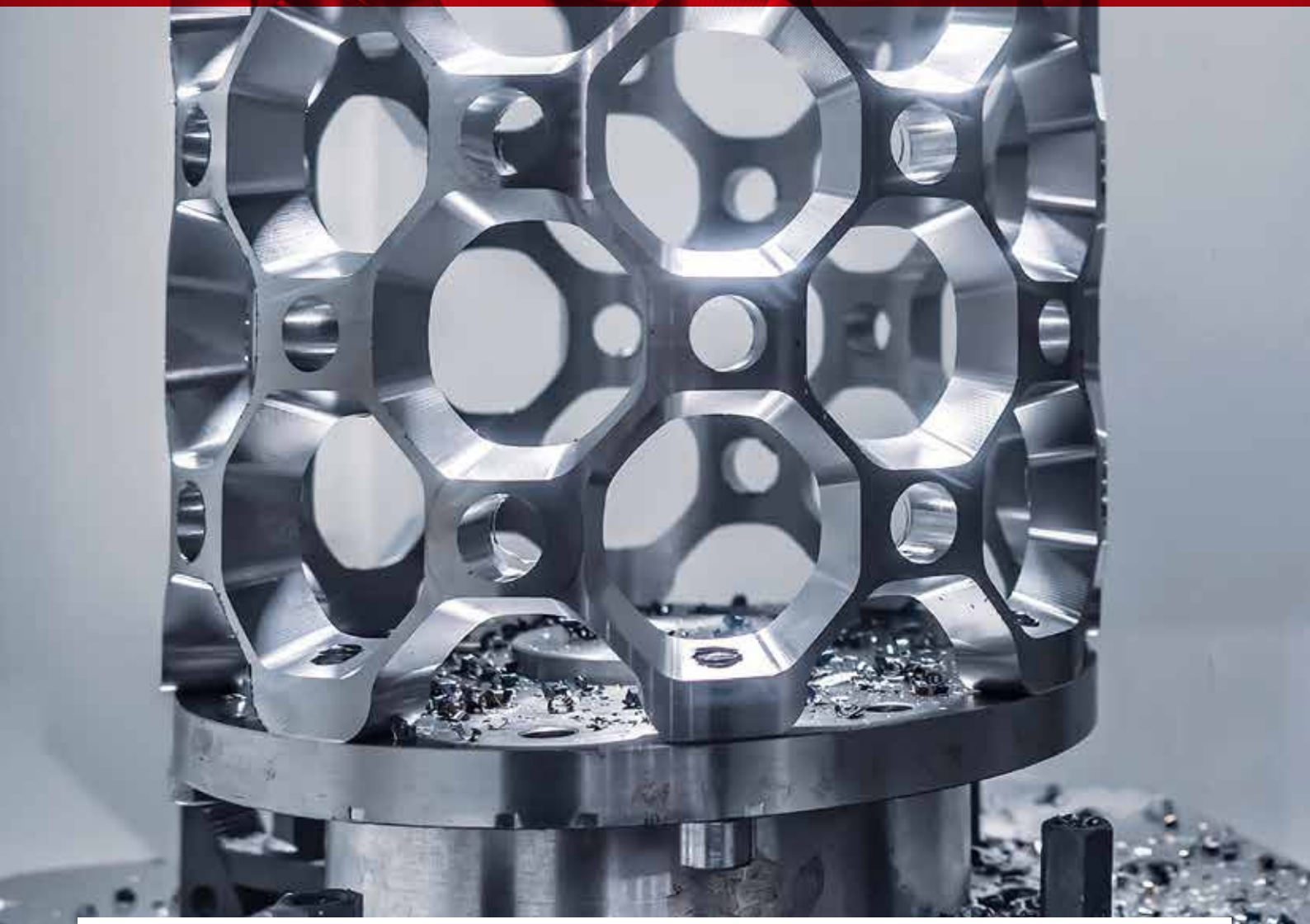
SARATOOLS.com
POWER TO PRODUCE
A BRAND OF SARTORIUS WERKZEUGE

TAKEOFF 01.22

valid until 28/02/2022 €



ATORN / SARA
Machine tap

P. 4

SARA
Steel end milling cutter

P. 9

SARA
Modular emulsion mist separator
Ultra-Cleaner

P. 28

ATORN Centring drill

HSS | HSS-E | DIN 333 | A | 60° | TiAlN

- For centring holes without protected centre DIN 332 A
- Ø 0.5 mm and 0.8 mm, single cutting edge

Single

D k12 mm	D1 h7 mm	L mm	L1 mm	Feed f steel < 1000 N/mm² mm/rev		HSS, blank Art.no.	€		HSS-E, TiAlN Art.no.	€
0.5	3.15	25	0,6 - 0,9	0.05	5	**100101** 0050	**2.42**			
0.8	3.15	25	1,0 - 1,3	0.05	5	100101 0080	**2.42**			
1	3.15	31	1,3 - 1,7	0.05	5	100101 0100	**2.40**	5	**100109** 0100	**7.70**
1.25	3.15	31	1,6 - 2,0	0.05	5	100101 0125	**2.37**	5	100109 0125	**7.70**
1.6	4	35	2,0 - 2,6	0.05	5	100101 0160	**2.42**	5	100109 0160	**7.70**
2	5	40	2,5 - 3,1	0.05	5	100101 0200	**2.85**	5	100109 0200	**8.10**
2.5	6.3	45	3,1 - 3,8	0.05	5	100101 0250	**3.58**	5	100109 0250	**9.45**
3.15	8	50	3,9 - 4,6	0.07	5	100101 0315	**3.99**	5	100109 0315	**11.50**
4	10	55	5,0 - 5,9	0.07	1	100101 0400	**4.62**	1	100109 0400	**14.10**
5	12.5	63	6,3 - 7,2	0.07	1	100101 0500	**7.40**	1	100109 0500	**25.70**
6.3	16	71	8,0 - 8,9	0.14	1	100101 0630	**13.20**			
8	20	80	10,1 - 11,1	0.14	1	100101 0800	**25.00**			

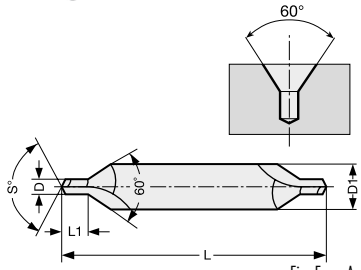


Fig. Form A

Set

Contents			HSS, blank Art.no.	€
3 units 1.6 x 4 mm 2 units 4 x 10 mm	3 units 3.15 x 8 mm 3 units 2.5 x 6.3 mm	3 units 2 x 5 mm 1 unit 5 x 12.5 mm	**100109** 1015	**49.90**

Material	● very well suited ○ well suited	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
	HSS	● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10					● 40-50				
	HSS-E	● 25-45	● 15-25	○ 10-15	○ 6-10	○ 6-10		○ 15-25	○ 10-15	○ 6-10			● 60-90	● 35-50	● 40-50				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

ATORN Twist drill sets

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

- 101035.... HSS, profile-ground, vapour-treated from Ø 2.3 mm, point thinning from Ø ≥ 1 mm
- 101036.... HSS-E, profile-ground, vapour-treated from Ø 2.3 mm, point thinning from Ø ≥ 1 mm
- 101038.... HSS-E, profile-ground, point thinning from Ø ≥ 1 mm, drilling with no need for accurate centring

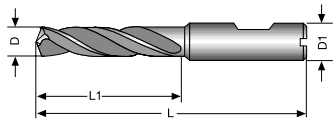
D mm	Number of drills	HSS, type N, 118°, vap. Art.no.	€	HSS-E, type N, 118°, vap. Art.no.	€	HSS-E, type NV, 130°, blank Art.no.	€
Ø 1.0 to 5.9 mm in 0.1 mm increments	50	**101035** 0001	**79.90**	**101036** 0001	**105.00**	**101038** 0001	**109.00**
Ø 6.0 to 10.0 mm in 0.1 mm increments	41	101035 0002	**169.00**	101036 0002	**209.00**	101038 0002	**225.00**
Ø 1.0 to 10.0 mm in 0.5 mm increments	19	101035 0003	**49.90**	101036 0003	**59.90**	101038 0003	**63.90**
Ø 1.0 to 13.0 mm in 0.5 mm increments	25	101035 0004	**105.00**	101036 0004	**125.00**	101038 0004	**129.90**
Ø 1.0 to 10.5 mm in 0.5 mm increments with the following additional dimensions for threaded bores: Ø 3.3 - 4.2 - 6.8 - 10.2 mm	24	101035 0005	**69.90**	101036 0005	**88.00**	101038 0005	**89.90**

Material	● very well suited ○ well suited	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
	101035....	● 20-28	● 10-15					● 23-27	○ 20-23				○ 40-55	○ 30-35	○ 25-35				
	101036....	● 25-28	● 20-22		○ 12-14	○ 10-12		● 25-28	○ 20-23				○ 50-60	○ 40-50	○ 30-60				
	101038....	● 30-35	● 20-22	○ 12-15	● 10-14	○ 10-12				● 6-9	○ 6-8								
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

SARA® Solid carbide high-performance drill bit *TiNplus HPC*

VHM | DIN 6537 | Typ U | 140° | 30° | 3xD | 5xD | DIN 6535 HB | TiN plus | Vc/fz

- Newly developed geometry with reinforced core and special point thinning
- **Solid carbide ultra-fine grain cutting material TiNplus** (TiAlN+TiN)
- Modern multi-layer hard coating for maximum service life and optimum chip transport
- High centring accuracy
- **Universally applicable**



3 x D without coolant bore

D m7 mm	D1 h6 mm	L mm	L1 mm	Art.no.	€
3	6	62	20	**111503** 0030	**19.90**
3.2	6	62	20	111503 0032	**19.90**
3.3	6	62	20	111503 0033	**19.90**
3.5	6	62	20	111503 0035	**19.90**
3.8	6	66	24	111503 0038	**19.90**
4	6	66	24	111503 0040	**19.90**
4.2	6	66	24	111503 0042	**19.90**
4.5	6	66	24	111503 0045	**19.90**
4.8	6	66	28	111503 0048	**19.90**
5	6	66	28	111503 0050	**19.90**
5.1	6	66	28	111503 0051	**19.90**
5.5	6	66	28	111503 0055	**19.90**
5.8	6	66	28	111503 0058	**19.90**
6	6	66	28	111503 0060	**19.90**
6.2	8	79	34	111503 0062	**20.80**
6.5	8	79	34	111503 0065	**20.80**
6.8	8	79	34	111503 0068	**20.80**
7	8	79	34	111503 0070	**20.80**
7.5	8	79	41	111503 0075	**20.80**
8	8	79	41	111503 0080	**20.80**
8.2	10	89	47	111503 0082	**24.50**
8.5	10	89	47	111503 0085	**24.50**
8.8	10	89	47	111503 0088	**24.50**
9	10	89	47	111503 0090	**24.50**
9.5	10	89	47	111503 0095	**24.50**
10	10	89	47	111503 0100	**24.50**
10.2	12	102	55	111503 0102	**34.20**
10.5	12	102	55	111503 0105	**34.20**
11	12	102	55	111503 0110	**34.20**
11.5	12	102	55	111503 0115	**34.20**
12	12	102	55	111503 0120	**34.20**
12.5	14	107	60	111503 0125	**48.20**
13	14	107	60	111503 0130	**48.20**
13.5	14	107	60	111503 0135	**48.20**
14	14	107	60	111503 0140	**48.20**
14.5	16	115	65	111503 0145	**62.00**
15	16	115	65	111503 0150	**62.00**
15.5	16	115	65	111503 0155	**62.00**
16	16	115	65	111503 0160	**62.00**
16.5	18	123	73	111503 0165	**99.00**
17	18	123	73	111503 0170	**99.00**
17.5	18	123	73	111503 0175	**99.00**
18	18	123	73	111503 0180	**99.00**
18.5	20	131	79	111503 0185	**119.00**
19	20	131	79	111503 0190	**119.00**
19.5	20	131	79	111503 0195	**119.00**
20	20	131	79	111503 0200	**119.00**

3 x D with coolant bore

D m7 mm	D1 h6 mm	L mm	L1 mm	Art.no.	€
3	6	62	20	**111507** 0030	**27.40**
3.2	6	62	20	111507 0032	**27.40**
3.3	6	62	20	111507 0033	**27.40**
3.5	6	62	20	111507 0035	**27.40**
3.8	6	66	24	111507 0038	**27.40**
4	6	66	24	111507 0040	**27.40**
4.2	6	66	24	111507 0042	**27.40**
4.5	6	66	24	111507 0045	**27.40**
4.8	6	66	28	111507 0048	**27.40**
5	6	66	28	111507 0050	**27.40**
5.1	6	66	28	111507 0051	**27.40**
5.5	6	66	28	111507 0055	**27.40**
5.8	6	66	28	111507 0058	**27.40**
6	6	66	28	111507 0060	**27.40**
6.2	8	79	34	111507 0062	**35.40**
6.5	8	79	34	111507 0065	**35.40**
6.8	8	79	34	111507 0068	**35.40**
7	8	79	34	111507 0070	**35.40**
7.5	8	79	41	111507 0075	**35.40**
8	8	79	41	111507 0080	**35.40**
8.2	10	89	47	111507 0082	**41.80**
8.5	10	89	47	111507 0085	**41.80**
8.8	10	89	47	111507 0088	**41.80**
9	10	89	47	111507 0090	**41.80**
9.5	10	89	47	111507 0095	**41.80**
10	10	89	47	111507 0100	**41.80**
10.2	12	102	55	111507 0102	**61.40**
10.5	12	102	55	111507 0105	**61.40**
11	12	102	55	111507 0110	**61.40**
11.5	12	102	55	111507 0115	**61.40**
12	12	102	55	111507 0120	**61.40**
12.5	14	107	60	111507 0125	**81.30**
13	14	107	60	111507 0130	**81.30**
13.5	14	107	60	111507 0135	**81.30**
14	14	107	60	111507 0140	**81.30**
14.5	16	115	65	111507 0145	**99.90**
15	16	115	65	111507 0150	**99.90**
15.5	16	115	65	111507 0155	**99.90**
16	16	115	65	111507 0160	**99.90**
16.5	18	123	73	111507 0165	**138.00**
17	18	123	73	111507 0170	**138.00**
17.5	18	123	73	111507 0175	**138.00**
18	18	123	73	111507 0180	**138.00**
18.5	20	131	79	111507 0185	**171.50**
19	20	131	79	111507 0190	**171.50**
19.5	20	131	79	111507 0195	**171.50**
20	20	131	79	111507 0200	**171.50**

