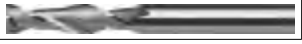
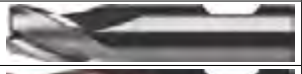
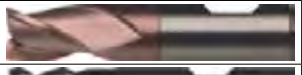
Solid carbide profiling and special cutter

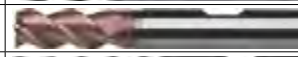
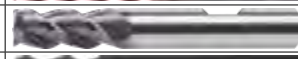
		Ø	Cutting material	Z	Type	Surface	P	M	N	K	S	H		page
16564	Solid carbide graver Pre-profiled	3-10 mm	VHM	2 PCS		Uncoated	●	○	●	●	○			-
16521	Cemented carbide keyway cutter	10.5-32.5 mm	Carbide	8 PCS	N	Uncoated	●	○	○	●	○			312
16525	Cemented carbide T-groove cutter	16-40 mm	Carbide	4 PCS	N	Uncoated	●	○	○	●	○			312
16530216-240	Cemented carbide angular milling cutter	16-40 mm	Carbide	6 PCS		Uncoated	●	○	○	●	○			312-313
16711625-850	Solid carbide quarter circle milling cutter Concave	0.25-2.5 mm	VHM	2 PCS	N	Uncoated	●	●	●	●	○			313
16711905-960	Solid carbide quarter circle milling cutter Concave	0.5-6.0 mm	VHM	4 PCS	N	TiAlN	●	●	●	●	○			313
16704	Solid carbide chamfer cutter 2 cutting edges, uncoated	3-20 mm	VHM	2 PCS	N	Uncoated	●	●	●	●	○			314
16705	Solid carbide chamfer cutter 2 cutting edges, uncoated	1-20 mm	VHM	2 PCS	N	Uncoated	●	●	●	●	○			314
16706	Solid carbide chamfer cutter 2 cutting edges, uncoated	3-20 mm	VHM	2 PCS	N	Uncoated	●	●	●	●	○			314

universal machining – 2 cutters

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16733	3-20 mm	2 PCS	W	TiAlN	HB parallel shank		●	●					316
16727001-025	0.25-1.8 mm	2 PCS	N	Uncoated	HB parallel shank	●	●	●	●	○			316-317
16728001-025	0.25-1.8 mm	2 PCS	N	ULTRA	HB parallel shank	●	●	●	●	○			316-317
16717030-200	3-20 mm	2 PCS	N	TiAlN	HB parallel shank	●	●	●	●	○			317
16713	0.3-2.5 mm	2 PCS	N	Uncoated	HA parallel shank	●	●	●	●	○			-
16725	1-16 mm	2 PCS	N	Uncoated	HA parallel shank	●	●	●	●	○			318
16750	3-20 mm	2 PCS	N	Uncoated	HA parallel shank	●	●	●	●	○			318

universal machining – 3 cutters

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16760	2-12 mm	3 PCS	N	Uncoated	HB parallel shank	●	●	●	●	○			319
16763	2-12 mm	3 PCS	N	ULTRA	HB parallel shank	●	●	●	●	○			319
16770	2-20 mm	3 PCS	W	Uncoated	HB parallel shank	●	●	●	○	○			-
16771	2-20 mm	3 PCS	W	ULTRA	HB parallel shank	●	●	●	○	○			-
16787	2.8-20 mm	3 PCS	N	Uncoated	HB parallel shank	●	●	○	●	○			319-320
16788	2.8-20 mm	3 PCS	N	ULTRA	HB parallel shank	●	●	○	●	○			319-320
16778	3-20 mm	3 PCS	N	TiAlN	HB parallel shank	●	●	○	●	●			320

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16781030-200	3-20 mm	3 PCS	N	TiAlN	HB parallel shank	●	●	●	●	○			321
16784031-201	3-20 mm	3 PCS	N	TiAlN	HA parallel shank	●	●	●	●	○			321
16780	1-12 mm	3 PCS	N	Uncoated	HA parallel shank	●	●	●	●	○			321-322
16790	2-20 mm	3 PCS	N	Uncoated	HB parallel shank	●	●	●	●	○			322
16792	2-20 mm	3 PCS	N	ULTRA	HB parallel shank	●	●	●	●	○			322
16793	3.5-20 mm	3 PCS	N	Uncoated	HB parallel shank	●	●	●	●	○			323
16794	3.5-20 mm	3 PCS	N	ULTRA	HB parallel shank	●	●	●	●	○			323
16799530-700	3-20 mm	3 PCS	N	TiAlN	HB parallel shank	●	●	●	●	○			323-324
16785	1-20 mm	3 PCS	N	Uncoated	HA parallel shank	●	●	●	●	○			324

universal machining – 4 cutters

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16828	2-20 mm	4 PCS	W	TiAlN	HB parallel shank		●	●		○			324-325
16830	2-20 mm	4 PCS	N	Uncoated	HA parallel shank	●	●	●	●	○			325
16822020-200	3-20 mm	4 PCS	N	TiAlN	HA parallel shank	●	●	●	●	○			325-326
16823031-201	3-20 mm	4 PCS	N	TiAlN	HB parallel shank	●	●	●	●	○			325-326
16837306-325	6-25 mm	4 PCS	H	TiAlN	HB parallel shank	●			●		●		326
16838302-305	2-5 mm	4 PCS	H	TiAlN	HB parallel shank	●			●		●		326
16857	2-20 mm	4 PCS	N	ULTRA	HB parallel shank	●	●	●	●	○			327
16862040-201	4-20 mm	4 PCS	N	ULTRA	HA parallel shank	●	○			○	●		327-328
16851200-220	3-25 mm	4 PCS	N	ULTRA	HB parallel shank	●	●	●	●	●			329
16851284-294	6-20 mm	4 PCS	N	ULTRA	HB parallel shank	●	●	●	●	●			330
16853201-217	3-20 mm	4 PCS	N	TiAlN	HB parallel shank	●	○	●	●	○			330-331

universal machining – 6-8 cutters

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16879006-020	6-20 mm	6 PCS	N	AlOXSN²	HB parallel shank	●	●	●	●	●			-
16886	6-20 mm	8 PCS	VA	ULTRA	HB parallel shank	●	●	●	●	●			333-334
16876040-200	4-20 mm	6 PCS	N	TiAlN	HB parallel shank	●	●	●	○	○			334
16881040-200	4-20 mm	6 PCS	N	TiAlN	HB parallel shank	●	●	●	○	○			334
16883040-200	4-20 mm	6 PCS	H	TiAlN	HA parallel shank	●			○		●		335
16883051-251	5-25 mm	8 PCS	H	TiAlN	HA parallel shank	●			○		●		335

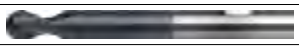
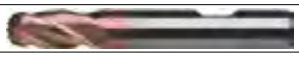
universal machining – roughing cutter

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16848040-200	4-20 mm	3 PCS	NR	ULTRA	HB parallel shank	●	●	●	●	●			331-332
16848041-201	4-20 mm	4 PCS	NR	ULTRA	HB parallel shank	●	●	●	●	●			331-332
16847	6-25 mm	4 PCS	NF	TiAlN	HB parallel shank	●	○		●	○			-
16849460-900	6-20 mm	4 PCS	VA	ULTRA	HA parallel shank	●	○	●	●	○			332
16849461-901	6-20 mm	6 PCS	VA	ULTRA	HB parallel shank	●	○	●	●	○			332
16849306-320	6-20 mm	4 PCS	HR	TiAlN	HB parallel shank	●	○	●	●	○			332-333
16852040-251	4-25 mm	3 PCS	NR	TiAlN	HB parallel shank	●		●	●				333
16852050-200	5-20 mm	3 PCS	NR	TiAlN	HB parallel shank	●		●	●				333

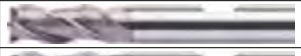
universal machining – torus milling cutter

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16856	3-20 mm	4 PCS	N	ULTRA	HB parallel shank	●	●	●	●	●			335-336
16839351-379	5-20 mm	4 PCS	N	ULTRA	HB parallel shank	●	●	●	●	●			-
16862500-509	2-16 mm	3 PCS	H	TiAlN	HA parallel shank	●	○			○	●		336-337

universal machining – radius cutter

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16738	0.25-2.5 mm	2 PCS	N	Uncoated	HA parallel shank	●	●	●	●	○			337
16740	3-16 mm	2 PCS	N	Uncoated	HB parallel shank	●	○	●	●	○			-
16741020-200	2-20 mm	2 PCS	N	TiAlN	HB parallel shank	●	○	●	●	○			337-338
16744060-200	6-20 mm	2 PCS	N	Uncoated	HB parallel shank	●	○	●	●	○			-
16745030-050	3-5 mm	2 PCS	N	ULTRA	HB parallel shank	●	○	●	●	○			-
16743	6-20 mm	2 PCS	N	TiAlN	HB parallel shank	●	○	●	●	○			338
16749	1-10 mm	2 PCS	N	TiAlN	HA parallel shank	●	○	●	●	○			338-339
16868060	6-6 mm	4 PCS	N	ULTRA	HB parallel shank	●	●	●	●	●			339
16868061	6-6 mm	4 PCS	N	ULTRA	HB parallel shank	●	●	●	●	●			339
16866	6-16 mm	4 PCS	NR	ULTRA	HB parallel shank	●	○	○	●				-

HPC POWER solid carbide mill

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16858104-120	4-20 mm	3 PCS	N	ULTRA	HB parallel shank	●	○	●	●	○			340-341
16858206-220	6-20 mm	3 PCS	N	ULTRA	HB parallel shank	●	○	●	●	○			341-342
16854304-320	4-20 mm	4 PCS	N	ULTRA	HB parallel shank	●			●				342-343
16855204-220	4-20 mm	4 PCS	VA	ULTRA M	HB parallel shank		●	○		●			344

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16855406-420	6-20 mm	4 PCS	VA	ULTRA M	HB parallel shank		●	○		●			344-345
16855606-621	6-20 mm	4 PCS	H	ULTRA H	HB parallel shank	●			○		●		345-346

solid carbide TVC cutter – trochoidal milling

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16859002-012	6-20 mm	5 PCS	N	ULTRA	HB parallel shank	●			●				347
16859020-028	6-16 mm	4 PCS	N	ULTRA	HB parallel shank	●			●				347
16859100-110	6-20 mm	5 PCS	VA	ULTRA M	HB parallel shank		●	●		●			348
16859120-128	6-16 mm	4 PCS	VA	ULTRA M	HB parallel shank		●	●		●			348
16859140-154	4-20 mm	4 PCS	W	Uncoated	HB parallel shank			●					348
16859160-172	4-16 mm	4 PCS	W	Uncoated	HB parallel shank			●					348
16665700-725	6-20 mm	3 PCS	W	ULTRA N PRO	HA parallel shank			●					-

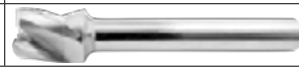
Solid carbide milling cutter WIDIA VariMill™

Solid carbide mills for machining aluminium

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16652105-114	1.5-16 mm	1 PCS	W	Uncoated	HA parallel shank			●					315, 349
16700	1-10 mm	1 PCS	W	Uncoated	HA parallel shank			●					315, 350
16665300-340	1-12 mm	1 PCS	W	ULTRA N PRO	HA parallel shank			●					350, 355, 356
16652010-095	0.5-2.5 mm	2 PCS	W	ULTRA N	HA parallel shank			●					351
16652120-128	3-20 mm	2 PCS	W	Uncoated	HB parallel shank			●					351
16652140-147	3-16 mm	2 PCS	W	ULTRA N	HB parallel shank			●					352
16665100-140	3-20 mm	2 PCS	W	ULTRA N PRO	HA parallel shank			●					352
16665200-240	3-20 mm	2 PCS	W	ULTRA N PRO	HA parallel shank			●					353
16815	4-25 mm	2 PCS	W	Uncoated	HA parallel shank			●					353
16652220-228	3-20 mm	3 PCS	W	Uncoated	HB parallel shank			●					354
16655010-070	4-16 mm	3 PCS	W	Uncoated	HA parallel shank			●					354-355
16652270-278	3-20 mm	3 PCS	W	ULTRA N	HA parallel shank			●					355
16665300-340	3-20 mm	3 PCS	W	ULTRA N PRO	HA parallel shank			●					350, 355, 356
16665400-435	4-20 mm	3 PCS	W	ULTRA N PRO	HA parallel shank			●					356
16665500-525	6-20 mm	3 PCS	W	ULTRA N PRO	HA parallel shank			●					356-357
16652300-308	3-20 mm	3 PCS	W	Uncoated	HA parallel shank			●					357

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16652320-328	3-20 mm	3 PCS	W	ULTRA N	HA parallel shank			●					357-358
16655100-150	6-20 mm	3 PCS	WF	Uncoated	HA parallel shank			●					358
16652410-415	6-20 mm	3 PCS	WF	ULTRA N	HB parallel shank			●					358-359
16652420-425	6-20 mm	3 PCS	WF	ULTRA N	HA parallel shank			●					359
16665800-825	6-20 mm	3 PCS	WF	ULTRA N PRO	HA parallel shank			●					359
16665900-925	6-20 mm	3 PCS	WF	ULTRA N PRO	HA parallel shank			●					360
16652510-518	3-20 mm	4 PCS	W	ULTRA N	HB parallel shank			●					360
16652521-527	4-16 mm	4 PCS	W	ULTRA N	HA parallel shank			●					361
16652533-537	6-16 mm	4 PCS	W	ULTRA N	HA parallel shank			●					361
16655200-250	6-20 mm	4 PCS	W	Uncoated	HA parallel shank			●					361-362
16655300-350	6-20 mm	4 PCS	W	Uncoated	HA parallel shank			●					362
16652600-608	3-20 mm	4 PCS	W	ULTRA N	HA parallel shank			●					362-363
16665600-640	3-20 mm	4 PCS	W	ULTRA N PRO	HA parallel shank			●					363
16652611-618	4-16 mm	4 PCS	W	ULTRA N	HA parallel shank			●					363-364
16653010-095	0.5-2.5 mm	2 PCS	W	ULTRA N	HA parallel shank			●					364
16653105-180	3-16 mm	2 PCS	W	ULTRA N	HA parallel shank			●					364-365
16653205-280	3-16 mm	2 PCS	W	ULTRA N	HA parallel shank			●					365
16653320-365	6-16 mm	2 PCS	W	ULTRA N	HA parallel shank			●					365-366
16666005-080	3-16 mm	2 PCS	W	ULTRA N PRO	HA parallel shank			●					366
16666100-175	3-16 mm	2 PCS	W	ULTRA N PRO	HA parallel shank			●					366-367
16653620-680	5-20 mm	3 PCS	W	ULTRA N	HB parallel shank			●					367
16666200-270	6-20 mm	3 PCS	W	ULTRA N PRO	HA parallel shank			●					367-368
16651	6-25 mm	3 PCS	WF	CALIDA Z	HA parallel shank			●					368
16655400-490	10-20 mm	4 PCS	W	Uncoated	HA parallel shank			●					369
16655500-590	10-20 mm	4 PCS	W	Uncoated	HA parallel shank			●					369
16654010-095	0.5-2.5 mm	2 PCS	W	ULTRA N	HA parallel shank			●					370
16654105-140	3-16 mm	2 PCS	W	ULTRA N	HA parallel shank			●					370
16654205-240	3-16 mm	2 PCS	W	ULTRA N	HA parallel shank			●					370-371
16654305-330	3-12 mm	2 PCS	W	ULTRA N	HA parallel shank			●					371
16667005-040	3-16 mm	2 PCS	W	ULTRA N PRO	HA parallel shank			●					371-372
16667100-135	3-16 mm	2 PCS	W	ULTRA N PRO	HA parallel shank			●					372

Solid carbide milling cutter, plastic processing

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16656010-120	2-12 mm	1 PCS	Left-hand twist	Uncoated	HA parallel shank			●					373
16656200-310	2-12 mm	1 PCS	Right-hand twist	Uncoated	HA parallel shank			●					373
16656400-510	2-12 mm	1 PCS	Left-hand twist	Uncoated	HA parallel shank			●					373-374
16656600-710	2-12 mm	1 PCS	Right-hand twist	Uncoated	HA parallel shank			●					373-374
16656800-910	3-12 mm	1 PCS	W	Uncoated	HA parallel shank			●					374
16657010-100	2-20 mm	2 PCS	Right-hand twist	Uncoated	HA parallel shank			●					374-375
16657200-300	2-20 mm	2 PCS	Left-hand twist	Uncoated	HA parallel shank			●					374-375
16657400-450	4-12 mm	2 PCS	Standard	Uncoated	HA parallel shank			●					375
16657500-550	4-12 mm	2 PCS	High-per-formance	Uncoated	HA parallel shank			●					375
16657700-760	10-30 mm	3 PCS	W	Uncoated	HA parallel shank			●					376

Solid carbide milling cutter, advanced materials

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16658010-040	6-12 mm	2 PCS		Uncoated	HA parallel shank			●					376
16658100-170	6-12 mm	4 PCS	Right-hand twist	Diamond coating	HA parallel shank			●					377
16658100-170	6-12 mm	4 PCS	Left-hand twist	Diamond coating	HA parallel shank			●					377
16658200-230	6-12 mm	6 PCS		Diamond coating	HA parallel shank			●					377
16658300-410	6-12 mm			Diamond coating	HA parallel shank			●					378
16658500-570	2-12 mm	5 PCS		Uncoated	HA parallel shank			●					378
16658505-575	2-12 mm	5 PCS		Diamond coating	HA parallel shank			●					378
16658600-690	2-12 mm	6 PCS		Uncoated	HA parallel shank			●					379
16658605-695	2-12 mm	6 PCS		Diamond coating	HA parallel shank			●					379
16658700-750	4-12 mm		Drill tip	Uncoated	HA parallel shank			●					379
16658760-810	4-12 mm		Milling tip	Uncoated	HA parallel shank			●					379
16656800-910	3-12 mm	1 PCS	W	Uncoated	HA parallel shank			●					374

Solid carbide mills for machining graphite

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16661002-190	0.2-3.5 mm	2 PCS	N	ULTRA DC	HA parallel shank			●					-
16661192-248	4-12 mm	2 PCS	N	ULTRA DC	HA parallel shank			●					-

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16661400-452	3-16 mm	4 PCS	N	ULTRA DC	HA parallel shank			●					-
16661300-352	3-16 mm	4 PCS	N	ULTRA DC	HA parallel shank			●					-
16662002-178	0.2-3.5 mm	2 PCS	N	ULTRA DC	HA parallel shank			●					381-382
16662180-212	4-12 mm	2 PCS	N	ULTRA DC	HA parallel shank			●					382-383

Solid carbide mills for machining stainless steel

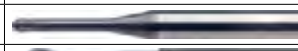
	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16670002-132	0.2-4 mm	2 PCS	VA	ULTRA MS	HA parallel shank	●	●			●			384
16670150-166	3-20 mm	3 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			384-385
16670190-206	3-20 mm	4 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			385
16670260-274	4-20 mm	4 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			385-386
16670320-327	4-20 mm	4 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			386
16670340-347	4-20 mm	5 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			386-387
16670240-250	6-20 mm	4 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			387
16672002-128	0.2-4 mm	2 PCS	VA	ULTRA MS	HA parallel shank	●	●			●			387-388
16672150-204	4-20 mm	4 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			388
16674004-132	0.2-4 mm	2 PCS	VA	ULTRA MS	HA parallel shank	●	●			●			389
16674170-186	3-20 mm	2 PCS	VA	ULTRA MS	HA parallel shank	●	●			●			389-390
16674200-216	3-20 mm	2 PCS	VA	ULTRA MS	HB parallel shank	●	●			●			390

Solid carbide barrel milling cutter

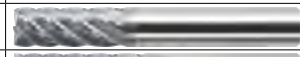
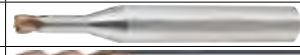
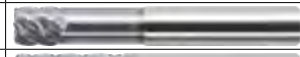
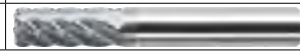
	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16968100-120	2-6 mm	4 PCS	N	ULTRA	HA parallel shank	●	●	●	●		●		391
16968200-220	2-6 mm	4 PCS	N	Uncoated	HA parallel shank	●	●	●	●		●		391
16968500-550	2-8 mm	4 PCS	N	ULTRA	HA parallel shank	●	●	●	●		●		391-392
16968600-650	2-8 mm	4 PCS	N	Uncoated	HA parallel shank	●	●	●	●		●		391-392

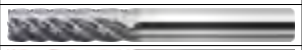
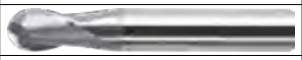
Solid carbide mills for machining steel up to 52 HRC

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16972001-009	0.1-0.9 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		-
16972100-153	0.2-3 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		-
16972200-208	3-20 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		393
16972220-228	3-20 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		393
16972230-238	3-20 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		394

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16972240-248	3-20 mm	8 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		394
16972250-258	3-20 mm	6 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		395
16973001-054	0.2-3 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		-
16973300-352	1-4 mm	4 PCS	N	RockTec 52	HA parallel shank	●				●	●		395-396
16973100-127	3-20 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		396
16973130-145	3-16 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		397
16973150-165	3-16 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		397-398
16973170-185	3-16 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		398
16976190-201	4-12 mm	4 PCS	H	RockTec 65	HA parallel shank	●					●		309, 398, 399, 410
16974001-008	0.2-0.9 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		-
16974100-153	0.2-3 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		-
16974200-210	2-20 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		399
16974220-230	2-20 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		399-400
16974240-250	2-20 mm	2 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		400
16974260-268	3-20 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		400-401
16974270-278	3-20 mm	4 PCS	N	RockTec 52	HA parallel shank	●	●		●	●	●		401

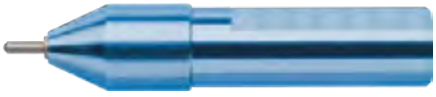
Solid carbide mills for machining steel up to 65 HRC

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16975001-009	0.1-0.9 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		-
16975100-153	0.2-3 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		-
16975200-208	3-20 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		402
16975220-228	3-20 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		402
16975230-238	3-20 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		403
16975240-248	3-20 mm	8 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		403
16975250-258	3-20 mm	6 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		404
16931103-130	2-20 mm	4 PCS	H	TiSiN	HA parallel shank	○					●		404
16931180-187	6-20 mm	6 PCS	H	TiSiN	HA parallel shank	○					●		405
16976001-054	0.2-3 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		-
16976300-352	1-4 mm	4 PCS	H	RockTec 65	HA parallel shank	●					●		405-406
16976100-127	3-20 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		406
16976130-145	3-16 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		407
16976150-165	3-16 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		407-408
16976170-185	3-16 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		408
16976400-440	2-12 mm	4 PCS	H	RockTec 65	HA parallel shank	●					●		408-409
16976500-540	2-12 mm	4 PCS	H	RockTec 65	HA parallel shank	●					●		409
16976190-201	4-12 mm	4 PCS	H	RockTec 65	HA parallel shank	●					●		309, 398, 399, 410
16932003-051	3-16 mm	4 PCS	H	TiSiN	HA parallel shank	○					●		410-411
16932100-127	6-16 mm	6 PCS	H	TiSiN	HA parallel shank	○					●		411

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
16932160-175	6-16 mm	6 PCS	H	TiSiN	HA parallel shank	○					●		411-412
16942	3-16 mm	4 PCS	H	TiAlN	HA parallel shank	●					●		412-413
16977001-008	0.2-0.9 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		-
16977100-153	0.2-3 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		-
16977200-210	2-20 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		413
16977220-230	2-20 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		413-414
16977240-250	2-20 mm	2 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		414
16977260-268	3-20 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		414-415
16977270-278	3-20 mm	4 PCS	H	RockTec 65	HA parallel shank	●	●		●	●	●		415
16933003-027	1-16 mm	2 PCS	H	TiSiN	HA parallel shank	○					●		415-416
16933050-074	1-16 mm	2 PCS	H	TiSiN	HA parallel shank	○					●		416
16933103-130	2-16 mm	4 PCS	H	TiSiN	HA parallel shank	○					●		416-417
16933150-171	2-16 mm	4 PCS	H	TiSiN	HA parallel shank	○					●		417

ATORN® "Marker PRO" marking tool

for fast and efficient labelling



Application:
the tool produces high-quality marking with a combination of material compaction and material displacement.

Execution:
- Workpiece unevenness is compensated for up to 5 mm
- possible to mark round surfaces
- labelling possible both in dry and in wet state
- labelling speed up to 200 m/min
- compact design for cramped conditions

Advantage:
- universal use in a wide range of materials
- no need for external labelling
- reduced processing times of workpieces
- production efficiency is increased

Type	Housing outer Ø (mm)	Ø of needle (mm)	Shaft Ø	Total length (mm)	Composition of set	16531... Ident. No.	
Marker-PRO12	14	3	12	80	1 x Marker-PRO12 with clamping surface, 1 x needle with radius 0.3 mm, 1 x needle with radius 0.5 mm, 1 x installation key	050	●
Marker-PRO20	22	3	20	107	1 x Marker-PRO20 with clamping surface, 1 x needle with radius 0.5 mm, 1 x needle with radius 1 mm, 1 x installation key	060	●

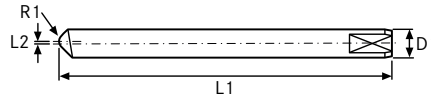
Prod. Gr. 186

Marker pin

Suitable for “Marker PRO” labelling tool

Execution:
- Centric marking needle

- **Ident. No. 080–082:** Suitable for marker PRO12
- **Ident. No. 090–092:** Suitable for marker PRO20



Type	R1 (mm)	D1 (mm)	L1 (mm)	16531... Ident. No.	
Marker PRO12	0.3	3	37	080	●
Marker PRO12	0.5	3	37	082	●
Marker PRO20	0.5	3	50	090	●
Marker PRO20	1	3	50	092	●

Prod. Gr. 186

Solid carbide profiling and special cutter

ORION® Cemented carbide keyway cutter (Milling cutter design standard DIN 850)

HM | Typ N | Z 6 | Z 8 | HA

Application:
For producing slots.

Execution:
- solid carbide

- with smooth straight shank
- hollow-ground on side
- in accordance with DIN 850
- from 13.5 mm in diameter, carbide-tipped

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16521	70	60	50	40	30	100	225	80	85	55	60	75		45	23				

Cutting edge Ø (mm)	Width of cutting edge (mm)	Length (mm)	Shaft Ø (mm)	Z (PCS)	fz steel 1000 ● (mm)	16521... Ident. No.	
10.5	2	50	8	6	0.035	010	●
10.5	4	50	8	6	0.035	015	●
12.5	2	50	10	6	0.035	020	●
12.5	4	50	10	6	0.035	025	●
13.5	4	50	10	6	0.035	030	●
16.5	5	55	10	6	0.04	035	●
19.5	6	55	10	6	0.04	040	●
22.5	8	60	10	6	0.045	045	●
25.5	6	60	10	6	0.045	050	●
28.5	10	60	10	6	0.045	055	●
32.5	10	65	10	8	0.045	060	●

Prod. Gr. 165

ORION® Cemented carbide T-slot cutter (Milling cutter design standard DIN 851)

HM | Typ N | Z 4 | Z 6 | HA

Application:
For making T-slots conforming to DIN 650

Execution:
- Straight shank according to DIN 1835 A

- Stable cemented carbide cutters
- Cross-toothing
- Corners 0.3 mm x 45°, chamfered
- In accordance with DIN 650

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16525	80	65	55	40	35	100	225	80	85	55	60	75		45	23				

Cutting edge Ø (mm)	Width of cutting edge (mm)	Suitable for T-groove (mm)	Length (mm)	Neck Ø (mm)	Shaft Ø (mm)	Z (PCS)	Type fz steel 1000 ● (mm)	N 16525... Ident. No.	
16	8	8	63	6.5	10	4	0.03	080	●
19	9	10	71	8	12	6	0.035	100	●
22	10	12	71	10	12	6	0.035	120	●
25	11	14	90	12	16	6	0.035	140	●
28	12	16	90	13	16	6	0.035	160	●
32	14	18	110	15	20	6	0.045	180	●
36	16	20	115	17	25	6	0.05	200	●
40	18	22	120	19	25	6	0.05	220	●

Prod. Gr. 165

ORION® Cemented carbide angle cutter, 50° and 60°

HM | Z 4 | Z 6 | HA

Application:
For milling ducts and other angular geometries in tool and mechanical engineering.

Execution:
- Straight shank according to DIN 1835 A
- Cutter angles chamfered 0.5 mm x 60° to planing side

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16530016-040	70	60	50	40	30	100	225	80	85	55	60	75		45	23				
16530216-240	70	60	50	40	30	100	225	80	85	55	60	75		45	23				

Chamfer angle (Degree)	Cutting edge Ø (mm)	Width of cutting edge (mm)	Immersion depth (mm)	Length (mm)	Shaft Ø (mm)	Z (PCS)	Form fz steel 1000 ● (mm)	C 16530... Ident. No.	
50	16	4	15	50	10	4	0.04	016	●
60	16	6	15	50	10	4	0.04	216	●
50	20	5	21	56	12	6	0.04	020	●
60	20	7	21	56	12	6	0.04	220	●
50	25	6	23	63	12	6	0.045	025	○
60	25	8	23	63	12	6	0.045	225	●
50	32	8	25	70	16	6	0.045	032	●
60	32	10	25	70	16	6	0.045	232	●
50	40	10	30	80	20	6	0.05	040	●
60	40	12	30	80	20	6	0.05	240	●

Prod. Gr. 165

ORION® Solid carbide quarter circle milling cutter

Concave

VHM | Typ N | Z 2 | HA

Application:
Quarter circle milling cutter for machining complex forms, e.g. for very small radii on bores. With reduced diameter on the radius runoff so it can be used even in confined working conditions.

Execution:
- Straight shank pursuant to DIN 1636 HA
- Straight grooved
- K15 micro-fine grain

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16711625-850	170	150	100	90	75	185	230	75	75	65	65	160		120	20	20	20		

Radius (mm)	Min. cutting edge Ø (mm)	Max. cutting edge Ø (mm)	Clearance length (mm)	Length (mm)	Clearance Ø (mm)	Shaft Ø (mm)	Z (PCS)	fz steel 1000 ● (mm)	16711... Ident. No.	
0.25	0.5	1	2.5	50	1	3	2	0.005	625	●
0.3	0.5	1.2	2.5	50	1.2	3	2	0.006	630	●
0.4	0.5	1.4	2.5	50	1.4	3	2	0.006	640	●
0.5	0.5	1.6	2.5	50	1.6	3	2	0.007	650	●
0.6	0.5	1.8	3	50	1.8	3	2	0.008	660	●
0.7	0.5	2.1	3	50	2.1	3	2	0.008	670	●
0.8	0.8	2.5	4	50	2.5	3	2	0.009	680	●
0.9	0.8	2.9	4	50	2.9	3	2	0.01	690	●
1	0.8	2.9	4	50	2.9	3	2	0.012	700	●
1.25	0.8	3.4	4	50	3.4	5	2	0.015	725	●
1.5	1.5	4.6	6	50	4.6	5	2	0.017	750	●
1.75	1.5	5.6	6	50	5.6	6	2	0.019	775	●
2	1.5	5.6	8	50	5.6	6	2	0.022	800	●
2.25	1.5	6.6	10	50	6.6	8	2	0.025	825	●
2.5	1.5	6.6	10	50	6.6	8	2	0.028	850	●

Prod. Gr. 150

ORION® Solid carbide quarter circle milling cutter

Concave

VHM | TiAlN | Typ N | Z 4 | HA

Application:
Quarter circle milling cutter for machining complex forms, e.g. bore radii in materials up to 1300 N/mm².

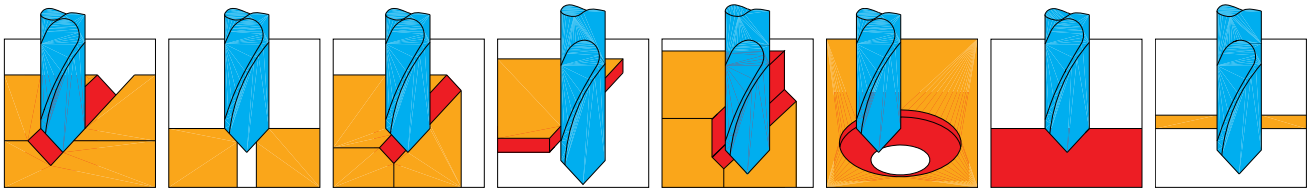
Execution:
- Straight shank pursuant to DIN 1636 HA
- Tolerance R = +/- 0.01 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16711905-960	170	150	100	90	75	185	230	75	75	65	65	160		120	20	20	20		

Radius (mm)	Min. cutting edge Ø (mm)	Max. cutting edge Ø (mm)	Length (mm)	Shaft Ø (mm)	Z (PCS)	fz steel 1000 ● (mm)	16711... Ident. No.	
0.5	7	8	70	8	4	0.007	905	●
1	6	8	70	8	4	0.012	910	●
1.5	7	10	75	10	4	0.017	915	●
2	6	10	75	10	4	0.023	920	●
2.5	7	12	75	12	4	0.028	925	●
3	6	12	75	12	4	0.032	930	●
3.5	9	16	80	16	4	0.036	935	●
4	8	16	80	16	4	0.04	940	●
4.5	7	16	80	16	4	0.043	945	●
5	10	20	80	20	4	0.05	950	●
6	8	20	80	20	4	0.06	960	●

Prod. Gr. 150

Possible applications: solid carbide chamfer cutter



V slot milling | Countersinking | Angle milling | Face milling | Comb. face and bevel milling | Spot drilling* | Drilling*

* Drilling and spot drilling only in cast and non-ferrous metals.

ORION® Solid carbide chamfer cutter

VHM | Z 2 | 30° | HA

Application:
For cutting chamfers, drilling and countersinking on machining centres and CNC machines.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 1636 HA
- uncoated
- **No. 16704:** 60°
- **No. 16705:** 90°
- **No. 16706:** 120°

Notes:
chamfer point flattened 10% of diameter, e.g. dia. 10 = 1 mm

No. 16704

No. 16705

No. 16706

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16704	70	60	35	35	30	280	350	60	70	40	45	135		45	23	18	18		
16705	70	60	35	35	30	280	350	60	70	40	45	135		45	23	18	18		
16706	70	60	35	35	30	280	350	60	70	40	45	135		45	23	18	18		

					Chamfer angle (Degree)	90		60		120	
Cutting edge Ø (mm)	Cutting edge length (mm)	Length (mm)	Shaft Ø (mm)	Protective chamfer for milling point (mm)	fz steel 1000 ● (mm)	16705... Ident. No.		16704... Ident. No.		16706... Ident. No.	
1	2	39	3	0.1	0.01	210	●	-	-	-	-
1.2	2.4	39	3	0.12	0.01	212	●	-	-	-	-
1.5	3	39	3	0.15	0.01	215	●	-	-	-	-
2	4	39	3	0.2	0.01	220	●	-	-	-	-
2.5	5	39	3	0.25	0.01	225	●	-	-	-	-
3	6	50	4	0.3	0.01	230	●	230	●	230	●
4	8	50	5	0.4	0.02	240	●	240	●	240	●
5	10	50	6	0.5	0.02	250	●	250	●	250	●
6	12	60	8	0.6	0.03	260	●	260	●	260	●
8	16	70	10	0.8	0.04	280	●	280	●	280	●
10	18	70	12	1	0.05	300	●	300	●	300	●
12	20	70	12	1.2	0.06	320	●	320	●	320	●
16	26	80	16	1.6	0.08	360	●	360	●	360	●
20	32	100	20	2	0.1	400	●	400	●	400	●

Prod. Gr. 150

Solid carbide mills for universal machining

ATORN® Solid carbide single tooth cutter

1 cutter, uncoated

VHM | Typ W | Z 1 | 30° | γ = 20° | HA | HSC

Application:
For milling, plunging and contour milling NF metals and plastics.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA
- Sharp-edged
- Uncoated
- With clearance
- Mirror finish
- Right-hand cutting

Advantage:
- Defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652105-114						200	425	190	250	175	210	350							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
1.5	6	22	50	1.45	3	1	0.01	105	●
2	8	22	50	1.8	3	1	0.014	106	●
3	12	22	50	2.8	3	1	0.02	107	●
4	15	29	57	3.8	4	1	0.03	108	●
5	17	32	60	4.8	5	1	0.04	109	●
6	20	28	64	5.8	6	1	0.055	110	●
8	24	28	64	7.8	8	1	0.07	111	●
10	25	33	73	9.7	10	1	0.085	112	●
12	32	39	84	11.7	12	1	0.1	113	●
16	38	45	93	15.7	16	1	0.12	114	●

Prod. Gr. 152

ORION® Solid carbide single tooth cutter

1 flute, uncoated

VHM | Typ W | Z 1 | 30° | HA

Application:
For milling, recessing and contour milling of non-ferrous metals and plastics.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HA
- sharp-edged
- uncoated
- right-hand cutting

Delivery:
Up to 3 mm diameter = 10 pieces

Notes:
Minimum order: up to 3.0 mm diameter = 10 pieces

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16700						180	350	150	200	145	180	260							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h10
Tolerance of shank Ø	h6

mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16700... Ident. No.	
1	4	38	3	1	0.008	110	●
1.5	6	38	3	1	0.01	115	●
2	8	38	3	1	0.012	120	●
3	12	38	3	1	0.016	130	●
4	12	50	6	1	0.03	140	●
5	14	50	6	1	0.04	150	●
6	16	50	6	1	0.055	160	●
8	20	60	8	1	0.065	180	●
10	22	70	10	1	0.075	200	●

Prod. Gr. 150

ORION® Solid carbide end mill

2 cutters, TiAlN-coated

VHM | TiAlN | Typ W | Z 2 | 45° | γ = 12° | 45° | HA | HB

No. 16732

No. 16733

Application:
Suitable for plunge milling, groove milling and fitting milling in non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain
- TiAlN coated
- Centre cutting
- With edge protection chamfer
- **No. 16732:** Straight shank in accordance with DIN 6535 HA
- **No. 16733:** Straight shank in accordance with DIN 6535 HB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16732					70	140	180	120	160	110	150	130							
16733					70	140	180	120	160	110	150	130							

						Type	W		W	
						Surface	TiAlN		TiAlN	
						Tool holding device	HA parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	e8		e8	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16732... Ident. No.		16733... Ident. No.	
1	3	50	3	0.05	2	0.008	010	●	-	-
2	5	50	3	0.05	2	0.01	020	●	-	-
3	8	57	6	0.05	2	0.013	030	●	030	●
4	11	57	6	0.1	2	0.016	040	●	040	●
5	13	57	6	0.1	2	0.022	050	●	050	●
6	13	57	6	0.1	2	0.026	060	●	060	●
8	19	63	8	0.2	2	0.04	080	●	080	●
10	22	72	10	0.2	2	0.05	100	●	100	●
12	26	83	12	0.2	2	0.07	120	●	120	●
14	26	83	14	0.2	2	0.08	140	●	-	-
16	32	92	16	0.2	2	0.09	160	●	160	●
20	38	104	20	0.2	2	0.12	200	●	200	●

Prod. Gr. 154

ATORN® Solid carbide end mill

2 flutes, uncoated/ULTRA coated

VHM | ULTRA | Typ N | Z 2 | 30° | γ = 13° | 45° | HB

No. 16727

No. 16728

Application:
Suitable for universal plunge milling, groove milling and fitting milling.

Execution:
- Solid carbide ultra-fine grain
- Straight shank, 3 mm diameter, to DIN 6535 HA
- Straight shank, from 6 mm diameter, to DIN 6535 HB
- Centre cutting
- Radial grinding relief
- With edge protection chamfer
- With clearance
- **No. 16727:** Uncoated
- **No. 16728:** ULTRA coated

Notes:
The undersize values are particularly suitable for cutting keyways, slightly conical ground for more accurately fitting grooves.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16727001-025	105	80	65	60	55	225	270	145	160	100	115	115		90	50	45	40		
16727028-200	105	80	65	60	55	225	270	145	160	100	115	115		90	50	45	40		
16728001-025	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16728028-200	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

							Type	N		N	
							Surface	Uncoated		ULTRA	
							Tool holding device	HB parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	e8		e8	
							Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16727... Ident. No.		16728... Ident. No.	
0.25	0.5	-	38	-	3	-	2	0.0015	001	●	001	●
0.3	1	-	38	-	3	-	2	0.0015	002	●	002	●
0.35	1	-	38	-	3	-	2	0.0015	003	○	003	○
0.4	1	-	38	-	3	-	2	0.0015	004	●	004	●
0.5	1.5	-	38	-	3	-	2	0.0015	005	●	005	●
0.6	1.5	-	38	-	3	-	2	0.0025	006	●	006	●
0.7	2	-	38	-	3	-	2	0.0025	007	●	007	●
0.8	2	-	38	-	3	-	2	0.0025	008	●	008	●
0.9	2.5	-	38	-	3	-	2	0.0025	009	●	009	●
1	3	-	50	-	3	-	2	0.004	010	●	010	●
1.1	3	-	50	-	3	-	2	0.004	011	●	011	●
1.2	4	-	50	-	3	-	2	0.004	012	●	012	●
1.4	4	-	50	-	3	-	2	0.005	014	●	014	●
1.5	4	-	50	-	3	-	2	0.005	015	●	015	●
1.6	4	-	50	-	3	-	2	0.0065	016	●	016	●

								Type	N		N	
								Surface	Uncoated		ULTRA	
								Tool holding device	HB parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16727... Ident. No.		16728... Ident. No.	
1.8	5	-	50	-	3	-	2	0.009	018	●	018	●
2	5	-	50	-	3	0.05	2	0.013	020	●	020	●
2.5	6	-	50	-	3	0.05	2	0.019	025	●	025	●
2.8	8	15	57	2.6	6	0.05	2	0.019	028	●	028	●
3	8	15	57	2.8	6	0.1	2	0.019	030	●	030	●
3.8	11	15	57	3.6	6	0.1	2	0.019	038	●	038	●
4	11	15	57	3.8	6	0.1	2	0.025	040	●	040	●
4.8	13	21	57	4.6	6	0.1	2	0.025	048	●	048	●
5	13	21	57	4.8	6	0.1	2	0.025	050	●	050	●
5.8	13	21	57	5.6	6	0.1	2	0.025	058	●	058	●
6	13	21	57	5.8	6	0.1	2	0.035	060	●	060	●
6.8	16	27	63	6.6	8	0.1	2	0.035	068	●	068	●
7	16	27	63	6.8	8	0.1	2	0.035	070	●	070	●
7.8	19	27	63	7.5	8	0.1	2	0.035	078	●	078	●
8	19	27	63	7.7	8	0.1	2	0.045	080	●	080	●
8.7	19	32	72	8.5	10	0.1	2	0.045	087	○	087	○
9	19	32	72	8.8	10	0.1	2	0.045	090	●	090	●
9.7	22	32	72	9.5	10	0.1	2	0.045	097	●	097	○
10	22	32	72	9.8	10	0.1	2	0.055	100	●	100	●
10.7	26	38	83	10.5	12	0.1	2	0.055	107	○	107	●
11	26	38	83	10.8	12	0.1	2	0.06	110	●	110	●
11.7	26	38	83	11.5	12	0.1	2	0.06	117	●	117	●
12	26	38	83	11.8	12	0.1	2	0.07	120	●	120	●
13.7	26	38	83	13.5	14	0.1	2	0.07	137	●	137	●
14	26	38	83	13.8	14	0.1	2	0.08	140	●	140	●
15.7	32	44	92	15.4	16	0.1	2	0.08	157	●	157	○
16	32	44	92	15.7	16	0.1	2	0.09	160	●	160	●
18	32	44	92	17.7	18	0.1	2	0.1	180	●	180	●
20	38	54	104	19.7	20	0.1	2	0.12	200	●	200	●

Prod. Gr. 108

ORION® Solid carbide end mill

2 cutters, TiAlN-coated

VHM | TiAlN | Typ N | Z 2 | 30° | γ = 9° | 45° | HA | HB

No. 16716

No. 16717

Application:
Suitable for universal plunge, groove and clearance milling.

Execution:

- **No. 16716:**
  - Solid carbide ultra-fine grain
  - TiAlN-coated
  - Centre cutting
  - With edge protection chamfer
  - Straight shank pursuant to DIN 6535 HA
- **No. 16717:**
  - solid carbide ultra-fine grain
  - TiAlN-coated
  - centre cutting
  - with edge protection chamfer
  - straight shank in line with DIN 6535 HB

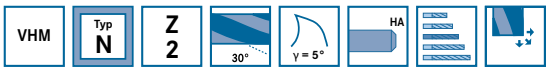
Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16716010-200	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16717030-200	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

						Type	N		N	
						Surface	TiAlN		TiAlN	
						Tool holding device	HA parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	h8		e8	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16716... Ident. No.		16717... Ident. No.	
1	2	38	3	0.03	2	0.005	010	●	-	-
1.5	3	38	3	0.03	2	0.008	015	●	-	-
2	6	57	6	0.03	2	0.01	020	●	-	-
2.5	7	57	6	0.05	2	0.02	025	●	-	-
3	7	57	6	0.05	2	0.036	030	●	030	●
4	8	57	6	0.05	2	0.056	040	●	040	●
5	10	57	6	0.05	2	0.06	050	●	050	●
6	10	57	6	0.05	2	0.063	060	●	060	●
8	16	63	8	0.1	2	0.07	080	●	080	●
10	19	72	10	0.1	2	0.074	100	●	100	●
12	22	83	12	0.1	2	0.077	120	●	120	●
16	26	92	16	0.15	2	0.084	160	●	160	●
20	32	104	20	0.15	2	0.1	200	●	200	●

Prod. Gr. 154

ORION® Solid carbide end mill

2-cutter, uncoated



Application:
Suitable for universal plunge milling, groove milling and fitting milling.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA
- Centre cutting
- Uncoated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16725	105	80	65	60	55	225	270	145	160	100	115	115		90	50	45	40		

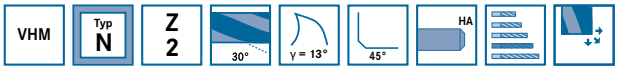
Type	N
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h10
Tolerance of shank Ø	h6

mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16725... Ident. No.	
1	5	38	3	2	0.004	010	●
1.5	5	38	3	2	0.0055	015	●
2	9	38	3	2	0.0135	020	●
2.5	10	38	3	2	0.022	025	●
3	12	38	3	2	0.029	030	●
3.5	12	40	3.5	2	0.037	035	●
4	12	40	4	2	0.045	040	●
5	14	50	5	2	0.048	050	●
6	16	50	6	2	0.05	060	●
8	22	60	8	2	0.056	080	●
10	22	70	10	2	0.059	100	●
12	22	70	12	2	0.062	120	●
16	25	75	16	2	0.067	160	●

Prod. Gr. 150

ATORN® Solid carbide end mill

2-cutter, uncoated



Application:
Suitable for universal plunge, groove and clearance milling.

Execution:
- Solid carbide ultra-fine grain
- Straight shank pursuant to DIN 6535 HA
- Centre cutting

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16750	95	70	60	55	50	200	245	130	145	90	105	105		80	45	40	35		

Type	N
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h5

mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16750... Ident. No.	
3	20	60	3	0.1	2	0.021	030	●
4	30	75	4	0.1	2	0.032	040	●
5	30	75	5	0.1	2	0.034	050	●
6	40	100	6	0.1	2	0.036	060	●
8	40	100	8	0.2	2	0.04	080	●
10	40	100	10	0.2	2	0.042	100	●
12	45	100	12	0.2	2	0.044	120	●
16	75	150	16	0.2	2	0.048	160	●
20	75	150	20	0.2	2	0.056	200	●

Prod. Gr. 108

ATORN® Disposable solid carbide milling cutter

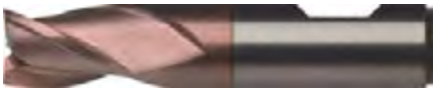
3 flutes, uncoated/ULTRA coated

VHM | ULTRA | Typ N | Z 3 | 30° | γ = 5° | HB

Application:
For universal machining in all material groups. Regrinding this cutting mill is not economical. It is cheaper to use the tool down to the wear line and replace it with a new one.

