passion
for precision

fraisa

High-performance milling tools

Volume 9

Products

- **Largest range of European-made, solid-carbide milling tools**
  (4,200 standard production items, excluding inch and modular systems)
- **Leading innovator: 30 new product technologies**
  since 2011, 5% of turnover reinvested in R&D
- **Trend-setter in HSC, HPC and HDC**
  (HSC: High Speed Cutting; HPC: High Performance Cutting; HDC: High Dynamic Cutting)
- **Perfection is our passion**

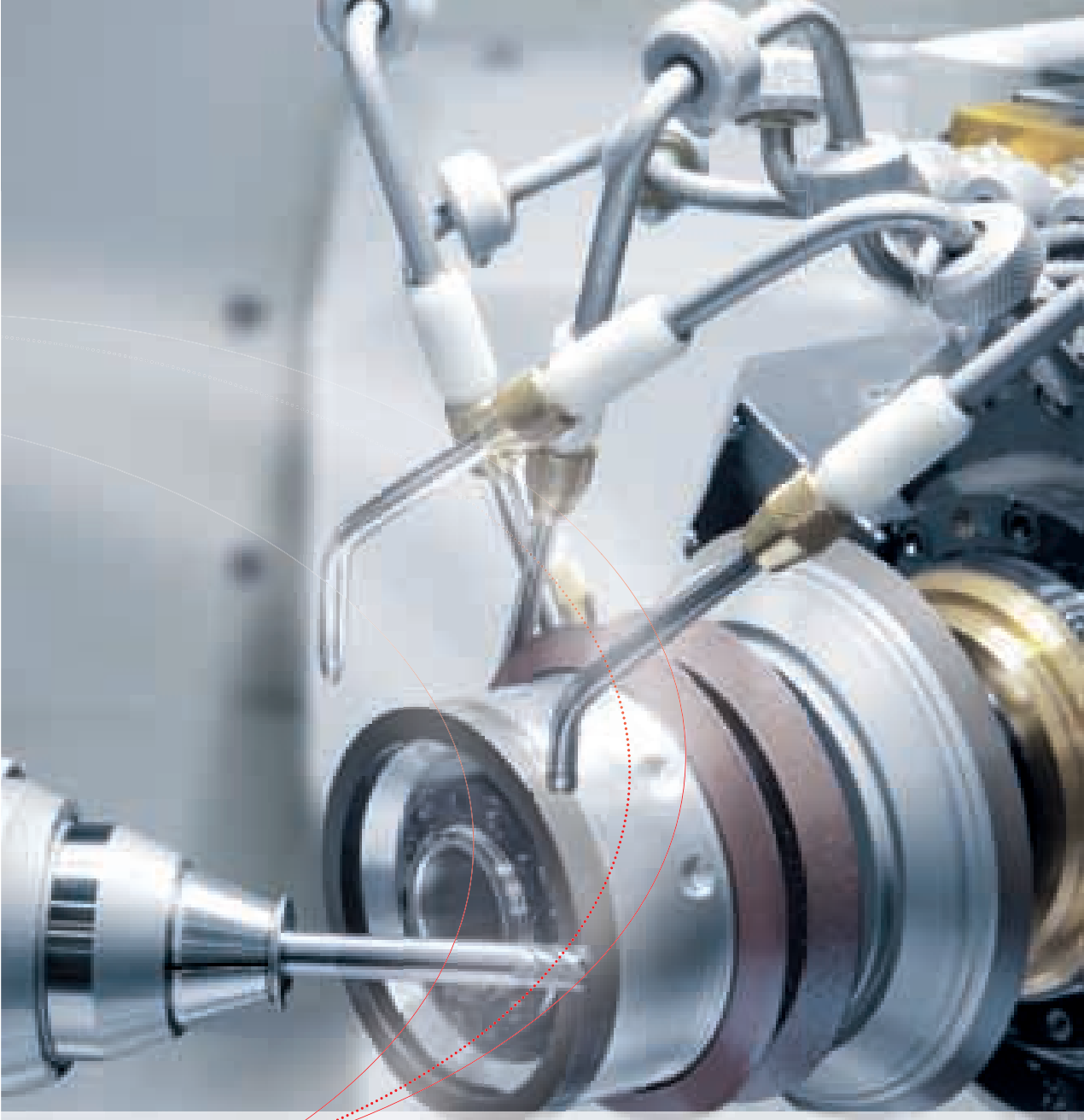
PRODUCTS

ToolService

- **Full service centre for solid-carbide milling tools**
  in New Brighton, mn
- **ReTool: ecologically and economically perfect tool management for FRAISA and third-party tools**
- **Great experience during 20 years of ReTool and more than 5 million reconditioned milling tools**
- **Environmentally significant savings of 50,000 kg of tungsten and 5,000 kg of cobalt per annum**
  thanks to tool reconditioning and material recycling

BLUECOMPETENCE
Alliance Member

www.bluecompetence.net



TOOLSERVICE

Logistics

- Trend-setter in ToolCare tool management systems: 15 years' experience, 1,000 installed systems, new Version 2.1
- ToolCareSecure: 100% ability to deliver – guaranteed!
- ToolCareConcept: order special tools like standard production items
- E-shop: simple ordering process at any time of the day or night
- Next day delivery available to any where in USA

LOGISTICS

Application technology

- **40 years' experience in milling technology data**
- **ToolSchool: 12 years of added value thanks to extensive Know-how transfer and training for more than 18,000 clients**
- **Accurate and dependable application information**
  for each individual FRAISA tool
- **ToolExpert: online access to application data for all FRAISA milling tools and strategies**
- **Unique presentation of application data directly in the catalogue**

APPLICATION

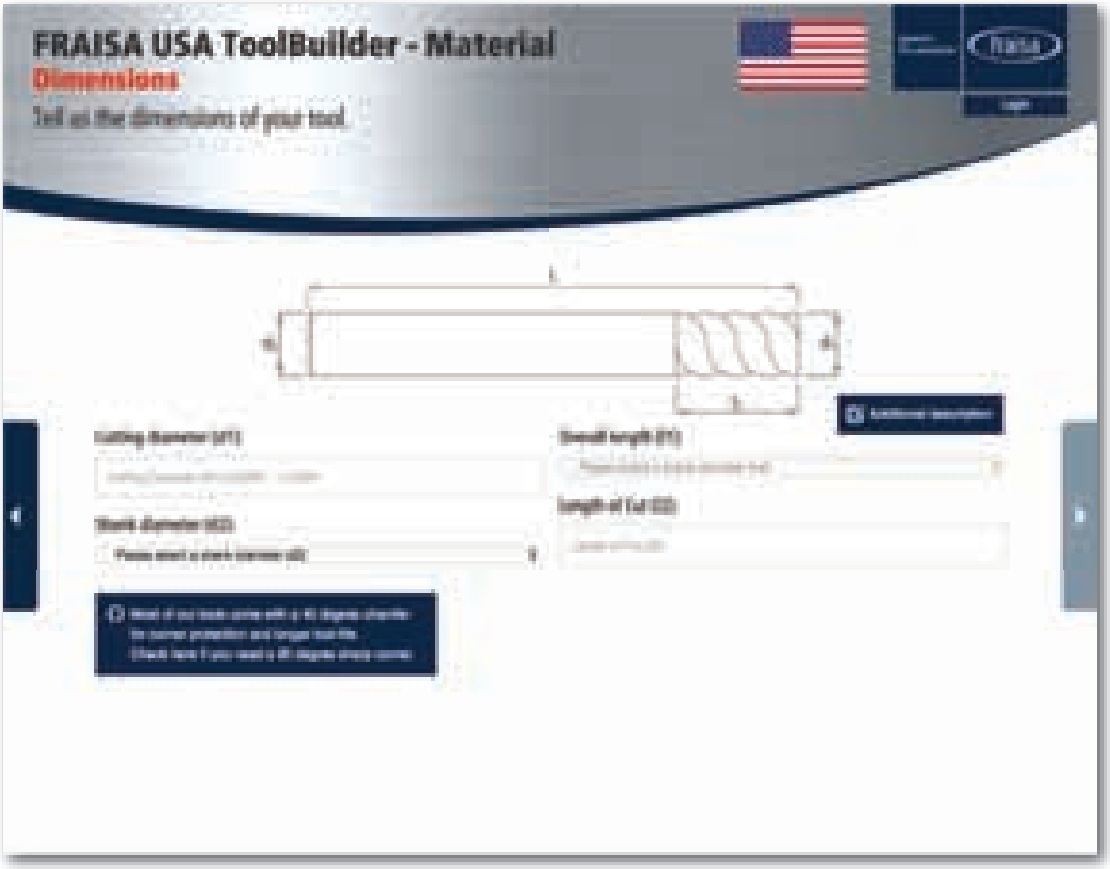
Personal customer contact

- **Outstanding expertise thanks to regular and intensive professional training of our own customer service representatives**
- **Customer contact exclusively through in-house representatives and FRAISA-qualified sales partners**
- **FRAISA customer service representatives are experienced milling technology specialists**
- **National sales and distribution companies in Germany, France, Italy, Hungary, the USA, China and Switzerland**
- **Short communication channels from the customer service representatives to company management**
  thanks to our medium-sized structure and transparent organisation

CUSTOMER CONTACT

Create a tool for your specific needs on

www.fraisatoolbuilder.com



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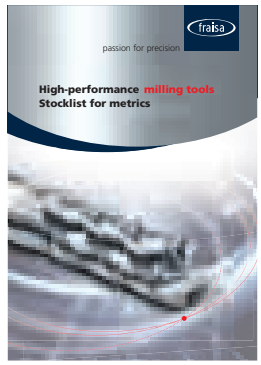

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inch

metric

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Square end mills for steel, stainless steel, titanium, nickel alloys, etc.