5 x D with coolant bore

D m7 mm	D1 h6 mm	L mm	L1 mm	Art.no.	€
3	6	66	28	**111512** 0030	**34.90**
3.2	6	66	28	111512 0032	**34.90**
3.3	6	66	28	111512 0033	**34.90**
3.5	6	66	28	111512 0035	**34.90**
3.8	6	74	36	111512 0038	**34.90**
4	6	74	36	111512 0040	**34.90**
4.2	6	74	36	111512 0042	**34.90**
4.5	6	74	36	111512 0045	**34.90**
4.8	6	82	44	111512 0048	**34.90**
5	6	82	44	111512 0050	**34.90**
5.1	6	82	44	111512 0051	**34.90**
5.5	6	82	44	111512 0055	**34.90**
5.8	6	82	44	111512 0058	**34.90**
6	6	82	44	111512 0060	**34.90**
6.2	8	91	53	111512 0062	**40.30**
6.5	8	91	53	111512 0065	**40.30**
6.8	8	91	53	111512 0068	**40.30**
7	8	91	53	111512 0070	**40.30**
7.5	8	91	53	111512 0075	**40.30**
8	8	91	53	111512 0080	**40.30**
8.2	10	103	61	111512 0082	**45.30**
8.5	10	103	61	111512 0085	**45.30**
8.8	10	103	61	111512 0088	**45.30**
9	10	103	61	111512 0090	**45.30**
9.5	10	103	61	111512 0095	**45.30**
10	10	103	61	111512 0100	**45.30**
10.2	12	118	71	111512 0102	**63.50**
10.5	12	118	71	111512 0105	**63.50**
11	12	118	71	111512 0110	**63.50**
11.5	12	118	71	111512 0115	**63.50**
12	12	118	71	111512 0120	**63.50**
12.5	14	124	77	111512 0125	**86.90**
13	14	124	77	111512 0130	**86.90**
13.5	14	124	77	111512 0135	**86.90**
14	14	124	77	111512 0140	**86.90**
14.5	16	133	83	111512 0145	**111.00**
15	16	133	83	111512 0150	**111.00**
15.5	16	133	83	111512 0155	**111.00**
16	16	133	83	111512 0160	**111.00**
16.5	18	143	93	111512 0165	**174.00**
17	18	143	93	111512 0170	**174.00**
17.5	18	143	93	111512 0175	**174.00**
18	18	143	93	111512 0180	**174.00**
18.5	20	153	101	111512 0185	**189.00**
19	20	153	101	111512 0190	**189.00**
19.5	20	153	101	111512 0195	**189.00**
20	20	153	101	111512 0200	**189.00**

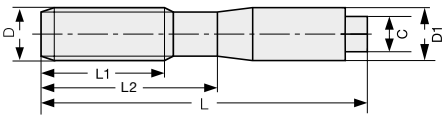
Material	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRC	≥ 30 HRC	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRC	< 60 HRC	≥ 60 HRc
	Without coolant bore	●	●	●	●	○	○	●	○	○	○	○	○	○	○		○	○	
		110-130	95-100	50-75	40-50	40	27	110-140	110	32-36	27	22	230	160	110		35-50	22-32	
	With coolant bore	●	●	●	●	●	○	●	●	●	●	○	●	●	●		●	○	
		110-150	75-110	60-95	40	50	40	145	110	36-40	36	32	230-280	200	110		50	32	
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

ATORN SARA® Machine tap

Up to 1000 N/mm²

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

- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **HSS-E cutting material**
- Strong chip removal to the rear for long-chipping materials
- Minimal thread relief-grinding



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN Art.no.	ATORN €	SARA® Art.no.	SARA® €
M 2	0.4	45	8	-	2.8	2.1	1.60	**134200** 0020	**12.95**		
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134200 0025	**12.95**		
M 3	0.5	56	6	18	3.5	2.7	2.50	134200 0030	**10.35**	**134201** 0030	**6.50**
M 4	0.7	63	7	21	4.5	3.4	3.30	134200 0040	**10.35**	134201 0040	**6.50**
M 5	0.8	70	8	25	6	4.9	4.20	134200 0050	**10.40**	134201 0050	**6.60**
M 6	1	80	10	30	6	4.9	5.00	134200 0060	**10.60**	134201 0060	**6.70**
M 8	1.25	90	13	35	8	6.2	6.80	134200 0080	**13.25**	134201 0080	**8.40**
M 10	1.5	100	15	39	10	8	8.50	134200 0100	**15.70**	134201 0100	**9.90**
M 12	1.75	110	18	-	9	7	10.25	134200 0120	**22.40**	134201 0120	**14.20**
M 14	2	110	20	-	11	9	12.00	134200 0140	**32.00**		
M 16	2	110	20	-	12	9	14.00	134200 0160	**33.70**		
M 20	2.5	140	25	-	16	12	17.50	134200 0200	**55.30**		
M 24	3	160	30	-	18	14.5	21.00	134200 0240	**79.90**		

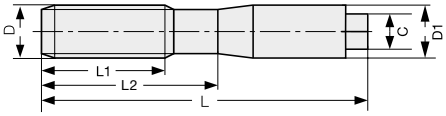
Material	● very well suited well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRC	≥ 30 HRC	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRC	< 60 HRC	≥ 60 HRc
	134200.... 134201....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

ATORN SARA® Machine tap

Up to 1000 N/mm²

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

- DIN 371 = up to M10, DIN 376 = from M12
- **HSS-E cutting material**
- The spiral point ensures strong chip removal to the front



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	ATORN Art.no.	ATORN €	SARA® Art.no.	SARA® €
M 2	0.4	45	8	-	2.8	2.1	1.60	**134105** 0020	**12.75**		
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134105 0025	**10.50**		
M 3	0.5	56	10	18	3.5	2.7	2.50	134105 0030	**8.45**	**134106** 0030	**6.10**
M 4	0.7	63	12	21	4.5	3.4	3.30	134105 0040	**8.45**	134106 0040	**6.10**
M 5	0.8	70	14	25	6	4.9	4.20	134105 0050	**8.55**	134106 0050	**6.25**
M 6	1.0	80	16	30	6	4.9	5.00	134105 0060	**8.85**	134106 0060	**6.45**
M 8	1.25	90	18	35	8	6.2	6.80	134105 0080	**10.00**	134106 0080	**7.25**
M 10	1.5	100	20	39	10	8	8.50	134105 0100	**12.35**	134106 0100	**8.90**
M 12	1.75	110	22	-	9	7	10.25	134105 0120	**17.40**	134106 0120	**12.60**
M 14	2.0	110	25	-	11	9	12.00	134105 0140	**23.65**		
M 16	2.0	110	28	-	12	9	14.00	134105 0160	**26.80**		
M 20	2.5	140	32	-	16	12	17.50	134105 0200	**41.50**		
M 24	3.0	160	36	-	18	14.5	21.00	134105 0240	**61.30**		
M 30	3.5	180	40	-	22	18	26.50	134105 0300	**120.00**		

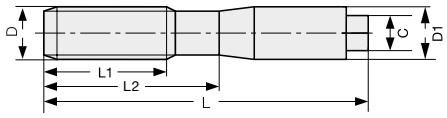
Material	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRC	≥ 30 HRC	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRC	< 60 HRC	≥ 60 HRc
	134105.... 134106....	● 5-20	● 5-15		○ 5-10	○ 5-12			○ 8-20										
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

ATORN SARA® Machine tap

Up to 1400 N/mm²

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | Vc/fz

- **ISO 6H metric thread**
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **HSS-E cutting material**



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	C 2-3 / 40° / 2,5xD — ATORN Blind hole Art.no.	€	SARA® Blind hole Art.no.	€	B 3,5-5 / 3xD — ATORN Through hole Art.no.	€	SARA® Through hole Art.no.	€
M 3	0.5	56	6	18	3.5	2.7	2.50	**134230** 0030	**11.20**	**134231** 0030	**7.10**	**134135** 0030	**11.80**	**134136** 0030	**7.50**
M 4	0.7	63	7	21	4.5	3.4	3.30	134230 0040	**11.20**	134231 0040	**7.10**	134135 0040	**11.80**	134136 0040	**7.50**
M 5	0.8	70	8	25	6	4.9	4.20	134230 0050	**11.35**	134231 0050	**7.20**	134135 0050	**11.90**	134136 0050	**7.55**
M 6	1.0	80	10	30	6	4.9	5.00	134230 0060	**11.60**	134231 0060	**7.35**	134135 0060	**12.25**	134136 0060	**7.75**
M 8	1.25	90	13	35	8	6.2	6.80	134230 0080	**14.30**	134231 0080	**9.00**	134135 0080	**15.20**	134136 0080	**9.60**
M 10	1.5	100	15	39	10	8	8.50	134230 0100	**17.00**	134231 0100	**10.75**	134135 0100	**18.00**	134136 0100	**11.35**
M 12	1.75	110	18	-	9	7	10.25	134230 0120	**24.60**	134231 0120	**15.50**	134135 0120	**25.90**	134136 0120	**16.40**
M 16	2.0	110	20	-	12	9	14.00	134230 0160	**37.40**			134135 0160	**40.00**		
M 20	2.5	140	25	-	16	12	17.50	134230 0200	**64.30**			134135 0200	**67.30**		

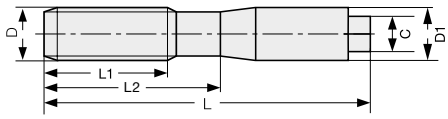
Material	● very well suited ○ well suited	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
	134230....134231.... 134135....134136....	● 5-20	● 5-15	● 5-10	○ 5-10			● 8-20	● 8-20	○ 2-6	○ 2-6			○ 10-25					
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

ATORN SARA® Machine tap

For stainless steel

M | 60° | HSS-E | DIN 371 | DIN 376 | ISO 2 6H | Vap. | Vc/fz

- **ISO 6H metric thread**
- DIN 371 construction dimensions = up to M10, DIN 376 = from M12
- **Cutting material: HSS-E, vapour-treated**



D mm	Pitch mm	L mm	L1 mm	L2 mm	D1 mm	C mm	Tapping hole Ø mm	C 2-3 / 40° / 2,5xD — ATORN Blind hole Art.no.	€	SARA® Blind hole Art.no.	€	B 3,5-5 / 3xD — ATORN Through hole Art.no.	€	SARA® Through hole Art.no.	€
M 2	0.4	45	8	-	2.8	2.1	1.60	**134225** 0020	**17.50**			**134130** 0020	**17.50**		
M 2.5	0.45	50	9	-	2.8	2.1	2.05	134225 0025	**14.50**			134130 0025	**14.40**		
M 3	0.5	56	6	18	3.5	2.7	2.50	134225 0030	**11.65**	**134227** 0030	**7.40**	134130 0030	**11.65**	**134132** 0030	**7.40**
M 4	0.7	63	7	21	4.5	3.4	3.30	134225 0040	**11.65**	134227 0040	**7.40**	134130 0040	**11.65**	134132 0040	**7.40**
M 5	0.8	70	8	25	6	4.9	4.20	134225 0050	**11.80**	134227 0050	**7.45**	134130 0050	**11.75**	134132 0050	**7.45**
M 6	1.0	80	10	30	6	4.9	5.00	134225 0060	**12.10**	134227 0060	**7.65**	134130 0060	**12.10**	134132 0060	**7.65**
M 8	1.25	90	13	35	8	6.2	6.80	134225 0080	**15.00**	134227 0080	**9.50**	134130 0080	**14.95**	134132 0080	**9.45**
M 10	1.5	100	15	39	10	8	8.50	134225 0100	**17.90**	134227 0100	**11.30**	134130 0100	**17.75**	134132 0100	**11.20**
M 12	1.75	110	18	-	9	7	10.25	134225 0120	**25.80**	134227 0120	**16.40**	134130 0120	**25.50**	134132 0120	**16.20**
M 16	2.0	110	20	-	11	9	14.00	134225 0160	**39.60**			134130 0160	**39.20**		

Material	● very well suited ○ well suited	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
	134225...., 134227.... 134130...., 134132....				● 5-10	● 5-12	● 5-8												
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

ATORN Tap wrench, adjustable

NEW

Reinforced version

DIN 1814

- Adjustable tap wrench in accordance with DIN 1814
- **Tool body made of zinc die-casting alloy with increased tensile strength**
- **Clamping jaws made of tool steel: precision-eroded and hardened**
- Up to 120% higher torque compared to conventional holding tools
- Handles refined by burnishing-nitriding process, can be unscrewed on one side
- Handle with working hole to increase leverage
- Guide slot for stabilising the jaw
- Holding of tools with square

No.	for quadratic mm	L mm	Art.no.	€
0	2,0 - 5,0	125	**138120** 0001	**7.75**
1	2,0 - 6,0	180	138120 0002	**8.30**
1 1/2	2,5 - 8,0	200	138120 0003	**9.35**
2	4,0 -9,0	280	138120 0004	**12.95**