Execution:
- Solid carbide ultra-fine grain
- Straight shank pursuant to DIN 6535 HB
- Centre cutting
- **No. 16760:** Uncoated
- **No. 16763:** ULTRA-coating for extremely high service life requirements

No. 16760



No. 16763

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16760	100	90	67	55	45	270	315	130	155	110	120	125		90	40	30	30		
16763	110	100	75	60	50	300	350	145	170	120	135	140		100	45	35	35		

						Type	N		N	
						Surface	Uncoated		ULTRA	
						Tool holding device	HB parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	h10		h10	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)		16760... Ident. No.		16763... Ident. No.	
2	4	35	6	3	0.014		020	●	020	●
2.5	4	35	6	3	0.023		025	●	025	●
3	5	36	6	3	0.031		030	●	030	●
3.5	5	36	6	3	0.04		035	●	035	●
4	7	38	6	3	0.048		040	●	040	●
4.5	7	38	6	3	0.05		045	●	045	●
5	8	39	6	3	0.051		050	●	050	●
5.5	8	39	6	3	0.053		055	●	055	●
5.75	8	39	6	3	0.053		057	●	057	●
6	8	39	6	3	0.054		060	●	060	●
6.75	11	43	8	3	0.056		067	●	067	○
7	11	43	8	3	0.057		070	●	070	●
7.75	11	43	8	3	0.059		077	●	077	●
8	11	43	8	3	0.06		080	●	080	●
8.7	13	50	10	3	0.061		087	○	-	-
9	13	50	10	3	0.062		090	●	090	●
9.7	13	50	10	3	0.063		097	●	-	-
10	13	50	10	3	0.063		100	●	100	●
12	15	55	12	3	0.066		120	●	120	●

Prod. Gr. 108

ATORN® Solid carbide end mill

3 flutes, uncoated/ULTRA coated

VHM | ULTRA | Typ N | Z 3 | 30° | γ = 13° | 45° | HB

Application:
End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HB
- centre cutting
- radial relief
- with clearance
- **No. 16787:** uncoated
- **No. 16788:** ULTRA-coated

Notes:
The undersized dimensions are particularly suited for cutting keyways

No. 16787

No. 16788

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16787	105	80	65	60	55	225	270	145	160	100	115	115		90	50	45	40		
16788	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

									Type	N		N	
									Surface	Uncoated		ULTRA	
									Tool holding device	HB parallel shank		HB parallel shank	
									Tolerance of cutting edge Ø	e8		e8	
									Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)		16787... Ident. No.		16788... Ident. No.	
2.8	8	15	57	2.6	6	0.05	3	0.01		028	●	028	●
3	8	15	57	2.8	6	0.1	3	0.01		030	●	030	●
3.8	11	15	57	3.6	6	0.1	3	0.01		038	●	038	●
4	11	15	57	3.8	6	0.1	3	0.02		040	●	040	●
4.8	13	19	57	4.6	6	0.1	3	0.02		048	●	048	●
5	13	19	57	4.8	6	0.1	3	0.02		050	●	050	●
5.8	13	19	57	5.6	6	0.1	3	0.03		058	●	058	●
6	13	19	57	5.8	6	0.1	3	0.03		060	●	060	●
6.8	16	25	63	6.6	8	0.1	3	0.03		068	●	068	●

								Type	N		N	
								Surface	Uncoated		ULTRA	
								Tool holding device	HB parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16787... Ident. No.		16788... Ident. No.	
7	16	25	63	6.8	8	0.1	3	0.03	070	●	070	●
7.8	19	25	63	7.6	8	0.1	3	0.03	078	●	078	●
8	19	25	63	7.8	8	0.1	3	0.04	080	●	080	●
8.7	19	30	72	8.5	10	0.1	3	0.04	087	○	087	●
9	19	30	72	8.8	10	0.1	3	0.04	090	●	090	●
9.7	22	30	72	9.5	10	0.1	3	0.05	097	●	097	●
10	22	30	72	9.8	10	0.1	3	0.05	100	●	100	●
10.7	26	36	83	10.5	12	0.1	3	0.05	107	●	107	●
11	26	36	83	10.8	12	0.1	3	0.07	110	●	110	●
11.7	26	36	83	11.5	12	0.1	3	0.07	117	●	117	●
12	26	36	83	11.8	12	0.1	3	0.07	120	●	120	●
13.7	26	36	83	13.5	14	0.1	3	0.07	137	●	137	●
14	26	36	83	13.8	14	0.1	3	0.07	140	●	140	●
15.7	32	42	92	15.4	16	0.1	3	0.09	157	●	157	●
16	32	42	92	15.7	16	0.1	3	0.09	160	●	160	●
17.7	32	42	92	17.4	18	0.1	3	0.09	177	●	177	○
18	32	42	92	17.7	18	0.1	3	0.1	180	●	180	●
19.7	38	52	104	19.4	20	0.1	3	0.1	197	●	197	○
20	38	52	104	19.7	20	0.1	3	0.12	200	●	200	●

Prod. Gr. 108

ATORN® Solid carbide HPC end mill

3 flutes, TiAlN coated

VHM | TiAlN | Typ N | Z 3 | γ = 7° | 45° | HA | HB | HPC

No. 16777

No. 16778

Application:
HPC end mill with unequal twist for roughing and finishing materials with a strength of up to 1400 N/mm²

Execution:
- Solid carbide ultra-fine grain
- TiAlN-coated
- Centre cutting
- With edge protection chamfer
- Unequal twist angle (41°, 43°, 45°)
- With clearance

- **No. 16777:** Straight shank pursuant to DIN 6535 HA
- **No. 16778:** Straight shank pursuant to DIN 6535 HB

Advantage:
- Extremely smooth running
- Reduces vibrations
- Enables higher feed rates and greater cutting depths
- Ideal for static and dynamic trochoidal milling
- Defined edge rounding for extremely long service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16777201-209	220	190	170	115	105	250		180		160				160	70	60	60		
16778	220	190	170	115	105	250		180		160				160	70	60	60		

								Type	N		N	
								Surface	TiAlN		TiAlN	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16777... Ident. No.		16778... Ident. No.	
3	8	15	57	2.7	6	0.05	3	0.04	201	●	201	●
4	11	18	57	3.7	6	0.1	3	0.05	202	●	202	●
5	13	18	57	4.7	6	0.1	3	0.06	203	●	203	●
6	13	21	57	5.5	6	0.1	3	0.07	204	●	204	●
8	19	27	63	7.5	8	0.2	3	0.08	205	●	205	●
10	22	32	72	9.2	10	0.2	3	0.09	206	●	206	●
12	26	38	83	11.2	12	0.2	3	0.11	207	●	207	●
16	32	44	92	15	16	0.2	3	0.13	208	●	208	●
20	38	54	104	19	20	0.2	3	0.15	209	●	209	●

Prod. Gr. 108

ORION® Solid carbide end mill

3 flutes, TiAlN coated

VHM | TiAlN | Typ N | Z 3 | 30° | γ = 12° | 45° | HB | HA

Application:
Universal end mill for plunge, groove and slot milling as well as for face and circumferential milling.

Execution:
- solid carbide ultra-fine grain

- TiAlN-coated
- centre cutting with new point geometry
- with edge protection chamfer
- **No. 16781:** straight shank in line with DIN 6535 HB
- **No. 16784:** straight shank in line with DIN 6535 HA

No. 16781 031, 16781 041, 16781 051, 16781 061, 16781 081, 16781 101, 16781 121, 16781 141, 16781 161, 16781 201

No. 16784 030, 16784 040, 16784 050, 16784 060, 16784 080, 16784 100, 16784 120, 16784 140, 16784 160, 16784 200

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16781030-200	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16781031-201	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16784030-200	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16784031-201	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

							Type	N		N
							Surface	TiAlN		TiAlN
							Tool holding device	HB parallel shank		HA parallel shank
							Tolerance of cutting edge Ø	e8		e8
							Tolerance of shank Ø	h6		h6
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16781... Ident. No.		16784... Ident. No.	
3	8	57	6	0.05	3	0.01	030	●	030	●
3	12	57	6	0.05	3	0.01	031	●	031	●
4	11	57	6	0.06	3	0.02	040	●	040	●
4	19	63	6	0.06	3	0.02	041	●	041	●
5	13	57	6	0.08	3	0.02	050	●	050	●
5	24	68	6	0.08	3	0.02	051	●	051	●
6	13	57	6	0.09	3	0.03	060	●	060	●
6	24	72	6	0.09	3	0.03	061	●	061	●
8	19	63	8	0.12	3	0.04	080	●	080	●
8	38	88	8	0.12	3	0.04	081	●	081	●
10	22	72	10	0.15	3	0.05	100	●	100	●
10	45	95	10	0.15	3	0.05	101	●	101	●
12	26	83	12	0.18	3	0.07	120	●	120	●
12	53	110	12	0.18	3	0.07	121	●	121	●
14	26	83	14	0.2	3	0.07	140	●	140	●
14	53	110	14	0.2	3	0.07	141	●	141	●
16	32	92	16	0.2	3	0.09	160	●	160	●
16	63	123	16	0.2	3	0.09	161	●	161	●
20	38	104	20	0.25	3	0.12	200	●	200	●
20	75	141	20	0.25	3	0.12	201	●	201	●

Prod. Gr. 154

ORION® Solid carbide end mill

3-cutter, uncoated

VHM | Typ N | Z 3 | 30° | γ = 5° | HA

Application:
Universal end mill for plunge, groove and slot milling as well as for face and circumferential milling.

Execution:
- Solid carbide ultra-fine grain

- Straight shank pursuant to DIN 6535 HA
- Up to Ø 3 mm - 3-cutter, cutting to the centre
- From Ø 3.5 mm - centre cutting

Notes:
Minimum order quantity: up to diameter 3.0 mm = 10 pieces

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16780	105	80	67	60	55	225	270	145	160	100	115	115		90	50	45	40		

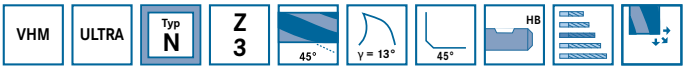
						Type	N
						Surface	Uncoated
						Tool holding device	HA parallel shank
						Tolerance of cutting edge Ø	h10
						Tolerance of shank Ø	h6
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16780... Ident. No.	
1	3	38	3	3	0.01	010	●
1.5	5	38	3	3	0.01	015	●

					Type	N	
					Surface	Uncoated	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	h10	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16780... Ident. No.	
2	6	38	3	3	0.01	020	●
2.5	7	38	3	3	0.01	025	●
3	9	38	3	3	0.01	030	●
3.5	12	40	3.5	3	0.01	035	●
4	12	40	4	3	0.02	040	●
4.5	14	50	4.5	3	0.02	045	●
5	14	50	5	3	0.03	050	●
6	16	50	6	3	0.03	060	●
7	20	60	7	3	0.04	070	●
8	20	60	8	3	0.05	080	●
9	22	70	9	3	0.05	090	●
10	22	70	10	3	0.06	100	●
11	22	70	11	3	0.07	110	●
12	22	70	12	3	0.07	120	●

Prod. Gr. 148

ATORN® Solid carbide end mill

3 flutes, uncoated/ULTRA coated



No. 16790

No. 16792

Application:
End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HB
- centre cutting
- with clearance
- **No. 16790:**
  - without edge protection chamfer
  - uncoated
- **No. 16792:**
  - with edge protection chamfer
  - ULTRA-coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16790	95	75	65	55	50	215	255	135	155	95	110	110		85	45	40	40		
16792	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

								Type	N		N	
								Surface	Uncoated		ULTRA	
								Tool holding device	HB parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16790... Ident. No.		16792... Ident. No.	
2	8	-	57	-	6	0.05	3	0.01	020	●	020	●
3	8	15	57	2.8	6	0.05	3	0.01	030	●	030	●
3.5	11	15	57	3.3	6	0.05	3	0.01	035	●	035	●
4	11	15	57	3.8	6	0.1	3	0.02	040	●	040	●
4.5	13	21	57	4.3	6	0.1	3	0.02	045	●	045	●
5	13	21	57	4.8	6	0.1	3	0.02	050	●	050	●
5.5	13	21	57	5.3	6	0.1	3	0.02	055	●	055	●
6	13	21	57	5.8	6	0.1	3	0.03	060	●	060	●
6.5	16	27	63	6.3	8	0.1	3	0.03	065	●	065	●
7	16	27	63	6.8	8	0.1	3	0.03	070	●	070	●
7.5	19	27	63	7.3	8	0.1	3	0.03	075	●	075	●
8	19	27	63	7.7	8	0.2	3	0.04	080	●	080	●
8.5	19	32	72	8.3	10	0.2	3	0.04	085	●	085	●
9	19	32	72	8.8	10	0.2	3	0.05	090	●	090	●
9.5	22	32	72	9.3	10	0.2	3	0.05	095	●	095	●
10	22	32	72	9.8	10	0.2	3	0.06	100	●	100	●
11	26	32	83	10.8	12	0.2	3	0.06	110	●	110	●
12	26	38	83	11.8	12	0.2	3	0.07	120	●	120	●
14	26	38	83	13.8	14	0.2	3	0.07	140	●	140	●
16	32	44	92	15.7	16	0.2	3	0.07	160	●	160	●
18	32	44	92	17.7	18	0.2	3	0.09	180	●	180	●
20	38	54	104	19.7	20	0.2	3	0.12	200	●	200	●

Prod. Gr. 108

ATORN® Solid carbide end mill

3 flutes, uncoated/ULTRA coated

VHM | ULTRA | Typ N | Z 3 | 45° | γ = 13° | 45° | HB

No. 16793

No. 16794

Application:
End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HB
- centre cutting
- **No. 16793:**
  - without edge protection chamfer
  - uncoated
- **No. 16794:**
  - with edge protection chamfer
  - ULTRA-coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16793	85	67	60	50	45	195	230	120	140	85	100	100		75	40	35	35		
16794	105	80	67	60	55	225	270	145	160	100	120	120		90	50	45	40		

							Type	N		N
							Surface	Uncoated		ULTRA
							Tool holding device	HB parallel shank		HB parallel shank
							Tolerance of cutting edge Ø	e8		e8
							Tolerance of shank Ø	h5		h5
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16793... Ident. No.		16794... Ident. No.	
3.5	15	59	6	0.05	3	0.036	035	●	035	●
4	19	63	6	0.1	3	0.043	040	●	040	●
4.5	19	63	6	0.1	3	0.045	045	●	045	●
5	24	68	6	0.1	3	0.046	050	●	050	●
5.5	24	68	6	0.1	3	0.048	055	●	055	●
6	24	68	6	0.1	3	0.049	060	●	060	●
6.5	30	80	8	0.1	3	0.05	065	●	065	●
7	30	80	8	0.1	3	0.051	070	●	070	●
7.5	30	80	8	0.1	3	0.053	075	●	075	●
8	38	88	8	0.2	3	0.054	080	●	080	●
8.5	38	88	10	0.2	3	0.055	085	●	085	●
9	38	88	10	0.2	3	0.056	090	●	090	●
9.5	38	88	10	0.2	3	0.056	095	●	095	●
10	45	95	10	0.2	3	0.057	100	●	100	●
11	45	102	12	0.2	3	0.058	110	●	110	●
12	53	110	12	0.2	3	0.059	120	●	120	●
14	53	110	14	0.2	3	0.062	140	●	140	●
16	63	123	16	0.2	3	0.065	160	●	160	●
18	63	123	18	0.2	3	0.07	180	●	180	●
20	75	141	20	0.2	3	0.076	200	●	200	●

Prod. Gr. 108

ORION® Solid carbide end mill

3 flutes, TiAlN coated

VHM | TiAlN | Typ N | Z 3 | 45° | γ = 12° | 45° | HA | HB

Application:
Universal end mill for plunge, groove and slot milling as well as for face and circumferential milling.

Execution:
- solid carbide ultra-fine grain
- centre cutting with new point geometry
- with edge protection chamfer
- TiAlN-coated
- **No. 16797:** straight shank in line with DIN 6535 HA
- **No. 16799:** straight shank in line with DIN 6535 HB

No. 16797

No. 16799

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16797530-700	105	80	70	60	55	225	270	145	160	100	120	120		90	50	45	40		
16799530-700	105	80	70	60	55	225	270	145	160	100	120	120		90	50	45	40		

						Type	N		N	
						Surface	TiAlN		TiAlN	
						Tool holding device	HA parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	e8		e8	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16797... Ident. No.		16799... Ident. No.	
3	8	57	6	0.05	3	0.031	530	●	530	●
4	11	57	6	0.06	3	0.048	540	●	540	●
5	13	57	6	0.08	3	0.051	550	●	550	●
6	13	57	6	0.09	3	0.054	560	●	560	●
8	19	63	8	0.12	3	0.06	580	●	580	●
10	22	72	10	0.15	3	0.063	600	●	600	●
12	26	83	12	0.18	3	0.066	620	●	620	●
14	26	83	14	0.2	3	0.069	640	●	640	●
16	32	92	16	0.2	3	0.072	660	●	660	●
20	38	104	20	0.25	3	0.084	700	●	700	●

Prod. Gr. 154

ORION® Solid carbide end mill

3-cutter, uncoated

VHM | Typ N | Z 3 | 45° | HA

Application:
End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

Execution:
- solid carbide ultra-fine grain

- straight shank in accordance with DIN 6535 HA
- up to 3-mm diameter – 3 blades for centre cutting
- from 4-mm diameter – centre cutting

Notes:
Minimum order quantity: up to 3.0 mm diameter = 5 pieces

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16785	95	70	65	55	50	205	245	130	145	90	110	110		80	45	40	35		

					Type	N	
					Surface	Uncoated	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	h10	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16785... Ident. No.	
1	3	38	3	3	0.0035	010	●
1.5	5	38	3	3	0.0055	015	●
2	6	38	3	3	0.0125	020	●
2.5	7	38	3	3	0.021	025	●
3	7	38	3	3	0.028	030	●
4	12	40	4	3	0.043	040	●
5	14	50	5	3	0.046	050	●
6	10	57	6	3	0.049	060	●
8	15	63	8	3	0.054	080	●
10	19	72	10	3	0.057	100	●
12	22	83	12	3	0.059	120	●
16	26	92	16	3	0.065	160	●
20	32	104	20	3	0.076	200	●

Prod. Gr. 148

ORION® Solid carbide end mill

4 cutters, TiAlN-coated

VHM | TiAlN | Typ W | Z 4 | 45° | γ = 12° | 45° | HA | HB

No. 16827

No. 16828

Application:
End mill for universal machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain
- TiAlN-coated

- centre cutting
- with edge protection chamfer
- **No. 16827:** straight shank in accordance with DIN 6535 HA
- **No. 16828:** straight shank in accordance with DIN 6535 HB

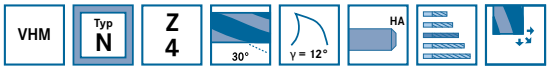
Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16827					40	280	350	125	140	115	125	115			40	35	35		
16828					40	280	350	125	140	115	125	115			40	35	35		

						Type	W		W	
						Surface	TiAlN		TiAlN	
						Tool holding device	HA parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	e8		e8	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16827... Ident. No.		16828... Ident. No.	
2	8	57	6	0.05	4	0.01	020	●	020	●
3	8	57	6	0.05	4	0.01	030	●	030	●
4	11	57	6	0.1	4	0.02	040	●	040	●
5	13	57	6	0.1	4	0.02	050	●	050	●
6	13	57	6	0.1	4	0.03	060	●	060	●
8	19	63	8	0.2	4	0.04	080	●	080	●
10	22	72	10	0.2	4	0.05	100	●	100	●
12	26	83	12	0.2	4	0.06	120	●	120	●
14	26	83	14	0.2	4	0.08	140	●	140	●
16	32	92	16	0.2	4	0.08	160	●	160	●
20	38	104	20	0.2	4	0.1	200	●	200	●

Prod. Gr. 154

ATORN® Solid carbide end mill

4-cutter, uncoated



Application:
End mill for universal machining.

Execution:
- solid carbide ultra-fine grain

- straight shank in accordance with DIN 6535 HA
- centre cutting
- 2-4 mm diameter without clearance
- without edge protection chamfer

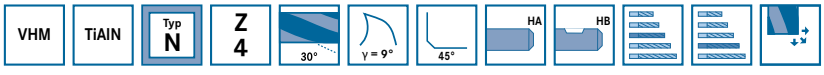
Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16830	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

						Type	N		
						Surface	Uncoated		
						Tool holding device	HA parallel shank		
						Tolerance of cutting edge Ø	e8		
						Tolerance of shank Ø	h5		
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16830... Ident. No.	
2	8	-	32	-	2	4	0.02	020	●
3	12	-	38	-	3	4	0.02	030	●
4	12	-	40	-	4	4	0.03	040	●
5	15	20	50	4.8	5	4	0.04	050	●
6	16	20	58	5.8	6	4	0.04	060	●
8	22	32	70	7.7	8	4	0.05	080	●
10	25	31	73	9.6	10	4	0.06	100	●
12	28	37	84	11.6	12	4	0.07	120	●
14	31	41	88	13.5	14	4	0.08	140	●
16	35	43	93	15.5	16	4	0.1	160	●
20	40	52	104	19.5	20	4	0.12	200	●

Prod. Gr. 108

ORION® Solid carbide end mill

4 flutes, TiAlN - coated



No. 16822 020–16822 030, 16822 040, 16822 050, 16822 060, 16822 080, 16822 100, 16822 120, 16822 160, 16822 200

No. 16823 031–16823 051, 16823 061, 16823 081, 16823 101, 16823 121, 16823 161, 16823 201

Application:
End mill for universal machining.

Execution:
- solid carbide ultra-fine grain
- centre cutting

- with edge protection chamfer
- linear relief
- TiAlN-coated
- **No. 16822:** straight shank in line with DIN 6535 HA
- **No. 16823:** straight shank in line with DIN 6535 HB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16822020-200	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16822031-201	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16823031-201	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		
16823060-200	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

						Type	N		N	
						Surface	TiAlN		TiAlN	
						Tool holding device	HA parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	e8		e8	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16822... Ident. No.		16823... Ident. No.	
2	8	32	2	0.03	4	0.02	020	●	-	-
3	12	38	3	0.05	4	0.02	030	●	-	-
3	15	57	6	0.05	4	0.02	031	●	031	●
4	12	40	4	0.05	4	0.03	040	●	-	-
4	19	63	6	0.05	4	0.03	041	●	041	●
5	15	50	5	0.05	4	0.04	050	●	-	-
5	24	68	6	0.05	4	0.04	051	●	051	●
6	16	57	6	0.05	4	0.04	060	●	060	●
6	24	68	6	0.05	4	0.04	061	●	061	●
8	22	68	8	0.1	4	0.05	080	●	080	●
8	38	88	8	0.1	4	0.05	081	●	081	●
10	25	72	10	0.1	4	0.06	100	●	100	●
10	45	95	10	0.1	4	0.06	101	●	101	●
12	28	83	12	0.1	4	0.07	120	●	120	●
12	53	110	12	0.1	4	0.07	121	●	121	●
16	35	92	16	0.15	4	0.1	160	●	160	●
16	63	125	16	0.15	4	0.1	161	●	161	●
20	40	104	20	0.15	4	0.12	200	●	200	●
20	75	141	20	0.15	4	0.12	201	●	201	●

Prod. Gr. 154

ORION® Solid carbide end mill

4 flutes, TiAlN - coated

VHM | TiAlN | Typ H | Z 4 | 30° | γ = 4° | 45° | HB

Application:
End mill for universal processing.

Execution:
- Solid carbide ultra-fine grain
- Up to Ø 5 mm straight shank in line with DIN 6535 HA
- From Ø 6 mm straight shank in line with DIN 6535 HB
- TiAlN-coated
- Centre cutting
- **No. 16837:**
  - Short version
  - Very high feed rates possible
- **No. 16838:** Long version

No. 16837

No. 16838

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16837302-305	250	170	130											140				85	
16837306-325	250	170	130											140				85	
16838302-305	250	170	130											140				85	
16838306-325	250	170	130											140				85	

						Type	H		H	
						Surface	TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	e8		e8	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16837... Ident. No.		16838... Ident. No.	
2	3	32	2	0.05	4	0.02	302	●	-	-
2	8	32	2	0.05	4	0.02	-	-	302	●
3	5	32	3	0.05	4	0.02	303	●	-	-
3	12	38	3	0.05	4	0.02	-	-	303	●
4	8	36	4	0.1	4	0.04	304	●	-	-
4	13	40	4	0.1	4	0.035	-	-	304	●
5	9	45	5	0.1	4	0.05	305	●	-	-
5	15	50	5	0.1	4	0.04	-	-	305	●
6	10	46	6	0.1	4	0.05	306	●	-	-
6	16	58	6	0.1	4	0.04	-	-	306	●
7	20	60	8	0.1	4	0.045	-	-	307	●
8	12	55	8	0.2	4	0.06	308	●	-	-
8	22	70	8	0.2	4	0.05	-	-	308	●
9	22	70	10	0.2	4	0.06	-	-	309	●
10	14	65	10	0.2	4	0.08	310	●	-	-
10	25	73	10	0.2	4	0.07	-	-	310	●
12	16	66	12	0.2	4	0.12	312	●	-	-
12	28	84	12	0.2	4	0.1	-	-	312	●
14	18	70	14	0.2	4	0.13	314	●	-	-
14	30	84	14	0.2	4	0.12	-	-	314	●
16	20	75	16	0.2	4	0.15	316	●	-	-
16	35	93	16	0.2	4	0.13	-	-	316	●
20	25	82	20	0.2	4	0.17	320	●	-	-
20	40	104	20	0.2	4	0.14	-	-	320	●
25	30	92	25	0.2	4	0.18	325	●	-	-
25	50	120	25	0.2	4	0.15	-	-	325	●

Prod. Gr. 150

ATORN® Solid carbide end mill

4 flutes, ULTRA-coated

VHM | ULTRA | Typ N | Z 4 | 30° | γ = 6° | HA | HB

Application:
End/torus milling cutter for universal machining.

Execution:
- Solid carbide ultra-fine grain
- Up to Ø 6 mm straight shank pursuant to DIN 6535 HA
- From Ø 8 mm straight shank pursuant to DIN 6535 HB
- ULTRA-coated
- Centre cutting
- Ø 2-4 mm without clearance

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16857	115	90	75	65	60	250	300	160	180	110	130	130		100	55	50	45		

								Type	N		N	
								Surface	ULTRA		ULTRA	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16857... Ident. No.		16857... Ident. No.	
2	8	-	32	-	2	4	0.023	020	●	-	-
3	12	-	38	-	3	4	0.05	030	●	-	-
4	12	-	40	-	4	4	0.077	040	●	-	-
5	15	20	50	4.8	5	4	0.081	050	●	-	-
6	16	20	58	5.8	6	4	0.086	060	●	-	-
8	22	32	70	7.7	8	4	0.096	-	-	080	●
10	25	31	73	9.6	10	4	0.101	-	-	100	●
12	28	37	84	11.6	12	4	0.106	-	-	120	●
16	35	43	93	15.5	16	4	0.115	-	-	160	●
20	40	52	104	19.5	20	4	0.135	-	-	200	●

Prod. Gr. 108

ATORN® Solid carbide HPC end mill/torus milling cutter

4 flutes, ULTRA-coated

VHM | ULTRA | Typ N | Z 4 | 52° | γ = -10° | 45° | HA | HPC

Application:
Ident. No. 040–041, 050–051, 060–061, 080–081, 100–101, 120–121, 160–201: End/torus milling cutter for universal machining.
Ident. No. 042–043, 052–053, 062–063, 082–083, 103, 123, 203: Shank or torus milling cutter for universal machining.

Execution:
- Solid carbide ultra-fine grain
- Centre cutting
- ULTRA-coated
- Edge protection chamfer/edge radius
- **Ident. No. 040–041, 050–051, 060–061, 080–081, 100–101, 120–121, 160–201:**
  - Straight shank pursuant to DIN 6535 HA
  - Extra-long design without clearance
- **Ident. No. 042–043, 052–053, 062–063, 082–083, 103, 123, 203:**
  - Straight shank in accordance with DIN 6535 HA
  - Extra-long design with no clearance

								Type	N		
								Surface	ULTRA		
								Tool holding device	HA parallel shank		
								Tolerance of cutting edge Ø	f8		
								Tolerance of shank Ø	h5		
mm	mm	mm	mm	mm	mm	F mm	R mm	Z (PCS)	fz steel 1300 ● (mm)	16862... Ident. No.	
4	11	18	57	3.9	6	0.1	-	4	0.03	040	●
4	16	-	62	-	6	0.1	-	4	0.03	041	●
4	11	18	57	3.9	6	-	0.5	4	0.03	042	●
4	16	-	62	-	6	-	0.5	4	0.03	043	●
5	13	19	57	4.9	6	0.1	-	4	0.03	050	●
5	17	-	62	-	6	0.1	-	4	0.03	051	●
5	13	19	57	4.9	6	-	0.5	4	0.03	052	●
5	17	-	62	-	6	-	0.5	4	0.03	053	●
6	13	19	57	5.9	6	0.1	-	4	0.04	060	●
6	18	-	62	-	6	0.1	-	4	0.04	061	●
6	13	19	57	5.9	6	-	0.5	4	0.04	062	●
6	18	-	62	-	6	-	0.5	4	0.04	063	●
8	19	25	63	7.7	8	0.1	-	4	0.05	080	●
8	24	-	68	-	8	0.1	-	4	0.05	081	●
8	19	25	63	7.7	8	-	1	4	0.05	082	○
8	24	-	68	-	8	-	1	4	0.05	083	○
10	22	30	72	9.7	10	0.1	-	4	0.06	100	●
10	30	-	80	-	10	0.1	-	4	0.06	101	●
10	30	-	80	-	10	-	1	4	0.06	103	●
12	26	36	83	11.7	12	0.1	-	4	0.07	120	●
12	36	-	93	-	12	0.1	-	4	0.07	121	●
12	36	-	93	-	12	-	1.5	4	0.07	123	●
16	32	42	92	15.5	16	0.1	-	4	0.09	160	●
16	48	-	108	-	16	0.1	-	4	0.09	161	●
20	38	52	104	19.5	20	0.1	-	4	0.11	200	●

										Type	N
										Surface	ULTRA
										Tool holding device	HA parallel shank
										Tolerance of cutting edge Ø	f8
										Tolerance of shank Ø	h5
mm	mm	mm	mm	mm	mm	F mm	R mm	Z (PCS)	fz steel 1300 ● (mm)	16862... Ident. No.	
20	60	-	126	-	20	0.1	-	4	0.11	201	●
20	60	-	126	-	20	-	2	4	0.11	203	○

Prod. Gr. 108

ORION HPC drilling and stem mill cutters
drilling and ramping with maximum performance

grooves
- very quiet operation and high process stability
- highest feeds during insertion and grooving
- undersize tools for precise fitting grooves

drilling
- very good drilling properties up to 2xD
- no separate pilot tool necessary

ramping
- insertion angle up to 45° possible
- optimum chip removal through special face geometry

rough machining
- high material removal rate due to HPC geometry
- can also be used on less powerful machines due to low power consumption

finishing
- contours with high surface quality
- HPC geometry ensures low-vibration milling

ORION®

P M K S

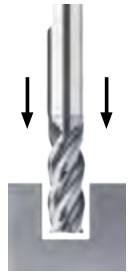
circumferential milling

P M K S

groove milling

P M K S

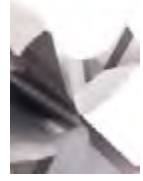
ramp milling



P K

drilling

uneven pitch



optimised front chip spaces

ORION® solid carbide HPC drilling and plunge milling cutter
4 flutes, AlTiN-coated

Application:
Ramping, grooving, drilling and rough machining with maximum performance. The special point geometry allows for ramp angles up to 45° and drilling up to 2xD without a piloting tool.

Execution:
- point geometry for ramping and drilling
- solid carbide ultra-fine grain

- AlTiN-coated
- Centre cutting and clearance
- with 45° edge protection chamfer
- uneven twist angle

Technical data:
- Z: 4 PCS

Ident. No. 305–320

Ident. No. 405–420

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16860305-320	210	175	120	120	110									150	60	30	25		
16860405-420	210	175	120	120	110									150	60	30	25		

								Type	N		N
								Surface	AlTiN		AlTiN
								Tool holding device	HA parallel shank		HB parallel shank
								Tolerance of cutting edge Ø	h10		h10
								Tolerance of shank Ø	h6		h6
mm	mm	mm	mm	mm	mm	F mm		fz steel 1000 ● (mm)	16860... Ident. No.		16860... Ident. No.	
5.7	13	19	57	5.4	6	0.05		0.05	305	●	405	●
6	13	19	57	5.7	6	0.05		0.05	306	●	406	●
7.7	19	25	63	7.3	8	0.1		0.06	307	●	407	●
8	19	25	63	7.6	8	0.1		0.06	308	●	408	●
9.7	22	30	72	9.2	10	0.1		0.07	309	●	409	●
10	22	30	72	9.5	10	0.1		0.07	310	●	410	●
11.7	26	36	83	11.2	12	0.15		0.09	311	●	411	●
12	26	36	83	11.5	12	0.15		0.09	312	●	412	●
13.7	26	36	83	13.2	14	0.15		0.11	313	●	413	●

							Type	N		N	
							Surface	AlTiN		AlTiN	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	h10		h10	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	mm	fz steel 1000 ● (mm)	16860... Ident. No.		16860... Ident. No.	
14	26	36	83	13.5	14	0.15	0.11	314	●	414	●
15.6	32	42	92	15.1	16	0.2	0.12	315	●	415	●
16	32	42	92	15.5	16	0.2	0.12	316	●	416	●
19.5	38	52	104	19	20	0.2	0.14	319	●	419	●
20	38	52	104	19.5	20	0.2	0.14	320	●	420	●

Prod. Gr. 150

ORION® Solid carbide HPC end mill

4 flutes, ULTRA-coated

VHM | ULTRA | Typ N | Z 4 | 35°/38° | γ = 8° | 45° | HB | HA

Application:
HPC end mill with uneven twist and uneven pitch for universal rough machining and smoothing.

Execution:
- Solid carbide ultra-fine grain
- Straight shank as per DIN 6535 HA and HB
- ULTRA-coated
- With clearance
- Uneven twist angle 35°/38°
- With edge protection chamfer
- Edge-rounded flutes
- Centre cutting
- Uneven flute pitch

Advantage:
- Extremely smooth running
- Reduced oscillation
- Higher feed rates and cutting depths possible
- Ideal for static and dynamic trochoidal milling
- Defined edge rounding for outstanding service life

Ident. No. 200, 202, 204, 206, 208, 210, 212, 214, 216, 218, 220, 252

Ident. No. 201, 203, 205, 207, 209, 211, 213, 215, 217, 219, 221, 253

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16851200-220	230	190	150	120	100			350	300	240	280			160	100	70	70		
16851201-221	230	190	150	120	100			350	300	240	280			160	100	70	70		
16851222-250	230	190	150	120	100			350	300	240	280			160	100	70	70		
16851223-251	230	190	150	120	100			350	300	240	280			160	100	70	70		

							Type	N		N	
							Surface	ULTRA		ULTRA	
							Tool holding device	HB parallel shank		HA parallel shank	
							Tolerance of cutting edge Ø	e8		e8	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16851... Ident. No.		16851... Ident. No.	
3	5	10	50	2.8	6	0.05	4	0.03	200	●	250	●
3	8	13	57	2.8	6	0.05	4	0.03	201	●	251	●
4	8	14	54	3.8	6	0.1	4	0.035	204	●	224	●
4	11	17	57	3.8	6	0.1	4	0.035	205	●	225	●
5	9	16	54	4.7	6	0.1	4	0.04	202	●	222	●
5	13	17	57	4.7	6	0.1	4	0.04	203	●	223	●
6	10	17	54	5.8	6	0.1	4	0.05	206	●	226	●
6	13	19	57	5.8	6	0.1	4	0.05	207	●	227	●
8	12	22	58	7.7	8	0.2	4	0.06	208	●	228	●
8	21	25	63	7.7	8	0.2	4	0.06	209	●	229	●
10	14	26	66	9.7	10	0.2	4	0.07	210	●	230	●
10	22	30	72	9.7	10	0.2	4	0.07	211	●	231	●
12	16	28	73	11.6	12	0.2	4	0.08	212	●	232	●
12	26	36	83	11.6	12	0.2	4	0.08	213	●	233	●
14	16	28	73	13.6	14	0.2	4	0.1	214	●	234	●
14	26	36	83	13.6	14	0.2	4	0.1	215	●	235	●
16	22	34	82	15.5	16	0.2	4	0.12	216	●	236	●
16	36	42	92	15.5	16	0.2	4	0.12	217	●	237	●
18	22	34	82	17.5	18	0.2	4	0.13	218	●	238	●
18	36	42	92	17.5	18	0.2	4	0.13	219	●	239	●
20	26	42	92	19.5	20	0.2	4	0.14	220	●	240	●
20	41	52	104	19.5	20	0.2	4	0.14	221	●	241	●
25	30	50	110	24.5	25	0.2	4	0.16	252	●	254	●
25	68	78	136	24.5	25	0.2	4	0.16	253	●	255	●

Prod. Gr. 150

ORION® Solid carbide HPC end mill set

4 flutes, ULTRA-coated

Application:
HPC end mill with unequal twist and unequal pitch for universal rough machining and smoothing

Execution:
- solid carbide ultra-fine grain, ULTRA-coated
- straight shank in line with DIN 6535 HB
- unequal twist angle of 35°/38°
- with edge protection chamfer
- Comprising individual tools 16851 207-217

Ident. No. 298

Ident. No. 299

Composition of set		6 / 8 / 10 / 12 mm	6 / 8 / 10 / 12 / 16 mm
Number of pieces in assortment/set (PCS)		4	5
Type		N	N
16851...	Ident. No.	298	299
		●	●

Prod. Gr. 150

ORION® Solid carbide HPC end mill

4 flutes, ULTRA-coated

VHM | ULTRA | Typ N | Z 4 | 35°/38° | γ = 8° | 45° | HB | HPC

Application:
HPC end mill with uneven twist and uneven pitch for universal rough machining and smoothing.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HB
- ULTRA-coated
- With clearance
- Uneven twist angle 35°/38°
- With edge protection chamfer
- Edge-rounded flutes
- Centre cutting
- Uneven flute pitch
- Chip breaker on every flute

Advantage:
- Optimal suitability for trochoidal milling
- With chip breaker geometry for short chips
- HPC geometry for highest feed rates and smooth running
- Suitable for large cutting depths

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16851284-294	230	190	150	120	100			350	300	240	280			160	100	70	70		

							Type	N	
							Surface	ULTRA	
							Tool holding device	HB parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16851... Ident. No.	
6	18	24	62	5.8	6	0.1	4	0.05	284	●
8	24	30	68	7.7	8	0.2	4	0.06	286	●
10	31	38	80	9.7	10	0.2	4	0.07	288	●
12	41	46	93	11.6	12	0.2	4	0.08	290	●
16	51	58	108	15.5	16	0.2	4	0.11	292	●
20	61	74	126	19.5	20	0.2	4	0.13	294	●

Prod. Gr. 150

ORION® Solid carbide HPC end mill

4 flutes, TiAlN - coated

VHM | TiAlN | Typ N | Z 4 | 35°/38° | γ = 4° | 45° | HB | HPC

Application:
HPC end mill with unequal twist and uneven distribution for universal roughing and finishing.

Execution:
- Solid carbide ultra-fine grain
- Straight shank pursuant to DIN 6535 HB
- TiAlN-coated
- With clearance
- Unequal twist angle 35°/38°
- With edge protection chamfer
- Rounded cutting edge
- Centre cutting
- Unequal cutter pitch

Advantage:
- Roughing and finishing with just one tool
- Ideally suitable for trochoidal milling
- Enables higher feed rates and greater cutting depths

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16853201-217	200	160	130	105	85			300	255	205	240			135	85	60	60		
16853202-218	200	160	130	105	85			300	255	205	240			135	85	60	60		

								Type	N	
								Surface	TiAlN	
								Tool holding device	HB parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16853... Ident. No.	
3	5	12	50	2.8	6	0.1	4	0.027	201	●
3	8	15	57	2.8	6	0.1	4	0.027	202	●
4	8	15	54	3.8	6	0.1	4	0.036	203	●
4	11	18	57	3.8	6	0.1	4	0.036	204	●
5	9	15	54	4.8	6	0.1	4	0.03	205	●
5	13	18	57	4.8	6	0.1	4	0.03	206	●
6	10	18	54	5.7	6	0.15	4	0.045	207	●
6	13	21	57	5.7	6	0.15	4	0.045	208	●
8	12	22	58	7.7	8	0.15	4	0.055	209	●
8	19	27	63	7.7	8	0.15	4	0.055	210	●
10	14	26	66	9.5	10	0.2	4	0.06	211	●
10	22	32	72	9.5	10	0.2	4	0.06	212	●
12	16	28	73	11.5	12	0.2	4	0.07	213	●
12	26	38	83	11.5	12	0.2	4	0.07	214	●
16	22	34	82	15.5	16	0.35	4	0.1	215	●
16	32	44	92	15.5	16	0.35	4	0.1	216	●
20	26	42	92	19.5	20	0.45	4	0.13	217	●
20	38	54	104	19.5	20	0.45	4	0.13	218	●

Prod. Gr. 150

ORION® Solid carbide HPC end mill set

4 flutes, TiAlN - coated

Application:
HPC end mill with unequal twist and unequal pitch for universal rough machining and smoothing

Execution:
- Solid carbide ultra-fine grain, TiAlN-coated

- Straight shank in line with DIN 6535 HB
- Unequal twist angle of 35°/38°
- With edge protection chamfer
- Comprising individual tools 16853 208-216

Ident. No. 298

Ident. No. 299

Composition of set	Number of pieces in assortment/set (PCS)	Type	16853... Ident. No.	
6/8/10/12 mm	4	N	298	●
6/8/10/12/16 mm	5	N	299	●

Prod. Gr. 150

ATORN® SC roughing cutter

3-4 flutes, ULTRA coated

VHM | ULTRA | Typ NR | Z 3 | Z 4 | 45° | γ = 8° | 45° | HB

Application:
For universal rough cutting with maximum machining performance. Ideal for dry machining.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HB
- Centre cutting
- With edge protection chamfer
- With clearance

Ident. No. 040, 050, 060, 080, 100, 120, 160, 200

Ident. No. 041, 051, 061, 081, 101, 121, 161, 201

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16848040-200	150	150	110	110	110	350		140		130				150	70	50	50		
16848041-201	150	150	110	110	110	350		140		130				150	70	50	50		

								Type	NR	
								Surface	ULTRA	
								Tool holding device	HB parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16848... Ident. No.	
4	11	18	57	3.8	6	0.1	3	0.032	040	●
4	8	18	57	3.8	6	0.1	3	0.044	041	●
5	13	20	57	4.8	6	0.1	3	0.04	050	●
5	9	20	57	4.8	6	0.1	3	0.048	051	●
6	13	20	57	5.8	6	0.1	4	0.048	060	●
6	10	20	57	5.8	6	0.1	4	0.056	061	●
8	19	25	63	7.7	8	0.2	4	0.064	080	●
8	12	25	63	7.7	8	0.2	4	0.064	081	●
10	22	30	72	9.5	10	0.2	4	0.08	100	●
10	15	30	72	9.5	10	0.2	4	0.072	101	●
12	26	35	83	11.5	12	0.3	4	0.096	120	●
12	18	35	83	11.5	12	0.3	4	0.12	121	●
16	32	40	92	15.5	16	0.3	4	0.115	160	●
16	24	40	92	15.5	16	0.3	4	0.145	161	●
20	38	50	104	19.5	20	0.3	4	0.13	200	●
20	30	50	104	19.5	20	0.3	4	0.17	201	●

Prod. Gr. 108

ATORN® SC roughing cutter

4-6 flutes, ULTRA - coated

VHM | ULTRA | Typ VA | Z 4 | Z 5 | Z 6 | 45° | γ = 10° | 45° | HA | HB

Ident. No. 460–601

Ident. No. 760–901

Application:
Roughing cutter for universal machining.

Execution:
- Solid carbide ultra-fine grain
- Centre cutting
- With clearance
- ULTRA-coated
- **Ident. No. 460, 480, 500, 520, 560, 600, 760, 780, 800, 820, 860, 900:** Straight shank in accordance with DIN 6535 HB
- **Ident. No. 461, 481, 501, 521, 561, 601, 761, 781, 801, 821, 861, 901:** Straight shank in accordance with DIN 6535 HA

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16849460-900	110	100	90	70	65	350	300	135	150	120	135			120	35	30	30		
16849461-901	110	100	90	70	65	350	300	135	150	120	135			120	35	30	30		

							Type	VA		VA	
							Surface	ULTRA		ULTRA	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	d11		d11	
							Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16849... Ident. No.		16849... Ident. No.	
6	8	16	54	5.8	6	0.1	4	0.044	460	●	760	●
6	13	19	57	5.8	6	0.1	4	0.044	461	●	761	●
8	11	20	58	7.7	8	0.2	4	0.048	480	●	780	●
8	19	25	63	7.7	8	0.2	4	0.048	481	●	781	●
10	13	24	66	9.8	10	0.2	4	0.056	500	●	800	●
10	22	30	72	9.8	10	0.2	4	0.056	501	●	801	●
12	16	26	73	11.8	12	0.2	4	0.064	520	●	820	●
12	26	36	83	11.8	12	0.2	4	0.064	521	●	821	●
16	19	32	82	15.7	16	0.3	5	0.1	560	●	860	●
16	32	42	92	15.7	16	0.3	5	0.1	561	●	861	●
20	19	40	92	19.7	20	0.3	6	0.145	600	●	900	●
20	38	52	104	19.7	20	0.3	6	0.145	601	●	901	●

Prod. Gr. 108

ORION® SC roughing cutter

4-6 flutes, TiAlN coated

VHM | TiAlN | Typ HR | Z 4 | Z 5 | Z 6 | 45° | γ = 8° | 45° | HB

Application:
For rough cutting at high feed rates and with rigid clamping, up to Vc 160 m/min possible

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HB
- TiAlN-coated
- Centre cutting

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16849306-320	100	90	80	70	65	300	250	135	145	110	125			115	35	30	30		

							Type	HR
							Surface	TiAlN
							Tool holding device	HB parallel shank
							Tolerance of cutting edge Ø	e8
							Tolerance of shank Ø	h6
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16849... Ident. No.	
6	16	57	6	0.1	4	0.044	306	●
7	16	63	8	0.1	4	0.046	307	●
8	16	63	8	0.2	4	0.048	308	●
9	19	72	10	0.2	4	0.052	309	●
10	22	72	10	0.2	4	0.056	310	●
12	25	83	12	0.2	4	0.064	312	●
14	32	83	14	0.2	4	0.072	314	●
16	32	92	16	0.3	5	0.1	316	●
18	32	92	18	0.3	6	0.13	318	●
20	38	104	20	0.3	6	0.145	320	●

Prod. Gr. 150

ORION® SC roughing cutter

3-5 flutes, TiAlN - coated

VHM | TiAlN | Typ NR | Z 3 | Z 4 | Z 5 | 20° | γ = -3° | 45° | HB

Ident. No. 040, 051, 061, 081, 101, 121, 161, 201–251
Short version

Ident. No. 050, 060, 080, 100, 120, 160, 200

Application:
For universal rough milling with maximum cutting performance.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HB
- TiAlN-coated
- Centre cutting
- With edge protection chamfer
- Fine notch separation
- **Ident. No. 040, 051, 061, 081, 101, 121, 161, 201–251:** Long version
- **Ident. No. 050, 060, 080, 100, 120, 160, 200:** Short version

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16852040-251	110	80				175		135		110				100					
16852050-200	110	80				175		135		110				100					

							Type	NR
							Surface	TiAlN
							Tool holding device	HB parallel shank
							Tolerance of cutting edge Ø	e8
							Tolerance of shank Ø	h6
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16852... Ident. No.	
4	8	54	6	0.1	3	0.024	040	●
5	8	54	6	0.1	3	0.03	050	●
5	16	57	6	0.1	3	0.03	051	●
6	8	54	6	0.1	3	0.036	060	●
6	16	57	6	0.1	3	0.036	061	●
8	11	58	8	0.2	3	0.048	080	●
8	19	63	8	0.2	3	0.048	081	●
10	13	66	10	0.2	4	0.072	100	●
10	22	72	10	0.2	4	0.072	101	●
12	16	73	12	0.2	4	0.08	120	●
12	26	83	12	0.2	4	0.08	121	●
16	19	82	16	0.3	4	0.096	160	●
16	32	92	16	0.3	4	0.096	161	●
20	19	92	20	0.3	4	0.115	200	●
20	38	104	20	0.3	4	0.115	201	●
25	45	121	25	0.3	5	0.16	251	●

Prod. Gr. 154

ATORN® SC multi-tooth mills

6-8 flutes, ULTRA coated

VHM | ULTRA | Typ VA | Z 6 | Z 8 | 45° | γ = 14° | 45° | HB

Application:
For circumferential milling as a finishing process to create a high surface quality. Face cut only with shallow cutting depths.

Execution:
- Solid carbide ultra-fine grain
- Straight shank pursuant to DIN 6535 HB
- ULTRA-coated
- Centre cutting
- With clearance

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16886	120	90	75	65	60	350	400	180	220	160	190	140		130	55	45	45		

								Type	VA	
								Surface	ULTRA	
								Tool holding device	HB parallel shank	
								Tolerance of cutting edge Ø	f8	
								Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16886... Ident. No.	
6	13	19	57	5.7	6	0.1	6	0.108	060	●
6	16.3	40	80	5.8	6	0.1	6	0.108	062	●
6	18	24	62	5.7	6	0.1	6	0.108	061	●
8	19	25	63	7.6	8	0.1	6	0.12	080	●
8	19	50	100	7.7	8	0.1	6	0.12	082	●
8	24	30	68	7.6	8	0.1	6	0.12	081	●
10	22	30	72	9.6	10	0.1	6	0.125	100	●
10	25	60	100	9.7	10	0.1	6	0.125	102	●
10	30	38	80	9.6	10	0.1	6	0.125	101	●
12	26	36	83	11.5	12	0.2	6	0.13	120	●
12	30	60	120	11.6	12	0.2	6	0.13	122	●
12	36	46	93	11.5	12	0.2	6	0.13	121	●
16	32	42	92	15.5	16	0.2	6	0.145	160	●
16	40	100	150	15.5	16	0.2	6	0.145	163	●
16	48	58	108	15.5	16	0.2	6	0.145	161	●
16	65	75	125	15.5	16	0.2	6	0.145	162	●
20	38	52	104	19.5	20	0.2	8	0.16	200	●
20	50	100	150	19.6	20	0.2	8	0.16	203	○
20	60	74	126	19.5	20	0.2	8	0.16	201	○
20	75	98	150	19.5	20	0.2	8	0.16	202	●

Prod. Gr. 108

ORION® SC multi-tooth mills

6 flutes, TiAlN coated

VHM | TiAlN | Typ N | Z 6 | 45° | γ = 7° | HB

Application:
For circumferential milling as a finishing process to create a high surface quality. Face cut only with shallow cutting depths.

