

# TAKEOFF 01.24

Valid until 30.6.2024



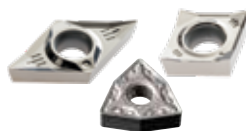
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273,700	-177,931	0,000	-177,931	273,700	105,000
106,934	-148,700	0,000	636,921		
0,000	323,733	0,000	-23,279	-177,931	636,921
-87,966	-83,966	0,000	0,000	636,921	-23,279
273,700	0,000	0,000	0,000	-23,279	105,000

**ATORN**  
Universal machine tap



6

**ATORN**  
ISO indexable cutting inserts



18



**ATORN**  
Outside micrometer



31

**NEU**

# ATORN Twist drill STEP DRILL

HSS
HSS-E
DIN 338
Typ N
118°

h8
5xD

Z 2
TiN
Vap.

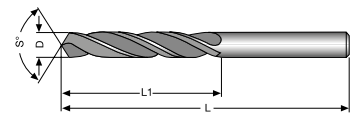
- Drilling of sheet metal and flat materials
- **Innovative step-structured tip geometry**
- **Excellent self-centring**
- 3-facet grinding to shank for optimum transfer of force and secure hold in the drill chuck, no possibility of slippage
- Ideal for use on hand drills
- Low-burr drilling
- **Versions:**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

**Innovative step geometry**

Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/Ni/Co-based		Aluminium		Copper	Graphite	Hardened steel	
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG	< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○		●	●			○	○	○				

**Single**

D mm	L1 mm	L mm	⊞	HSS		HSS, TiN		HSS-E, vap.	
				Art. no.	€	Art. no.	€	Art. no.	€
1	12	34	10	102669 0100	1.09	102668 0100	1.31	102667 0100	1.67
1.5	18	40	10	102669 0150	1.13	102668 0150	1.34	102667 0150	1.67
2	24	49	10	102669 0200	1.17	102668 0200	1.40	102667 0200	1.79
2.5	30	57	10	102669 0250	1.58	102668 0250	1.89	102667 0250	2.44
3	33	61	10	102669 0300	1.79	102668 0300	2.14	102667 0300	2.67
3.2	36	65	10	102669 0320	1.79	102668 0320	2.14	102667 0320	2.68
3.3	36	65	10	102669 0330	1.79	102668 0330	2.14	102667 0330	2.71
3.5	39	70	10	102669 0350	1.86	102668 0350	2.23	102667 0350	2.80
4	43	75	10	102669 0400	2.14	102668 0400	2.56	102667 0400	3.14
4.1	43	75	10	102669 0410	2.23	102668 0410	2.68	102667 0410	3.27
4.2	43	75	10	102669 0420	2.28	102668 0420	2.72	102667 0420	3.35
4.5	47	80	10	102669 0450	2.34	102668 0450	2.80	102667 0450	3.57
4.9	52	86	10	102669 0490	2.46	102668 0490	2.95	102667 0490	4.10
5	52	86	10	102669 0500	2.78	102668 0500	3.33	102667 0500	4.13
5.1	52	86	10	102669 0510	2.81	102668 0510	3.37	102667 0510	4.27
5.2	52	86	10	102669 0520	2.93	102668 0520	3.50	102667 0520	4.34
5.5	57	93	10	102669 0550	3.05	102668 0550	3.68	102667 0550	4.52
6	57	93	10	102669 0600	3.44	102668 0600	3.96	102667 0600	5.15
6.5	63	101	1	102669 0650	4.41	102668 0650	5.10	102667 0650	6.75
6.8	69	109	1	102669 0680	4.59	102668 0680	5.25	102667 0680	7.45
7	69	109	1	102669 0700	4.66	102668 0700	5.35	102667 0700	7.60
7.5	69	109	1	102669 0750	5.25	102668 0750	6,-	102667 0750	8,-
8	75	117	1	102669 0800	5.60	102668 0800	6.50	102667 0800	8.75
8.5	75	117	1	102669 0850	6.55	102668 0850	7.55	102667 0850	10.65
9	81	125	1	102669 0900	6.85	102668 0900	7.90	102667 0900	11.75
9.5	81	125	1	102669 0950	7.20	102668 0950	8.30	102667 0950	12.35
10	87	133	1	102669 1000	8.20	102668 1000	9.50	102667 1000	14,-
10.2	87	133	1	102669 1020	8.20	102668 1020	9.50	102667 1020	14.90
10.5	87	133	1	102669 1050	8.40	102668 1050	9.70	102667 1050	15.25
11	94	142	1	102669 1100	8.50	102668 1100	9.85	102667 1100	15.40
11.5	94	142	1	102669 1150	8.70	102668 1150	10,-	102667 1150	15.60
12	101	151	1	102669 1200	9.35	102668 1200	10.80	102667 1200	15.80
12.5	101	151	1	102669 1250	9.80	102668 1250	11.30	102667 1250	17.15
13	101	151	1	102669 1300	10.75	102668 1300	12.35	102667 1300	17.85



**Sets**

Contents	Pitch mm	Quantity Pcs.	HSS		HSS, TiN		HSS-E, vap.	
			Art. no.	€	Art. no.	€	Art. no.	€
1,0-10,0	0.5 mm	19	102669 2001	65,-	102668 2001	79.50	102667 2001	106,-
1,0-13,0	0.5 mm	25	102669 2002	119,-	102668 2002	139.50	102667 2002	177,-
1,0-10,5	0.5 mm including tapping hole drill bit	24	102669 2003	84,-	102668 2003	99,-	102667 2003	129,-
1,0-13,0	0.5 mm including tapping hole drill bit	29	102669 2004	135,-	102668 2004	158,-	102667 2004	199,-



1026682001

# SARA® Solid drilling tool SARADRILL

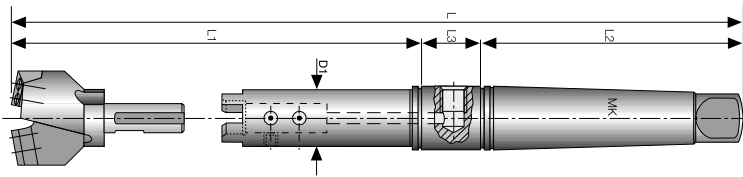
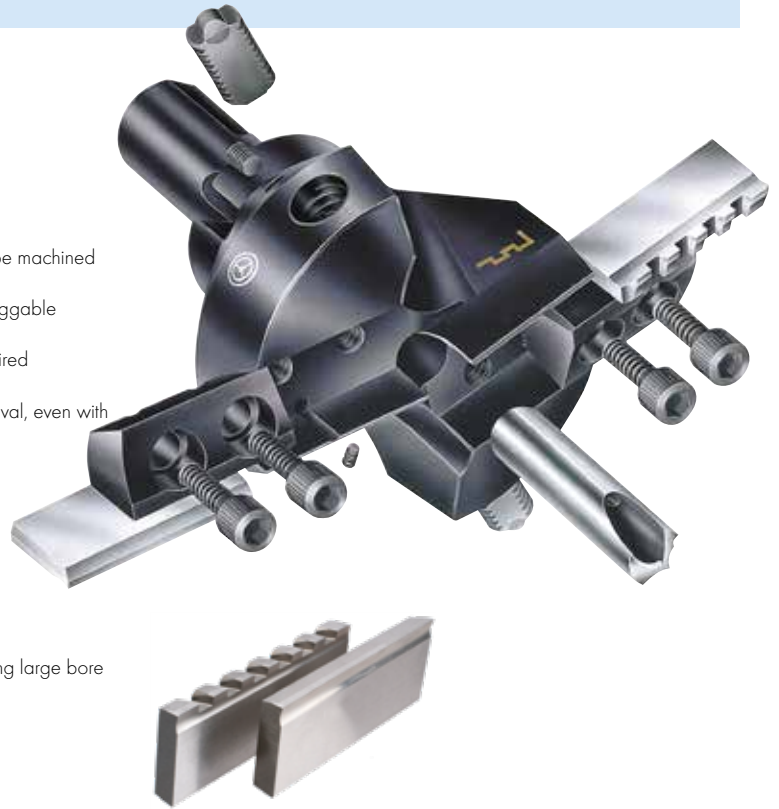


- **Machining of bore holes from Ø 49 to 270 mm on machines with low drive power**
- Low-vibration, equipment-friendly machining with up to 50% less drive power
- Drilling in a single work step without centring and pre-drilling
- No front face planning required
- Cost-efficient boring system, since differences 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 thanks 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 edges **HSS-E-PM**, ASP30 centre bit **HSS**
- 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!



## Boring head

Designation	Working area mm	Art. no.	€
A1-55	49 - 55	104501 0055	799,-
A2-65	55 - 65	104501 0065	799,-
B-80	65 - 80	104501 0080	969,-
C-100	80 - 100	104501 0100	1.129,-
D-120	100 - 120	104501 0120	1.299,-

## 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	MK 4	104505 0055	439,-
B-80	200	158	30	35	MK 4	104505 0080	469,-
C-100	200	158	30	38	MK 4	104505 0100	529,-
D-120	200	192	30	45	MK 5	104505 0120	929,-

## Extension

150 mm and 300 mm

For boring head	D1 mm	150 mm		300 mm	
		Art. no.	€	Art. no.	€
A1/A2	29	104510 0055	369,-	104515 0055	429,-
B-80	35	104510 0080	395,-	104515 0080	499,-
C-100	38	104510 0100	429,-	104515 0100	529,-
D-120	45	104510 0120	489,-	104515 0120	559,-

## Centre bit

For boring head	D mm	Working area mm	Art. no.	€
A1-55 to D-120	12	49 - 120	104530 0012	69.50

## Cutting edge SARADRILL

- For **SARADRILL** solid drilling tools
- Cutting edges are supplied in pairs, i.e., 1 roughing blade and 1 finishing blade.
- **Note for machining blind holes:** For machining intermediate sizes, the finishing blade can be adjusted in the range of 3 to 10 mm, depending on the size of the boring head. (Not permissible for machining through-holes!)
- **Caution: The cutting edges may only be replaced in pairs, as otherwise there is a risk of breakage!**
- Prices per pair (1 roughing blade and 1 finishing blade)

D mm	For boring head	Art. no.	€
50	A1-55	104550 0050	195,-
52	A1-55	104550 0052	195,-
55	A1-55, A2-65	104550 0055	195,-
58	A2-65	104550 0058	195,-
60	A2-65	104550 0060	195,-
62	A2-65	104550 0062	199,-
65	A2-65, B-080	104550 0065	199,-
70	B-80	104550 0070	245,-
72	B-80	104550 0072	245,-
75	B-80	104550 0075	259,-
78	B-80	104550 0078	259,-
80	B-80, C-100	104550 0080	275,-
85	C-100	104550 0085	275,-
88	C-100	104550 0088	275,-
90	C-100	104550 0090	275,-
95	C-100	104550 0095	295,-
100	C-100, D-120	104550 0100	295,-
105	D-120	104550 0105	309,-
110	D-120	104550 0110	309,-
115	D-120	104550 0115	369,-
120	D-120	104550 0120	369,-

Application	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	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	< 55 HRc	< 60 HRc
104550....	●	●	●	○	○		●	●				●	●	○				

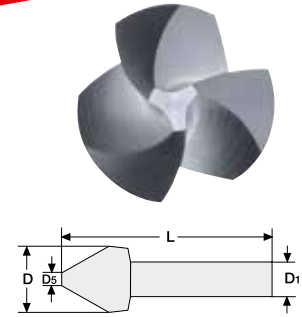
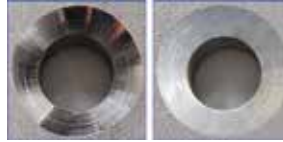
NEU

# ATORN Tapered and deburring countersink, spiralled

Spiralled cutting edges



- Universal geometry with 3 spiralled cutting edges and unequal pitch
- **Cutting material: HSSE, TiAlN-coated**
- **Low-vibration and high degree of smoothness**
- Significantly reduced feed and radial forces
- **Round and chatter-free countersinks**
- Wide range of applications
- **Versions:**
  - 150275 - with straight shank
  - 150276 - with 3 clamping surfaces on the shank to prevent slipping in the drill chuck (optimal for hand drills)



Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
	○ 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		< 55 HRc	< 60 HRc	≥ 60 HRc	
		40	20	15	18	15	10	25	25	12	9		50	35	90				

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

## Single

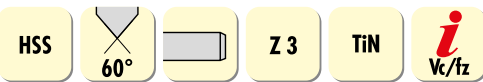
D mm	D5 mm	D1 mm	L mm	Z	Feed f steel < 1000 N/mm² mm/rev	Straight shank Art. no.	€	3-face shank Art. no.	€
6.3	1.6	5	45	3	0.06	150275 0063	21.90	150276 0063	24.30
8	2	6	50	3	0.06	150275 0080	23.30	150276 0080	25.80
10	2.5	6	50	3	0.09	150275 0100	24.20	150276 0100	26.70
12.5	3.2	8	56	3	0.12	150275 0125	28.80	150276 0125	31.95
16	4	10	63	3	0.12	150275 0160	32.90	150276 0160	36.70
20	5	10	67	3	0.16	150275 0200	40.80	150276 0200	45.50
25	6.3	10	71	3	0.16	150275 0250	57.10	150276 0250	63.90



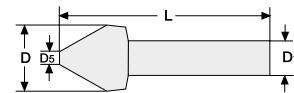
## Sets, 6-piece

Contents	Straight shank Art. no.	€	3-face shank Art. no.	€
6.3   8.0   10.0   12.5   16.0   20.0 mm	150275 0001	129,-	150276 0001	139,-

# ATORN Taper and deburring countersinks



- DIN 334C
- 3 cutting edges
- **Cutting material: HSS, HSS, TiN-coated**



Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
	○ 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		< 55 HRc	< 60 HRc	≥ 60 HRc	
		30	20	10	8	8		11	15				70	40	60				

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

D mm	D5 mm	D1 mm	L mm	Z	Feed f steel < 1000 N/mm² mm/rev	Art. no.	€	TiN Art. no.	€
6.3	1.6	5	45	3	0.06	150130 0063	7.40	150131 0063	12.70
8	2	6	50	3	0.06	150130 0080	7.70	150131 0080	13.20
10	2.5	6	50	3	0.09	150130 0100	9.40	150131 0100	16.30
12.5	3.2	8	56	3	0.12	150130 0125	9.95	150131 0125	17.90
16	4	10	63	3	0.12	150130 0160	12.20	150131 0160	21.90
20	5	10	67	3	0.16	150130 0200	16.70	150131 0200	30.60
25	6.3	10	71	3	0.16	150130 0250	23,-	150131 0250	41.70



NEU

# ATORN Tapered and deburring countersink, spiralled

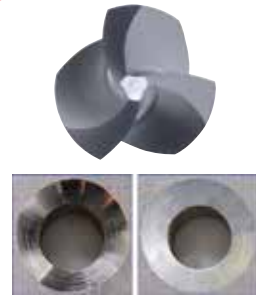
Spiralled cutting edges

HSS-E
Werks-norm
90°

Z 3
TiAlN

 $V_c/f_z$

- Universal geometry with 3 spiralled cutting edges and unequal pitch
- **Cutting material: HSSE, TiAlN-coated**
- **Low-vibration and high degree of smoothness**
- Significantly reduced feed and radial forces
- **Round and chatter-free countersinks**
- Wide range of applications
- **Versions:**
  - 150272 - with straight shank
  - 150273 - with 3 clamping surfaces on the shank to prevent slipping in the drill chuck (optimal for hand drills)
  - 150274 - with extended shank for bridging of interference contours

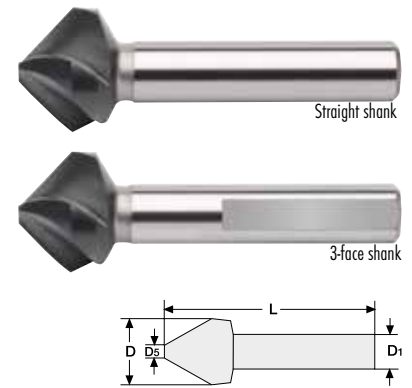


Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
	○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	Ferrit/martens.	Austenitic	Duplex	GG/GTS	GGG	< 30 HRC	≥ 30 HRC	< 8% Si	≥ 8% Si	90	< 55 HRC	< 60 HRC	≥ 60 HRC		
		40	20	15	18	15	10	25	25	12	9	50	35	90					