No.	for quadratic mm	L mm	Art.no.	€
3	4,9 - 12,0	375	138120 0005	**18.50**
4	5,5 - 16,0	500	138120 0006	**32.40**
5	7,0 - 20,0	750	138120 0007	**54.10**
6	9,0 - 25,0	1000	138120 0008	**63.20**

ATORN All-steel tap wrench with centring lug

NEW

With centring lug for perpendicular cutting

DIN 1814

- Adjustable tap wrench in accordance with DIN 1814
- **High-strength tool body made of stainless steel with centring lug for perpendicular cutting**
- **Clamping jaws made of tool steel: precision-eroded and hardened**
- Handles refined by burnishing-nitriding process, can be unscrewed on one side
- Working hole to hold spindle toggle for maximum traction
- Holding of tools with square

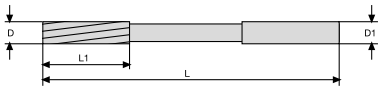
No.	for quadratic mm	L mm	Art.no.	€
0	2,0 - 5,0	125	**138121** 0001	**9.95**
1	2,0 - 6,0	180	138121 0002	**11.00**
1 1/2	2,5 - 8,0	200	138121 0003	**11.40**
2	4,0 - 9,0	280	138121 0004	**14.95**
3	4,9 - 12,0	375	138121 0005	**23.50**

No.	for quadratic mm	L mm	Art.no.	€
4	5,5 - 16,0	500	138121 0006	**35.60**
5	7,0 - 20,0	750	138121 0007	**56.20**
6	9,0 - 25,0	1000	138121 0008	**87.00**
7	16,0 - 32,0	1250	138121 0009	**127.00**
8	16,0 - 40,0	1250	138121 0010	**134.00**

ATORN NC machine reamers

VHM | DIN 212 | H7 | 9° | Vc/fz

- **NC shank for use in hydraulic expansion chucks and high-precision collet chucks**
- High true running accuracy
- Form D
- Straight shank, spiral-fluted, right-hand cutting
- **Up to Ø 13 mm solid carbide, from Ø 14 mm with steel shank**
- For reaming through-holes
- Also suitable for blind bores



D H7 mm	D1 h6 mm	L mm	L1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	Art.no.	€
1.0	1	34	6	3	0.15	**163005** 0010	**32.60**
1.5	2	40	8	3	0.15	163005 0015	**37.90**
2.0	2	49	11	4	0.15	163005 0020	**37.90**
2.5	3	57	14	4	0.15	163005 0025	**37.90**
3.0	3	61	15	6	0.15	163005 0030	**37.90**
3.5	4	70	18	6	0.15	163005 0035	**37.90**
4.0	4	75	19	6	0.15	163005 0040	**37.90**
4.5	5	80	21	6	0.15	163005 0045	**46.90**
5.0	5	86	23	6	0.15	163005 0050	**46.90**
5.5	6	93	26	6	0.18	163005 0055	**46.90**
6.0	6	93	26	6	0.18	163005 0060	**46.90**
7.0	8	109	31	6	0.18	163005 0070	**58.30**

D H7 mm	D1 h6 mm	L mm	L1 mm	Z	Feed f steel < 1000 N/mm² mm/rev	Art.no.	€
8.0	8	117	33	6	0.18	163005 0080	**58.30**
9.0	10	125	36	6	0.20	163005 0090	**71.40**
10.0	10	133	38	6	0.20	163005 0100	**71.40**
11.0	10	142	41	6	0.20	163005 0110	**93.50**
12.0	10	151	44	6	0.25	163005 0120	**93.50**
13.0	10	151	44	8	0.25	163005 0130	**111.00**
14.0	14	160	47	8	0.25	163005 0140	**114.00**
15.0	14	162	50	8	0.25	163005 0150	**118.00**
16.0	14	170	52	8	0.25	163005 0160	**122.00**
18.0	14	182	56	8	0.30	163005 0180	**156.50**
20.0	16	195	60	8	0.30	163005 0200	**186.50**

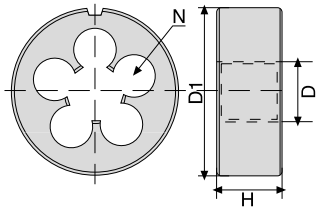
ATORN Threading dies, measuring unit

M | 60° | HSS | HSS-E | Werks-norm | DIN 13 6g | Vap. | Vc/fz

NEW

Suitable for threading die holder 25 x 9 mm

- **Threading dies 25 x 9 mm**
- **For DIN 13 ISO metric thread**
- Two-sided spiral point for good chip removal
- Larger chamfer diameter, chamfering of the bolt not necessary
- Thread lapped for smoother, burr-free cutting edges
- **Cutting material: HSS and HSS-E, vapour-treated**
- Increased surface hardness (nitriding process)
- Particularly suitable for mechanical applications due to the one-size-fits-all design



D mm	Pitch mm	D1 mm	H mm	N mm	HSS Art.no.	HSS €	HSS-E Art.no.	HSS-E €
M 3	0.5	25	9	3	**136101** 0030	**14.35**	**136105** 0030	**28.90**
M 4	0.7	25	9	3	136101 0040	**14.35**	136105 0040	**28.00**
M 5	0.8	25	9	4	136101 0050	**14.35**	136105 0050	**26.10**
M 6	1.0	25	9	4	136101 0060	**14.35**	136105 0060	**26.10**
M 8	1.25	25	9	4	136101 0080	**15.85**	136105 0080	**31.20**
M 10	1.5	25	9	5	136101 0100	**20.50**	136105 0100	**37.10**
M 12	1.75	25	9	5	136101 0120	**25.40**	136105 0120	**49.40**

Sets

Contents	HSS Art.no.	HSS €	HSS-E Art.no.	HSS-E €
Threading dies M 3 - 4 - 5 - 6 - 8 - 10 - 12 (1 of each)	**136101** 0312	**99.90**	**136105** 0312	**179.00**

Material	● very well suited ○ well suited	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
	136101....	●	●		○	○		○	○				●	●	●				
	136105....	●	●		●	●		○	○				●	●	●				

ATORN Threading die holder

DIN 22568

NEW

Reinforced version

- For threading dies in accordance with DIN EN 22568 (DIN 225)
- **Tool body made of fine die-cast zinc in accordance with DIN 1743**
- Four attachment screws for small diameters, five screws for larger diameters
- Burnished attachment screws with a 90° pointed tip, for centring in the threading die
- Handles refined by burnishing-nitriding process with fine knurling for increased grip
- **Revised support structure for increased load capacity**

D mm	H mm	suitable for threading die	L mm	Art.no.	€
16	5	M 1 - 2.6	160	**138130** 0001	**2.79**
20	5	M 3 - 4	195	138130 0002	**2.79**
20	7	M 4.5 - 6	195	138130 0003	**2.79**
25	9	M 7 - 9	215	138130 0004	**3.10**
30	11	M 10 - 11	260	138130 0005	**4.59**
38	10	MF 12 - 15	315	138130 0016	**6.25**
38	14	M 12 - 14	315	138130 0006	**6.25**

D mm	H mm	suitable for threading die	L mm	Art.no.	€
45	14	MF 16 - 20	445	138130 0014	**9.70**
45	18	M 16 - 20	445	138130 0007	**9.70**
55	16	MF 22 - 26	495	138130 0012	**13.25**
55	22	M 22 - 24	495	138130 0008	**13.25**
65	18	MF 27 - 36	630	138130 0017	**16.65**
65	25	M 27 - 36	630	138130 0009	**16.65**

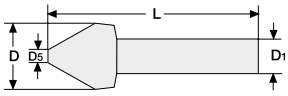
BECK MAPAL GROUP | SARA® Taper and deburring countersinks

HSS | DIN 335C | 90° | Z 3 | Vc/fz | ZrN | TiN

- Geometry with unequal pitch
- **High degree of smoothness**
- Radially relief-ground
- **Reduced axial and radial forces**
- **Low vibration tendency**
- 150271.... Patented shank to stop rotation of the countersink in the drill chuck with optimum torque transfer (from Ø 8.3 mm)

150172

150271



Single

D mm	D5 mm	D1 mm	L mm	● Feed f steel < 700 N/mm² mm/rev	BECK ZrN Art.no.	BECK ZrN €	SARA TiN Art.no.	SARA TiN €
6.3	1.5	5	45	0.08	**150172** 0063	**19.10**	**150271** 0063	**13.80**
8.3	2	6	50	0.10	150172 0083	**20.80**	150271 0083	**15.40**
10.4	2.5	6	50	0.10	150172 0104	**21.10**	150271 0104	**15.70**
12.4	2.8	8	56	0.12	150172 0124	**25.30**	150271 0124	**18.80**
16.5	3.2	10	60	0.14	150172 0165	**28.60**	150271 0165	**21.80**
20.5	3.5	10	63	0.18	150172 0205	**35.20**	150271 0205	**27.10**

150172 1000

150271 1000

Sets, 5-pcs.

Contents	BECK ZrN Art.no.	BECK ZrN €	SARA TiN Art.no.	SARA TiN €
6.3 / 10.4 / 16.5 / 20.5 / 25 mm (1 of each)	**150172** 1000	**129.00**	**150271** 2000	**109.00**

Material	● very well suited ○ well suited	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
	150172....	● 36	● 30	○ 12	○ 10	○ 10		● 14	● 12	○ 10			○ 42		○ 42				
	150271....	● 20-28	● 10-15	○ 5-8	○ 5-8	○ 5-10	○ 5-10	○ 8-14	○ 8-12				○ 40-80	○ 20-50	○ 25-40				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

SARA® Steel

NEW

Steel professional

VHM | 40° | h9 | h6 | DIN 6535 HB | Z 4 | AlCrN | Vc/fz

- **Unequal pitch for vibration-free milling**
- With corner protection radius R for improved service life

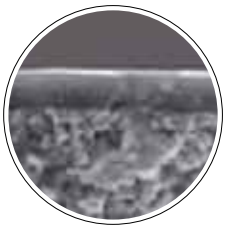
UNIVERSAL

Unequal pitch

for vibration-free machining and outstanding surface quality

Ideal cutting edge design

for a stable milling process and extended service life



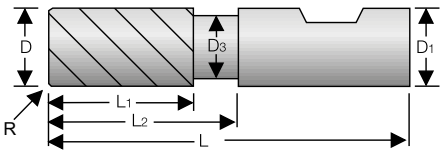
PVD coating + carbide metal types

optimum combination of raw materials and coating against wear and nicks extends service life

Milling cutter with corner protection radius

Stabilises and protects the cutting edge

D mm	L1 mm	L2 mm	L mm	D1 mm	D3 mm	R mm	Feed fz steel < 1000 N/mm² mm/Z	Feed fz steel < 1000 N/mm² mm/Z	Art.no.	€
4	11	20	57	6	3.7	0.1	0.012	0.02	**254111** 0040	**16.40**
5	13	20	57	6	4.6	0.1	0.016	0.025	254111 0050	**16.40**
6	20	25	60	6	5.5	0.1	0.019	0.031	254111 0060	**16.40**
8	20	26	64	8	7.4	0.2	0.026	0.043	254111 0080	**22.20**
10	22	32	72	10	9.2	0.2	0.034	0.056	254111 0100	**30.10**
12	26	37	83	12	11	0.2	0.041	0.070	254111 0120	**41.10**
14	26	37	83	14	13	0.2	0.047	0.079	254111 0140	**58.30**
16	32	42	92	16	15	0.2	0.053	0.087	254111 0160	**69.80**
18	32	42	92	18	17	0.2	0.058	0.092	254111 0180	**94.80**
20	38	50	104	20	19	0.2	0.064	0.098	254111 0200	**111.50**



Material	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRC	≥ 30 HRC	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRC	< 60 HRC	≥ 60 HRc
		● 200	● 160	● 150	● 80	● 120	● 80	● 170	● 110	● 60	● 30	● 30	● 330	● 300	● 280				
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

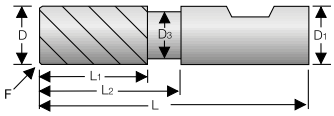
UNEQUAL HELIX ANGLE
EXTREMELY HIGH MATERIAL REMOVAL RATE

- Universal tools for all roughing and finishing work
- Minimisation of vibration
- Improved surface finish
- Protective chamfer F for increased service life
- Optional shank for greater cutting depths
- High-performance layer for high-temperature hardness and oxidation resistance
- Ideally suited for HPC (high performance cutting)
- Short and long versions for machining steel, cast iron, stainless steel and titanium alloys

SARA® *Stainless steel* end milling cutter

VHM | Typ N | 35°-38° | h10 | h6 | DIN 6535 HB | Z 4 | AlTiN | HPC | Vc/fz

- **With clearance**
- **Irregular helix angle and pitch for low-vibration milling**
- With protective chamfer F for improved tool life
- Specially designed for stainless steel machining



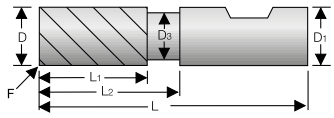
D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Feed fz stainless steel austenitic mm/Z	Feed fz stainless steel austenitic mm/Z	Art.no.	€
3.0	8	18	57	2.8	6	0.13	0.008	0.009	**254136** 0030	**24.70**
4.0	11	21	57	3.6	6	0.18	0.013	0.015	254136 0040	**24.70**
5.0	13	21	57	4.6	6	0.20	0.021	0.025	254136 0050	**24.70**
6.0	13	21	57	5.5	6	0.20	0.021	0.025	254136 0060	**24.70**
7.0	19	27	63	6.5	8	0.20	0.027	0.032	254136 0070	**33.20**
8.0	19	27	63	7.5	8	0.20	0.027	0.032	254136 0080	**33.20**
9.0	22	32	72	8.5	10	0.30	0.027	0.032	254136 0090	**46.90**
10.0	22	32	72	9.5	10	0.30	0.044	0.052	254136 0100	**46.90**
11.0	26	38	83	10.5	12	0.30	0.044	0.052	254136 0110	**57.80**
12.0	26	38	83	11.5	12	0.30	0.044	0.052	254136 0120	**57.80**
13.0	26	42	83	12.5	14	0.30	0.059	0.07	254136 0130	**75.90**
14.0	26	42	83	13.5	14	0.30	0.059	0.07	254136 0140	**75.90**
16.0	32	44	92	15.5	16	0.40	0.059	0.07	254136 0160	**99.00**
18.0	32	50	100	17.5	18	0.40	0.071	0.084	254136 0180	**134.50**
20.0	38	54	104	19.5	20	0.50	0.071	0.084	254136 0200	**149.00**
25.0	42	65	121	24.0	25	0.50	0.077	0.091	254136 0250	**299.00**