Execution:
- solid carbide ultra-fine grain

- straight shank in line with DIN 6535 HB
- TiAlN-coated
- **No. 16876:** Standard version
- **No. 16881:** Long version

No. 16876

No. 16881

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16876040-200	115	85	70	60	57	330	380	170	210	150	180	135		125	50	40			
16881040-200	105	75	65	55	50	300	340	155	190	135	160	120		115	45	35			

						Type	N		N	
						Surface	TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	f8		f8	
						Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16876... Ident. No.		16881... Ident. No.	
4	11	57	6	6	0.03	040	●	-	-
4	16	63	6	6	0.025	-	-	040	●
5	13	57	6	6	0.03	050	●	-	-
5	18	63	6	6	0.025	-	-	050	●
6	13	57	6	6	0.04	060	●	-	-
6	18	63	6	6	0.035	-	-	060	●
8	19	63	8	6	0.06	080	●	-	-
8	24	68	8	6	0.05	-	-	080	●
10	22	72	10	6	0.07	100	●	-	-
10	30	80	10	6	0.06	-	-	100	●
12	26	83	12	6	0.08	120	●	-	-
12	36	93	12	6	0.07	-	-	120	●
14	26	83	14	6	0.08	140	●	-	-
14	42	100	14	6	0.07	-	-	140	●
16	32	92	16	6	0.09	160	●	-	-
16	48	108	16	6	0.08	-	-	160	●
18	32	92	18	6	0.1	180	●	-	-
18	54	114	18	6	0.09	-	-	180	●
20	38	104	20	6	0.11	200	●	-	-
20	60	126	20	6	0.1	-	-	200	●

Prod. Gr. 154

ORION® SC multi-tooth mills

6-8 flutes, TiAlN coated

VHM | TiAlN | Typ H | Z 6 | Z 8 | 50° | γ = -5° | HA

Ident. No. 040–050, 060, 080, 100, 120, 160, 200

Ident. No. 051, 061, 081, 101, 121, 161, 201–251

Application:
HSC milling also for dry machining, for machining up to 64 HRC

Execution:
- Solid carbide ultra-fine grain
- Straight shank pursuant to DIN 6535 HA
- TiAlN-coated
- Without centre cutting

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16883040-200		90	80	60										125		40		80	60
16883051-251		80	70	55										115				70	55

						Type	H
						Surface	TiAlN
						Tool holding device	HA parallel shank
						Tolerance of cutting edge Ø	e8
						Tolerance of shank Ø	h6
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16883... Ident. No.	
4	11	57	6	6	0.01	040	●
5	13	57	6	6	0.01	050	●
5	18	62	6	6	0.008	051	●
6	13	57	6	6	0.014	060	●
6	18	62	6	6	0.01	061	●
8	19	63	8	6	0.02	080	●
8	24	68	8	6	0.016	081	●
10	22	72	10	6	0.025	100	●
10	30	80	10	6	0.02	101	●
12	26	83	12	6	0.03	120	●
12	36	93	12	6	0.025	121	●
16	32	92	16	8	0.04	160	●
16	48	108	16	8	0.035	161	●
20	38	104	20	8	0.045	200	●
20	60	126	20	8	0.04	201	●
25	95	160	25	8	0.05	251	●

Prod. Gr. 154

ATORN® SC HPC torus milling cutter

4 flutes, ULTRA-coated

VHM | ULTRA | Typ N | Z 4 | 30° | γ = 8° | HB | HPC

Application:
HPC torus milling cutter with uneven pitch for universal rough machining and smoothing.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HB
- ULTRA-coated
- Centre cutting
- Unequal cutting pitch

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16856	230	190	150	120	100			350	300	240	280			160	100	70	70		

								Type	N	
								Surface	ULTRA	
								Tool holding device	HB parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16856... Ident. No.	
3	0.1	5	10	50	2.7	6	4	0.02	001	●
3	0.1	8	13	57	2.7	6	4	0.02	002	●
3	0.4	5	10	50	2.7	6	4	0.02	003	●
3	0.4	8	13	57	2.7	6	4	0.02	004	●
3	0.5	5	10	50	2.7	6	4	0.02	005	●
3	0.5	8	13	57	2.7	6	4	0.02	006	●
3	1	5	13	50	2.7	6	4	0.02	007	●
3	1	8	13	57	2.7	6	4	0.02	008	●
4	0.1	8	14	54	3.7	6	4	0.03	009	●
4	0.1	11	17	57	3.7	6	4	0.03	010	●
4	0.4	8	14	54	3.7	6	4	0.03	011	●
4	0.4	11	17	57	3.7	6	4	0.03	012	●
4	0.5	8	14	54	3.7	6	4	0.03	013	●
4	0.5	11	17	57	3.7	6	4	0.03	014	●
4	1	8	14	54	3.7	6	4	0.03	015	●
4	1	11	17	57	3.7	6	4	0.03	016	●
5	0.1	9	16	54	4.7	6	4	0.04	017	●
5	0.1	13	19	57	4.7	6	4	0.04	018	●

									Type	N
									Surface	ULTRA
									Tool holding device	HB parallel shank
									Tolerance of cutting edge Ø	e8
									Tolerance of shank Ø	h6
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16856... Ident. No.	
5	0.5	9	16	54	4.7	6	4	0.04	019	●
5	0.5	13	19	57	4.7	6	4	0.04	020	●
5	1	9	16	54	4.7	6	4	0.04	021	●
5	1	13	19	57	4.7	6	4	0.04	022	●
6	0.1	10	16	54	5.5	6	4	0.045	023	●
6	0.1	13	19	57	5.5	6	4	0.045	024	●
6	0.5	10	16	54	5.5	6	4	0.045	025	●
6	0.5	13	19	57	5.5	6	4	0.045	026	●
6	1	10	16	54	5.5	6	4	0.045	027	●
6	1	13	19	57	5.5	6	4	0.045	028	●
6	1.5	10	16	54	5.5	6	4	0.045	029	●
6	1.5	13	19	57	5.5	6	4	0.045	030	●
8	0.15	12	20	58	7.4	8	4	0.05	031	●
8	0.15	21	25	63	7.4	8	4	0.05	032	●
8	0.5	12	20	58	7.4	8	4	0.05	033	●
8	0.5	21	25	63	7.4	8	4	0.05	034	●
8	1	12	20	58	7.4	8	4	0.05	035	●
8	1	21	25	63	7.4	8	4	0.05	036	●
8	1.5	12	20	58	7.4	8	4	0.05	037	●
8	1.5	21	25	63	7.4	8	4	0.05	038	●
8	2	12	20	58	7.4	8	4	0.05	039	●
8	2	21	25	63	7.4	8	4	0.05	040	●
10	0.15	14	24	66	9.2	10	4	0.06	041	●
10	0.15	22	30	72	9.2	10	4	0.06	042	●
10	0.5	14	24	66	9.2	10	4	0.06	043	●
10	0.5	22	30	72	9.2	10	4	0.06	044	●
10	1	14	24	66	9.2	10	4	0.06	045	●
10	1	22	30	72	9.2	10	4	0.06	046	●
10	1.5	14	24	66	9.2	10	4	0.06	047	●
10	1.5	22	30	72	9.2	10	4	0.06	048	●
10	2	14	24	66	9.2	10	4	0.06	049	●
10	2	22	30	72	9.2	10	4	0.06	050	●
12	0.2	16	26	73	11	12	4	0.07	051	●
12	0.2	26	36	83	11	12	4	0.07	052	●
12	0.5	26	36	83	11	12	4	0.07	054	●
12	1	16	26	73	11	12	4	0.07	055	●
12	1	26	36	83	11	12	4	0.07	056	●
12	1.5	16	26	73	11	12	4	0.07	057	●
12	1.5	26	36	83	11	12	4	0.07	058	●
12	2	16	26	73	11	12	4	0.07	059	●
12	2	26	36	83	11	12	4	0.07	060	●
16	0.3	22	32	82	15	16	4	0.09	063	●
16	0.3	36	42	92	15	16	4	0.09	064	●
16	1	22	32	82	15	16	4	0.09	065	●
16	1	36	42	92	15	16	4	0.09	066	●
16	2	36	42	92	15	16	4	0.09	068	●
16	4	36	42	92	15	16	4	0.09	070	●
20	1	41	52	104	19	20	4	0.12	080	●
20	2	41	52	104	19	20	4	0.12	082	●
20	4	41	52	104	19	20	4	0.12	084	●

Prod. Gr. 108

ORION® SC torus milling cutter

3-4 flutes, TiAlN coated

VHM | TiAlN | Typ H | Z 3 | Z 4 | 50° | HA | HPC

Application:
Torus milling cutter for universal machining.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA

- TiAlN-coated
- 3-4 cutters
- Centre cutting
- Edge radius
- Chip chamber lowered from the face over the length of the diameter

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16862500-509		130	110	120														80	60

						Type	H	
						Surface	TiAlN	
						Tool holding device	HA parallel shank	
						Tolerance of cutting edge Ø	e8	
						Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16862... Ident. No.	
2	0.5	7	57	6	3	0.03	500	●
3	0.5	8	57	6	3	0.035	501	●
4	1	11	57	6	3	0.04	502	●
5	1	13	57	6	3	0.05	503	●
6	1	13	65	8	4	0.055	504	●

						Type	H	
						Surface	TiAlN	
						Tool holding device	HA parallel shank	
						Tolerance of cutting edge Ø	e8	
						Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16862... Ident. No.	
8	2	19	80	8	4	0.06	505	●
10	2	22	100	10	4	0.065	506	●
12	3	26	100	12	4	0.075	507	●
14	3	26	104	12	4	0.08	508	●
16	4	32	115	16	4	0.09	509	●

Prod. Gr. 148

ORION® Solid carbide mini radius milling cutter

2-cutter, uncoated

VHM | Typ N | Z 2 | 30° | HA

Application:
Miniature radius milling cutter in a short, stable design for universal machining.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA
- With clearance
- Cutter tolerance: +/- 0.02 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16738	90	60	55	40	35	175	190	110	130	90	120	125		60	30	30	25		

					Type	N	
					Surface	Uncoated	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	+/-0.02	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16738... Ident. No.	
0.25	0.5	39	3	2	0.004	325	●
0.3	1	39	3	2	0.005	330	●
0.4	1	39	3	2	0.006	340	●
0.5	1.5	39	3	2	0.008	350	●
0.6	1.5	39	3	2	0.01	360	●
0.8	2	39	3	2	0.018	380	●
1	3	39	3	2	0.024	400	●
1.2	4	39	3	2	0.029	420	●
1.4	4	39	3	2	0.034	440	●
1.5	4	39	3	2	0.036	450	●
1.6	4	39	3	2	0.037	460	●
1.8	5	39	3	2	0.038	480	●
2	5	39	3	2	0.04	500	●
2.5	7	39	3	2	0.044	550	●

Prod. Gr. 150

ORION® Solid carbide radius cutter

2 cutters, TiAlN-coated

VHM | TiAlN | Typ N | Z 2 | 30° | HA | HB

Ident. No. 020, 030, 040, 050, 060, 080, 100, 120, 160, 200
Shank HB

Ident. No. 021, 031, 041, 051, 061, 081, 101, 121, 161, 201

Application:
Radius milling cutter for universal use for copy milling in dip working and mould construction.

Execution:
- Solid carbide ultra-fine grain
- TiAlN-coated
- Full radius
- Centre cutting
- **Ident. No. 020, 030, 040, 050, 060, 080, 100, 120, 160, 200:** Straight shank in accordance with DIN 6535 HB
- **Ident. No. 021, 031, 041, 051, 061, 081, 101, 121, 161, 201:** Straight shank in accordance with DIN 6535 HA

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16741020-200	85	75	65	45	45	300	350	130	160	110	135	225		100	35	30	30		
16741021-201	85	75	65	45	45	300	350	130	160	110	135	225		100	35	30	30		

					Type	N		N	
					Surface	TiAlN		TiAlN	
					Tool holding device	HA parallel shank		HB parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16741... Ident. No.		16741... Ident. No.	
2	5	50	6	2	0.0155	021	●	020	●
3	5	50	6	2	0.024	031	●	030	●

					Type	N		N	
					Surface	TiAlN		TiAlN	
					Tool holding device	HA parallel shank		HB parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16741... Ident. No.		16741... Ident. No.	
4	8	54	6	2	0.036	041	●	040	●
5	9	54	6	2	0.045	051	●	050	●
6	10	54	6	2	0.054	061	●	060	●
8	12	58	8	2	0.072	081	●	080	●
10	14	66	10	2	0.084	101	●	100	●
12	16	73	12	2	0.096	121	●	120	●
16	22	82	16	2	0.12	161	●	160	●
20	26	92	20	2	0.145	201	●	200	●

Prod. Gr. 154

ORION® Solid carbide radius cutter

2 cutters, TiAlN-coated

VHM | TiAlN | Typ N | Z 2 | 30° | HA | HB

No. 16742
Shank HA

No. 16743

Application:
Radius milling cutter for universal use for copy milling in dip working and mould construction.

Execution:
- Solid carbide ultra-fine grain
- TiAlN-coated

- Centre cutting
- Full radius
- **No. 16742:** Straight shank in accordance with DIN 6535 HA
- **No. 16743:** Straight shank in accordance with DIN 6535 HB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16742	90	80	70	50	50	495	495	150	170	130	150	250		110	40	35	35		
16743	90	80	70	50	50	495	495	150	170	130	150	250		110	40	35	35		

					Type	N		N	
					Surface	TiAlN		TiAlN	
					Tool holding device	HA parallel shank		HB parallel shank	
					Tolerance of cutting edge Ø	e8		e8	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16742... Ident. No.		16743... Ident. No.	
3	8	62	3	2	0.02	030	●	-	-
4	8	75	4	2	0.03	040	●	-	-
5	9	75	5	2	0.038	050	●	-	-
6	10	100	6	2	0.045	060	●	060	●
8	12	100	8	2	0.06	080	●	080	●
10	14	100	10	2	0.07	100	●	100	●
12	16	100	12	2	0.08	120	●	120	●
16	22	150	16	2	0.1	160	●	160	●
20	26	150	20	2	0.12	200	●	200	●

Prod. Gr. 154

ORION® Solid carbide radius cutter

2 cutters, TiAlN-coated

VHM | TiAlN | Typ N | Z 2 | 30° | HA

Application:
Radius milling cutter for universal use for copy milling in dip working and mould construction.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- TiAlN-coated
- Centre cutting
- Exact radius with a milling angle of 220°

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16749	90	80	70	50	50	495	495	150	170	130	150	250		110	40	35	35		

						Type	N		
						Surface	TiAlN		
						Tool holding device	HA parallel shank		
						Tolerance of cutting edge Ø	f8		
						Tolerance of shank Ø	h6		
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16749... Ident. No.	
1	0.7	5.7	60	0.9	6	2	0.014	110	●
1.5	1.2	10	60	1.3	6	2	0.021	115	●
2	1.5	11.5	60	1.7	6	2	0.028	120	●
3	2.3	17.3	70	2.7	6	2	0.042	130	●
4	3	23	70	3.7	6	2	0.056	140	●
5	3.5	30	80	4.7	6	2	0.07	150	●
6	4	50	90	5.7	6	2	0.084	160	●

								Type	N
								Surface	TiAlN
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	f8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16749... Ident. No.	
8	5.4	65	100	7.7	8	2	0.115	180	●
10	6.7	66	100	9.7	10	2	0.14	200	●

Prod. Gr. 150

ATORN® Solid carbide radius cutter

4 flutes, ULTRA-coated

VHM | ULTRA | Typ N | Z 4 | 30° | HB

Ident. No. 060, 080, 100, 120, 140–160

Ident. No. 061, 081, 101, 121

Application:
Radius milling cutter for universal machining.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HB
- Up to Ø 6 mm = HA shank
- Centre cutting
- ULTRA-coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16868060	120	90	75	60	60	300	350	200	240	170	200			130	55	45	45		
16868061	110	80	65	55	55	270	315	180	215	155	180			115	50	40	40		
16868080-160	120	90	75	60	60	300	350	200	240	170	200			130	55	45	45		
16868081-121	110	80	65	55	55	270	315	180	215	155	180			115	50	40	40		

						Type	N
						Surface	ULTRA
						Tool holding device	HB parallel shank
						Tolerance of cutting edge Ø	f8
						Tolerance of shank Ø	h5
mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16868... Ident. No.	
6	13	57	6	4	0.04	060	●
6	40	100	6	4	0.03	061	●
8	19	63	8	4	0.05	080	●
8	40	100	8	4	0.04	081	●
10	22	72	10	4	0.08	100	●
10	40	100	10	4	0.06	101	●
12	26	83	12	4	0.09	120	●
12	45	100	12	4	0.07	121	●
14	26	83	14	4	0.1	140	●
16	32	92	16	4	0.12	160	●

Prod. Gr. 108

ATORN HPC POWER groove end mill UNI

the HPC POWER groove mill cutter is a 3-edged high-performance tool. due to its large chip space and very good chip removal, it is perfectly suitable for groove milling. each cutting edge has a different twist angle (33°/35°/37°). in addition to the entire spectrum for rustproof and acid-resistant steels, it can also be used for all steel processing.

the tool is available in the „short“ version and as undersize mill cutter for feather key grooves with a conical cutting section as well as in the „long” version with front-side coolant outlet.

features:

- Ø range 4 – 20 mm
- short and long version
- incl. undersize version
- incl. with internal cooling
- each cutting edge has a different twist angle (33°/35°/37°)

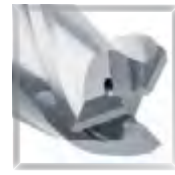
advantages:

- shaft version HA and HB available in h6 tolerance
- all tools with clearance for greater use of depth
- with unequal twist angles (33°/35°/38°)
- ULTRA coating ensures highest service life
- optimised front chip space for better chip removal

ATORN® P M N K S

cutting edge corner twice protected through edge protection chamfer and stable forehead cutting edge

optimised front-face cutting geometry with large chip spaces



long version with axial internal cooling available

ATORN® HPC POWER solid carbide groove end mill UNI

3 flutes, ULTRA-coated

VHM | ULTRA | Typ N | Z 3 | γ = 8° | 45° | HB | HA | HPC

Application:
HPC end mill for universal application, ideal for groove milling.

Execution:

- Solid carbide ultra-fine grain
- ULTRA high-performance coating
- Centre cutting
- Unequal twist angle 33°/35°/37°
- Unequal cutting edge pitch
- With edge protection chamfer
- With clearance
- Cutting edge with edge preparation

Advantage:

- Increased material removal rate
- High level of process reliability up to 2xD
- Higher feed rates and cutting depths possible
- Reduces vibrations
- Ideal for groove milling

Ident. No. 004–020

Ident. No. 104–120

Ident. No. 144–160

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16858004-020	200	160	130	120	100	300		260		200				160	70	40	40		
16858044-060	200	160	130	120	100	300		260		200				160	70	40	40		
16858104-120	200	160	130	120	100	300		260		200				160	70	40	40		
16858144-160	200	160	130	120	100	300		260		200				160	70	40	40		

								Type	N		N	
								Surface	ULTRA		ULTRA	
								Tool holding device	HB parallel shank		HA parallel shank	
								Tolerance of cutting edge Ø	h10		h10	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16858... Ident. No.		16858... Ident. No.	
4	5	8	54	3.8	6	0.1	3	0.04	004	●	044	●
4	8	12	54	3.8	6	0.1	3	0.04	104	●	144	●
5	6	10	54	4.7	6	0.15	3	0.05	005	●	045	●
5	10	15	54	4.7	6	0.15	3	0.05	105	●	145	●
6	7	12	54	5.7	6	0.2	3	0.06	006	●	046	●
6	13	21	57	5.7	6	0.2	3	0.06	106	●	146	●
8	9	16	58	7.7	8	0.2	3	0.08	008	●	048	●
8	19	27	63	7.7	8	0.2	3	0.08	108	●	148	●
10	11	20	66	9.6	10	0.2	3	0.1	010	●	050	●
10	22	32	72	9.6	10	0.2	3	0.1	110	●	150	●
12	12	24	73	11	12	0.2	3	0.12	012	●	052	●
12	26	38	83	11	12	0.2	3	0.12	112	●	152	●
14	14	28	75	13	14	0.3	3	0.16	014	●	054	●
14	26	38	83	13	14	0.3	3	0.16	114	●	154	●

								Type	N		N	
								Surface	ULTRA		ULTRA	
								Tool holding device	HB parallel shank		HA parallel shank	
								Tolerance of cutting edge Ø	h10		h10	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16858... Ident. No.		16858... Ident. No.	
16	16	32	82	15	16	0.3	3	0.16	016	●	056	●
16	32	44	92	15	16	0.3	3	0.16	116	●	156	●
18	18	36	84	17	18	0.3	3	0.2	018	●	058	●
18	32	44	92	17	18	0.3	3	0.2	118	●	158	●
20	20	40	92	19	20	0.3	3	0.2	020	●	060	●
20	38	54	104	19	20	0.3	3	0.2	120	●	160	●

Prod. Gr. 108

ATORN® HPC POWER solid carbide groove end mill UNI

3 flutes, ULTRA coated – UNDERSIZE

VHM | ULTRA | Typ N | Z 3 | γ = 8° | 45° | HA | HB | HPC

Ident. No. 345–356

Ident. No. 305–316

Application:
HPC end mill for universal application, ideal for groove milling.

Execution:
- Solid carbide ultra-fine grain
- ULTRA high-performance coating
- Centre cutting
- Unequal twist angle 33°/35°/37°
- Unequal cutting edge pitch
- With edge protection chamfer
- With clearance
- Cutting edge with edge preparation
- With conical cutting section

Advantage:
- Increased material removal rate
- High level of process reliability up to 2xD
- Higher feed rates and cutting depths possible
- Reduces vibrations
- Ideal for groove milling

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16858305-316	200	160	130	120	100	300		260		200				160	70	40	40		
16858345-356	200	160	130	120	100	300		260		200				160	70	40	40		

								Type	N		N	
								Surface	ULTRA		ULTRA	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h10		h10	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16858... Ident. No.		16858... Ident. No.	
4.8	6	18	54	4.6	6	0.15	3	0.05	345	●	305	●
5.75	6	18	54	5.5	6	0.15	3	0.06	346	●	306	●
7.75	9	22	58	7.5	8	0.2	3	0.08	348	●	308	●
9.7	11	26	66	9.3	10	0.2	3	0.1	350	●	310	●
11.7	12	28	73	11.2	12	0.2	3	0.12	352	●	312	●
13.7	14	30	75	13	14	0.2	3	0.16	354	●	314	●
15.7	16	34	82	15	16	0.3	3	0.16	356	●	316	●

Prod. Gr. 108

ATORN® HPC POWER solid carbide groove end mill UNI

3 flutes, ULTRA coated - INTERNAL COOLING

VHM | ULTRA | Typ N | Z 3 | γ = 8° | 45° | HB | HPC | IK

Application:
HPC end mill for universal application, ideal for groove milling.

Execution:
- Solid carbide ultra-fine grain
- ULTRA high-performance coating
- Centre cutting
- Unequal twist angle 33°/35°/37°
- Unequal cutting edge pitch
- With edge protection chamfer
- With clearance
- Cutting edge with edge preparation
- With internal cooling

Advantage:
- Increased material removal rate
- High level of process reliability up to 2xD
- Higher feed rates and cutting depths possible
- Reduces vibrations
- Ideal for groove milling

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16858206-220	200	160	130	120	100	300		260		200				160	70	40	40		

								Type	N	
								Surface	ULTRA	
								Tool holding device	HB parallel shank	
								Tolerance of cutting edge Ø	h10	
								Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16858... Ident. No.	
6	13	21	57	5.7	6	0.2	3	0.06	206	●
8	19	27	63	7.7	8	0.2	3	0.08	208	●
10	22	32	72	9.6	10	0.2	3	0.1	210	●
12	26	38	83	11	12	0.2	3	0.12	212	●
16	32	44	92	15	16	0.3	3	0.16	216	●
20	38	54	104	19	20	0.3	3	0.2	220	●

Prod. Gr. 108

ATORN HPC POWER end mill STEEL

with the solid carbide end mills HPC POWER cutter for steel and cast iron, HAHN+KOLB significantly increased the performance of low-vibration premium tools: significantly higher material removal rates are the result of different twist angles in conjunction with newly developed, stable front face and peripheral cutting edges.

one feature of the HPC POWER milling cutters by ATORN is the multi-functional application: rough machining and finishing is possible with the same tool. you can also create bars and grooves up to 2xD with excellent surface quality.

in addition to a short and long version, there is an additional extra-long version, which is also available on request.

features:

- Ø-range 1 – 20 mm
- short, long and extra-long version
- unequal twist angle (35°/38°)
- low power consumption
- stable cutting edge and edge protection chamfer
- optimised front cutting edge

advantages:

- shaft version HA and HB available in h6 tolerance
- all tools with clearance for greater application depth
- with unequal twist angle (35°/38°)
- ULTRA coating ensures highest service life
- optimised front chip space make for better suitability when helix milling and ramping

ATORN® P K

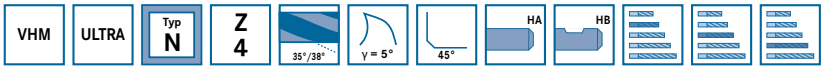
cutting edge corner twice protected through edge protection chamfer and stable forehead cutting edge

defined cutting edge rounding increases the service life and process reliability

gashing version in radius form for improved chip removal

ATORN® HPC POWER solid carbide end mill STEEL

4 flutes, ULTRA-coated



Application:
HPC end mill for machining steel and cast iron – low-vibration, multi-functional and high-performance tool for rough machining and finishing up to 2xD.

Execution:

- Solid carbide ultra-fine grain
- ULTRA high-performance coating
- Centre cutting
- Uneven twist angle: 35°/38°
- Unequal cutting edge pitch
- With edge protection chamfer
- With clearance
- Cutting edge with edge preparation

Advantage:

- Increased material removal rate
- High level of process reliability up to 2xD
- Higher feed rates and cutting depths possible
- Reduces vibrations
- Ideal for static and dynamic trochoidal milling

Ident. No. 304–320

Ident. No. 404–420

Ident. No. 506–520

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16854304-320	250	200	160											170					
16854341-360	250	200	160											170					
16854404-420	250	200	160											170					
16854441-460	250	200	160											170					
16854506-520	200	160	130											140					
16854546-560	200	160	130											140					

								Type	N		N	
								Surface	ULTRA		ULTRA	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h10		h10	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1000 ● (mm)	16854... Ident. No.		16854... Ident. No.	
1	1.5	2	40	0.9	4	0.025	4	0.008	341	●	-	-
1	2.5	3	40	0.9	4	0.025	4	0.008	441	●	-	-
2	3	4	40	1.8	4	0.05	4	0.014	342	●	-	-
2	4	6	40	1.8	4	0.05	4	0.014	442	●	-	-
3	4	6	40	2.8	4	0.075	4	0.02	343	●	-	-
3	6	9	40	2.8	4	0.075	4	0.02	443	●	-	-
4	5	8	54	3.8	6	0.1	4	0.04	344	●	304	●
4	8	12	54	3.8	6	0.1	4	0.04	444	●	404	●
5	6	10	54	4.7	6	0.15	4	0.06	345	●	305	●
5	10	15	54	4.7	6	0.15	4	0.06	445	●	405	●
6	7	16	54	5.7	6	0.2	4	0.07	346	●	306	●
6	13	21	57	5.7	6	0.2	4	0.07	446	●	406	●
6	9	29	65	5.7	6	0.2	4	0.05	546	●	506	●
8	9	20	58	7.7	8	0.2	4	0.09	348	●	308	●
8	19	27	63	7.7	8	0.2	4	0.09	448	●	408	●
8	12	39	75	7.7	8	0.2	4	0.065	548	●	508	●
10	11	24	66	9.6	10	0.2	4	0.11	350	●	310	●
10	22	32	72	9.6	10	0.2	4	0.11	450	●	410	●
10	15	40	80	9.6	10	0.2	4	0.08	550	●	510	●
12	12	26	73	11	12	0.2	4	0.13	352	●	312	●
12	26	38	83	11	12	0.2	4	0.13	452	●	412	●
12	18	48	93	11	12	0.2	4	0.09	552	●	512	●
14	14	28	75	13	16	0.3	4	0.18	354	●	314	●
14	26	38	83	13	14	0.3	4	0.18	454	●	414	●
16	16	32	82	15	16	0.3	4	0.18	356	●	316	●
16	32	44	92	15	16	0.3	4	0.18	456	●	416	●
16	24	60	108	15	16	0.3	4	0.13	556	●	516	●
18	18	34	84	17	18	0.3	4	0.22	358	●	318	●
18	32	44	92	17	18	0.3	4	0.22	458	●	418	●
20	20	40	92	19	20	0.3	4	0.22	360	●	320	●
20	38	54	104	19	20	0.3	4	0.22	460	●	420	●
20	30	76	126	19	20	0.3	4	0.15	560	●	520	●

Prod. Gr. 108

ATORN HPC POWER end mill STAINLESS STEEL

the 4-edged high-performance milling cutter was especially designed for machining stainless and acid-resistant steels, titanium and nickel-based alloys as well as short-chipping aluminium.

special cutting edge geometries, combined with optimal cemented carbide quality and a multi-layer, fine crystalline PVD coating were able to set new standards for processing demanding materials. chip formation, chip removal and temperature resistance were optimised and ensure maximum performance for demanding cutting values. the tools are available in short and long version in Ø 4-20 mm as well as with radial internal cooling.

features:

- Ø range 4 - 20 mm
- short and long version
- with internal cooling
- unequal twist angle (41°/44°)
- optimised cutting edge design (multi-chamfer polished surface)
- perfect for modern milling strategies

advantages:

- shank design HA and HB available in h6 tolerance
- all tools with clearance for greater milling depth
- low-vibration milling due to different twist angles (41°/44°)
- micro-cutting preparation on all cutting edges
- wear-resistant and temperature-resistant ULTRA M-coating

ATORN®

M N S

new edge protection in the form of a multi-chamfer cut

optimised hollowing out in the centre

long version with radial internal cooling available

ATORN® HPC POWER solid carbide end mill STAINLESS STEEL

4 flutes, ULTRA M coated

VHM | ULTRA M | Typ VA | Z 4 | 41°/44° | γ = 8° | HB | HA | HPC

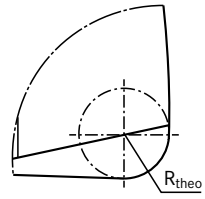
Application:
HPC end mill for machining rust- and acid-proof steels and titanium and nickel-based alloys, optimal application in trochoidal milling and in edge, corner and groove machining.

Execution:
- Solid carbide ultra-fine grain
- ULTRA M high-performance coating
- Centre cutting
- Uneven twist angle: 41°/44°
- Unequal cutting edge pitch
- Optimised cutting edge design
- With clearance
- Cutting edge with edge preparation

Advantage:
- Increased material removal rate
- High process reliability owing to robust cutting edges
- Higher feed rates and cutting depths possible
- Reduces vibrations
- Ideal for static and dynamic trochoidal milling

Ident. No. 204–220

Ident. No. 304–320



Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16855204-220				125	110	300		260		200					70	50	50		
16855244-260				125	110	300		260		200					70	50	50		
16855304-320				125	110	300		260		200					70	50	50		
16855344-360				125	110	300		260		200					70	50	50		

									Type	VA		VA	
									Surface	ULTRA M		ULTRA M	
									Tool holding device	HB parallel shank		HA parallel shank	
									Tolerance of cutting edge Ø	h10		h10	
									Tolerance of shank Ø	h6		h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16855... Ident. No.		16855... Ident. No.		
4	0.15	5	8	54	3.8	6	4	0.03	204	●	244	●	
4	0.15	8	12	54	3.8	6	4	0.03	304	●	344	●	
5	0.2	6	10	54	4.7	6	4	0.04	205	●	245	●	
5	0.2	10	15	54	4.7	6	4	0.04	305	●	345	●	
6	0.3	7	16	54	5.7	6	4	0.04	206	●	246	●	
6	0.3	13	21	57	5.7	6	4	0.04	306	●	346	●	
8	0.3	9	20	58	7.7	8	4	0.06	208	●	248	●	
8	0.3	19	27	63	7.7	8	4	0.06	308	●	348	●	
10	0.3	11	24	66	9.6	10	4	0.07	210	●	250	●	
10	0.3	22	32	72	9.6	10	4	0.07	310	●	350	●	
12	0.3	12	26	73	11	12	4	0.09	212	●	252	●	
12	0.3	26	38	83	11	12	4	0.09	312	●	352	●	
16	0.4	16	32	82	15	16	4	0.11	216	●	256	●	
16	0.4	32	44	92	15	16	4	0.11	316	●	356	●	
20	0.4	20	40	92	19	20	4	0.14	220	●	260	●	
20	0.4	38	54	104	19	20	4	0.14	320	●	360	●	

Prod. Gr. 108

ATORN® HPC POWER solid carbide end mill STAINLESS STEEL

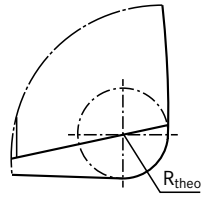
4 flutes, ULTRA M coated - INTERNAL COOLING

VHM | ULTRA M | Typ VA | Z 4 | 41°/44° | γ = 8° | HB | HPC | IK

Application:
HPC end mill for machining rust- and acid-proof steels and titanium and nickel-based alloys, optimal application in trochoidal milling and in edge, corner and groove machining.

Execution:
- Solid carbide ultra-fine grain
- ULTRA M high-performance coating
- Centre cutting
- Uneven twist angle: 41°/44°
- Unequal cutting edge pitch
- Optimised cutting edge design
- With clearance
- Cutting edge with edge preparation
- With internal cooling

Advantage:
- Increased material removal rate
- High process reliability owing to robust cutting edges
- Higher feed rates and cutting depths possible
- Reduces vibrations
- Ideal for static and dynamic trochoidal milling



Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16855406-420				125	110	300		260		200					70	50	50		

									Type	VA
									Surface	ULTRA M
									Tool holding device	HB parallel shank
									Tolerance of cutting edge Ø	h10
									Tolerance of shank Ø	h6
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16855... Ident. No.	
6	0.3	13	21	57	5.7	6	4	0.04	406	●
8	0.3	19	27	63	7.7	8	4	0.06	408	●
10	0.3	22	32	72	9.6	10	4	0.07	410	●
12	0.3	26	38	83	11	12	4	0.09	412	●
16	0.4	32	44	92	15	16	4	0.11	416	●
20	0.4	38	54	104	19	20	4	0.14	420	●

Prod. Gr. 108

ATORN HPC POWER end mill HARD

the new HPC HARD by ATORN is used wherever high-strength materials up to 1600 N/mm² or hardened steel from 45 to 55 HRC is machined. the uneven pitch ensures maximum smoothness and process reliability. it is ideally suited for HSC machining or for trochoidal milling and shows its strength also in edge, angular and groove milling and drilling up to 0.5 x diameter. the new tool is available in the diameter range from 6-20 mm as well as in the two different cutting lengths short and long.

features:

- Ø range 6 - 20 mm
- short and long version
- various corner radii available
- unequal twist angle (35°/38°)
- perfect for modern milling strategies
- suitable for materials up to 55 HRC

advantages:

- shaft version HA and HB in h6 tolerance available
- all tools with clearance for greater milling depth
- low-vibration milling due to different twist angles (35°/38°)
- ULTRA coating ensures highest service life
- optimised front chip space makes for better suitability when helix milling and ramping

ATORN® P K H

cutting corner optimally protected due to edge protection chamfer and stable front cutting edge

unequal cutting pitch reduces vibration

ATORN® HPC POWER solid carbide end mill HARD

4 flutes, ULTRA H coated

VHM | ULTRA H | Typ H | Z 4 | 35°/38° | γ = -3° | HB | HA | HPC

Application:
HPC end mill for high-strength materials up to 1600 N/mm² and hardened steel up to 55 HRC – optimal application in trochoidal milling and in edge, corner and groove machining.

Execution:

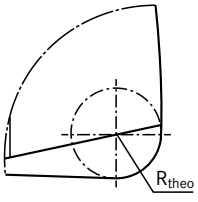
- Solid carbide ultra-fine grain
- ULTRA H high-performance coating
- Centre cutting
- Uneven twist angle: 35°/38°
- Unequal cutting edge pitch
- Optimised cutting edge design
- With clearance
- Cutting edge with edge preparation

Advantage:

- Increased material removal rate
- High process reliability owing to robust cutting edges
- Very good surface quality
- Reduces vibrations
- Ideal for static and dynamic trochoidal milling

Ident. No. 506–521

Ident. No. 606–621



Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16855506-521	160	140	120											160				100	
16855546-561	160	140	120											160				100	
16855606-621	160	140	120											160				100	
16855646-661	160	140	120											160				100	

								Type	H		H	
								Surface	ULTRA H		ULTRA H	
								Tool holding device	HB parallel shank		HA parallel shank	
								Tolerance of cutting edge Ø	h10		h10	
								Tolerance of shank Ø	h6		h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16855... Ident. No.		16855... Ident. No.	
6	0.5	7	16	54	5.7	6	4	0.01	506	●	546	●
6	0.5	15	21	57	5.7	6	4	0.01	606	●	646	●
8	0.5	9	20	58	7.7	8	4	0.02	508	●	548	●
8	0.5	20	27	63	7.7	8	4	0.02	608	●	648	●
10	0.5	11	24	66	9.6	10	4	0.025	510	●	550	●
10	0.5	25	32	72	9.6	10	4	0.025	610	●	650	●
12	0.5	12	26	73	11	12	4	0.03	512	●	552	●
12	1	12	26	73	11	12	4	0.03	513	●	553	●
12	0.5	30	38	83	11	12	4	0.03	612	●	652	●
12	1	30	38	83	11	12	4	0.03	613	●	653	●
16	0.5	16	32	82	15	16	4	0.06	516	●	556	●
16	1	16	32	82	15	16	4	0.06	517	●	557	●
16	0.5	35	44	92	15	16	4	0.06	616	●	656	●
16	1	35	44	92	15	16	4	0.06	617	●	657	●
20	0.5	20	40	92	19	20	4	0.08	520	●	560	●
20	1	20	40	92	19	20	4	0.08	521	●	561	●
20	0.5	44	54	104	19	20	4	0.08	620	●	660	●
20	1	44	54	104	19	20	4	0.08	621	●	661	●

Prod. Gr. 108

ATORN TVC trochoidal end mill
milling tools for modern milling strategies

the new ATORN TVC end mills are ideally suited for processing various steels and stainless steels/heat-resistant alloys using modern milling strategies. cutting lengths of 3xD and 4xD, reinforced cores and specially developed chip breaker geometries allow for deep operating depths with maximum process reliability. The variable twist angles of 44°/45° and 37°/40° reduce vibrations to a minimum and lead to highest surface qualities.

maximum cutting edge lengths – both types are available in 3xD and 4xD cutting length.

Uneven twist angle
Steel = 44°/45°, stainless steel = 37°/40°

Chamfer Edge protection - all tools are manufactured with chamfer edges for protection against wear.

chip breaker geometry – produces short chips, thus optimising chip removal.

optimised number of teeth – 3xD tools have 5 teeth; the 4xD tools are manufactured with 4 teeth.

ATORN®

3xD with 5 teeth 4xD with 4 teeth

edge protection chamfer

chip breaker

trochoidal milling

TVC = Trochoidal Volume Cutting
this milling strategy creates smarter and more efficient tool paths, especially when rough machining. this means that more material can be removed in a shorter time – without any loss of quality. overlapping a circular path on the feed movement has a positive influence on contact conditions. reducing stepover while at the same time utilising the entire cutting length results in the process forces being significantly reduced.

advantages:
- cutting depths of 3-4xD easily possible
- optimal, controlled tool engagement
- almost constant engagement angle (max. 70°) and centre chip thickness
- low stress on tool / spindle / bearings
- the cutting parameters can be selected very aggressively

static:
only grooves are milled. the tool paths consist exclusively of circular tool paths.

dynamic:
free workpiece contours are milled. the tool paths consist of circular and straight tool paths. the circular paths may in some cases include very large radii or linear movements.

ATORN® Solid carbide TVC end mill, trochoidal — STEEL
4-5 flutes, ULTRA coated

VHM | ULTRA | Typ N | Z 5 | Z 4 | 45° | γ = 10° | 45° | HB

Application:
The TVC end mills are optimally suited for processing with modern milling strategies. Cutting lengths of 3xD and 4xD, reinforced cores and specially developed chip breaker geometries allow for deep operating depths with maximum process reliability.

Execution:
- solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-coated
- centre cutting and edge protection chamfer
- special chip breakers for short chips
- uneven twist angle
- **Ident. No. 002–012:** 3xD design with clearance

Ident. No. 002–012

Ident. No. 020–028

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16859002-012	270	250	220											170					
16859020-028	270	250	220											170					

Type	N
Surface	ULTRA
Tool holding device	HB parallel shank
Tolerance of cutting edge Ø	h10
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1000 ●	16859... Ident. No.	
6	19	21	62	5.7	6	0.12	5	0.07	002	●
6	25	-	70	-	6	0.12	4	0.07	020	●
8	26	28	68	7.7	8	0.16	5	0.09	004	●
8	34	-	80	-	8	0.16	4	0.09	022	●
10	32	35	80	9.7	10	0.2	5	0.11	006	●
10	42	-	95	-	10	0.2	4	0.11	024	●
12	38	42	93	11.7	12	0.24	5	0.14	008	●
12	50	-	105	-	12	0.24	4	0.14	026	●
16	50	56	108	15.7	16	0.32	5	0.18	010	●
16	66	-	125	-	16	0.32	4	0.18	028	●
20	62	70	126	19.7	20	0.4	5	0.21	012	●

Prod. Gr. 152

ATORN® Solid carbide TVC end mill, trochoidal – STAINLESS STEEL

4–5 flutes, ULTRA M – coated

VHM | ULTRA M | Typ VA | Z 5 | Z 4 | 40° | γ = 12° | 45° | HB

Ident. No. 100–110

Ident. No. 120–128

Application:
The TVC end mills are optimally suited for processing with modern milling strategies. Cutting lengths of 3xD and 4xD, reinforced cores and specially developed chip breaker geometries allow for deep operating depths with maximum process reliability.

Execution:
- solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA M-coated
- centre cutting and edge protection chamfer
- special chip breakers for short chips
- uneven twist angle
- **Ident. No. 100–110:** 3xD design with clearance

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16859100-110				100	110										100	100	80		
16859120-128				100	110										100	100	80		

									Type	VA
									Surface	ULTRA M
									Tool holding device	HB parallel shank
									Tolerance of cutting edge Ø	h10
									Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steinl. st. ●	16859... Ident. No.	
6	19	21	62	5.7	6	0.12	5	0.07	100	●
6	25	-	70	-	6	0.12	4	0.07	120	●
8	26	28	68	7.7	8	0.16	5	0.09	102	●
8	34	-	80	-	8	0.16	4	0.09	122	●
10	32	35	80	9.7	10	0.2	5	0.11	104	●
10	42	-	95	-	10	0.2	4	0.11	124	●
12	38	42	93	11.7	12	0.24	5	0.14	106	●
12	50	-	105	-	12	0.24	4	0.14	126	●
16	50	56	108	15.7	16	0.32	5	0.18	108	●
16	66	-	125	-	16	0.32	4	0.18	128	●
20	62	70	126	19.7	20	0.4	5	0.21	110	●

Prod. Gr. 152

ATORN® Solid carbide TVC end mill, trochoidal – ALUMINIUM

4-cutter, uncoated

VHM | Typ W | Z 4 | 20° | γ = 20° | 45° | HB

Application:
The TVC end mills are optimally suited for processing with modern milling strategies. Cutting lengths of 3xD and 4xD, reinforced cores and specially developed chip breaker geometries allow for deep operating depths with maximum process reliability.

Execution:
- solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- uncoated and polished
- centre cutting and edge protection chamfer
- uneven twist angle
- **Ident. No. 140–154:** 3xD design with clearance

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16859140-154						600	400												
16859160-172						500	360												

									Type	W
									Surface	Uncoated
									Tool holding device	HB parallel shank
									Tolerance of cutting edge Ø	e8
									Tolerance of shank Ø	h5
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16859... Ident. No.	
4	13	14	62	3.8	6	0.08	4	0.05	140	●
4	17	-	70	-	6	0.08	4	0.05	160	●
5	16	17.5	62	4.8	6	0.1	4	0.06	142	●
5	21	-	70	-	6	0.1	4	0.06	162	●
6	19	21	62	5.8	6	0.12	4	0.1	144	●
6	25	-	70	-	6	0.12	4	0.1	164	●
8	26	28	68	7.8	8	0.16	4	0.12	146	●
8	34	-	80	-	8	0.16	4	0.12	166	●
10	32	35	80	9.8	10	0.2	4	0.14	148	●
10	42	-	95	-	10	0.2	4	0.14	168	●
12	38	42	93	11.8	12	0.24	4	0.18	150	●
12	50	-	105	-	12	0.24	4	0.18	170	●
16	50	56	108	15.8	16	0.32	4	0.21	152	●
16	66	-	125	-	16	0.32	4	0.21	172	●
20	62	70	126	19.8	20	0.4	4	0.28	154	●

Prod. Gr. 154

ATORN® Solid carbide TVC end mill

3-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 3 | 45° | γ = 13° | 45° | HA | HB

Application:
The TVC end mills are optimally suited for processing with modern milling strategies. Cutting edge lengths of 3.5xD, reinforced cores and specially developed chip breaker geometries allow high working depths with maximum process reliability.

Execution:
- solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO-coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- Polish sanding

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

						Type	W		W	
						Surface	ULTRA N PRO		ULTRA N PRO	
						Tool holding device	HA parallel shank		HB parallel shank	
						Tolerance of cutting edge Ø	h9		h9	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.		16665... Ident. No.	
8	28	68	8	0.2	3	0.09	705	●	-	-
10	35	80	10	0.2	3	0.1	710	●	-	-
12	42	93	12	0.2	3	0.11	715	●	-	-
16	56	108	16	0.2	3	0.12	-	-	720	●
20	70	126	20	0.2	3	0.16	-	-	725	●

Prod. Gr. 152

Solid carbide mills for machining aluminium

ATORN® Solid carbide single tooth cutter

1 cutter, uncoated

VHM | Typ W | Z 1 | 30° | γ = 20° | HA | HSC

Application:
For milling, plunging and contour milling NF metals and plastics.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA
- Sharp-edged
- Uncoated
- With clearance
- Mirror finish
- Right-hand cutting

Advantage:
- Defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652105-114						200	425	190	250	175	210	350							

						Type	W		
						Surface	Uncoated		
						Tool holding device	HA parallel shank		
						Tolerance of cutting edge Ø	h9		
						Tolerance of shank Ø	h5		
mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
1.5	6	22	50	1.45	3	1	0.01	105	●
2	8	22	50	1.8	3	1	0.014	106	●
3	12	22	50	2.8	3	1	0.02	107	●
4	15	29	57	3.8	4	1	0.03	108	●
5	17	32	60	4.8	5	1	0.04	109	●
6	20	28	64	5.8	6	1	0.055	110	●
8	24	28	64	7.8	8	1	0.07	111	●
10	25	33	73	9.7	10	1	0.085	112	●
12	32	39	84	11.7	12	1	0.1	113	●
16	38	45	93	15.7	16	1	0.12	114	●

Prod. Gr. 152

ORION® Solid carbide single tooth cutter

1 flute, uncoated

VHM | Typ W | Z 1 | 30° | HA

Application:
For milling, recessing and contour milling of non-ferrous metals and plastics.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HA
- sharp-edged
- uncoated
- right-hand cutting

Delivery:
Up to 3 mm diameter = 10 pieces

Notes:
Minimum order: up to 3.0 mm diameter = 10 pieces

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16700						180	350	150	200	145	180	260							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h10
Tolerance of shank Ø	h6

mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16700... Ident. No.	
1	4	38	3	1	0.008	110	●
1.5	6	38	3	1	0.01	115	●
2	8	38	3	1	0.012	120	●
3	12	38	3	1	0.016	130	●
4	12	50	6	1	0.03	140	●
5	14	50	6	1	0.04	150	●
6	16	50	6	1	0.055	160	●
8	20	60	8	1	0.065	180	●
10	22	70	10	1	0.075	200	●

Prod. Gr. 150

ATORN® Solid carbide single tooth cutter

1 cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 1 | 26° | γ = 18° | HA | HSC

Application:
HPC end mill with variable pitch for roughing and finishing non-ferrous metals with maximum results.