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

## Single

D mm	D5 mm	D1 mm	L mm	Z	Feed f steel < 1000 N/mm² mm/rev	Straight shank Art. no.	€	3-face shank Art. no.	€
6.3	1.5	5	45	3	0.06	150272 0063	19.10	150273 0063	21.30
8	2	6	50	3	0.06	150272 0080	20.90	150273 0080	22.80
8.3	2	6	50	3	0.09	150272 0083	21.30	150273 0083	23.30
10	2.5	6	50	3	0.09	150272 0100	21.60	150273 0100	23.60
10.4	2.5	6	50	3	0.09	150272 0104	21.70	150273 0104	24.20
11.5	2.8	8	56	3	0.09	150272 0115	24.80	150273 0115	27.20
12.4	2.8	8	56	3	0.12	150272 0124	25.95	150273 0124	28.20
15	3.2	10	60	3	0.12	150272 0150	29.20	150273 0150	31.80
16.5	3.2	10	60	3	0.16	150272 0165	29.90	150273 0165	31.95
19	3.5	10	63	3	0.16	150272 0190	32.70	150273 0190	35.30
20.5	3.5	10	63	3	0.16	150272 0205	37.40	150273 0205	39.40
23	3.8	10	67	3	0.16	150272 0230	42.80	150273 0230	45.50
25	3.8	10	67	3	0.16	150272 0250	46.90	150273 0250	48.20
31	4.2	12	71	3	0.16	150272 0310	56.40	150273 0310	59.10
40	10	12	75	3	0.16	150272 0400	99,-	150273 0400	99.90



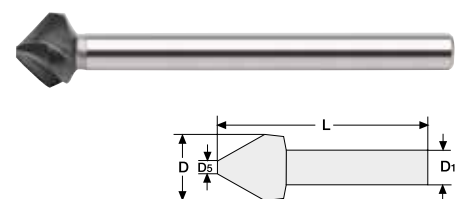
## Sets

Contents	Straight shank Art. no.	€	3-face shank Art. no.	€
6.3   10.4   16.5   20.5   25.0 mm	150272 0002	139,-	150273 0002	149,-
6.3   8.3   10.4   12.4   16.5   20.5 mm	150272 0001	129,-	150273 0001	139,-



## Long version

D mm	D5 mm	D1 mm	L mm	Z	Feed f steel < 1000 N/mm² mm/rev	Art. no.	€
6.3	1.5	5	104	3	0.06	150274 0063	34.60
8.3	2	6	105	3	0.09	150274 0083	37.40
10.4	2.5	6	107	3	0.09	150274 0104	40.80
12.4	2.8	8	108	3	0.12	150274 0124	46.90
16.5	3.2	10	111	3	0.16	150274 0165	48.95
20.5	3.5	10	114	3	0.16	150274 0205	58.40
25	3.8	10	118	3	0.16	150274 0250	66.60
31	4.2	12	140	3	0.16	150274 0310	104.70



# ATORN Universal machine tap

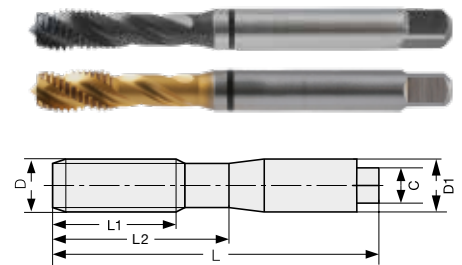


- **ISO 6H metric thread**
- Form C, 2-3 thread chamfer, for blind-hole threads
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- Possible thread depth 2.5 x D
- **For universal applications**

Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel			
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si			< 55 HRc	< 60 HRc	≥ 60 HRc	
		18	12	8	8	8			15				18		13					

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

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	Vapour-treated		TiN	
								Art. no.	€	Art. no.	€
M1	0.25	40	5	-	2.5	2.1	0.75	134710 0010	23.20		
M1.2	0.25	40	5	-	2.5	2.1	0.95	134710 0012	23.20		
M1.4	0.3	40	7	-	2.5	2.1	1.1	134710 0014	20.70		
M1.6	0.35	40	8	-	2.5	2.1	1.25	134710 0016	19.65		
M1.7	0.35	40	8	-	2.5	2.1	1.35	134710 0017	20.40		
M1.8	0.35	40	8	-	2.5	2.1	1.45	134710 0018	19.65		
M2	0.4	45	8	-	2.8	2.1	1.6	134710 0020	16.90		
M2.2	0.45	45	9	-	2.8	2.1	1.75	134710 0022	17.15		
M2.3	0.4	45	9	-	2.8	2.1	1.9	134710 0023	19.30		
M2.5	0.45	50	9	-	2.8	2.1	2.05	134710 0025	16.90		
M2.6	0.45	50	9	-	2.8	2.1	2.15	134710 0026	17.55		
M3	0.5	56	10	18	3.5	2.7	2.5	134710 0030	7.95	134715 0030	12.50
M4	0.7	63	12	21	4.5	3.4	3.3	134710 0040	7.95	134715 0040	12.50
M5	0.8	70	14	25	6	4.9	4.2	134710 0050	8.30	134715 0050	12.75
M6	1	80	16	30	6	4.9	5	134710 0060	8.30	134715 0060	13,-
M8	1.25	90	18	35	8	6.2	6.8	134710 0080	10.50	134715 0080	15.65
M10	1.5	100	20	39	10	8	8.5	134710 0100	12.40	134715 0100	18.30
M12	1.75	110	22	-	9	7	10.2	134710 0120	18.10	134715 0120	25.10
M16	2	110	28	-	12	9	14	134710 0160	26.50	134715 0160	37.60
M20	2.5	140	32	-	16	12	17.5	134710 0200	43,-	134715 0200	61.20
M24	3	160	30	-	18	14.5	21	134710 0240	71.40		
M27	3	160	30	-	20	16	24	134710 0270	116,-		
M30	3.5	180	35	-	22	18	26.5	134710 0300	138,-		

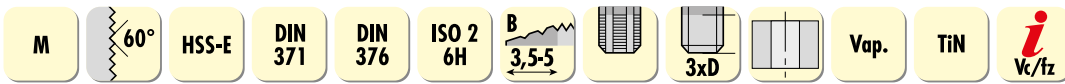


## Set

Quantity Pcs.	Contents	Art. no.	€
7	1 machine thread tap each HSSE 13125 M3/M4/M5/M6/M8/M10/M12	134710 1000	102.50



# ATORN Universal machine tap

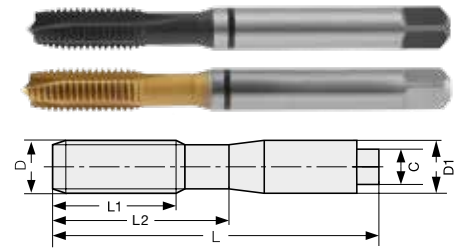


- Straight-fluted with spiral point
- DIN 371 = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated; HSS-E, TiN-coated**
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D
- **For universal applications**

Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG	< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	< 55 HRc	< 60 HRc	≥ 60 HRc		
		18	12	8	8	8			15			18		13					

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

D	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	Vapour-treated		TiN	
								Art. no.	€	Art. no.	€
M1	0.25	40	5	-	2.5	2.1	0.75	134700 0010	22.90		
M1.2	0.25	40	5	-	2.5	2.1	0.95	134700 0012	22.90		
M1.4	0.3	40	7	-	2.5	2.1	1.1	134700 0014	20.40		
M1.6	0.35	40	8	-	2.5	2.1	1.25	134700 0016	19.40		
M1.7	0.35	40	8	-	2.5	2.1	1.35	134700 0017	20.10		
M1.8	0.35	40	8	-	2.5	2.1	1.45	134700 0018	19.40		
M2	0.4	45	8	-	2.8	2.1	1.6	134700 0020	16.50		
M2.2	0.45	45	9	-	2.8	2.1	1.75	134700 0022	16.80		
M2.3	0.4	45	9	-	2.8	2.1	1.9	134700 0023	19,-		
M2.5	0.45	50	9	-	2.8	2.1	2.05	134700 0025	16.50		
M2.6	0.45	50	9	-	2.8	2.1	2.15	134700 0026	17.40		
M3	0.5	56	10	18	3.5	2.7	2.5	134700 0030	7.95	134705 0030	12.50
M4	0.7	63	12	21	4.5	3.4	3.3	134700 0040	7.95	134705 0040	12.50
M5	0.8	70	14	25	6	4.9	4.2	134700 0050	8.30	134705 0050	12.70
M6	1	80	16	30	6	4.9	5	134700 0060	8.30	134705 0060	13,-
M8	1.25	90	18	35	8	6.2	6.8	134700 0080	10.50	134705 0080	15.60
M10	1.5	100	20	39	10	8	8.5	134700 0100	12.40	134705 0100	18.30
M12	1.75	110	22	-	9	7	10.2	134700 0120	18.10	134705 0120	25.10
M16	2	110	28	-	12	9	14	134700 0160	25.90	134705 0160	37.60
M20	2.5	140	32	-	16	12	17.5	134700 0200	42.30	134705 0200	61.20
M24	3	160	36	-	18	14.5	21	134700 0240	70.50		
M27	3	160	36	-	20	16	24	134700 0270	114.50		
M30	3.5	180	40	-	22	18	26.5	134700 0300	135.50		



## Set

Quantity Pcs.	Contents	Art. no.	€
7	1 machine thread tap each HSSE 13121 M3/M4/M5/M6/M8/M10/M12	134700 1000	102.50



## ATORN Universal machine tap

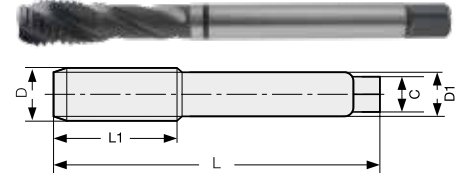


- ISO 6H fine metric thread
- 40° spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

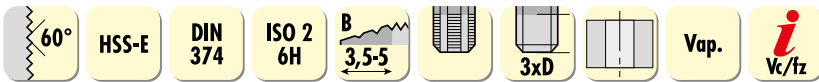
Application	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
		< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit/martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		18	12	8	8	8			15				18		13				

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

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	Art. no.	€
M 8	1	90	22	6	4.9	7	134760 0810	12.75
M 10	1	90	20	7	5.5	9	134760 1010	16.10
M 10	1.25	100	24	7	5.5	8.8	134760 1012	16.50
M 12	1	100	22	9	7	11	134760 1210	19.70
M 12	1.25	100	22	9	7	10.8	134760 1212	19.70
M 12	1.5	100	22	9	7	10.5	134760 1215	20.30
M 14	1	100	22	11	9	13	134760 1410	29.50
M 14	1.5	100	22	11	9	12.5	134760 1415	30.60
M 16	1	100	22	12	9	15	134760 1610	36,-
M 16	1.5	100	22	12	11	14.5	134760 1615	35.40
M 18	1.5	110	25	14	12	16.5	134760 1815	45.90
M 18	2	125	34	14	12	16	134760 1820	49.30
M 20	1	125	25	16	12	19	134760 2010	56.20
M 20	1.5	125	25	16	12	18.5	134760 2015	58.30



## ATORN Universal machine tap

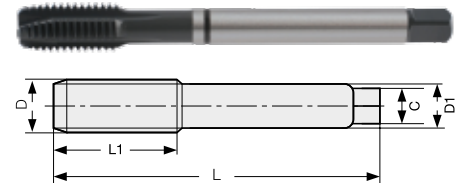


- ISO 6H fine metric thread
- Straight-fluted with spiral point
- Type B, 3.5 to 5-thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads
- The spiral point ensures strong chip removal to the front
- Possible thread depth 3 x D

Application	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
		< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit/martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		18	12	8	8	8			15				18		13				

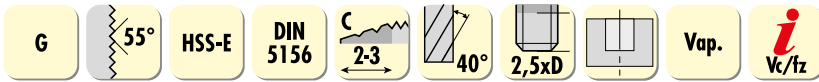
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!

D mm	Pitch mm	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	Art. no.	€
M 8	1	90	22	6	4.9	7	134765 0810	12.50
M 10	1	90	20	7	5.5	9	134765 1010	15.80
M 10	1.25	100	24	7	5.5	8.8	134765 1012	16.10
M 12	1	100	22	9	7	11	134765 1210	19.30
M 12	1.25	100	22	9	7	10.8	134765 1212	19.30
M 12	1.5	100	22	9	7	10.5	134765 1215	19.85
M 14	1	100	22	11	9	13	134765 1410	28.80
M 14	1.5	100	22	11	9	12.5	134765 1415	29.90
M 16	1	100	22	12	9	15	134765 1610	35.10
M 16	1.5	100	22	12	11	14.5	134765 1615	34.70
M 18	1.5	110	25	14	12	16.5	134765 1815	44.50
M 18	2	125	34	14	12	16	134765 1820	47.40
M 20	1	125	25	16	12	19	134765 2010	54.70
M 20	1.5	125	25	16	12	18.5	134765 2015	57.60





## ATORN Universal machine tap

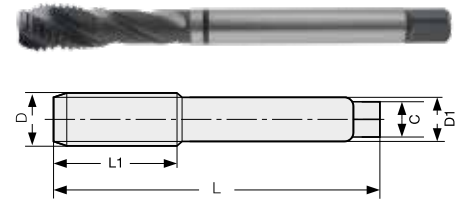


- Whitworth pipe thread, 55°
- 40° spiral-fluted
- Type C, 2-3 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For blind-hole threads

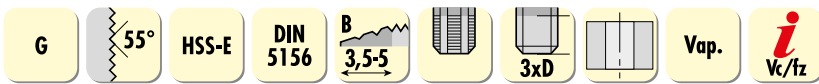
Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		18	12	8	8	8			15				18		13				

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

D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	Art. no.	€
G 1/8 inch	28	90	20	7	5.5	8.7	134770 0018	23.40
G 1/4 inch	19	100	22	11	9	11.8	134770 0014	30.10
G 3/8 inch	19	100	22	12	9	15.3	134770 0038	44.50
G 1/2 inch	14	125	25	16	12	19	134770 0012	66.90
G 3/4 inch	14	140	28	20	16	24.5	134770 0034	112.50
G 1 inch	11	160	30	25	20	30.75	134770 0100	127.50
G 1 1/4 inches	11	170	30	32	24	39.5	134770 0114	359,-



## ATORN Universal machine tap

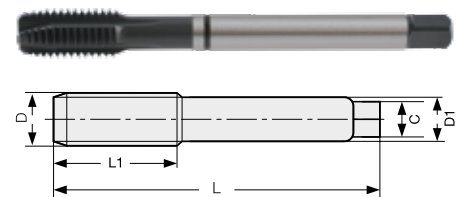


- Whitworth pipe thread, 55°
- 40° spiral-fluted
- Form B, 3.5-5 thread chamfer
- **Cutting material: HSS-E, vapour-treated**
- For through-hole threads

Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		18	12	8	8	8			15				18		13				

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

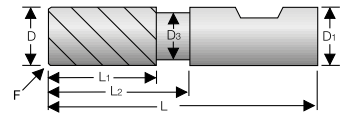
D	Pitch	L mm	L1 mm	D1 mm	C mm	Tapping hole Ø mm	Art. no.	€
G 1/8 inch	28	90	20	7	5.5	8.7	134775 0018	22.80
G 1/4 inch	19	100	22	11	9	11.8	134775 0014	29.20
G 3/8 inch	19	100	22	12	9	15.3	134775 0038	43.80
G 1/2 inch	14	125	25	16	12	19	134775 0012	64.80
G 3/4 inch	14	140	28	20	16	24.5	134775 0034	109.50
G 1 inch	11	160	30	25	20	30.75	134775 0100	125,-
G 1 1/4 inches	11	170	30	32	24	39.5	134775 0114	345,-



# SARA® Longitudinal slot cutter



- **With clearance**
- Straight shank up to  $\varnothing 2.5$  mm smooth, from  $\varnothing 2.8$  mm with driving planes in accordance with DIN 6535-HB
- **First-rate chip removal due to extremely smooth surface**
- **For P9 grooves**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**



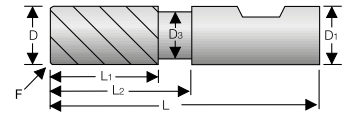
Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel			
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc	
		110	90	70	58	55	45	115	100	50	45	35	350	250	120					