Square end mills for steel, stainless steel, titanium, nickel alloys, etc.

Square Tools for Roughing

5976	NX-FP	X-Generation	X	Roughing / Finishing	d_1 1/4"- 3/4" 45°	Steel < 24-42	Steel 42-54	Inox Stainless	21
5979	NX-FP	X-Generation	X	Roughing / Finishing	d_1 1/4"- 3/4" 45°	Steel < 24-42	Steel 42-54	Inox Stainless	23
5973	NX-FP	X-Generation	X	Roughing / Finishing	d_1 1/4"- 3/4" 45°	Steel < 24-42	Steel 42-54	Inox Stainless	25
5974	NX-FP	X-Generation	X	Roughing / Finishing	d_1 1/4"- 3/4" 45°	Steel < 24-42	Steel 42-54	Inox Stainless	27
15979	SupraCarb	Base-X	B	Roughing / Finishing	d_1 3/8"- 3/4" 45°	Steel < 24-34	Steel 34-42	Inox Stainless	29
9609	Cut-X RF		HSS	Roughing / Finishing	d_1 1/4"-1" 45°	Steel < 24-34	Inox Stainless	Ti Titanium	31

Square Tools for Roughing/Finishing

15880 / 15980	ZX-NV	X-Generation	X	Roughing / Finishing	d_1 3/16"- 3/4" r	Nickel Alloys	Manga-nese Steels	HSS	33
15881 / 15981	ZX-NV5	X-Generation	X	Roughing / Finishing	d_1 1/4"- 3/4" r	Nickel Alloys	Manga-nese Steels	HSS	35
5838 / 5938	NB-VD	X-Generation	X	Roughing / Finishing	d_1 3/16"- 1" 45°	Steel <24-42	Inox Stainless	Ti Titanium	37
15836 / 15936	NB-NVD	X-Generation	X	Roughing / Finishing	d_1 3/16"- 1" 45°	Steel <24-42	Inox Stainless	Ti Titanium	39
5939	NB-NVD	X-Generation	X	Roughing / Finishing	d_1 3/8"- 3/4" 45°	Steel <24-42	Inox Stainless	Ti Titanium	41
5836 / 5936	NB-NVD	X-Generation	X	Roughing / Finishing	d_1 1/8"- 1" 45°	Steel <24-42	Inox Stainless	Ti Titanium	43
5833 / 5933	NB-NVD new!	X-Generation	X	Roughing / Finishing	d_1 1/8"- 1/2" 90°	Steel <24-42	Inox Stainless	Ti Titanium	45
5837 / 5937	NB-NVD	X-Generation	X	Roughing / Finishing	d_1 1/8"- 1" 45°	Steel <24-42	Inox Stainless	Ti Titanium	47
5832 / 5932	NB-NVD new!	X-Generation	X	Roughing / Finishing	d_1 1/4"- 1" 45°	Steel <24-42	Inox Stainless	Ti Titanium	49

Square end mills for steel, stainless steel, titanium, nickel alloys, etc.

Square Tools for Roughing/Finishing

5831 / 5931	NB-NVD new!	X-Generation X	Roughing / Finishing	d_1 1/4" - 3/4" 45°	Steel <24-42	Inox Stainless	Ti Titanium	51
5834 / 5934	NB-NVD5 new!	X-Generation X	Roughing / Finishing	d_1 1/4" - 3/4" 45°	Steel <24-42	Inox Stainless	Ti Titanium	53
15822 / 15922	NX-NVD	X-Generation X	Roughing / Finishing	d_1 3/16" - 1" 45°	Steel 24-48	Cast Iron	Steel 48-54	55
15824 / 15924	NX-NVD	X-Generation X	Roughing / Finishing	d_1 1/8" - 1" 45°	Steel 24-48	Cast Iron	Steel 48-54	57
15823 / 15923	NX-NVD	X-Generation X	Roughing / Finishing	d_1 3/16" - 3/4" 45°	Steel 24-48	Cast Iron	Steel 48-54	59
5949	HX	X-Generation X	Roughing / Finishing	d_1 1/32" - 5/8" 45°	Steel 48-54	Steel 42-48	Steel 54-60+	61
5948	HX	X-Generation X	Roughing / Finishing	d_1 1/8" - 3/4" 45°	Steel 48-54	Steel 42-48	Steel 54-60+	65
5958	HX	X-Generation X	Roughing / Finishing	d_1 1/4" - 5/8" 45°	Steel 48-54	Steel 42-48	Steel 54-60+	67
5947	HX-H	X-Generation X	Roughing / Finishing	d_1 1/8" - 1/2" 45°	Steel 48-60+	Steel 42-48		69
5925	NX-V	X-Generation X	Roughing / Finishing	d_1 1/8" - 3/4" 45°	Steel 24-42	Steel 42-48	Inox Stainless	71
5927	NX-NV	X-Generation X	Roughing / Finishing	d_1 1/4" - 5/8" 45°	Steel 24-42	Steel 42-48	Inox Stainless	73
15925	NX-V	X-Generation X	Roughing / Finishing	d_1 1/4" - 3/4" 45°	Steel 24-42	Steel 42-48	Inox Stainless	75
15913	SX	X-Generation X	Roughing / Finishing	d_1 1/8" - 5/8" 45°	Inox Stainless	Steel <24	Nickel Alloys	77
5918	SX	X-Generation X	Roughing / Finishing	d_1 1/4" - 5/8" 45°	Inox Stainless	Steel <24	Nickel Alloys	79
15914	SX	X-Generation X	Roughing / Finishing	d_1 1/8" - 5/8" 45°	Inox Stainless	Steel <24	Nickel Alloys	81

Square end mills for steel, stainless steel, titanium, nickel alloys, etc.

Square Tools for Roughing/Finishing

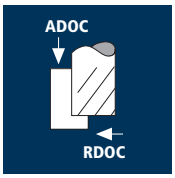
15991	**Vario**	Base-X **B**	Roughing / Finishing	d_1 1/8" - 3/4" 45°	**Steel** <24-34	**Inox** Stainless	**Ti** Titanium	83
15990	**Vario**	Base-X **B**	Roughing / Finishing	d_1 1/8" - 1" 45°	**Steel** <24-34	**Inox** Stainless	**Ti** Titanium	85
15994	**Vario** **new!**	Base-X **B**	Roughing / Finishing	d_1 1/8" - 1" 45°	**Steel** <24-34	**Inox** Stainless	**Ti** Titanium	87
15993	**Vario**	Base-X **B**	Roughing / Finishing	d_1 1/8" - 1" 45°	**Steel** <24-34	**Inox** Stainless	**Ti** Titanium	89
15995	**Vario 5**	Base-X **B**	Roughing / Finishing	d_1 1/4" - 1" 45°	**Steel** <24-34	**Inox** Stainless	**Ti** Titanium	91
5840 / 5940		Base-X **B**	Roughing / Finishing	d_1 1/8" - 1" 45°	**Steel** <24-42	**Inox** Stainless	**Ti** Titanium	93
5945		Base-X **B**	Roughing / Finishing	d_1 1/8" - 1" 45°	**Steel** <24-42	**Inox** Stainless	**Ti** Titanium	95
45811		Favora **F**	Roughing / Finishing	d_1 1/8" - 1" 90°	**Steel** <24-34	**Steel** 34-42	**Inox** Stainless	97
45812		Favora **F**	Roughing / Finishing	d_1 1/8" - 3/4" 90°	**Steel** <24-34	**Steel** 34-42	**Inox** Stainless	99

Square end mills for steel, stainless steel, titanium, nickel alloys, etc.