Execution:
- Solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO-coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance
- Polish sanding

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665300-340						200	425	190	250	175	210	350							

Type	W
Surface	ULTRA N PRO
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h6

mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.	
1	4	50	3	1	0.01	005	●
1.5	6	50	3	1	0.01	010	●
2	8	50	3	1	0.014	015	●
3	12	50	3	1	0.02	020	●
4	15	60	4	1	0.03	025	●
5	17	60	5	1	0.04	030	●
6	20	65	6	1	0.055	035	●
8	22	65	8	1	0.07	040	●
10	25	75	10	1	0.085	045	●
12	30	80	12	1	0.1	050	●

Prod. Gr. 152

ATORN® Solid carbide miniature end mill

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 30° | γ = 15° | 45° | HA

Application:
Miniature end mill with long neck for machining NF metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined edge rounding of cutter
- With edge protection chamfer
- With clearance
- ZrCN ULTRA N-coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652010-095						280	450	230	280	200	250	375							

Type	W
Surface	ULTRA N
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
0.5	0.9	4	55	0.48	4	0.05	2	0.003	010	●
0.5	0.9	6	65	0.48	4	0.05	2	0.003	015	●
0.5	0.9	10	65	0.48	4	0.05	2	0.003	020	●
1	1.5	5	55	0.95	4	0.1	2	0.005	030	●
1	1.5	10	65	0.95	4	0.1	2	0.005	035	●
1	1.5	15	65	0.95	4	0.1	2	0.005	040	●
1.5	1.8	8	55	1.44	4	0.1	2	0.008	050	●
1.5	1.8	15	65	1.44	4	0.1	2	0.008	055	●
1.5	1.8	20	65	1.44	4	0.1	2	0.008	060	●
2	2	10	55	1.92	4	0.1	2	0.01	070	●
2	2	20	65	1.92	4	0.1	2	0.01	075	●
2.5	2.5	12	55	2.4	4	0.1	2	0.013	090	●
2.5	2.5	20	65	2.4	4	0.1	2	0.013	095	●

Prod. Gr. 152

ATORN® Solid carbide end mill

2-cutter, uncoated

VHM | Typ W | Z 2 | 45° | γ = 20° | 45° | HB

Application:
For milling, plunging and contour milling NF metals and plastics.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HB
- With edge protection chamfer
- Defined edge rounding of cutter
- Centre cutting
- With clearance
- Uncoated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652120-128						180	380	170	225	160	190	315							

Type	W
Surface	Uncoated
Tool holding device	HB parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
3	8	18	57	2.9	6	0.1	2	0.013	120	●
4	11	18	57	3.9	6	0.1	2	0.016	121	●
5	13	20	57	4.9	6	0.1	2	0.022	122	●
6	13	20	57	5.8	6	0.1	2	0.026	123	●
8	19	26	63	7.8	8	0.1	2	0.04	124	●
10	22	29	72	9.7	10	0.2	2	0.05	125	●
12	26	36	83	11.7	12	0.2	2	0.07	126	●
16	32	42	92	15.7	16	0.2	2	0.09	127	●
20	38	52	104	19.7	20	0.2	2	0.11	128	●

Prod. Gr. 152

ATORN® Solid carbide end mill

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 45° | γ = 20° | 45° | HA | HB

Ident. No. 130–137

Ident. No. 140–147

Application:
End mill for plunging and groove milling in NF metals.

Execution:
- Solid carbide ultra-fine grain
- With edge protection chamfer
- Defined edge rounding of cutter
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated
- **Ident. No. 130–137:** Straight shank in accordance with DIN 6535 HA
- **Ident. No. 140–147:** Straight shank in accordance with DIN 6535 HB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652130-137						200	425	190	250	175	210	350							
16652140-147						200	425	190	250	175	210	350							

								Type	W		W	
								Surface	ULTRA N		ULTRA N	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.		16652... Ident. No.	
3	8	18	57	2.9	6	0.1	2	0.013	130	●	140	●
4	11	18	57	3.9	6	0.1	2	0.016	131	●	141	●
5	13	20	57	4.9	6	0.1	2	0.022	132	●	142	●
6	13	20	57	5.8	6	0.1	2	0.026	133	●	143	●
8	19	26	63	7.8	8	0.1	2	0.04	134	●	144	●
10	22	29	72	9.7	10	0.2	2	0.05	135	●	145	●
12	26	36	83	11.7	12	0.2	2	0.07	136	●	146	●
16	32	42	92	15.7	16	0.2	2	0.09	137	●	147	●

Prod. Gr. 152

ATORN® Solid carbide end mill

2-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 2 | 45° | γ = 18° | 45° | HA | HB

Application:
For dive, groove and keyway milling as well as helical and circumferential milling in all non-ferrous metals and plastics.

Execution:
- Solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO-coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance
- Polish sanding

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665100-140						180	380	170	225	160	190	315							

								Type	W		W	
								Surface	ULTRA N PRO		ULTRA N PRO	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.		16665... Ident. No.	
3	8	18	57	2.9	6	0.1	2	0.013	100	●	-	-
4	11	18	57	3.9	6	0.1	2	0.016	105	●	-	-
5	13	20	57	4.9	6	0.1	2	0.022	110	●	-	-
6	13	20	57	5.8	6	0.1	2	0.026	115	●	-	-
8	19	26	63	7.8	8	0.1	2	0.04	120	●	-	-
10	22	29	72	9.7	10	0.2	2	0.05	125	●	-	-
12	26	36	83	11.7	12	0.2	2	0.07	130	●	-	-
16	32	42	92	15.7	16	0.2	2	0.09	-	-	135	●
20	38	52	104	19.5	20	0.2	2	0.11	-	-	140	●

Prod. Gr. 152

ATORN® Solid carbide end mill

2-4-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 2 | Z 3 | Z 4 | 20° | γ = 18° | HA

Application:
For dive, groove and keyway milling as well as helical and circumferential milling in all non-ferrous metals and plastics with maximum results.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- ULTRA-N PRO-coated
- sharp-edged
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance
- Polish sanding

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665200-240						200	425	190	250	175	210	350							

							Type	W	
							Surface	ULTRA N PRO	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	h9	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.	
3	11	14	50	2.9	6	2	0.042	200	●
4	13	16	54	3.9	6	2	0.054	205	●
5	15	18	54	4.9	6	2	0.06	210	●
6	16	21	64	5.8	6	2	0.072	215	●
8	22	27	70	7.8	8	2	0.084	220	●
10	25	32	72	9.7	10	2	0.096	225	●
12	28	38	83	11.7	12	3	0.108	230	●
16	36	44	92	15.7	16	3	0.12	235	●
20	41	54	104	19.5	20	4	0.145	240	●

Prod. Gr. 152

ORION® Solid carbide end mill

2-3 flutes, uncoated

VHM | Typ W | Z 2 | Z 3 | 20° | γ = 25° | HA | HB

No. 16815

No. 16817

Application:
End mill for plunge milling, groove milling and keyway cutting as well as face and side milling in all non-ferrous metals.

Execution:
- solid carbide ultra-fine grain
- centre cutting
- finishing teeth
- cemented carbide quality K30/40
- **No. 16815:** straight shank in accordance with DIN 6535 HA
- **No. 16817:** straight shank in accordance with DIN 6535 HB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16815						700	800	240	260	200	220	250							
16817						700	800	240	260	200	220	250							

							Type	W		W	
							Surface	Uncoated		Uncoated	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	h12		h12	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16815... Ident. No.		16817... Ident. No.	
4	11	21	57	3.8	6	2	0.044	304	●	304	●
5	13	21	57	4.8	6	2	0.049	305	●	305	●
6	13	21	57	5.8	6	2	0.054	306	●	306	●
8	19	27	63	7.8	8	2	0.064	308	●	308	●
10	22	32	72	9.8	10	2	0.072	310	●	310	●
12	26	38	83	11.8	12	3	0.12	312	●	312	●
14	26	38	83	13.8	14	3	0.145	314	○	314	●
16	32	44	92	15.8	16	3	0.17	316	●	316	●
20	38	54	104	19.8	20	3	0.22	320	●	320	●

Prod. Gr. 150

ATORN® Solid carbide end mill

3-cutter, uncoated

VHM | Typ W | Z 3 | 45° | γ = 18° | 45° | HA | HB

Ident. No. 200–208

Ident. No. 210–228

Application:
Ident. No. 200–208, 220–228: End mill for universal machining of non-ferrous metals.
Ident. No. 210–218: End mill for universal machining of NF metals.

Execution:
- **Ident. No. 200–208:**
  - Defined edge rounding of the cutting edge
  - Straight shank in accordance with DIN 6535 HA
- **Ident. No. 200–218:**
  - Solid carbide ultra-fine grain
  - Centre cutting
  - With clearance
  - Uncoated
  - With edge protection chamfer
- **Ident. No. 210–218:**
  - Defined edge rounding of cutter
  - Straight shank in accordance with DIN 6535 HB
- **Ident. No. 220–228:**
  - solid carbide ultra-fine grain
  - defined edge rounding of the cutting edge
  - centre cutting
  - with clearance
  - uncoated
  - straight shank in accordance with DIN 6535 HB
  - sharp-edged

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652200-208						180	380	170	225	160	190	315							
16652210-218						180	380	170	225	160	190	315							
16652220-228						180	380	170	225	160	190	315							

									Type	W		W
									Surface	Uncoated		Uncoated
									Tool holding device	HA parallel shank		HB parallel shank
									Tolerance of cutting edge Ø	h9		h9
									Tolerance of shank Ø	h5		h5
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.		16652... Ident. No.	
3	12	16	57	2.8	6	0.1	3	0.024	200	●	210	●
3	12	16	57	2.8	6	-	3	0.024	-	-	220	●
4	12	18	57	3.8	6	0.1	3	0.03	201	●	211	●
4	12	18	57	3.8	6	-	3	0.03	-	-	221	●
5	15	18	57	4.7	6	0.1	3	0.042	202	●	212	●
5	15	18	57	4.7	6	-	3	0.042	-	-	222	●
6	16	21	57	5.6	6	0.1	3	0.048	203	●	213	●
6	16	21	57	5.6	6	-	3	0.048	-	-	223	●
8	22	28	64	7.6	8	0.1	3	0.06	204	●	214	●
8	22	28	64	7.6	8	-	3	0.06	-	-	224	●
10	25	33	73	9.6	10	0.2	3	0.084	205	●	215	●
10	25	33	73	9.6	10	-	3	0.084	-	-	225	●
12	28	39	84	11.4	12	0.2	3	0.096	206	●	216	●
12	28	39	84	11.4	12	-	3	0.096	-	-	226	●
16	35	45	93	15.4	16	0.2	3	0.108	207	●	217	●
16	35	45	93	15.4	16	-	3	0.108	-	-	227	●
20	40	54	104	19.4	20	0.2	3	0.12	208	●	218	●
20	40	54	104	19.4	20	-	3	0.12	-	-	228	●

Prod. Gr. 152

ATORN® Solid carbide end mill with IC

3-cutter, uncoated

VHM | Typ W | Z 3 | 40° | γ = 13° | HA | IK

Application:
End mill with uneven pitch for roughing and finishing of non-ferrous metals with maximum machining performance.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- With chip breakers on the front
- Defined edge rounding of the cutting edge
- centre cutting
- With edge protection radius
- Polish sanding
- with internal cooling

Advantage:
- High material removal rate
- Uneven pitch reduces vibrations
- Corner radius increases the service life
- High-gloss polished cutting edges for better chip removal
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16655010-070						385	605	200	250	200	250	385							

								Type	W	
								Surface	Uncoated	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	R mm	Z (PCS)	fz alu ● (mm)	16655... Ident. No.	
4	12	20	50	3.7	6	0.005	3	0.015	010	●
5	15	20	50	4.7	6	0.005	3	0.022	020	●
6	16	20	50	5.5	6	0.005	3	0.031	030	●
8	20	30	64	7.4	8	0.005	3	0.045	040	●
10	22	32	70	9.2	10	0.1	3	0.062	050	●
12	25	37	75	11	12	0.1	3	0.077	060	●
16	32	46	90	15	16	0.1	3	0.122	070	●

Prod. Gr. 152

ATORN® Solid carbide end mill

3 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 3 | 45° | γ = 18° | 45° | HA | HB

Ident. No. 250–258

Ident. No. 260–278

Application:
End mill for universal machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain
- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- ZrCN ULTRA-N coated
- **Ident. No. 250–258, 270–278:** straight shank in accordance with DIN 6535 HA
- **Ident. No. 250–268:** with edge protection chamfer
- **Ident. No. 260–268:** straight shank in accordance with DIN 6535 HB
- **Ident. No. 270–278:** sharp-edged

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652250-258						200	425	190	250	175	210	350							
16652260-268						200	425	190	250	175	210	350							
16652270-278						200	425	190	250	175	210	350							

							Type	W		W	
							Surface	ULTRA N		ULTRA N	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	h9		h9	
							Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.		16652... Ident. No.	
3	12	16	57	2.8	6	0.1	3	0.042	250	●	260	●
3	12	16	57	2.8	6	-	3	0.042	270	●	-	-
4	12	18	57	3.8	6	0.1	3	0.054	251	●	261	●
4	12	18	57	3.8	6	-	3	0.054	271	●	-	-
5	15	18	57	4.7	6	0.1	3	0.06	252	●	262	●
5	15	18	57	4.7	6	-	3	0.06	272	●	-	-
6	16	21	57	5.6	6	0.1	3	0.072	253	●	263	●
6	16	21	57	5.6	6	-	3	0.072	273	●	-	-
8	22	28	64	7.6	8	0.1	3	0.084	254	●	264	●
8	22	28	64	7.6	8	-	3	0.084	274	●	-	-
10	25	33	73	9.6	10	0.2	3	0.096	255	●	265	●
10	25	33	73	9.6	10	-	3	0.096	275	●	-	-
12	28	39	84	11.4	12	0.2	3	0.108	256	●	266	●
12	28	39	84	11.4	12	-	3	0.108	276	●	-	-
16	35	45	93	15.4	16	0.2	3	0.12	257	●	267	●
16	35	45	93	15.4	16	-	3	0.12	277	●	-	-
20	40	54	104	19.4	20	0.2	3	0.145	258	●	268	●
20	40	54	104	19.4	20	-	3	0.145	278	●	-	-

Prod. Gr. 152

ATORN® VHM HPC end mill

3-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 3 | 45° | γ = 13° | 45° | HA | HB | HPC

Application:
HPC end mill with variable pitch for roughing and finishing non-ferrous metals with maximum results.

Execution:
- Solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO-coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance
- Polish sanding

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

								Type	W		W	
								Surface	ULTRA N PRO		ULTRA N PRO	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.		16665... Ident. No.	
3	12	16	57	2.9	6	0.1	3	0.042	300	●	-	-
4	12	18	57	3.9	6	0.1	3	0.054	305	●	-	-
5	15	18	57	4.9	6	0.1	3	0.06	310	●	-	-
6	15	21	57	5.8	6	0.1	3	0.072	315	●	-	-
8	22	28	64	7.8	8	0.1	3	0.084	320	●	-	-
10	25	33	73	9.7	10	0.2	3	0.096	325	●	-	-
12	28	39	84	11.7	12	0.2	3	0.108	330	●	-	-
16	35	45	93	15.7	16	0.2	3	0.12	-	-	335	●
20	41	52	104	19.5	20	0.2	3	0.145	-	-	340	●

Prod. Gr. 152

ATORN® Solid carbide end mill

3-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 3 | 45° | γ = 13° | 45° | HA | HB | HPC

Application:
Long HPC end mill with variable pitch for roughing and finishing non-ferrous metals with maximum results.

Execution:
- Solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO-coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance
- Polish sanding

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665400-435						180	380	170	225	160	190	315							

								Type	W		W	
								Surface	ULTRA N PRO		ULTRA N PRO	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.		16665... Ident. No.	
4	6	24	80	3.9	6	0.1	3	0.016	400	●	-	-
5	8	30	80	4.9	6	0.1	3	0.022	405	●	-	-
6	10	42	80	5.8	6	0.2	3	0.026	410	●	-	-
8	13	62	100	7.8	8	0.2	3	0.04	415	●	-	-
10	16	58	100	9.7	10	0.2	3	0.05	420	●	-	-
12	19	73	120	11.7	12	0.2	3	0.07	425	●	-	-
16	25	92	150	15.7	16	0.2	3	0.09	-	-	430	●
20	32	100	150	19.5	20	0.2	3	0.11	-	-	435	●

Prod. Gr. 152

ATORN® Solid carbide end mill with IC

3-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 3 | 45° | γ = 13° | 45° | HA | HB | HPC

Application:
Long HPC end mill with variable pitch for roughing and finishing non-ferrous metals with maximum results.

Execution:
- solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO-coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance
- Polish sanding
- with internal cooling

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665500-525						180	380	170	225	160	190	315							

								Type	W		W	
								Surface	ULTRA N PRO		ULTRA N PRO	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.		16665... Ident. No.	
6	10	42	80	5.8	6	0.1	3	0.026	500	●	-	-
8	13	62	100	7.8	8	0.1	3	0.04	505	●	-	-
10	16	58	100	9.7	10	0.2	3	0.05	510	●	-	-
12	19	73	120	11.7	12	0.2	3	0.07	515	●	-	-
16	25	92	150	15.7	16	0.2	3	0.09	-	-	520	●
20	32	100	150	19.5	20	0.2	3	0.11	-	-	525	●

Prod. Gr. 152

ATORN® Solid carbide end mill

3-cutter, uncoated

VHM | Typ W | Z 3 | 45° | γ = 18° | 45° | HA

Application:
End mill for universal machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain

- straight shank in accordance with DIN 6535 HA
- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- uncoated
- with edge protection chamfer

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652300-308						160	340	150	200	145	170	285							

							Type	W		
							Surface	Uncoated		
							Tool holding device	HA parallel shank		
							Tolerance of cutting edge Ø	h9		
							Tolerance of shank Ø	h5		
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
3	15	21	64	2.8	6	0.1	3	0.022	300	●
4	19	27	64	3.8	6	0.1	3	0.027	301	●
5	20	28	64	4.7	6	0.1	3	0.038	302	●
6	20	28	64	5.6	6	0.1	3	0.043	303	●
8	38	44	80	7.6	8	0.1	3	0.054	304	●
10	45	55	95	9.6	10	0.2	3	0.076	305	●
12	53	55	100	11.4	12	0.2	3	0.086	306	●
16	63	75	123	15.4	16	0.2	3	0.097	307	●
20	65	75	125	19.4	20	0.2	3	0.108	308	●

Prod. Gr. 152

ATORN® Solid carbide end mill

3 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 3 | 45° | γ = 18° | 45° | HA

Application:
End mill for universal machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HA

- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- ZrCN ULTRA-N coated
- **Ident. No. 310–318:** with edge protection chamfer
- **Ident. No. 320–328:** sharp-edged

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652310-318						180	380	170	225	155	190	315							
16652320-328						180	380	170	225	155	190	315							

							Type	W		
							Surface	ULTRA N		
							Tool holding device	HA parallel shank		
							Tolerance of cutting edge Ø	h9		
							Tolerance of shank Ø	h5		
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
3	15	21	64	2.8	6	0.1	3	0.038	310	●
3	15	21	64	2.8	6	-	3	0.038	320	●
4	19	27	64	3.8	6	0.1	3	0.049	311	●
4	19	27	64	3.8	6	-	3	0.049	321	●
5	20	28	64	4.7	6	0.1	3	0.054	312	●
5	20	28	64	4.7	6	-	3	0.054	322	●
6	20	28	64	5.6	6	0.1	3	0.065	313	●
6	20	28	64	5.6	6	-	3	0.065	323	●

								Type	W	
								Surface	ULTRA N	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	h9	
								Tolerance of shank Ø	h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
8	38	44	80	7.6	8	0.1	3	0.076	314	●
8	38	44	80	7.6	8	-	3	0.076	324	●
10	45	55	95	9.6	10	0.2	3	0.086	315	●
10	45	55	95	9.6	10	-	3	0.086	325	●
12	53	55	100	11.4	12	0.2	3	0.097	316	●
12	53	55	100	11.4	12	-	3	0.097	326	●
16	63	75	123	15.4	16	0.2	3	0.108	317	●
16	63	75	123	15.4	16	-	3	0.108	327	●
20	65	75	125	19.4	20	0.2	3	0.13	318	●
20	65	75	125	19.4	20	-	3	0.13	328	●

Prod. Gr. 152

ATORN® Solid carbide torus roughing cutter with internal cooling

3-cutter, uncoated

VHM | Typ WF | Z 3 | 40° | γ = 15° | HA | IK

Application:
Suitable for rough cutting with outstanding material removal rates on NF metals.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- Defined edge rounding of the cutting edge
- centre cutting
- Radius tolerance = +/- 0.01 mm
- Clearance
- Internal cooling

Advantage:
- High material removal rate
- Uneven pitch reduces vibrations
- Corner radius increases the service life
- Large chip area for optimum chip flow

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16655100-150						405	635	220	270	220	270	405							

								Type	WF	
								Surface	Uncoated	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	R mm	Z (PCS)	fz alu ● (mm)	16655... Ident. No.	
6	13	24	60	5.5	6	0.1	3	0.061	100	●
8	20	28	64	7.4	8	0.1	3	0.090	110	●
10	22	35	75	9.2	10	0.1	3	0.123	120	●
12	26	40	75	11	12	0.12	3	0.162	130	●
16	32	40	90	15	16	0.16	3	0.223	140	●
20	40	50	100	19	20	0.2	3	0.267	150	●

Prod. Gr. 152

ATORN® SC roughing cutter

3 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ WF | Z 3 | 40° | γ = 9° | 45° | HA | HB

Ident. No. 400–405

Ident. No. 410–415
Shank HB

Application:
Suitable for rough cutting with outstanding material removal rates on NF metals.

Execution:
- Solid carbide ultra-fine grain
- With edge protection chamfer
- Defined edge rounding of cutter
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated
- **Ident. No. 400–405:** Straight shank in accordance with DIN 6535 HA
- **Ident. No. 410–415:** Straight shank in accordance with DIN 6535 HB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652400-405						200	425	190	250	175	210	350							
16652410-415						200	425	190	250	175	210	350							

								Type	WF		WF	
								Surface	ULTRA N		ULTRA N	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.		16652... Ident. No.	
6	13	18	57	5.6	6	0.4	3	0.086	400	●	410	●
8	21	25	63	7.6	8	0.4	3	0.106	401	●	411	●
10	22	30	72	9.6	10	0.4	3	0.125	402	●	412	●

								Type	WF		WF	
								Surface	ULTRA N		ULTRA N	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.		16652... Ident. No.	
12	26	36	83	11.4	12	0.4	3	0.145	403	●	413	●
16	36	42	92	15.4	16	0.4	3	0.155	404	●	414	●
20	41	52	104	19.4	20	0.4	3	0.2	405	●	415	●

Prod. Gr. 152

ATORN® Solid carbide roughing cutter with IC

3 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ WF | Z 3 | 40° | γ = 9° | 45° | HA | IK

Application:
Suitable for rough cutting with outstanding material removal rates on NF metals.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA

- With edge protection chamfer
- Defined edge rounding of cutter
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated
- With internal cooling

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652420-425						220	470	210	275	195	230	385							

							Type	WF		
							Surface	ULTRA N		
							Tool holding device	HA parallel shank		
							Tolerance of cutting edge Ø	h9		
							Tolerance of shank Ø	h5		
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
6	13	18	57	5.6	6	0.4	3	0.108	420	●
8	21	25	63	7.6	8	0.4	3	0.13	421	●
10	22	30	72	9.6	10	0.4	3	0.155	422	●
12	26	36	83	11.4	12	0.4	3	0.18	423	●
16	36	42	92	15.4	16	0.4	3	0.19	424	●
20	41	52	104	19.4	20	0.4	3	0.25	425	●

Prod. Gr. 152

ATORN® SC roughing cutter

3-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ WF | Z 3 | 40° | γ = 14° | 45° | HA | HB

Application:
Suitable for rough cutting with outstanding material removal rates on NF metals.

Execution:
- Solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge

- centre cutting
- Clearance
- Polish sanding

Advantage:
- Ultra-smooth coating
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665800-825						200	425	190	250	175	210	350							

							Type	WF		WF	
							Surface	ULTRA N PRO		ULTRA N PRO	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	h9		h9	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.		16665... Ident. No.	
6	14	20	57	5.9	6	0.2	3	0.086	800	●	-	-
8	21	26	63	7.8	8	0.25	3	0.106	805	●	-	-
10	23	31	72	9.8	10	0.3	3	0.125	810	●	-	-
12	27	37	83	11.7	12	0.35	3	0.145	815	●	-	-
16	36	43	92	15.7	16	0.4	3	0.155	-	-	820	●
20	41	52	104	19.5	20	0.4	3	0.2	-	-	825	●

Prod. Gr. 152

ATORN® Solid carbide roughing cutter with IC

3-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ WF | Z 3 | 40° | γ = 14° | 45° | HA | HB | IK

Application:
Suitable for rough cutting with outstanding material removal rates on NF metals.

Execution:
- Solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- Clearance
- Polish sanding
- Internal cooling

Advantage:
- Ultra-smooth coating
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Technical data:
- Z: 3 PCS

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665900-925						220	470	210	275	195	230	385							

								Type	WF		WF	
								Surface	ULTRA N PRO		ULTRA N PRO	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	fz alu ● (mm)		16665... Ident. No.		16665... Ident. No.	
6	14	20	57	5.9	6	0.2	0.108		900	●	-	-
8	21	26	63	7.8	8	0.25	0.13		905	●	-	-
10	23	31	72	9.8	10	0.3	0.155		910	●	-	-
12	27	37	83	11.7	12	0.35	0.18		915	●	-	-
16	36	43	92	15.7	16	0.4	0.19		-	-	920	●
20	41	52	104	19.5	20	0.4	0.25		-	-	925	●

Prod. Gr. 152

ATORN® Solid carbide end mill

4 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 4 | 45° | γ = 18° | 45° | HA | HB

Ident. No. 500–508

Ident. No. 510–518

Application:
End mill for universal machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain
- with edge protection chamfer
- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- ZrCN ULTRA-N coated
- **Ident. No. 500–508:** straight shank in accordance with DIN 6535 HA
- **Ident. No. 510–518:** straight shank in accordance with DIN 6535 HB

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652500-508						200	425	190	250	175	210	350							
16652510-518						200	425	190	250	175	210	350							

								Type	W		W	
								Surface	ULTRA N		ULTRA N	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	h9		h9	
								Tolerance of shank Ø	h5		h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.		16652... Ident. No.	
3	6	10	57	2.8	6	0.1	4	0.04	500	●	510	●
4	8	14	57	3.8	6	0.1	4	0.048	501	●	511	●
5	10	16	57	4.7	6	0.1	4	0.065	502	●	512	●
6	12	19	57	5.6	6	0.2	4	0.07	503	●	513	●
8	16	25	63	7.6	8	0.2	4	0.09	504	●	514	●
10	20	30	72	9.6	10	0.2	4	0.1	505	●	515	●
12	24	36	83	11.4	12	0.2	4	0.11	506	●	516	●
16	32	42	92	15.4	16	0.2	4	0.12	507	●	517	●
20	40	52	104	19.4	20	0.2	4	0.16	508	●	518	●

Prod. Gr. 152

ATORN® Solid carbide end mill

4 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 4 | 45° | γ = 18° | 45° | HA

Application:
End mill for universal machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain

- straight shank in accordance with DIN 6535 HA
- with edge protection chamfer
- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- ZrCN ULTRA-N coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652521-527						180	380	170	225	160	190	315							

Type	W
Surface	ULTRA N
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
4	16	22	62	3.8	6	0.1	4	0.04	521	●
5	17	24	62	4.7	6	0.1	4	0.05	522	●
6	18	24	62	5.6	6	0.2	4	0.06	523	●
8	24	30	72	7.6	8	0.2	4	0.07	524	●
10	30	38	80	9.6	10	0.2	4	0.08	525	●
12	36	46	93	11.5	12	0.2	4	0.09	526	●
16	48	58	108	15.4	16	0.2	4	0.1	527	●

Prod. Gr. 152

ATORN® Solid carbide end mill

4 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 4 | 45° | γ = 18° | 45° | HA

Application:
End mill for universal machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain

- straight shank in accordance with DIN 6535 HA
- with edge protection chamfer
- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- ZrCN ULTRA-N coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652533-537						170	360	160	210	150	180	300							

Type	W
Surface	ULTRA N
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
6	12	42	80	5.6	6	0.2	4	0.054	533	●
8	16	58	100	7.6	8	0.2	4	0.06	534	●
10	20	62	100	9.6	10	0.2	4	0.07	535	●
12	24	75	120	11.4	12	0.2	4	0.08	536	●
16	32	100	150	15.4	16	0.2	4	0.09	537	●

Prod. Gr. 152

ATORN® Solid carbide HPC end mill with internal cooling

4-cutter, uncoated

VHM | Typ W | Z 4 | γ = 16° | 45° | HA | HPC | IK

Application:
HPC end mill with uneven twist and uneven pitch for roughing and finishing of non-ferrous metals with maximum machining performance.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- With chip breakers on the front
- Defined edge rounding of the cutting edge
- centre cutting
- with edge protection chamfer

- Clearance
- Polish sanding
- Internal cooling

Advantage:
- Chip breakers on the front provide short chips when processing long-chipping materials
- High material removal rate
- Uneven pitch and twist reduces vibrations
- High-gloss polished cutting edges for better chip removal
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16655200-250						680	850	220	270	220	270	700							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16655... Ident. No.	
6	13	20	57	5.5	6	0.1	4	0.069	200	●
8	20	26	64	7.4	8	0.1	4	0.092	210	●
10	22	30	72	9.2	10	0.2	4	0.116	220	●
12	26	36	83	11	12	0.2	4	0.139	230	●
16	32	42	92	15	16	0.2	4	0.185	240	●
20	38	52	104	19	20	0.3	4	0.231	250	●

Prod. Gr. 152

ATORN® Solid carbide HPC end mill with internal cooling

4-cutter, uncoated

VHM | Typ W | Z 4 | γ = 16° | 45° | HA | HPC | IK

Application:
HPC end mill with variable pitch and variable twist for roughing and finishing non-ferrous metals with maximum results.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- With chip breakers on the front and periphery
- Defined edge rounding of the cutting edge
- centre cutting
- with edge protection chamfer
- with clearance
- Polish sanding
- with internal cooling

Advantage:
- Chip breakers on the front and periphery provide short chips when processing long-chipping materials
- High material removal rate
- Variable pitch and swirl reduces vibration
- High-gloss polished cutting edges for better chip removal
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16655300-350						680	850	220	270	220	270	700							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16655... Ident. No.	
6	13	20	57	5.5	6	0.1	4	0.073	300	●
8	20	26	64	7.4	8	0.1	4	0.097	310	●
10	22	30	72	9.2	10	0.2	4	0.121	320	●
12	26	36	83	11	12	0.2	4	0.146	330	●
16	32	42	92	15	16	0.2	4	0.194	340	●
20	38	52	104	19	20	0.3	4	0.243	350	●

Prod. Gr. 152

ATORN® Solid carbide HPC end mill

4 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 4 | 35°/38° | γ = 18° | 45° | HA | HPC

Application:
HPC end mill with uneven twist and uneven pitch for rough and finish machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HA
- with edge protection chamfer
- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- uneven 35°/38° twist angle
- ZrCN ULTRA-N coated

Advantage:
- extremely quiet running
- reduces vibrations
- higher feeds and cutting depths possible
- ideal for static and dynamic trochoidal milling
- defined edge rounding for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652600-608						210	445	200	260	185	220	365							

								Type	W	
								Surface	ULTRA N	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	h9	
								Tolerance of shank Ø	h5	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.	
3	6	10	57	2.8	6	0.1	4	0.05	600	●
4	8	14	57	3.8	6	0.1	4	0.06	601	●
5	10	16	57	4.7	6	0.1	4	0.075	602	●
6	12	19	57	5.6	6	0.2	4	0.08	603	●
8	16	25	63	7.6	8	0.2	4	0.1	604	●
10	20	30	72	9.6	10	0.2	4	0.11	605	●
12	24	36	83	11.4	12	0.2	4	0.12	606	●
16	32	42	92	15.4	16	0.2	4	0.14	607	●
20	40	52	104	19.4	20	0.2	4	0.19	608	●

Prod. Gr. 152

ATORN® VHM HPC end mill

4-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 4 | γ = 14° | 45° | HA | HB | HPC

Application:
HPC end mill with variable pitch and variable twist for roughing and finishing non-ferrous metals with maximum results.

Execution:
- solid carbide ultra-fine grain
- straight shank in line with DIN 6535 HB
- ULTRA-N PRO-coated
- with edge protection chamfer
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance
- Polish sanding

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16665600-640						200	425	190	250	175	210	350							

							Type	W		W		
							Surface	ULTRA N PRO		ULTRA N PRO		
							Tool holding device	HA parallel shank		HB parallel shank		
							Tolerance of cutting edge Ø	h9		h9		
							Tolerance of shank Ø	h6		h6		
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16665... Ident. No.		16665... Ident. No.	
3	6	10	57	2.9	6	0.1	4	0.04	600	●	-	-
4	8	14	57	3.9	6	0.1	4	0.048	605	●	-	-
5	10	16	57	4.9	6	0.1	4	0.065	610	●	-	-
6	12	19	57	5.8	6	0.2	4	0.07	615	●	-	-
8	16	25	63	7.8	8	0.2	4	0.09	620	●	-	-
10	20	30	72	9.7	10	0.2	4	0.1	625	●	-	-
12	24	36	83	11.7	12	0.2	4	0.11	630	●	-	-
16	32	42	92	15.7	16	0.2	4	0.12	-	-	635	●
20	40	52	104	19.5	20	0.2	4	0.16	-	-	640	●

Prod. Gr. 152

ATORN® Solid carbide HPC end mill

4 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 4 | 35°/38° | γ = 18° | 45° | HA | HPC

Application:
HPC end mill with uneven twist and uneven pitch for rough and finish machining of non-ferrous metals.

Execution:
- solid carbide ultra-fine grain
- straight shank in accordance with DIN 6535 HA
- with edge protection chamfer
- defined edge rounding of the cutting edge
- centre cutting
- with clearance
- uneven 35°/38° twist angle
- ZrCN ULTRA-N coated

Advantage:
- extremely quiet running
- reduces vibrations
- higher feeds and cutting depths possible
- ideal for static and dynamic trochoidal milling
- defined edge rounding for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16652611-618						190	400	180	235	165	200	330							

								Type	W
								Surface	ULTRA N
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	h9
								Tolerance of shank Ø	h5
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	16652... Ident. No.
4	16	22	62	3.8	6	0.1	4	0.05	611 ●
5	17	24	62	4.7	6	0.1	4	0.065	612 ●
6	18	24	62	5.6	6	0.2	4	0.07	613 ●
8	24	30	68	7.6	8	0.2	4	0.085	614 ●
10	30	38	80	9.6	10	0.2	4	0.095	615 ●
12	36	46	93	11.4	12	0.2	4	0.1	616 ●
16	48	58	108	15.4	16	0.2	4	0.12	617 ●
20	60	74	126	19.4	20	0.2	4	0.16	618 ●

Prod. Gr. 152

ATORN® Solid carbide miniature torus milling cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 30° | γ = 15° | HA

Application:
Miniature torus milling cutter with long neck for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined edge rounding of the blade
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16653010-095						280	450	230	280	200	250	375							

								Type	W
								Surface	ULTRA N
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	h9
								Tolerance of shank Ø	h5
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16653... Ident. No.
0.5	0.05	0.9	4	55	0.48	4	2	0.006	010 ●
0.5	0.05	0.9	6	65	0.48	4	2	0.006	015 ●
0.5	0.08	0.9	10	65	0.48	4	2	0.006	020 ●
1	0.08	1.5	5	55	0.95	4	2	0.012	030 ●
1	0.1	1.5	10	65	0.95	4	2	0.012	035 ●
1	0.1	1.5	15	65	0.95	4	2	0.012	040 ●
1.5	0.12	1.8	8	55	1.44	4	2	0.018	050 ●
1.5	0.15	1.8	15	65	1.44	4	2	0.018	055 ●
1.5	0.15	1.8	20	65	1.44	4	2	0.018	060 ●
2	0.2	2	10	55	1.92	4	2	0.024	070 ●
2	0.2	2	20	65	1.92	4	2	0.024	075 ●
2.5	0.25	2.5	12	55	2.4	4	2	0.03	090 ●
2.5	0.25	2.5	20	65	2.4	4	2	0.03	095 ●

Prod. Gr. 152

ATORN® SC torus milling cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 30° | γ = 20° | HA

Application:
Torus milling cutter, standard version for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined edge rounding of the blade
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated
- Radius tolerance = +/- 0.01 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16653105-180						200	425	190	250	175	210	350							

								Type	W
								Surface	ULTRA N
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	h9
								Tolerance of shank Ø	h5
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16653... Ident. No.
3	0.3	4	14	50	2.9	3	2	0.036	105 ●
4	0.3	5	16	50	3.8	4	2	0.048	110 ●
5	0.3	6	18	54	4.8	5	2	0.06	115 ●
6	0.3	7	21	57	5.7	6	2	0.08	120 ●
6	1	7	21	57	5.7	6	2	0.08	125 ●

								Type	W	
								Surface	ULTRA N	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	h9	
								Tolerance of shank Ø	h5	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16653... Ident. No.	
6	2	7	21	57	5.7	6	2	0.08	130	●
8	0.3	9	27	63	7.7	8	2	0.11	135	●
8	1	9	27	63	7.7	8	2	0.11	140	●
8	2	9	27	63	7.7	8	2	0.11	145	●
10	0.3	11	32	72	9.6	10	2	0.13	150	●
10	1.5	11	32	72	9.6	10	2	0.13	155	●
10	3	11	32	72	9.6	10	2	0.13	160	●
12	1.5	12	38	83	11.6	12	2	0.15	165	●
12	4	12	38	83	11.6	12	2	0.15	170	●
16	2	16	44	92	15.5	16	2	0.16	175	●
16	4	16	44	92	15.5	16	2	0.16	180	●

Prod. Gr. 152

ATORN® SC torus milling cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 30° | γ = 20° | HA

Application:
Torus milling cutter, long version for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined edge rounding of the blade
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated
- Radius tolerance = +/- 0.01 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16653205-280						200	425	190	250	175	210	350							

								Type	W	
								Surface	ULTRA N	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	h9	
								Tolerance of shank Ø	h5	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16653... Ident. No.	
3	0.3	4	32	75	2.8	3	2	0.035	205	●
4	0.3	5	36	75	3.75	4	2	0.042	210	●
5	0.3	6	40	75	4.7	5	2	0.049	215	●
6	0.3	7	44	80	5.6	6	2	0.063	220	●
6	1	7	44	80	5.6	6	2	0.063	225	●
6	2	7	44	80	5.6	6	2	0.063	230	●
8	0.3	9	54	100	7.6	8	2	0.084	235	●
8	1	9	54	100	7.6	8	2	0.084	240	●
8	2	9	54	100	7.6	8	2	0.084	245	●
10	0.3	11	60	100	9.5	10	2	0.098	250	●
10	1.5	11	60	100	9.5	10	2	0.098	255	●
10	3	11	60	100	9.5	10	2	0.098	260	●
12	1.5	12	75	120	11.5	12	2	0.115	265	●
12	4	12	75	120	11.5	12	2	0.115	270	●
16	2	16	92	150	15.5	16	2	0.14	275	●
16	4	16	92	150	15.5	16	2	0.14	280	●

Prod. Gr. 152

ATORN® SC torus milling cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 30° | γ = 20° | HA

Application:
Torus milling cutter, extra-long version for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined edge rounding of the blade
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated
- Radius tolerance = +/- 0.01 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16653320-365						170	360	160	210	150	180	300							

								Type	W	
								Surface	ULTRA N	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	h9	
								Tolerance of shank Ø	h5	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16653... Ident. No.	
6	0.3	7	80	120	5.6	6	2	0.054	320	●
6	1	7	80	120	5.6	6	2	0.054	325	●
8	0.3	9	90	130	7.6	8	2	0.072	330	●
8	1	9	90	130	7.6	8	2	0.072	335	●
8	2	9	90	130	7.6	8	2	0.072	340	●
10	0.3	11	110	150	9.5	10	2	0.084	345	●
10	3	11	110	150	9.5	10	2	0.084	350	●
12	1.5	12	115	160	11.5	12	2	0.096	355	●
12	4	12	115	160	11.5	12	2	0.096	360	●
16	2	16	140	200	15.5	16	2	0.12	365	●

Prod. Gr. 152

ATORN® SC torus milling cutter

2-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 2 | 30° | γ = 10° | HA

Application:
Torus milling cutter, standard version for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- ULTRA-N PRO-coated
- Radius tolerance = +/- 0.01 mm
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16666005-080						200	425	190	250	175	210	350							

								Type	W	
								Surface	ULTRA N PRO	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	h9	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16666... Ident. No.	
3	0.3	4	14	50	2.9	6	2	0.036	005	●
4	0.3	5	16	50	3.9	6	2	0.048	010	●
5	0.3	6	18	54	4.9	6	2	0.06	015	●
6	0.3	7	21	57	5.8	6	2	0.08	020	●
6	1	7	21	57	5.8	6	2	0.08	025	●
6	2	7	21	57	5.8	6	2	0.08	030	●
8	0.3	9	27	63	7.8	8	2	0.11	035	●
8	1	9	27	63	7.8	8	2	0.11	040	●
8	2	9	27	63	7.8	8	2	0.11	045	●
10	0.3	11	32	72	9.7	10	2	0.13	050	●
10	1.5	11	32	72	9.7	10	2	0.13	055	●
10	3	11	32	72	9.7	10	2	0.13	060	●
12	1.5	13	38	83	11.7	12	2	0.15	065	●
12	4	13	38	83	11.7	12	2	0.15	070	●
16	2	17	44	92	15.7	16	2	0.16	075	●
16	5	17	44	92	15.7	16	2	0.16	080	●

Prod. Gr. 152

ATORN® SC torus milling cutter

2-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 2 | 30° | γ = 10° | HA

Application:
Torus milling cutter, long version for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- ULTRA-N PRO-coated
- Radius tolerance = +/- 0.01 mm
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16666100-175						200	425	190	250	175	210	350							

								Type	W	
								Surface	ULTRA N PRO	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	h9	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16666... Ident. No.	
3	0.3	4	32	75	2.9	6	2	0.035	100	●
4	0.3	5	36	75	3.9	6	2	0.042	105	●
5	0.3	6	40	75	4.9	6	2	0.049	110	●
6	0.3	7	44	80	5.8	6	2	0.063	115	●
6	1	7	44	80	5.8	6	2	0.063	120	●
6	2	7	44	80	5.8	6	2	0.063	125	●
8	0.3	9	54	100	7.8	8	2	0.084	130	●
8	1	9	54	100	7.8	8	2	0.084	135	●
8	2	9	54	100	7.8	8	2	0.084	140	●
10	0.3	11	60	100	9.7	10	2	0.098	145	●
10	1.5	11	60	100	9.7	10	2	0.098	150	●
10	3	11	60	100	9.7	10	2	0.098	155	●
12	1.5	13	75	120	11.7	12	2	0.115	160	●
12	4	13	75	120	11.7	12	2	0.115	165	●
16	2	17	92	150	15.7	16	2	0.14	170	●
16	5	17	92	150	15.7	16	2	0.14	175	●

Prod. Gr. 152

ATORN® SC HPC torus milling cutter

3 cutting edges, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 3 | 45° | γ = 18° | HA | HB | HPC

Ident. No. 520–580
Shank HA

Ident. No. 620–680

Application:
HPC torus milling cutter for roughing and finishing non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain
- Defined edge rounding of the blade
- Radius tolerance = +/- 0.01 mm
- Centre cutting
- With clearance
- ZrCN ULTRA N-coated
- **Ident. No. 520–580:** Straight shank in accordance with DIN 6535 HA
- **Ident. No. 620–680:** Straight shank in accordance with DIN 6535 HB

Advantage:
- Higher feed rates and cutting depths possible
- Defined edge rounding for outstanding service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16653520-580						200	425	190	250	175	210	350							
16653620-680						200	425	190	250	175	210	350							

							Type	W		W	
							Surface	ULTRA N		ULTRA N	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	h9		h9	
							Tolerance of shank Ø	h5		h5	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16653... Ident. No.		16653... Ident. No.	
5	0.5	13	18	57	4.7	6	3	0.03	520	●	620	●
5	1	13	18	57	4.7	6	3	0.03	525	●	625	●
6	0.5	13	18	57	5.6	6	3	0.04	530	●	630	●
6	1	13	18	57	5.6	6	3	0.04	535	●	635	●
8	0.5	21	25	63	7.6	8	3	0.05	540	●	640	●
8	1	21	25	63	7.6	8	3	0.05	545	●	645	●
10	0.5	22	30	72	9.6	10	3	0.07	550	●	650	●
10	1	22	30	72	9.6	10	3	0.07	555	●	655	●
12	0.5	26	36	83	11.4	12	3	0.08	560	●	660	●
12	1	26	36	83	11.4	12	3	0.08	565	●	665	●
16	2	36	42	92	15.4	16	3	0.1	570	●	670	●
16	4	36	42	92	15.4	16	3	0.1	575	●	675	●
20	4	41	52	104	19.4	20	3	0.14	580	●	680	●

Prod. Gr. 152

ATORN® Solid carbide HPC / TVC torus milling cutter

3-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 3 | 45° | γ = 13° | HA | HPC

Application:
HPC/TVC torus milling cutter with uneven pitch for roughing and finishing of non-ferrous metals with maximum machining performance.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- ULTRA-N PRO-coated
- Radius tolerance = +/- 0.01 mm
- Defined edge rounding of the cutting edge
- centre cutting
- with clearance

Advantage:
- Ultra-smooth coating thickness
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16666200-270						200	425	190	250	175	210	350							

Type	W
Surface	ULTRA N PRO
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h6

mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16666... Ident. No.	
6	0.5	25	31	71	5.8	6	3	0.04	200	●
6	1	25	31	71	5.8	6	3	0.04	205	●
8	0.5	33	41	80	7.8	8	3	0.05	210	●
8	1	33	41	80	7.8	8	3	0.05	215	●
8	2	33	41	80	7.8	8	3	0.05	220	●
10	0.5	41	51	95	9.7	10	3	0.07	225	●
10	1	41	51	95	9.7	10	3	0.07	230	●
10	2	41	51	95	9.7	10	3	0.07	235	●
12	0.5	49	61	109	11.7	12	3	0.08	240	●
12	1	49	61	109	11.7	12	3	0.08	245	●
12	2	49	61	109	11.7	12	3	0.08	250	●
16	2	65	81	132	15.7	16	3	0.1	255	●
16	3	65	81	132	15.7	16	3	0.1	260	●
20	2	82	101	154	19.5	20	3	0.14	265	●
20	3	82	101	154	19.5	20	3	0.14	270	●

Prod. Gr. 152

ATORN® SC 3D roughing cutter

3 flutes, CALIDA Z coated

VHM | CALIDA Z | Typ WF | Z 3 | 7° | γ = 14° | HA | HSC | HPC

Application:
For high-performance milling in aluminium with cutting values up to 1600 m/min.