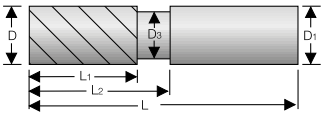
Material	● very well suited ○ well suited	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
		< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRC	≥ 30 HRC	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRC	< 60 HRC	≥ 60 HRc
		● 120-150	● 80-110		● 40-65	● 40-65	● 30-50	○ 100-140	○ 80-100	● 30-45	● 30-45	● 25-40							
	Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

ATORN Ultra-N end milling cutter

VHM | Typ W | 45° | h9 | h5 | DIN 6535 HA | DIN 6535 HB | Z 3 | ZrCN | Vc/fz

- **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





Short

D mm	L1 mm	L mm	L2 mm	D3 mm	D1 mm	Feed fz aluminium < 8 % Si mm/Z	Feed fz aluminium < 8 % Si mm/Z	ZrCN DIN 6535-HA Art.no.	€	polished DIN 6535-HB Art.no.	€	Mirror finish DIN 6535-HB Art.no.	€
3.0	12	57	16	2.8	6	0.018	0.025	**249304** 0030	**25.60**	**249309** 0030	**24.30**	**249305** 0030	**22.80**
4.0	12	57	18	3.8	6	0.021	0.030	249304 0040	**25.60**	249309 0040	**24.30**	249305 0040	**22.80**
5.0	15	57	18	4.7	6	0.026	0.038	249304 0050	**25.60**	249309 0050	**24.30**	249305 0050	**22.80**
6.0	16	57	21	5.6	6	0.032	0.045	249304 0060	**29.90**	249309 0060	**26.60**	249305 0060	**24.90**
8.0	22	64	28	7.6	8	0.042	0.060	249304 0080	**36.00**	249309 0080	**33.50**	249305 0080	**31.10**
10.0	25	73	33	9.6	10	0.053	0.075	249304 0100	**45.80**	249309 0100	**42.00**	249305 0100	**39.60**
12.0	28	84	39	11.4	12	0.060	0.085	249304 0120	**64.10**	249309 0120	**59.90**	249305 0120	**55.70**
16.0	35	93	45	15.4	16	0.068	0.098	249304 0160	**94.50**	249309 0160	**86.20**	249305 0160	**81.00**
20.0	40	104	54	19.4	20	0.079	0.113	249304 0200	**146.50**	249309 0200	**145.00**	249305 0200	**136.00**

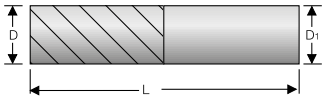
Material	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
● very well suited ○ well suited												●	●	●				
												350-500	150-250	150-350				
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

SARA® Deburring tools

VHM | Typ N | 60° | 90° | 120° | DIN 6535 HA | DIN 6535 HB | Z 4 | TiAlN

- **4 cutting edges**
- Ideal for chamfering and deburring workpiece edges and for contour milling
- **Cutting material: superfine grain solid carbide, TiAlN-coated**

D mm	L mm	D1 mm	90° HA Art.no.	€	90° HB Art.no.	€
4	51	4	**251540** 0040	**19.90**		
6	64	6	251540 0060	**24.40**	**251543** 0060	**25.10**
8	64	8	251540 0080	**30.40**	251543 0080	**31.30**
10	70	10	251540 0100	**35.90**	251543 0100	**36.90**
12	78	12	251540 0120	**53.30**	251543 0120	**54.60**

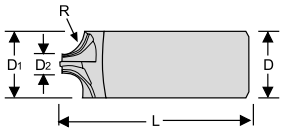


Material	Steel < 700 N/mm²	Steel < 1000 N/mm²	Steel < 1400 N/mm²	Stainless steel ferrit./martens.	Stainless steel austenitic	Stainless steel duplex	Cast iron GG/GTS	Cast iron GGG	Titanium alloys	Super alloys Fe/NiCo-based < 30 HRC	Super alloys Fe/NiCo-based ≥ 30 HRC	Aluminium < 8 % Si	Aluminium ≥ 8 % Si	Copper Cu-alloy	Graphite GRP/CFP/thermo.	Hardened steel < 55 HRC	Hardened steel < 60 HRC	Hardened steel ≥ 60 HRc
● very well suited ○ well suited	●	●	●	●	○	○	●	●	○	○	○							
	160-180	120-140	100-120	80-100	60-80	60-80	140-160	140-160	80-100	80-100	60-80							
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!																		

SARA® Quadrant milling cutter

VHM | Werks-norm | Typ N | h10 | h6 | DIN 6535 HA | Z 4 | AlCrN | Vc/fz

- Factory standard
- **Version**: straight-fluted, no profile distortion
- **Application**: for rounding off and deburring edges



D mm	L mm	R mm	D1 mm	Feed fz steel < 1000 N/mm² mm/Z	Art.no.	€
8.0	70	0.5	7	0.004	**291310** 0050	**64.40**
8.0	70	1.0	6	0.009	291310 0100	**64.70**
10.0	75	1.5	7	0.009	291310 0150	**68.60**
10.0	75	2.0	6	0.015	291310 0200	**68.60**
12.0	75	2.5	7	0.015	291310 0250	**74.90**
12.0	75	3.0	6	0.015	291310 0300	**74.90**
16.0	80	3.5	9	0.015	291310 0350	**95.20**
16.0	80	4.0	8	0.033	291310 0400	**95.20**
20.0	80	5.0	10	0.033	291310 0500	**133.00**
20.0	80	6.0	8	0.055	291310 0600	**133.00**
25.0	100	8.0	9	0.064	291310 0800	**219.00**
25.0	100	10.0	5	0.073	291310 1000	**222.00**

Material	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRC	≥ 30 HRC	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRC	< 60 HRC	≥ 60 HRc
● very well suited	●	●	●	●	●	○	●	●		●	●	○	○	●		●	●	○
○ well suited	70-100	60-90	35-60	35-70	25-60	25-60	70-95	60-80		10-30	10-30	140-500	140-500	85-190		65-90	65-90	40-60

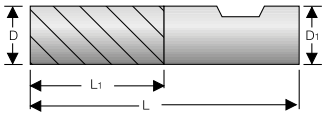
Cutting speed Vc m/min. Please adjust these guidelines according to clamping operation and machine set-up!

SARA® Solid carbide end milling cutter

Trochoidal

VHM | 41°-42° | e8 | h5 | DIN 6535 HB | Z 5 | AlCrN | Vc/fz

- With clearance
- **Milling cutter designed for TVC use**
- Reinforced core
- With chip breaker
- **Cutting material: superfine grain solid carbide**
- Irregular tooth pitch for a strong head centre
- **ae steel max. 20 %**
- **ae stainless steel max. 15 %**
- **fz based on 0.1x D**



D mm	L1 mm	L2 mm	L mm	D3 mm	D1 mm	F x 45° mm	Z	Feed fz steel < 1000 N/mm² mm/Z	Art.no.	€
6.0	18	24	62	5.7	6.0	0.12	5	0.087	**254117** 0060	**26.30**
8.0	24	30	68	7.6	8.0	0.16	5	0.117	254117 0080	**35.10**
10.0	30	38	80	9.5	10.0	0.20	5	0.146	254117 0100	**45.60**
12.0	36	46	93	11.5	12.0	0.24	5	0.175	254117 0120	**60.40**
14.0	42	50	100	13.5	14.0	0.28	5	0.204	254117 0140	**86.20**
16.0	48	58	108	15.5	16.0	0.32	5	0.233	254117 0160	**105.50**
18.0	54	67	115	17.5	18.0	0.36	5	0.262	254117 0180	**147.00**
20.0	60	74	126	19.5	20.0	0.40	5	0.292	254117 0200	**164.00**
25.0	75	92	150	24.0	25.0	0.50	5	0.365	254117 0250	**310.00**

Material	Steel			Stainless steel			Cast iron		Titanium alloys	Super alloys Fe/NiCo-based		Aluminium		Copper	Graphite	Hardened steel		
	< 700 N/mm²	< 1000 N/mm²	< 1400 N/mm²	ferrit./martens.	austenitic	duplex	GG/GTS	GGG		< 30 HRC	≥ 30 HRC	< 8 % Si	≥ 8 % Si	Cu-alloy	GRP/CFP/thermo.	< 55 HRC	< 60 HRC	≥ 60 HRc
● very well suited	●	●	●	●	●				○	○						○	○	
○ well suited	300	250	210	170	190				130	80						100	90	

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

ATORN® The CMT system

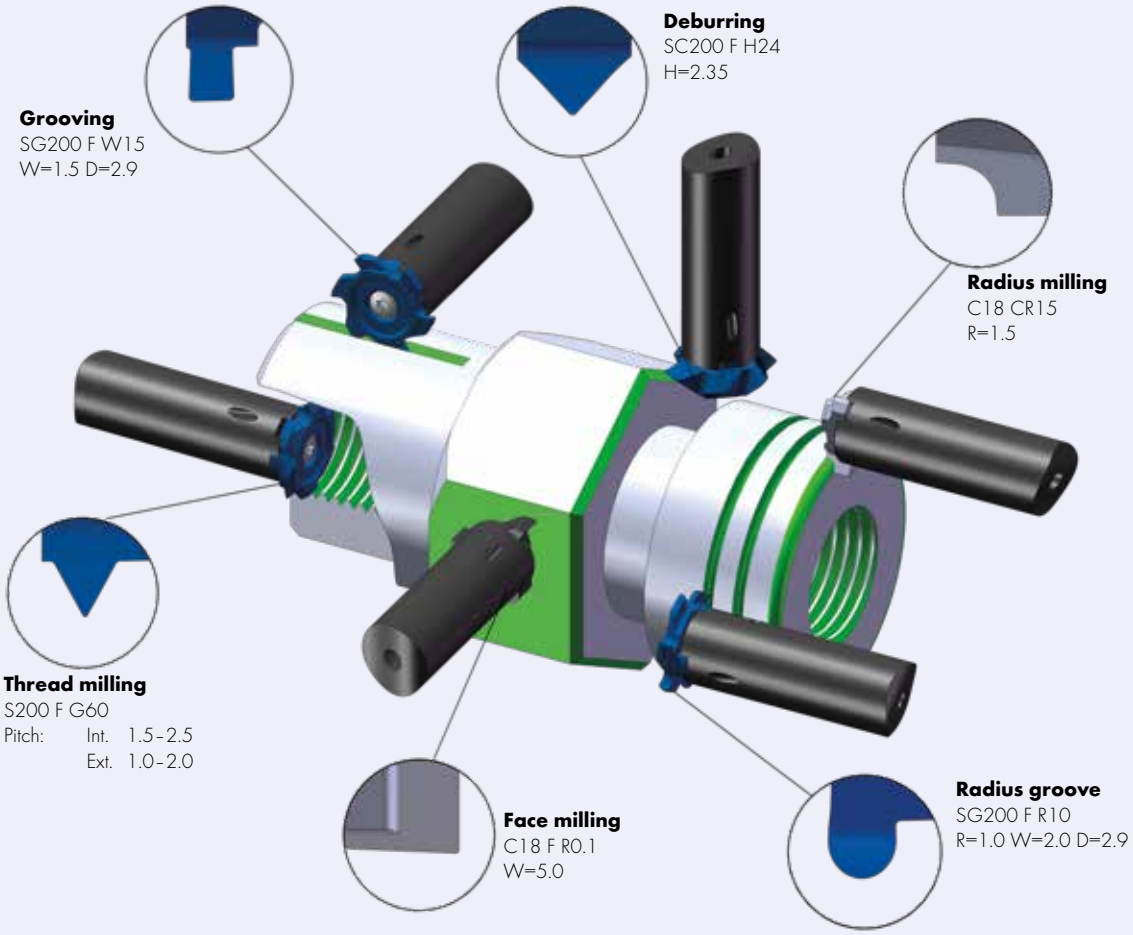
INFO

Removable, vertical thread-mill inserts and holders for a variety of thread profiles

- Front-mounted plate for high precision and excellent performance
- Milling with high cutting rates and perfect surface finish
- Stable and precise clamping for consistent reproducibility
- Same plate for right-hand and left-hand threads
- Tool holders with Weldon shank and internal cooling
- Plates for countersinking, grooving and face milling

One holder for all machining situations

SRC 2018 J with internal coolant supply



ATORN CMT tool system for vertical thread milling CMT

DIN 6535 HB | Vc/fz

CMT Starter Kit

- Steel mounting SRC 2018 J
- Partial profile insert S200 F G60 for internal pitch 1.5-2.5, external 1.0-2.0 mm
- Chamfer insert SC20 F H24 90°
- Recessing insert SG200 F W15 1.5 mm
- Radius insert SG200 F R10 R1.0
- Corner radius insert C18 CR15 R1.5
- Milling insert C18 F R0.1 ∅ 17.8

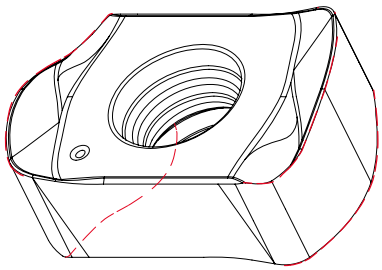
€ 329.00

Contents	Art.no.	€
Set of steel mountings incl. 6 inserts	**266005** 0001	**329.00**

MILLING INSERTS XNKU.. 06..
TETRAFEED

PHH NEW GRADE

PHP NEW GRADE



PHP coating technology

The new PHP coating technology offers high levels of layer hardness and smooth surfaces for increased wear resistance and reduction of material build-up.