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

D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	F x 45° mm	Z	Feed fz		Art. no.	€
								steel < 1400 N/mm <sup>2</sup> mm/Z	steel < 1400 N/mm <sup>2</sup> mm/Z		
1.0	3	-	50	3.0	-	-	2	0.006	0.007	254050 0010	27.50
1.1	3	-	50	3.0	-	-	2	0.006	0.007	254050 0011	27.50
1.2	4	-	50	3.0	-	-	2	0.006	0.007	254050 0012	27.50
1.4	4	-	50	3.0	-	-	2	0.006	0.007	254050 0014	27.50
1.5	4	-	50	3.0	-	-	2	0.006	0.007	254050 0015	27.50
1.6	4	-	50	3.0	-	-	2	0.006	0.007	254050 0016	27.50
1.8	5	-	50	3.0	-	-	2	0.006	0.007	254050 0018	27.50
2.0	5	-	50	3.0	-	0.05	2	0.006	0.007	254050 0020	27.50
2.5	6	-	50	3.0	-	0.05	2	0.012	0.015	254050 0025	27.50
2.8	8	15	57	6.0	2.6	0.05	2	0.012	0.015	254050 0028	23.30
3.0	8	15	57	6.0	2.8	0.05	2	0.012	0.015	254050 0030	23.30
3.8	11	15	57	6.0	3.6	0.1	2	0.012	0.015	254050 0038	23.30
4.0	11	15	57	6.0	3.8	0.1	2	0.012	0.015	254050 0040	23.30
4.8	13	21	57	6.0	4.6	0.1	2	0.024	0.030	254050 0048	24.60
5.0	13	21	57	6.0	4.8	0.1	2	0.024	0.030	254050 0050	24.60
5.8	13	21	57	6.0	5.6	0.1	2	0.024	0.030	254050 0058	24.60
6.0	13	21	57	6.0	5.8	0.1	2	0.024	0.030	254050 0060	24.60
6.8	16	27	63	8.0	6.6	0.1	2	0.024	0.030	254050 0068	28.80
7.0	16	27	63	8.0	6.8	0.1	2	0.024	0.030	254050 0070	28.40
7.8	19	27	63	8.0	7.5	0.1	2	0.024	0.030	254050 0078	28.10
8.0	19	27	63	8.0	7.7	0.1	2	0.024	0.030	254050 0080	27.80
8.7	19	32	72	10.0	8.5	0.1	2	0.032	0.040	254050 0087	40.70
9.0	19	32	72	10.0	8.8	0.1	2	0.032	0.040	254050 0090	40.70
9.7	22	32	72	10.0	9.5	0.1	2	0.032	0.040	254050 0097	40.70
10.0	22	32	72	10.0	9.8	0.1	2	0.032	0.040	254050 0100	40.70
10.7	26	38	83	12.0	10.5	0.1	2	0.032	0.040	254050 0107	58.60
11.0	26	38	83	12.0	10.8	0.1	2	0.032	0.040	254050 0110	58.60
11.7	26	38	83	12.0	11.5	0.1	2	0.032	0.040	254050 0117	58.60
12.0	26	38	83	12.0	11.8	0.1	2	0.032	0.040	254050 0120	58.60
13.7	26	38	83	14.0	13.5	0.1	2	0.040	0.050	254050 0137	72.30
14.0	26	38	83	14.0	13.8	0.1	2	0.040	0.050	254050 0140	72.30
15.7	32	44	92	16.0	15.4	0.1	2	0.040	0.050	254050 0157	93.90
16.0	32	44	92	16.0	15.7	0.1	2	0.040	0.050	254050 0160	93.90
17.7	32	44	92	18.0	17.4	0.1	2	0.048	0.060	254050 0177	128,-
18.0	32	44	92	18.0	17.7	0.1	2	0.048	0.060	254050 0180	113.50
19.7	38	54	104	20.0	19.4	0.1	2	0.048	0.060	254050 0197	162.50
20.0	38	54	104	20.0	19.7	0.1	2	0.048	0.060	254050 0200	144,-



## SARA® End milling cutter



- With clearance
- First-rate chip removal due to extremely smooth surface
- Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated

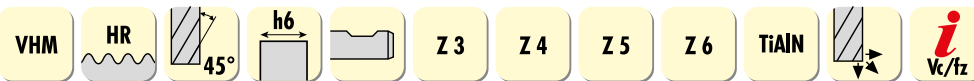
Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
	○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si		< 55 HRc	< 60 HRc	≥ 60 HRc	
		110	90	70	58	55	45	115	100	50	45	35	350	250	120				

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

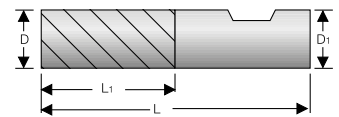
D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	F x 45° mm	Z	Feed fz steel < 1400 N/mm² mm/Z	Feed fz steel < 1400 N/mm² mm/Z	Art. no.	€
3.0	8	15	57	6.0	2.8	0.1	3	0.012	0.015	254052 0030	26,-
3.5	11	15	57	6.0	3.3	0.1	3	0.012	0.015	254052 0035	27.50
4.0	11	15	57	6.0	3.8	0.1	3	0.012	0.015	254052 0040	25.30
4.5	13	21	57	6.0	4.3	0.1	3	0.024	0.03	254052 0045	27.50
5.0	13	21	57	6.0	4.8	0.1	3	0.024	0.03	254052 0050	25.30
5.5	13	21	57	6.0	5.3	0.1	3	0.024	0.03	254052 0055	27.50
6.0	13	21	57	6.0	5.8	0.1	3	0.024	0.03	254052 0060	25.30
6.5	16	27	63	8.0	6.3	0.1	3	0.024	0.03	254052 0065	33.80
7.0	16	27	63	8.0	6.8	0.1	3	0.024	0.03	254052 0070	33.10
7.5	19	27	63	8.0	7.3	0.1	3	0.024	0.03	254052 0075	31.90
8.0	21	27	63	8.0	7.7	0.1	3	0.024	0.03	254052 0080	32.30
8.5	21	32	72	10.0	8.3	0.1	3	0.032	0.04	254052 0085	50.80
9.0	21	32	72	10.0	8.8	0.1	3	0.032	0.04	254052 0090	49.40
9.5	22	32	72	10.0	9.3	0.1	3	0.032	0.04	254052 0095	54.70
10.0	22	32	72	10.0	9.8	0.1	3	0.032	0.04	254052 0100	47.20
11.0	26	32	83	12.0	10.8	0.1	3	0.032	0.04	254052 0110	76.30
12.0	26	38	83	12.0	11.8	0.1	3	0.032	0.04	254052 0120	70.40
14.0	26	38	83	14.0	13.8	0.1	3	0.04	0.05	254052 0140	88.90
16.0	36	44	92	16.0	15.7	0.1	3	0.04	0.05	254052 0160	119.50
18.0	36	44	92	18.0	17.7	0.1	3	0.048	0.06	254052 0180	147.50
20.0	41	54	104	20.0	19.7	0.1	3	0.048	0.06	254052 0200	188.50



## SARA® Roughing cutter Basic-Line



- 3-6 cutting edges, long, 20° right-hand cutting
- Eccentric relief grinding
- Cutting material: Fine grain solid carbide



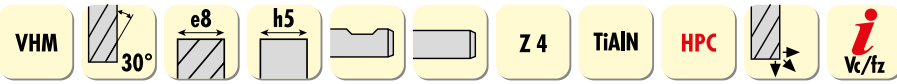
Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
	○ well suited	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si		< 55 HRc	< 60 HRc	≥ 60 HRc	
		150	110	90	85			150	100							70			

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

D mm	L1 mm	L mm	D1 mm	Z	Feed fz steel < 1000 N/mm² mm/Z	Feed fz steel < 1000 N/mm² mm/Z	Art. no.	€
4.0	11	57	6.0	3	0.013	0.015	254022 0040	18.50
5.0	13	57	6.0	4	0.021	0.025	254022 0050	18.50
6.0	16	57	6.0	4	0.021	0.025	254022 0060	18.50
8.0	16	63	8.0	4	0.027	0.032	254022 0080	21.30
10.0	22	72	10.0	4	0.044	0.052	254022 0100	32.50
12.0	26	83	12.0	4	0.044	0.052	254022 0120	41.10
16.0	32	92	16.0	5	0.059	0.070	254022 0160	67.50
20.0	38	104	20.0	6	0.071	0.084	254022 0200	107.50



# SARA® End milling cutter



- **Standard version with clearance**
- Straight shank in accordance with DIN 6535 HA and with Weldon shank in accordance with DIN 6535 HB
- **First-rate chip removal due to extremely smooth surface**
- **Cutting material: ultra-fine grain solid carbide, TiAlN-Ultra-coated**

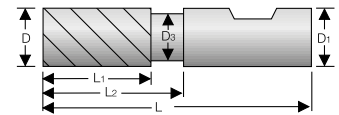
Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel			
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc	
		●	●	●	●	●	●	●	●	●	●	●	●	●	●					
		110	90	70	58	55	45	115	100	50	45	35	350	250	120					

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

## Standard version

- Smooth shank
- From Ø 6 mm with Weldon shanks in accordance with DIN 6535 HB

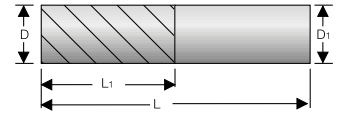
D	L1	L2	L	D1	D3	Z	Feed fz	Feed fz	Art. no.	€
mm	mm	mm	mm	mm	mm		steel < 1400 N/mm <sup>2</sup>	steel < 1400 N/mm <sup>2</sup>		
							mm/Z	mm/Z		
2.0	8	-	32	2.0	-	4	0.0056	0.007	254054 0020	20.70
3.0	12	-	38	3.0	-	4	0.012	0.015	254054 0030	22.20
4.0	12	-	40	4.0	-	4	0.012	0.015	254054 0040	23.90
5.0	15	20	50	5.0	4.8	4	0.024	0.03	254054 0050	25.40
6.0	16	20	58	6.0	5.8	4	0.024	0.03	254054 0060	34.90
8.0	22	32	70	8.0	7.7	4	0.024	0.03	254054 0080	38.10
10.0	25	31	73	10.0	9.6	4	0.032	0.04	254054 0100	56.90
12.0	28	37	84	12.0	11.6	4	0.032	0.04	254054 0120	82.80
16.0	35	43	93	16.0	15.5	4	0.04	0.05	254054 0160	133.50
20.0	40	52	104	20.0	19.5	4	0.048	0.06	254054 0200	198,-



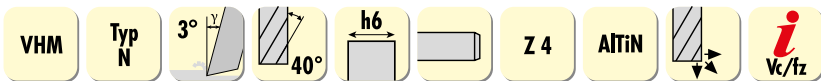
## Extra-long without clearance

- Smooth shank

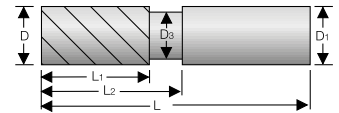
D	L1	L	D1	Z	Feed fz	Feed fz	Art. no.	€
mm	mm	mm	mm		steel < 1400 N/mm <sup>2</sup>	steel < 1400 N/mm <sup>2</sup>		
					mm/Z	mm/Z		
3.0	30	60	3.0	4	0.012	0.015	254056 0030	25.40
4.0	30	75	4.0	4	0.012	0.015	254056 0040	27.10
5.0	35	75	5.0	4	0.024	0.03	254056 0050	30.10
6.0	40	100	6.0	4	0.024	0.03	254056 0060	47.80
8.0	40	100	8.0	4	0.024	0.03	254056 0080	60.30
10.0	40	100	10.0	4	0.032	0.04	254056 0100	92.50
12.0	45	100	12.0	4	0.032	0.04	254056 0120	155.50
14.0	45	100	14.0	4	0.04	0.05	254056 0140	185,-
16.0	75	150	16.0	4	0.04	0.05	254056 0160	255,-



## ATORN End milling cutter RockTec 52



- With clearance
- For machining materials **up to 52 HRc**
- Cutting edge tolerance: at  $\varnothing$  3.0 - 20.0 mm = 0/- 0.020 mm
- **Solid carbide ultra-fine grain cutting material**
- Rake angle 3°



Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit/martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
		●	●	●	○	○	○	●	●	○	○	○					○		
		160	150	120	115	100	90	110	130	100	80	90					70		

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

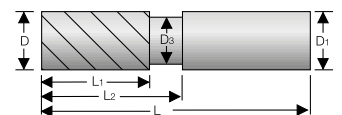
D	L1	L2	L	D3	D1	Z	Feed fz steel < 1400 N/mm <sup>2</sup> mm/Z	Art. no.	€
3	9	15	50	2.8	6	4	0.02	257003 0030	21.50
4	12	20	50	3.7	6	4	0.02	257003 0040	21.50
5	15	20	50	4.6	6	4	0.03	257003 0050	21.50
6	16	20	50	5.5	6	4	0.03	257003 0060	21.50
8	20	30	64	7.4	8	4	0.04	257003 0080	33.90
10	22	32	70	9.2	10	4	0.05	257003 0100	45.80
12	25	37	75	11	12	4	0.06	257003 0120	52.20
16	32	46	90	15	16	4	0.08	257003 0160	92,-
20	38	58	100	19	20	4	0.1	257003 0200	125.50



## ATORN End milling cutter RockTec 65



- With clearance
- For machining materials **up to 65 HRc**
- Cutting edge tolerance: at  $\varnothing$  3.0 - 20.0 mm = 0/- 0.020 mm
- **Solid carbide ultra-fine grain cutting material**
- Rake angle -6°



Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit/martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc
				●							○						○	○	○
				180							95						140	140	120

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

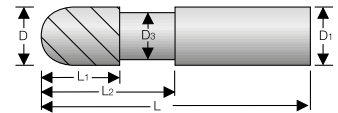
D	L1	L2	L	D3	D1	Z	Feed fz hardened steel ≥ 60 HRc mm/Z	Art. no.	€
3	9	15	50	2.8	6	4	0.015	257004 0030	23.40
4	12	20	50	3.7	6	4	0.02	257004 0040	23.40
5	15	20	50	4.6	6	4	0.025	257004 0050	23.40
6	16	20	50	5.5	6	4	0.038	257004 0060	23.40
8	20	30	64	7.4	8	4	0.05	257004 0080	37.30
10	22	32	70	9.2	10	4	0.052	257004 0100	51.10
12	25	37	75	11	12	4	0.06	257004 0120	62,-
16	32	46	90	15	16	4	0.07	257004 0160	109,-
20	38	58	100	19	20	4	0.08	257004 0200	132.50



## ATORN Radius milling cutter **RockTec 65**



- With clearance
- For machining materials **up to 65 HRc**
- Radius tolerance: 0/-0.01 mm
- **Solid carbide ultra-fine grain cutting material**
- Rake angle -10°



Application	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG	< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy		< 55 HRc	< 60 HRc	≥ 60 HRc	
				275						○ 215	○ 215	○ 180					● 160	● 160	● 65

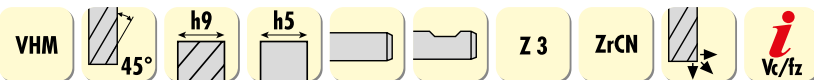
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!

### Short

D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	R mm	Z	Feed fz hardened steel ≥ 60 HRc mm/Z	Art. no.	€
3	5	14	50	2.8	6	1.5	4	0.03	257036 0030	35.90
4	8	20	50	3.7	6	2	4	0.0425	257036 0040	35.90
5	9	20	50	4.6	6	2.5	4	0.0425	257036 0050	35.90
6	10	20	50	5.5	6	3	4	0.0625	257036 0060	35.90
8	12	30	64	7.4	8	4	4	0.0625	257036 0080	48.80
10	14	32	70	9.2	10	5	4	0.09	257036 0100	61.60
12	16	38	75	11	12	6	4	0.09	257036 0120	97,-
16	32	46	90	15	16	8	4	0.095	257036 0160	132.50
20	38	58	100	19	20	10	4	0.095	257036 0200	220,-



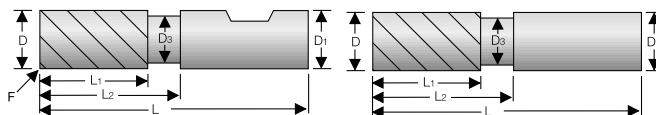
## ATORN End milling cutter **Ultra-N**



- With clearance
- **3 cutting edges, sharp**
- **With defined cutting-edge rounding**
- **Polished version, sharp-edged, ground**
- For non-ferrous materials
- Cutting material: superfine grain solid carbide, uncoated with **mirror finish / polished version**
- Cutting material: superfine grain solid carbide, **ZrCN Ultra-N** coated

Application	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper Cu alloy	Graphite GRP/CFP/thermo.	Hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG	< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy		< 55 HRc	< 60 HRc	≥ 60 HRc	
													● 380	● 180	● 170				

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



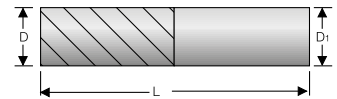
### Short

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	Z	Feed fz aluminium < 8% Si mm/Z		Straight shank HA ZrCN		Straight shank HB polished		Straight shank HB mirror finish	
							aluminium < 8% Si mm/Z	aluminium < 8% Si mm/Z	Art. no.	€	Art. no.	€	Art. no.	€
3.0	12	57	16	2.8	6	3	0.025	0.018	249304 0030	26.30	249309 0030	25,-	249305 0030	23.30
4.0	12	57	18	3.8	6	3	0.030	0.021	249304 0040	26.30	249309 0040	25,-	249305 0040	23.30
5.0	15	57	18	4.7	6	3	0.038	0.026	249304 0050	26.30	249309 0050	25,-	249305 0050	23.30
6.0	16	57	21	5.6	6	3	0.045	0.032	249304 0060	30.70	249309 0060	27.20	249305 0060	25.50
8.0	22	64	28	7.6	8	3	0.060	0.042	249304 0080	36.90	249309 0080	34.30	249305 0080	31.90
10.0	25	73	33	9.6	10	3	0.075	0.053	249304 0100	46.90	249309 0100	43.10	249305 0100	40.70
12.0	28	84	39	11.4	12	3	0.085	0.060	249304 0120	65.90	249309 0120	61.30	249305 0120	57,-
16.0	35	93	45	15.4	16	3	0.098	0.068	249304 0160	97.20	249309 0160	88.90	249305 0160	83.20
20.0	40	104	54	19.4	20	3	0.113	0.079	249304 0200	151,-	249309 0200	149,-	249305 0200	139.50