Square Tools for Finishing

15850		Multicut XF	X-Generation X	Roughing / Finishing	d_1 1/8″ - 1″ 45°	Steel <24-48	Inox Stainless	Ti Titanium	101
15851		Multicut XF	X-Generation X	Roughing / Finishing	d_1 3/8″ - 1 1/4″ 45°	Steel <24-48	Inox Stainless	Ti Titanium	103
15852		Multicut XF	X-Generation X	Roughing / Finishing	d_1 1/2″ - 1 1/4″ 45°	Steel <24-48	Inox Stainless	Ti Titanium	105
5855			X-Generation X	Roughing / Finishing	d_1 1/4″ - 3/4″ 45°	Steel <24	Inox Stainless	Nickel Alloys	107
5866		Multicut HX	X-Generation X	Roughing / Finishing	d_1 1/8″ - 3/4″ 45°	Steel 54-60+	Cast Iron	Steel 42-54	109
15866		Multicut HX	X-Generation X	Roughing / Finishing	d_1 1/4″ - 3/4″ 45°	Steel 54-60+	Cast Iron	Steel 42-54	111
5860		Multicut N	Base-X B	Roughing / Finishing	d_1 1/4″ - 1″ 45°	Steel <24	Steel 24-42	Inox Stainless	113
5865		Multicut N	Base-X B	Roughing / Finishing	d_1 1/2″ - 1″ 45°	Steel <24	Steel 24-42	Inox Stainless	115
5868		Multicut N	Base-X B	Roughing / Finishing	d_1 5/8″ - 3/4″ 45°	Steel <24	Steel 24-42	Inox Stainless	117

5976



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	490	0.0012	0.250	0.192	7490	36	1.726
	5/16	4	490	0.0016	0.313	0.241	5990	38	2.887
	7/16	4	490	0.0022	0.438	0.331	4280	38	5.454
	1/2	4	490	0.0025	0.500	0.383	3740	37	7.162
	5/8	4	490	0.0025	0.625	0.497	2990	30	9.288
	3/4	4	490	0.0030	0.750	0.621	2500	30	13.973
Steel 34 -42 HRC	1/4	4	395	0.0012	0.250	0.192	6040	29	1.392
	5/16	4	395	0.0016	0.313	0.241	4830	31	2.328
	7/16	4	395	0.0022	0.438	0.331	3450	30	4.397
	1/2	4	395	0.0025	0.500	0.383	3020	30	5.793
	5/8	4	395	0.0025	0.625	0.497	2410	24	7.486
	3/4	4	395	0.0030	0.750	0.621	2010	24	11.234
Stainless Steel 303 304	1/4	4	230	0.0012	0.250	0.192	3510	17	0.809
	5/16	4	230	0.0016	0.313	0.241	2810	18	1.354
	7/16	4	230	0.0022	0.438	0.331	2010	18	2.561
	1/2	4	230	0.0025	0.500	0.383	1760	18	3.370
	5/8	4	230	0.0025	0.625	0.497	1410	14	4.380
	3/4	4	230	0.0030	0.750	0.621	1170	14	6.539
Titanium Alloys Ti6Al4V	1/4	4	165	0.0012	0.250	0.192	2520	12	0.581
	5/16	4	165	0.0016	0.313	0.241	2020	13	0.974
	7/16	4	165	0.0022	0.438	0.331	1440	13	1.835
	1/2	4	165	0.0025	0.500	0.383	1260	13	2.413
	5/8	4	165	0.0025	0.625	0.497	1010	10	3.137
	3/4	4	165	0.0030	0.750	0.621	840	10	4.695

5976

Slotting

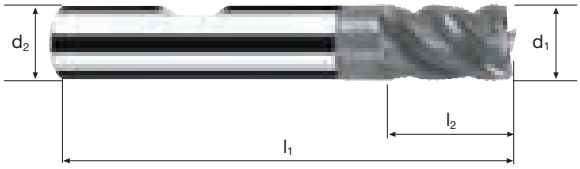
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24-34 HRC	1/4	4	330	0.0012	0.241	0.250	5040	24	1.458
	5/16	4	330	0.0016	0.301	0.313	4030	26	2.426
	7/16	4	330	0.0022	0.413	0.438	2880	26	4.579
	1/2	4	330	0.0021	0.479	0.500	2520	21	5.070
	5/8	4	330	0.0021	0.621	0.625	2020	17	6.586
	3/4	4	330	0.0022	0.776	0.750	1680	15	8.604
Steel 34-42 HRC	1/4	4	260	0.0012	0.241	0.250	3970	19	1.148
	5/16	4	260	0.0016	0.301	0.313	3180	20	1.914
	7/16	4	260	0.0022	0.413	0.438	2270	20	3.609
	1/2	4	260	0.0025	0.479	0.500	1990	20	4.766
	5/8	4	260	0.0025	0.621	0.625	1590	16	6.171
	3/4	4	260	0.0030	0.776	0.750	1320	16	9.219
Stainless Steel 303 304	1/4	4	165	0.0012	0.241	0.250	2520	12	0.729
	5/16	4	165	0.0016	0.301	0.313	2020	13	1.216
	7/16	4	165	0.0022	0.413	0.438	1440	13	2.290
	1/2	4	165	0.0025	0.479	0.500	1260	13	3.018
	5/8	4	165	0.0025	0.621	0.625	1010	10	3.920
	3/4	4	165	0.0030	0.776	0.750	840	10	5.867
Titanium Alloys Ti6Al4V	1/4	4	130	0.0012	0.241	0.250	1990	10	0.576
	5/16	4	130	0.0016	0.301	0.313	1590	10	0.957
	7/16	4	130	0.0022	0.413	0.438	1140	10	1.813
	1/2	4	130	0.0025	0.479	0.500	990	10	2.371
	5/8	4	130	0.0025	0.621	0.625	790	8	3.066
	3/4	4	130	0.0030	0.776	0.750	660	8	4.609

X-Generation Stub Length NX-FP

HSS | Favora® | Base-X | X-Generation

HM XR	Helix 45° Rake 0°

45°



Performance roughing

Performance finishing

Machines the following materials:

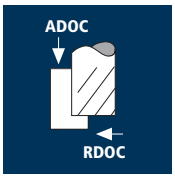
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC			Stainless	Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5976312	1/4	1/4	2 1/4	3/8	0.004	4	$57.60	
P5976372	5/16	5/16	2 1/4	7/16	0.004	4	$81.90	
P5976432*	3/8	3/8	2 3/4	1/2	0.006	4	$99.90	•
P5976530*	1/2	1/2	3	5/8	0.006	4	$126.90	•
P5976605*	5/8	5/8	3 1/4	3/4	0.006	4	$216.20	•
P5976652*	3/4	3/4	3 1/2	1	0.006	4	$315.50	•

*** with clamping flat**

5979



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	490	0.0010	0.375	0.150	7490	30	1.685
	5/16	4	490	0.0012	0.469	0.186	5990	29	2.508
	3/8	4	490	0.0019	0.563	0.213	4990	38	4.548
	1/2	4	490	0.0023	0.750	0.302	3740	34	7.793
	5/8	4	490	0.0021	0.938	0.388	2990	25	9.141
	3/4	4	490	0.0022	1.125	0.461	2500	22	11.410
Steel 34 - 42 HRC	1/4	4	395	0.0010	0.375	0.150	6040	24	1.359
	5/16	4	395	0.0012	0.469	0.186	4830	23	2.022
	3/8	4	395	0.0019	0.563	0.213	4020	31	3.664
	1/2	4	395	0.0023	0.750	0.302	3020	28	6.293
	5/8	4	395	0.0021	0.938	0.388	2410	20	7.368
	3/4	4	395	0.0022	1.125	0.461	2010	18	9.173
Stainless Steel 303 304	1/4	4	230	0.0010	0.375	0.150	3510	14	0.790
	5/16	4	230	0.0012	0.469	0.186	2810	13	1.177
	3/8	4	230	0.0019	0.563	0.213	2340	18	2.133
	1/2	4	230	0.0023	0.750	0.302	1760	16	3.667
	5/8	4	230	0.0021	0.938	0.388	1410	12	4.311
	3/4	4	230	0.0022	1.125	0.461	1170	10	5.340
Titanium Alloys Ti6Al4V	1/4	4	165	0.0010	0.375	0.150	2520	10	0.567
	5/16	4	165	0.0012	0.469	0.186	2020	10	0.846
	3/8	4	165	0.0019	0.563	0.213	1680	13	1.531
	1/2	4	165	0.0023	0.750	0.302	1260	12	2.626
	5/8	4	165	0.0021	0.938	0.388	1010	8	3.088
	3/4	4	165	0.0022	1.125	0.461	840	7	3.834

5979

Slotting

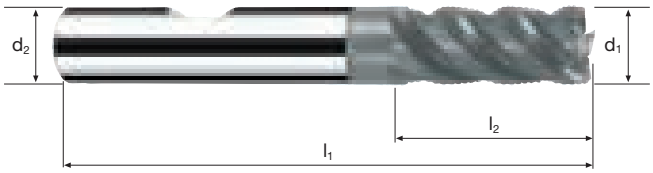
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	330	0.0008	0.374	0.250	5040	16	1.508
	5/16	4	330	0.0010	0.465	0.313	4030	16	2.342
	3/8	4	330	0.0011	0.532	0.375	3360	15	2.949
	1/2	4	330	0.0017	0.754	0.500	2520	17	6.460
	5/8	4	330	0.0020	0.970	0.625	2020	16	9.797
	3/4	4	330	0.0021	1.152	0.750	1680	14	12.193
Steel 34 - 42 HRC	1/4	4	260	0.0008	0.374	0.250	3970	13	1.188
	5/16	4	260	0.0010	0.465	0.313	3180	13	1.848
	3/8	4	260	0.0011	0.532	0.375	2650	12	2.326
	1/2	4	260	0.0017	0.754	0.500	1990	14	5.102
	5/8	4	260	0.0020	0.970	0.625	1590	13	7.712
	3/4	4	260	0.0021	1.152	0.750	1320	11	9.580
Stainless Steel 303 304	1/4	4	165	0.0008	0.374	0.250	2520	8	0.754
	5/16	4	165	0.0010	0.465	0.313	2020	8	1.174
	3/8	4	165	0.0011	0.532	0.375	1680	7	1.475
	1/2	4	165	0.0017	0.754	0.500	1260	9	3.230
	5/8	4	165	0.0020	0.970	0.625	1010	8	4.899
	3/4	4	165	0.0021	1.152	0.750	840	7	6.096
Titanium Alloys Ti6Al4V	1/4	4	130	0.0008	0.374	0.250	1990	6	0.595
	5/16	4	130	0.0010	0.465	0.313	1590	6	0.924
	3/8	4	130	0.0011	0.532	0.375	1320	6	1.159
	1/2	4	130	0.0017	0.754	0.500	990	7	2.538
	5/8	4	130	0.0020	0.970	0.625	790	6	3.832
	3/4	4	130	0.0021	1.152	0.750	660	6	4.790