Suitable for high-performance applications in unalloyed, alloyed and high-speed steels as well as for the machining of cast iron.

PHH coating technology

The new PHH coating technology has a very high level of thermal stability and offers long tool service lives.

Suitable for the machining of hardened steel, stainless steel and titanium alloys.

Geometry

The reinforced cutting edge is designed for general applications in various substances.

Plate width

- Large cross-section

Cutting edge

- Stable cutting edge
- Increased wear resistance

Double-sided indexable insert

- Double-sided indexable insert with 4 cutting edges

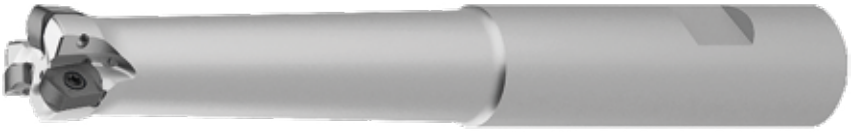
Optimised design for better chip removal

- More stable, improved insert seat for a long service life of the abrasive bead

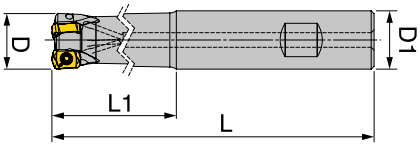
palbit Shank 20° *TETRAFEED*

NEW

- **For milling inserts XNKU 06**
- Easy cutting action due to the positive installation position of the indexable insert
- **four cutting edges per insert**
- Tools deliver smooth milling performance
- **Internal coolant supply**



D mm	D1 mm	L mm	L1 mm	Z	Tightening torque max. N-m	Art.no.	€
20	20	160	90	3	1.20	**260311** 0020	**179.00**
25	25	180	100	4	1.20	260311 0025	**199.00**
32	32	200	120	5	1.20	260311 0032	**229.00**

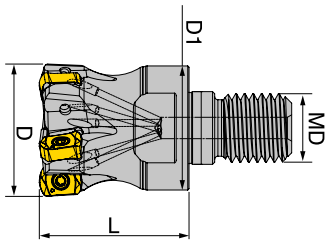


palbit Screw-in milling cutter 20° *TETRAFEED*

NEW

- **For milling inserts XNKU 06**
- Easy cutting action due to the positive installation position of the indexable insert
- **four cutting edges per insert**
- Tools deliver smooth milling performance
- **Internal coolant supply**

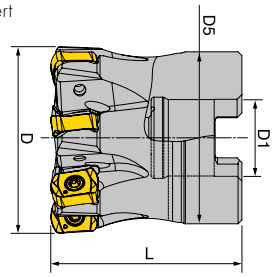
D mm	MD	D1 mm	L mm	Z	Tightening torque max. N-m	Art.no.	€
16	M8	13	25	2	1.20	**260312** 0016	**129.00**
20	M10	18	28	3	1.20	260312 0020	**178.00**
25	M12	18	30	4	1.20	260312 0025	**195.00**
32	M16	29	35	5	1.20	260312 0032	**225.00**
35	M16	29	35	6	1.20	260312 0035	**235.00**
40	M16	29	45	5	1.20	260312 0040	**265.00**
42	M16	29	35	7	1.20	260312 0042	**269.00**



palbit 20° corner milling cutter *TETRAFEED*

NEW

- **For milling inserts XNKU 06**
- Easy cutting action due to the positive installation position of the indexable insert
- **four cutting edges per insert**
- Tools deliver smooth milling performance
- **Internal coolant supply**



D mm	D1 mm	D5 mm	L mm	Z	Tightening torque max. N-m	Art.no.	€
40	16	36	40	7	1.20	**260313** 0040	**255.00**
50	22	42	40	8	1.20	260313 0050	**299.00**
52	22	40	40	8	1.20	260313 0052	**309.00**
63	22	40	40	9	1.20	260313 0063	**339.00**

Milling inserts XNKU.. 06.. *TETRAFEED*

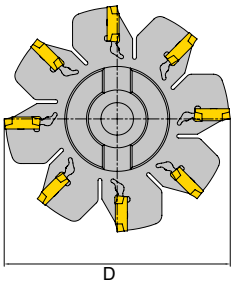
NEW

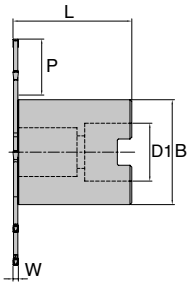
F finishing -	M medium -	R roughing -	palbit ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
			XNKU 06T310-MP		●			●		**PHH 930**	10	**285560** 0167	**9.50**
				●		●				**PHP 920**	10	285560 0168	**9.50**
				●	●	●		●		**PHS 740**	10	285560 0174	**9.50**
				●						**PHP 910**	10	285560 0192	**9.50**

ISO	PHH 930	PHP 910	PHP 920	PHS 740
ISO P Steel		Vc = 140 - 250	Vc = 160 - 250	Vc = 140 - 230
ISO M Stainless steel	Vc = 80 - 170			Vc = 70 - 180
ISO K Cast iron			Vc = 100 - 320	Vc = 70 - 260
ISO S Superalloy	Vc = 30 - 75			Vc = 30 - 70
Vc = [m/min] fz = [mm/Z] ap = [mm]	fz = 0.5-1.4	fz = 0.5-1.5 ap = 1.0		fz = 0.5-1.3

SARA® Disc milling cutters with long inserts

- Disc milling cutters with inserted inserts
- **For slot and burr cutting**
- Single and double-sided recessing inserts
- **Supplied with: Without assembly key and recessing inserts**





D mm	L mm	W mm	P mm	B mm	D1 mm	Z mm	Suitable cutting inserts	Art.no.	€
80	39.9	2.0	25	29	M16	4	GELCG.. 1920002	**262630** 2080	**669.00**
100	51.9	2.0	28	40	22	6	GELCG.. 1920002	262630 2100	**779.00**
125	51.9	2.0	36	48	27	8	GELCG.. 1920002	262630 2125	**829.00**
160	64.9	2.0	39	80	40	10	GELCG.. 1920002	262630 2160	**989.00**
80	40.7	3.0	25	29	M16	4	GELCG.. 1920002	262630 3080	**679.00**
100	52.7	3.0	28	40	22	6	GELCG.. 1930002	262630 3100	**779.00**
125	52.7	3.0	36	48	27	8	GELCG.. 1930002	262630 3125	**849.00**
160	65.7	3.0	39	80	40	10	GELCG.. 1930002	262630 3160	**999.00**
125	53.5	4.0	37.5	48	27	6	GELCG.. 1940002	262630 4125	**819.00**
160	66.5	4.0	39	80	40	8	GELCG.. 1940002	262630 4160	**929.00**

SARA® Cutting edge insert GELCG...

Cutting edge insert, one-sided

ISO designation	Width mm	r mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
GELCGS 192002	2	0.2				●			**SWN 15 G**	10	**285711** 2015	**9.70**
	2	0.2	●		●				**SCU 30 G**	10	285711 2030	**9.70**
	2	0.2		●					**SCM 30 G**	10	285711 2035	**9.70**
GELCGS 193002	3	0.2				●			**SWN 15 G**	10	285711 3015	**10.20**
	3	0.2	●		●				**SCU 30 G**	10	285711 3030	**10.20**
	3	0.2		●					**SCM 30 G**	10	285711 3035	**10.20**
GELCGS 234002	4	0.2				●			**SWN 15 G**	10	285711 4015	**10.95**
	4	0.2	●		●				**SCU 30 G**	10	285711 4030	**10.95**
	4	0.2		●					**SCM 30 G**	10	285711 4035	**10.95**

ISO	SCM 30 G	SCU 30 G	SWN 15 G
ISO P Steel		Vc = 120 - 220	
ISO M Stainless steel	Vc = 130 - 150		
ISO K Cast iron		Vc = 180 - 200	
ISO N Al/non-ferrous			Vc = 200 - 300
Vc = [m/min] fz = [mm/Z]	fz = 0.04 -0.18	fz = 0.04 -0.26	

Cutting edge insert, double-sided

ISO designation	Width mm	r mm	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
GELCGD 192002	2	0.2				●			**SWN 15 G**	10	**285712** 2015	**11.45**
	2	0.2	●		●				**SCU 30 G**	10	285712 2030	**11.45**
	2	0.2		●					**SCM 30 G**	10	285712 2035	**11.45**
GELCGD 193002	3	0.2				●			**SWN 15 G**	10	285712 3015	**12.20**
	3	0.2	●		●				**SCU 30 G**	10	285712 3030	**12.20**
	3	0.2		●					**SCM 30 G**	10	285712 3035	**12.20**
GELCGD 234002	4	0.2				●			**SWN 15 G**	10	285712 4015	**12.70**
	4	0.2	●		●				**SCU 30 G**	10	285712 4030	**12.70**
	4	0.2		●					**SCM 30 G**	10	285712 4035	**12.70**

ISO	SCM 30 G	SCU 30 G	SWN 15 G
ISO P Steel		Vc = 120 - 220	
ISO M Stainless steel	Vc = 130 - 150		
ISO K Cast iron		Vc = 180 - 200	
ISO N Al/non-ferrous			Vc = 200 - 300
Vc = [m/min] fz = [mm/Z]	fz = 0.04 - 0.18		fz = 0.04-0.26

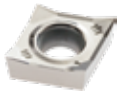
ISO indexable cutting inserts CC.. ISO N

ISO N

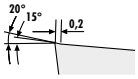
- **80° rhombic, positive 7°**

Chip breaker *MN5* positive

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
○	○	○	CCGT 060201-MN5			○	●	○		AWN 15 T	10	**366601** 0116	6.60
			CCGT 060202-MN5			○	●	○		AWN 15 T	10	366601 0216	6.60
					○	○	●	○		APN 15 T	10	366601 0417	7.95
			CCGT 060204-MN5			○	●	○		AWN 15 T	10	366601 0316	6.60
					○	○	●	○		APN 15 T	10	366601 0517	7.95
			CCGT 09T302-MN5			○	●	○		AWN 15 T	10	366601 0616	6.90
					○	○	●	○		APN 15 T	10	366601 0717	8.50
			CCGT 09T304-MN5			○	●	○		AWN 15 T	10	366601 0816	6.90
					○	○	●	○		APN 15 T	10	366601 0917	8.50
			CCGT 09T308-MN5			○	●	○		AWN 15 T	10	366601 1016	6.90
					○	○	●	○		APN 15 T	10	366601 1117	8.50
			CCGT 120404-MN5			○	●	○		AWN 15 T	10	366601 1216	8.25
					○	○	●	○		APN 15 T	10	366601 1317	9.75
			CCGT 120408-MN5			○	●	○		AWN 15 T	10	366601 1416	8.25
					○	○	●	○		APN 15 T	10	366601 1517	9.75



Universal application



ISO	APN 15 T	AWN 15 T
ISO M Stainless steel	Vc = 50 - 140	
ISO K Cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S Superalloy	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/rev] ap = [mm]	f = 0.1-0.5 ap = 0.1-4.5	

ISO indexable cutting inserts DC.. ISO N

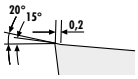
ISO N

- **55° rhombic, positive 7°**

Chip breaker *MN5*

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
○	○	○	DCGT 070201-MN5			○	●	○		AWN 15 T	10	**366623** 0116	6.60
			DCGT 070202-MN5			○	●	○		AWN 15 T	10	366623 0216	6.60
					○	○	●	○		APN 15 T	10	366623 0317	7.95
			DCGT 070204-MN5			○	●	○		AWN 15 T	10	366623 0416	6.60
					○	○	●	○		APN 15 T	10	366623 0517	7.95
			DCGT 070208-MN5			○	●	○		AWN 15 T	10	366623 0616	6.60
			DCGT 11T302-MN5			○	●	○		AWN 15 T	10	366623 0716	7.95
					○	○	●	○		APN 15 T	10	366623 0817	8.95
			DCGT 11T304-MN5			○	●	○		AWN 15 T	10	366623 0916	8.25
					○	○	●	○		APN 15 T	10	366623 1017	8.95
			DCGT 11T308-MN5			○	●	○		AWN 15 T	10	366623 1116	8.25
					○	○	●	○		APN 15 T	10	366623 1217	8.95

Universal application



ISO	APN 15 T	AWN 15 T
ISO M Stainless steel	Vc = 50 - 140	
ISO K Cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S Superalloy	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/rev] ap = [mm]	f = 0.1-0.5 ap = 0.1-4.5	

ISO indexable cutting inserts SC.. ISO N

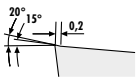
ISO N

- **90° square, positive 7°**

Chip breaker *MN5*

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
○	○	○	SCGT 09T304-MN5			○	●	○		AWN 15 T	10	**366648** 0116	7.95
					○	○	●	○		APN 15 T	10	366648 0217	9.95
			SCGT 09T308-MN5			○	●	○		AWN 15 T	10	366648 0316	7.95
					○	○	●	○		APN 15 T	10	366648 0417	9.95
			SCGT 120408-MN5		○	○	●	○		APN 15 T	10	366648 0617	9.95