## ATORN Deburring tools



- Ideal for chamfering and deburring workpiece edges, and for contour milling



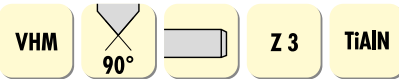
Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel			
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc	
		●	●	●	●	○	○	○	●	●	○	○	○	○	○					
		170	130	110	90	70	70	150	150	90	90	70								

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

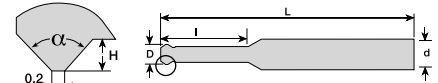
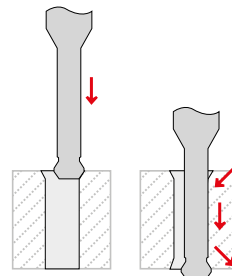
D mm	L mm	D1 mm	Z	60°		90°	
				Art. no.	€	Art. no.	€
1.0	38	3	3	251550 0010	21.90	251551 0010	21.90
2.0	38	3	3	251550 0020	21.90	251551 0020	21.90
3.0	38	3	3	251550 0030	21.90	251551 0030	21.90
4.0	51	4	4	251550 0040	23.10	251551 0040	23.10
6.0	64	6	4	251550 0060	28.70	251551 0060	28.70
8.0	64	8	5	251550 0080	35.70	251551 0080	35.70
10.0	70	10	6	251550 0100	42.10	251551 0100	42.10
12.0	78	12	6	251550 0120	62,-	251551 0120	62,-
16.0	89	16	6	251550 0160	105,-	251551 0160	105,-



## ATORN Forward and reverse deburring tool



- For linear and circular forward and reverse deburring or chamfering
- Cutting on two sides
- Spiral-fluted for an easy cut



Application	● very well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel			
	○ well suited	< 700 N/mm <sup>2</sup>	< 1000 N/mm <sup>2</sup>	< 1400 N/mm <sup>2</sup>	Ferrit./martens.	Austenitic	Duplex	GG/GTS	GGG		< 30 HRc	≥ 30 HRc	< 8% Si	≥ 8% Si	Cu alloy	GRP/CFP/thermo.	< 55 HRc	< 60 HRc	≥ 60 HRc	
		●	●	●	●	○	○	●	●	○	○	○	○	○	○			●		
		90	75	65	85	75	75	60	60	30	30	25	150	100	80			55		

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

### 90°

D mm	D1 mm	L mm	L2 mm	H mm	γ °	Z	Art. no.	€
1.5	3	39	3.8	0.3	90	3	250005 0015	42.90
2.0	3	39	5.0	0.4	90	3	250005 0020	42.90
2.5	3	39	6.3	0.5	90	3	250005 0025	42.90
3.0	3	39	7.5	0.6	90	3	250005 0030	42.90
3.5	4	51	8.8	0.7	90	3	250005 0035	45.50
4.0	4	51	10.0	0.8	90	3	250005 0040	45.50
4.5	5	51	11.3	1.0	90	3	250005 0045	46.70
5.0	5	51	12.5	1.1	90	3	250005 0050	46.70
5.5	6	51	13.8	1.2	90	3	250005 0055	49.20
6.0	6	51	15.0	1.5	90	3	250005 0060	49.20

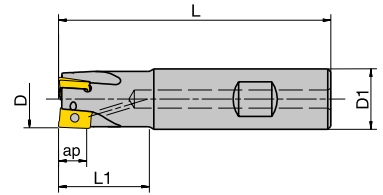


# ATORN End milling cutter 90°



- For ISO milling inserts, type AP.. 1003
- Internal coolant supply

- Easy cutting action thanks to the positive installation position of the indexable insert
- Tools deliver smooth milling performance
- Axial run-out max. 0.03 mm
- Radial run-out max. 0.03 mm
- For groove milling and side milling
- Precise 90° shoulder milling
- Shank according to DIN 1835B
- Supplied with clamping screws and wrench




## Short

D mm	D1 mm	L mm	L1 mm	ap max. mm	Z	Tightening torque max. N-m	Art. no.	€
16	16	85	25	9.3	2	1	262540 0160	105,-
20	20	90	25	9.3	3	1	262540 0200	129,-
25	25	95	25	9.3	4	1	262540 0250	159,-
32	25	95	31	9.3	5	1	262540 0320	189,-

## APKT Radius

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€
•	•	•	APKT 100308 PDER	●	●	●				HC4540	10 281514 4011	9.95
			APKT 100312 PDER	●	●	●				HC4540	10 281514 4012	9.95
			APKT 100320 PDER	●	●	●				HC4540	10 281514 4013	9.95


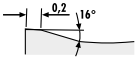


**Universal application**

ISO	HC4540
ISO P Steel	Vc = 70 - 130
ISO M Stainless steel	Vc = 90 - 160
ISO K Cast iron	Vc = 120 - 230
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.4 per cutting edge ap = max. 0.7 x cutting edge length



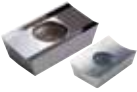
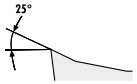
**APKT**

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€	
•	•	•	ISO designation										
 <p>Universal application</p> 			APKT 1003 PDER-S	•		•				<b>HC4615</b>	10 281514 3005	<b>6.95</b>	
				•	•						<b>HC4535</b>	10 281514 3007	<b>6.95</b>
				•	•							<b>HC4635</b>	10 281514 3009

ISO	HC4535	HC4615	HC4635
<b>ISO P</b> Steel	Vc = 100 - 170	Vc = 180 - 280	Vc = 110 - 220
<b>ISO M</b> Stainless steel	Vc = 70 - 130		Vc = 90 - 160
<b>ISO K</b> Cast iron		Vc = 160 - 270	Vc = 120 - 250
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.4 per cutting edge ap = max. 0.7 x cutting edge length		

**Polished design!**

**APHX specially for non-ferrous metals**

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€
•	•	•	ISO designation									
 <p>Universal application</p> 			APHX 100304 FR-ALU				•			<b>HW4415</b>	10 281517 2003	<b>11.95</b>

ISO	HW4415
<b>ISO N</b> Al/non-ferrous	Vc = 200-700
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.1 - 0.4 per cutting edge ap = max. 0.7 x cutting edge length



**WENN DU UNS BRAUCHST,  
SIND WIR DA.  
EGAL WO:  
24-STUNDEN-LIEFERUNG EUROPaweIT**

## ISO indexable cutting inserts CN.. ISO P

ISO P

- 80° rhombic, negative 0°

### Chip breaker MP negative

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€	
-	•	-	ISO designation										
<b>Medium machining</b>			CNMG 120404-MP	●		○				HC7620	10 311155 2612	6.25	
				●						HC7630	10 311155 2613	6.25	
				●		○					HC7610	10 311155 2711	6.25
				●							HC7620	10 311155 2712	6.25
				●							HC7630	10 311155 2713	6.25
				●				○			HC7610	10 311155 2811	6.25
				●				○			HC7620	10 311155 2812	6.25
				●							HC7630	10 311155 2813	6.25
				●				○			HC7620	10 311155 4012	10,-
				●				○			HC7620	10 311155 4112	10,-

ISO	HC7610	HC7620	HC7630
ISO P Steel	Vc = 110 - 420	Vc = 80 - 350	Vc = 60 - 220
ISO K Cast iron	Vc = 110 - 320	Vc = 60 - 290	
Vc = [m/min] fz = [mm/Z] ap = [mm]	f = 0.15 - 0.25 ap = 0.8 - 4	f = 0.1 - 0.18 ap = 1 - 7 ap = 0.8 - 4	

## ISO indexable cutting inserts DN.. ISO P

ISO P

- 55° rhombic, negative 0°

### Chip breaker MP negative

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€	
-	•	-	ISO designation										
<b>Medium machining</b>			DNMG 110404-MP	●		○				HC7620	10 311255 2312	7.20	
				●						HC7630	10 311255 2313	7.20	
				●				○			HC7610	10 311255 2411	7.20
				●							HC7620	10 311255 2412	7.20
				●							HC7630	10 311255 2413	7.20
				●							HC7610	10 311255 3011	8.80
				●				○			HC7620	10 311255 3012	8.80
				●							HC7630	10 311255 3013	8.80
				●							HC7610	10 311255 3111	8.80
				●							HC7620	10 311255 3112	8.80
				●							HC7630	10 311255 3113	8.80

ISO	HC7610	HC7620	HC7630
ISO P Steel	Vc = 140 - 420	Vc = 80 - 350	Vc = 60 - 220
ISO K Cast iron	Vc = 140 - 320	Vc = 50 - 290	
Vc = [m/min] fz = [mm/Z] ap = [mm]	f = 0.18 - 0.35	f = 0.15 - 0.25 ap = 0.6 - 5	

## ISO indexable cutting inserts WN.. ISO P

ISO P

- 80° trigonometric, negative 0°

### Chip breaker MP negative

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€	
-	•	-	ISO designation										
<b>Medium machining</b>			WNMG 060404-MP	●		○				HC7620	10 311755 0312	6.10	
				●						HC7620	10 311755 0412	6.10	
				●				○			HC7610	10 311755 0811	6.80
				●							HC7620	10 311755 0812	6.80
				●							HC7630	10 311755 0813	6.80
				●							HC7610	10 311755 0911	6.80
				●							HC7620	10 311755 0912	6.80
				●							HC7630	10 311755 0913	6.80
				●							HC7620	10 311755 1012	6.80


ISO	HC7610	HC7620	HC7630
ISO P Steel	Vc = 110-350	Vc = 90 - 350	Vc = 60 - 220
ISO K Cast iron	Vc = 140 - 240	Vc = 120 - 290	
Vc = [m/min] fz = [mm/Z] ap = [mm]	ap = 0.6 - 5	f = 0.16 - 0.25 ap = 1 - 6 ap = 0.6 - 5	

## ISO indexable cutting inserts CC.. ISO N

• 80° rhombic, positive 7°

ISO N

Chip breaker **MN5** positive

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€
○	○	○	<b>ISO designation</b>									
			CCGT 060201-MN5			○	●	○		AWN15T	10 366601 0116	7.65
			CCGT 060202-MN5			○	●	○		AWN15T	10 366601 0216	7.65
			CCGT 060204-MN5		○	○	●	○		APN15T	10 366601 0417	8.50
			CCGT 09T302-MN5			○	●	○		AWN15T	10 366601 0316	7.65
			CCGT 09T304-MN5		○	○	●	○		APN15T	10 366601 0517	8.50
			CCGT 09T308-MN5			○	●	○		AWN15T	10 366601 0616	7.95
			CCGT 120404-MN5		○	○	●	○		APN15T	10 366601 0717	8.80
			CCGT 120408-MN5			○	●	○		AWN15T	10 366601 0816	7.95
			CCGT 120408-MN5		○	○	●	○		APN15T	10 366601 0917	8.80
			CCGT 120408-MN5			○	●	○		AWN15T	10 366601 1016	7.95
			CCGT 120408-MN5		○	○	●	○		APN15T	10 366601 1117	8.80
			CCGT 120408-MN5			○	●	○		AWN15T	10 366601 1216	9.15
			CCGT 120408-MN5		○	○	●	○		APN15T	10 366601 1317	9.95
			CCGT 120408-MN5			○	●	○		AWN15T	10 366601 1416	9.15
			CCGT 120408-MN5		○	○	●	○		APN15T	10 366601 1517	9.95


ISO	APN15T	AWN15T
<b>ISO M</b> Stainless steel	Vc = 50 - 140	
<b>ISO K</b> Cast iron	Vc = 120 - 200	Vc = 120 - 200
<b>ISO N</b> Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
<b>ISO S</b> Superalloy	Vc = 18 - 45	Vc = 20 - 50
Vc = [m/min] fz = [mm/Z] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	

## ISO indexable cutting inserts DC.. ISO N

• 55° rhombic, positive 7°

ISO N

Chip breaker **MN5**

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€
○	○	○	<b>ISO designation</b>									
			DCGT 070201-MN5			○	●	○		AWN15T	10 366623 0116	7.35
			DCGT 070202-MN5			○	●	○		AWN15T	10 366623 0216	7.35
			DCGT 070204-MN5		○	○	●	○		APN15T	10 366623 0317	7.95
			DCGT 070208-MN5			○	●	○		AWN15T	10 366623 0416	7.35
			DCGT 11T302-MN5		○	○	●	○		APN15T	10 366623 0517	7.95
			DCGT 11T304-MN5			○	●	○		AWN15T	10 366623 0616	7.35
			DCGT 11T308-MN5			○	●	○		AWN15T	10 366623 0716	8.40
			DCGT 11T308-MN5		○	○	●	○		APN15T	10 366623 0817	9.10
			DCGT 11T308-MN5			○	●	○		AWN15T	10 366623 0916	8.40
			DCGT 11T308-MN5		○	○	●	○		APN15T	10 366623 1017	9.10
			DCGT 11T308-MN5			○	●	○		AWN15T	10 366623 1116	8.40
			DCGT 11T308-MN5		○	○	●	○		APN15T	10 366623 1217	9.10


ISO	APN15T	AWN15T
<b>ISO M</b> Stainless steel	Vc = 50 - 140	
<b>ISO K</b> Cast iron	Vc = 120 - 200	Vc = 120 - 200
<b>ISO N</b> Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
<b>ISO S</b> Superalloy	Vc = 18 - 45	Vc = 20 - 50
Vc = [m/min] fz = [mm/Z] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	

## ISO indexable cutting inserts SC.. ISO N

• 90° square, positive 7°

ISO N

Chip breaker **MN5**

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€
○	○	○	<b>ISO designation</b>									
			SCGT 09T304-MN5			○	●	○		AWN15T	10 366648 0116	8.25
			SCGT 09T308-MN5		○	○	●	○		APN15T	10 366648 0217	10.25
			SCGT 120408-MN5			○	●	○		AWN15T	10 366648 0316	8.25
			SCGT 120408-MN5		○	○	●	○		APN15T	10 366648 0417	10.25
			SCGT 120408-MN5			○	●	○		APN15T	10 366648 0617	10.25

ISO	APN15T	AWN15T
<b>ISO M</b> Stainless steel	Vc = 50 - 140	
<b>ISO K</b> Cast iron	Vc = 120 - 200	Vc = 120 - 200
<b>ISO N</b> Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
<b>ISO S</b> Superalloy	Vc = 18 - 45	Vc = 18 - 50
Vc = [m/min] fz = [mm/Z] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	

## ISO indexable cutting inserts TC.. ISO N

- 60° triangular, positive 7°

### Chip breaker MN5

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€
○	○	○	ISO designation									
<p>Medium machining</p>			TCGT 110204-MN5			○	●	○		AWN15T	10 366662 0116	7.75
			TCGT 16T304-MN5		○	●	○			APN15T	10 366662 0217	9.30
			TCGT 16T308-MN5		○	●	○			AWN15T	10 366662 0316	9.40
					○	●	○			AWN15T	10 366662 0416	9.40

ISO N

ISO	APN15T	AWN15T
<b>ISO M</b> Stainless steel	Vc = 50 - 140	
<b>ISO K</b> Cast iron	Vc = 120 - 200	Vc = 120 - 200
<b>ISO N</b> Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
<b>ISO S</b> Superalloy	Vc = 18 - 45	Vc = 18 - 50
Vc = [m/min] fz = [mm/Z] ap = [mm]	f = 0.1 - 0.4 ap = 0.1 - 4.5	

## ISO indexable cutting inserts VC.. ISO N

- 35° rhombic, positive 7°

### Chip breaker MN5

F finishing	M medium	R roughing	<b>ATORN</b>	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality	Art. no.	€
○	○	○	ISO designation									
<p>Universal application</p>			VCGT 110302-MN5			○	●	○		AWN15T	10 366680 0116	9.40
			VCGT 110304-MN5		○	●	○			APN15T	10 366680 0317	10.95
			VCGT 130302-MN5		○	●	○			AWN15T	10 366680 0216	9.40
			VCGT 130304-MN5		○	●	○			APN15T	10 366680 0417	10.95
			VCGT 130304-MN5		○	●	○			AWN15T	10 366680 0616	9.70
			VCGT 130304-MN5		○	●	○			AWN15T	10 366680 0516	9.70
			VCGT 160404-MN5		○	●	○			AWN15T	10 366680 0717	11.25
			VCGT 160404-MN5		○	●	○			APN15T	10 366680 0917	12.70
			VCGT 160408-MN5		○	●	○			AWN15T	10 366680 1017	11.25
			VCGT 160408-MN5		○	●	○			APN15T	10 366680 1217	12.70
VCGT 160412-MN5		○	●	○			APN15T	10 366680 1317	12.70			
VCGT 220530-MN5		○	●	○			APN15T	10 366680 1417	16.50			