Execution:
- Solid carbide ultra-fine grain
- HA straight shank
- With clearance
- CALIDA Z high-performance coating (ZrCrN titanium-free)
- Defined cutting edge rounding
- Centre cutting
- Reinforced core
- Flat 7° twist

Advantage:
- Extremely stable high-performance geometry
- Chip breaker for machining short chips
- Fast and reliable chip removal
- Also for long-chipping materials
- Wear protection through corner radius (torus)

Notes:
The tools should be shrunk-in. A stable machine and firmly clamped parts are important.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16651						850	1000	800	950	600	700								

Type	WF
Surface	CALIDA Z
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	R mm	Z (PCS)	fz alu ● (mm)	16651... Ident. No.	
6	8	21	57	5.8	6	0.6	3	0.21	060	●
8	10	27	63	7.8	8	0.8	3	0.27	080	●
10	12	32	72	9.7	10	1	3	0.39	100	●
12	16	38	83	11.7	12	1.2	3	0.48	120	●
16	20	44	92	15.7	16	1.6	3	0.6	160	●
20	25	54	104	19	20	2	3	0.65	200	●
25	30	65	121	24	25	2.5	3	0.7	250	●

Prod. Gr. 108

ATORN® Solid carbide HPC torus milling cutter with IC

4-cutter, uncoated

VHM | Typ W | Z 4 | γ = 16° | HA | HPC | IK

Application:
HPC torus milling cutter with uneven pitch for roughing and finishing of non-ferrous metals with maximum machining performance.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- With chip breaker on the end
- Defined edge rounding of the cutting edge
- centre cutting
- Radius tolerance = +/- 0.01 mm
- Clearance
- Polish sanding
- Internal cooling

Advantage:
- Chip breakers on the end ensure short chips for long-chipping materials
- High material removal rate
- Uneven pitch and twist reduces vibrations
- High-gloss polished cutting edges for better chip removal
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16655400-490						680	850	220	270	220	270	700							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16655... Ident. No.	
10	2	22	30	72	9.2	10	4	0.116	400	●
10	3	22	30	72	9.2	10	4	0.116	410	●
12	2	26	36	83	11	12	4	0.139	420	●
12	3	26	36	83	11	12	4	0.139	430	●
16	2	32	42	92	15	16	4	0.185	440	●
16	3	32	42	92	15	16	4	0.185	450	●
16	4	32	42	92	15	16	4	0.185	460	●
20	2	38	52	104	19	20	4	0.231	470	●
20	3	38	52	104	19	20	4	0.231	480	●
20	4	38	52	104	19	20	4	0.231	490	●

Prod. Gr. 152

ATORN® Solid carbide HPC torus milling cutter with IC

4-cutter, uncoated

VHM | Typ W | Z 4 | γ = 16° | HA | HPC | IK

Application:
HPC torus milling cutter with uneven pitch for roughing and finishing of non-ferrous metals with maximum machining performance.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- With chip breaker on the end and at circumference
- Defined edge rounding of the cutting edge
- centre cutting
- Radius tolerance = +/- 0.01 mm
- with clearance
- Polish sanding
- with internal cooling

Advantage:
- Chip breakers on the end and at circumference ensure short chips for long-chipping materials
- High material removal rate
- Uneven pitch and twist reduces vibrations
- High-gloss polished cutting edges for better chip removal
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16655500-590						680	850	220	270	220	270	700							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16655... Ident. No.	
10	2	22	30	72	9.2	10	4	0.116	500	●
10	3	22	30	72	9.2	10	4	0.116	510	●
12	2	26	36	83	11	12	4	0.139	520	●
12	3	26	36	83	11	12	4	0.139	530	●
16	2	32	42	92	15	16	4	0.185	540	●
16	3	32	42	92	15	16	4	0.185	550	●
16	4	32	42	92	15	16	4	0.185	560	●
20	2	38	52	104	19	20	4	0.231	570	●
20	3	38	52	104	19	20	4	0.231	580	●
20	4	38	52	104	19	20	4	0.231	590	●

Prod. Gr. 152

ATORN® Solid carbide mini radius milling cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 30° | HA

Application:
Mini radius cutter with long neck for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined flute edge rounding
- With clearance
- ZrCN ULTRA N coated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16654010-095						310	495	250	310	220	275	415							

Type	W
Surface	ULTRA N
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16654... Ident. No.	
0.5	0.9	4	55	0.48	4	2	0.006	010	●
0.5	0.9	6	65	0.48	4	2	0.006	015	●
0.5	0.9	10	65	0.48	4	2	0.006	020	●
1	1.5	5	55	0.95	4	2	0.012	030	●
1	1.5	10	65	0.95	4	2	0.012	035	●
1	1.5	15	65	0.95	4	2	0.012	040	●
1.5	1.8	8	55	1.44	4	2	0.018	050	●
1.5	1.8	15	65	1.44	4	2	0.018	055	●
1.5	1.8	20	65	1.44	4	2	0.018	060	●
2	2	10	55	1.92	4	2	0.023	070	●
2	2	20	65	1.92	4	2	0.023	075	●
2.5	2.5	12	55	2.4	4	2	0.029	090	●
2.5	2.5	20	65	2.4	4	2	0.029	095	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 45° | HA

Application:
Standard radius cutter for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined flute edge rounding
- With clearance
- ZrCN ULTRA N coated
- Radius tolerance = +/- 0.01 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16654105-140						220	470	210	275	190	230	385							

Type	W
Surface	ULTRA N
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16654... Ident. No.	
3	6	16	50	2.9	3	2	0.06	105	●
4	7	17	54	3.8	4	2	0.072	110	●
5	8	18	54	4.8	5	2	0.084	115	●
6	10	21	54	5.7	6	2	0.108	120	●
8	12	27	60	7.7	8	2	0.145	125	●
10	13	32	67	9.6	10	2	0.17	130	●
12	16	38	73	11.6	12	2	0.19	135	●
16	20	44	83	15.5	16	2	0.24	140	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 45° | HA

Application:
Long radius cutter for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined flute edge rounding
- With clearance
- ZrCN ULTRA N coated
- Radius tolerance = +/- 0.01 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16654205-240						200	425	190	250	170	210	345							

Type	W
Surface	ULTRA N
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16654... Ident. No.	
3	10	32	75	2.9	3	2	0.05	205	●
4	13	36	75	3.8	4	2	0.06	210	●
5	15	40	75	4.8	5	2	0.07	215	●
6	16	44	100	5.7	6	2	0.09	220	●
8	22	54	100	7.7	8	2	0.12	225	●
10	25	60	100	9.6	10	2	0.14	230	●
12	26	60	100	11.6	12	2	0.16	235	●
16	30	92	150	15.5	16	2	0.2	240	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 blades, ULTRA N-coated

VHM | ULTRA N | Typ W | Z 2 | 45° | HA

Application:
Extra-long radius cutter for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain

- Straight shank in accordance with DIN 6535 HA
- Defined flute edge rounding
- With clearance
- ZrCN ULTRA N coated
- Radius tolerance = +/- 0.01 mm

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16654305-330						200	425	190	250	170	210	345							

Type	W
Surface	ULTRA N
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16654... Ident. No.	
3	10	82	125	2.8	3	2	0.04	305	●
4	13	86	125	3.75	4	2	0.048	310	●
6	16	94	150	5.6	6	2	0.072	315	●
8	22	104	150	7.6	8	2	0.096	320	●
10	25	110	150	9.6	10	2	0.115	325	●
12	26	110	150	11.4	12	2	0.13	330	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 2 | 45° | HA

Application:
Standard radius cutter for machining non-ferrous metals.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- ULTRA-N PRO coated
- Radius tolerance = +/- 0.001 mm
- Defined edge rounding of the cutting edge

- centre cutting
- Clearance

Advantage:
- Ultra-smooth coating
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16667005-040						220	470	210	275	190	230	385							

Type	W
Surface	ULTRA N PRO
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h9
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16667... Ident. No.	
3	6	16	50	2.9	3	2	0.06	005	●
4	7	17	54	3.9	4	2	0.072	010	●
5	8	18	54	4.9	5	2	0.084	015	●

								Type	W
								Surface	ULTRA N PRO
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	h9
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16667... Ident. No.	
6	10	21	54	5.8	6	2	0.108	020	●
8	12	27	59	7.8	8	2	0.145	025	●
10	13	32	67	9.8	10	2	0.17	030	●
12	16	38	73	11.7	12	2	0.19	035	●
16	20	44	83	15.7	16	2	0.24	040	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2-cutter, ULTRA N PRO-coated

VHM | ULTRA N PRO | Typ W | Z 2 | 45° | HA

Application:
Long radius cutter for machining non-ferrous metals.

- centre cutting
- Clearance

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- ULTRA-N PRO coated
- Radius tolerance = +/- 0.001 mm
- Defined edge rounding of the cutting edge

Advantage:
- Ultra-smooth coating
- Excellent chip removal
- defined edge rounding for maximum service life
- Large chip area for optimum chip flow
- Ideal for NF metals and plastics

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16667100-135						200	425	190	250	170	210	345							

								Type	W
								Surface	ULTRA N PRO
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	h9
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16667... Ident. No.	
3	10	32	75	2.9	3	2	0.05	100	●
4	13	36	75	3.9	4	2	0.06	105	●
5	15	40	75	4.9	5	2	0.07	110	●
6	16	44	100	5.8	6	2	0.09	115	●
8	22	54	100	7.8	8	2	0.12	120	●
10	25	60	100	9.8	10	2	0.14	125	●
12	26	60	100	11.7	12	2	0.16	130	●
16	30	92	150	15.7	16	2	0.2	135	●

Prod. Gr. 152

Solid carbide milling cutter, plastic processing

ATORN® Solid carbide HSC single-tooth milling cutter - hard plastics

1 cutter, uncoated

VHM | Z 1 | 30° | HA | HSC

Ident. No. 010–120

Ident. No. 200–310

Application:
For the milling, grooving and contour milling of high-performance plastics.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- Uncoated
- Surface polished
- With centre cutting
- For hard high-performance plastics such as Duroplast: Bakelite, melamine, MF, MPF, etc.

- **Ident. No. 010–120:** DownCut
- **Ident. No. 200–310:** UpCut

Advantage:
- Ideal for sheet metal, boards and thin-walled materials
- Large chip space for easy chip removal

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16656010-120												550							
16656200-310												550							

					Type	Left-hand twist		Right-hand twist	
					Surface	Uncoated		Uncoated	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16656... Ident. No.		16656... Ident. No.	
2	8	64	6	1	0.1	010	●	200	●
3	12	64	3	1	0.11	020	●	210	●
3	12	64	6	1	0.11	030	●	220	●
4	12	64	4	1	0.12	040	●	230	●
4	20	64	6	1	0.12	050	●	240	●
5	16	64	6	1	0.13	060	●	250	●
6	12	64	6	1	0.14	070	●	260	●
6	38	76	6	1	0.14	080	●	270	●
8	25	64	8	1	0.18	090	●	280	●
8	38	76	8	1	0.18	100	●	290	●
10	30	76	10	1	0.2	110	●	300	●
12	38	76	12	1	0.24	120	●	310	●

Prod. Gr. 108

ATORN® Solid carbide HSC single-tooth milling cutter - soft plastics

1 cutter, uncoated

VHM | Z 1 | 30° | HA | HSC

Ident. No. 400–510

Ident. No. 600–710

Application:
For the milling, grooving and contour milling of standard plastics.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- Uncoated
- Surface polished
- With centre cutting
- For soft standard plastics like thermoplastics PVC, PE, PP, etc.

- **Ident. No. 400–510:** DownCut
- **Ident. No. 600–710:** UpCut

Advantage:
- Ideal for sheet metal, boards and thin-walled materials
- Large chip space for easy chip removal

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16656400-510												345							
16656600-710												345							

					Type	Left-hand twist		Right-hand twist	
					Surface	Uncoated		Uncoated	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16656... Ident. No.		16656... Ident. No.	
2	8	64	6	1	0.1	400	●	600	●
3	12	64	3	1	0.15	410	●	610	●
3	12	64	6	1	0.15	420	●	620	●

					Type	Left-hand twist		Right-hand twist	
					Surface	Uncoated		Uncoated	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16656... Ident. No.		16656... Ident. No.	
4	12	64	4	1	0.2	430	●	630	●
4	20	64	6	1	0.2	440	●	640	●
5	16	64	6	1	0.23	450	●	650	●
6	12	64	6	1	0.25	460	●	660	●
6	38	76	6	1	0.25	470	●	670	●
8	25	64	8	1	0.3	480	●	680	●
8	38	76	8	1	0.3	490	●	690	●
10	30	76	10	1	0.35	500	●	700	●
12	38	76	12	1	0.4	510	●	710	●

Prod. Gr. 108

ATORN® Solid carbide HSC single-tooth milling cutter - straight-grooved

1 cutter, uncoated

VHM | Typ W | Z 1 | 0° | HA | HSC

Application:
For milling, recessing and contour milling of light alloys and plastics.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- uncoated
- Surface polished
- Straight grooved with centre cutting

Advantage:
- Ideal for sheet metal, boards and thin-walled materials
- No tensile forces on workpiece
- Large chip space for easy chip removal

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16656800-910												350							

				Type	W	
				Surface	Uncoated	
				Tool holding device	HA parallel shank	
				Tolerance of cutting edge Ø	h10	
				Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16656... Ident. No.	
3	12	40	3	1	0.032	800	●
3	15	60	6	1	0.030	810	●
4	15	60	6	1	0.048	820	●
4	20	75	6	1	0.044	830	●
5	16	60	6	1	0.065	840	●
6	20	60	6	1	0.060	850	●
6	35	75	6	1	0.058	860	●
8	22	63	8	1	0.096	870	●
8	40	100	8	1	0.090	880	●
10	25	72	10	1	0.120	890	●
10	55	100	10	1	0.110	900	●
12	30	83	12	1	0.144	910	●

Prod. Gr. 108

ATORN® Solid carbide HSC end mill

2-cutter, uncoated

VHM | Z 2 | 30° | γ = 17° | HA | HSC

Ident. No. 010–100

Ident. No. 200–300

Application:
For milling, recessing and contour milling of light alloys and plastics.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- uncoated
- Surface polished
- For soft standard plastics like thermoplastics PVC, PE, PP, etc.
- With centre cutting
- **Ident. No. 010–100:** Right cutting with right-hand spiral
- **Ident. No. 200–300:** Right cutting with left-hand spiral

Advantage:
- Ideal for sheet metal, boards and thin-walled materials
- Extremely sharp cutting edges
- Large chip space for easy chip removal
- **Ident. No. 200–300:** Chip ejection downwards

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16657010-100												625							
16657200-300												625							

					Type	Right-hand twist		Left-hand twist	
					Surface	Uncoated		Uncoated	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16657... Ident. No.		16657... Ident. No.	
2	8	50	3	2	0.024	010	●	-	-
2	6	50	6	2	0.024	-	-	200	●
3	12	40	3	2	0.032	020	●	210	●
3	12	50	6	2	0.032	-	-	220	●
4	14	40	4	2	0.048	030	●	230	●
5	16	50	5	2	0.065	040	●	240	●
6	18	50	6	2	0.060	050	●	250	●
8	20	63	8	2	0.096	060	●	260	●
10	25	72	10	2	0.120	070	●	270	●
12	30	83	12	2	0.144	080	●	280	●
16	35	92	16	2	0.192	090	●	290	●
20	45	104	20	2	0.240	100	●	300	●

Prod. Gr. 108

ATORN® Solid carbide HSC end mill – straight-grooved

2-cutter, uncoated

VHM | Z 2 | 0° | HA | HSC

Application:
Ident. No. 400–450: For the milling, grooving and contour milling of standard plastics.
Ident. No. 500–550: For the milling, grooving and contour milling of high-performance plastics.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- Uncoated
- Surface polished
- Straight grooved with centre cutting
- **Ident. No. 400–450:** For soft standard plastics like thermoplastics PVC, PE, PP, etc.
- **Ident. No. 500–550:** For hard high-performance plastics such as Duroplast: Bakelite, melamine, MF, MPF, etc.

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Ident. No. 400–450

Ident. No. 500–550

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16657400-450												350							
16657500-550												350							

					Type	Standard		High-performance	
					Surface	Uncoated		Uncoated	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16657... Ident. No.		16657... Ident. No.	
4	16	64	6	2	0.060	400	●	500	●
5	20	64	6	2	0.096	410	●	510	●
6	25	64	6	2	0.120	420	●	520	●
8	25	76	8	2	0.144	430	●	530	●
10	35	88	10	2	0.192	440	●	540	●
12	35	88	12	2	0.240	450	●	550	●

Prod. Gr. 108

ATORN® Solid carbide face milling cutter

3-cutter, uncoated

HM | Typ W | Z 3 | 30° | γ = 17° | HA

Application:
For face milling of larger surfaces in light alloys and plastics.

Execution:
- Steel shank with soldered-on cemented carbide head
- Straight shank in accordance with DIN 6535 HA
- uncoated
- Without centre cutting

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16657700-760												350							

Type	W
Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h10
Tolerance of shank Ø	h8

mm	mm	mm	mm	R mm	Z (PCS)	fz alu ● (mm)	16657... Ident. No.	
10	8	50	6	0.5	3	0.120	700	●
12	8	50	6	0.5	3	0.144	710	●
14	8	50	10	0.5	3	0.175	720	●
16	8	50	10	0.5	3	0.192	730	●
18	8	50	10	0.5	3	0.220	740	●
20	8	50	10	0.5	3	0.240	750	●
30	8	50	12	0.5	3	0.300	760	●

Prod. Gr. 108

Solid carbide milling cutter, advanced materials

ATORN® Solid carbide compression milling cutter

1 - 2 flutes, uncoated

VHM | Z 1 | Z 2 | HA | HSC

Application:
With this tool, the spiral changes from left to right, which leads to the axial cutting forces being compressed at a centred point. This allows delamination issues to be more effectively dealt with. HSC compression milling cutters are especially suitable for machining epoxy resin or polyester-based plastics with carbon or glass fibres.

Execution:
- Solid carbide ultra-fine grain
- Uncoated
- Straight shank in line with DIN 6535 HA

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658010-040												300	200						

Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h10
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16658... Ident. No.	
6	22	4	64	6	1	0.1	010	●
8	22	4	64	8	2	0.15	020	●
10	22	4	76	10	2	0.2	030	●
12	28	6	76	12	2	0.3	040	●

Prod. Gr. 108

ATORN® Solid carbide end mill – fibre glass

4 cutters, diamond-coated

VHM | Z 4 | 30° | HA

Ident. No. 100–130

Ident. No. 140–170

Application:
This end mill is suitable for the machining of fibreglass-reinforced plastics, fibreglass, thermoplastics or duroplastic resins, in which fibreglass was introduced as a reinforcement element. The tools are available with left- and right-hand spiral.

Execution:
- Solid carbide ultra-fine grain
- Diamond coating
- Straight shank in accordance with DIN 6535 HA

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658100-170												350	200						

						Type	Right-hand twist		Left-hand twist	
						Surface	Diamond coating		Diamond coating	
						Tool holding device	HA parallel shank		HA parallel shank	
						Tolerance of cutting edge Ø	h10		h10	
						Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)		16658... Ident. No.		16658... Ident. No.	
6	19	76	6	4	0.08		100	●	140	●
8	22	76	8	4	0.11		110	●	150	●
10	25	76	10	4	0.13		120	●	160	●
12	25	76	12	4	0.2		130	●	170	●

Prod. Gr. 108

ATORN® Solid carbide compression milling cutter – fibre glass

4–6 flutes, diamond-coated

VHM | Z 4 | Z 6 | 30° | HA

Application:
To prevent delamination when machining fibre composites and to achieve an optimal edge finish, the left-hand spiral generates pressure on the bottom edge of the workpiece at the bottom of the tool, while the right-hand spiral generates counter pressure on the top of the workpiece at the top of the tool. To prevent melting, a greatly positive cutting angle and deep chipping spaces work against over-heating.

Execution:
- Solid carbide ultra-fine grain
- Diamond coating
- Straight shank in accordance with DIN 6535 HA
- Spiral change as compression zone

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658200-230												350	200						

						Surface	Diamond coating	
						Tool holding device	HA parallel shank	
						Tolerance of cutting edge Ø	h10	
						Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16658... Ident. No.	
6	20	7.75	90	6	4	0.04	200	●
8	25	8	100	8	4	0.05	210	●
10	25	8.5	100	10	6	0.065	220	●
12	25	9	100	12	6	0.08	230	●

Prod. Gr. 108

ATORN® Solid carbide HSC compression milling cutters

Diamond-coated

VHM | γ = 5° | HA | HSC

Application:
With this tool, the spiral changes from left to right, which leads to the axial cutting forces being compressed at a centred point. The tools are available in three lengths to ensure compression always occurs in the centre of the workpiece. This allows delamination issues to be more effectively dealt with. HSC compression milling cutters are especially suitable for machining epoxy resin or polyester-based plastics with carbon or glass fibres and make it possible to manufacture surfaces in finishing quality (ra < 2 µm).

Execution:
- Solid carbide ultra-fine grain
- Diamond coating
- Straight shank in accordance with DIN 6535 HA
- 3 spiral changes available

Advantage:
- Spiral change from left to right
- Simultaneous drawing and pushing cut
- Opposing flutes with chip breakers
- Axial cutting forces run together in the middle

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658300-410												400	600						

					Surface	Diamond coating	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	h10	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	fz alu ● (mm)	16658... Ident. No.	
6	13	4	57	6	0.06	300	●
6	13	6.5	57	6	0.06	310	●
6	22	11	60	6	0.06	320	●
8	19	6	63	8	0.1	330	●
8	19	9.5	63	8	0.1	340	●
8	32	16	78	8	0.1	350	●
10	22	7	72	10	0.15	360	●
10	22	11	72	10	0.15	370	●
10	35	17.5	78	10	0.15	380	●
12	26	8	83	12	0.2	390	●
12	26	13	83	12	0.2	400	●
12	40	20	83	12	0.2	410	●

Prod. Gr. 108

ATORN® Solid carbide HSC milling cutter - CFRP/GFRP

5 flutes, uncoated / diamond-coated

VHM | Z 5 | 0° | γ = 14° | HA | HSC

Ident. No. 500, 510, 520, 530, 540, 550, 560, 570

Ident. No. 505, 515, 525, 535, 545, 555, 565, 575

Application:
HSC end mill for machining CFRP/GFRP materials with large flutes and synchronous chip breakers.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA
- **Ident. No. 500, 510, 520, 530, 540, 550, 560, 570:**
  - uncoated
  - Polished surface
- **Ident. No. 505, 515, 525, 535, 545, 555, 565, 575:** Diamond coating

Advantage:
- Large flutes with synchronous chip breakers
- Continuous cutting, good chip removal
- Straight grooves, no tensile forces on the workpiece

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658500-570													220						
16658505-575													220						

					Surface	Uncoated		Diamond coating	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16658... Ident. No.		16658... Ident. No.	
2	7	40	6	5	0.14	500	●	505	●
3	12	50	6	5	0.2	510	●	515	●
4	14	40	6	5	0.28	520	●	525	●
5	16	50	6	5	0.33	530	●	535	●
6	18	50	6	5	0.42	540	●	545	●
8	20	63	8	5	0.55	550	●	555	●
10	25	72	10	5	0.7	560	●	565	●
12	30	83	12	5	0.8	570	●	575	●

Prod. Gr. 108

ATORN® Solid carbide HSC milling cutter - CFRP/GFRP

6 flutes, uncoated / diamond-coated

VHM | Z 6 | 47° | γ = 14° | HA | HSC

Ident. No. 600, 610, 620, 630, 640, 650, 660, 670, 680, 690

Ident. No. 605, 615, 625, 635, 645, 655, 665, 675, 685, 695

Application:
HSC end mill for machining CFRP/GFRP materials with large flutes and synchronous chip breakers.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA
- **Ident. No. 600, 610, 620, 630, 640, 650, 660, 670, 680, 690:**
  - uncoated
  - Polished surface
- **Ident. No. 605, 615, 625, 635, 645, 655, 665, 675, 685, 695:** Diamond coating

Advantage:
- Large flutes with synchronous chip breakers
- Continuous cutting, good chip removal

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658600-690													220						
16658605-695													220						

					Surface	Uncoated		Diamond coating	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	16658... Ident. No.		16658... Ident. No.	
2	7	40	6	6	0.14	600	●	605	●
3	12	50	6	6	0.2	610	●	615	●
4	20	50	6	6	0.28	620	●	625	●
5	16	50	6	6	0.33	630	●	635	●
6	18	50	6	6	0.42	640	●	645	●
6	35	75	6	6	0.42	650	●	655	●
8	20	63	8	6	0.55	660	●	665	●
8	40	100	8	6	0.55	670	●	675	●
10	25	72	10	6	0.7	680	●	685	●
12	30	83	12	6	0.8	690	●	695	●

Prod. Gr. 108

ATORN® Solid carbide HSC end mill – Composite router

With drilling or milling tip, uncoated

VHM | HA | HSC

Ident. No. 700–750

Ident. No. 760–810

Application:
High-performance composite router with pyramid cross-toothing and drawing cut. For machining CFK/GFK materials and fibre plastics.

Execution:
- Solid carbide ultra-fine grain
- Uncoated
- Polished surface
- Straight shank in accordance with DIN 6535 HA
- **Ident. No. 700–750:** With drill tip
- **Ident. No. 760–810:** With milling tip

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658700-750													250						
16658760-810													220						

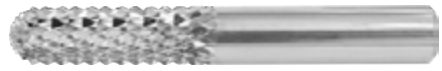
					Type	Drill tip		Milling tip	
					Surface	Uncoated		Uncoated	
					Tool holding device	HA parallel shank		HA parallel shank	
					Tolerance of cutting edge Ø	h10		h10	
					Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm		fz alu ● (mm)	16658... Ident. No.		16658... Ident. No.	
4	16	64	4		0.076	700	●	760	●
6	19	76	6		0.13	710	●	770	●
6	25	76	6		0.13	720	●	780	●
8	25	76	8		0.14	730	●	790	●
10	25	76	10		0.15	740	●	800	●
12	25	76	12		0.18	750	●	810	●

Prod. Gr. 108

ATORN® Solid carbide HSC radius cutter - GFRP / CFRP

Uncoated

VHM | HA | HSC



Application:
HSC radius cutter with pyramid cross-toothing and drawing cut. For machining CFRP/GFRP materials and soft fibre plastics with tendency to stick.

Execution:
- Solid carbide ultra-fine grain
- uncoated
- Polished surface
- Face radius for copy machining
- Extremely sharp cutting edges
- Straight shank in accordance with DIN 6535 HA

Advantage:
- Low friction coefficient
- High edge-holding ability
- Optimum chip removal

Notes:
You can find detailed information on the usage value of this tool on our online shop.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16658820-885													220						

Surface	Uncoated
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	h10
Tolerance of shank Ø	h6

mm	mm	mm	mm	fz alu ● (mm)	16658... Ident. No.	
3	10	40	3	0.15	820	●
3	12	50	6	0.15	825	●
4	15	40	4	0.28	830	●
4	20	50	6	0.28	835	●
5	16	50	5	0.33	840	●
5	25	75	6	0.33	845	●
6	18	50	6	0.42	850	●
6	35	75	6	0.42	855	●
8	25	63	8	0.55	860	●
8	40	100	8	0.55	865	●
10	30	72	10	0.7	870	●
12	32	83	12	0.84	875	●
16	36	92	16	1.12	880	●
20	45	104	20	1.4	885	●

Prod. Gr. 108

ATORN milling tools for graphite machining

in tool and mould construction, especially in spark erosion, graphite electrodes are increasingly becoming the standard due to their technical advantages. to process the highly abrasive electrode material graphite efficiently, tools are required which will keep pace with the performance of modern machine tools. the diamond-coated graphite milling cutters by ATORN guarantee the highest precision which enables delicate processing of the material. the special ULTRA DC multi-layer diamond coating protects the tools from wear and tear due to the highly abrasive graphite and enables reliable milling with high feed rates.

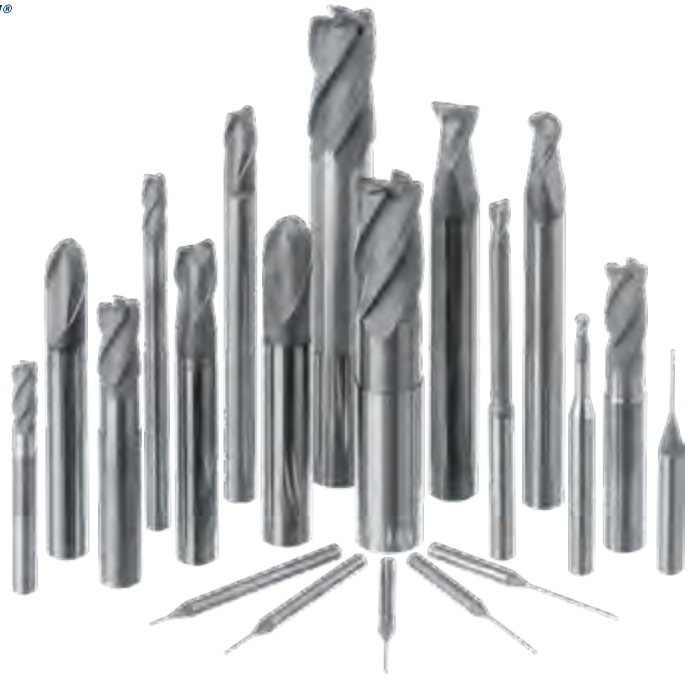
ULTRA DC coating
high-performance diamond coating for maximum wear resistance with a layer hardness of 10,000 HV

large program depth
available in Ø range from 0.2 mm – 16 mm and a number of tool clearances

100% quality
all tools undergo 100% final inspection

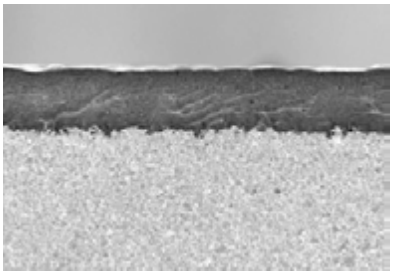
high-precision tool tolerances
radius accuracy: +0.003/-0.003 mm
cutting tolerance: +0.000/-0.015 mm
concentricity tolerance: 0.005 mm

optimum cutting geometry
for results with precise contours and excellent surface qualities



ULTRA DC coating – hard as a diamond

for machining graphite, carbon/fibreglass, we coat our torus and radius cutter with the special ULTRA DC coating. thanks to the extremely adhesive CVD high-performance coating, the tools have similar physical and chemical properties as natural diamond. extreme hardness and smoothness, high chemical resistance and very good heat conductivity and abrasion resistance make them extremely powerful and stable. for a long service life, the milling tools are equipped with a layer thickness of 10+2 µm or 6+2 µm.



ATORN® Solid carbide mini radius milling cutter

2 flutes, ULTRA DC coated

VHM | ULTRA DC | Typ N | Z 2 | 30° | HA

Application:
High-precision miniature radius cutter with long neck for process-reliable machining of graphite, GFRP and CFRP.

Execution:
- High-tech CVD diamond coating
- Coat thickness 10+2 µm
- With clearance
- Concentricity 0.005 mm

Advantage:
- Non-wearing, crystalline diamond coating
- Optimised, highly accurate geometry

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16662002-178													95						

Type	N
Surface	ULTRA DC
Tool holding device	HA parallel shank
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	Z (PCS)	fz graphite ● (mm)	16662... Ident. No.	
0.2	0.2	1	55	0.18	3	2	0.002	002	●

Type	N
Surface	ULTRA DC
Tool holding device	HA parallel shank
Tolerance of shank Ø	h5

mm	mm	mm	mm	mm	mm	Z (PCS)	fz graphite ● (mm)	16662... Ident. No.	
0.2	0.2	1	55	0.18	4	2	0.002	004	●

Source: Hahn+Kolb Werkzeuge GmbH
Technical data subject to change.
Availability subject to country specific rules and regulations.

							Type	N	
							Surface	ULTRA DC	
							Tool holding device	HA parallel shank	
							Tolerance of shank Ø	h5	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz graphite ● (mm)	16662... Ident. No.	
0.3	0.3	1	55	0.27	3	2	0.003	006	●
0.3	0.3	3	55	0.27	3	2	0.003	008	●
0.3	0.3	5	55	0.27	3	2	0.003	010	●
0.3	0.3	8	55	0.27	3	2	0.003	012	●
0.3	0.3	1	55	0.27	4	2	0.003	014	●
0.3	0.3	3	55	0.27	4	2	0.003	016	●
0.3	0.3	5	55	0.27	4	2	0.003	018	●
0.3	0.3	8	55	0.27	4	2	0.003	020	●
0.4	0.4	4	55	0.35	3	2	0.003	022	●
0.4	0.4	6	55	0.35	3	2	0.003	024	●
0.4	0.4	8	55	0.35	3	2	0.003	026	●
0.4	0.4	4	55	0.35	4	2	0.003	028	●
0.4	0.4	6	55	0.35	4	2	0.003	030	●
0.4	0.4	8	55	0.35	4	2	0.003	032	●
0.5	0.5	5	55	0.45	3	2	0.003	034	●
0.5	0.5	10	55	0.45	3	2	0.003	036	●
0.5	0.5	5	55	0.45	4	2	0.003	038	●
0.5	0.5	10	55	0.45	4	2	0.003	040	●
0.6	0.8	6	55	0.56	3	2	0.005	042	●
0.6	0.8	9	55	0.56	3	2	0.005	044	●
0.6	0.8	12	55	0.56	3	2	0.005	046	●
0.6	0.8	6	55	0.56	4	2	0.006	048	●
0.6	0.8	9	55	0.56	4	2	0.006	050	●
0.6	0.8	12	55	0.56	4	2	0.005	052	●
0.7	0.9	7	55	0.65	3	2	0.005	054	●
0.7	0.9	14	55	0.65	3	2	0.005	056	●
0.7	0.9	7	55	0.65	4	2	0.005	058	●
0.7	0.9	14	55	0.65	4	2	0.005	060	●
0.8	1	8	55	0.75	3	2	0.005	062	●
0.8	1	12	55	0.75	3	2	0.005	064	●
0.8	1	16	55	0.75	3	2	0.005	066	●
0.8	1	8	55	0.75	4	2	0.005	068	●
0.8	1	12	55	0.75	4	2	0.005	070	●
0.8	1	16	55	0.75	4	2	0.005	072	●
1	1	5	55	0.9	3	2	0.01	074	●
1	1	10	55	0.9	3	2	0.01	076	●
1	1	15	55	0.9	3	2	0.01	078	●
1	1	20	55	0.9	3	2	0.01	080	●
1	1	25	55	0.9	3	2	0.01	082	●
1	1	30	55	0.9	3	2	0.01	084	●
1	1	15	55	0.9	6	2	0.01	086	●
1	1	5	55	0.9	4	2	0.01	088	●
1	1	10	55	0.9	4	2	0.01	090	●

							Type	N	
							Surface	ULTRA DC	
							Tool holding device	HA parallel shank	
							Tolerance of shank Ø	h5	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz graphite ● (mm)	16662... Ident. No.	
1	1	15	55	0.9	4	2	0.01	092	●
1	1	20	55	0.9	4	2	0.01	094	●
1	1	25	55	0.9	4	2	0.01	096	●
1	1	30	55	0.9	4	2	0.01	098	●
1.2	1.5	5	55	1.1	3	2	0.01	100	●
1.2	1.5	10	55	1.1	3	2	0.01	102	●
1.2	1.5	15	55	1.1	3	2	0.01	104	●
1.2	1.5	5	55	1.1	4	2	0.01	106	●
1.2	1.5	10	55	1.1	4	2	0.01	108	●
1.2	1.5	15	55	1.1	4	2	0.01	110	●
1.5	2	5	55	1.4	3	2	0.012	112	●
1.5	2	10	55	1.4	3	2	0.012	114	●
1.5	2	15	55	1.4	3	2	0.012	116	●
1.5	2	20	55	1.4	3	2	0.012	118	●
1.5	2	25	55	1.4	3	2	0.012	120	●
1.5	2	15	55	1.4	6	2	0.012	122	●
1.5	2	5	55	1.4	4	2	0.012	124	●
1.5	2	10	55	1.4	4	2	0.012	126	●
1.5	2	15	55	1.4	4	2	0.012	128	●
1.5	2	20	55	1.4	4	2	0.012	130	●
1.5	2	25	55	1.4	4	2	0.012	132	●
1.8	2	20	55	1.7	3	2	0.013	136	●
1.8	2	10	55	1.7	4	2	0.013	138	●
1.8	2	20	55	1.7	4	2	0.013	140	●
2	2	10	55	1.9	3	2	0.015	142	●
2	2	15	55	1.9	3	2	0.015	144	●
2	2	20	55	1.9	3	2	0.015	146	●
2	2	25	65	1.9	3	2	0.015	148	●
2	2	30	65	1.9	3	2	0.015	150	●
2	2	20	65	1.9	6	2	0.015	152	●
2	2	10	55	1.9	4	2	0.015	154	●
2	2	15	55	1.9	4	2	0.015	156	●
2	2	20	55	1.9	4	2	0.015	158	●
2	2	25	65	1.9	4	2	0.015	160	●
2	2	30	65	1.9	4	2	0.015	162	●
2.5	3	20	65	2.4	6	2	0.017	164	●
3	3	10	65	2.9	4	2	0.02	166	●
3	3	15	65	2.9	4	2	0.02	168	●
3	3	20	65	2.9	4	2	0.02	170	●
3	3	25	75	2.9	4	2	0.02	172	●
3	3	30	75	2.9	4	2	0.02	174	●
3	3	20	65	2.9	6	2	0.02	176	●
3.5	3	20	65	3.4	6	2	0.025	178	●

Prod. Gr. 1FC

ATORN® Solid carbide radius cutter

2 flutes, ULTRA DC coated

VHM | ULTRA DC | Typ N | Z 2 | 30° | HA

Application:
Radius cutter for process-reliable machining of graphite, GFRP and CFRP.

Execution:
- High-tech CVD diamond coating
- Coat thickness 10+2 µm
- With clearance
- Concentricity 0.005 mm

Advantage:
- Non-wearing, crystalline diamond coating
- Optimised, highly accurate geometry

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16662180-212													95						

							Type	N	
							Surface	ULTRA DC	
							Tool holding device	HA parallel shank	
							Tolerance of shank Ø	h5	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz graphite ● (mm)	16662... Ident. No.	
4	4	20	65	3.9	6	2	0.03	180	●
4	4	30	75	3.9	6	2	0.03	182	●
4	4	40	90	3.9	6	2	0.03	184	●
5	5	20	65	4.9	6	2	0.045	186	●
5	5	30	75	4.9	6	2	0.045	188	●
5	5	40	90	4.9	6	2	0.045	190	●
5	5	50	90	4.9	6	2	0.045	192	●
6	6	30	75	5.9	6	2	0.05	194	●
6	6	40	90	5.9	6	2	0.05	196	●
6	6	50	90	5.9	6	2	0.05	198	●
6	6	60	100	5.9	6	2	0.05	200	●
8	8	30	80	7.8	8	2	0.06	202	●
8	8	60	100	7.8	8	2	0.06	204	●

								Type	N
								Surface	ULTRA DC
								Tool holding device	HA parallel shank
								Tolerance of shank Ø	h5
mm	mm	mm	mm	mm	mm	Z (PCS)	fz graphite ● (mm)	16662... Ident. No.	
10	10	30	80	9.8	10	2	0.08	206	●
10	10	60	100	9.8	10	2	0.08	208	●
12	12	30	83	11.8	12	2	0.1	210	●
12	12	60	100	11.8	12	2	0.1	212	●

Prod. Gr. 1FC

Solid carbide mills for machining stainless steel

ATORN® Solid carbide miniature end mill

2 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 2 | 40° | γ = 11° | HA

Application:
Ultra-precise mini end mill with long neck for reliable machining of stainless steels, titanium, nickel and copper alloys.

Execution:
- ultra-fine grain cemented carbide
- tolerance: < dia. 0.7 mm = 0/-0.012 mm and < dia. 4 mm = 0/-0.020 mm
- HA straight shank
- with clearance
- high-performance ULTRA MS layer
- defined cutting edge rounding
- centre cutting

Advantage:
- large selection of clearance lengths
- optimum chip removal and temperature resistance
- maximum service life thanks to ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16670002-132	45	40		35	30										45	40	45		

							Type	VA	
							Surface	ULTRA MS	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16670... Ident. No.	
0.2	0.3	0.5	50	0.16	4	2	0.003	002	●
0.3	0.4	2	50	0.26	4	2	0.003	010	●
0.4	0.6	2	50	0.37	4	2	0.004	014	○
0.4	0.6	4	50	0.37	4	2	0.003	018	○
0.5	0.7	2	50	0.45	4	2	0.006	022	●
0.5	0.7	4	50	0.45	4	2	0.005	024	●
0.5	0.7	6	50	0.45	4	2	0.004	026	●
0.6	0.9	2	50	0.55	4	2	0.007	030	●
0.6	0.9	4	50	0.55	4	2	0.006	032	●
0.6	0.9	6	50	0.55	4	2	0.005	034	●
0.8	1.2	4	50	0.75	4	2	0.007	040	●
0.8	1.2	6	50	0.75	4	2	0.007	042	●
0.8	1.2	8	50	0.75	4	2	0.006	044	●
1	1.5	6	50	0.95	4	2	0.008	050	●
1	1.5	8	50	0.95	4	2	0.008	052	●
1	1.5	10	50	0.95	4	2	0.007	054	●
1	1.5	12	50	0.95	4	2	0.006	056	●
1	1.5	16	50	0.95	4	2	0.005	058	●
1.2	1.8	6	50	1.15	4	2	0.011	060	●
1.2	1.8	8	50	1.15	4	2	0.01	062	●
1.2	1.8	10	50	1.15	4	2	0.009	064	●
1.5	2.3	6	50	1.45	4	2	0.014	068	●
1.5	2.3	8	50	1.45	4	2	0.013	070	●
1.5	2.3	10	50	1.45	4	2	0.012	072	●
1.5	2.3	12	50	1.45	4	2	0.011	074	●

							Type	VA	
							Surface	ULTRA MS	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16670... Ident. No.	
1.5	2.3	16	50	1.45	4	2	0.01	076	●
1.5	2.3	20	60	1.45	4	2	0.009	078	●
2	3	6	50	1.95	4	2	0.018	080	●
2	3	8	50	1.95	4	2	0.018	082	●
2	3	10	50	1.95	4	2	0.017	084	●
2	3	12	50	1.95	4	2	0.016	086	●
2	3	16	50	1.95	4	2	0.014	088	●
2	3	20	60	1.95	4	2	0.013	090	●
2	3	25	75	1.95	4	2	0.012	092	●
2.5	3.7	8	50	2.4	4	2	0.023	096	●
2.5	3.7	10	50	2.4	4	2	0.023	098	●
2.5	3.7	12	50	2.4	4	2	0.023	100	●
2.5	3.7	16	50	2.4	4	2	0.02	102	●
2.5	3.7	20	60	2.4	4	2	0.017	104	●
2.5	3.7	25	60	2.4	4	2	0.015	106	●
3	4.5	8	50	2.85	6	2	0.027	110	●
3	4.5	10	50	2.85	6	2	0.027	112	●
3	4.5	12	50	2.85	6	2	0.027	114	●
3	4.5	16	60	2.85	6	2	0.025	116	●
3	4.5	20	60	2.85	6	2	0.023	118	●
3	4.5	25	75	2.85	6	2	0.021	120	●
4	4.5	20	60	3.85	6	2	0.033	126	●
4	4.5	25	75	3.85	6	2	0.03	128	●
4	4.5	30	75	3.85	6	2	0.03	130	●
4	4.5	40	75	3.85	6	2	0.026	132	●

Prod. Gr. 152

ATORN® Solid carbide end mill

3 cutting edges, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 3 | 40° | γ = 10° | HA | HB

Ident. No. 150–166

Ident. No. 170–186

Application:
End mill for machining stainless steel, titanium alloy, nickel and copper alloys.

Execution:
- ultra-fine grain cemented carbide
- with clearance
- high-performance ULTRA MS layer
- defined cutting edge rounding
- centre cutting
- **Ident. No. 150–166:** HB straight shank
- **Ident. No. 170–186:** HA straight shank

Advantage:
- optimised, positive cutting geometry
- optimum chip removal and temperature resistance
- maximum service life thanks to ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16670150-166	140	130		70	60										70	60	70		
16670170-186	140	130		70	60										70	60	70		

							Type	VA		VA	
							Surface	ULTRA MS		ULTRA MS	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	e8		e8	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16670... Ident. No.		16670... Ident. No.	
3	9	15	50	2.8	6	3	0.015	170	●	150	●
4	12	20	50	3.7	6	3	0.02	172	●	152	●
5	15	20	50	4.6	6	3	0.025	174	●	154	●
6	16	20	50	5.5	6	3	0.03	176	●	156	●
8	20	30	64	7.4	8	3	0.036	178	●	158	●
10	22	32	70	9.2	10	3	0.044	180	●	160	●
12	25	37	75	11	12	3	0.052	182	●	162	●
16	32	46	90	15	16	3	0.065	184	●	164	●
20	38	58	100	19	20	3	0.08	186	●	166	●

Prod. Gr. 152

ATORN® Solid carbide end mill

4 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 4 | 40° | γ = 10° | HA | HB

Ident. No. 190–206

Ident. No. 210–226

Application:
End mill for machining stainless steel, titanium alloy, nickel and copper alloys.

Execution:
- ultra-fine grain cemented carbide
- with clearance
- high-performance ULTRA MS layer
- defined cutting edge rounding
- centre cutting
- **Ident. No. 190–206:** HB straight shank
- **Ident. No. 210–226:** HA straight shank

Advantage:
- optimised, positive cutting geometry
- optimum chip removal and temperature resistance
- maximum service life thanks to ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16670190-206	140	130		70	60										70	60	70		
16670210-226	140	130		70	60										70	60	70		

							Type	VA		VA	
							Surface	ULTRA MS		ULTRA MS	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	e8		e8	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16670... Ident. No.		16670... Ident. No.	
3	9	15	50	2.8	6	4	0.015	210	●	190	●
4	12	20	50	3.7	6	4	0.02	212	●	192	●
5	15	20	50	4.6	6	4	0.025	214	●	194	●
6	16	20	50	5.5	6	4	0.03	216	●	196	●
8	20	30	64	7.4	8	4	0.036	218	●	198	●
10	22	32	70	9.2	10	4	0.044	220	●	200	●
12	25	37	75	11	12	4	0.052	222	●	202	●
16	32	46	90	15	16	4	0.065	224	●	204	●
20	38	58	100	19	20	4	0.08	226	●	206	●

Prod. Gr. 152

ATORN® Solid carbide HPC end mill

4 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 4 | 35°/38° | γ = 10° | 45° | HA | HB | HPC

Ident. No. 260–274

Ident. No. 276–290

Application:
HPC end mill with uneven helical and uneven pitch for rough machining and finish machining of stainless steel, titanium alloy, nickel and copper alloys. The uneven helical pitch means that vibrations on the tool are reduced, which results in outstanding finished surfaces, while, at the same time, feed rates and cutting depths can be increased.

Execution:
- ultra-fine grain cemented carbide
- with uneven helical and cutter distribution (35/38°)
- with clearance
- high-performance ULTRA MS layer
- with edge protection chamfer
- defined cutting edge rounding
- centre cutting
- **Ident. No. 260–274:** HB straight shank
- **Ident. No. 276–290:** HA straight shank

Advantage:
- rough machining and finishing with just one tool
- optimum suitability for trochoidal milling
- HPC geometry for maximum feed rates and running smoothness
- suitable for large cutting depths

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16670260-274	140	130		70	60										70	60	70		
16670276-290	140	130		70	60										70	60	70		

								Type	VA		VA	
								Surface	ULTRA MS		ULTRA MS	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steinl. st. ● (mm)	16670... Ident. No.		16670... Ident. No.	
4	11	20	57	3.7	6	0.1	4	0.02	276	●	260	●
5	13	20	57	4.6	6	0.1	4	0.025	278	●	262	●
6	13	20	57	5.5	6	0.1	4	0.03	280	●	264	●
8	20	30	64	7.4	8	0.2	4	0.036	282	●	266	●
10	22	32	72	9.2	10	0.2	4	0.044	284	●	268	●
12	26	37	83	11	12	0.2	4	0.052	286	●	270	●
16	32	46	92	15	16	0.3	4	0.065	288	●	272	●
20	38	58	104	19	20	0.4	4	0.08	290	●	274	●

Prod. Gr. 152

ATORN® Solid carbide HPC end mill

4 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 4 | 35°/38° | γ = 10° | 45° | HA | HB | HPC

Ident. No. 320–327

Ident. No. 330–337

Application:
HPC end mill with uneven helical and uneven pitch for rough machining and finish machining of stainless steel, titanium alloy, nickel and copper alloys. The uneven helical pitch means that vibrations on the tool are reduced, which results in outstanding finished surfaces, while, at the same time, feed rates and cutting depths can be increased.

Execution:
- ultra-fine grain cemented carbide
- with uneven helical and cutter distribution (35/38°)
- with clearance
- high-performance ULTRA MS layer
- with edge protection chamfer
- defined cutting edge rounding
- centre cutting
- **Ident. No. 320–327:** HB straight shank
- **Ident. No. 330–337:** HA straight shank

Advantage:
- rough machining and finishing with just one tool
- optimum suitability for trochoidal milling
- HPC geometry for maximum feed rates and running smoothness
- suitable for large cutting depths

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16670320-327	140	130		70	60										70	60	70		
16670330-337	140	130		70	60										70	60	70		

								Type	VA		VA	
								Surface	ULTRA MS		ULTRA MS	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steinl. st. ● (mm)	16670... Ident. No.		16670... Ident. No.	
4	19	32	75	3.7	6	0.1	4	0.015	330	●	320	●
5	19	32	75	4.6	6	0.1	4	0.02	331	●	321	●
6	19	32	75	5.5	6	0.1	4	0.025	332	●	322	●
8	26	40	75	7.4	8	0.2	4	0.031	333	●	323	●
10	32	46	100	9.2	10	0.2	4	0.04	334	●	324	●
12	32	46	100	11	12	0.2	4	0.047	335	●	325	●
16	50	75	125	15	16	0.3	4	0.06	336	●	326	●
20	57	75	125	19	20	0.4	4	0.075	337	●	327	●

Prod. Gr. 152

ATORN® Solid carbide HPC end mill

5 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 5 | 35°/38° | γ = 10° | 45° | HA | HB | HPC

Application:
HPC end mill with uneven helical and uneven pitch for rough machining and finish machining of stainless steel, titanium alloy, nickel and copper alloys. The uneven helical pitch means that vibrations on the tool are reduced, which results in outstanding finished surfaces, while, at the same time, feed rates and cutting depths can be increased.