Universal application



ISO	APN 15 T	AWN 15 T
ISO M Stainless steel	Vc = 50 - 140	
ISO K Cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 2000	Vc = 100 - 2000
ISO S Superalloy	Vc = 18 - 120	Vc = 18 - 48
Vc = [m/min] f = [mm/rev] ap = [mm]	f = 0.1-0.5 ap = 0.25-6.0	

ISO indexable cutting inserts *TC*.. ISO N

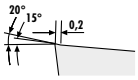
ISO N

- **60° triangular, positive 7°**

Chip breaker *MN5*

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
○	○	○	TCGT 110204-MN5			○	●	○		**AWN 15 T**	10	**366662** 0116	**6.90**
					○	○	●	○		**APN 15 T**	10	366662 0217	**9.15**
			TCGT 16T304-MN5			○	●	○		**AWN 15 T**	10	366662 0316	**8.50**
			TCGT 16T308-MN5			○	●	○		**AWN 15 T**	10	366662 0416	**8.50**

Universal application



ISO	APN 15 T	AWN 15 T
ISO M Stainless steel	Vc = 50 - 140	
ISO K Cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 2000	Vc = 100 - 2000
ISO S Superalloy	Vc = 60 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/rev] ap = [mm]	f = 0.1-0.4 ap = 0.1-4.5	

ISO indexable cutting inserts *VC*.. ISO N

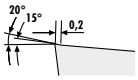
ISO N

- **35° rhombic, positive 7°**

Chip breaker *MN5*

F finishing	M medium	R roughing	ATORN ISO designation	ISO P	ISO M	ISO K	ISO N	ISO S	ISO H	Quality		Art.no.	€
○	○	○	VCGT 110302-MN5			○	●	○		**AWN 15 T**	10	**366680** 0116	**8.95**
					○	○	●	○		**APN 15 T**	10	366680 0317	**10.50**
			VCGT 110304-MN5			○	●	○		**AWN 15 T**	10	366680 0216	**8.95**
					○	○	●	○		**APN 15 T**	10	366680 0417	**10.50**
			VCGT 130302-MN5			○	●	○		**AWN 15 T**	10	366680 0616	**9.30**
			VCGT 130304-MN5			○	●	○		**AWN 15 T**	10	366680 0516	**9.30**
			VCGT 160404-MN5			○	●	○		**AWN 15 T**	10	366680 0717	**10.80**
					○	○	●	○		**APN 15 T**	10	366680 0917	**12.10**
			VCGT 160408-MN5			○	●	○		**AWN 15 T**	10	366680 1017	**10.80**
					○	○	●	○		**APN 15 T**	10	366680 1217	**12.10**
			VCGT 160412-MN5		○	○	●	○		**APN 15 T**	10	366680 1317	**12.10**
			VCGT 220530-MN5		○	○	●	○		**APN 15 T**	10	366680 1417	**16.10**

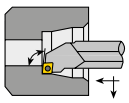
Universal application

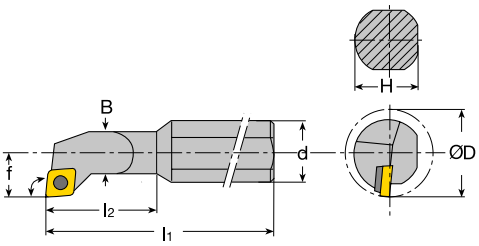


ISO	APN 15 T	AWN 15 T
ISO M Stainless steel	Vc = 50 - 140	
ISO K Cast iron	Vc = 120 - 200	Vc = 120 - 200
ISO N Al/non-ferrous	Vc = 100 - 3000	Vc = 100 - 2000
ISO S Superalloy	Vc = 18 - 120	Vc = 18 - 45
Vc = [m/min] f = [mm/rev] ap = [mm]	f = 0.1-0.5 ap = 0.1-4.5	

ATORN Boring bar, positive *SCLC*

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

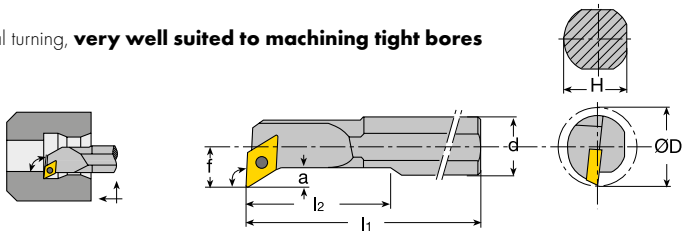




Contents	Right-hand Art.no.	€	Left-hand Art.no.	€
1x A0608H SCLCR/L 06 | 1x A0810J SCLCR/L 06 | 1x A1012K SCLCR/L 06 | 1x A1216M SCLCR/L 06	**321003** 1004	**169.00**	**321004** 1004	**169.00**

ATORN Boring bar set, positive SDUC

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



Contents	Right-hand Art.no.	€	Left-hand Art.no.	€
1x A0810H SDUCR/L 07 | 1x A1012K SDUCR/L 07 | 1x A1216M SDUCR/L 07	**321013** 1003	159.00	**321014** 1003	159.00

Clamp mounting with internal cooling

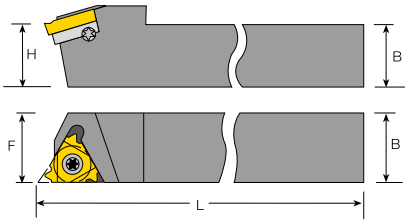
NEW

With internal cooling

- **External thread**
- **With internal coolant supply**
- **Note:** All clamp mountings are manufactured with a pitch angle of 1.5°. Other pitch angles are specified in the pitch angle table in the technical part of the catalogue.

External thread

Designation	B mm	L mm	F mm	l mm	H mm	Right-hand Art.no.	€	Left-hand Art.no.	€
DER 1616 H16	16	100	16	16	16	**340120** 0001	141.50		
DEL 1616 H16	16	100	16	16	16			**340130** 0001	141.50
DER 2020 K16	20	125	20	16	20	340120 0002	141.50		
DEL 2020 K16	20	125	20	16	20			340130 0002	141.50
DER 2525 M16	25	150	25	16	25	340120 0003	168.00		
DEL 2525 M16	25	150	25	16	25			340130 0003	168.00
DER 2525 M22	25	150	25	22	25	340120 0004	168.00		
DEL 2525 M22	25	150	25	22	25			340130 0004	168.00



Standard type

Threading insert set, full profile ISO, ER

- **Metric, ISO full profile**

10-part set, ground profile, external right-hand

Contents per set	ISO P M K S H HC 5630 Art.no.	€
2 x 16 ER 1.0 ISO 2 x 16 ER 1.25 ISO 2 x 16 ER 1.5 ISO 2 x 16 ER 1.75 ISO 2 x 16 ER 2.0 ISO	**342801** 5016	89.90

10-piece set, external right-hand, ground, with chip breaker type B

Contents	ISO P M K S H HC 5630 Art.no.	€
2 x 16 ER B 1.0 ISO 2 x 16 ER B 1.25 ISO 2 x 16 ER B 1.5 ISO 2 x 16 ER B 1.75 ISO 2 x 16 ER B 2.0 ISO	**342802** 5016	89.90

Dümmel WERKZEUGFABRIK *mini-børe* cutting tool sets

Vc/fz

mini-børe cutting tool set 1

- **Internal, external turning, recess turning and chamfering**
- Complete set including holder
- Internal machining from 3 mm bore hole ∅
- Version: **right-hand cutting**
- Cutting edge inserts: **CN45F-TiN-coated**
- Supplied in a case

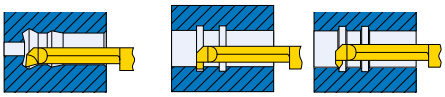


Fig. A Fig. E Fig. F

Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	Art.no.	€
676.0016-D							
645.0016-D							
111,645							
R 050.6-22	6	22	-	-	A		
R 050.5-20	5	20	-	-	A		
R 060.5-20	5	20	-	-	F		
R 050.4-16	4	16	-	-	A	**304601** 0001	**319.00**
R 050.3-16	3	16	-	-	A		
R 006.0200-22	6	22	1.8	2.0	E		
R 006.0150-22	6	22	1.8	1.5	E		
R 005.0200-20	5	20	1.0	2.0	E		
R 005.0150-20	5	20	1.0	1.5	E		
R 004.0100-16	4	16	0.8	1.0	E		

mini-børe cutting tool set 2

- **Internal recess turning**
- Complete set including holder
- Internal machining from 4 mm bore ∅
- Version: **right-hand cutting**
- Cutting edge inserts: **CN45F-TiN-coated**
- Supplied in a case

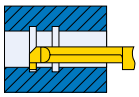


Fig. E

Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	Art.no.	€
676.0016-D							
645.0016-D							
111,645							
R 006.0200-22	6	22	1.8	2.0	E	**304601** 0002	**239.00**
R 006.0150-22	6	22	1.8	1.5	E		
R 005.0200-20	5	20	1.0	2.0	E		
R 005.0150-20	5	20	1.0	1.5	E		
R 004.0100-16	4	16	0.8	1.0	E		

mini-børe cutting tool set 3

- **Internal turning**
- Complete set including holder
- Internal machining from 3 mm bore hole ∅
- Version: **right-hand cutting**
- Cutting edge inserts: **CN45F-TiN-coated**
- Supplied in a case

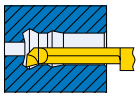
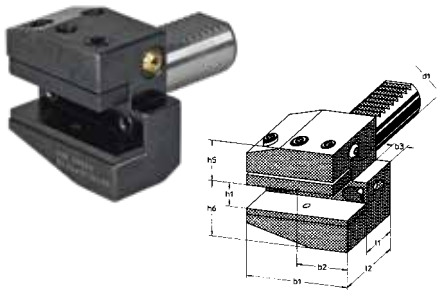


Fig. A

Designation	Bore hole Ø mm	Bore depth mm	Punching depth mm	Punching width mm	Illustration	Art.no.	€
676.0016-D							
645.0016-D							
111,645							
R 050.6-22	6	22	-	-	A	**304601** 0003	**269.00**
R 050.5-20	5	20	-	-	A		
R 050.4-16	4	16	-	-	A		
R 050.3-16	3	16	-	-	A		

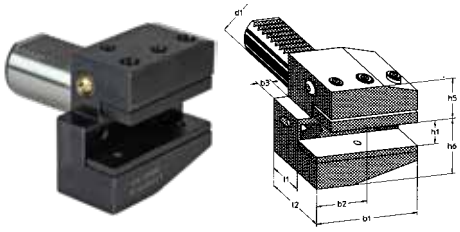
SARA® Square transverse holding fixture

- Surface hardness 58–60 HRc
- Core strength HV 950 N/mm²
- Hardness depth 0.8 mm ± 0.2 mm
- Fully burnished and precision-ground



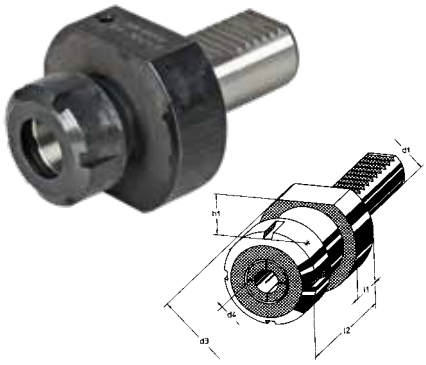
Form B1, right-hand, short

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	Art.no.	€
VDI 20	20	55	30	16	7	25	30	30	16	**446005** 0020	**48.50**
VDI 30	30	70	35	20	10	28	38	40	22	446005 0030	**54.00**
VDI 40	40	85	42.5	25	12.5	32.5	48	44	22	446005 0040	**60.00**
VDI 50	50	100	50	32	16	35	60	55	30	446005 0050	**79.00**



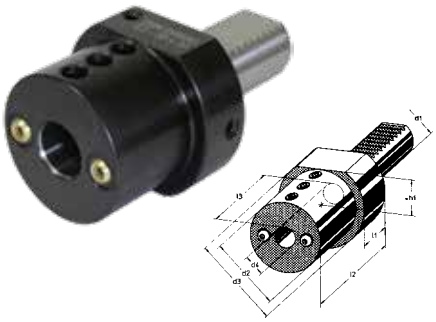
Form B2, left-hand, short

Shank	d1 mm	b1 mm	b2 mm	h1 mm	b3 mm	h5 mm	h6 mm	l1 mm	l2 mm	Art.no.	€
VDI 20	20	55	30	16	7	25	30	30	16	**446007** 0020	**48.50**
VDI 30	30	70	35	20	10	28	38	40	22	446007 0030	**54.00**
VDI 40	40	85	42.5	25	12.5	32.5	48	44	22	446007 0040	**60.00**
VDI 50	50	100	50	32	16	35	60	55	30	446007 0050	**79.00**



Form E4, cylindrical holding fixture with collet

Shank	Designation	Clamping range mm	d1 mm	h1 mm	l2 mm	l1 mm	d3 mm	Art.no.	€
VDI 20	ER16 426E	1 - 10	20	23	40	16	50	**446036** 2016	**72.50**
VDI 20	ER25 430E	2 - 16	20	23	50	16	50	446036 2025	**72.50**
VDI 20	ER32 470E	2 - 20	20	23	50	16	50	446036 2032	**72.50**
VDI 30	ER25 430E	2 - 16	30	28	57	22	68	446036 3025	**74.50**
VDI 30	ER32 470E	2 - 20	30	28	62	22	68	446036 3032	**74.50**
VDI 30	ER40 472E	3 - 26	30	28	75	22	68	446036 3040	**74.50**
VDI 40	ER25 430E	2 - 16	40	32.5	75	22	83	446036 4025	**74.50**
VDI 40	ER32 470E	2 - 20	40	32.5	62	22	83	446036 4032	**74.50**
VDI 40	ER40 472E	3 - 26	40	32.5	75	22	83	446036 4040	**74.50**
VDI 50	ER40 472E	3 - 26	50	35	75	30	98	446036 5040	**108.00**