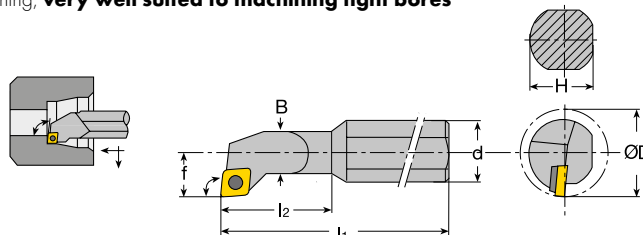
ISO N

ISO	APN15T	AWN15T
<b>ISO M</b> Stainless steel	Vc = 50 - 140	
<b>ISO K</b> Cast iron	Vc = 120 - 200	Vc = 120 - 200
<b>ISO N</b> Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
<b>ISO S</b> Superalloy	Vc = 18 - 120	Vc = 20 - 50
Vc = [m/min] fz = [mm/Z] ap = [mm]	f = 0.1 - 0.5 ap = 0.1 - 4.5	

## ATORN Boring bar, positive SCLC



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



### Set

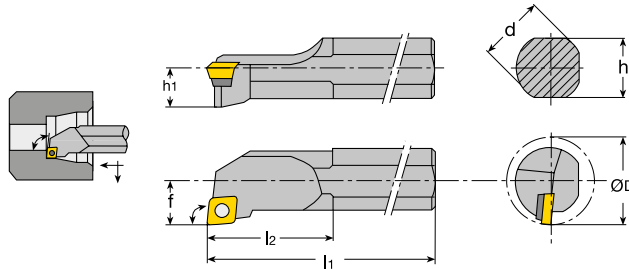
Contents	Suitable indexable inserts	Right-hand		Left-hand	
		Art. no.	€	Art. no.	€
1 of each A0608H, A0810J, A1012K, A1216M	CC.. 0602..	321003 1004	189,-	321004 1004	189,-



## ATORN Solid carbide boring bars, **SCLC**



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



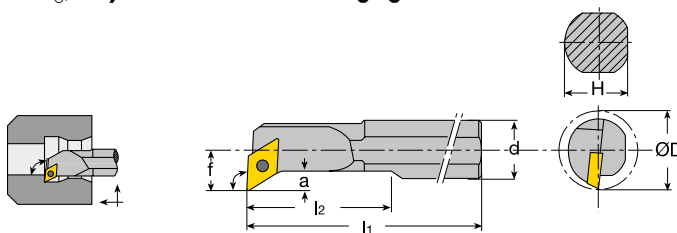
### Set

Contents	Suitable indexable inserts	Right-hand		Left-hand	
		Art. no.	€	Art. no.	€
1 of each E08K, E10K, E12M	CC.. 0602..	321101 0003	409,-	321102 0003	409,-

## ATORN Boring bars, positive **SDUC**



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



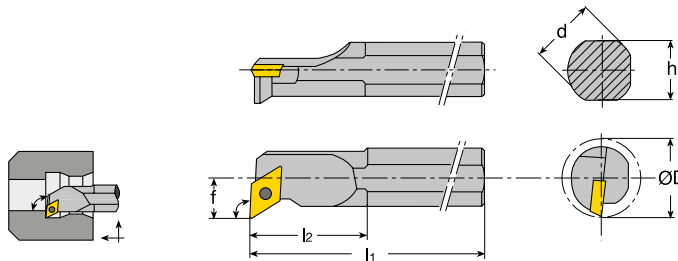
### Set

Contents	Suitable indexable inserts	Right-hand		Left-hand	
		Art. no.	€	Art. no.	€
1 of each A0810H, A1012K, A1216M	DC.. 0702..	321013 1003	169,-	321014 1003	169,-

## ATORN Solid carbide boring bars, SDUC



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



### Set

Contents	Suitable indexable inserts			Right-hand		Left-hand	
				Art. no.	€	Art. no.	€
1 of each E10K, E12M	DC.. 0702..	A1	B1	321108 0002	309,-	321109 0002	309,-



## Sets for keyway slotting of longitudinal grooves

- Keyway slotting on CNC lathes, milling machines and machining centres
- Keyway slotting of longitudinal grooves in accordance with DIN 6885
- **Cutting inserts easier fit in accordance with DIN 6885**
- Tolerance class JS9
- Cutting material: AL41F, TiAlN-coated

**Economical keyway slotting even in very small production runs!**

### NPU 5-piece keyway slotting set, bore Ø from 6 mm

Contents	Art. no.	€
1x tool holder NHU.0025.1 3x cutting inserts: NPU.0200.01.1 NPU.0300.01.1 NPU.0400.01.1 1x hollow hexagon wrench for groove widths 2/3/4 mm	307010 0001	229,-



### NP10 4-piece keyway slotting set, bore Ø from 10 mm

Contents	Art. no.	€
1x tool holder NH10.0025.1 2x cutting inserts: NP10.400.02.3 NP10.500.02.3 1x hollow hexagon wrench for groove widths 4/5 mm	308010 0001	259,-



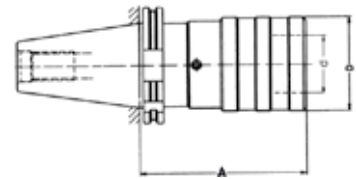
### NPV 5-piece keyway slotting set, bore Ø from 22 mm

Contents	Art. no.	€
1x tool holder NHV.22.0025.1 3x cutting inserts: NPV.0501.02, NPV.0601.02 NPV.0801.02 1x Torx key TX 15 - for groove widths 5/6/8 mm	309010 0001	219,-



## SARA® Thread cutting quick-change chucks

- Automatic locking of the inserts
- **Flexible length compensation under compression and tension**
- For quick-release inserts with adjustable safety coupling
- Minimal residual torque prevents tap breakage
- For thread cutting on mechanical and digitally controlled radial drills as well as drilling and milling machines
- More sizes available on request



### DIN ISO 7388-1 / DIN 69871 A

Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Suitable for thread	Art. no.	€
SK40	19	38	60	9	9	M3-M12	442003 4012	142,-
SK40	31	55	100	15	15	M6-M20	442003 4024	185,-
SK50	19	38	62	9	9	M3-M12	442003 5012	217,-
SK50	31	55	83	15	15	M6-M20	442003 5024	239,-

### DIN ISO 7388-2 / MAS BT JIS B 6339

Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Suitable for thread	Art. no.	€
BT 40	19	38	68	9	9	M3-M12	442007 4012	157.50
BT 40	31	55	93	15	15	M6-M20	442007 4024	195,-
BT 50	31	55	102	15	15	M6-M20	442007 5024	294,-



### DIN 2080

Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Suitable for thread	Art. no.	€
SK40	19	38	53	9	9	M3-M12	442001 4012	174,-
SK40	31	55	77	15	15	M6-M20	442001 4024	212,-
SK50	31	55	79	15	15	M6-M20	442001 5024	275,-



### Straight shank similar to DIN 1835 B+E

d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Suitable for thread	Art. no.	€
19	38	41	9	9	M3-M12	442008 2519	152.50
31	55	63	15	15	M6-M20	442008 2531	182,-



### DIN 228

Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Suitable for thread	Art. no.	€
MK2	19	38	46	9	9	M3-M12	442015 0212	128,-
MK3	19	38	46	9	9	M3-M12	442015 0312	126,-
MK3	31	55	69	15	15	M6-M20	442015 0324	157.50
MK4	31	55	70	15	15	M6-M20	442015 0424	157.50



## SARA® Quick-release inserts

DIN  
371

DIN  
376

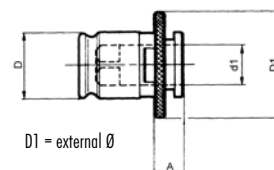
- More sizes available on request

### Without coupling

d1 mm	Square plug-in shank mm	D mm	A mm	External Ø mm	For thread	Art. no.	€
2.8	2.1	19	7	30	M2	442501 1928	18.40
3.5	2.7	19	7	30	M3	442501 1935	18.40
4	3.0	19	7	30	M3.5	442501 1940	18.40
4.5	3.4	19	7	30	M4	442501 1945	18.40
6	4.9	19	7	30	M6	442501 1960	18.40
8	6.2	19	7	30	M8	442501 1980	18.40
10	8	19	7	30	M10	442501 1910	18.40
7	5.5	19	7	30	M10	442501 1970	18.40
9	7	19	7	30	M12	442501 1990	18.40
11	9	19	7	30	M14	442501 1911	18.40
6	4.9	31	11	46	M6	442501 3106	24.40
8	6.2	31	11	46	M8	442501 3108	24.40
10	8	31	11	46	M10	442501 3110	24.40
7	5.5	31	11	46	M10	442501 3107	24.40
9	7	31	11	46	M12	442501 3109	24.40
11	9	31	11	46	M14	442501 3111	24.40
12	9	31	11	46	M16	442501 3112	24.40
14	11	31	11	46	M18	442501 3114	24.40
16	12	31	11	46	M20	442501 3116	24.40
18	14.5	31	11	46	M22	442501 3118	24.40



Without coupling



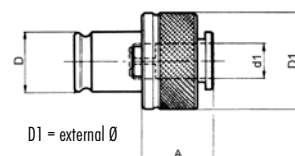
D1 = external Ø

### With safety coupling

d1 mm	Square plug-in shank mm	D mm	A mm	External Ø mm	For thread	With adjustable coupling Art. no.	€
2.8	2.1	19	25	32	M2	442505 1928	41.40
3.5	2.7	19	25	32	M3	442505 1935	41.40
4	3.0	19	25	32	M3.5	442505 1940	41.40
4.5	3.4	19	25	32	M4	442505 1945	41.40
6	4.9	19	25	32	M6	442505 1960	41.40
8	6.2	19	25	32	M8	442505 1980	41.40
10	8	19	25	32	M10	442505 1910	41.40
7	5.5	19	25	32	M10	442505 1970	41.40
9	7	19	25	32	M12	442505 1990	41.40
11	9	19	25	32	M14	442505 1911	41.40
6	4.9	31	34	50	M6	442505 3106	59.90
8	6.2	31	34	50	M8	442505 3108	59.90
10	8	31	34	50	M10	442505 3110	59.90
7	5.5	31	34	50	M10	442505 3107	59.90
9	7	31	34	50	M12	442505 3109	59.90
11	9	31	34	50	M14	442505 3111	59.90
12	9	31	34	50	M16	442505 3112	59.90
14	11	31	34	50	M18	442505 3114	59.90
16	12	31	34	50	M20	442505 3116	59.90
18	14.5	31	34	50	M22	442505 3118	59.90



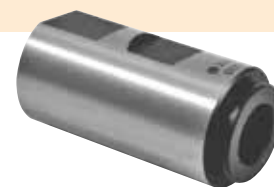
With safety coupling



D1 = external Ø

## Clamping sleeve for taps

- **Torsion-free version**
- Tap clamping sleeve for machines with synchronous threading mechanism
- **Application:** in conventional chucks in accordance with DIN 1835 B (Weldon jaw chuck), tapping at areas that are difficult to access
- Synchronisation between speed and forward thrust, no slip between the sleeve and drill
- 100% cooling at the cutting edge with internal coolant supply



D mm	d mm	Square mm	L mm	Art. no.	€
16	3.5	2.7	56	442016 1635	30.90
16	4	3	56	442016 1640	30.90
16	4.5	3.4	56	442016 1645	30.90
16	6	4.9	56	442016 1660	30.90
20	4.5	3.4	58	442016 2045	30.90
20	6	4.9	58	442016 2060	30.90
20	7	5.5	58	442016 2070	30.90
20	8	6.2	58	442016 2080	30.90

D mm	d mm	Square mm	L mm	Art. no.	€
20	9	7	58	442016 2090	30.90
20	10	8	58	442016 2010	30.90
25	4.5	3.4	66	442016 2545	42.20
25	6	4.9	66	442016 2560	42.20
25	7	5.5	66	442016 2570	42.20
25	8	6.2	66	442016 2580	42.20
25	9	7	66	442016 2590	42.20
25	10	8	66	442016 2510	42.20

D mm	d mm	Square mm	L mm	Art. no.	€
25	11	9	66	442016 2511	42.20
25	12	9	66	442016 2512	42.20
32	10	8	70	442016 3210	45.90
32	11	9	70	442016 3211	45.90
32	12	9	70	442016 3212	45.90
32	14	11	70	442016 3214	45.90
32	16	12	70	442016 3216	45.90
32	18	14.5	70	442016 3218	45.90

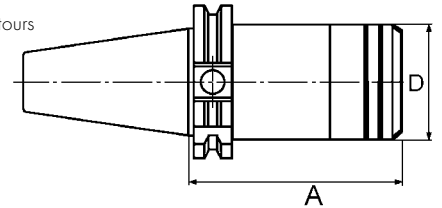


# ATORN Precision ER collet chuck

**True-running accuracy 3 µm including clamping nut**



- **30° ground trapezoidal thread with special anti-friction coating**
- Up to twice the holding forces of conventional collet chucks are possible thanks to lower friction when tightening the nut and due to the collet being seated entirely inside the chuck cone
- Resistant to temperature fluctuations and fully suitable for dry processes and hard milling up to 200°C.
- Clamping forces are distributed evenly across the entire cylindrical surface, and optimum radial force absorption produces perfect surfaces
- Excellent damping properties
- Increasing the chuck body to the diameter of the clamping nut creates enormous stability without any protruding contours
- **Extremely high concentricity and precision of 3 µm**
- **Pre-balanced to G 2.5 at 22,000 rpm**
- **Leak-proof up to 80 bar with radially sealed collets**
- **For all GER collets**
- **Supplied with clamping nut**
- **Please order roller clamping key separately, torque wrench recommended**



## DIN 69893 HSK-A, including clamping nut

- Internal coolant supply
- When machining with internal coolant supply, a coolant transfer pipe art. no. 431011... should be used

Shank	Clamping range	Suitable for collet type	A mm	External Ø mm	Art. no.	€
HSK 63	1-10 mm	ER 16	55	30	431236 1606	145,-
HSK 63	1-10 mm	ER 16	100	30	431236 1610	145,-
HSK 63	1-10 mm	ER 16	160	30	431236 1616	199,-
HSK 63	2-16 mm	ER 25	100	40	431236 2510	149,-
HSK 63	2-16 mm	ER 25	160	40	431236 2516	205,-
HSK 63	2-20 mm	ER 32	70	50	431236 3207	152,-
HSK 63	2-20 mm	ER 32	100	50	431236 3210	152,-
HSK 63	2-20 mm	ER 32	160	50	431236 3216	209,-



## DIN ISO 7388-1 / DIN 69871 AD, including clamping nut

- Internal coolant supply

Shank	Clamping range	Suitable for collet type	A mm	External Ø mm	Art. no.	€
SK40	1-10 mm	ER 16	70	30	431235 1607	119,-
SK40	1-10 mm	ER 16	100	30	431235 1610	129,-
SK40	1-10 mm	ER 16	160	30	431235 1616	189,-
SK40	2-16 mm	ER 25	70	40	431235 2507	123.50
SK40	2-16 mm	ER 25	100	40	431235 2510	133.50
SK40	2-16 mm	ER 25	160	40	431235 2516	199,-
SK40	2-20 mm	ER 32	70	50	431235 3207	125,-
SK40	2-20 mm	ER 32	100	50	431235 3210	135,-
SK40	2-20 mm	ER 32	160	50	431235 3216	199,-



## Roller clamping key

Designation	For clamping nut	Art. no.	€
RO 30	HPC16 / HPC16-DI	431240 3016	63.50
RO 40	HPC25 / HPC25-DI	431240 3030	63.50
RO 50	HPC32 / HPC32-DI	431240 5032	63.50



## Torque roller clamping key attachment

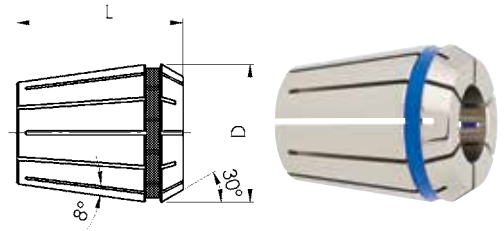
Designation	For clamping nut	For type	Art. no.	€
DRO 30	HPC16 / HPC16-DI	7026030003	431242 3016	63.50
DRO 40	HPC25 / HPC25-DI	7026030003	431242 4025	63.50
DRO 50	HPC32 / HPC32-DI	7026030004	431242 5032	63.50