X-Generation Standard Length NX-FP

HSS | Favora® | Base-X | X-Generation

HM XR	Helix 45° Rake 0°

45°



Performance roughing

Performance finishing

Machines the following materials:

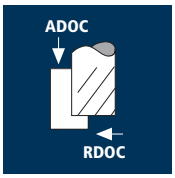
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC			Stainless	Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5979312	1/4	1/4	2 1/2	3/4	0.004	4	$62.00	
P5979372	5/16	5/16	2 1/2	1	0.004	4	$87.80	
P5979432*	3/8	3/8	3	1	0.006	4	$107.80	•
P5979530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$134.80	•
P5979605*	5/8	5/8	3 1/2	1 1/4	0.006	4	$232.80	•
P5979652*	3/4	3/4	4	1 1/2	0.006	4	$339.20	•

*** with clamping flat**

5973



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	490	0.0012	0.500	0.039	7490	36	0.701
	5/16	4	490	0.0016	0.625	0.056	5990	38	1.342
	3/8	4	490	0.0024	0.750	0.069	4990	48	2.479
	1/2	4	490	0.0033	1.000	0.094	3740	49	4.641
	5/8	4	490	0.0027	1.250	0.118	2990	32	4.763
	3/4	4	490	0.0022	1.500	0.144	2500	22	4.752
Steel 34 - 42 HRC	1/4	4	395	0.0012	0.500	0.039	6040	29	0.565
	5/16	4	395	0.0016	0.625	0.056	4830	31	1.082
	3/8	4	395	0.0024	0.750	0.069	4020	39	1.997
	1/2	4	395	0.0033	1.000	0.094	3020	40	3.747
	5/8	4	395	0.0027	1.250	0.118	2410	26	3.839
	3/4	4	395	0.0022	1.500	0.144	2010	18	3.821
Stainless Steel 303 304	1/4	4	230	0.0012	0.500	0.039	3510	17	0.329
	5/16	4	230	0.0016	0.625	0.056	2810	18	0.629
	3/8	4	230	0.0024	0.750	0.069	2340	22	1.163
	1/2	4	230	0.0033	1.000	0.094	1760	23	2.184
	5/8	4	230	0.0027	1.250	0.118	1410	15	2.246
	3/4	4	230	0.0022	1.500	0.144	1170	10	2.224
Titanium Alloys Ti6Al4V	1/4	4	165	0.0012	0.500	0.039	2520	12	0.236
	5/16	4	165	0.0016	0.625	0.056	2020	13	0.452
	3/8	4	165	0.0024	0.750	0.069	1680	16	0.835
	1/2	4	165	0.0033	1.000	0.094	1260	17	1.563
	5/8	4	165	0.0027	1.250	0.118	1010	11	1.609
	3/4	4	165	0.0022	1.500	0.144	840	7	1.597

5973

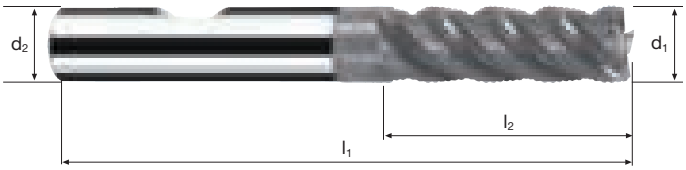
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	330	0.0008	0.138	0.250	5040	16	0.556
	5/16	4	330	0.0010	0.197	0.313	4030	16	0.992
	3/8	4	330	0.0013	0.241	0.375	3360	17	1.579
	1/2	4	330	0.0017	0.330	0.500	2520	17	2.827
	5/8	4	330	0.0020	0.413	0.625	2020	16	4.171
	3/4	4	330	0.0019	0.505	0.750	1680	13	4.836
Steel 34 - 42 HRC	1/4	4	260	0.0008	0.138	0.250	3970	13	0.438
	5/16	4	260	0.0010	0.197	0.313	3180	13	0.783
	3/8	4	260	0.0013	0.241	0.375	2650	14	1.245
	1/2	4	260	0.0017	0.330	0.500	1990	14	2.233
	5/8	4	260	0.0020	0.413	0.625	1590	13	3.283
	3/4	4	260	0.0019	0.505	0.750	1320	10	3.800
Stainless Steel 303 304	1/4	4	165	0.0008	0.138	0.250	2520	8	0.278
	5/16	4	165	0.0010	0.197	0.313	2020	8	0.497
	3/8	4	165	0.0013	0.241	0.375	1680	9	0.790
	1/2	4	165	0.0017	0.330	0.500	1260	9	1.414
	5/8	4	165	0.0020	0.413	0.625	1010	8	2.086
	3/4	4	165	0.0019	0.505	0.750	840	6	2.418
Titanium Alloys Ti6Al4V	1/4	4	130	0.0008	0.138	0.250	1990	6	0.220
	5/16	4	130	0.0010	0.197	0.313	1590	6	0.393
	3/8	4	130	0.0013	0.241	0.375	1320	7	0.620
	1/2	4	130	0.0017	0.330	0.500	990	7	1.111
	5/8	4	130	0.0020	0.413	0.625	790	6	1.631
	3/4	4	130	0.0019	0.505	0.750	660	5	1.900

X-Generation Long Length NX-FP

HSS | Favora® | Base-X | X-Generation

HM XR	Helix 45° Rake 0°



Performance roughing

Performance finishing

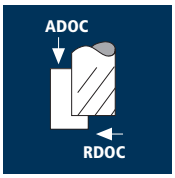
Machines the following materials: Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC			Stainless	Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5973312	1/4	1/4	3 1/2	1 1/2	0.004	4	$90.40	
P5973372	5/16	5/16	3 1/2	1 3/4	0.004	4	$126.90	
P5973432*	3/8	3/8	4	2	0.006	4	$156.90	•
P5973530*	1/2	1/2	4 1/2	2 1/4	0.006	4	$196.40	•
P5973605*	5/8	5/8	5	2 1/2	0.006	4	$337.50	•
P5973652*	3/4	3/4	5	2 1/2	0.006	4	$491.30	•

*** with clamping flat**

5974



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	490	0.0012	0.375	0.059	7490	36	0.795
	5/16	4	490	0.0016	0.469	0.084	5990	38	1.510
	3/8	4	490	0.0024	0.563	0.103	4990	48	2.778
	1/2	4	490	0.0033	0.750	0.141	3740	49	5.221
	5/8	4	490	0.0027	0.938	0.177	2990	32	5.361
	3/4	4	490	0.0022	1.125	0.216	2500	22	5.346
Steel 34 - 42 HRC	1/4	4	395	0.0012	0.375	0.059	6040	29	0.641
	5/16	4	395	0.0016	0.469	0.084	4830	31	1.218
	3/8	4	395	0.0024	0.563	0.103	4020	39	2.238
	1/2	4	395	0.0033	0.750	0.141	3020	40	4.216
	5/8	4	395	0.0027	0.938	0.177	2410	26	4.321
	3/4	4	395	0.0022	1.125	0.216	2010	18	4.298
Stainless Steel 303 304	1/4	4	230	0.0012	0.375	0.059	3510	17	0.373
	5/16	4	230	0.0016	0.469	0.084	2810	18	0.708
	3/8	4	230	0.0024	0.563	0.103	2340	22	1.303
	1/2	4	230	0.0033	0.750	0.141	1760	23	2.457
	5/8	4	230	0.0027	0.938	0.177	1410	15	2.528
	3/4	4	230	0.0022	1.125	0.216	1170	10	2.502
Titanium Alloys Ti6Al4V	1/4	4	165	0.0012	0.375	0.059	2520	12	0.268
	5/16	4	165	0.0016	0.469	0.084	2020	13	0.509
	3/8	4	165	0.0024	0.563	0.103	1680	16	0.935
	1/2	4	165	0.0033	0.750	0.141	1260	17	1.759
	5/8	4	165	0.0027	0.938	0.177	1010	11	1.811
	3/4	4	165	0.0022	1.125	0.216	840	7	1.796