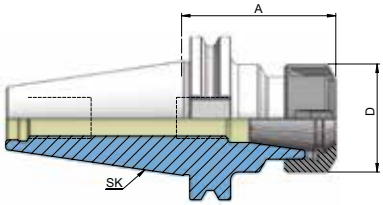


Form E2, for straight shank turning tools with an internal and external coolant supply

Shank	d1 mm	d4 mm	d3 mm	h1 mm	l1 mm	l2 mm	d2 mm	l3 mm	Art.no.	€
VDI 20	20	8	50	23	18	50	40	32	**446033** 2008	**56.50**
VDI 20	20	10	50	23	18	50	40	32	446033 2010	**56.50**
VDI 20	20	12	50	23	18	50	40	32	446033 2012	**56.50**
VDI 20	20	16	50	23	18	50	40	32	446033 2016	**56.50**
VDI 20	20	20	50	23	18	50	50	32	446033 2020	**56.50**
VDI 20	20	25	50	23	18	60	50	42	446033 2025	**56.50**
VDI 30	30	8	68	28	22	60	55	38	446033 3008	**56.50**
VDI 30	30	10	68	28	22	60	55	38	446033 3010	**56.50**
VDI 30	30	12	68	28	22	60	55	38	446033 3012	**56.50**
VDI 30	30	16	68	28	22	60	55	38	446033 3016	**56.50**
VDI 30	30	20	68	28	22	60	55	38	446033 3020	**56.50**
VDI 30	30	25	68	28	22	60	55	38	446033 3025	**56.50**
VDI 30	30	32	68	28	22	75	68	53	446033 3032	**56.50**
VDI 30	30	40	68	28	22	90	68	68	446033 3040	**56.50**
VDI 40	40	8	83	32.5	22	75	55	53	446033 4008	**57.50**
VDI 40	40	10	83	32.5	22	75	55	53	446033 4010	**57.50**
VDI 40	40	12	83	32.5	22	75	55	53	446033 4012	**57.50**
VDI 40	40	16	83	32.5	22	75	55	53	446033 4016	**57.50**
VDI 40	40	20	83	32.5	22	75	55	53	446033 4020	**57.50**
VDI 40	40	25	83	32.5	22	75	55	53	446033 4025	**57.50**
VDI 40	40	32	83	32.5	22	75	83	53	446033 4032	**57.50**
VDI 40	40	40	83	32.5	22	90	83	68	446033 4040	**57.50**
VDI 50	50	12	98	35	30	90	68	60	446033 5012	**79.00**
VDI 50	50	16	98	35	30	90	68	60	446033 5016	**79.00**
VDI 50	50	20	98	35	30	90	68	60	446033 5020	**79.00**
VDI 50	50	25	98	35	30	90	68	60	446033 5025	**79.00**
VDI 50	50	32	98	35	30	90	68	60	446033 5032	**79.00**
VDI 50	50	40	98	35	30	90	98	60	446033 5040	**79.00**
VDI 50	50	50	98	35	30	100	98	70	446033 5050	**79.00**

ATORN ER collet chuck

- **For DIN 6499 ER collets**
- **Pre-balanced to G 2.5 / 25,000 rpm**
- Alloyed case-hardened steel with a core tensile strength of min. 950 N/mm², case-hardened to HRc 60 ± 2 (HV 700 ± 50), case depth 0.8 mm ± 0.2 mm, burnished
- Taper angle tolerance quality < AT3 in accordance with DIN 7187 and DIN 2080, max. true running accuracy < 0.005 mm
- Supplied with clamping nut
- **Additional shank designs and AD/AF version available on request**
- **ER16 / 426E* tool holding fixtures supplied with hexagonal nut**



DIN 69893 Form A (HSK-A)

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

Shank	Clamping range mm	for collets	A mm	D mm	Art.no.	€
HSK-A 63	2 - 16	ER25 / 430E	100	42	**431009** 6316	**66.50**
HSK-A 63	2 - 20	ER32 / 470E	100	50	431009 6320	**69.50**
HSK-A 63	3 - 26	ER40 / 472E	120	63	431009 6326	**73.50**

DIN ISO 7388-1 / DIN 69871 AD

- Internal coolant supply

Shank	Clamping range mm	for collets	A mm	D mm	Art.no.	€
SK 40	2 - 16	ER25 / 430E	60	42	**431003** 4016	**37.00**
SK 40	2 - 20	ER32 / 470E	70	50	431003 4020	**39.50**
SK 40	3 - 26	ER40 / 472E	80	63	431003 4026	**42.00**

DIN ISO 7388-2 / MAS BT JIS B 6339

- Internal coolant supply

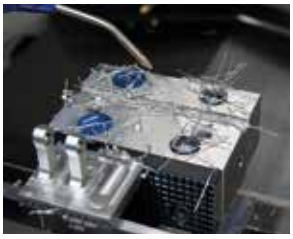
Shank	Clamping range mm	for collets	A mm	D mm	Art.no.	€
SK 40	2 - 16	ER25 / 430E	60	42	**431007** 4016	**37.00**
SK 40	2 - 20	ER32 / 470E	70	50	431007 4020	**39.50**
SK 40	3 - 26	ER40 / 472E	80	63	431007 4026	**42.00**

DIN 2080

Shank	Clamping range mm	for collets	A mm	D mm	Art.no.	€
SK 40	2 - 16	ER25 / 430E	50	42	**431001** 4016	**37.00**
SK 40	2 - 20	ER32 / 470E	50	50	431001 4020	**39.00**
SK 40	3 - 26	ER40 / 472E	80	63	431001 4026	**41.50**

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



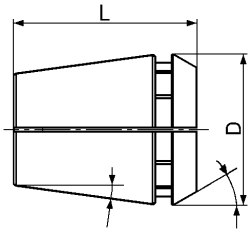
Aluminium cover

Description	Art.no.	€
10 x cover M10	**438110** 0010	**59.90**
10 x cover M12	438110 0012	**59.90**
10 x cover M16	438110 0016	**76.90**
5 x cover M20	438110 0020	**44.90**

SARA ER collets, 10 µm

DIN 6499-B

- Collapse of 1 mm
  (for ER11; 0.5 mm for clamping diameters of 1 to 2 mm)
- True running accuracy 10 µm



Single

Ø mm	ER11 4008E D=11.5 mm L=18 mm Art.no.	€	ER16 426E D=17 mm L=27.5 mm Art.no.	€	ER25 430E D=26 mm L=34 mm Art.no.	€	ER32 470E D=33 mm L=40 mm Art.no.	€	ER40 472E D=41 mm L=46 mm Art.no.	€
1	**433210** 0010	12.75	**433211** 0010	12.30						
1.5	433210 0015	12.75								
2	433210 0020	12.75	433211 0020	12.30	**433213** 0020	12.95				
2.5	433210 0025	12.75								
3	433210 0030	12.75	433211 0030	12.30	433213 0030	12.95	**433214** 0030	13.90	**433215** 0030	16.90
3.5	433210 0035	12.75								
4	433210 0040	12.75	433211 0040	12.30	433213 0040	12.95	433214 0040	13.90	433215 0040	16.90
4.5	433210 0045	12.75								
5	433210 0050	12.75	433211 0050	12.30	433213 0050	12.95	433214 0050	13.90	433215 0050	16.90
5.5	433210 0055	12.75								
6	433210 0060	12.75	433211 0060	12.30	433213 0060	12.95	433214 0060	13.90	433215 0060	16.90
6.5	433210 0065	12.75								
7	433210 0070	12.75	433211 0070	12.30	433213 0070	12.95	433214 0070	13.90	433215 0070	16.90
8			433211 0080	12.30	433213 0080	12.95	433214 0080	13.90	433215 0080	16.90
9			433211 0090	12.30	433213 0090	12.95	433214 0090	13.90	433215 0090	16.90
10			433211 0100	12.30	433213 0100	12.95	433214 0100	13.90	433215 0100	16.90
11					433213 0110	12.95	433214 0110	13.90	433215 0110	16.90
12					433213 0120	12.95	433214 0120	13.90	433215 0120	16.90
13					433213 0130	12.95	433214 0130	13.90	433215 0130	16.90
14					433213 0140	12.95	433214 0140	13.90	433215 0140	16.90
15					433213 0150	12.95	433214 0150	13.90	433215 0150	16.90
16					433213 0160	12.95	433214 0160	13.90	433215 0160	16.90
17							433214 0170	13.90		
18							433214 0180	13.90	433215 0180	16.90
19							433214 0190	13.90		
20							433214 0200	13.90	433215 0200	16.90
22									433215 0220	16.90
25									433215 0250	16.90
26									433215 0260	16.90

433220 1110

Set on a wooden stand

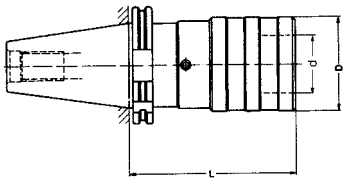
- ER11 = increasing in increments of 0.5 mm, ER16-ER40 = increasing in increments of 1 mm

Designation	Contents per set	Clamping range mm	Art.no.	€
ER11 4008E	13-pcs.	1 - 7	**433220** 1110	169.00
ER16 426E	10-pcs.	1 - 10	433220 1610	139.00
ER25 430E	15-pcs.	2 - 16	433220 2515	209.00
ER32 470E	18-pcs.	3 - 20	433220 3218	259.00
ER40 472E	24-pcs.	3 - 26	433220 4023	409.00

433220 2515

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
- Further sizes are available on request



DIN ISO 7388-1 / DIN 69871 A

Shank	d mm	D mm	A mm	L mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	Art.no.	€
SK 40	19	38	60	60	9	9	M 3 - M 12	**442003** 4012	**135.00**
SK 40	31	55	100	98	15	15	M 8 - M 20	442003 4024	**175.00**

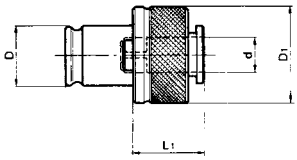
DIN ISO 7388-2 / MAS BT JIS B 6339

Shank	d mm	D mm	A mm	Length compensation, pressure mm	Length compensation, tension mm	Thread	Art.no.	€
SK 40	19	38	68	9	9	M 3 - M 12	**442007** 4012	**139.00**
SK 40	31	55	93	15	15	M 8 - M 20	442007 4024	**179.00**

SARA® Quick-release inserts

- More sizes available on request

With safety coupling



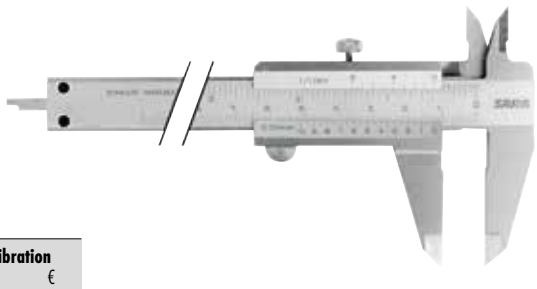
With safety coupling

d mm	Square mm	D mm	L mm	D1 mm	Thread	DIN	Art.no.	€
2.8	2.1	19	25	32	M 2	371	**442505** 1928	**36.00**
3.5	2.7	19	25	32	M 3	371	442505 1935	**36.00**
4	3.0	19	25	32	M 3.5	371	442505 1940	**36.00**
4.5	3.4	19	25	32	M 4	371	442505 1945	**36.00**
6	4.9	19	25	32	M 5 / M 6	371	442505 1960	**36.00**
8	6.2	19	25	32	M 8	371	442505 1980	**36.00**
10	8	19	25	32	M 10	371	442505 1910	**36.00**
7	5.5	19	25	32	M 10	376	442505 1970	**36.00**
9	7	19	25	32	M 12	376	442505 1990	**36.00**
11	9	19	25	32	M 14	376	442505 1911	**36.00**
6	4.9	31	34	50	M 5 / M 6	371	442505 3106	**53.00**
8	6.2	31	34	50	M 8	371	442505 3108	**53.00**
10	8	31	34	50	M 10	371	442505 3110	**53.00**
7	5.5	31	34	50	M 10	376	442505 3107	**53.00**
9	7	31	34	50	M 12	376	442505 3109	**53.00**
11	9	31	34	50	M 14	376	442505 3111	**53.00**
12	9	31	34	50	M 16	376	442505 3112	**53.00**
14	11	31	34	50	M 18	376	442505 3114	**53.00**
16	12	31	34	50	M 20	376	442505 3116	**53.00**
18	14.5	31	34	50	M 22	376	442505 3118	**53.00**

SARA® Vernier callipers for left-handed users

DIN 862 | INOX

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



Measurement range mm	Jaw length mm	Vernier mm/inch	Art.no.	€	DAkkS calibration Art.no.	€
150	40	0.05 x 1/128"	**500905** 0150	**39.90**	072008 D001	**14.00**

SARA® Digital outside micrometer IP65

IP65 | DIN 863/1 | 0,5 mm | 0,001 mm

- Sturdy, with ratchet
- Painted steel frame with hand protection
- Spindle fixed by a locking lever
- Spindle Ø 6.5 mm
- Calibration including setting gauge
- Supplied with CR2032 battery (no. 548079 6032) and adjustment key, versions over 25 mm include setting gauge

Measurement range mm	Art.no.	€	DAkkS calibration Art.no.	€
0-25	**503491** 0025	**89.00**	070160 D001	**18.00**
25-50	503491 0050	**99.00**	073103 D047	**33.00**
50-75	503491 0075	**114.00**	073103 D053	**36.00**
75-100	503491 0100	**125.00**	073103 D053	**36.00**

WE'RE THERE WHEN

YOU NEED US.