Execution:
- ultra-fine grain cemented carbide
- with uneven helical (35/38°)
- with reinforced core
- with clearance
- high-performance ULTRA MS layer
- with edge protection chamfer
- defined cutting edge rounding
- centre cutting
- **Ident. No. 340–347:** HB straight shank
- **Ident. No. 350–357:** HA straight shank

Advantage:
- optimum suitability for trochoidal milling
- HPC geometry for maximum feed rates and running smoothness
- suitable for large cutting depths

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16670340-347	140	130		70	60										70	60	70		
16670350-357	140	130		70	60										70	60	70		

								Type	VA		VA	
								Surface	ULTRA MS		ULTRA MS	
								Tool holding device	HA parallel shank		HB parallel shank	
								Tolerance of cutting edge Ø	e8		e8	
								Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steinl. st. (mm)	16670... Ident. No.		16670... Ident. No.	
4	12	20	57	3.7	6	0.1	5	0.02	350	●	340	●
5	13	20	57	4.6	6	0.1	5	0.025	351	●	341	●
6	13	20	57	5.5	6	0.1	5	0.03	352	●	342	●
8	20	30	64	7.4	8	0.2	5	0.036	353	●	343	●
10	22	32	72	9.2	10	0.2	5	0.044	354	●	344	●
12	26	37	83	11	12	0.2	5	0.052	355	●	345	●
16	32	46	92	15	16	0.3	5	0.065	356	●	346	●
20	38	58	104	19	20	0.4	5	0.08	357	●	347	●

Prod. Gr. 152

ATORN® SC roughing cutter

4 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 4 | 40° | γ = 10° | 45° | HB

Application:
Roughing cutter with unequal cutting pitch for machining stainless steels and titanium/Ni/Co alloys.

Execution:
- Ultra-fine grain cemented carbide
- HB straight shank
- With clearance
- ULTRA MS high-performance coating
- With edge protection chamfer
- Defined cutting edge rounding
- Centre cutting

Advantage:
- High-performance roughing
- Optimised, positive cutting geometry
- Excellent chip removal and temperature resistance
- Maximum service life thanks to ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16670240-250	140	130		70	60										70	60	70		

							Type	VA		
							Surface	ULTRA MS		
							Tool holding device	HB parallel shank		
							Tolerance of cutting edge Ø	e8		
							Tolerance of shank Ø	h6		
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steinl. st. (mm)	16670... Ident. No.	
6	16	20	57	5.5	6	0.1	4	0.023	240	●
8	20	30	64	7.4	8	0.2	4	0.03	242	●
10	22	32	72	9.2	10	0.2	4	0.035	244	●
12	26	37	83	11	12	0.2	4	0.041	246	●
16	32	46	92	15	16	0.3	4	0.052	248	●
20	38	58	104	19	20	0.4	4	0.065	250	●

Prod. Gr. 152

ATORN® Solid carbide miniature torus milling cutter

2 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 2 | 40° | γ = 11° | HA

Application:
High-precision miniature torus milling cutter with long neck for process reliability in machining stainless steels, titanium, nickel and cobalt alloys.

Execution:
- Ultra-fine grain cemented carbide
- Tolerance: < diameter 0.7 mm = 0/-0.012 mm and < diameter 4 mm = 0/-0.020 mm
- Radius tolerance = 0/-0.010 mm
- Straight shank, HA
- With clearance
- High-performance layer, ULTRA MS
- Defined cutting edge rounding
- Centre cutting

Advantage:
- Large selection of clearance lengths
- Best chip removal and temperature resistance
- Maximum service life due to ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16672002-128	45	40		35	30										45	40	45		

							Type	VA		
							Surface	ULTRA MS		
							Tool holding device	HA parallel shank		
							Tolerance of cutting edge Ø	e8		
							Tolerance of shank Ø	h6		
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. (mm)	16672... Ident. No.	
0.2	0.05	0.3	0.5	50	0.16	4	2	0.003	002	●
0.3	0.05	0.4	2	50	0.26	4	2	0.003	010	○
0.4	0.05	0.6	2	50	0.37	4	2	0.004	014	●
0.4	0.05	0.6	4	50	0.37	4	2	0.003	018	●

							Type	VA		
							Surface	ULTRA MS		
							Tool holding device	HA parallel shank		
							Tolerance of cutting edge Ø	e8		
							Tolerance of shank Ø	h6		
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. (mm)	16672... Ident. No.	
0.5	0.05	0.7	2	50	0.45	4	2	0.006	022	●
0.5	0.05	0.7	4	50	0.45	4	2	0.005	024	●
0.5	0.05	0.7	6	50	0.45	4	2	0.004	026	●
0.6	0.05	0.9	2	50	0.55	4	2	0.007	030	●

								Type	VA	
								Surface	ULTRA MS	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16672... Ident. No.	
0.6	0.05	0.9	4	50	0.55	4	2	0.006	032	●
0.6	0.05	0.9	6	50	0.55	4	2	0.005	034	●
0.8	0.1	1.2	4	50	0.75	4	2	0.007	036	●
0.8	0.1	1.2	6	50	0.75	4	2	0.007	038	●
0.8	0.1	1.2	8	50	0.75	4	2	0.006	040	●
1	0.1	1.5	6	50	0.95	4	2	0.008	046	●
1	0.1	1.5	8	50	0.95	4	2	0.008	048	●
1	0.1	1.5	10	50	0.95	4	2	0.007	050	●
1	0.1	1.5	12	50	0.95	4	2	0.006	052	●
1	0.1	1.5	16	50	0.95	4	2	0.005	054	○
1.2	0.1	1.8	6	50	1.15	4	2	0.011	056	●
1.2	0.1	1.8	8	50	1.15	4	2	0.01	058	●
1.2	0.1	1.8	10	50	1.15	4	2	0.009	060	●
1.5	0.2	2.3	6	50	1.45	4	2	0.014	064	●
1.5	0.2	2.3	8	50	1.45	4	2	0.013	066	●
1.5	0.2	2.3	10	50	1.45	4	2	0.012	068	●
1.5	0.2	2.3	12	50	1.45	4	2	0.011	070	●
1.5	0.2	2.3	16	50	1.45	4	2	0.01	072	●
1.5	0.2	2.3	20	60	1.45	4	2	0.009	074	●
2	0.2	3	6	50	1.95	4	2	0.018	076	●
2	0.2	3	8	50	1.95	4	2	0.018	078	●

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								Type	VA	
								Surface	ULTRA MS	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16672... Ident. No.	
2	0.2	3	10	50	1.95	4	2	0.017	080	●
2	0.2	3	12	50	1.95	4	2	0.016	082	●
2	0.2	3	16	50	1.95	4	2	0.014	084	●
2	0.2	3	20	60	1.95	4	2	0.013	086	●
2	0.2	3	25	75	1.95	4	2	0.012	088	●
2.5	0.3	3.7	8	50	2.4	4	2	0.023	092	●
2.5	0.3	3.7	10	50	2.4	4	2	0.023	094	●
2.5	0.3	3.7	12	50	2.4	4	2	0.023	096	●
2.5	0.3	3.7	16	50	2.4	4	2	0.02	098	○
2.5	0.3	3.7	20	60	2.4	4	2	0.018	100	●
2.5	0.3	3.7	25	60	2.4	4	2	0.017	102	●
3	0.3	4.5	8	50	2.85	6	2	0.027	106	●
3	0.3	4.5	10	50	2.85	6	2	0.027	108	●
3	0.3	4.5	12	50	2.85	6	2	0.027	110	●
3	0.3	4.5	16	60	2.85	6	2	0.025	112	●
3	0.3	4.5	20	60	2.85	6	2	0.023	114	●
3	0.3	4.5	25	75	2.85	6	2	0.021	116	●
4	0.4	4.5	20	60	3.85	6	2	0.033	122	○
4	0.4	4.5	25	75	3.85	6	2	0.03	124	●
4	0.4	4.5	30	75	3.85	6	2	0.03	126	●
4	0.4	4.5	40	75	3.85	6	2	0.026	128	●

ATORN® Solid carbide HPC torus milling cutter

4 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 4 | 35°/38° | γ = 10° | HA | HB | HPC

Ident. No. 150–204

Ident. No. 210–264

Application:
HPC torus milling cutter with an unequal twist and unequal pitch for smoothing and rough machining stainless steels and titanium, Ni and Co alloys. The unequal twist angle prevents vibration on the tool, thereby ensuring excellent finishing surfaces as well as higher feed rates and greater cutting depths.

Execution:
- Ultra-fine grain cemented carbide
- With clearance
- ULTRA MS high-performance coating
- Defined cutting edge rounding
- Centre cutting
- **Ident. No. 150–204:** HB straight shank
- **Ident. No. 210–264:** HA straight shank

Advantage:
- Rough machining and smoothing with a single tool
- Ideal for trochoidal milling
- HPC geometry for optimum feed rates and running smoothness
- Suitable for large cutting depths

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16672150-204	140	130		70	60										70	60	70		
16672210-264	140	130		70	60										70	60	70		

							Type	VA		VA	
							Surface	ULTRA MS		ULTRA MS	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	e8		e8	
							Tolerance of shank Ø	h6		h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16672... Ident. No.		16672... Ident. No.	
4	0.3	11	20	57	3.7	6	4	0.015	210	●	150	●
4	0.5	11	20	57	3.7	6	4	0.015	212	●	152	●
5	0.3	13	20	57	4.6	6	4	0.02	214	●	154	●
5	0.5	13	20	57	4.6	6	4	0.02	216	●	156	●
6	0.3	13	20	57	5.5	6	4	0.023	218	●	158	●
6	0.5	13	20	57	5.5	6	4	0.023	220	●	160	●
6	1	13	20	57	5.5	6	4	0.023	222	●	162	●
8	0.5	20	30	64	7.4	8	4	0.03	226	●	166	●
8	1	20	30	64	7.4	8	4	0.03	228	●	168	●
10	0.5	22	32	72	9.2	10	4	0.035	232	●	172	●
10	1	22	32	72	9.2	10	4	0.035	234	●	174	●
12	0.5	26	37	83	11	12	4	0.045	236	●	176	●
12	1	26	37	83	11	12	4	0.045	238	●	178	●
12	2	26	37	83	11	12	4	0.045	240	●	180	●
12	3	26	37	83	11	12	4	0.045	244	●	184	●
16	1	32	46	92	15	16	4	0.06	248	●	188	●
16	2	32	46	92	15	16	4	0.06	250	●	190	●
16	3	32	46	92	15	16	4	0.06	252	●	192	●
16	4	32	46	92	15	16	4	0.06	254	●	194	●
20	1	38	58	104	19	20	4	0.08	258	●	198	●
20	2	38	58	104	19	20	4	0.08	260	○	200	●
20	3	38	58	104	19	20	4	0.08	262	●	202	●
20	4	38	58	104	19	20	4	0.08	264	●	204	●

Prod. Gr. 152

ATORN® Solid carbide mini radius milling cutter

2 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 2 | 30° | HA

Application:
High-precision miniature radius cutter with long neck for process-reliable machining of stainless steels and alloys of titanium, nickel and cobalt.

Execution:
- Ultrafine grain, cemented carbide
- Tolerance: < Ø 0.7 mm = 0/-0.012 mm and < Ø 4 mm = 0/-0.020 mm
- Radius tolerance = 0/-0.010 mm
- HA straight shank
- With clearance
- High-performance ULTRA MS coating
- Defined cutting edge rounding

Advantage:
- Broad range of clearance lengths
- Optimum chip removal and temperature resistance
- Maximum service life through ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16674004-132	45	40		35	30										45	40	45		

Type	VA
Surface	ULTRA MS
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. (mm)	16674... Ident. No.	
0.2	0.2	1	50	0.15	4	2	0.003	004	●
0.3	0.3	2	50	0.25	4	2	0.003	010	●
0.4	0.4	1	50	0.35	4	2	0.005	014	●
0.4	0.4	2	50	0.35	4	2	0.005	016	●
0.4	0.4	3	50	0.35	4	2	0.003	018	●
0.4	0.4	4	50	0.35	4	2	0.003	020	●
0.5	0.4	2	50	0.45	4	2	0.006	024	●
0.5	0.4	4	50	0.45	4	2	0.004	028	●
0.5	0.4	6	50	0.45	4	2	0.004	032	●
0.6	0.5	2	50	0.55	4	2	0.007	036	●
0.6	0.5	4	50	0.55	4	2	0.005	040	●
0.6	0.5	6	50	0.55	4	2	0.005	044	●
0.8	0.6	4	50	0.75	4	2	0.008	050	●
0.8	0.6	6	50	0.75	4	2	0.006	054	●
0.8	0.6	8	50	0.75	4	2	0.006	056	●
1	0.8	3	50	0.95	4	2	0.01	060	●
1	0.8	4	50	0.95	4	2	0.01	062	●
1	0.8	6	50	0.95	4	2	0.007	066	●
1	0.8	8	50	0.95	4	2	0.007	068	●
1	0.8	10	50	0.95	4	2	0.007	070	●
1	0.8	12	50	0.95	4	2	0.007	072	●
1	0.8	20	50	0.95	4	2	0.006	074	●
1.2	1	6	50	1.15	4	2	0.012	076	●
1.2	1	8	50	1.15	4	2	0.008	078	○

Type	VA
Surface	ULTRA MS
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. (mm)	16674... Ident. No.	
1.5	1.2	8	50	1.45	4	2	0.014	084	●
1.5	1.2	12	50	1.45	4	2	0.01	086	●
1.5	1.2	16	50	1.45	4	2	0.01	088	●
2	1.6	6	50	1.95	4	2	0.018	090	●
2	1.6	8	50	1.95	4	2	0.018	092	●
2	1.6	10	50	1.95	4	2	0.018	094	●
2	1.6	12	50	1.95	4	2	0.013	096	●
2	1.6	16	50	1.95	4	2	0.013	098	●
2	1.6	20	60	1.95	4	2	0.013	100	●
2	1.6	25	75	1.95	4	2	0.013	102	●
3	2.4	8	50	2.85	6	2	0.027	106	●
3	2.4	10	50	2.85	6	2	0.027	108	●
3	2.4	16	60	2.85	6	2	0.027	110	●
3	2.4	20	60	2.85	6	2	0.019	112	●
3	2.4	25	75	2.85	6	2	0.019	114	●
3	2.4	30	75	2.85	6	2	0.019	116	●
4	3.2	10	50	3.85	6	2	0.035	118	●
4	3.2	16	60	3.85	6	2	0.035	120	●
4	3.2	20	60	3.85	6	2	0.035	122	●
4	3.2	25	75	3.85	6	2	0.025	124	●
4	3.2	30	75	3.85	6	2	0.025	126	●
4	3.2	35	75	3.85	6	2	0.025	128	●
4	3.2	40	100	3.85	6	2	0.025	130	○
4	3.2	50	100	3.85	6	2	0.025	132	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 2 | 30° | HA | HB

Application:
Ident. No. 140–156: Radius cutter for machining stainless steels and alloys of titanium, nickel and cobalt.
Ident. No. 170–186: Radius milling cutter for machining stainless steel, titanium, Ni and Co alloys.

Execution:
- Radius tolerance = 0/-0.010 mm
- Reinforced core
- With clearance
- Defined cutting edge rounding
- **Ident. No. 140–156:**
  - Ultrafine grain, cemented carbide
  - HB straight shank
  - High-performance ULTRA MS coating
- **Ident. No. 170–186:**
  - Ultra-fine grain cemented carbide
  - HA straight shank
  - ULTRA MS high-performance coating

Advantage:
- Optimised, positive cutting geometry
- **Ident. No. 140–156:**
  - Optimum chip removal and temperature resistance
  - Maximum service life through ULTRA MS coating
- **Ident. No. 170–186:**
  - Excellent chip removal and temperature resistance
  - Maximum service life thanks to ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16674140-156	150	140		75	65										70	60	70		
16674170-186	150	140		75	65										70	60	70		

							Type	VA		VA	
							Surface	ULTRA MS		ULTRA MS	
							Tool holding device	HA parallel shank		HB parallel shank	
							Tolerance of cutting edge Ø	e8		e8	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16674... Ident. No.		16674... Ident. No.	
3	5	20	57	2.8	6	2	0.015	170	●	140	●
4	6	20	57	3.7	6	2	0.02	172	●	142	●
5	7	20	57	4.6	6	2	0.025	174	●	144	●
6	8	20	57	5.5	6	2	0.03	176	●	146	●
8	10	25	64	7.4	8	2	0.036	178	●	148	●
10	12	35	75	9.2	10	2	0.044	180	●	150	●
12	14	35	75	11	12	2	0.052	182	○	152	○
16	18	45	90	15	16	2	0.065	184	●	154	●
20	22	50	100	19	20	2	0.08	186	●	156	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 flutes, ULTRA MS-coated

VHM | ULTRA MS | Typ VA | Z 2 | 30° | HB | HA

Application:
Radius milling cutter for machining stainless steel, titanium, Ni and Co alloys.

Execution:
- Ultra-fine grain cemented carbide
- Radius tolerance = 0/-0.010 mm
- Reinforced core
- With clearance

- ULTRA MS high-performance coating
- Defined cutting edge rounding
- **Ident. No. 200–216:** HB straight shank
- **Ident. No. 230–246:** HA straight shank

Advantage:
- Optimised, positive cutting geometry
- Excellent chip removal and temperature resistance
- Maximum service life thanks to ULTRA MS coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16674200-216	150	140		75	65										70	60	70		
16674230-246	150	140		75	65										70	60	70		

							Type	VA		VA	
							Surface	ULTRA MS		ULTRA MS	
							Tool holding device	HB parallel shank		HA parallel shank	
							Tolerance of cutting edge Ø	e8		e8	
							Tolerance of shank Ø	h6		h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steinl. st. ● (mm)	16674... Ident. No.		16674... Ident. No.	
3	5	21	75	2.8	6	2	0.015	200	●	230	●
4	8	28	75	3.7	6	2	0.02	202	●	232	●
5	9	32	75	4.6	6	2	0.025	204	●	234	●
6	10	40	75	5.5	6	2	0.03	206	●	236	●
8	12	40	75	7.4	8	2	0.036	208	●	238	●
10	14	60	100	9.2	10	2	0.044	210	●	240	●
12	16	60	100	11	12	2	0.052	212	●	242	●
16	32	80	125	15	16	2	0.065	214	●	244	●
20	38	80	125	19	20	2	0.08	216	●	246	●

Prod. Gr. 152

Solid carbide barrel milling cutter

ATORN® Solid carbide barrel milling cutter, tangential

4 flutes, uncoated/ULTRA coated

VHM | ULTRA | Typ N | Z 4 | γ = 15° | HA | HSC

Application:
Barrel milling cutters revolutionise finishing on 5-axis milling machines. Due to the larger radii, you can achieve significantly higher infeeds with improved surfaces.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- Tangential design
- Forming tolerance of +/-0.01
- Defined edge rounding
- **Ident. No. 100–120:** ULTRA coated
- **Ident. No. 200–220:** Uncoated

Advantage:
- Suitable for easily accessible edges
- Reduced machining times thanks to large line skips
- Highly economical
- Improved surfaces thanks to large radii

Ident. No. 100–120

Ident. No. 200–220

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16968100-120	190	150	130	100	80	550	600	200	210	180	210	400		185				120	
16968200-220	190	150	130	100	80	550	600	200	210	180	210	400		185				120	

							Type	N		N	
							Surface	ULTRA		Uncoated	
							Tool holding device	HA parallel shank		HA parallel shank	
							Tolerance of cutting edge Ø	+/-0.01		+/-0.01	
							Tolerance of shank Ø	h6		h6	
mm	R1 (mm)	R2 (mm)	mm	mm	mm	Z (PCS)	fz steel 1000 ● (mm)	16968... Ident. No.		16968... Ident. No.	
2	1	95	24	70	8	4	0.048	100	●	200	●
4	2	90	28	83	12	4	0.072	110	●	210	●
6	3	80	30	105	16	4	0.096	120	●	220	●

Prod. Gr. 152

ATORN® Solid carbide barrel milling cutter, conical

4 flutes, uncoated/ULTRA coated

VHM | ULTRA | Typ N | Z 4 | γ = 15° | HA | HSC

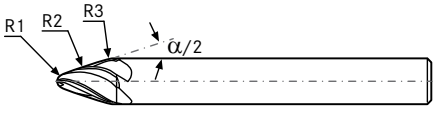
Application:
Barrel milling cutters revolutionise finishing on 5-axis milling machines. Due to the larger radii, you can achieve significantly higher infeeds with improved surfaces.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in line with DIN 6535 HA
- Conical design
- Forming tolerance of +/-0.01
- Defined edge rounding
- α/2 is the recommended angle to the surface
- **Ident. No. 500–550:** ULTRA coated
- **Ident. No. 600–650:** Uncoated

Advantage:
- Suitable for deep cavities and steep areas
- Reduced machining times thanks to large line skips
- Highly economical
- Improved surfaces thanks to large radii

Ident. No. 500–550

Ident. No. 600–650



Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16968500-550	190	150	130	100	80	550	600	200	210	180	210	400		185				120	
16968600-650	190	150	130	100	80	550	600	200	210	180	210	400		185				120	

									Type	N		N	
									Surface	ULTRA		Uncoated	
									Tool holding device	HA parallel shank		HA parallel shank	
									Tolerance of cutting edge Ø	+/-0.01		+/-0.01	
									Tolerance of shank Ø	h6		h6	
mm	R1 (mm)	R2 (mm)	R3 (mm)	mm	mm	mm	α/2	Z (PCS)	fz steel 1000 ● (mm)	16968... Ident. No.		16968... Ident. No.	
2	1	300	1	10	75	8	18	4	0.048	500	●	600	●
4	2	450	2	14	100	12	18	4	0.072	510	●	610	●
6	3	1200	3	18	120	16	18	4	0.096	520	●	620	●
6	3	800	3	12	120	16	28	4	0.096	530	●	630	●
8	4	1200	4	16	120	16	18	4	0.096	540	●	640	●
8	4	800	4	11	120	16	28	4	0.096	550	●	650	●

Prod. Gr. 152

Solid carbide mills for machining steel up to 52 HRC

ATORN® Solid carbide end mill

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 40° | γ = 3° | HA

Application:
End mill in a standard design for machining materials up to 52 HRC, e.g. in dip working and mould forming.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank pursuant to DIN 6535
- With clearance
- Type N
- Chip angle 3°
- RockTec 52-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16972200-208	160	150	120	115	100									130	100	90	80	70	

Type	N
Surface	RockTec 52
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16972... Ident. No.	
3	9	15	50	2.8	6	4	0.03	200	●
4	12	20	50	3.7	6	4	0.04	201	●
5	15	20	50	4.6	6	4	0.05	202	●
6	16	20	50	5.5	6	4	0.06	203	●
8	20	30	64	7.4	8	4	0.08	204	●
10	22	32	70	9.2	10	4	0.09	205	●
12	25	37	75	11	12	4	0.1	206	●
16	32	46	90	15	16	4	0.12	207	●
20	38	58	100	19	20	4	0.16	208	●

Prod. Gr. 152

ATORN® Solid carbide end mill

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 40° | γ = 3° | HA

Application:
End mill in a long design with short cutters for machining materials up to 52 HRC, e.g. in dip working and mould forming.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank pursuant to DIN 6535
- With clearance
- Type N
- Chip angle 3°
- RockTec 52-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16972220-228	145	135	110	105	90									120	90	80	70	65	

Type	N
Surface	RockTec 52
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16972... Ident. No.	
3	5	30	75	2.8	6	4	0.027	220	●
4	8	32	75	3.7	6	4	0.035	221	●
5	9	32	75	4.6	6	4	0.045	222	●
6	10	40	75	5.5	6	4	0.05	223	●
8	12	40	75	7.4	8	4	0.07	224	●
10	14	60	100	9.2	10	4	0.08	225	●
12	16	60	100	11	12	4	0.09	226	●
16	22	85	125	15	16	4	0.11	227	●
20	26	85	125	19	20	4	0.14	228	○

Prod. Gr. 152

ATORN® Solid carbide end mill

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 40° | γ = 3° | HA

Application:
End mill in an extra-long design with short cutters for machining materials up to 52 HRC, e.g. in dip working and mould forming.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank pursuant to DIN 6535

- With clearance
- Type N
- Chip angle 3°
- RockTec 52-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16972230-238	130	120	100	95	80									110	80	70	65	60	

Type	N
Surface	RockTec 52
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16972... Ident. No.	
3	5	60	100	2.8	6	4	0.025	230	○
4	8	60	100	3.7	6	4	0.03	231	●
5	9	60	100	4.6	6	4	0.04	232	●
6	10	60	100	5.5	6	4	0.045	233	●
8	12	60	100	7.4	8	4	0.065	234	●
10	14	85	125	9.2	10	4	0.07	235	●
12	16	110	150	11	12	4	0.08	236	●
16	22	110	150	15	16	4	0.1	237	●
20	26	110	150	19	20	4	0.13	238	○

Prod. Gr. 152

ATORN® SC multi-tooth mills

6 flutes, RockTec 52-coated

VHM | RockTec 52 | Typ N | Z 6 | Z 8 | 50° | γ = 3° | HA

Application:
Multi-tooth mill for circumferential machining, fine finishing and semi-roughing up to 52 HRC.

Execution:
- Solid carbide ultra-fine grain
- Centre cutting
- Edge protection chamfer
- HA shank pursuant to DIN 6535

- Cutting edge finish
- With clearance
- Type N
- Chip angle 3°
- RockTec 52-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16972240-248	160	150	120	115	100									130	100	90	80	70	

Type	N
Surface	RockTec 52
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1300 ● (mm)	16972... Ident. No.	
3	8	20	50	2.8	6	0.1	6	0.027	240	●
4	11	20	50	3.7	6	0.1	6	0.035	241	●
5	13	20	50	4.6	6	0.1	6	0.045	242	●
6	15	20	50	5.5	6	0.1	6	0.055	243	●
8	20	30	64	7.4	8	0.2	6	0.07	244	●
10	22	32	70	9.2	10	0.2	6	0.08	245	●
12	25	37	75	11	12	0.2	6	0.09	246	●
16	30	46	90	15	16	0.3	8	0.11	247	●
20	38	58	100	19	20	0.4	8	0.14	248	●

Prod. Gr. 152

ATORN® SC multi-tooth mills

6 flutes, RockTec 52-coated

VHM | RockTec 52 | Typ N | Z 6 | Z 8 | 50° | γ = 3° | HA

Application:
Multi-tooth mill for circumferential machining, fine finishing and semi-roughing up to 52 HRC.

Execution:
- Solid carbide ultra-fine grain
- Centre cutting
- Edge protection chamfer
- HA shank pursuant to DIN 6535
- Cutting edge finish
- With clearance
- Type N
- Chip angle 3°
- RockTec 52-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16972250-258	145	135	110	105	90									120	90	80	70	65	

										Type	N
										Surface	RockTec 52
										Tool holding device	HA parallel shank
										Tolerance of cutting edge Ø	e8
										Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1300 ● (mm)		16972... Ident. No.	
3	19	30	75	2.8	6	0.1	6	0.025		250	○
4	19	32	75	3.7	6	0.1	6	0.03		251	●
5	19	32	75	4.6	6	0.1	6	0.04		252	●
6	31	40	75	5.5	6	0.1	6	0.045		253	●
8	31	40	75	7.4	8	0.2	6	0.06		254	●
10	45	60	100	9.2	10	0.2	6	0.07		255	●
12	50	60	100	11	12	0.2	6	0.08		256	●
16	57	85	125	15	16	0.3	8	0.1		257	●
20	57	85	125	19	20	0.4	8	0.13		258	●

Prod. Gr. 152

ATORN® Solid carbide miniature torus milling cutter

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 25° | γ = 0° | HA

Application:
Miniature torus milling cutter with a long neck for machining materials up to 52 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- HA shaft pursuant to DIN 6535
- cutting edge finish
- with clearance
- 0° chip angle
- Radius tolerance = 0/-0.010 mm
- RockTec 52 coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16973300-352	160	150	120													60	70	70	

										Type	N
										Surface	RockTec 52
										Tool holding device	HA parallel shank
										Tolerance of cutting edge Ø	e8
										Tolerance of shank Ø	h6
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)		16973... Ident. No.	
1	0.1	1	4	50	0.95	6	4	0.019		300	●
1	0.1	1	6	50	0.95	6	4	0.019		302	●
1	0.1	1	8	50	0.95	6	4	0.019		304	●
1	0.1	1	10	50	0.95	6	4	0.019		306	●
1	0.1	1	12	50	0.95	6	4	0.016		308	●
1.5	0.2	1.5	6	50	1.45	6	4	0.022		310	●
1.5	0.2	1.5	8	50	1.45	6	4	0.022		312	●
1.5	0.2	1.5	10	50	1.45	6	4	0.022		314	●
1.5	0.2	1.5	12	50	1.45	6	4	0.022		316	●
2	0.2	2	6	50	1.95	6	4	0.042		318	●
2	0.2	2	8	50	1.95	6	4	0.042		320	●
2	0.2	2	10	50	1.95	6	4	0.040		322	●
2	0.2	2	12	50	1.95	6	4	0.038		324	●
2	0.2	2	16	50	1.95	6	4	0.038		326	●
2.5	0.3	2.5	8	50	2.4	6	4	0.038		328	●
2.5	0.3	2.5	10	50	2.4	6	4	0.038		330	●
2.5	0.3	2.5	12	50	2.4	6	4	0.038		332	●
2.5	0.3	2.5	16	50	2.4	6	4	0.038		334	●
3	0.3	3	8	50	2.85	6	4	0.053		336	●
3	0.3	3	10	50	2.85	6	4	0.053		338	●

								Type	N	
								Surface	RockTec 52	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16973... Ident. No.	
3	0.3	3	12	50	2.85	6	4	0.053	340	●
3	0.3	3	16	60	2.85	6	4	0.053	342	●
3	0.3	3	20	60	2.85	6	4	0.053	344	●
4	0.5	4	10	60	3.85	6	4	0.065	346	●
4	0.5	4	15	60	3.85	6	4	0.065	348	●
4	0.5	4	20	60	3.85	6	4	0.065	350	●
4	0.5	4	25	75	3.85	6	4	0.062	352	●

Prod. Gr. 152

ATORN® SC torus milling cutter

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 40° | γ = 3° | HA

Application:
Torus milling cutter for universal machining of materials up to 52 HRC, e.g. for countersinking and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance
- type N
- 3° chip angle
- RockTec 52 coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16973100-127	160	150	120	115	100									130	100	90	80	70	

						Type	N	
						Surface	RockTec 52	
						Tool holding device	HA parallel shank	
						Tolerance of cutting edge Ø	e8	
						Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16973... Ident. No.	
3	0.3	9	50	6	4	0.03	100	●
3	0.5	9	50	6	4	0.03	101	●
4	0.3	12	50	6	4	0.04	102	●
4	0.5	12	50	6	4	0.04	103	●
4	1	12	50	6	4	0.04	104	●
5	0.5	15	50	6	4	0.05	105	●
5	1	15	50	6	4	0.05	106	●
5	0.3	15	50	6	4	0.05	126	●
6	0.3	20	60	6	4	0.06	107	●
6	0.5	20	60	6	4	0.06	108	●
6	1	20	60	6	4	0.06	109	●
8	0.5	20	64	8	4	0.08	110	●
8	1	20	64	8	4	0.08	111	●
8	1.5	20	64	8	4	0.08	112	●
8	2	20	64	8	4	0.08	113	●
10	0.5	22	75	10	4	0.09	114	●
10	1.5	22	75	10	4	0.09	115	●
10	2	22	75	10	4	0.09	116	●
10	1	22	75	10	4	0.09	127	●
12	1	25	75	12	4	0.1	117	●
12	2	25	75	12	4	0.1	118	●
12	3	25	75	12	4	0.1	119	●
16	1	32	90	16	4	0.12	120	●
16	2	32	90	16	4	0.12	121	●
16	3	32	90	16	4	0.12	122	●
20	1	38	100	20	4	0.16	123	●
20	2	38	100	20	4	0.16	124	●
20	3	38	100	20	4	0.16	125	●

Prod. Gr. 152

ATORN® SC torus milling cutter

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 40° | γ = 3° | HA

Application:
Torus milling cutter with short cutter for machining materials up to 52 HRC, e.g. for countersinking and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance
- type N
- 3° chip angle
- RockTec 52 coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16973130-145	160	150	120	115	100									130	100	90	80	70	

								Type	N	
								Surface	RockTec 52	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16973... Ident. No.	
3	0.3	4	14	60	2.8	6	4	0.03	130	●
3	0.5	4	14	60	2.8	6	4	0.03	131	●
4	0.3	5	16	60	3.7	6	4	0.04	132	●
4	0.5	5	16	60	3.7	6	4	0.04	133	●
5	0.3	6	18	60	4.6	6	4	0.05	134	●
5	0.5	6	18	60	4.6	6	4	0.05	135	●
6	0.5	7	20	60	5.5	6	4	0.06	136	●
6	1	7	20	60	5.5	6	4	0.06	137	●
8	0.5	9	26	64	7.4	8	4	0.08	138	●
8	1	9	26	64	7.4	8	4	0.08	139	●
10	1	11	31	70	9.2	10	4	0.09	140	●
10	2	11	31	70	9.2	10	4	0.09	141	●
12	1	13	37	75	11	12	4	0.1	142	●
12	2	13	37	75	11	12	4	0.1	143	●
16	1	17	43	90	15	16	4	0.12	144	●
16	2	17	43	90	15	16	4	0.12	145	●

Prod. Gr. 152

ATORN® SC torus milling cutter

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 40° | γ = 3° | HA

Application:
Torus milling cutter long with short cutter for machining materials up to 52 HRC, e.g. for countersinking and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance
- type N
- 3° chip angle
- RockTec 52 coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16973150-165	145	135	110	105	90									120	90	80	70	65	

								Type	N	
								Surface	RockTec 52	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16973... Ident. No.	
3	0.3	5	30	75	2.8	6	4	0.025	150	●
3	0.5	5	30	75	2.8	6	4	0.025	151	●
4	0.3	8	32	75	3.7	6	4	0.03	152	●
4	0.5	8	32	75	3.7	6	4	0.03	153	●
5	0.3	9	32	75	4.6	6	4	0.04	154	●
5	0.5	9	32	75	4.6	6	4	0.04	155	●
6	0.5	10	40	75	5.5	6	4	0.05	156	●
6	1	10	40	75	5.5	6	4	0.05	157	●
8	0.5	12	40	75	7.4	8	4	0.07	158	●
8	1	12	40	75	7.4	8	4	0.07	159	●
10	1	14	60	100	9.2	10	4	0.08	160	●
10	2	14	60	100	9.2	10	4	0.08	161	●
12	1	16	60	100	11	12	4	0.09	162	●

								Type	N	
								Surface	RockTec 52	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16973... Ident. No.	
12	2	16	60	100	11	12	4	0.09	163	●
16	1	22	85	125	15	16	4	0.11	164	●
16	2	22	85	125	15	16	4	0.11	165	●

Prod. Gr. 152

ATORN® SC torus milling cutter

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 40° | γ = 3° | HA

Application:
Torus milling cutter extra long with short cutter for machining materials up to 52 HRC, e.g. for countersinking and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535

- with clearance
- type N
- 3° chip angle
- RockTec 52 coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16973170-185	135	130	105	100	85									110	85	75	70	60	

								Type	N	
								Surface	RockTec 52	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16973... Ident. No.	
3	0.3	5	60	100	2.8	6	4	0.02	170	○
3	0.5	5	60	100	2.8	6	4	0.02	171	○
4	0.3	8	60	100	3.7	6	4	0.025	172	●
4	0.5	8	60	100	3.7	6	4	0.025	173	●
5	0.3	9	60	100	4.6	6	4	0.035	174	●
5	0.5	9	60	100	4.6	6	4	0.035	175	●
6	0.5	10	60	100	5.5	6	4	0.04	176	●
6	1	10	60	100	5.5	6	4	0.04	177	●
8	0.5	12	60	100	7.4	8	4	0.06	178	●
8	1	12	60	100	7.4	8	4	0.06	179	●
10	1	14	85	125	9.2	10	4	0.07	180	●
10	2	14	85	125	9.2	10	4	0.07	181	●
12	1	16	110	150	11	12	4	0.08	182	●
12	2	16	110	150	11	12	4	0.08	183	●
16	1	22	110	150	15	16	4	0.1	184	○
16	2	22	110	150	15	16	4	0.1	185	○

Prod. Gr. 152

ATORN® Solid carbide HSC high-feed milling cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | Z 6 | 3° | γ = -1° | HA | HSC

Application:
High-feed milling cutter (HSC) with short blade for processing materials up to 65 HRC. Applications in die and mould making and general mechanical engineering.

Execution:
- Solid carbide ultra-fine grain
- HA shank in line with DIN 6535
- Cutting edge finish
- Centre cutting

- Type H
- Chip angle -1°
- Twist angle 3°
- RockTec 65-coated

Advantage:
- High material removal rate, high surface quality
- High feeds of 0.2-0.5 mm per tooth possible
- Good dimensional and geometric accuracy
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976190-201		170	160	140														90	120

								Type	H	
								Surface	RockTec 65	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
4	0.4	1.5	8	57	3.7	6	4	0.13	190	●
4	0.4	1.5	15	57	3.7	6	4	0.13	191	●
5	0.5	2	10	57	4.6	6	4	0.17	192	●
5	0.5	2	21	57	4.6	6	4	0.17	193	●
6	0.6	2.5	12	57	5.5	6	4	0.2	194	●
6	0.6	2.5	26	57	5.5	6	4	0.2	195	●
8	0.8	3	16	63	7.4	8	6	0.24	196	●
8	0.8	3	31	63	7.4	8	6	0.24	197	●
10	1	3.5	20	72	9.2	10	6	0.34	198	●
10	1	3.5	36	72	9.2	10	6	0.34	199	●
12	1.2	4	24	83	11	12	6	0.42	200	●
12	1.2	4	41	83	11	12	6	0.42	201	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 flutes, RockTec 52-coated

VHM | RockTec 52 | Typ N | Z 2 | 30° | HA

Application:
Radius cutter in standard design for machining materials up to 52 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance
- type N
- 3° chip angle
- RockTec 52-coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16974200-210	175	165	130	125	110									145	110	100	90	75	

							Type	N	
							Surface	RockTec 52	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16974... Ident. No.	
2	4	8	40	1.85	4	2	0.03	200	●
2.5	4	10	40	2.35	4	2	0.035	201	○
3	5	14	50	2.8	4	2	0.04	202	●
4	8	20	50	3.7	4	2	0.04	203	●
5	9	20	50	4.6	6	2	0.05	204	●
6	10	20	50	5.5	6	2	0.06	205	●
8	12	30	64	7.4	8	2	0.08	206	●
10	14	32	70	9.2	10	2	0.09	207	●
12	16	38	75	11	12	2	0.1	208	●
16	32	46	90	15	16	2	0.12	209	●
20	38	58	100	19	20	2	0.14	210	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 flutes, RockTec 52-coated

VHM | RockTec 52 | Typ N | Z 2 | 30° | HA

Application:
Radius cutter in long design for machining materials up to 52 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance
- type N
- 3° chip angle
- RockTec 52-coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16974220-230	160	150	120	110	100									130	100	90	80	65	

								Type	N
								Surface	RockTec 52
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	e8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16974... Ident. No.	
2	4	14	75	1.85	6	2	0.025	220	●
2.5	4	18	75	2.35	6	2	0.03	221	●
3	5	21	75	2.8	6	2	0.035	222	●
4	8	28	75	3.7	6	2	0.035	223	●
5	9	32	75	4.6	6	2	0.04	224	●
6	10	40	75	5.5	6	2	0.05	225	●
8	12	40	75	7.4	8	2	0.07	226	●
10	14	60	100	9.2	10	2	0.08	227	●
12	16	60	100	11	12	2	0.09	228	●
16	32	80	125	15	16	2	0.1	229	●
20	38	80	125	19	20	2	0.12	230	○

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 flutes, RockTec 52-coated

Application:
Radius cutter in extra-long design for machining materials up to 52 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance

- type N
- 3° chip angle
- RockTec 52-coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16974240-250	150	140	110	105	95									125	95	85	75	65	

								Type	N
								Surface	RockTec 52
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	e8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16974... Ident. No.	
2	4	20	100	1.85	6	2	0.02	240	●
2.5	4	25	100	2.35	6	2	0.025	241	○
3	5	30	100	2.8	6	2	0.03	242	●
4	8	40	100	3.7	6	2	0.03	243	●
5	9	50	100	4.6	6	2	0.035	244	●
6	10	60	150	5.5	6	2	0.04	245	●
8	12	80	150	7.4	8	2	0.06	246	●
10	14	100	150	9.2	10	2	0.07	247	●
12	16	110	150	11	12	2	0.08	248	●
16	32	150	200	15	16	2	0.09	249	●
20	38	150	200	19	20	2	0.1	250	○

Prod. Gr. 152

ATORN® Solid carbide radius cutter

4 cutters, RockTec-52-coated

Application:
Radius cutter in standard design for machining materials up to 52 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance

- type N
- 3° chip angle
- RockTec 52-coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16974260-268	175	165	130	125	110									145	110	100	90	75	

							Type	N	
							Surface	RockTec 52	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16974... Ident. No.	
3	5	14	50	2.8	6	4	0.03	260	●
4	8	20	50	3.7	6	4	0.04	261	●
5	9	20	50	4.6	6	4	0.05	262	●
6	10	20	50	5.5	6	4	0.06	263	●
8	12	30	64	7.4	8	4	0.08	264	●
10	14	32	70	9.2	10	4	0.09	265	●
12	16	38	75	11	12	4	0.1	266	●
16	32	46	90	15	16	4	0.12	267	●
20	38	58	100	19	20	4	0.14	268	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

4 cutters, RockTec-52-coated

VHM | RockTec 52 | Typ N | Z 4 | 30° | HA

Application:
Radius cutter in long design for machining materials up to 52 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in accordance with DIN 6535
- with clearance
- type N
- 3° chip angle
- RockTec 52-coated
- radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- maximum service life thanks to RockTec 52 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16974270-278	160	150	120	110	100									130	100	90	80	65	

							Type	N	
							Surface	RockTec 52	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz steel 1300 ● (mm)	16974... Ident. No.	
3	5	21	75	2.8	6	4	0.025	270	●
4	8	28	75	3.7	6	4	0.035	271	●
5	9	32	75	4.6	6	4	0.04	272	●
6	10	40	75	5.5	6	4	0.05	273	●
8	12	40	75	7.4	8	4	0.07	274	●
10	14	60	100	9.2	10	4	0.08	275	●
12	16	60	100	11	12	4	0.09	276	●
16	32	80	125	15	16	4	0.1	277	●
20	38	80	125	19	20	4	0.12	278	●

Prod. Gr. 152

Solid carbide mills for machining steel up to 65 HRC

ATORN® Solid carbide end mill

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 40° | γ = -6° | HA

Application:
End mill in a standard design for machining materials up to 65 HRC, e.g. dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535

- With clearance
- Type H
- Chip angle -6°
- RockTec 65-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16975200-208		200	180	140													95	140	120

								Type	H
								Surface	RockTec 65
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	e8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16975... Ident. No.	
3	9	15	50	2.8	6	4	0.027	200	●
4	12	20	50	3.7	6	4	0.036	201	●
5	15	20	50	4.6	6	4	0.045	202	●
6	16	20	50	5.5	6	4	0.055	203	●
8	20	30	64	7.4	8	4	0.07	204	●
10	22	32	70	9.2	10	4	0.08	205	●
12	25	37	75	11	12	4	0.09	206	●
16	32	46	90	15	16	4	0.11	207	●
20	38	58	100	19	20	4	0.14	208	●

Prod. Gr. 152

ATORN® Solid carbide end mill

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 40° | γ = -6° | HA

Application:
End mill, long, with short cutters for machining materials up to 65 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535

- With clearance
- Type H
- Chip angle -6°
- RockTec 65-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16975220-228		180	160	125													85	125	110

								Type	H
								Surface	RockTec 65
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	e8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16975... Ident. No.	
3	5	30	75	2.8	6	4	0.02	220	●
4	8	32	75	3.7	6	4	0.03	221	●
5	9	32	75	4.6	6	4	0.035	222	●
6	10	40	75	5.5	6	4	0.045	223	●
8	12	40	75	7.4	8	4	0.06	224	●
10	14	60	100	9.2	10	4	0.07	225	●
12	16	60	100	11	12	4	0.07	226	●
16	22	85	125	15	16	4	0.09	227	●
20	26	85	125	19	20	4	0.11	228	○

Prod. Gr. 152

ATORN® Solid carbide end mill

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 40° | γ = -6° | HA

Application:
End mill, extra long, with short cutters for machining materials up to 65 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535
- With clearance
- Type H
- Chip angle -6°
- RockTec 65-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16975230-238		160	**145**	110													75	115	100

Type	H
Surface	RockTec 65
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16975... Ident. No.	
3	5	60	100	2.8	6	4	0.018	230	○
4	8	60	100	3.7	6	4	0.027	231	●
5	9	60	100	4.6	6	4	0.03	232	●
6	10	60	100	5.5	6	4	0.04	233	●
8	12	60	100	7.4	8	4	0.05	234	●
10	14	85	125	9.2	10	4	0.065	235	●
12	16	110	150	11	12	4	0.07	236	●
16	22	110	150	15	16	4	0.08	237	●
20	26	110	150	19	20	4	0.1	238	○

Prod. Gr. 152

ATORN® SC multi-tooth mills

6 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 6 | Z 8 | 50° | γ = -26° | HA

Application:
Multi-tooth mills for circumferential, ultra-fine finish cutting and semi-rough cutting in materials up to 65 HRC.

Execution:
- Solid carbide ultra-fine grain
- Centre cutting
- Edge protection chamfer
- HA shank in accordance with DIN 6535
- With clearance
- Type H
- Chip angle -26°
- RockTec 65-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16975240-248		200	**180**	140													95	140	120

Type	H
Surface	RockTec 65
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz hard 52 HRC ● (mm)	16975... Ident. No.	
3	8	20	50	2.8	6	0.1	6	0.02	240	●
4	11	20	50	3.7	6	0.1	6	0.03	241	●
5	13	20	50	4.6	6	0.1	6	0.04	242	●
6	15	20	50	5.5	6	0.1	6	0.05	243	●
8	20	30	64	7.4	8	0.2	6	0.06	244	●
10	22	32	70	9.2	10	0.2	6	0.07	245	●
12	25	37	75	11	12	0.2	6	0.08	246	●
16	30	46	90	15	16	0.3	8	0.1	247	●
20	38	58	100	19	20	0.4	8	0.13	248	●

Prod. Gr. 152

ATORN® SC multi-tooth mills

6 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 6 | Z 8 | 50° | γ = -26° | HA

Application:
Multi-tooth mills for circumferential, ultra-fine finish cutting and semi-rough cutting in materials up to 65 HRC.

Execution:
- Solid carbide ultra-fine grain
- Centre cutting
- Edge protection chamfer

- HA shank in accordance with DIN 6535
- With clearance
- Type H
- Chip angle -26°
- RockTec 65-coated

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16975250-258		180	160	125													85	125	110

Type	H
Surface	RockTec 65
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	F mm	Z (PCS)	fz hard 52 HRC ● (mm)	16975... Ident. No.	
3	19	30	75	2.8	6	0.1	6	0.018	250	○
4	19	32	75	3.7	6	0.1	6	0.027	251	●
5	19	32	75	4.6	6	0.1	6	0.03	252	●
6	31	40	75	5.5	6	0.1	6	0.04	253	●
8	31	40	75	7.4	8	0.2	6	0.055	254	●
10	45	60	100	9.2	10	0.2	6	0.06	255	●
12	50	60	100	11	12	0.2	6	0.06	256	●
16	57	85	125	15	16	0.3	8	0.08	257	●
20	57	85	125	19	20	0.4	8	0.1	258	●

Prod. Gr. 152

ORION® Solid carbide HPC multi-tooth mills

4–10 flutes, TiAlN coated

VHM | TiSiN | Typ H | Z 4 | Z 6 | Z 8 | Z 10 | 45° | γ = 0° | HA

Application:
Multi-tooth mill for circumferential machining, fine finishing and semi-roughing up to 68 HRC.

Execution:
- solid carbide ultra-fine grain
- TiSiN-coated
- Unequal twist angle
- HA shaft in line with DIN 6535
- type H

- 0° chip angle
- cutting edge finish
- centre cutting

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Notes:
At >60 HRC: ae = 0.07xD. Face cut from Z6 is only possible to a limited extent.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16931103-130			180															170	100

Type	H
Surface	TiSiN
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16931... Ident. No.	
2	8	58	6	4	0.016	103	●
3	12	58	6	4	0.016	106	●
4	13	58	6	4	0.016	109	●
5	15	58	6	6	0.016	112	●
6	16	58	6	6	0.016	115	●
8	22	70	8	6	0.02	118	●
10	25	73	10	6	0.02	121	●
12	28	84	12	6	0.025	124	●
16	35	93	16	8	0.025	127	●
20	40	104	20	10	0.03	130	●

Prod. Gr. 1FQ

ORION® Solid carbide HPC multi-tooth mills

6–10 flutes, TiAlN coated

VHM | TiSiN | Typ H | Z 6 | Z 8 | Z 10 | 45° | γ = 0° | HA | HPC

Application:
Multi-tooth mill for circumferential machining, fine finishing and semi-roughing up to 68 HRC.

Execution:
- solid carbide ultra-fine grain
- TiSiN-coated
- Unequal twist angle
- HA shaft in line with DIN 6535
- type H
- 0° chip angle
- cutting edge finish
- centre cutting

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Notes:
At >60 HRC: ae = 0.07xD. Face cut from Z6 is only possible to a limited extent.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16931180-187			150															140	80

					Type	H	
					Surface	TiSiN	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	e8	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16931... Ident. No.	
6	21	65	6	6	0.016	180	●
8	28	75	8	6	0.02	181	●
10	35	85	10	6	0.02	182	●
12	45	100	12	6	0.025	183	●
16	50	110	16	8	0.025	184	●
16	65	125	16	8	0.025	185	●
20	55	126	20	10	0.03	186	●
20	70	135	20	10	0.03	187	●

Prod. Gr. 1FQ

ATORN® Solid carbide miniature torus milling cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 25° | γ = 0° | HA

Application:
Torus milling cutter with long neck for machining materials up to 65 HRC, e.g. for countersinking and mould making.