5974

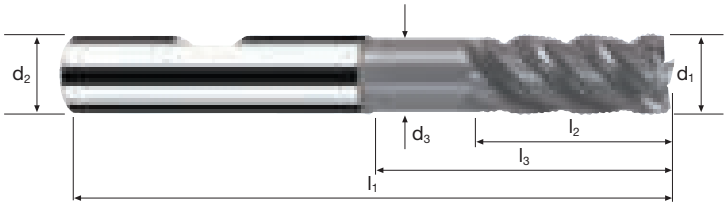
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34	1/4	4	330	0.0008	0.158	0.250	5040	16	0.637
	5/16	4	330	0.0010	0.225	0.313	4030	16	1.133
	3/8	4	330	0.0013	0.276	0.375	3360	17	1.808
	1/2	4	330	0.0017	0.377	0.500	2520	17	3.230
	5/8	4	330	0.0020	0.472	0.625	2020	16	4.767
	3/4	4	330	0.0019	0.577	0.750	1680	13	5.525
Steel 24 - 34 HRC	1/4	4	260	0.0008	0.158	0.250	3970	13	0.502
	5/16	4	260	0.0010	0.225	0.313	3180	13	0.894
	3/8	4	260	0.0013	0.276	0.375	2650	14	1.426
	1/2	4	260	0.0017	0.377	0.500	1990	14	2.551
	5/8	4	260	0.0020	0.472	0.625	1590	13	3.752
	3/4	4	260	0.0019	0.577	0.750	1320	10	4.341
Stainless Steel 303 304	1/4	4	165	0.0008	0.158	0.250	2520	8	0.319
	5/16	4	165	0.0010	0.225	0.313	2020	8	0.568
	3/8	4	165	0.0013	0.276	0.375	1680	9	0.904
	1/2	4	165	0.0017	0.377	0.500	1260	9	1.615
	5/8	4	165	0.0020	0.472	0.625	1010	8	2.384
	3/4	4	165	0.0019	0.577	0.750	840	6	2.763
Titanium Alloys Ti6Al4V	1/4	4	130	0.0008	0.158	0.250	1990	6	0.252
	5/16	4	130	0.0010	0.225	0.313	1590	6	0.447
	3/8	4	130	0.0013	0.276	0.375	1320	7	0.710
	1/2	4	130	0.0017	0.377	0.500	990	7	1.269
	5/8	4	130	0.0020	0.472	0.625	790	6	1.864
	3/4	4	130	0.0019	0.577	0.750	660	5	2.171

X-Generation Long Reach NX-FP

HSS | Favora® | Base-X | X-Generation

HM XR	Helix 45° Rake 0°
45°	



Performance roughing

Performance finishing

Machines the following materials:

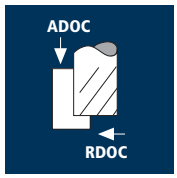
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC			Stainless	Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN									
P5974312	1/4	1/4	0.229	3 1/2	3/4	2	0.004	4	$81.10	
P5974372	5/16	5/16	0.285	3 1/2	1	2	0.004	4	$114.00	
P5974432*	3/8	3/8	0.344	4	1	2 1/4	0.006	4	$141.10	•
P5974530*	1/2	1/2	0.459	4 1/2	1 1/4	2 1/2	0.006	4	$177.70	•
P5974605*	5/8	5/8	0.575	5	1 1/4	2 3/4	0.006	4	$302.50	•
P5974652*	3/4	3/4	0.709	5	1 1/2	2 3/4	0.006	4	$443.70	•

*** with clamping flat**

15979



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/8	4	390	0.0019	0.375	0.281	3970	30	3.182
	1/2	4	390	0.0025	0.500	0.375	2980	30	5.588
	5/8	4	390	0.0025	0.625	0.469	2380	24	6.973
	3/4	4	390	0.0030	0.750	0.563	1990	24	10.074
Steel 34 - 42 HRC	3/8	4	310	0.0019	0.375	0.281	3160	24	2.533
	1/2	4	310	0.0025	0.500	0.375	2370	24	4.444
	5/8	4	310	0.0025	0.625	0.469	1890	19	5.537
	3/4	4	310	0.0030	0.750	0.563	1580	19	7.999
Stainless Steel 303 304	3/8	4	180	0.0019	0.375	0.281	1830	14	1.467
	1/2	4	180	0.0025	0.500	0.375	1380	14	2.588
	5/8	4	180	0.0025	0.625	0.469	1100	11	3.223
	3/4	4	180	0.0030	0.750	0.563	920	11	4.658
Titanium Alloys Ti6Al4V	3/8	4	130	0.0019	0.375	0.281	1320	10	1.058
	1/2	4	130	0.0025	0.500	0.375	990	10	1.856
	5/8	4	130	0.0025	0.625	0.469	790	8	2.314
	3/4	4	130	0.0030	0.750	0.563	660	8	3.341

15979

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/8	4	260	0.0017	0.300	0.375	2650	18	2.027
	1/2	4	260	0.0022	0.400	0.500	1990	18	3.502
	5/8	4	260	0.0025	0.500	0.625	1590	16	4.969
	3/4	4	260	0.0027	0.600	0.750	1320	14	6.415
Steel 34 - 42 HRC	3/8	4	200	0.0017	0.300	0.375	2040	14	1.561
	1/2	4	200	0.0022	0.400	0.500	1530	13	2.693
	5/8	4	200	0.0025	0.500	0.625	1220	12	3.813
	3/4	4	200	0.0027	0.600	0.750	1020	11	4.957
Stainless Steel 303 304	3/8	4	135	0.0017	0.300	0.375	1380	9	1.056
	1/2	4	135	0.0022	0.400	0.500	1030	9	1.813
	5/8	4	135	0.0025	0.500	0.625	830	8	2.594
	3/4	4	135	0.0027	0.600	0.750	690	7	3.353
Titanium Alloys Ti6Al4V	3/8	4	105	0.0017	0.300	0.375	1070	7	0.819
	1/2	4	105	0.0022	0.400	0.500	800	7	1.408
	5/8	4	105	0.0025	0.500	0.625	640	6	2.000
	3/4	4	105	0.0027	0.600	0.750	530	6	2.576

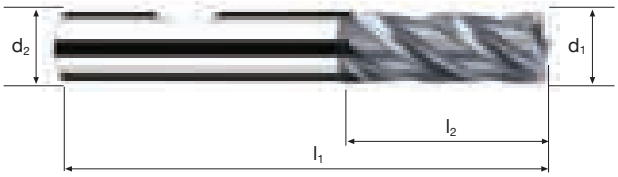
Base-X Standard Length SupraCarb

HSS | Favora® | Base-X B | X-Generation

HM MG10

Helix **38°**
Rake **0°**

45°



Performance roughing

Performance finishing

Machines the following materials:

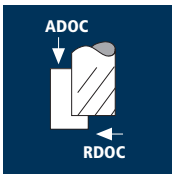
Best = Good =

Steel < 24 HRC | **Steel** 24 - 34 HRC | **Steel** 34 - 42 HRC | **Stainless** | **Titanium**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15979432*	3/8	3/8	3	1	0.006	4	$88.00	•
P15979530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$109.90	•
P15979605*	5/8	5/8	3 1/2	1 1/4	0.006	4	$215.50	•
P15979652*	3/4	3/4	4	1 1/2	0.006	4	$276.40	•

*** with clamping flat**

9609



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	210	0.0010	0.250	0.100	3210	12.8	0.320
	5/16	4	210	0.0014	0.313	0.124	2565	14.4	0.559
	3/8	4	210	0.0017	0.375	0.142	2140	14.6	0.777
	7/16	4	210	0.0020	0.438	0.165	1835	14.7	1.062
	1/2	4	210	0.0029	0.500	0.201	1605	18.6	1.869
	5/8	4	210	0.0037	0.625	0.259	1285	19.0	3.076
	3/4	4	210	0.0045	0.750	0.310	1070	19.3	4.487
	1	6	210	0.0057	1.000	0.414	800	27.4	11.344
Steel 24 - 34 HRC	1/4	4	175	0.0010	0.250	0.100	2675	10.7	0.268
	5/16	4	175	0.0012	0.313	0.124	2140	12.0	0.466
	3/8	4	175	0.0019	0.375	0.142	1785	12.1	0.644
	7/16	4	175	0.0022	0.438	0.165	1530	12.2	0.882
	1/2	4	175	0.0023	0.500	0.201	1335	15.5	1.558
	5/8	4	175	0.0021	0.625	0.259	1070	15.8	2.558
	3/4	4	175	0.0022	0.750	0.310	890	16.0	3.720
	1	6	175	0.0057	1.000	0.414	670	22.9	9.481
Stainless Steel 303 304	1/4	4	80	0.0010	0.250	0.100	1220	4.9	0.123
	5/16	4	80	0.0012	0.313	0.124	980	5.5	0.213
	3/8	4	80	0.0019	0.375	0.142	815	5.5	0.293
	7/16	4	80	0.0022	0.438	0.165	700	5.6	0.405
	1/2	4	80	0.0023	0.500	0.201	610	7.1	0.714
	5/8	4	80	0.0021	0.625	0.259	490	7.3	1.182
	3/4	4	80	0.0022	0.750	0.310	405	7.3	1.697
	1	6	80	0.0057	1.000	0.414	305	10.4	4.306
Cast Iron	1/4	4	165	0.0010	0.250	0.100	2520	10.1	0.253
	5/16	4	165	0.0012	0.313	0.124	2015	11.3	0.439
	3/8	4	165	0.0019	0.375	0.142	1680	11.4	0.607
	7/16	4	165	0.0022	0.438	0.165	1440	11.5	0.831
	1/2	4	165	0.0023	0.500	0.201	1260	14.6	1.467
	5/8	4	165	0.0021	0.625	0.259	1010	14.9	2.412
	3/4	4	165	0.0022	0.750	0.310	840	15.1	3.511
	1	6	165	0.0057	1.000	0.414	630	21.5	8.901