NO MATTER WHERE:

24-HOUR DELIVERY ACROSS EUROPE

THAT'S POWER TO PRODUCE

SARA® Digital dial indicator

Werks-norm | 0,01 mm | inch / mm

- Extremely easy to read with large LCD display
- External ring Ø 58 mm
- Clamping shank Ø 8 mm
- Probe tip thread M2.5
- **Functions:** mm/inch, ON/OFF, ZERO
- Supplied with CR 2032 battery, No. 548079 6032

Measurement range mm/inch	Reading mm/inch	Error limit mm	Art.no.	€	DAkkS calibration Art.no.	€
12,57/.5	0,01/.0005	0.03	**512015** 1201	**69.90**	073009 D004	**22.00**

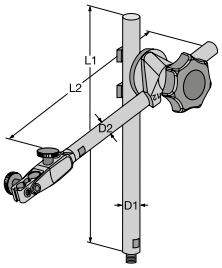
NOGA Magnetic measuring stands *PH*

- For quickly and precisely positioning dial indicators
- Improved fine adjustment on the magnetic foot
- Strong, switchable magnetic foot
- Universal holding fixture for common dial indicators
- Robust arm mechanism with three-point system
- Measuring instrument holding fixture: Ø 8 mm, 6 mm, 3/8 inch and dovetail

Fine adjustment holding fixture

Fine adjustment magnetic foot

Arm mechanism



550110 6400

Fine adjustment on the measuring instrument holding fixture

Model	L1 mm	D1 mm	L2 mm	D2 mm	Magnetic foot L x W x H mm	Retention force N	Magnetic foot thread	Art.no.	€
PH 6400	203	14	185	12	60 x 50 x 55	800	M 8	**550110** 6400	**68.00**
PH 6600	260	16	225	16	75 x 50 x 55	1000	M 8	550110 6600	**111.50**
PH 6800	350	18	225	16	120 x 50 x 55	1300	M10 x 1.25	550110 6800	**134.00**

550110 2040

Fine adjustment on magnetic foot

Model	L1 mm	D1 mm	L2 mm	D2 mm	Magnetic foot L x W x H mm	Retention force N	Magnetic foot thread	Art.no.	€
PH3100	120	10	110	8	40 x 30 x 35	320	M 5	**550110** 3100	**44.50**
PH2040	203	14	185	12	60 x 50 x 55	800	M 8	550110 2040	**69.00**
PH4016	260	16	225	16	75 x 50 x 55	1000	M 8	550110 4016	**111.50**

550110 6610

Measuring stand w/o base, fine adjustment – measuring instrument holding fixture

- Measuring instrument holding fixture: Ø 8 mm, 6 mm, 3/8 inch and dovetail

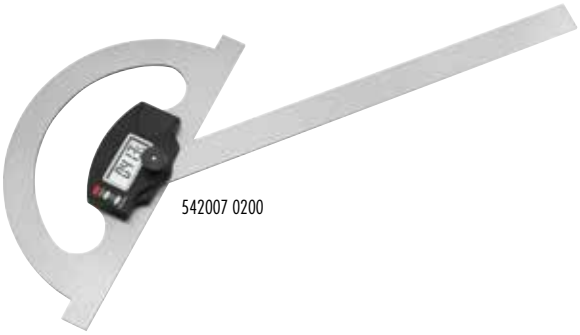
Model	L1 mm	D1 mm	L2 mm	D2 mm	Magnetic foot thread	Art.no.	€
PH 6410	203	14	185	12	M 8	**550110** 6401	**60.50**
PH 6610	260	16	225	16	M 8	550110 6610	**93.00**
PH 6810	350	18	225	16	M10 x 1.25	550110 6810	**98.50**

SARA® Digital protractor

- Adjustment and zeroing possible on any level surface
- Measuring bar can be fixed in any position using the knurled-head screw
- Stainless steel, precision-ground measuring edges
- Measurement range: 180 °
- Reading: 0.05 °
- Accuracy: +/- 0.3°
- Functions: user-defined zeroing, hold value, rotate display for overhead measurement
- Supplied in a synthetic leather pouch with 1x CR2032 battery, no. 548079 6032

542007 0120

542007 0150


542007 0200

Protractor mm	Rail length mm	Art.no.	€	DAkkS calibration Art.no.	€
120	150	**542007** 0120	**85.00**	075006 D001	**32.00**
150	200	542007 0150	**115.00**	075006 D001	**32.00**
200	300	542007 0200	**145.00**	075006 D001	**32.00**

ATORN LED magnifier lamp

- Even, largely anti-glare lighting provided by 90 LEDs (colour temperature 6,500 K)
- Extremely long-life LEDs, no risk of breakage
- High-quality glass lenses with 1.75x or 2.25x magnification
- Metal arm with plastic covering, no risk of pinching
- Particularly slim magnifier casing with replaceable magnifier cover
- Extremely low power consumption (only around 9 W!)
- Table clamp

Enlargement	Lens Ø mm	Projection mm	Art.no.	€
1.75 times	125	1060	**560160** 0175	**159.00**
2.25 times	125	1060	560160 0225	**169.00**

SARA® Modular emulsion mist separator *Ultra-Cleaner*

NEW

Self-regulating separator

We'll never let you get caught in the

mist.

- **Mechanical, with patented X-Cyclone® agglomerator system**
- **Thanks to European ErP directives, energy savings of several thousand euros can be had over conventional air purifiers.**
- **Functions without disposable filters – no subsequent costs!**
- Effective separation of oils, emulsions, other fluids and solid particles
- Complete unit as a recirculating device with an integrated ventilator
- Robust and torsion-free housing made of powder-coated stainless steel (RAL 7035 – light grey), smooth inner surface and with service opening
- Bottom section designed as an oil and water-tight collection tray
- Collecting tray fitted with drain cock for emptying, optional siphon available
- Thanks to the diverse installation and assembly possibilities of the Ultra-Cleaner system, most extraction problems arising in connection with various machining processes and the use of different coolant lubricants and oils can be solved with a single appliance.
- Developed, designed and manufactured in conformity with the relevant EU directives
- Ultra-Cleaners are tested for flame penetration in accordance with DIN EN 16282
- Separation efficiencies tested and confirmed by the Fraunhofer Institute for Toxicology and Aerosol Research
- Permissible ambient temperature for all models 0 °C to 50 °C
- **Supplied with:** Ultra Cleaner with frequency converter and motor cover, agglomerator and X-Cyclone® filter insert
- **Pricing:** ex works, including packaging
- **Filter system automatically regulates the motor output according to the degree of contamination of the separator. This guarantees that the volume flow, inflow velocity and separation efficiency remain the same until complete contamination (red status indicator).**
- Digital wear indicator

Model	Volume flow min. m³/h	Volume flow max. m³/h	Dimensions L x W x H mm	Connection Ø mm	Weight kg	Noise level dB	Motor output kW	I(A)	Voltage V	Right-hand Art.no.	Right-hand €	Left-hand Art.no.	Left-hand €
UCS-Mini	0	500	360 x 355 x 565	150	20	50	0.157	1.1	230	**909100** 0001	**2,049.00**	**909105** 0001	**2,049.00**
UC1SD	200	1000	865 x 360 x 640	200	44	67	0.75	1.6	400	909100 0010	**3,299.00**	909105 0010	**3,299.00**
UC2SD	400	2000	900 x 440 x 720	200	62	69	1.5	3.2	400	909100 0020	**4,589.00**	909105 0020	**4,589.00**
UC3SD	600	3000	945 x 520 x 800	300	93	69	2.2	4.3	400	909100 0030	**6,589.00**	909105 0030	**6,589.00**

SARA® Emulsion mist separator *Ultra-Eco compact*

Compact and energy-efficient

- **CFD-optimised high-performance separation system with a separation rate of up to 99.9999 %**.
- **Thanks to European ErP directives, energy savings of several thousand euros can be had over conventional air purifiers**.
- Effective separation of aerosols containing liquids
- Compact design, direct mounting on the machine
- Robust and torsion-free housing made of stainless steel
- Integrated long-term HEPA filter
- Designed, constructed and produced in Germany
- **Supplied with:** Ultra-Eco compact emulsion mist separator, HEPA filter
- **Pricing:** ex works, including packaging

Model	Volume flow min. m³/h	Volume flow max. m³/h	Dimensions L x W x H mm	Connection Ø mm	Weight kg	Noise level dB	Motor output kW	I(A)	Voltage V	Art.no.	€
UEC-1000	1000	0	345 x 345 x 595	200	27	67	0.168	1.4	230	**909090** 0010	**2,179.00**

SARA® *Compact Clean* bio-parts washing table

NEW

Includes initial filling

- **Easily removes oil, grease and emulsion from tools, components and accessories**
- Protects employees and the environment
- 3-stage filter system located in the tank drain (coarse, fine and bag filters and magnet)
- Control box, contains all control and pump equipment
- Ergonomic design
- Easy transport by pallet truck or rail system with rollers (optional)
- Drainage device facilitates the exchange of liquid
- **No hazardous substances, no dangerous goods, no fire hazard**
- **Supplied with:** Bio-parts washing table, 5 x 20 ltr. Canister for BT100 bio-parts cleaner
- **Pricing:** ex works, including packaging

Device dimensions	Working height mm	Supported load kg	Work surface mm	Contents l	Operating temperature min.	Operating temperature max.	Material	Weight kg	Rated voltage	Art.no.	€
1060 x 940 x 600 mm	940 / 800	100	700 x 480	100	15	48	LDPE - polyethylene	55	230	**987001** 0010	**1,999.00**

SARA® Bio-parts cleaning agent *BT100*

NEW

Easily removes oil, grease and emulsion

- **First biological cleaner that can be used in all common manual and automatic parts cleaning systems – we are happy to help with optimisation**
- Microorganisms in the cleaner break down the removed oil
- Suitable for all common materials
- Ideal for any modern workshop
- **Non-hazardous, VOC reduction, NSF certification**
- Can be used in the Compact Clean bio-parts washer, parts washers and high-pressure parts washers
- **Application area:** Maintenance and servicing of machine parts, components, tools, etc.

Designation	Contents l	Art.no.	€
Bio-parts cleaner	20	**987002** 0020	**147.50**

SARA® Filter fleece

up to 30%
savings in maintenance costs

- For the protection of electrical and electronic equipment for industrial manufacturing plants and electric motors against oil mist and dust
- The inspection for replacing the filter fleece is visual. If the filter is covered in impurities, it must be replaced.
- Magnetic holder

991001 6006

Filter fleece for switch cabinets
- each roll contains 110 sheets
- Appropriate for machine tools, cooling systems, control cabinets, robots, CNC machines

Width mm	Art.no.	€
200	**991001** 2012	**38.00**
300	991001 3012	**67.00**
400	991001 4006	**77.40**
500	991001 5006	**88.40**
600	991001 6006	**97.50**

Filter fleece for compressors
- Each roll contains 60 sheets
- Sheet length 200 mm
- Appropriate for compressors, heat exchangers, air-conditioning units
- **Other lengths up to 1500 mm available on request**

Width mm	Art.no.	€
200	**991003** 2012	**39.95**
300	991003 3012	**70.40**
400	991003 4006	**81.20**
500	991003 5006	**92.50**
600	991003 6006	**103.00**

Filter fleece for electric motors
- Appropriate for electric motors
- **Supplied with:** 12 filter fleeces, 10 clamping rings, 1 plastic fastening system with magnet

Ø mm	Art.no.	€
100	**991005** 1036	**43.10**
120	991005 1236	**45.30**
150	991005 1518	**52.30**
175	991005 1718	**56.70**
200	991005 2008	**61.40**
230	991005 2308	**70.40**
260	991005 2605	**77.40**
300	991005 3005	**83.90**

Universal absorbent mats

- **High absorption capacity ensures a clean and safe workplace**
- Simply place the mat over the spill
- Rapid absorption and high strength, even with fully saturated mats
- Saves on disposal costs due to the reduced volume
- Perforation enables mats to be laid as needed
- For absorbing oil, coolants, solvents and water
- Ideal for wiping off machinery, laying out tool boxes and covering work areas
- The exceptionally hard-wearing 4-in-1® mats (MAT284 and MAT235) can be used as an underlay, roll, wipe and absorbent sock
- **Price per pack**

25%

Mats

Type	Dimensions	Thickness	Contents	Absorption capacity	Art.no.	€
MAT 231	38 x 51 cm	Double thickness	50 in box	42 l	**910101** 0001	**67.50**
MAT 203	38 x 51 cm	Double thickness	100 in box	84 l	910101 0020	**130.00**
MAT 204	38 x 51 cm	Single thickness	200 in box	84 l	910101 0021	**129.50**
MAT 2101	41 x 51 cm	Quadruple thickness	50 in dispenser box	84 l	910101 0042	**122.00**
MAT 240	38 x 51 cm	Double thickness	100 in dispenser box	84 l	910101 0025	**136.00**

MAT 231

Roll material, perforated every 25.5 cm

Type	Dimensions	Thickness	Contents	Absorption capacity	Art.no.	€
MAT 137	76 cm x 46 m	Single thickness	1 roll	76 l	**910101** 0032	**109.00**
MAT 220	38 cm x 46 m	Double thickness	2 rolls	76 l	910110 0030	**217.00**
MAT 202-01	61 cm x 46 m	Double thickness	1 roll	123 l	910110 0035	**172.00**
MAT 230	76 cm x 46 m	Double thickness	1 roll	152 l	910110 0010	**214.00**
MAT 2102	81 cm x 23 m	Quadruple thickness	1 roll	152 l	910110 0033	**199.50**

MAT 230

MAT 202-01

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

Type	Dimensions	Contents	Absorption capacity	Art.no.	€
MAT 284	41 cm x 24 m	1 roll in dispenser box	35 l	**910110** 0060	**96.50**
MAT 235	41 cm x 46 m	1 roll	66 l	910110 0061	**172.00**

MAT 284

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