**Fahrion Protect corrosion protection**



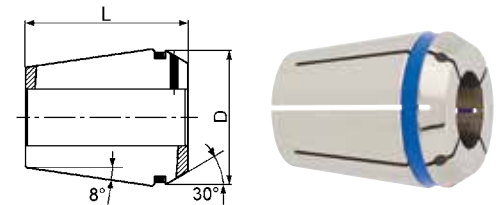
- GERC-HP, HPD and HPDD collets, 2 µm
- For ATORN precision ER collet chuck and FAHRION CENTRO|P
- Higher contact area ratio
- Increased rigidity and holding forces
- Greater system concentricity
- Optimum concentricity at nominal Ø
- Collapse h10



**Standard version / type GER-HP**

Clamp Ø mm	GERC16 / 426E D = 17 mm L = 27.5 mm		GERC25 / 430E D = 26 mm L = 34 mm		GERC32 / 470E D = 33 mm L = 40 mm	
	Art. no.	€	Art. no.	€	Art. no.	€
1	433121 0010	61.50				
2	433121 0020	46.20	433122 0020	47.70	433123 0020	48.90
3	433121 0030	39.30	433122 0030	40.50	433123 0030	41,-
4	433121 0040	39.30	433122 0040	40.50	433123 0040	41,-
5	433121 0050	39.30	433122 0050	40.50	433123 0050	41,-
6	433121 0060	39.30	433122 0060	40.50	433123 0060	41,-
7	433121 0070	39.30	433122 0070	40.50	433123 0070	41,-
8	433121 0080	39.30	433122 0080	40.50	433123 0080	41,-
9	433121 0090	39.30	433122 0090	40.50	433123 0090	41,-
10	433121 0100	39.30	433122 0100	40.50	433123 0100	41,-

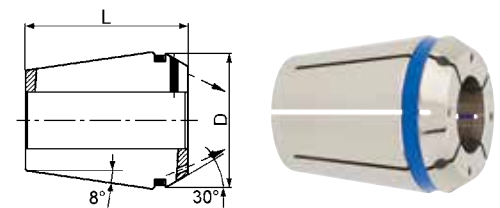
Clamp Ø mm	GERC16 / 426E D = 17 mm L = 27.5 mm		GERC25 / 430E D = 26 mm L = 34 mm		GERC32 / 470E D = 33 mm L = 40 mm	
	Art. no.	€	Art. no.	€	Art. no.	€
11			433122 0110	40.50	433123 0110	41,-
12			433122 0120	40.50	433123 0120	41,-
13			433122 0130	40.50	433123 0130	41,-
14			433122 0140	40.50	433123 0140	41,-
15			433122 0150	40.50	433123 0150	41,-
16			433122 0160	40.50	433123 0160	41,-
17					433123 0170	41,-
18					433123 0180	41,-
20					433123 0200	41,-



**With seal for internal coolant supply / type GER-HPD**

Clamp Ø mm	GERC16-HPD / 425E D = 17 mm L = 27.5 mm		GERC25-HPD / 429E D = 25.7 mm L = 34 mm		GERC32-HPD / 469E D = 32.7 mm L = 40 mm	
	Art. no.	€	Art. no.	€	Art. no.	€
3	433124 1603	52.90				
4	433124 1604	52.90	433126 2504	55.90	433127 3204	57.90
5	433124 1605	58,-	433126 2505	61,-	433127 3205	63,-
6	433124 1606	52.90	433126 2506	55.90	433127 3206	57.90
8	433124 1608	52.90	433126 2508	55.90	433127 3208	57.90
10	433124 1610	52.90	433126 2510	55.90	433127 3210	57.90

Clamp Ø mm	GERC16-HPD / 425E D = 17 mm L = 27.5 mm		GERC25-HPD / 429E D = 25.7 mm L = 34 mm		GERC32-HPD / 469E D = 32.7 mm L = 40 mm	
	Art. no.	€	Art. no.	€	Art. no.	€
12			433126 2512	55.90	433127 3212	57.90
14			433126 2514	55.90	433127 3214	57.90
16			433126 2516	55.90	433127 3216	57.90
18					433127 3218	57.90
20					433127 3220	57.90



**With seals for internal coolant supply and coolant bore / type GER-HPDD**

Clamp Ø mm	GERC25-HPDD / 429E D = 25.7 mm L = 34 mm		GERC32-HPDD / 469E D = 32.7 mm L = 40 mm	
	Art. no.	€	Art. no.	€
4	433129 2504	82.70	433130 3204	85.60
6	433129 2506	82.70	433130 3206	85.60
8	433129 2508	82.70	433130 3208	85.60
10	433129 2510	82.70	433130 3210	85.60

Clamp Ø mm	GERC25-HPDD / 429E D = 25.7 mm L = 34 mm		GERC32-HPDD / 469E D = 32.7 mm L = 40 mm	
	Art. no.	€	Art. no.	€
12	433129 2512	82.70	433130 3212	85.60
14	433129 2514	82.70	433130 3214	85.60
16			433130 3216	85.60
18			433130 3218	85.60

**Set in a wooden box, with seals for internal coolant supply / type GER-HPD**

Designation	Contents per set	Clamping range mm	Art. no.	€
GERC16-HPD / 425E	Ø3-4-5-6-8-10	3 - 10	433078 0000	339,-
GERC20-HPD / 427E	Ø3-4-5-6-8-10-12	3 - 12	433078 0001	409,-
GERC25-HPD / 429E	Ø4-6-8-10-12-14-16	4 - 16	433078 0002	409,-
GERC32-HPD / 469E	Ø4-6-8-10-12-14-16-20	4 - 20	433078 0003	485,-

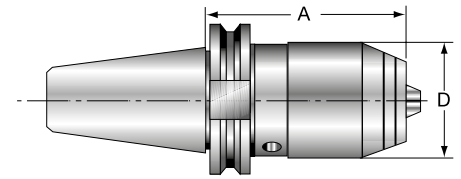


## ATORN NC short drill chuck with worm gear



Clamping range 1.0 to 16.0 mm,  
internal coolant supply

- Clamping by means of an integrated worm gear
- Clamping range 1.0 to 16.0 mm
- High true running accuracy, max. 0.03 mm
- Suitable for clockwise and anti-clockwise rotation
- Long service life, wearing parts hardened and ground
- Prebalanced to 7,000 rpm with a residual imbalance of max. 40 g/mm
- Supplied with hexagonal key
- Max. permissible speed with unbalanced tool 35,000 rpm



### DIN 69893 ISO 12164-1 (HSK-A)

- Internal coolant supply

Shank	Min./max clamping width	A mm	External Ø mm	Tightening torque max. N-m	Retention force N	Wrench width	True running accuracy max. mm	Art. no.	€
HSK 63	1-16 mm	98	50	10	90	4 mm	0.03	440129 6316	289,-

### DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply

Shank	Min./max clamping width	A mm	External Ø mm	Tightening torque max. N-m	Retention force N	Wrench width	True running accuracy max. mm	Art. no.	€
SK40	1-16 mm	80	50	10	90	4 mm	0.03	440127 4016	209,-
SK50	1-16 mm	80	50	10	90	4 mm	0.03	440127 5016	289,-



### JIS B 6339 A (MAS BT)

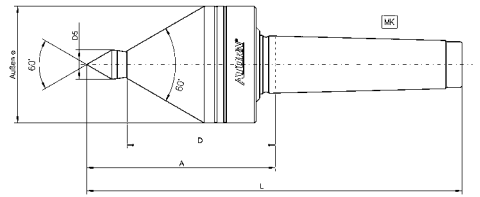
- Internal coolant supply

Shank	Min./max clamping width	A mm	External Ø mm	Tightening torque max. N-m	Retention force N	Wrench width	True running accuracy max. mm	Art. no.	€
BT 40	1-16 mm	88	50	10	90	4 mm	0.03	440128 4016	209,-



## ATORN Live centre, extended running point

- 60° point angle
- Extended running point
- Perfect all-purpose point for universal use on manual lathes
- Radial run-out: max. 0.005 mm
- Fully hardened and ground tool
- Bearing arrangement for high axial forces
- Shaft sealing ring prevents the ingress of dirt and coolant



Shank	D mm	External Ø mm	D5 mm	A mm	L mm	Rotational speed max. rpm	Workpiece weight max. kg	Art. no.	€
MK 2	68.5	54	13	86.5	150.5	4200	170	401503 0002	279,-
MK 3	68.5	54	13	86.5	167.5	4200	170	401503 0003	309,-
MK 3	78	64	16	100	181	4200	330	401503 0013	329,-
MK 4	78	64	16	100	202.5	3800	330	401503 0004	359,-
MK 4	93.5	86	19	121.5	224	3800	550	401503 0014	419,-
MK 5	93.5	86	19	121.5	251	3200	550	401503 0005	479,-



Easy to use for tubes with large diameters



The extended running point guarantees the required clearance angle for turning parts with small diameters.



Ideal for bar stock with large diameters

## SARA Live centres

- Excellent true running accuracy thanks to reliable precision bearings
- Special lubrication for long service life and low maintenance costs
- 60° point angle

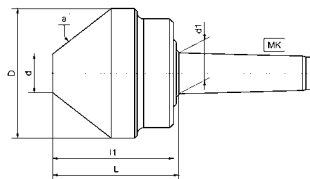


D5 = point Ø x point length

Shank	Head diameter x head length mm	D5 mm	True running accuracy max. mm	Workpiece weight max. kg	Rotational speed max. rpm	Art. no.	€
MK 2	45 x 65	20 x 41	0.005	200	4900	401516 0002	75,-
MK 3	60 x 79.5	25 x 48.5	0.005	500	3500	401516 0003	90,-
MK 4	70 x 102.5	32 x 61.5	0.005	800	2700	401516 0004	109,-
MK 5	90 x 129	40 x 78.5	0.005	2000	2100	401516 0005	185,-

## Comet Live precision centring taper

- For machining tubes and hollow bodies with large holes and centres
- Fully hardened and ground
- Maintenance-free permanent lubrication
- Shaft sealing ring prevents the ingress of dirt and coolant



Shank	D mm	d mm	d1 mm	L mm	l1 mm	α	Rotational speed max. rpm	Workpiece weight d max. kg	Workpiece weight d max. kg	True running accuracy mm	Art. no.	€
MK 3	80	30	23.82	86	78	60°	3500	450	250	Max. 0.005	401531 0003	215,-
MK 4	100	30	31.26	101	92	75°	3000	650	300	Max. 0.005	401531 0004	289,-
MK 5	125	50	44.39	92	82	75°	3000	1800	1400	Max. 0.007	401531 0005	359,-
MK 6	150	50	63.34	112	102	75°	2800	2800	2000	Max. 0.01	401531 0006	479,-

## ATORN Workpiece stop, T-slot

- Adjustable in five axes
- For use on drilling and milling machines
- Quick to set, flexible, sturdy
- 12 and 14 mm T-slot nuts with M8 thread



Designation	Art. no.	€
Workpiece stop with T-slot nuts 12 and 14 mm	466597 0001	109,-

### T-slot nut for workpiece stop

Designation	Art. no.	€
T-slot nut 14 mm	466594 0014	3.15
T-slot nut 16 mm	466594 0016	5.10
T-slot nut 18 mm	466594 0018	6.15

## SARA® Workpiece stop, magnetic

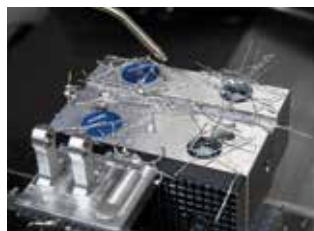
- Suitable for all vices
- No threaded bores required
- Stop rod length 125 mm
- Adjustable fixing magnets



Total height mm	Art. no.	€
100	466596 0001	85,-

## ATORN Cover for boreholes and screw heads with hex key

- Prevents chips from sticking and cooling lubricants from accumulating in screw head and countersink
- Greater occupational safety when working and cleaning with compressed air
- Faster set-up due to reduced cleaning effort
- Patented reusable system
- Compatible with clamping systems in the catalogue
- Special dimensions on request



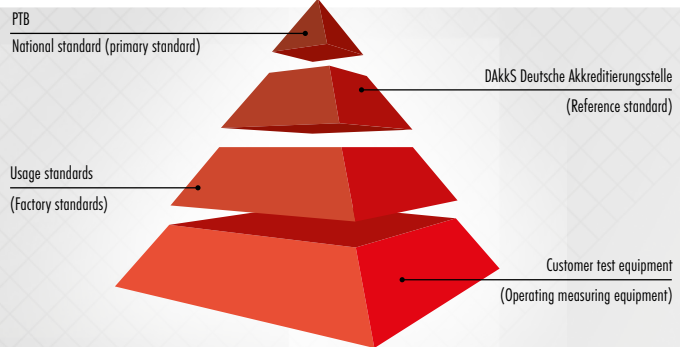
### Aluminium cover

Designation	Art. no.	€
10 x cover M10	438110 0010	67.50
10 x cover M12	438110 0012	67.50
10 x cover M16	438110 0016	84.50
5 x cover M20	438110 0020	49,-

# Test equipment monitoring service

## ISO 9000 ff

- DAkkS Calibration Laboratory according to DIN EN ISO/IEC 17025:2005
- Advice on setting up monitoring and management processes for your test equipment
- Short-term calibration of both new test equipment and test equipment which is already in use
- Modular software for monitoring and managing test equipment with target data generation
- Full service: Management and calibration of your entire fleet of test equipment with data transfer
- Calibrated test equipment available from stock in the short term
- As calibrations are considered to be services, the calibration prices are to be understood as strictly net and are to be added to the tool's respective net sales price.



## SARA® Vernier calliper



- Reading parts matt chrome-plated
- Raised guideways
- Vernier scale 0.05 mm extended to 39 mm

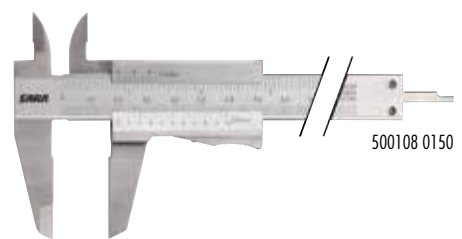
### Locking screw on top

Measurement range length max. mm	Jaw length mm	Vernier scale, inches	Art. no.	€	DAkkS calibration	
					Art. no.	€
150	40	1/128 inch	500107 0150	16.95	072008 D001	16,-



### Torque adjustment

Measurement range length max. mm	Jaw length mm	Vernier scale, inches	Art. no.	€	DAkkS calibration	
					Art. no.	€
150	40	1/128 inch	500108 0150	19.95	072008 D001	16,-



## SARA® Test and adjustment gauge for vernier calliper

- For quick testing and adjustment of measuring jaws, cross-tips and depth markers
- Hardened, ground and lapped
- The depth marker is tested through the centre hole

External Ø mm	Internal diameter mm	Height mm	Art. no.	€	DAkkS calibration	
					Art. no.	€
30 ± 0.002	10 ± 0.002	10 ± 0.010	540201 3010	99,-	073103 D086	104,-



## SARA® Digital sliding depth callipers



- Locking screw on top
- **Functions:** ON/OFF, ZERO, inch/mm
- Supplied with SR 44 battery, No. 500534 0001



Measurement range length max. mm	Base length mm	Art. no.	€	DAkkS calibration	
				Art. no.	€
150	100	501440 0150	<b>129,50</b>	072008 D001	<b>16,-</b>
300	100	501440 0300	<b>169,50</b>	072008 D002	<b>21,-</b>

## ATORN® Outside micrometer



- Precision design with advanced friction coupling (ratchet)
- Steel clamp
- Spindle fixed by means of a locking lever
- Reading parts matt chrome-plated
- Spindle Ø: 6.5 mm
- Calibration including setting gauge
- Versions over 25 mm supplied with setting gauge



### Single

Measurement range	Art. no.	€	DAkkS calibration	
			Art. no.	€
0-25 mm	502510 0025	<b>39,50</b>	070160 D001	<b>20,50</b>
25-50 mm	502510 0050	<b>61,-</b>	073103 D047	<b>38,50</b>
50-75 mm	502510 0075	<b>71,50</b>	073103 D052	<b>42,50</b>
75-100 mm	502510 0100	<b>81,50</b>	073103 D052	<b>42,50</b>

### Set

Measurement range	Contents	Art. no.	€	DAkkS calibration	
				Art. no.	€
0 - 100 mm	4 outside micrometers / 3 setting gauges	502511 0100	<b>248,-</b>	073103 D041	<b>166,-</b>



## SARA® Digital universal goniometer



- Digital display with simultaneous display of values in degrees, minutes and seconds, and decimal
- Automatic switch-off
- Simple adjustment using fixed reference points
- Measuring bar fully moveable and lockable
- Measurement range 4 x 90° / 2 x 180° / 360°
- Fine adjustment for precisely calibrating angles
- **Function:** ON/OFF, ZERO for user-defined zeroing, reverse counting direction
- Supplied with 2x rails, additional angle, 60 x 50 mm framing square and CR2032 batteries, no. 548079 6032