Execution:
- Solid carbide ultra-fine grain
- HA shaft pursuant to DIN 6535
- cutting edge finish
- with clearance
- type H
- 0° chip angle
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- optimum chip removal and temperature resistance
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976300-352		150	120															80	90

								Type	H	
								Surface	RockTec 65	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
1	0.1	1	4	50	0.95	6	4	0.018	300	●
1	0.1	1	6	50	0.95	6	4	0.018	302	●
1	0.1	1	8	50	0.95	6	4	0.018	304	●
1	0.1	1	10	50	0.95	6	4	0.018	306	●
1	0.1	1	12	50	0.95	6	4	0.012	308	●
1.5	0.2	1.5	6	50	1.45	6	4	0.019	310	●
1.5	0.2	1.5	8	50	1.45	6	4	0.019	312	●
1.5	0.2	1.5	10	50	1.45	6	4	0.019	314	●
1.5	0.2	1.5	12	50	1.45	6	4	0.019	316	●
2	0.2	2	6	50	1.95	6	4	0.034	318	●
2	0.2	2	8	50	1.95	6	4	0.034	320	●
2	0.2	2	10	50	1.95	6	4	0.034	322	●
2	0.2	2	12	50	1.95	6	4	0.034	324	●
2	0.2	2	16	50	1.95	6	4	0.034	326	●
2.5	0.3	2.5	8	50	2.4	6	4	0.034	328	●
2.5	0.3	2.5	10	50	2.4	6	4	0.034	330	●
2.5	0.3	2.5	12	50	2.4	6	4	0.033	332	●
2.5	0.3	2.5	16	50	2.4	6	4	0.033	334	●

									Type	H
									Surface	RockTec 65
									Tool holding device	HA parallel shank
									Tolerance of cutting edge Ø	e8
									Tolerance of shank Ø	h6
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
3	0.3	3	8	50	2.85	6	4	0.042	336	●
3	0.3	3	10	50	2.85	6	4	0.042	338	●
3	0.3	3	12	50	2.85	6	4	0.042	340	●
3	0.3	3	16	60	2.85	6	4	0.042	342	●
3	0.3	3	20	60	2.85	6	4	0.042	344	●
4	0.5	4	10	60	3.85	6	4	0.052	346	●
4	0.5	4	15	60	3.85	6	4	0.052	348	●
4	0.5	4	20	60	3.85	6	4	0.052	350	●
4	0.5	4	25	75	3.85	6	4	0.049	352	●

Prod. Gr. 152

ATORN® SC torus milling cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 40° | γ = -6° | HA

Application:
Torus milling cutter for processing materials up to 65 HRC, e.g. for die and mould making.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in line with DIN 6535
- With clearance

- Type H
- Chip angle -5° -7°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Best chip removal and temperature resistance
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976100-127		200	180	140													95	140	120

							Type	H
							Surface	RockTec 65
							Tool holding device	HA parallel shank
							Tolerance of cutting edge Ø	e8
							Tolerance of shank Ø	h6
mm	R mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
3	0.3	9	50	6	4	0.027	100	●
3	0.5	9	50	6	4	0.027	101	●
4	0.3	12	50	6	4	0.036	102	●
4	0.5	12	50	6	4	0.036	103	●
4	1	12	50	6	4	0.036	104	●
5	0.5	15	50	6	4	0.045	105	●
5	1	15	50	6	4	0.045	106	●
5	0.3	15	50	6	4	0.045	126	●
6	0.3	20	60	6	4	0.055	107	●
6	0.5	20	60	6	4	0.055	108	●
6	1	20	60	6	4	0.055	109	●
8	0.5	20	64	8	4	0.07	110	●
8	1	20	64	8	4	0.07	111	●
8	1.5	20	64	8	4	0.07	112	●
8	2	20	64	8	4	0.07	113	●
10	0.5	22	75	10	4	0.08	114	●
10	1.5	22	75	10	4	0.08	115	●
10	2	22	75	10	4	0.08	116	●
10	1	22	75	10	4	0.08	127	●
12	1	25	75	12	4	0.09	117	●
12	2	25	75	12	4	0.09	118	●
12	3	25	75	12	4	0.09	119	●
16	1	32	90	16	4	0.11	120	●
16	2	32	90	16	4	0.11	121	●
16	3	32	90	16	4	0.11	122	●
20	1	38	100	20	4	0.14	123	○
20	2	38	100	20	4	0.14	124	○
20	3	38	100	20	4	0.14	125	○

Prod. Gr. 152

ATORN® SC torus milling cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 40° | γ = -6° | HA

Application:
Torus milling cutter with short blade for processing materials up to 65 HRC, e.g. for die and mould making.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in line with DIN 6535

- With clearance
- Type H
- Chip angle -5° -7°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Best chip removal and temperature resistance
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976130-145		200	180	140													95	140	120

Type	H
Surface	RockTec 65
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
3	0.3	4	14	60	2.8	6	4	0.027	130	●
3	0.5	4	14	60	2.8	6	4	0.027	131	●
4	0.3	5	16	60	3.7	6	4	0.036	132	●
4	0.5	5	16	60	3.7	6	4	0.036	133	●
5	0.3	6	18	60	4.6	6	4	0.045	134	●
5	0.5	6	18	60	4.6	6	4	0.045	135	●
6	0.5	7	20	60	5.5	6	4	0.055	136	●
6	1	7	20	60	5.5	6	4	0.055	137	●
8	0.5	9	26	64	7.4	8	4	0.07	138	●
8	1	9	26	64	7.4	8	4	0.07	139	●
10	1	11	31	70	9.2	10	4	0.08	140	●
10	2	11	31	70	9.2	10	4	0.08	141	●
12	1	13	37	75	11	12	4	0.09	142	●
12	2	13	37	75	11	12	4	0.09	143	●
16	1	17	43	90	15	16	4	0.11	144	●
16	2	17	43	90	15	16	4	0.11	145	●

Prod. Gr. 152

ATORN® SC torus milling cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 40° | γ = -6° | HA

Application:
Torus milling cutter, long, with short blade for processing materials up to 65 HRC, e.g. for die and mould making.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in line with DIN 6535

- With clearance
- Type H
- Chip angle -5° -7°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Best chip removal and temperature resistance
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976150-165		180	160	125													85	125	110

Type	H
Surface	RockTec 65
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
3	0.3	5	30	75	2.8	6	4	0.025	150	●
3	0.5	5	30	75	2.8	6	4	0.025	151	○
4	0.3	8	32	75	3.7	6	4	0.03	152	●
4	0.5	8	32	75	3.7	6	4	0.03	153	●
5	0.3	9	32	75	4.6	6	4	0.04	154	●
5	0.5	9	32	75	4.6	6	4	0.04	155	●
6	0.5	10	40	75	5.5	6	4	0.05	156	●
6	1	10	40	75	5.5	6	4	0.05	157	●
8	0.5	12	40	75	7.4	8	4	0.06	158	●
8	1	12	40	75	7.4	8	4	0.06	159	●
10	1	14	60	100	9.2	10	4	0.07	160	●
10	2	14	60	100	9.2	10	4	0.07	161	●
12	1	16	60	100	11	12	4	0.08	162	●

								Type	H	
								Surface	RockTec 65	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
12	2	16	60	100	11	12	4	0.08	163	●
16	1	22	85	125	15	16	4	0.1	164	○
16	2	22	85	125	15	16	4	0.1	165	○

Prod. Gr. 152

ATORN® SC torus milling cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 40° | γ = -6° | HA

Application:
Torus milling cutter, extra-long, with short blade for processing materials up to 65 HRC, e.g. for die and mould making.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in line with DIN 6535

- With clearance
- Type H
- Chip angle -5° -7°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Best chip removal and temperature resistance
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976170-185		170	155	120													80	120	100

								Type	H	
								Surface	RockTec 65	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
3	0.3	5	60	100	2.8	6	4	0.02	170	○
3	0.5	5	60	100	2.8	6	4	0.02	171	○
4	0.3	8	60	100	3.7	6	4	0.025	172	●
4	0.5	8	60	100	3.7	6	4	0.025	173	●
5	0.3	9	60	100	4.6	6	4	0.035	174	●
5	0.5	9	60	100	4.6	6	4	0.035	175	●
6	0.5	10	60	100	5.5	6	4	0.04	176	●
6	1	10	60	100	5.5	6	4	0.04	177	●
8	0.5	12	60	100	7.4	8	4	0.05	178	●
8	1	12	60	100	7.4	8	4	0.05	179	●
10	1	14	85	125	9.2	10	4	0.06	180	●
10	2	14	85	125	9.2	10	4	0.06	181	●
12	1	16	110	150	11	12	4	0.07	182	●
12	2	16	110	150	11	12	4	0.07	183	●
16	1	22	110	150	15	16	4	0.09	184	○
16	2	22	110	150	15	16	4	0.09	185	○

Prod. Gr. 152

ATORN® Solid carbide HSC high-feed milling cutter

4-6 cuts, RockTec 65 - coated

VHM | RockTec 65 | Typ H | Z 4 | Z 6 | 25° | γ = 0° | HA | HSC

Application:
Torus milling cutter (HSC) with a short cutting edge for processing materials up to 65 HRC. For use in die and mould making and general mechanical engineering.

Execution:
- Solid carbide ultra-fine grain
- HA shaft in line with DIN 6535
- cutting edge finish
- Clearance

- Type H
- 0° chip angle
- RockTec 65 coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- High material removal rate, high surface quality
- Good dimensional and geometric accuracy
- RockTec 65 coating for maximum service life
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976400-440		120	100															70	80

								Type	H	
								Surface	RockTec 65	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
2	0.3	2	10	60	1.9	6	4	0.075	400	●
2	0.5	2	20	60	1.9	6	4	0.075	402	●
3	0.3	3	21	60	2.8	6	4	0.12	404	●
3	0.5	3	21	60	2.8	6	4	0.12	406	●
4	0.3	4	12	60	3.7	6	4	0.2	408	●
4	0.5	4	12	60	3.7	6	4	0.2	410	●
6	0.3	6	20	60	5.5	6	4	0.23	412	●
6	0.5	6	20	60	5.5	6	4	0.23	414	●
6	1	6	20	60	5.5	6	4	0.23	416	●
8	0.3	8	24	64	7.4	8	6	0.37	418	●
8	0.5	8	24	64	7.4	8	6	0.37	420	●
8	1	8	24	64	7.4	8	6	0.37	422	●
8	2	8	24	64	7.4	8	6	0.37	424	●
10	0.3	10	30	75	9.2	10	6	0.41	426	●
10	0.5	10	30	75	9.2	10	6	0.41	428	●
10	1	10	30	75	9.2	10	6	0.41	430	●
10	2	10	30	75	9.2	10	6	0.41	432	●
12	0.3	12	30	75	11	12	6	0.44	434	●
12	0.5	12	30	75	11	12	6	0.44	436	●
12	1	12	30	75	11	12	6	0.44	438	●
12	2	12	30	75	11	12	6	0.44	440	●

Prod. Gr. 152

ATORN® Solid carbide HSC high-feed milling cutter

4-6 cuts, RockTec 65 - coated

VHM | RockTec 65 | Typ H | Z 4 | Z 6 | 25° | γ = 0° | HA | HSC

Application:
Long torus milling cutter (HSC) with a short cutting edge for processing materials up to 65 HRC. For use in die and mould making and general mechanical engineering.

Execution:
- Solid carbide ultra-fine grain
- HA shaft in line with DIN 6535
- cutting edge finish
- Clearance

- Type H
- 0° chip angle
- RockTec 65 coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- High material removal rate, high surface quality
- Good dimensional and geometric accuracy
- RockTec 65 coating for maximum service life
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976500-540		120	100															70	80

								Type	H	
								Surface	RockTec 65	
								Tool holding device	HA parallel shank	
								Tolerance of cutting edge Ø	e8	
								Tolerance of shank Ø	h6	
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
2	0.3	2	35	75	1.9	6	4	0.075	500	●
2	0.5	2	35	75	1.9	6	4	0.075	502	●
3	0.3	3	30	75	2.8	6	4	0.12	504	●
3	0.5	3	30	75	2.8	6	4	0.12	506	●
4	0.3	4	32	75	3.7	6	4	0.2	508	●
4	0.5	4	32	75	3.7	6	4	0.2	510	●
6	0.3	6	40	75	5.5	6	4	0.23	512	●
6	0.5	6	40	75	5.5	6	4	0.23	514	●
6	1	6	40	75	5.5	6	4	0.23	516	●
8	0.3	8	60	100	7.4	8	6	0.37	518	●
8	0.5	8	60	100	7.4	8	6	0.37	520	●
8	1	8	60	100	7.4	8	6	0.37	522	●
8	2	8	60	100	7.4	8	6	0.37	524	●
10	0.3	10	60	100	9.2	10	6	0.41	526	●
10	0.5	10	60	100	9.2	10	6	0.41	528	●
10	1	10	60	100	9.2	10	6	0.41	530	●
10	2	10	60	100	9.2	10	6	0.41	532	●
12	0.3	12	60	100	11	12	6	0.44	534	●
12	0.5	12	60	100	11	12	6	0.44	536	●
12	1	12	60	100	11	12	6	0.44	538	●
12	2	12	60	100	11	12	6	0.44	540	●

Prod. Gr. 152

ATORN® Solid carbide HSC high-feed milling cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | Z 6 | 3° | γ = -1° | HA | HSC

Application:
High-feed milling cutter (HSC) with short blade for processing materials up to 65 HRC. Applications in die and mould making and general mechanical engineering.

Execution:
- Solid carbide ultra-fine grain
- HA shank in line with DIN 6535
- Cutting edge finish
- Centre cutting
- Type H
- Chip angle -1°
- Twist angle 3°
- RockTec 65-coated

Advantage:
- High material removal rate, high surface quality
- High feeds of 0.2-0.5 mm per tooth possible
- Good dimensional and geometric accuracy
- RockTec 65 coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16976190-201		170	160	140														90	120

									Type	H
									Surface	RockTec 65
									Tool holding device	HA parallel shank
									Tolerance of cutting edge Ø	e8
									Tolerance of shank Ø	h6
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16976... Ident. No.	
4	0.4	1.5	8	57	3.7	6	4	0.13	190	●
4	0.4	1.5	15	57	3.7	6	4	0.13	191	●
5	0.5	2	10	57	4.6	6	4	0.17	192	●
5	0.5	2	21	57	4.6	6	4	0.17	193	●
6	0.6	2.5	12	57	5.5	6	4	0.2	194	●
6	0.6	2.5	26	57	5.5	6	4	0.2	195	●
8	0.8	3	16	63	7.4	8	6	0.24	196	●
8	0.8	3	31	63	7.4	8	6	0.24	197	●
10	1	3.5	20	72	9.2	10	6	0.34	198	●
10	1	3.5	36	72	9.2	10	6	0.34	199	●
12	1.2	4	24	83	11	12	6	0.42	200	●
12	1.2	4	41	83	11	12	6	0.42	201	●

Prod. Gr. 152

ORION® Solid carbide HPC torus multi-tooth mills

4-6 flutes, TiAlN coated

VHM | TiSiN | Typ H | Z 4 | Z 6 | 45° | γ = 0° | HA

Application:
Torus milling cutter for processing materials up to 68 HRC, e.g. for die and mould making.

Execution:
- solid carbide ultra-fine grain
- TiSiN-coated
- HA shank in line with DIN 6535
- type H
- 0° chip angle
- cutting edge finish
- centre cutting
- Radius tolerance = +/- 0.005 mm

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Notes:
At >60 HRC: ae = 0.07xD. Face cut from Z6 is only possible to a limited extent.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16932003-051			200															170	110

									Type	H
									Surface	TiSiN
									Tool holding device	HA parallel shank
									Tolerance of cutting edge Ø	e8
									Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	R mm	Z (PCS)	fz hard 65 HRC ● (mm)	16932... Ident. No.	
3	4	14	50	2.7	3	0.3	4	0.019	003	●
3	4	14	50	2.7	3	0.5	4	0.019	006	●
4	5	16	50	3.7	4	0.4	4	0.019	009	●
4	5	16	50	3.7	4	0.5	4	0.019	012	●
5	6	18	54	4.6	5	0.5	4	0.048	015	●
6	7	21	58	5.5	6	0.5	6	0.048	018	●
6	7	21	58	5.5	6	1	6	0.048	021	●
8	9	27	64	7.4	8	0.5	6	0.06	024	●
8	9	27	64	7.4	8	1	6	0.06	027	●
10	11	32	73	9.2	10	0.5	6	0.07	030	●
10	11	32	73	9.2	10	1	6	0.07	033	●
10	11	32	73	9.2	10	2	6	0.07	036	●

									Type	H
									Surface	TiSiN
									Tool holding device	HA parallel shank
									Tolerance of cutting edge Ø	e8
									Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	R mm	Z (PCS)	fz hard 65 HRC ● (mm)	16932... Ident. No.	
12	12	38	84	11	12	0.5	6	0.08	039	●
12	12	38	84	11	12	1	6	0.08	042	●
12	12	38	84	11	12	2	6	0.08	045	●
16	16	44	93	15	16	1	6	0.09	048	●
16	16	44	93	15	16	2	6	0.09	051	●

Prod. Gr. 1FQ

ORION® Solid carbide HPC torus multi-tooth mills

6-8 flutes, TiAlN coated

VHM | TiSiN | Typ H | Z 6 | Z 8 | 45° | γ = 0° | HA | HPC

Application:
Torus milling cutter for processing materials up to 68 HRC, e.g. for die and mould making.

Execution:
- solid carbide ultra-fine grain
- TiSiN-coated
- Unequal twist angle
- HA shaft in line with DIN 6535
- type H
- 0° chip angle
- cutting edge finish
- centre cutting
- Radius tolerance = +/- 0.005 mm

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Notes:
At >60 HRC: ae = 0.07xD. Face cut from Z6 is only possible to a limited extent.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16932100-127			160															160	90

							Type	H
							Surface	TiSiN
							Tool holding device	HA parallel shank
							Tolerance of cutting edge Ø	e8
							Tolerance of shank Ø	h6
mm	mm	mm	mm	R mm	Z (PCS)	fz hard 65 HRC ● (mm)	16932... Ident. No.	
6	16	58	6	0.5	6	0.015	100	●
6	16	58	6	1	6	0.015	103	●
8	22	70	8	0.5	6	0.018	106	●
8	22	70	8	1	6	0.018	109	●
10	25	73	10	0.5	6	0.019	112	●
10	25	73	10	1.5	6	0.019	115	●
12	28	84	12	0.5	6	0.023	118	●
12	28	84	12	1.5	6	0.023	121	●
16	35	93	16	1	8	0.025	124	●
16	35	93	16	2	8	0.025	127	●

Prod. Gr. 1FQ

ORION® Solid carbide HPC torus multi-tooth mills

6-8 flutes, TiAlN coated

VHM | TiSiN | Typ H | Z 6 | Z 8 | 45° | γ = 0° | HA | HPC

Application:
Torus milling cutter for processing materials up to 68 HRC, e.g. for die and mould making.

Execution:
- solid carbide ultra-fine grain
- TiSiN-coated
- Unequal twist angle
- HA shaft in line with DIN 6535
- type H
- 0° chip angle
- cutting edge finish
- centre cutting
- Radius tolerance = +/- 0.005 mm

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Notes:
At >60 HRC: ae = 0.07xD. Face cut from Z6 is only possible to a limited extent.

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16932160-175			160															160	90

						Type	H	
						Surface	TiSiN	
						Tool holding device	HA parallel shank	
						Tolerance of cutting edge Ø	e8	
						Tolerance of shank Ø	h6	
mm	mm	mm	mm	R mm	Z (PCS)	fz hard 65 HRC ● (mm)	16932... Ident. No.	
6	21	65	6	0.5	6	0.015	160	●
8	28	75	8	0.5	6	0.018	163	●
10	35	85	10	0.5	6	0.019	166	●
12	45	100	12	0.5	6	0.023	169	●
16	50	110	16	1	8	0.025	172	●
16	65	125	16	1	8	0.025	175	●

Prod. Gr. 1FQ

ORION® Solid carbide HSC torus milling cutter

4 flutes, TiAlN - coated

VHM | TiAlN | Typ H | Z 4 | 30° | γ = -8° | HA | HSC

Application:
HSC torus milling cutter with a short cutter for machining steels up to 1300 N/mm² and for hard milling.

Execution:
- Solid carbide ultra-fine grain
- Straight shank in accordance with DIN 6535 HA

- TiAlN-coated
- With clearance
- Edge radius
- Standard design

Advantage:
- specially developed coating for hard machining
- Optimised cutting geometry for plunge milling

Ident. No. 001–028
Standard design

Ident. No. 050–077

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16942		130	110															100	90

						Type	H		
						Surface	TiAlN		
						Tool holding device	HA parallel shank		
						Tolerance of cutting edge Ø	f8		
						Tolerance of shank Ø	h6		
mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16942... Ident. No.	
3	0.3	6	14	50	2.7	3	4	0.03	001	●
3	0.5	6	14	50	2.7	3	4	0.03	002	●
3	1	6	14	50	2.7	3	4	0.03	003	●
3	0.3	6	32	75	2.7	3	4	0.025	050	●
3	0.5	6	32	75	2.7	3	4	0.025	051	●
3	1	6	32	75	2.7	3	4	0.025	052	●
4	0.4	7	16	50	3.7	4	4	0.04	004	●
4	0.5	7	16	50	3.7	4	4	0.04	005	●
4	1	7	16	50	3.7	4	4	0.04	006	●
4	0.4	7	36	75	3.7	4	4	0.035	053	●
4	0.5	7	36	75	3.7	4	4	0.035	054	●
4	1	7	36	75	3.7	4	4	0.035	055	●
5	0.5	8	18	54	4.6	5	4	0.045	007	●
5	1	8	18	54	4.6	5	4	0.045	008	●
5	1.5	8	18	54	4.6	5	4	0.045	009	●
5	2	8	18	54	4.6	5	4	0.045	010	●
5	0.5	8	40	75	4.6	5	4	0.04	056	●
5	1	8	40	75	4.6	5	4	0.04	057	●
5	1.5	8	40	75	4.6	5	4	0.04	058	●
5	2	8	40	75	4.6	5	4	0.04	059	●
6	0.5	10	21	57	5.5	6	4	0.06	011	●
6	1	10	21	57	5.5	6	4	0.06	012	●
6	1.5	10	21	57	5.5	6	4	0.06	013	●
6	2	10	21	57	5.5	6	4	0.06	014	●
6	0.5	10	44	80	5.5	6	4	0.05	060	●
6	1	10	44	80	5.5	6	4	0.05	061	●
6	1.5	10	44	80	5.5	6	4	0.05	062	●
6	2	10	44	80	5.5	6	4	0.05	063	●
8	0.5	12	27	63	7.4	8	4	0.07	015	●
8	1	12	27	63	7.4	8	4	0.07	016	●
8	1.5	12	27	63	7.4	8	4	0.07	017	●
8	2	12	27	63	7.4	8	4	0.07	018	●
8	0.5	12	63	100	7.4	8	4	0.06	064	●
8	1	12	63	100	7.4	8	4	0.06	065	●
8	1.5	12	63	100	7.4	8	4	0.06	066	●
8	2	12	63	100	7.4	8	4	0.06	067	●
10	0.5	13	32	72	9.2	10	4	0.08	019	●
10	1	13	32	72	9.2	10	4	0.08	020	●
10	1.5	13	32	72	9.2	10	4	0.08	021	●
10	2	13	32	72	9.2	10	4	0.08	022	●
10	0.5	13	72	100	9.2	10	4	0.07	068	●
10	1	13	72	100	9.2	10	4	0.07	069	●
10	1.5	13	72	100	9.2	10	4	0.07	070	●
10	2	13	72	100	9.2	10	4	0.07	071	●
12	0.5	16	38	83	11	12	4	0.09	023	●
12	1	16	38	83	11	12	4	0.09	024	●
12	1.5	16	38	83	11	12	4	0.09	025	●

Type	H
Surface	TiAlN
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	f8
Tolerance of shank Ø	h6

mm	R mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16942... Ident. No.	
12	2	16	38	83	11	12	4	0.09	026	●
12	0.5	16	83	120	11	12	4	0.08	072	●
12	1	16	83	120	11	12	4	0.08	073	●
12	1.5	16	83	120	11	12	4	0.08	074	●
12	2	16	83	120	11	12	4	0.08	075	●
16	1	20	44	92	15	16	4	0.11	027	●
16	2	20	44	92	15	16	4	0.11	028	●
16	1	20	92	150	15	16	4	0.1	076	●
16	2	20	92	150	15	16	4	0.1	077	●

Prod. Gr. 148

ATORN® Solid carbide radius cutter

2 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 2 | 30° | HA

Application:
Radius milling cutter, standard design, for machining materials up to 65 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535

- With clearance
- Type H
- Chip angle -10°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16977200-210		220	200	155													105	155	130

Type	H
Surface	RockTec 65
Tool holding device	HA parallel shank
Tolerance of cutting edge Ø	e8
Tolerance of shank Ø	h6

mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16977... Ident. No.	
2	4	8	40	1.85	4	2	0.025	200	●
2.5	4	10	40	2.35	4	2	0.03	201	●
3	5	14	50	2.8	4	2	0.035	202	●
4	8	20	50	3.7	4	2	0.035	203	●
5	9	20	50	4.6	6	2	0.04	204	●
6	10	20	50	5.5	6	2	0.05	205	●
8	12	30	64	7.4	8	2	0.07	206	●
10	14	32	70	9.2	10	2	0.08	207	●
12	16	38	75	11	12	2	0.09	208	●
16	32	46	90	15	16	2	0.1	209	●
20	38	58	100	19	20	2	0.12	210	○

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 2 | 30° | HA

Application:
Radius milling cutter, long design, for machining materials up to 65 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535

- With clearance
- Type H
- Chip angle -10°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16977220-230		200	180	140													95	140	120

							Type	H	
							Surface	RockTec 65	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16977... Ident. No.	
2	4	14	75	1.85	6	2	0.02	220	●
2.5	4	18	75	2.35	6	2	0.025	221	○
3	5	21	75	2.8	6	2	0.03	222	●
4	8	28	75	3.7	6	2	0.03	223	●
5	9	32	75	4.6	6	2	0.035	224	●
6	10	40	75	5.5	6	2	0.04	225	●
8	12	40	75	7.4	8	2	0.06	226	●
10	14	60	100	9.2	10	2	0.07	227	●
12	16	60	100	11	12	2	0.08	228	●
16	32	80	125	15	16	2	0.09	229	●
20	38	80	125	19	20	2	0.1	230	○

Prod. Gr. 152

ATORN® Solid carbide radius cutter

2 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 2 | 30° | HA

Application:
Radius milling cutter, extra long design, for machining materials up to 65 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535

- With clearance
- Type H
- Chip angle -10°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16977240-250		190	170	130													90	130	110

							Type	H	
							Surface	RockTec 65	
							Tool holding device	HA parallel shank	
							Tolerance of cutting edge Ø	e8	
							Tolerance of shank Ø	h6	
mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 52 HRC ● (mm)	16977... Ident. No.	
2	4	20	100	1.85	6	2	0.01	240	○
2.5	4	25	100	2.35	6	2	0.02	241	○
3	5	30	100	2.8	6	2	0.025	242	●
4	8	40	100	3.7	6	2	0.025	243	●
5	9	50	100	4.6	6	2	0.03	244	●
6	10	60	150	5.5	6	2	0.035	245	●
8	12	80	150	7.4	8	2	0.05	246	●
10	14	100	150	9.2	10	2	0.06	247	●
12	16	110	150	11	12	2	0.07	248	●
16	32	150	200	15	16	2	0.08	249	●
20	38	150	200	19	20	2	0.09	250	○

Prod. Gr. 152

ATORN® Solid carbide radius cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 30° | HA

Application:
Radius milling cutter, standard design, for machining materials up to 65 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535

- With clearance
- Type H
- Chip angle -10°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16977260-268		220	200	155													105	155	130

								Type	H
								Surface	RockTec 65
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	e8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16977... Ident. No.	
3	5	14	50	2.8	6	4	0.025	260	●
4	8	20	50	3.7	6	4	0.035	261	●
5	9	20	50	4.6	6	4	0.04	262	●
6	10	20	50	5.5	6	4	0.05	263	●
8	12	30	64	7.4	8	4	0.07	264	●
10	14	32	70	9.2	10	4	0.08	265	●
12	16	38	75	11	12	4	0.09	266	●
16	32	46	90	15	16	4	0.1	267	●
20	38	58	100	19	20	4	0.12	268	●

Prod. Gr. 152

ATORN® Solid carbide radius cutter

4 flutes, RockTec 65-coated

VHM | RockTec 65 | Typ H | Z 4 | 30° | HA

Application:
Radius milling cutter, long design, for machining materials up to 65 HRC, e.g. in dip cutting and mould construction.

Execution:
- Solid carbide ultra-fine grain
- Cutting edge finish
- HA shank in accordance with DIN 6535

- With clearance
- Type H
- Chip angle -10°
- RockTec 65-coated
- Radius tolerance = 0/-0.010 mm

Advantage:
- Excellent chip removal and temperature resistance
- Maximum service life thanks to RockTec 65 coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16977270-278		200	180	140													95	140	120

								Type	H
								Surface	RockTec 65
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	e8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16977... Ident. No.	
3	5	21	75	2.8	6	4	0.02	270	●
4	8	28	75	3.7	6	4	0.03	271	●
5	9	32	75	4.6	6	4	0.035	272	●
6	10	40	75	5.5	6	4	0.04	273	●
8	12	40	75	7.4	8	4	0.06	274	●
10	14	60	100	9.2	10	4	0.07	275	●
12	16	60	100	11	12	4	0.08	276	●
16	32	80	125	15	16	4	0.09	277	●
20	38	80	125	19	20	4	0.1	278	●

Prod. Gr. 152

ORION® Solid carbide radius cutter

2 flutes, TiSiN-coated

VHM | TiSiN | Typ H | Z 2 | 30° | HA

Application:
Radius cutter in standard design for machining materials up to 68 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in line with DIN 6535

- type H
- 0° chip angle
- TiSiN-coated
- Radius tolerance = +/- 0.005 mm

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16933003-027			200															170	140

								Type	H
								Surface	TiSiN
								Tool holding device	HA parallel shank
								Tolerance of cutting edge Ø	f8
								Tolerance of shank Ø	h6
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16933... Ident. No.			
1	2	54	6	2	0.005	003	●		
2	4	54	6	2	0.005	006	●		

					Type	H	
					Surface	TiSiN	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	f8	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16933... Ident. No.	
3	6	54	6	2	0.019	009	●
4	7	54	6	2	0.019	012	●
6	10	54	6	2	0.048	015	●
8	12	59	8	2	0.06	018	●
10	14	67	10	2	0.07	021	●
12	16	74	12	2	0.08	024	●
16	20	83	16	2	0.09	027	●

Prod. Gr. 1FQ

ORION® Solid carbide radius cutter

2 flutes, TiSiN-coated

VHM | TiSiN | Typ H | Z 2 | 30° | HA

Application:
Radius cutter in long design for machining materials up to 68 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in line with DIN 6535

- type H
- 0° chip angle
- TiSiN-coated
- Radius tolerance = +/- 0.005 mm

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16933050-074			200															170	140

					Type	H	
					Surface	TiSiN	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	f8	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16933... Ident. No.	
1	3	75	3	2	0.005	050	●
2	6	80	6	2	0.005	053	●
3	10	80	6	2	0.019	056	●
4	13	80	6	2	0.019	059	●
6	16	100	6	2	0.048	062	●
8	22	100	8	2	0.06	065	●
10	25	100	10	2	0.07	068	●
12	26	100	12	2	0.08	071	●
16	30	150	16	2	0.09	074	●

Prod. Gr. 1FQ

ORION® Solid carbide radius cutter

4 flutes, TiSiN-coated

VHM | TiSiN | Typ H | Z 4 | 30° | HA

Application:
Radius cutter in standard design for machining materials up to 68 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in line with DIN 6535

- type H
- 0° chip angle
- TiSiN-coated
- Radius tolerance = +/- 0.005 mm

Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16933103-130			200															170	140

					Type	H	
					Surface	TiSiN	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	f8	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16933... Ident. No.	
2	4	54	6	4	0.005	103	●
3	5	54	6	4	0.019	109	●
4	8	54	6	4	0.019	115	●
6	10	54	6	4	0.048	118	●
8	12	59	8	4	0.06	121	●

					Type	H	
					Surface	TiSiN	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	f8	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16933... Ident. No.	
10	14	67	10	4	0.07	124	●
12	16	74	12	4	0.08	127	●
16	22	83	16	4	0.09	130	●

Prod. Gr. 1FQ

ORION® Solid carbide radius cutter

4 flutes, TiSiN-coated

VHM | TiSiN | Typ H | Z 4 | 30° | HA

Application:
Radius cutter in long design for machining materials up to 68 HRC, e.g. in die and mould making.

Execution:
- solid carbide ultra-fine grain
- cutting edge finish
- HA shank in line with DIN 6535

- type H
- 0° chip angle
- TiSiN-coated
- Radius tolerance = +/- 0.005 mm

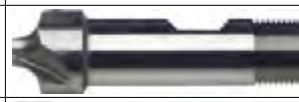
Advantage:
- optimum chip removal and temperature resistance
- Maximum service life deu to TiSiN coating

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
16933150-171			200															170	140

					Type	H	
					Surface	TiSiN	
					Tool holding device	HA parallel shank	
					Tolerance of cutting edge Ø	f8	
					Tolerance of shank Ø	h6	
mm	mm	mm	mm	Z (PCS)	fz hard 65 HRC ● (mm)	16933... Ident. No.	
2	4	80	6	4	0.005	150	●
3	5	80	6	4	0.019	153	●
4	8	80	6	4	0.019	156	●
6	10	100	6	4	0.048	159	●
8	12	100	8	4	0.06	162	●
10	14	100	10	4	0.07	165	●
12	16	100	12	4	0.08	168	●
16	22	150	16	4	0.09	171	●

Prod. Gr. 1FQ

HSS/HSSE profiling and disc milling cutter

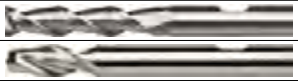
		Ø	Cutting material	Z	Type	Surface	P	M	N	K	S	H		page
15461010-080	Quarter circle milling cutter HSSE Co 5 Concave	1.0-8.0 mm		4 PCS	N	Uncoated	●	○	●	○	○			421
15792	T-slot milling cutter HSSE Co 5	12.5-45 mm	HSSE Co5	6 PCS	N	Uncoated	●	○	●	○	○			422
15794	T-slot milling cutter HSSE Co 5	16-45 mm	HSSE Co5	10 PCS	NF	Uncoated	●	○	●	○	○			422
15800	Keyway cutter HSSE Co 5	1-6 mm	HSSE Co5	6 PCS	H	Uncoated	●		●	○	●			422
15804	Keyway cutter HSSE Co 5	1-10 mm	HSSE Co5	14 PCS	N	Uncoated	●		●	○				423
15806	Keyway cutter HSSE Co 5	4-10 mm	HSSE Co5	8 PCS	N	Uncoated	●		●	○				423
15814120-155	Angular milling cutter HSSE Co 5	16-32 mm	HSSE Co5	12 PCS	N	Uncoated	●	○	○	○				423
15815015-055	Angular milling cutter HSSE Co 5	16-32 mm	HSSE Co5	10 PCS	N	Uncoated	●	○	○	○				423
14314	HSS single angle milling cutter Type H	50-125 mm	HSS	16 PCS	H	Uncoated	●	○	○	○	○			-
14332	Radius milling cutter HSSE Co 5 Convex, backed off	1-8 mm		12 PCS		Uncoated	●	○	○	○	○			-
14345	Profiling cutter HSSE Co 5 For Charpy test specimens	75-75 mm		18 PCS	N	Uncoated	●	○	○	○	○			-

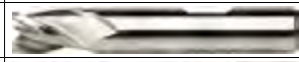
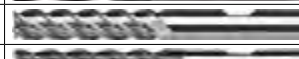
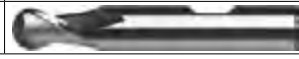
HSSE/HSSE PM shell end mill

	Ø	Cutting material	Z	Type	Surface	P	M	N	K	S	H		page
14164	30-60 mm		6 PCS	N	Uncoated	●	○	●	○				424
14169	40-60 mm		8 PCS	NF	Uncoated	●	○	●	○				424
14168	40-60 mm		8 PCS	NR	Uncoated	●	○	●	○				424
14193	40-80 mm		6 PCS	N	Uncoated	●	○	●	○				424

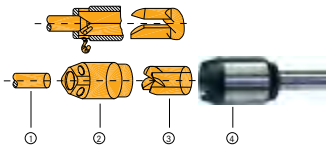
	Ø	Cutting material	Z	Type	Surface	P	M	N	K	S	H		page
14195	40-80 mm		6 PCS	W	Uncoated	●	○	●	○				424
14244	40-80 mm		6 PCS	NF	Uncoated	●	○	●	○	○			-
14248	40-63 mm		8 PCS	NF	TiAlN	●	○	●	○	○			-
14242	40-80 mm		6 PCS	NR	Uncoated	●	○	●	○	○			-
14247	40-100 mm		10 PCS	NR	TiAlN	●	○	●	○	○			-
14989	40-100 mm	HSSE-PM	6 PCS	N	Uncoated	●	●	●	●	●			-
14990	40-100 mm	HSSE-PM	10 PCS	N	TiAlN	●	●	●	●	●			-
14208	40-80 mm	HSSE-PM	6 PCS	HF	TiAlN	●	○		●	●			-
14207	40-80 mm	HSSE-PM	10 PCS	HR	TiAlN	●	○		●	●			-
14233	40-80 mm	HSSE-PM	8 PCS	HR	Uncoated	●	○		●	●			-
14992	40-100 mm	HSSE-PM	10 PCS	NF	TiAlN	●	●	●	●	○			-
14991	40-100 mm	HSSE-PM	6 PCS	NR	TiAlN	●	●	●	●	○			-

HSSE/HSSE PM angular milling cutter and radius cutter

	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
15007	3-10 mm	1 PCS	W	Uncoated	HA parallel shank			●					425
15020020-360	2-36 mm	2 PCS	N	Uncoated	HB parallel shank	●	○	○	●	○			425-426
15023010-015	1-1.5 mm	2 PCS	N	TiAlN	HB parallel shank	●	○	○	●	○			425-426
15061	2-20 mm	2 PCS	W	Uncoated	HB parallel shank	●	○	●		○			426-427
15063	2-20 mm	2 PCS	W	Uncoated	HB parallel shank	●	○	●		○			426-427
15053	2-25 mm	2 PCS	N	Uncoated	HB parallel shank	●	○	○	●	○			427
15055	2-20 mm	2 PCS	N	TiAlN	HB parallel shank	●	○	○	●	○			427

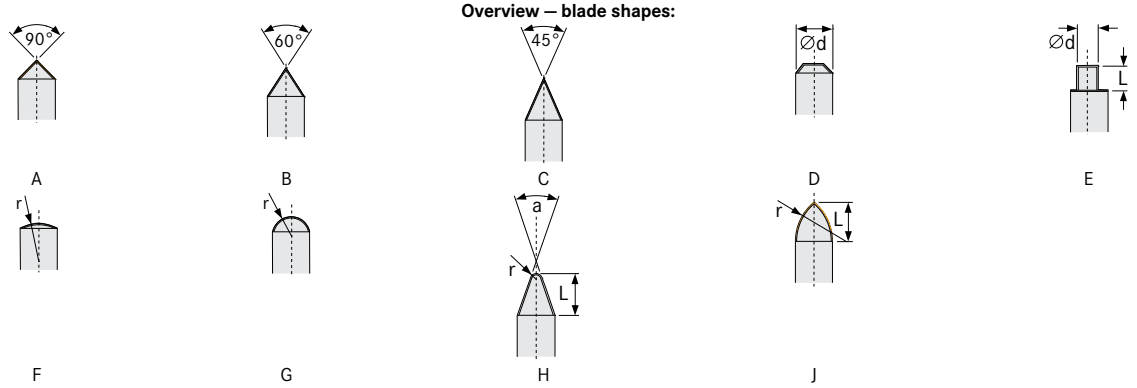
	Ø	Z	Type	Surface	Tool holding device	P	M	N	K	S	H		page
15102	2-32 mm	3 PCS	N	Uncoated	HB parallel shank	●	○	○	○	○	○		427-428
15105	2-20 mm	3 PCS	N	TiAlN	HB parallel shank	●	○	○	○	○	○		427-428
15112	2.8-25 mm	3 PCS	N	Uncoated	HB parallel shank	●	○	○	○	○			428-429
15118	2.8-25 mm	3 PCS	N	TiAlN	HB parallel shank	●	○	○	○	○			428-429
15116	6-20 mm	3 PCS	NR	Uncoated	HB parallel shank	●	○	○	○	○			428-429
15119	6-20 mm	3 PCS	NR	TiAlN	HB parallel shank	●	○	○	○	○			428-429
15124	3-25 mm	3 PCS	N	Uncoated	HB parallel shank	●	○	○	○	○			429
15176	2-40 mm	3 PCS	N	Uncoated	HB parallel shank	●	○	○	○	○			429-430
15178	2-40 mm	6 PCS	N	TiAlN	HB parallel shank	●	○	○	○	○			429-430
15193	3-32 mm	4 PCS	N	Uncoated	HB parallel shank	●	○	○	○	○			430-431
15195	3-32 mm	6 PCS	N	TiAlN	HB parallel shank	●	○	○	○	○			430-431
15904	6-20 mm	4 PCS	N	TiAlN	HB parallel shank	●	○	○	○	○			430-431
15324	10-32 mm	6 PCS	N	Uncoated	HB parallel shank	●	○	○	○	○			431
15325	14-32 mm	4 PCS	NR	Uncoated	HB parallel shank	●	○	○	○	○			431
15914	6-20 mm	5 PCS	N	TiAlN	HB parallel shank	●	●	○	○	●			431-432
15188	2-32 mm	4 PCS	N	TiAlN	HB parallel shank	●	○	○	○	○			432
15261	6-32 mm	4 PCS	NR	Uncoated	HB parallel shank	●	○	○	○	○			433
15290	6-30 mm	4 PCS	HR	TiCN	HB parallel shank	●	○	○	○	●			433
15300	6-30 mm	6 PCS	HR	TiCN	HB parallel shank	●	○	○	○	●			434
15269	6-32 mm	4 PCS	NRF	TiAlN	HB parallel shank	●	○	○	○	○			434-435
15905	6-20 mm	5 PCS	NR	TiAlN	HB parallel shank	●	○	○	○	○			434-435
15907	6-20 mm	4 PCS	NF	TiAlN	HB parallel shank	●	○	○	○	○			434-435
15319	6-32 mm	4 PCS	HR	TiAlN	HB parallel shank	●	○	○	○	●			435
15361	2-25 mm	2 PCS	N	Uncoated	HB parallel shank	●	○	○	○	○			435-436

Milling tool for wire and rod ends



Application: for centred rounding, pointing, levelling and chamfering of wire and rod ends and mass-produced parts with cylindrical or polygonal cross-sections. The HSS milling blade and workpiece centring discs are replaceable. The end-milling tools are used in an advantageous rotary motion.

Overview — blade shapes:



Prices on request.

ORION® HSSE Co 5 quarter circle milling cutter (Milling cutter design standard DIN 6518)

Concave

Typ N | Z 4 | HB

Application:
Quarter circle milling cutter for machining complex forms, e.g. bore radii in materials up to 1000 N/mm².

Execution:
- Finishing teeth
- 5° cutting angle
- Up to 5 mm radius - backed off radially and axially
- From 5.5 mm radius - ground chamfers
- Up to 8 mm radius - combination shank in accordance with DIN 1835 B and D
- From 8.5 mm radius - straight shank in accordance with DIN 1835 B
- For mounting in self-clamping chucks, e. g. Clarkson, Bahnmüller

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15461010-080	34	27	20	18	15	70	175	70	70	45	45	60		30	15	15	15		
15461085-200	34	27	20	18	15	70	175	70	70	45	45	60		30	15	15	15		

Radius (mm)	Min. cutting edge Ø (mm)	Max. cutting edge Ø (mm)	Length (mm)	Shaft Ø (mm)	Z (PCS)	fz steel 700 ● (mm)	15461... Ident. No.	
1	6	8	60	10	4	0.01	010	●
1.5	6	9	60	10	4	0.01	015	●
2	6	10	60	10	4	0.01	020	●
2.5	6	11	60	10	4	0.01	025	●
3	6	12	60	12	4	0.01	030	●
3.5	6	13	60	12	4	0.01	035	●
4	6	14	60	12	4	0.01	040	●
4.5	6	15	60	12	4	0.01	045	●
5	6	16	60	12	4	0.01	050	●
5.5	8	19	67	16	4	0.02	055	●
6	8	20	67	16	4	0.02	060	●
6.5	8	21	71	16	4	0.02	065	●
7	8	22	71	16	4	0.02	070	●
8	8	24	71	16	4	0.02	080	●
8.5	8	25	85	25	4	0.02	085	●
9	8	26	85	25	4	0.02	090	●
10	8	28	85	25	4	0.02	100	●
11	10	32	90	25	4	0.04	110	●
12	10	34	90	25	4	0.04	120	●
13	16	42	100	25	4	0.06	130	●
14	16	44	100	25	4	0.06	140	●
15	16	46	100	25	4	0.06	150	●
16	16	48	100	25	4	0.06	160	●
18	16	52	112	32	4	0.06	180	●
20	16	56	112	32	4	0.06	200	●

Prod. Gr. 106

ORION® HSSE Co 5 T-slot milling cutter (Milling cutter design standard DIN 851)

Type N / NF

HSSE Co5 | Typ N | Typ NF | Z 6 | Z 8 | Z 10 | HB

Application:
for cutting T-slots conforming to DIN 650

Execution:
- straight shank in accordance with DIN 1835 B
- in accordance with DIN 650
- **No. 15792:**
  - type N
  - finishing teeth
  - cross-cut teeth
- **No. 15794:**
  - type NF
  - rough machining-finishing teeth
  - right-hand twist, approx. 25°

No. 15792

No. 15794

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15792	34	27	20	18	15	70	175	70	70	45	45	60		30	15	15	15		
15794	34	27	20	15	18	70	175	45	45	70	70	60		30	15	15	15		

Cutting edge Ø (mm)	Width of cutting edge (mm)	Suitable for T-groove (mm)	Length (mm)	Neck Ø (mm)	Shaft Ø (mm)	Z (PCS)	Type fz steel 700 ● (mm)	N 15792... Ident. No.		NF 15794... Ident. No.	
12.5	6	6	57	5	10	6	0.03	060	●	-	-
16	8	8	62	7	10	6	0.04	080	●	080	●
18	8	10	70	8	12	6	0.04	090	●	090	●
19	9	10	71	8	12	6	0.04	100	●	100	●
21	9	12	74	10	12	8	0.06	110	●	110	●
22	10	12	75	10	12	8	0.06	120	●	120	●
25	11	14	82	12	16	8	0.06	140	●	140	●
28	12	16	85	13	16	8	0.06	160	●	160	●
32	14	18	90	15	16	8	0.07	180	●	180	●
36	16	20	103	17	25	8	0.08	200	●	-	-
36	16	20	103	17	25	10	0.08	-	-	200	●
40	18	22	108	19	25	8	0.09	220	●	-	-
40	18	22	108	19	25	10	0.09	-	-	220	●
45	20	24	113	21	25	10	0.1	240	●	240	●

Prod. Gr. 106

ORION® HSSE Co 5 keyway cutter (Milling cutter design standard DIN 850)

Type H

HSSE Co5 | Typ H | Z 6 | Z 8 | Z 10 | Z 12 | Z 14 | HB

Application:
For making grooves (P9) according to DIN 6888.

Execution:
- HSSE Co 5
- Straight-toothed
- Laterally hollow-ground
- Straight shank according to DIN 1835 B

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15800	34	27	20	15		70			70		45			30	15	15	15		

Cutting edge Ø (mm)	Width of cutting edge (mm)	Suitable for wood-ruff key	Length (mm)	Shaft Ø (mm)	Z (PCS)	fz steel 700 ● (mm)	15800... Ident. No.	
4.5	1	1 x 1.4 mm	50	6	6	0.03	010	●
7.5	1.5	1.5 x 2.6 mm	50	6	8	0.03	020	●
7.5	2	2 x 2.6 mm	50	6	8	0.03	030	●
10.5	2	2 x 3.7 mm	50	6	10	0.03	040	●
10.5	2.5	2.5 x 3.7 mm	50	6	10	0.03	050	●
10.5	3	3 x 3.7 mm	50	6	10	0.03	060	●
13.5	3	3 x 5 mm	56	10	10	0.04	070	●
13.5	4	4 x 5 mm	56	10	10	0.04	090	●
16.5	3	3 x 6.5 mm	56	10	10	0.04	080	●
16.5	4	4 x 6.5 mm	56	10	10	0.04	100	●
16.5	5	5 x 6.5 mm	56	10	10	0.04	120	●
19.5	4	4 x 7.5 mm	63	10	12	0.05	110	●
19.5	5	5 x 7.5 mm	63	10	12	0.05	130	●
19.5	6	6 x 7.5 mm	63	10	12	0.05	150	●
22.5	5	5 x 9 mm	63	10	12	0.06	140	●
22.5	6	6 x 9 mm	63	10	12	0.06	160	●
25.5	6	6 x 10 mm	63	10	14	0.07	170	●
28.5	6	6 x 11 mm	63	10	14	0.07	180	●

Prod. Gr. 106

ORION® HSSE Co 5 keyway cutter (Milling cutter design standard DIN 850)

Type N

HSSE Co5 | Typ N | Z 6 | Z 8 | Z 10 | Z 12 | Z 14 | HB

Application:
For making grooves (P9) according to DIN 6888.