9609

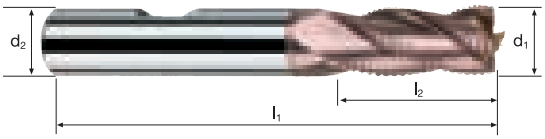
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	190	0.0008	0.249	0.250	2905	9.0	0.560
	5/16	4	190	0.0010	0.310	0.313	2320	9.0	0.873
	3/8	4	190	0.0013	0.354	0.375	1935	10.0	1.327
	7/16	4	190	0.0015	0.413	0.438	1660	10.0	1.809
	1/2	4	190	0.0023	0.503	0.500	1450	13.0	3.270
	5/8	4	190	0.0027	0.323	0.625	1160	13.0	2.624
	3/4	4	190	0.0037	0.377	0.750	970	14.0	3.959
	1	6	190	0.0043	0.518	1.000	725	19.0	9.842
Steel 24 - 34 HRC	1/4	4	155	0.0008	0.249	0.250	2370	8.0	0.498
	5/16	4	155	0.0010	0.310	0.313	1895	8.0	0.776
	3/8	4	155	0.0013	0.354	0.375	1580	8.0	1.062
	7/16	4	155	0.0015	0.413	0.438	1335	8.0	1.447
	1/2	4	155	0.0023	0.503	0.500	1185	11.0	2.767
	5/8	4	155	0.0027	0.323	0.625	945	10.0	2.019
	3/4	4	155	0.0037	0.377	0.750	790	12.0	3.393
	1	6	155	0.0043	0.518	1.000	590	15.0	7.770
Stainless Steel 303 304	1/4	4	70	0.0008	0.249	0.250	1070	3.0	0.187
	5/16	4	70	0.0010	0.310	0.313	855	3.0	0.291
	3/8	4	70	0.0013	0.354	0.375	715	4.0	0.531
	7/16	4	70	0.0015	0.413	0.438	610	4.0	0.724
	1/2	4	70	0.0023	0.503	0.500	535	5.0	1.258
	5/8	4	70	0.0027	0.323	0.625	430	5.0	1.009
	3/4	4	70	0.0037	0.377	0.750	355	5.0	1.414
	1	6	70	0.0043	0.518	1.000	265	7.0	3.626
Cast Iron	1/4	4	140	0.0008	0.249	0.250	2140	7.0	0.436
	5/16	4	140	0.0010	0.310	0.313	1710	7.0	0.679
	3.8	4	140	0.0013	0.354	0.375	1425	7.0	0.929
	7/16	4	140	0.0015	0.413	0.438	1220	7.0	1.266
	1/2	4	140	0.0023	0.503	0.500	1070	10.0	2.515
	5/8	4	140	0.0027	0.323	0.625	855	9.0	1.817
	3/4	4	140	0.0037	0.377	0.750	715	11.0	3.110
	1	6	140	0.0043	0.518	1.000	535	14.0	7.252

HSS Standard Length Cut-X RF

HSS Favora® Base-X X-Generation

HSS PM/F	Helix 30° Rake 12°
45°	



Performance roughing

Performance finishing

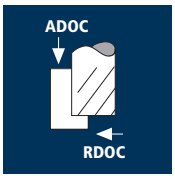
Machines the following materials: Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC						Stainless	Titanium	Cast Iron

dimensions tolerances	d1 k12	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN							
U9609312	1/4	1/4	2 1/2	3/4	0.004	4	$32.30	
U9609372	5/16	5/16	2 1/2	1	0.004	4	$34.80	
U9609432*	3/8	3/8	3	1	0.006	4	$40.10	
U9609482*	7/16	7/16	3	1	0.006	4	$43.50	
U9609530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$47.70	•
U9609605*	5/8	5/8	3 1/2	1 1/4	0.006	4	$80.10	•
U9609652*	3/4	3/4	4	1 1/2	0.006	4	$112.00	•
U9609775*	1	1	4 1/2	1 3/4	0.008	6	$195.80	•

*** with clamping flat**

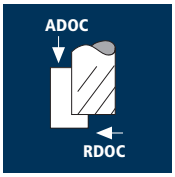
15880



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Annealed Nickel Alloys (Inconel 718) <32 HRC	3/16	4	100	0.0005	0.338	0.113	2040	5	0.161
	1/4	4	100	0.0008	0.450	0.150	1530	5	0.322
	3/8	4	100	0.0013	0.675	0.225	1020	6	0.804
	1/2	4	100	0.0017	0.900	0.300	770	6	1.394
	5/8	4	100	0.0020	1.125	0.375	620	5	2.011
	3/4	4	100	0.0023	1.350	0.450	510	5	2.896
Hardened Nickel Alloys (Inconel 718) >32 HRC	3/16	4	80	0.0004	0.338	0.113	1630	3	0.109
	1/4	4	80	0.0007	0.450	0.150	1230	4	0.218
	3/8	4	80	0.0011	0.675	0.225	820	4	0.545
	1/2	4	80	0.0014	0.900	0.300	620	4	0.944
	5/8	4	80	0.0017	1.125	0.375	490	4	1.361
	3/4	4	80	0.0020	1.350	0.450	410	4	1.960
Maganese Steel (Hardox 400) (Nitronic 50)	3/16	4	130	0.0005	0.338	0.113	2650	6	0.209
	1/4	4	130	0.0008	0.450	0.150	1990	7	0.418
	3/8	4	130	0.0013	0.675	0.225	1330	7	1.046
	1/2	4	130	0.0017	0.900	0.300	1000	7	1.813
	5/8	4	130	0.0020	1.125	0.375	800	7	2.615
	3/4	4	130	0.0023	1.350	0.450	670	7	3.765
Heat Resistant Steel (17-4 PH) (Duplex)	3/16	4	160	0.0008	0.338	0.113	3260	11	0.416
	1/4	4	160	0.0013	0.450	0.150	2450	13	0.832
	3/8	4	160	0.0021	0.675	0.225	1630	14	2.079
	1/2	4	160	0.0027	0.900	0.300	1230	14	3.604
	5/8	4	160	0.0032	1.125	0.375	980	13	5.198
	3/4	4	160	0.0038	1.350	0.450	820	13	7.485

15880



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
PM High Speed Steel Annealed	3/16	4	260	0.0005	0.338	0.113	5300	12	0.418
	1/4	4	260	0.0008	0.450	0.150	3980	13	0.837
	3/8	4	260	0.0013	0.675	0.225	2650	14	2.092
	1/2	4	260	0.0017	0.900	0.300	1990	14	3.626
	5/8	4	260	0.0020	1.125	0.375	1590	13	5.229
	3/4	4	260	0.0023	1.350	0.450	1330	13	7.530
Titanium Alloys 300 HB (Ti6Al4V)	3/16	4	200	0.0005	0.338	0.113	4080	9	0.322
	1/4	4	200	0.0008	0.450	0.150	3060	10	0.644
	3/8	4	200	0.0013	0.675	0.225	2040	11	1.609
	1/2	4	200	0.0017	0.900	0.300	1530	11	2.789
	5/8	4	200	0.0020	1.125	0.375	1230	10	4.022
	3/4	4	200	0.0023	1.350	0.450	1020	10	5.792

Slotting

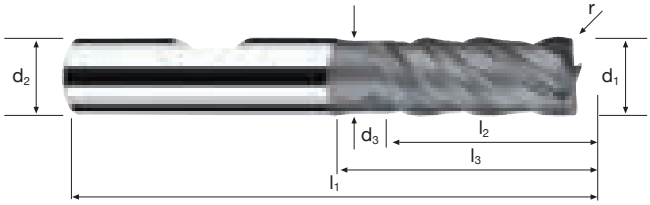
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Annealed Nickel Alloys (Inconel 718) <32 HRC	3/16	4	80	0.0006	0.263	0.188	1630	4	0.177
	1/4	4	80	0.0008	0.350	0.250	1230	4	0.321
	3/8	4	80	0.0011	0.525	0.375	820	4	0.709
	1/2	4	80	0.0014	0.700	0.500	620	4	1.229
	5/8	4	80	0.0019	0.875	0.625	490	4	2.009
	3/4	4	80	0.0022	1.050	0.750	410	4	2.837
Hardened Nickel Alloys (Inconel 718) >32 HRC	3/16	4	65	0.0003	0.263	0.188	1310	2	0.085
	1/4	4	65	0.0004	0.350	0.250	980	2	0.154
	3/8	4	65	0.0007	0.525	0.375	660	2	0.339
	1/2	4	65	0.0009	0.700	0.500	490	2	0.587
	5/8	4	65	0.0011	0.875	0.625	400	2	0.960
	3/4	4	65	0.0013	1.050	0.750	330	2	1.355