Rail length mm	Increments	Error limit	Art. no.	€	DAkkS calibration	
					Art. no.	€
150   300	0.005°/10 inch	+/- 5 min	542500 0360	<b>379,-</b>	075007 D001	<b>46,-</b>

## Kepco Dial gauge, oil and water-tight, shock-proof

**IP67** **DIN 878** **0,01 mm**

- Dimensions in accordance with DIN EN ISO 463 Issue 6/2006 (except L2 = 39.5 mm)
- **Oil and water-tight / IP67 protection rating**
- **With shock protection**
- Outer ring can be rotated through 360°
- Two adjustable tolerance marks
- Probe tip thread M 2.5
- Clamping shank Ø 8 mm

### Standard version

Measurement range mm	Pitch mm	External ring Ø mm	Measurement route per rotation of indicator mm	Measuring force max. N	Art. no.	€	DAkkS calibration	
							Art. no.	€
10	0.01	61.5	1	1.6	511008 0010	<b>98.50</b>	073009 D003	<b>23,-</b>



511008 0010

## ATORN Dial test indicator

**DIN 2270**

- Mounting with a dovetail clamp
- **Size 0040 with dial face seal and waterproof scale casing**
- **Size 0058 offers excellent legibility with a 58 mm scale diameter**
- Supplied with Ø 8 mm clamping shank

Measurement range mm	Scale division value mm	Error limit µm	External Ø mm	Measuring probe length from ball centre mm	Art. no.	€	DAkkS calibration	
							Art. no.	€
1.0	0.01	10	32	16.6	525051 1032	<b>89.90</b>	071250 D001	<b>24,-</b>
1.0	0.01	10	40	16.6	525051 1040	<b>98.50</b>	071250 D001	<b>24,-</b>
0.5	0.01	10	32	35.7	525051 0532	<b>125,-</b>	071250 D001	<b>24,-</b>
0.5	0.01	10	40	35.7	525051 0540	<b>133.50</b>	071250 D001	<b>24,-</b>
0.2	0.002	3	32	12.8	525051 0232	<b>106,-</b>	071250 D001	<b>24,-</b>
0.2	0.002	3	40	12.8	525051 0240	<b>121.50</b>	071250 D001	<b>24,-</b>
0.2	0.001	3	40	12.8	525051 0040	<b>133.50</b>	071250 D001	<b>24,-</b>
0.2	0.001	3	58	12.8	525051 0058	<b>155,-</b>	071250 D001	<b>24,-</b>



525051 1032

525051 0040

525051 0058

EINMAL QUER DURCH **EUROPA.**  
SCHAFFEN WIR FÜR DICH  
**IN 24 STUNDEN:**  
EUROPAWEITE 24-STUNDEN-LIEFERUNG

DAS IST POWER TO PRODUCE

**SARATOOLS.com**  
POWER TO PRODUCE



# NOGA Magnetic measuring stands

- For quickly and precisely positioning dial indicators
- **With mechanical central clamping mechanism**
- Improved fine adjustment on the magnetic base
- Strong, switchable magnetic base
- Universal holding fixture for common dial indicators
- Robust arm system with central clamping mechanism



Arm mechanism

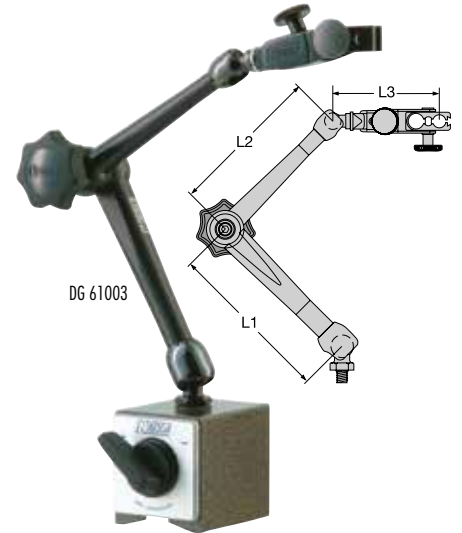
## Complete stand with fine adjustment on the measuring instrument holding fixture

- Measuring instrument holding fixture:  $\varnothing$  8 mm, 6 mm, 3/8 inch and dovetail

Model	L1 mm	L2 mm	L3 mm	Magnetic base L x W x H mm	Retention force N	Magnetic base thread	Art. no.	€
NF 61003	56	51	71	40 x 30 x 35	320	M 5	550501 1001	127,50
DG 61003	110	101	71	60 x 50 x 55	800	M 8	550501 2001	179,-
MG 61003	133	113	71	60 x 50 x 55	800	M 8	550501 3001	199,-
MA 61003	287	223	71	120 x 50 x 55	1300	M10 x 1.25	550501 4001	395,-



Fine adjustment holding fixture



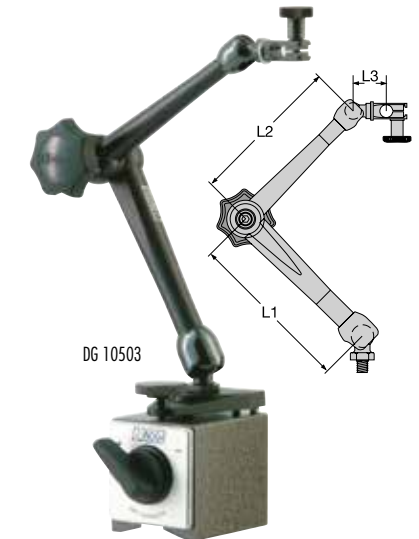
## Complete stand with fine adjustment on magnetic base

- $\varnothing$  8 mm and dovetail holding fixture for measuring instruments

Model	L1 mm	L2 mm	L3 mm	Magnetic base L x W x H mm	Retention force N	Magnetic base thread	Art. no.	€
NF 10403	56	51	21.5	40 x 30 x 35	320	M 5	550501 1101	105,-
DG 10503	110	101	21.5	60 x 50 x 55	800	M 8	550501 2101	135,-
MG 10503	133	113	21.5	60 x 50 x 55	800	M 8	550501 3101	155,-



Fine adjustment magnetic base



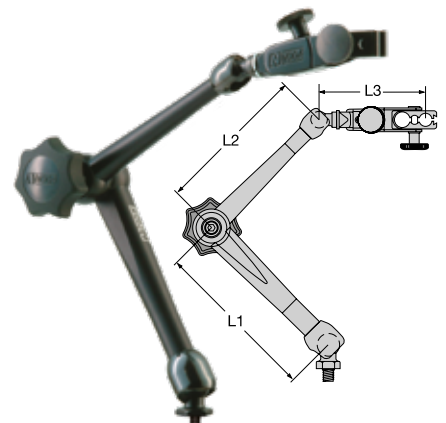
## Articulated stand without base, fine adjustment on the measuring instrument holding fixture

- Measuring instrument holding fixture:  $\varnothing$  8 mm, 6 mm, 3/8 inch and dovetail

Model	L1 mm	L2 mm	L3 mm	Magnetic base thread	Art. no.	€
NF 60103	56	51	71	M 5	550501 1010	115,-
DG 60103	110	101	71	M 8	550501 2010	149,-
MG 60103	133	113	71	M 8	550501 3110	185,-
MA 60103	287	223	71	M10 x 1.25	550501 4010	359,-



Fine adjustment holding fixture



## SARA® Steel gauge block set, long

DIN  
EN ISO  
3650



- For adjusting larger measuring instruments
- With locating bores for gauge block connectors no. 5360060010
- Made of carefully selected, high-quality alloyed special steel
- Aged, hardened and hand-lapped
- Each individual gauge block is engraved with an individual identification no.
- The works inspection certificate provided lists all the gauge blocks with the nominal dimensions and the deviation from the nominal dimensions. It documents traceability to national standards and the test conditions



Tolerance class	Quantity Pcs.	Nominal dimensions in the range mm	Art. no.	€	DAkkS calibration	
					Art. no.	€
1	8	125   150   175   200   250   300   400   500	535001 0008	1.199,-	075017 D005	509,-

## Gauge block connector

- Connects long gauge blocks with support holes quickly and safely
- Dimensions 72 x 30 x 29 mm



Designation	Art. no.	€
Gauge block connector	536006 0010	119,-

## TSCORN 3D probe

IP67

- New and improved model
- Minimised guide play and more stable positioning
- Optimised button mechanism
- For determining the spindle centre when aligning workpieces on X, Y, and Z axes
- To protect the measuring unit, large over-travel allowances have been incorporated into the probe unit
- Probe insert with predetermined break point at the far top
- Probes can be replaced by the user
- Supplied with standard probe insert



Size comparison: Standard probe / probe in schlanker Bauform



Shank Ø mm	L mm	Art. no.	€	Factory calibration	
				Art. no.	€
12	132.5	558002 0002	279,-	073103 W161	78,-

### Accessories

- Spare button with ceramic predetermined break point
- Suitable for 558002 0002 and 558002 0010

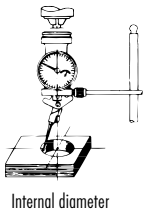
Type	Material	Probe diameter mm	Probe insert length mm	Art. no.	€
Spare button short	Ceramics	3	27	558003 0010	32.50
Spare button long	Ceramics	6	62	558003 0011	49.90



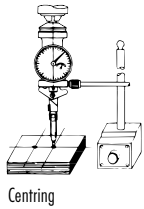
## Precision centring device **CO-AX**



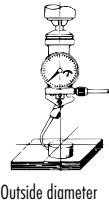
- For aligning workpieces on machine tools with vertically or horizontally rotating spindles
- Non-rotating, easily readable dial gauge
- Robust metal casing
- Wide display range
- Straight clamping shank  $\varnothing$  10 mm
- With stanchion to hold the dial gauge in the desired position
- Replacement of the probe tips facilitates large working area inside and outside
- Dial indicator diameter  $\varnothing$  40 mm with tolerance marks
- Functional range  $\varnothing$  4 - 300 mm, inside and outside
- Optimum speed 150 rpm
- Supplied with stanchion 160 mm,  
3 inner probes (50 / 100 / 150 mm),  
3 outer probes (50 / 100 / 150 mm),  
centre probe,  
wooden storage box



Internal diameter



Centring



Outside diameter



Display area mm	Reading mm	Art. no.	€	Factory calibration	
				Art. no.	€
5	0.01	530010 0070	229,-	073103 W162	58,-

WENN DU UNS BRAUCHST,  
SIND WIR **DA.**  
**EGAL WO:**  
24-STUNDEN-LIEFERUNG EUROPaweIT

## FILTERMIST

# Centrifugal separator

British manufacturer Filtermist International Ltd has more than 50 years of experience in the manufacturing of efficient oil mist removal systems. Filtermist has worked with government research institutes and machine manufacturers from all over the world on countless applications – from high-precision CNC machining centres to traditional open grinding machines.

Filtermist sets industry standards in aviation and the automotive industry, food processing and the manufacturing of medical devices. The devices are available in structural steel and stainless steel with dozens of accessories for installation. Customised solutions for almost any type of oil mist problem are therefore possible.

Filtermist devices are used by the world's leading manufacturers to protect people from harmful oil mist particles in the air.

- Oil mist is eliminated at the source.
- Oil mist is removed from the air using centrifugal force.
- The separated oil is returned to the machine.
- Clean air is released back into the workshop.
- A special secondary filter allows for the removal of smoke and steam and increases the degree of separation.

## FILTERMIST Centrifugal separator S series and XCEL2

- Efficiently removes oil and coolant mist, smoke and steam
- **Application:** Turning, milling, wet grinding, sawing, EDM / spark eroding, food processing and parts washing
- All versions comply with CE regulations.
- **Energy-efficient IE3 motors for models FX4002 - FX7002**
- **Test certificate available for IFA-tested smoke filter on request**
- Standard colour RAL 7035 (light grey), other RAL colours available on request
- **Stainless steel version:** For the removal of smoke and vapour when washing parts (parts washing machine / partswasher)
- **Supplied with:** highly efficient secondary filter (does not apply to stainless steel versions), oil return hose (S-series 2 m, FX-series 4 m), installation and operating instructions, without unit switch
- **Pricing:** ex works, including packaging

**Free 5-year guarantee for all new filter systems**  
[www.filtermist.com/warranty/](http://www.filtermist.com/warranty/)



YouTube user video



Stainless steel version

Basic unit including highly efficient secondary filter

### Single units

NEU

Model	Air flow rate m³/h	Motor output kW	Rated voltage/frequency V/Hz	Sound pressure level dB	Hose connection diameter mm	External Ø mm	Height mm	Weight kg	Including secondary filter Art. no.	€	Stainless steel Art. no.	€
S200	180	0.18	200, 220, 380, 400 V / 50 Hz   200, 220, 230, 440, 460, 480 V / 60 Hz	62	75	260	302	9	902015 0200	<b>2.179,-</b>	902020 0200	<b>2.629,-</b>
S400	425	0.55	200, 220, 380, 400 V / 50 Hz   200, 220, 230, 440, 460, 480 V / 60 Hz	65	150	325	381	14	902015 0400	<b>2.439,-</b>	902020 0400	<b>2.979,-</b>
S800	800	0.55	200, 220, 380, 400 V / 50 Hz   200, 220, 230, 440, 460, 480 V / 60 Hz	67	150	325	435	15	902015 0800	<b>3.019,-</b>	902020 0800	<b>3.779,-</b>
FX4002	1250	1.1	200, 220, 380, 400 V / 50 Hz   200, 220, 230, 440, 460, 480 V / 60 Hz	70	150	357	544	25.8	902015 4002	<b>3.469,-</b>	902020 4002	<b>4.349,-</b>
FX5002	1675	1.5	200, 220, 380, 400 V / 50 Hz   200, 220, 230, 440, 460, 480 V / 60 Hz	71	200	357	634.5	31.8	902015 5002	<b>3.609,-</b>	902020 5002	<b>4.579,-</b>
FX6002	2000	2.2	200, 220, 380, 400 V / 50 Hz   200, 220, 230, 440, 460, 480 V / 60 Hz	73	200	438	638.5	36.8	902015 6002	<b>3.929,-</b>	902020 6002	<b>4.999,-</b>
FX7002	2750	2.2	200, 220, 380, 400 V / 50 Hz	73	200	438	638.5	36.8	902015 7002	<b>5.059,-</b>	902020 7002	<b>6.549,-</b>

## SARA® Bio-industrial cleaner Oil Free



- Bio-industrial cleaners provide support in the areas of occupational safety and employee protection and help to reduce operating costs in the medium term
- Sustainable ingredients
- Reduced solvents
- For a wide range of materials and contaminants



Solvent and hazard-free power formula



### Bio-industrial cleaner Oil Free

- Effortlessly removes burnt-in dirt, special greases, oils, soot, rubber residues, bitumen, waxes and pastes
- Soiling is easily loosened and quickly removed from the surface with the help of the latest surfactant technology.
- Water-based, low-foaming cleaner, which is based on renewable raw materials
- Dirt is powerfully dissolved without damaging the surfaces.
- Quick-drying, with reduced residue and streaking compared to common solvents
- For stainless steel, steel and non-ferrous metals
- Long service life, recyclable, demulsifying
- Free from volatile organic compounds (VOC), non-hazardous
- Perfect for mechanical use in ultrasonic baths, automatic washing machines, immersion baths, high-pressure cleaners and parts cleaners

Container contents	Designation	Art. no.	€
6 x 0.5	Spray bottle	923003 0605	38.90
20.0	Canister	923003 0020	159,-

### Bio-industrial cleaner Oil Free Final Clean

- Degreaser and final cleaner for fast daily removal of machining oils, anti-corrosion oils, light waxes, emulsions, adhesive residues and other contaminants from tools, components, machines and semi-finished products
- Meets the highest cleanliness requirements especially before quality control, painting, coating and gluing
- Quick-drying, virtually no residue or streaking
- Reduces solvent consumption compared to conventional solvents such as acetone
- Highest yield with consistently strong action
- Temporary corrosion protection
- Reduced volatile organic compounds (VOC), non-hazardous, phosphate-free

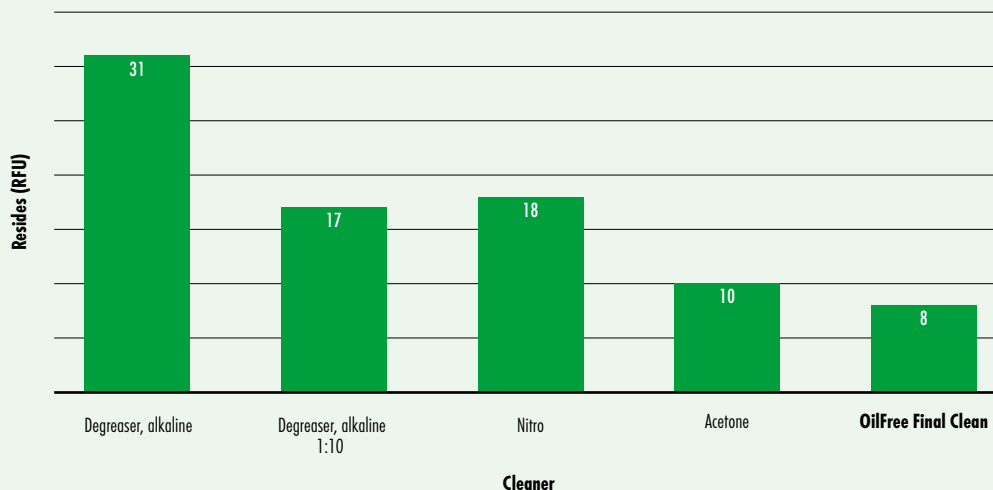
Container contents	Designation	Art. no.	€
6 x 0.5	Spray bottle	923004 0605	38.90
20.0	Canister	923004 0020	159,-

For a simply great finish!