Execution:
- HSSE Co 5

- Cross-toothed
- Straight shank according to DIN 1835 B.
- **No. 15804:** Laterally hollow-ground
- **No. 15806:** Cuts on 3 sides

No. 15804

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15804	34	16				70	175	70	70	45	45	60		30					
15806	34	16				70	175	45	45	70	70	60		30					

Cutting edge Ø (mm)	Width of cutting edge (mm)	Suitable for woodruff key	Length (mm)	Shaft Ø (mm)	Z (PCS)	fz steel 700 ● (mm)	15804... Ident. No.		15806... Ident. No.	
4.5	1	1 x 1.4 mm	50	6	6	0.02	010	●	-	-
7.5	1.5	1.5 x 2.6 mm	50	6	6	0.02	020	●	-	-
7.5	2	2 x 2.6 mm	50	6	6	0.02	030	●	-	-
10.5	2	2 x 3.7 mm	50	6	8	0.02	040	●	-	-
10.5	2.5	2.5 x 3.7 mm	50	6	8	0.02	050	●	-	-
10.5	3	3 x 3.7 mm	50	6	8	0.02	060	●	-	-
13.5	3	3 x 5 mm	56	10	8	0.03	070	●	-	-
13.5	4	4 x 5 mm	56	10	8	0.03	090	●	-	-
16.5	3	3 x 6.5 mm	56	10	8	0.03	080	●	-	-
16.5	4	4 x 6.5 mm	56	10	8	0.03	100	●	100	●
16.5	5	5 x 6.5 mm	56	10	8	0.03	120	●	120	●
19.5	4	4 x 7.5 mm	63	10	10	0.04	110	●	110	●
19.5	5	5 x 7.5 mm	63	10	10	0.04	130	●	130	●
19.5	6	6 x 7.5 mm	63	10	10	0.04	150	●	150	●
22.5	5	5 x 9 mm	63	10	10	0.05	140	●	140	●
22.5	6	6 x 9 mm	63	10	10	0.05	160	●	160	●
22.5	8	8 x 9 mm	63	10	10	0.05	190	●	190	●
25.5	6	6 x 10 mm	63	10	10	0.05	170	●	170	●
28.5	6	6 x 11 mm	63	10	10	0.05	180	●	180	●
28.5	8	8 x 11 mm	63	10	10	0.05	200	●	200	●
32.5	8	8 x 13 mm	71	12	12	0.07	210	●	210	●
32.5	10	10 x 13 mm	71	12	12	0.07	230	●	230	●
45.5	10	10 x 16 mm	71	12	14	0.09	240	●	240	●

Prod. Gr. 106

ORION® 45° and 60° HSSE Co 5 angle milling cutter

Type H

HSSE Co5 | Typ N | Z 10 | Z 12 | HB

Application:
For milling ducts and other angular geometries in tool and mechanical engineering.

Execution:
- Straight-grooved

- Finely toothed
- Straight shank according to DIN 1835 B.
- **No. 15814:** For cutting on periphery and end face
- **No. 15815:** For cutting on periphery

No. 15814

No. 15815

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15814015-055	34	27	20	18	15	70	175	70	70	45	45	60		30					
15814120-155	34	27	20	18	15	70	175	70	70	45	45	60		30					
15815015-055	34	27	20	15	18	70	175	45	45	70	70	60		30					
15815120-155	34	27	20	15	18	70	175	45	45	70	70	60		30					

Chamfer angle (Degree)	Cutting edge Ø (mm)	Width of cutting edge (mm)	Immersion depth (mm)	Length (mm)	Shaft Ø (mm)	Z (PCS)	Form fz steel 700 ● (mm)	C 15814... Ident. No.		D 15815... Ident. No.	
45	16	4	15	60	12	10	0.04	015	●	015	●
45	20	5	18	63	12	10	0.05	025	●	025	●
45	25	6.3	22	67	12	10	0.06	040	●	040	●
45	32	8	23	71	16	12	0.08	055	●	055	●
60	16	6.3	15	60	12	10	0.04	120	●	120	●
60	20	8	18	63	12	10	0.05	130	●	130	●
60	25	10	22	67	12	10	0.06	140	●	140	●
60	32	12.5	23	71	16	12	0.08	155	●	155	●

Prod. Gr. 106

ORION® HSSE Co 5 shell end mill (Milling cutter design standard DIN 841)

Typ N | Typ NR | Typ NF | Z 6 | Z 8 | 30°

Execution:
- Hole with longitudinal and lateral slot in line with DIN 138
- Cuts on periphery and end face

No. 14164
Type N

No. 14168
Type NR

No. 14169
Type NF

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
14164	31	26	20	21	17	66	180	57	44	36	36	75		33					
14168	31	26	20	21	17	66	180	57	44	36	36	75		33					
14169	31	26	20	21	17	66	180	57	44	36	36	75		33					

				Type	N		NR		NF	
				Design of cutting edges	Smoothing		Roughing		Rough finishing	
				Twist angle	30°		30°		30°	
				Surface	Uncoated		Uncoated		Uncoated	
Cutting edge Ø (mm)	Height (mm)	Bore Ø (mm)	Z (PCS)	fz steel 700 ● (mm)	14164... Ident. No.		14168... Ident. No.		14169... Ident. No.	
30	30	13	6	0.05	030	●	-	-	-	-
35	35	16	6	0.05	035	●	-	-	-	-
40	40	16	8	0.08	045	●	045	●	045	●
50	50	22	6	0.09	055	●	055	●	-	-
50	50	22	8	0.09	-	-	-	-	055	●
60	60	27	8	0.09	065	●	065	●	065	●

Prod. Gr. 1HH

ORION® HSSE Co 5 shell end mill (Milling cutter design standard DIN 1880)

Typ N | Typ W | Z 6 | Z 4 | Z 8 | Z 5 | Z 10 | 30° | 40°

Execution:
- Hole with longitudinal and lateral slot in line with DIN 138
- Cuts on periphery and end face

No. 14193
Type N

No. 14195
Type W

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
14193	31	26	20	21	17	66	180	57	44	36	36	75		33					
14195	31					66	180	57	44	36	36	75							

				Type	N		W	
				Design of cutting edges	Smoothing		Smoothing	
				Twist angle	30°		40°	
				Surface	Uncoated		Uncoated	
Cutting edge Ø (mm)	Bore Ø (mm)	Z (PCS)	fz steel 700 ● (mm)		14193... Ident. No.		14195... Ident. No.	
40	16	6	0.08		140	●	-	-
40	16	4	0.08		-	-	140	●
50	22	8	0.09		150	●	-	-
50	22	4	0.09		-	-	150	●
63	27	8	0.09		163	●	-	-
63	27	5	0.09		-	-	163	●
80	27	10	0.1		180	●	-	-
80	27	6	0.1		-	-	180	●

Prod. Gr. 1HH

ORION® HSSE Co 5 single-tooth milling cutter

1 cutter, uncoated

HSSE Co5 | Typ W | Z 1 | 40° | HA

Application:
For milling, plunging and contour milling NF metals and plastics.

Execution:
- HSSE Co 5
- Straight shank pursuant to DIN 6535 HA
- Sharp-edged
- Uncoated

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15007						60	186	30	35	25	32	77	30						

					Type	W	
					Surface	Uncoated	
					Tool holding device	HA parallel shank	
mm	mm	mm	mm	Z (PCS)	fz alu ● (mm)	15007... Ident. No.	
3	12	60	8	1	0.005	030	●
4	12	60	8	1	0.006	040	●
5	13	60	8	1	0.009	050	●
6	14	60	8	1	0.012	060	●
7	14	60	8	1	0.015	070	●
8	14	80	8	1	0.018	080	●
9	14	80	9	1	0.02	090	●
10	14	80	10	1	0.021	100	●

Prod. Gr. 106

ORION® HSSE Co 8 end mill (Milling cutter design standard DIN 327 B/D)

2 flutes, uncoated/TiAlN coated

HSSE Co8 | TiAlN | Typ N | Z 2 | 30° | HB | HA

Application:
No. 15013: Suitable for universal plunge, groove and clearance milling.
No. 15020–15023: Suitable for universal plunge milling, groove milling and tolerance milling.

Execution:
- HSSE Co 8
- **No. 15013:**
  - Finishing teeth
  - Centre cutting
  - Uncoated
  - Short version
- **No. 15020:** uncoated
- **No. 15020–15023:**
  - finishing teeth
  - centre cutting
  - short version
- **No. 15023:** TiAlN coating for maximum service life

No. 15013

No. 15020

No. 15023

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15013	28	23		13	17	60	186	30	35	25	32	77		28	11	11	11		
15020010-015	28	23		13	17	60	186	30	35	25	32	77		28	11	11	11		
15020020-360	28	23		13	17	60	186	30	35	25	32	77		28	11	11	11		
15023010-015	40	32		19	24	85	265	35	45	43	50	110		40	15	15	15		
15023020-360	40	32		19	24	85	265	35	45	43	50	110		40	15	15	15		

					Type	N		N		N	
					Surface	Uncoated		TiAlN		Uncoated	
					Tool holding device	HB parallel shank		HB parallel shank		HA parallel shank	
mm	mm	mm	mm	Z (PCS)	fz steel 700 ● (mm)	15020... Ident. No.		15023... Ident. No.		15013... Ident. No.	
1	2.6	47	6	2	0.005	010	●	010	●	-	-
1.5	3	47	6	2	0.006	015	●	015	●	-	-
2	4	48	6	2	0.008	020	●	020	●	020	●
2.5	5	49	6	2	0.009	025	●	025	●	-	-
3	5	49	6	2	0.01	030	●	030	●	030	●
3.5	6	50	6	2	0.01	035	●	035	●	-	-
4	7	51	6	2	0.01	040	●	040	●	040	●
4.5	7	51	6	2	0.014	045	●	045	●	-	-
4.8	8	52	6	2	0.016	048	●	048	●	-	-
5	8	52	6	2	0.017	050	●	050	●	050	●
5.5	8	52	6	2	0.021	055	●	055	●	-	-
5.75	8	52	6	2	0.022	057	●	-	-	-	-
6	8	52	6	2	0.024	060	●	060	●	060	●
6.5	10	60	10	2	0.027	065	●	065	●	-	-
7	10	60	10	2	0.03	070	●	070	●	070	●
7.5	10	60	10	2	0.033	075	●	075	●	-	-
7.75	11	61	10	2	0.034	077	●	077	●	-	-
8	11	61	10	2	0.036	080	●	080	●	080	●
8.5	11	61	10	2	0.038	085	●	085	●	-	-
9	11	61	10	2	0.039	090	●	090	●	090	●
9.5	11	61	10	2	0.041	095	●	-	-	-	-
9.7	13	63	10	2	0.041	097	●	-	-	-	-
10	13	63	10	2	0.042	100	●	100	●	100	●
10.5	13	70	12	2	0.044	105	●	-	-	-	-
11	13	70	12	2	0.045	110	●	-	-	110	●
11.7	16	73	12	2	0.047	117	●	117	●	-	-
12	16	73	12	2	0.048	120	●	120	●	120	●
13	16	73	12	2	0.05	130	●	-	-	130	●
14	16	73	12	2	0.052	140	●	140	●	140	●
15	16	73	12	2	0.054	150	●	-	-	150	●
16	19	79	16	2	0.056	160	●	160	●	160	●
17	19	79	16	2	0.058	170	●	170	●	-	-
18	19	79	16	2	0.06	180	●	180	●	180	●
19	19	79	16	2	0.062	190	●	190	●	-	-
20	22	88	20	2	0.064	200	●	200	●	200	●
22	22	88	20	2	0.065	220	●	220	●	220	●
24	26	102	25	2	0.067	240	●	240	●	-	-
25	26	102	25	2	0.067	250	●	250	●	250	●
28	26	102	25	2	0.069	280	●	280	●	280	●
30	26	102	25	2	0.071	300	●	300	●	300	●
32	32	112	32	2	0.072	320	●	320	●	-	-
36	36	112	32	2	0.076	360	●	-	-	-	-
36	32	112	32	2	0.076	-	-	360	○	-	-

Prod. Gr. 106

ORION® HSSE Co 8 end mill

2-cutter, uncoated

HSSE Co8 | Typ W | Z 2 | 42° | 45° | HB

Application:
Suitable for universal plunge milling, groove milling and tolerance milling in non-ferrous metals.

Execution:
- HSSE Co 8
- finishing teeth
- centre cutting
- straight shank in accordance with DIN 1835 B
- **No. 15061:**
  - DIN 844 K
  - standard design
- **No. 15063:**
  - DIN 844 L
  - long version

No. 15061

No. 15063

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15061	28			13	17	60	186	30	35	25	32	77			11				
15063	28			13	17	60	186	30	35	25	32	77			11				

					Type	W		W	
					Surface	Uncoated		Uncoated	
					Tool holding device	HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	15061... Ident. No.		15063... Ident. No.	
2	7	51	6	0.05	2	0.008	020	●	-	-
2	10	54	6	0.05	2	0.008	-	-	020	●
3	8	52	6	0.05	2	0.01	030	●	-	-
3	12	56	6	0.05	2	0.01	-	-	030	●
4	11	55	6	0.1	2	0.01	040	●	-	-
4	19	63	6	0.1	2	0.01	-	-	040	●
5	13	57	6	0.1	2	0.017	050	●	-	-
5	24	68	6	0.1	2	0.017	-	-	050	●
6	13	57	6	0.1	2	0.024	060	●	-	-
6	24	68	6	0.1	2	0.024	-	-	060	●
7	30	80	10	0.1	2	0.03	-	-	070	●
8	19	69	10	0.1	2	0.036	080	●	-	-
8	38	88	10	0.1	2	0.036	-	-	080	●
9	38	88	10	0.1	2	0.039	-	-	090	●

						Type	W		W	
						Surface	Uncoated		Uncoated	
						Tool holding device	HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz alu ● (mm)	15061... Ident. No.		15063... Ident. No.	
10	22	72	10	0.2	2	0.042	100	●	-	-
10	45	95	10	0.2	2	0.042	-	-	100	●
11	22	79	12	0.2	2	0.045	110	●	-	-
11	45	102	12	0.2	2	0.045	-	-	110	●
12	26	83	12	0.2	2	0.048	120	●	-	-
12	53	110	12	0.2	2	0.048	-	-	120	●
13	26	83	12	0.2	2	0.05	130	●	-	-
13	53	110	12	0.2	2	0.05	-	-	130	●
14	26	83	12	0.2	2	0.052	140	●	-	-
14	53	110	12	0.2	2	0.052	-	-	140	●
15	53	110	12	0.2	2	0.054	-	-	150	●
16	32	92	16	0.2	2	0.056	160	●	-	-
16	63	123	16	0.2	2	0.056	-	-	160	●
18	32	92	16	0.2	2	0.06	180	●	-	-
18	63	123	16	0.2	2	0.06	-	-	180	●
20	38	104	20	0.2	2	0.064	200	●	-	-
20	75	141	20	0.2	2	0.064	-	-	200	●

Prod. Gr. 143

ORION® HSSE Co 8 end mill (Milling cutter design standard DIN 844 L)

2 flutes, uncoated/TiAlN coated

HSSE Co8 | TiAlN | Typ N | Z 2 | 30° | HB

Application:
Suitable for universal plunge milling, groove milling and tolerance milling.

Execution:
- HSSE Co 8

- finishing teeth
- centre cutting
- straight shank in accordance with DIN 1835 B
- long version
- **No. 15053:** uncoated
- **No. 15055:** TiAlN coating for maximum service life

No. 15053

No. 15055

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15053	28	23		13	17	60	186	30	35	25	32	77		28	11	11	11		
15055	40	32		19	24	85	265	35	45	43	50	110		40					

					Type	N		N	
					Surface	Uncoated		TiAlN	
					Tool holding device	HB parallel shank		HB parallel shank	
mm	mm	mm	mm	Z (PCS)	fz steel 700 ● (mm)	15053... Ident. No.		15055... Ident. No.	
2	7	54	6	2	0.008	020	●	020	●
3	8	56	6	2	0.01	030	●	030	●
4	11	63	6	2	0.01	040	●	040	●
5	13	68	6	2	0.017	050	●	050	●
6	13	68	6	2	0.024	060	●	060	●
7	16	80	10	2	0.03	070	●	070	●
8	19	88	10	2	0.036	080	●	080	●
9	19	88	10	2	0.039	090	●	090	●
10	22	95	10	2	0.042	100	●	100	●
11	22	102	12	2	0.045	110	●	110	●
12	26	110	12	2	0.048	120	●	120	●
14	26	110	12	2	0.052	140	●	140	●
15	26	110	12	2	0.054	150	●	150	●
16	32	123	16	2	0.056	160	●	160	●
18	32	123	16	2	0.06	180	●	180	●
20	38	141	20	2	0.064	200	●	200	●
25	45	166	25	2	0.067	250	●	-	-

Prod. Gr. 106

ORION® HSSE Co 8 end mill (Milling cutter design standard DIN 327 B/D)

3 flutes, uncoated/TiAlN coated

HSSE Co8 | TiAlN | Typ N | Z 3 | 30° | 45° | HB

Application:
End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

Execution:
- HSSE Co 8

- finishing teeth
- centre cutting
- straight shank in accordance with DIN 1835 B
- without edge protection chamfer
- **No. 15102:** uncoated
- **No. 15105:** TiAlN coating for maximum service life

No. 15102

No. 15105

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15102	28	23		13	17	60	186	30	35	25	32	77		28	11	11	11		
15105	40	32		19	24	85	265	35	45	43	50	110		40	15	15	15		

						Type	N		N	
						Surface	Uncoated		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15102... Ident. No.		15105... Ident. No.	
2	4	48	6	0.1	3	0.015	020	●	020	●
3	5	49	6	0.1	3	0.018	030	●	030	●
3.5	6	50	6	0.1	3	0.019	035	●	035	●
4	7	51	6	0.1	3	0.02	040	●	040	●
4.5	7	51	6	0.1	3	0.027	045	●	-	-
5	8	52	6	0.1	3	0.032	050	●	050	●
5.5	8	52	6	0.1	3	0.038	055	●	055	●
6	8	52	6	0.1	3	0.043	060	●	060	●
6.5	10	60	10	0.1	3	0.049	065	●	-	-
7	10	60	10	0.1	3	0.055	070	●	070	●
7.5	10	60	10	0.1	3	0.06	075	●	-	-
8	11	61	10	0.1	3	0.067	080	●	080	●
9	11	61	10	0.1	3	0.071	090	●	090	●
9.5	11	61	10	0.1	3	0.074	095	●	-	-
10	13	63	10	0.2	3	0.077	100	●	100	●
11	13	70	12	0.2	3	0.084	110	●	110	●
12	16	73	12	0.2	3	0.088	120	●	120	●
13	16	73	12	0.2	3	0.09	130	●	130	●
14	16	73	12	0.2	3	0.1	140	●	140	●
15	16	73	12	0.2	3	0.1	150	●	150	●
16	19	79	16	0.2	3	0.1	160	●	160	●
18	19	79	16	0.2	3	0.11	180	●	180	●
20	22	88	20	0.2	3	0.12	200	●	200	●
22	22	88	20	0.2	3	0.12	220	●	-	-
25	26	102	25	0.2	3	0.12	250	●	-	-
28	26	102	25	0.2	3	0.13	280	●	-	-
30	26	102	25	0.2	3	0.13	300	●	-	-
32	32	112	32	0.2	3	0.13	320	●	-	-

Prod. Gr. 106

ORION® HSSE Co 5/Co 8 end mill (Milling cutter design standard DIN 844 K)

3 flutes, uncoated/TiAlN coated

HSSE Co8 | HSSE Co5 | TiAlN | Typ N | Typ NR | Z 3 | 30° | 45° | HB

Application:

No. 15112 028–15112 250, 15118 028–15118 250: End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

No. 15116 060–15116 200, 15119 060–15119 200: End mill for universal use in plunge milling, groove milling and keyway cutting, as well as front milling and peripheral milling.

Execution:

- **No. 15112:** uncoated
- **No. 15112 028–15112 250, 15118 028–15118 250:**
  - HSSE Co 8
  - centre cutting
  - type N
  - finishing teeth
  - straight shank in accordance with DIN 1835 B
- **No. 15116:** Uncoated
- **No. 15116 060–15116 200, 15119 060–15119 200:**
  - HSSE Co 5
  - Centre cutting
  - Type NR
  - Roughing teeth
  - Straight shank in accordance with DIN 1835 B
- **No. 15118:** TiAlN coating for maximum service life
- **No. 15119:** TiAlN coating for maximum service life

No. 15112

No. 15116

No. 15118

No. 15119

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15112	28	23		13	17	60	186	30	35	25	32	77		28	11	11	11		
15116	28	23		13	17	60	186	30	35	25	32	77		28	11	11	11		
15118	40	32		19	24	85	265	35	45	43	50	110		40	15	15	15		
15119	40	32		19	24	85	265	35	45	43	50	110		40	15	15	15		

						Type	N		NR		N		NR	
						Surface	Uncoated		Uncoated		TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank		HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15112... Ident. No.		15116... Ident. No.		15118... Ident. No.		15119... Ident. No.	
2.8	8	52	6	0.1	3	0.014	028	●	-	-	028	●	-	-
3	8	52	6	0.1	3	0.014	030	●	-	-	030	●	-	-
3.8	11	55	6	0.1	3	0.016	038	●	-	-	038	●	-	-
4	11	55	6	0.1	3	0.017	040	●	-	-	040	●	-	-
4.8	13	57	6	0.1	3	0.024	048	●	-	-	048	●	-	-
5	13	57	6	0.1	3	0.026	050	●	-	-	050	●	-	-
5.75	13	57	6	0.1	3	0.033	057	●	-	-	057	●	-	-
6	13	57	6	0.1	3	0.035	060	●	060	●	060	●	060	●
6.75	16	66	10	0.1	3	0.042	067	●	-	-	067	●	-	-
7	16	66	10	0.1	3	0.045	070	●	-	-	070	●	-	-
7.75	19	69	10	0.1	3	0.052	077	●	-	-	077	●	-	-
8	19	69	10	0.1	3	0.054	080	●	080	●	080	●	080	●
9.7	22	72	10	0.1	3	0.062	097	●	-	-	097	●	-	-
10	22	72	10	0.1	3	0.063	100	●	100	●	100	●	100	●
12	26	83	12	0.2	3	0.072	120	●	120	●	120	●	120	●

						Type	N		NR		N		NR	
						Surface	Uncoated		Uncoated		TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank		HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15112... Ident. No.		15116... Ident. No.		15118... Ident. No.		15119... Ident. No.	
14	26	83	12	0.2	3	0.078	140	●	140	●	140	●	140	●
16	32	92	16	0.2	3	0.084	160	●	160	●	160	●	160	●
18	32	92	16	0.2	3	0.09	180	●	180	●	180	●	180	●
20	38	104	20	0.2	3	0.096	200	●	200	●	200	●	200	●
25	45	121	25	0.2	3	0.101	250	●	-	-	250	●	-	-

Prod. Gr. 106

ORION® HSSE Co 8 end mill (Milling cutter design standard DIN 844 L)

3-cutter, uncoated

HSSE Co8 | Typ N | Z 3 | 30° | 45° | HB

Application:
End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

Execution:
- HSSE Co 8
- finishing teeth
- centre cutting
- straight shank in accordance with DIN 1835 B

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15124	28	23		17	13	60	186	30	35	25	32	77		28	11	11	11		

						Type	N	
						Surface	Uncoated	
						Tool holding device	HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15124... Ident. No.	
3	12	56	6	0.1	3	0.014	030	●
4	19	63	6	0.1	3	0.017	040	●
5	24	68	6	0.1	3	0.026	050	●
6	24	68	6	0.1	3	0.035	060	●
7	30	80	10	0.1	3	0.045	070	●
8	38	88	10	0.1	3	0.054	080	●
9	38	88	10	0.1	3	0.059	090	●
10	45	95	10	0.1	3	0.063	100	●
12	53	110	12	0.2	3	0.072	120	●
14	53	110	12	0.2	3	0.078	140	●
16	63	123	16	0.2	3	0.084	160	●
18	63	123	16	0.2	3	0.09	180	●
20	75	141	20	0.2	3	0.096	200	●
22	75	141	20	0.2	3	0.098	220	●
25	90	166	25	0.2	3	0.101	250	●

Prod. Gr. 106

ORION® HSSE Co 8 end mill (Milling cutter design standard DIN 844 K)

4-6 flutes, uncoated/TiAlN coated

HSSE Co8 | TiAlN | Typ N | Z 3 | Z 4 | Z 5 | Z 6 | 30° | HA | HB

Application:
End mill for universal machining in a wide range of materials.

Execution:
- HSSE Co 8
- finishing teeth
- centre cutting
- without edge protection chamfer
- **No. 15170:** straight shank in accordance with DIN 1835 A
- **No. 15170–15176:** uncoated
- **No. 15176–15178:** straight shank in accordance with DIN 1835 B
- **No. 15178:** TiAlN coating for maximum service life

No. 15170

No. 15176

No. 15178

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15170	28	23	12	17	17	60	186	30	32	25	35	77		28	11	11	11		
15176	28	23	12	17	17	60	186	30	32	25	35	77		28	11	11	11		
15178	40	32	18	19	24	85	265	35	45	43	50	110		40	15	15	15		

					Type	N		N		N	
					Surface	Uncoated		Uncoated		TiAlN	
					Tool holding device	HA parallel shank		HB parallel shank		HB parallel shank	
mm	mm	mm	mm	Z (PCS)	fz steel 700 ● (mm)	15170... Ident. No.		15176... Ident. No.		15178... Ident. No.	
2	7	51	6	3	0.012	020	●	020	●	020	●
2.5	8	52	6	3	0.014	025	●	025	●	025	●
3	8	52	6	4	0.014	030	●	030	●	030	●
3.5	10	54	6	4	0.016	-	-	035	●	035	●
4	11	55	6	4	0.017	040	●	040	●	040	●
4.5	11	55	6	4	0.022	-	-	045	●	045	●
5	13	57	6	4	0.026	050	●	050	●	050	●
5.5	13	57	6	4	0.031	-	-	055	●	055	●
6	13	57	6	4	0.035	060	●	060	●	060	●
6.5	16	66	10	4	0.04	-	-	065	●	065	●
7	16	66	10	4	0.045	070	●	070	●	070	●
7.5	16	66	10	4	0.05	-	-	075	●	075	●
8	19	69	10	4	0.054	080	●	080	●	080	●
8.5	19	69	10	4	0.056	-	-	085	●	085	●
9	19	69	10	4	0.059	090	●	090	●	090	●
9.5	19	69	10	4	0.061	-	-	095	●	095	●
10	22	72	10	4	0.063	100	●	100	●	100	●
11	22	79	12	4	0.068	110	●	110	●	110	●
12	26	83	12	4	0.072	120	●	120	●	120	●
13	26	83	12	4	0.075	130	●	130	●	130	●
14	26	83	12	4	0.078	140	●	140	●	140	●
15	26	83	12	4	0.081	150	●	150	●	150	●
16	32	92	16	4	0.086	160	●	160	●	160	●
17	32	92	16	4	0.086	170	●	170	●	170	●
18	32	92	16	4	0.09	180	●	180	●	180	●
20	38	104	20	4	0.1	200	●	200	●	200	●
22	38	104	20	5	0.12	220	●	220	●	220	●
24	45	121	25	5	0.12	-	-	240	●	240	●
25	45	121	25	5	0.13	250	●	250	●	250	●
28	45	121	25	5	0.13	280	●	280	●	280	●
30	45	121	25	5	0.13	300	●	300	●	300	●
32	53	133	32	6	0.17	320	●	320	●	320	●
35	53	133	32	6	0.17	-	-	350	●	350	●
36	53	133	32	6	0.17	-	-	360	●	360	●
40	63	155	40	6	0.18	-	-	400	●	400	●

Prod. Gr. 106

ORION® HSSE Co 8/HSSE PM end mill (Milling cutter design standard DIN 844 L)

4-6 flutes, uncoated/TiAlN coated

HSSE Co8 | HSSE-PM | TiAlN | Typ N | Z 4 | Z 5 | Z 6 | 40° | 30° | 45° | HB

Application:
End mill for universal machining in a wide range of materials.

Execution:
- **No. 15193:** uncoated
- **No. 15193–15195:**
  - HSSE Co 8
  - finishing teeth
  - centre cutting
  - straight shank DIN 1835 B
  - 40° twist angle
- **No. 15195:** TiAlN coating for maximum service life
- **No. 15904:**
  - HSSE PM - optimised cutting material for unstable clamping conditions and increased service life
  - Finishing teeth
  - Centre cutting
  - TiAlN-coating for maximum service life
  - Straight shank DIN 1835 B
  - Twist angle 30°


No. 15193


No. 15195


No. 15904

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15193	28	23	12	17	13	60	186	30	35	25	32	77		28	11	11	11		
15195	40	32	18	19	24	85	265	35	45	43	50	110		40	15	15	15		
15904	78	51	35	43	37	130	325	110	85	70	70	140		75	23	23	20		

						Type	N		N		N	
						Surface	Uncoated		TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15193... Ident. No.		15195... Ident. No.		15904... Ident. No.	
3	12	56	6	0.1	4	0.013	030	●	030	●	-	-
4	19	63	6	0.1	4	0.015	040	●	040	●	-	-
5	24	68	6	0.1	4	0.025	050	●	050	●	-	-
6	24	68	6	0.1	4	0.033	060	●	060	●	-	-
8	38	88	10	0.1	4	0.05	080	●	080	●	-	-
10	45	95	10	0.1	4	0.059	100	●	100	●	-	-
12	53	110	12	0.2	4	0.067	120	●	120	●	-	-
14	53	110	12	0.2	4	0.073	140	●	140	●	-	-
16	63	123	16	0.2	4	0.081	160	●	160	●	-	-
18	63	123	16	0.2	4	0.084	180	●	180	●	-	-
20	75	141	20	0.2	4	0.09	200	●	200	●	-	-
22	75	141	20	0.2	5	0.11	220	●	220	●	-	-
25	90	166	25	0.2	5	0.12	250	●	250	●	-	-

						Type	N		N		N	
						Surface	Uncoated		TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15193... Ident. No.		15195... Ident. No.		15904... Ident. No.	
28	90	166	25	0.2	5	0.12	280	●	280	●	-	-
30	90	166	25	0.2	5	0.12	300	●	300	●	-	-
32	106	186	32	0.2	6	0.15	320	●	320	●	-	-
6	24	68	6	0.1	4	0.053	-	-	-	-	060	●
8	38	88	10	0.1	4	0.073	-	-	-	-	080	●
10	45	95	10	0.1	4	0.088	-	-	-	-	100	●
12	53	110	12	0.2	4	0.1	-	-	-	-	120	●
16	63	123	16	0.2	4	0.11	-	-	-	-	160	●
20	75	141	20	0.2	4	0.13	-	-	-	-	200	●

Prod. Gr. 106

ORION® HSSE Co 5 end mill

4-6 flutes, uncoated

HSSE Co5 | Typ N | Typ NR | Z 4 | Z 5 | Z 6 | 45° | 45° | HB

No. 15324

No. 15325

Application:
No. 15324: End mill for universal machining in diverse materials.
No. 15325: End mill for universal machining in a wide range of materials.

Execution:
- HSSE Co 5

- **No. 15324:**
  - Straight shank in accordance with DIN 1835 B
  - Type N
  - Finishing teeth
- **No. 15325:**
  - straight shank in accordance with DIN 1835 B
  - type NR
  - roughing teeth

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15324	28	23	12	17	13	60	186	30	35	25	32	77		28	11	11	11		
15325	28	23	12	13	17	60	186	25	32	30	35	77		28	11	11	11		

						Type	N		NR	
						Surface	Uncoated		Uncoated	
						Tool holding device	HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15324... Ident. No.		15325... Ident. No.	
10	60	110	10	0.1	4	0.06	100	●	-	-
12	80	137	12	0.2	4	0.067	120	●	-	-
14	80	137	12	0.2	4	0.074	140	●	140	●
16	100	160	16	0.2	4	0.081	160	●	160	●
18	100	160	16	0.2	5	0.11	180	●	-	-
18	100	160	16	0.2	4	0.11	-	-	180	●
20	125	191	20	0.2	5	0.11	200	●	-	-
20	125	191	20	0.2	4	0.11	-	-	200	●
22	110	180	20	0.2	5	0.12	220	●	220	●
25	140	216	25	0.2	6	0.13	250	●	-	-
25	140	216	25	0.2	5	0.13	-	-	250	●
28	140	205	25	0.2	6	0.13	280	●	-	-
28	140	205	25	0.2	5	0.13	-	-	280	●
30	140	205	25	0.2	6	0.14	300	●	-	-
30	140	205	25	0.2	5	0.14	-	-	300	●
32	180	260	32	0.2	6	0.14	320	●	320	●

Prod. Gr. 106

ATORN® HPC HSSE PM end mill (Milling cutter design standard DIN 844 K)

4 flutes, TiAlN - coated

HSSE-PM | TiAlN | Typ N | Z 4 | Z 5 | 45° | HB | HPC

Application:
HPC end mill with an uneven twist for universal roughing and finishing in a wide range of materials. Optimized cutting material for unstable clamping conditions and increased service life.

Execution:
- HSSE PM
- Pursuant to DIN 844 K
- Straight shank according to DIN 1835 B
- TiAlN coating optimized for longer service life

- Centre cutting
- Edge protection chamfer
- Twist angle 35°/30-42°

Advantage:
- Extremely smooth running
- Reduces vibrations
- Ideal for machining in unstable clamping conditions
- Up to 30% increase in feed rate
- Enables greater surface quality

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15914	40	32	18	24	19	85	265	43	50	40	45	110		40	15	15	15		

						Type	N	
						Surface	TiAlN	
						Tool holding device	HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15914... Ident. No.	
6	13	57	6	0.1	4	0.047	060	●
8	19	69	10	0.1	4	0.072	080	●
10	22	72	10	0.1	4	0.084	100	●
12	26	83	12	0.2	4	0.096	120	●
16	32	92	16	0.2	5	0.115	160	●
18	32	92	16	0.2	5	0.12	180	●
20	38	104	20	0.2	5	0.13	200	●

Prod. Gr. 118

ATORN® ORION® HSSE PM end mill (Milling cutter design standard DIN 844 K)

4-6 flutes, TiAlN coated

HSSE-PM | TiAlN | Typ N | Z 4 | Z 6 | 30° | 45° | HB

No. 15188

No. 15902

Application:
No. 15188: End mill for universal machining in a wide range of materials. Optimised cutting material for unstable clamping conditions and increased service life.
No. 15902: End mill for universal machining in a wide range of materials. Optimized cutting material for unstable clamping conditions and increased service life.

Execution:
- HSSE PM

- **No. 15188:**
  - finishing teeth
  - centre cutting
  - TiAlN coating for maximum service life
  - straight shank in accordance with DIN 1835 B
  - also for dry milling using compressed air
- **No. 15902:**
  - Finishing teeth
  - Centre cutting
  - TiAlN-coating for maximum service life
  - Straight shank according to DIN 1835 B
  - Also for dry milling with compressed air

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15188	78	51	35	43	38	130	325	110	85	70	70	140		75	23	23	20		
15902	78	51	35	43	43	130	325	70	70	110	85	140		75	23	23	20		

							ATORN®		ORION®	
						Type	N		N	
						Surface	TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15188... Ident. No.		15902... Ident. No.	
2	7	51	6	0.1	4	0.011	020	●	-	-
3	8	52	6	0.1	4	0.022	030	●	-	-
4	11	55	6	0.1	4	0.034	040	●	-	-
5	13	57	6	0.1	4	0.043	050	●	-	-
6	13	57	6	0.1	4	0.053	060	●	060	●
7	16	66	10	0.1	4	0.063	070	●	-	-
8	19	69	10	0.1	4	0.073	080	●	080	●
10	22	72	10	0.1	4	0.09	100	●	100	●
12	26	83	12	0.2	4	0.1	120	●	120	●
14	26	83	12	0.2	4	0.11	140	●	-	-
16	32	92	16	0.2	4	0.11	160	●	160	●
18	32	92	16	0.2	4	0.12	180	●	-	-
20	38	104	20	0.2	4	0.13	200	●	200	●
25	45	121	25	0.2	6	0.15	250	●	-	-
32	53	133	32	0.2	6	0.16	320	●	-	-

ORION = Prod. Gr. 106
ATORN® = Prod. Gr. 118

ATORN® End mill, HSSE-PM (Milling cutter design standard DIN 844 K)

4 flutes, TiAlN - coated

Application:
End mill for universal processing in a wide range of materials. Optimised flute material for delicate clamping situations and increased service life.

Execution:
- HSSE PM
- Finishing teeth
- Centre cutting
- TiAlN coating for outstanding service life
- Straight shank according to DIN 1835 B
- Also for dry milling with compressed air

Delivery:
10 mills in a case made of 15188

Notes:
Set in a case consisting of Ø 4/5/6/8/10/12/14/16/18/20 mm

Composition of set		4/5/6/8/10/12/14/16/18/20 mm
Number of pieces in assortment/set (PCS)		10
Type		N
15188...	Ident. No.	500 ●

Prod. Gr. 118

ORION® HSSE Co 5 roughing cutter (Milling cutter design standard DIN 844 K)

4-6 flutes, uncoated/TiAlN coated

HSSE Co5 | TiAlN | Typ NR | Z 4 | Z 5 | 30° | 45° | HB

No. 15261

No. 15263

Application:
No. 15261: Roughing cutter for universal machining in diverse materials.
No. 15263: Roughing cutter for universal machining.

Execution:
- HSSE Co 5

- Roughing teeth
- Centre cutting
- Straight shank in accordance with DIN 1835 B
- **No. 15261:** Uncoated
- **No. 15263:** TiAlN coating for maximum service life

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15261	28	23	12	17	13	60	186	30	35	25	32	77		28	11	11	11		
15263	40	32	18	19	24	85	265	35	45	43	50	110		40	15	15	15		

mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	Type NR, Surface Uncoated, Tool holding device HB parallel shank: 15261... Ident. No.		Type NR, Surface TiAlN, Tool holding device HB parallel shank: 15263... Ident. No.	
6	13	57	6	0.1	4	0.033	060	●	060	●
7	16	66	10	0.1	4	0.042	070	●	070	●
8	19	69	10	0.1	4	0.05	080	●	080	●
9	19	69	10	0.1	4	0.055	090	●	090	●
10	22	72	10	0.1	4	0.059	100	●	100	●
11	22	79	12	0.2	4	0.063	110	●	110	●
12	26	83	12	0.2	4	0.067	120	●	120	●
14	26	83	12	0.2	4	0.073	140	●	140	●
16	32	92	16	0.2	4	0.081	160	●	160	●
18	32	92	16	0.2	4	0.084	180	●	180	●
20	38	104	20	0.2	4	0.09	200	●	200	●
22	38	104	20	0.2	4	0.09	220	●	220	●
25	45	121	25	0.2	4	0.09	250	●	250	●
28	45	121	25	0.2	5	0.12	280	●	280	●
30	45	121	25	0.2	5	0.12	300	●	300	●

Prod. Gr. 106

ORION® HSSE Co 8 roughing cutter (Milling cutter design standard DIN 844 K)

4 flutes, TiCN coated

HSSE Co8 | TiCN | Typ HR | Z 4 | Z 5 | Z 6 | 30° | 45° | HB

Application:
Roughing cutter for universal machining.

Execution:
- HSSE Co 8
- fine roughing teeth

- centre cutting (over dia. 20 mm without centre cutting)
- TiCN coating for maximum service life requirements
- straight shank in accordance with DIN 1835 B

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15290	40	32	18	24	19	85		50		45				40	15	15	15		

mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1300 ● (mm)	Type HR, Surface TiCN, Tool holding device HB parallel shank: 15290... Ident. No.	
6	13	57	6	0.1	4	0.038	060	●
7	16	66	10	0.1	4	0.048	070	●
8	19	69	10	0.1	4	0.058	080	●
9	19	69	10	0.1	4	0.062	090	●
10	22	72	10	0.1	4	0.068	100	●
11	22	79	12	0.2	4	0.072	110	●
12	26	83	12	0.2	4	0.076	120	●
13	26	83	12	0.2	4	0.08	130	●
14	26	83	12	0.2	4	0.084	140	●
15	26	83	12	0.2	4	0.088	150	●
16	32	92	16	0.2	4	0.09	160	●
17	32	92	16	0.2	4	0.09	170	●
18	32	92	16	0.2	4	0.1	180	●
20	38	104	20	0.2	4	0.1	200	●
22	38	104	20	0.2	4	0.1	220	●
25	45	121	25	0.2	5	0.12	250	●
30	45	121	25	0.2	6	0.14	300	●

Prod. Gr. 106

ORION® HSSE Co 8 roughing cutter (Milling cutter design standard DIN 844 L)

4 flutes, TiCN coated

HSSE Co8 | TiCN | Typ HR | Z 3 | Z 4 | Z 5 | Z 6 | 30° | 45° | HB

Application:
End mill for universal use when plunge milling, groove milling and keyway cutting as well as face milling and peripheral milling.

Execution:
- HSSE Co 8
- fine roughing teeth
- centre cutting (over diameter 20 mm without centre cutting)
- TiCN coating for long service life
- straight shank in accordance with DIN 1835 B

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15300	40	32	18	24	19	85		50		45				40	15	15	15		

						Type	HR	
						Surface	TiCN	
						Tool holding device	HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 1300 ● (mm)	15300... Ident. No.	
6	24	68	6	0.1	3	0.025	060	●
7	30	80	10	0.1	3	0.031	070	●
8	38	88	10	0.1	3	0.038	080	●
9	38	88	10	0.1	3	0.04	090	●
10	45	95	10	0.1	4	0.06	100	●
11	45	102	12	0.2	4	0.063	110	●
12	53	110	12	0.2	4	0.067	120	●
13	53	110	12	0.2	4	0.07	130	●
14	53	110	12	0.2	4	0.074	140	●
15	53	110	12	0.2	4	0.077	150	●
16	63	123	16	0.2	4	0.081	160	●
17	63	123	16	0.2	4	0.081	170	●
18	63	123	16	0.2	4	0.084	180	●
20	75	141	20	0.2	4	0.09	200	●
22	75	141	20	0.2	5	0.12	220	●
24	90	166	25	0.2	5	0.12	240	●
25	90	166	25	0.2	5	0.12	250	●
26	90	166	25	0.2	6	0.11	260	●
28	90	166	25	0.2	6	0.12	280	●
30	90	166	25	0.2	6	0.13	300	●

Prod. Gr. 106

ATORN® ORION® HSSE PM roughing cutter (Milling cutter design standard DIN 844 K)

4-6 flutes, TiAlN coated

HSSE-PM | TiAlN | Typ NRF | Typ NR | Typ NF | Z 4 | Z 5 | Z 6 | 30° | 45° | HB

Application:
Roughing cutter for universal machining in a wide range of materials.

Execution:
- HSSE PM
- TiAlN-coating for maximum service life
- Straight shank according to DIN 1835 B
- **No. 15269:**
  - Type NRF
  - Fine roughing teeth
- **No. 15905:**
  - Type NR
  - Roughing teeth
- **No. 15907:**
  - Type NF
  - Roughing and finishing teeth

No. 15269

No. 15905

No. 15907

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15269	78	51	35	43	37	130	325	110	85	70	70	140		75	23	23	20		
15905	78	51	35	43	43	130	325	70	70	110	85	140		75	23	23	20		
15907	78	51	35	43	43	130	325	70	70	110	85	140		75	23	23	20		

							ATORN®		ORION®			
						Type	NRF		NR		NF	
						Surface	TiAlN		TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15269... Ident. No.		15905... Ident. No.		15907... Ident. No.	
6	13	57	6	0.1	4	0.038	060	●	060	●	060	●
8	19	69	10	0.1	4	0.052	080	●	080	●	080	●
10	22	72	10	0.1	5	0.078	100	●	100	●	100	●
12	26	83	12	0.2	5	0.09	120	●	120	●	120	●

							ATORN®		ORION®			
						Type	NRF		NR		NF	
						Surface	TiAlN		TiAlN		TiAlN	
						Tool holding device	HB parallel shank		HB parallel shank		HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15269... Ident. No.		15905... Ident. No.		15907... Ident. No.	
14	26	83	12	0.2	5	0.1	140	●	-	-	-	-
16	32	92	16	0.2	5	0.1	160	●	160	●	160	●
18	32	92	16	0.2	5	0.11	180	●	-	-	-	-
20	38	104	20	0.2	5	0.12	200	●	200	●	200	●
25	45	121	25	0.2	5	0.13	250	●	-	-	-	-
32	53	133	32	0.2	6	0.18	320	●	-	-	-	-

ORION = Prod. Gr. 106
ATORN® = Prod. Gr. 118

ATORN® HSSE PM end mill (Milling cutter design standard DIN 844 K)

Type NRF

Application:
Roughing cutter for universal processing in a wide range of materials. Optimised flute material for delicate clamping situations and increased service life.

Execution:
- Roughing teeth, fine
- Type NRF
- TiAlN coating for increased service life
- Straight shank according to DIN 1835 B

Delivery:
8 mills in a case made of 15269

Notes:
Set in a case consisting of Ø 6/8/10/12/14/16/18/20 mm

Composition of set		6/8/10/12/14/16/18/20 mm
Number of pieces in assortment/set (PCS)		8
Type		NRF
15269...	Ident. No.	500 ●

Prod. Gr. 118

ATORN® HSSE PM roughing cutter (Milling cutter design standard DIN 844 L)

4-6 flutes, TiAlN coated

HSSE-PM | TiAlN | Typ HR | Z 4 | Z 5 | Z 6 | 30° | 45° | HB

Application:
Roughing cutter for universal machining.

Execution:
- HSSE PM
- Roughing teeth
- Centre cutting
- TiAlN-coating for maximum service life
- Straight shank according to DIN 1835 B

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15319	78	51	35	43	37	130			85		70	140		75	23	23	20		

						Type	HR	
						Surface	TiAlN	
						Tool holding device	HB parallel shank	
mm	mm	mm	mm	F mm	Z (PCS)	fz steel 700 ● (mm)	15319... Ident. No.	
6	24	68	6	0.1	4	0.049	060	●
8	38	88	10	0.1	4	0.068	080	●
10	45	95	10	0.1	4	0.081	100	●
12	53	110	12	0.2	4	0.094	120	●
14	53	110	12	0.2	4	0.1	140	●
16	63	123	16	0.2	4	0.1	160	●
18	63	123	16	0.2	4	0.11	180	●
20	75	141	20	0.2	4	0.12	200	●
25	90	166	25	0.2	5	0.13	250	●
32	106	186	32	0.2	6	0.15	320	●

Prod. Gr. 118

ORION® HSSE Co 8 radius cutter (Milling cutter design standard DIN 844 K)

2-cutter, uncoated

HSSE Co8 | Typ N | Z 2 | 30° | HB

Application:
Radius milling cutter, standard design, for universal use.

Execution:
- HSSE Co 8
- Finishing teeth
- Centre cutting
- Straight shank according to DIN 1835 B
- Uncoated
- Standard design

Application	Steel (N/mm²)			Stainless steel		Alu		Brass		Bronze		Plas-tics	Graphite G(C)FK	GG(G) GjMW	Titan-alloy	Nickel-alloy	Super-alloy	Hard mat.	
No.	<700	<1000	<1300	marten.	austen.	short	long	short	long	short	long							<55 HRC	<65 HRC
15361	28	23	12	17	13	60	186	30	35	25	32	77		28	11	11	11		

				Type	N	
				Surface	Uncoated	
				Tool holding device	HB parallel shank	
mm	mm	mm	mm	fz steel 700 ● (mm)	15361... Ident. No.	
2	4	48	6	0.015	020	●
3	5	49	6	0.018	030	●
4	7	51	6	0.021	040	●
5	8	52	6	0.033	050	●
6	8	52	6	0.044	060	●
7	10	60	10	0.056	070	●
8	11	61	10	0.068	080	●
9	11	61	10	0.074	090	●
10	13	63	10	0.079	100	●
12	16	73	12	0.09	120	●
13	16	73	12	0.09	130	●
14	16	73	12	0.1	140	●
15	16	73	12	0.1	150	●
16	19	79	16	0.11	160	●
18	19	79	16	0.11	180	●
20	22	88	20	0.12	200	●
22	22	88	20	0.12	220	●
24	26	102	25	0.12	240	●
25	26	102	25	0.13	250	●

Prod. Gr. 106