X-Generation Standard Length ZX-NV

HSS | Favora® | Base-X | X-Generation X

HM X10

Helix **40°**
Rake **5°**



Performance roughing

Performance finishing

Machines the following materials:

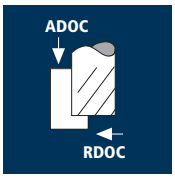
Best = Good =

Stainless | Titanium | Nickel Alloys Manganese Steels HSS

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P15880252	3/16	1/4	0.175	2 1/4	15/32	3/4	0.006	3°	4	$45.50	
P15880312	1/4	1/4	0.230	2 1/4	5/8	7/8	0.006	—	4	$51.90	
P15980432*	3/8	3/8	0.345	3	15/16	1 1/4	0.008	—	4	$86.20	•
P15980530*	1/2	1/2	0.460	3 1/2	1 1/4	1 5/8	0.008	—	4	$130.20	•
P15980605*	5/8	5/8	0.590	4	1 9/16	2	0.008	—	4	$233.30	•
P15980652*	3/4	3/4	0.715	4 1/2	2	2 1/2	0.008	—	4	$337.00	•

*** with clamping flat**

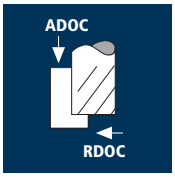
15881



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Annealed Nickel Alloys (Inconel 718) <32 HRC	1/4	5	125	0.0008	0.450	0.050	1910	8	0.168
	3/8	5	125	0.0014	0.675	0.075	1280	9	0.419
	1/2	5	125	0.0018	0.900	0.100	960	9	0.726
	5/8	5	125	0.0020	1.125	0.125	770	8	1.048
	3/4	5	125	0.0023	1.350	0.350	640	8	1.508
Hardened Nickel Alloys (Inconel 718) >32 HRC	1/4	5	85	0.0007	0.450	0.050	1300	5	0.096
	3/8	5	85	0.0011	0.675	0.075	870	5	0.241
	1/2	5	85	0.0014	0.900	0.100	650	5	0.418
	5/8	5	85	0.0017	1.125	0.125	520	5	0.603
	3/4	5	85	0.0020	1.350	0.350	440	5	0.868
Maganese Steel (Hardox 400) (Nitronic 50)	1/4	5	140	0.0008	0.450	0.050	2140	9	0.188
	3/8	5	140	0.0014	0.675	0.075	1430	10	0.469
	1/2	5	140	0.0018	0.900	0.100	1070	10	0.813
	5/8	5	140	0.0020	1.125	0.125	860	9	1.173
	3/4	5	140	0.0023	1.350	0.350	720	9	1.689
Heat Resistant Steel (17-4 PH) (Duplex)	1/4	5	170	0.0013	0.450	0.050	2600	17	0.368
	3/8	5	170	0.0021	0.675	0.075	1740	19	0.921
	1/2	5	170	0.0027	0.900	0.100	1300	18	1.596
	5/8	5	170	0.0032	1.125	0.125	1040	17	2.301
	3/4	5	170	0.0038	1.350	0.350	870	17	3.314

15881



Side Milling

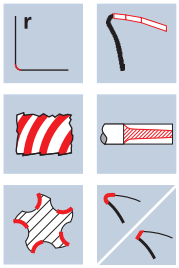
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
PM High Speed Steel Annealed	1/4	5	260	0.0008	0.450	0.150	3980	16	1.046
	3/8	5	260	0.0014	0.675	0.225	2650	18	2.615
	1/2	5	260	0.0018	0.900	0.300	1990	17	4.532
	5/8	5	260	0.0020	1.125	0.375	1590	16	6.536
	3/4	5	260	0.0023	1.350	0.450	1330	16	9.413
Titanium Alloys 300 HB (Ti6Al4V)	1/4	5	200	0.0008	0.450	0.150	3060	12	0.804
	3/8	5	200	0.0013	0.675	0.225	2040	14	2.011
	1/2	5	200	0.0017	0.900	0.300	1530	13	3.486
	5/8	5	200	0.0020	1.125	0.375	1230	12	5.028
	3/4	5	200	0.0023	1.350	0.450	1020	12	7.240

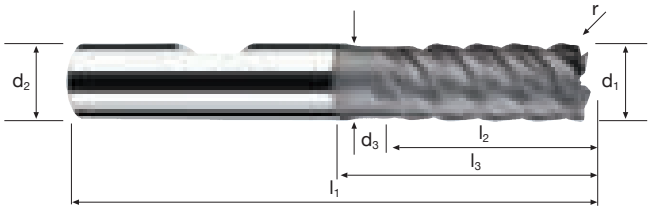
X-Generation Standard Length ZX-NV5

HSS | Favora® | Base-X | X-Generation

HM X10

Helix **40°**
Rake **5°**





Performance roughing

Performance finishing

Machines the following materials:

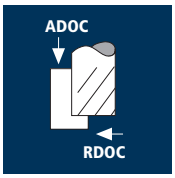
Best = Good =

Stainless | Titanium | **Nickel Alloys Manganese Steels HSS**

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN									
P15881312	1/4	1/4	0.230	2 1/4	5/8	7/8	0.006	5	$53.70	
P15981432*	3/8	3/8	0.345	3	15/16	1 1/4	0.008	5	$88.90	•
P15981530*	1/2	1/2	0.460	3 1/2	1 1/4	1 5/8	0.008	5	$134.50	•
P15981605*	5/8	5/8	0.590	4	1 9/16	2	0.008	5	$240.80	•
P15981652*	3/4	3/4	0.715	4 1/2	2	2 1/2	0.008	5	$347.90	•

*** with clamping flat**

5838



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	490	0.0015	0.188	0.126	9990	60	1.411
	1/4	4	490	0.0020	0.250	0.168	7490	62	2.558
	3/8	4	490	0.0030	0.375	0.251	5000	60	5.643
	1/2	4	490	0.0039	0.500	0.335	3750	59	9.782
	5/8	4	490	0.0051	0.625	0.419	3000	62	15.990
	3/4	4	490	0.0060	0.750	0.503	2500	60	22.574
	1	4	490	0.0081	1.000	0.670	1880	61	40.633
Stainless Steel 303 304	3/16	4	260	0.0012	0.188	0.126	5300	26	0.599
	1/4	4	260	0.0016	0.250	0.168	3980	26	1.086
	3/8	4	260	0.0024	0.375	0.251	2650	26	2.396
	1/2	4	260	0.0031	0.500	0.335	1990	25	4.152
	5/8	4	260	0.0041	0.625	0.419	1590	26	6.788
	3/4	4	260	0.0048	0.750	0.503	1330	26	9.582
	1	4	260	0.0065	1.000	0.670	1000	26	17.248
Titanium	3/16	4	190	0.0012	0.188	0.126	3880	19	0.438
	1/4	4	190	0.0016	0.250	0.168	2910	19	0.794
	3/8	4	190	0.0024	0.375	0.251	1940	19	1.751
	1/2	4	190	0.0031	0.500	0.335	1460	19	3.034
	5/8	4	190	0.0041	0.625	0.419	1170	19	4.960
	3/4	4	190	0.0048	0.750	0.503	970	19	7.003
	1	4	190	0.0065	1.000	0.670	730	19	12.605
Nickel Alloys	3/16	4	70	0.0011	0.188	0.126	1430	6	0.141
	1/4	4	70	0.0014	0.250	0.168	1070	7	0.256
	3/8	4	70	0.0021	0.375	0.251	720	6	0.564
	1/2	4	70	0.0027	0.500	0.335	540	6	0.978
	5/8	4	70	0.0036	0.625	0.419	430	7	1.599
	3/4	4	70	0.0042	0.750	0.503	360	6	2.257
	1	4	70	0.0057	1.000	0.670	270	7	4.063

5838

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	392	0.0012	0.188	0.188	7990	39	1.348
	1/4	4	392	0.0016	0.250	0.250	5990	40	2.444
	3/8	4	392	0.0024	0.375	0.375	4000	39	5.391
	1/2	4	392	0.0031	0.500	0.500	3000	38	9.344
	5/8	4	392	0.0041	0.625	0.625	2400	40	15.274
	3/4	4	392	0.0048	0.750	0.750	2000	39	21.563
	1	4	392	0.0065	1.000	1.000	1500	39	38.814
Stainless Steel 303 304	3/16	4	208	0.0010	0.188	0.188	4240	17	0.572
	1/4	4	208	0.0013	0.250	0.250	3180	17	1.037
	3/8	4	208	0.0019	0.375	0.375	2120	17	2.288
	1/2	4	208	0.0025	0.500	0.500	1590	16	3.966
	5/8	4	208	0.0033	0.625	0.625	1280	17	6.484
	3/4	4	208	0.0038	0.750	0.750	1060	17	9.153
	1	4	208	0.0052	1.000	1.000	800	17	16.476
Titanium	3/16	4	152	0.0010	0.188	0.188	3100	12	0.418
	1/4	4	152	0.0013	0.250	0.250	2330	13	0.758
	3/8	4	152	0.0019	0.375	0.375	1550	12	1.672
	1/2	4	152	0.0025	0.500	0.500	1170	12	2.899
	5/8	4	152	0.0033	0.625	0.625	930	13	4.738
	3/4	4	152	0.0038	0.750	0.750	780	12	6.689
	1	4	152	0.0052	1.000	1.000	590	13	12.040
Nickel Alloys	3/16	4	56	0.0008	0.188	0.188	1150	4	0.135
	1/4	4	56	0.0011	0.250	0.250	860	4	0.244
	3/8	4	56	0.0017	0.375	0.375	580	4	0.539
	1/2	4	56	0.0022	0.500	0.500	430	4	0.934
	5/8	4	56	0.0029	0.625	0.625	350	4	1.527
	3/4	4	56	0.0034	0.750	0.750	290	4	2.156
	1	4	56	0.0045	1.000	1.000	220	4	3.881