## Residues on surfaces

INFO



## SARA® Pneumatic drum pump

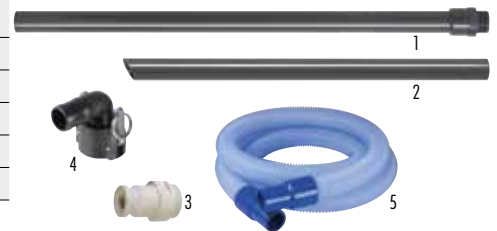
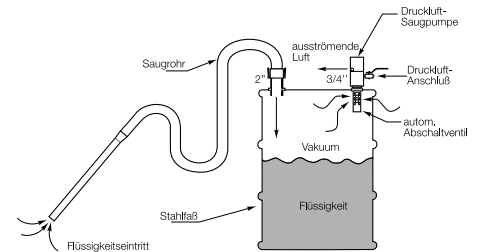
- Pneumatic dual-function suction and pressure pump
- For filling and emptying lubricant and coolant containers
- Used coolant, sludge and small metallic residues are sucked into a steel drum by negative pressure
- Simply rotating the knob creates overpressure and the drum can be emptied
- Simply screw the pump into the bung hole (3/4 inch) and the suction hose into the second bung hole (2 inch) of a standard steel drum
- Required pressure approx. 6-8 bar
- Filling and emptying of approx. 60 l/min
- Automatic closure valve prevents overflow
- **Caution:** Do not use the pneumatic pump for highly inflammable or explosive liquids. The steel drum must be undamaged and airtight.
- **Supplied with:** approx. 3 m suction hose, coupling, inlet pipe and adapter



Designation	Art. no.	€
Compressed air drum pump, stainless steel, 3/4 inch	931004 0001	389,-

### Spare parts

Designation	Colour	Illustration	Art. no.	€
Riser 815 mm	Grey	1	931005 0005	21.20
Intake pipe	Grey	2	931005 0003	21.20
Adapter	Grey	3	931005 0004	89.50
Coupling	Black	4	931005 0001	89.50
Hose, 3 m	Blue	5	931005 0002	45,-



## SARA® Overflow protection sirens

- **For monitoring minimum and maximum fill levels**
- Acoustic fill level control on your machine tool
- No excess hall cleaning due to container overflow
- Easy attachment thanks to magnetic plate
- **Supplied with:** Siren with magnetic base and 1x 9-volt mono-block battery



Designation	Art. no.	€
Overflow protection sirens	906011 0001	119,-

# KÜMI coolant delivery system

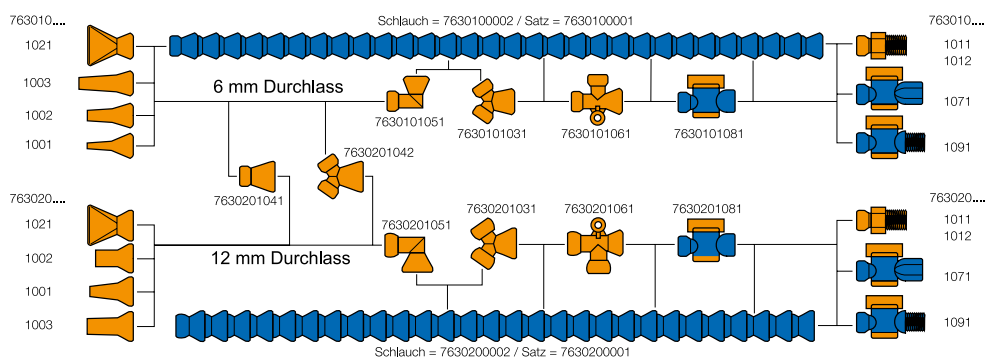
- Adjustable coolant hose, comprising individual plastic elements
- For use on all machine tools
- Replacement for conventional systems, plastic elements can be flexibly adjusted which allows coolant to reach any desired position
- Non-conducting and resistant to most chemicals and solvents
- Also suitable for blowing out workpieces, clamping equipment and machine tables
- Complete systems with magnetic anchoring bases and single elements allow for a large number of possible combinations
- Operating pressure max. 6 bar
- **Operating pressure up to max. 60 bar is possible by attaching band clamps 7630104001 or 7630204001**
- Compatible with the following systems: FLEXOLINE, OSSMANN, LOC-LINE, HYDRA, SNAPLOC, LUBE-COOL, VARIO, MAXIFLEXI
- Systems benefit from closer-fitting modules. This improves their ability to withstand higher pressures and ensures that the fluid stream remains directionally stable.



## Sets

- 18 pieces
- 1/4 inch or 1/2 inch
- Case with foam inlay

Contents	Art. no.	€
6 hose modules; 1 pair of assembly pliers; 1 Y-distributor; 1 shut-off valve; 3 flat nozzles: 16-hole / 32 mm / 27 mm, 3 round nozzles: Ø 1.6 / 3.2 / 6.4 mm; 2 threaded connectors, 1/4" and 1/8"; 1 non-return valve, 1/4	763025 1814	99,-
6 hose modules; 1 pair of assembly pliers; 1 Y-distributor; 1 shut-off valve; 3 flat nozzles: 8-hole / 50 mm / 35 mm, 3 round nozzles: Ø 6.4 / 9.5 / 12.7 mm; 2 threaded connectors, 3/8" and 1/2"; 1 non-return valve, 1/2	763025 1812	109,-



## SARA® Belt skimmer

**Oil skimmer systems:** Contamination in coolant emulsions from leaked oil floating on the surface - such as hydraulic oil, peripheral lubrication or contact surface oil - causes problems in the production process. Oil leakages reduce oxygen absorption, thus encouraging bacterial growth. They also cause deposits to develop on machines and workpieces, increase the formation of oil mist and reduce cooling performance. The consequences are: skin diseases, unpleasant odours, higher disposal costs, corrosion, bacterial contamination, poor cooling performance and problematic chipping behaviour. The following oil skimmer systems provide assistance in this regard.

- Special oil-carrying belt
- Tramp oil removal from the emulsion surface
- Installed above the emulsion container, requires little space
- Immersion depth: 225 mm



### S series

• **For continuous or time-controlled operation (timer switch included)**

- Colour: RAL 7035 (light grey)
- **Delivery:** includes timer switch, skimmer belt (800 mm) and oil return hose

Model	Output l/h	Tape width x length mm	Rated voltage/frequency V/Hz	Length x width x height mm	Weight kg	Art. no.	€
S-40	4	800 x 40	230 / 50	190 x 105 x 160	4	904001 0040	<b>699,-</b>
S-100	8	800 x 100	230 / 50	250 x 105 x 160	6	904001 0100	<b>899,-</b>



### F-series

- **High-quality aluminium casing**
- **Supplied with:** Base unit with 800 mm skimmer band, oil return hose, no timer

Model	Output l/h	Tape width x length mm	Rated voltage/frequency V/Hz	Length x width x height mm	Weight kg	Art. no.	€
F-40	4	800 x 40	230 / 50	155 x 85 x 148	1.8	904020 0040	<b>429,-</b>

## SARA® Cooling lubricant aerator to reduce bacterial growth

- **Reduces bacterial growth in the cooling lubricant**
- Prevents a cohesive foreign oil slick
- Increases the service life of cooling lubricants
- Foreign oil should then be removed using an emulsion treatment cart (9030020001) or skimmer system
- Removing foreign oil extends the service life and ensures an even bio balance in the cooling lubricant
- Low-maintenance stainless steel housing for easy cleaning
- For direct mounting on the machine
- Can be set with daily or weekly timer
- **Supplied with:** timer, aeration plates and connection hoses



Floating foreign oil



Lubricant ventilation



Result: no cohesive oil slick

Model	Length x width x height mm	Number of ventilation plates	Suitable for container contents l	Rated voltage V	Output W	Weight kg	Art. no.	€
350	400 x 90 x 75	1	350	240	5	3	906010 0350	<b>359,-</b>
500	400 x 90 x 75	2	500	240	5	3.4	906010 0500	<b>419,-</b>
1000	400 x 90 x 75	4	1000	240	10	4.6	906010 1000	<b>639,-</b>

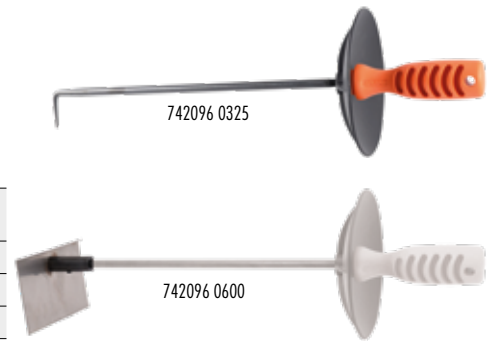




## SARA® Chip hooks

- The affordable alternative
- Robust chip protection shield
- Optional chip scraper

Designation	Art. no.	€
Chip hook 325 mm	742096 0325	17.90
Chip hook 525 mm	742096 0525	19.80
Chip scraper width 120 mm, height 65 mm	742096 0600	27.90



## SARA® Chip collector

### Magnetic chip collector

- For the removal of magnetic chips and small parts
- Integrated permanent magnet
- Remove chips by pulling the handle out of the permanent magnet
- Shield at handle end to prevent injuries
- Automatic material separation
- Low weight: 554 g
- Magnet traction: 19.3 kg



D mm	L mm	Art. no.	€
25	360 - 675	742095 0001	36.90

## ATORN Magnetic chip broom

- **For practical cleaning of floors in various working areas**
- Easy removal of any metal parts which are picked up thanks to the release mechanism on the handle
- Absorption capacity up to 9 kg
- Adjustable telescopic handle with length from 750 to 1050 mm
- Smooth-running plastic wheels



Width mm	L mm	Art. no.	€
400	1050	742098 0001	89,-



## pig Universal absorbent fleece

- Replaces cleaning cloths
- Perforations every 25cm
- Highly absorbent, fine-fibre structure that leaves virtually no liquid or fibre residues behind
- The single-layer design is ideal for small spills and cleaning operations.
- Ideal for workshops, tool trolleys, toolboxes and service areas

For a clean workplace

### Roll material

Type	Dimensions	Thickness	Contents	Absorption capacity l/min	Art. no.	€
MAT1990-DE	38 cm x 15 m	Single thickness	1 roll	12.5 l	910110 0026	34.50
MAT1991-DE	38 cm x 15 m	Single thickness	12 rollers	150 l	910110 0027	419,-



910110 0026

910110 0027

## pig Economy mat

- **The cost-effective mat with a high absorption capacity**
- For small spills, leaking and dripping points
- For light-duty applications in walkway areas
- Ideal as an underlay for tools and workpieces
- **Price per pack**



YouTube user video



MAT 411

### Roll material

Type	Dimensions	Contents	Absorption capacity l/min	Art. no.	€
MAT 411	76 cm x 61 m	1 roll	161 l	910110 0045	235,-

### Mats

Type	Dimensions	Contents	Absorption capacity l/min	Art. no.	€
MAT 412	38 x 51 cm	125 pcs. in box	82 l	910101 0030	144,-



MAT 412

## pig Ham-O mat

- **Liquid disappears in seconds**
- Unique pattern hides leaks and drops
- Absorbs oil, water and coolant (not recommended for solvents, which could dissolve the embossed pattern)
- Extremely hard-wearing
- Practical perforation
- **Price per pack**



225 ml oil is poured onto the HAM-O... ... and is fully absorbed in seconds.



910101 0081



MAT 267

### Roll material, perforated every 25.5 cm

Type	Dimensions	Contents	Absorption capacity l/min	Colour	Art. no.	€
MAT 267	41 cm x 46 m	1 roll in dispenser box	89 l	Green	910101 0081	185,-
MAT 269	81 cm x 46 m	1 roll	180 l	Green	910110 0269	333,-
MAT 116	81 cm x 46 m	1 roll	179.5 l	Grey	910101 0022	333,-



910101 0022



MAT 116

## **Blue mat**

- Made of 75 % recycled material
- **High absorption capacity**
- Absorbs oils, coolants, solvents and water
- Good floor adhesion, highly resistant even when saturated
- **Price per pack**



YouTube user video

### Mats in dispenser box

Type	Dimensions	Thickness	Contents	Absorption capacity l/min	Art. no.	€
BLU107	38 x 48 cm	Single thickness	50 pcs. per box	45.5 l	910200 0107	<b>61.50</b>
BLU106	38 x 48 cm	Double thickness	50 pcs. per box	64.5 l	910200 0106	<b>72,-</b>
BLU100	38 x 48 cm	Single thickness	100 pcs. per box	90 l	910200 0100	<b>120,-</b>
BLU101	38 x 48 cm	Double thickness	100 pcs. per box	129 l	910200 0101	<b>140,-</b>



BLU 100

### Roll material, perforated every 25.5 cm

Type	Dimensions	Thickness	Contents	Absorption capacity l/min	Art. no.	€
BLU105	38 cm x 46 m	Single thickness	1 roll	78 l	910201 0105	<b>99.50</b>
BLU103	38 cm x 46 m	Double thickness	1 roll	121 l	910201 0103	<b>117,-</b>
BLU104	76 cm x 46 m	Single thickness	1 roll	155 l	910201 0104	<b>194,-</b>
BLU102	76 cm x 46 m	Double thickness	1 roll	242.5 l	910201 0102	<b>227,-</b>



BLU 104

### Barrel lid mats

Type	Ø cm	Thickness	Contents	Absorption capacity l/min	Art. no.	€
BLU255	56	Single thickness	25 pcs. per box	45.4 l	910202 0255	<b>85,-</b>



BLU 0255

## **Oil-Only mat (white)**

- **The special white mat absorbs oil only, no water**
- Made of polypropylene, absorbs oil drops and leaks
- Water-resistant, which means it is also suitable for outdoor use. Absorption capacity is not affected by rain
- The exceptionally hard-wearing 4-in-1® mats (MAT484 and MAT435) can be used as an underlay, roll, wipe and absorbent sock.
- **Price per pack**



YouTube user video

### Mats

Type	Dimensions	Thickness	Contents	Absorption capacity l/min	Art. no.	€
MAT 415	38 x 51 cm	Double thickness	50 pcs. per box	42 l	911001 0010	<b>59.50</b>
MAT 4101	41 x 51 cm	Quadruple thickness	50 pcs. per box	84 l	911001 0013	<b>123,-</b>
MAT 440	38 x 51 cm	Medium	100 pcs. per box	84 l	918009 0013	<b>121.50</b>
MAT 403	38 x 51 cm	Double thickness	100 pcs. per box	84 l	911001 0011	<b>115,-</b>
MAT 460	38 x 51 cm	Medium	125 pcs. in bag	83 l	918009 0021	<b>115,-</b>
MAT 423	38 x 51 cm	Single thickness	200 pcs. per box	84 l	911001 0001	<b>115,-</b>



MAT 401

### Roll material

Type	Dimensions	Thickness	Contents	Absorption capacity l/min	Art. no.	€
MAT 401	76 cm x 46 m	Double thickness	1 roll	152 l	911010 0012	<b>195,-</b>
MAT 4102	81 cm x 23 m	Quadruple thickness	1 roll	152 l	911010 0013	<b>207,-</b>
MAT 461	76 cm x 61 m	Medium	1 roll	161 l	918009 0022	<b>195,-</b>



MAT 484

### 4-in-1® roll material, perforated every 25.5 cm, extremely hard-wearing

Type	Dimensions	Contents	Absorption capacity l/min	Art. no.	€
MAT 484	41 cm x 24 m in dispenser box	1 roll	35 l	910101 0048	<b>99.50</b>
MAT 435	41 cm x 46 m	1 roll	66 l	910101 0043	<b>173.50</b>



MAT 435



MAT 442

### Roll material, perforated, in dispenser box

Type	Dimensions	Thickness	Contents	Absorption capacity l/min	Art. no.	€
MAT 442	38 cm x 18 m	Double thickness	1 roll	30	918009 0014	<b>65.90</b>

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