X-Generation Standard Reach NB-VD

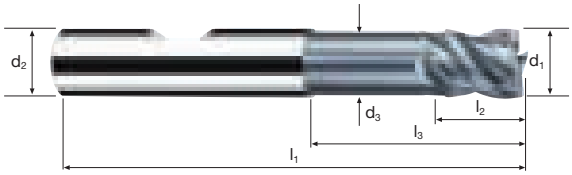
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

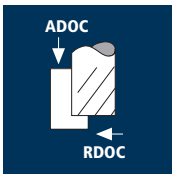
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P5838252	3/16	1/4	0.175	2 1/4	1/4	15/32	0.004	2°	4	$36.00	
P5838312	1/4	1/4	0.230	2 1/4	5/16	5/8	0.004	—	4	$41.10	
P5938432*	3/8	3/8	0.288	2 1/2	7/16	1	0.006	—	4	$68.30	•
P5938530*	1/2	1/2	0.345	3	9/16	1 1/16	0.006	—	4	$103.10	•
P5938605*	5/8	5/8	0.450	3 1/2	3/4	1 1/2	0.006	—	4	$184.70	•
P5938652*	3/4	3/4	0.710	4	13/16	1 3/4	0.006	—	4	$266.60	•
P5938775*	1	1	0.960	4 1/2	1 1/8	2	0.008	—	4	$380.10	•

*** with clamping flat**

15836



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	490	0.0013	0.281	0.075	9990	52	1.095
	1/4	4	490	0.0018	0.375	0.100	7490	53	1.986
	3/8	4	490	0.0026	0.563	0.150	5000	52	4.380
	1/2	4	490	0.0034	0.750	0.200	3750	51	7.592
	5/8	4	490	0.0044	0.938	0.250	3000	53	12.410
	3/4	4	490	0.0052	1.125	0.300	2500	52	17.520
	1	4	490	0.0070	1.500	0.400	1880	53	31.536
Stainless Steel 303 304	3/16	4	260	0.0012	0.281	0.075	5300	26	0.536
	1/4	4	260	0.0016	0.375	0.100	3980	26	0.973
	3/8	4	260	0.0024	0.563	0.150	2650	26	2.145
	1/2	4	260	0.0031	0.750	0.200	1990	25	3.719
	5/8	4	260	0.0041	0.938	0.250	1590	26	6.078
	3/4	4	260	0.0048	1.125	0.300	1330	26	8.581
	1	4	260	0.0065	1.500	0.400	1000	26	15.446
Titanium	3/16	4	190	0.0012	0.281	0.075	3880	19	0.392
	1/4	4	190	0.0016	0.375	0.100	2910	19	0.711
	3/8	4	190	0.0024	0.563	0.150	1940	19	1.568
	1/2	4	190	0.0031	0.750	0.200	1460	19	2.717
	5/8	4	190	0.0041	0.938	0.250	1170	19	4.442
	3/4	4	190	0.0048	1.125	0.300	970	19	6.271
	1	4	190	0.0065	1.500	0.400	730	19	11.288
Nickel Alloys	3/16	4	70	0.0011	0.281	0.075	1430	6	0.126
	1/4	4	70	0.0014	0.375	0.100	1070	7	0.229
	3/8	4	70	0.0021	0.563	0.150	720	6	0.505
	1/2	4	70	0.0027	0.750	0.200	540	6	0.876
	5/8	4	70	0.0036	0.938	0.250	430	7	1.432
	3/4	4	70	0.0042	1.125	0.300	360	6	2.022
	1	4	70	0.0057	1.500	0.400	270	7	3.639

15836

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	392	0.0010	0.281	0.188	7990	34	1.752
	1/4	4	392	0.0014	0.375	0.250	5990	34	3.177
	3/8	4	392	0.0021	0.563	0.375	4000	34	7.008
	1/2	4	392	0.0027	0.750	0.500	3000	34	12.147
	5/8	4	392	0.0035	0.938	0.625	2400	34	19.856
	3/4	4	392	0.0042	1.125	0.750	2000	34	28.032
	1	4	392	0.0056	1.500	1.000	1500	34	50.458
Stainless Steel 303 304	3/16	4	208	0.0010	0.281	0.188	4240	17	0.858
	1/4	4	208	0.0013	0.375	0.250	3180	17	1.556
	3/8	4	208	0.0019	0.563	0.375	2120	17	3.432
	1/2	4	208	0.0025	0.750	0.500	1590	16	5.950
	5/8	4	208	0.0033	0.938	0.625	1280	17	9.725
	3/4	4	208	0.0038	1.125	0.750	1060	17	13.730
	1	4	208	0.0052	1.500	1.000	800	17	24.714
Titanium	3/16	4	152	0.0010	0.281	0.188	3100	12	0.627
	1/4	4	152	0.0013	0.375	0.250	2330	13	1.137
	3/8	4	152	0.0019	0.563	0.375	1550	12	2.508
	1/2	4	152	0.0025	0.750	0.500	1170	12	4.348
	5/8	4	152	0.0033	0.938	0.625	930	13	7.107
	3/4	4	152	0.0038	1.125	0.750	780	12	10.033
	1	4	152	0.0052	1.500	1.000	590	13	18.060
Nickel Alloys	3/16	4	56	0.0008	0.281	0.188	1150	4	0.202
	1/4	4	56	0.0011	0.375	0.250	860	4	0.367
	3/8	4	56	0.0017	0.563	0.375	580	4	0.809
	1/2	4	56	0.0022	0.750	0.500	430	4	1.402
	5/8	4	56	0.0029	0.938	0.625	350	4	2.291
	3/4	4	56	0.0034	1.125	0.750	290	4	3.234
	1	4	56	0.0045	1.500	1.000	220	4	5.822

X-Generation Standard Length NB-NVD

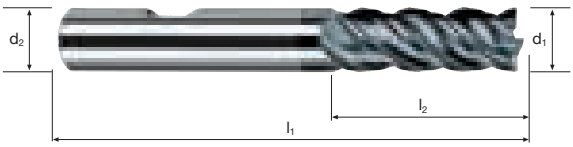
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

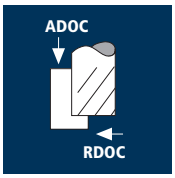
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P15836252	3/16	1/4	2 1/4	3/8	0.004	3°	4	$36.00	
P15836312	1/4	1/4	2 1/4	1/2	0.004	—	4	$41.10	
P15936432*	3/8	3/8	2 3/4	3/4	0.006	—	4	$68.30	•
P15936530*	1/2	1/2	3 1/4	1	0.006	—	4	$103.10	•
P15936605*	5/8	5/8	3 1/2	1 1/4	0.006	—	4	$184.70	•
P15936652*	3/4	3/4	4	1 1/2	0.006	—	4	$266.60	•
P15936775*	1	1	5	2	0.008	—	4	$380.10	•

*** with clamping flat**

5939



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/8	4	590	0.0020	0.563	0.150	6010	48	4.060
	1/2	4	590	0.0027	0.750	0.200	4510	49	7.306
	5/8	4	590	0.0032	0.938	0.250	3610	46	10.836
	3/4	4	590	0.0040	1.125	0.300	3010	48	16.254
Stainless Steel 303 304	3/8	4	310	0.0018	0.563	0.150	3160	23	1.921
	1/2	4	310	0.0024	0.750	0.200	2370	23	3.455
	5/8	4	310	0.0029	0.938	0.250	1890	22	5.106
	3/4	4	310	0.0036	1.125	0.300	1580	23	7.679
Titanium	3/8	4	230	0.0018	0.563	0.150	2340	17	1.423
	1/2	4	230	0.0024	0.750	0.200	1760	17	2.566
	5/8	4	230	0.0029	0.938	0.250	1410	16	3.809
	3/4	4	230	0.0036	1.125	0.300	1170	17	5.686
Nickel Alloys	3/8	4	80	0.0016	0.563	0.150	810	5	0.443
	1/2	4	80	0.0022	0.750	0.200	610	5	0.800
	5/8	4	80	0.0026	0.938	0.250	490	5	1.191
	3/4	4	80	0.0032	1.125	0.300	410	5	1.793

5939

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/8	4	430	0.0018	0.375	0.375	4380	32	4.435
	1/2	4	430	0.0024	0.500	0.500	3290	32	7.995
	5/8	4	430	0.0029	0.625	0.625	2630	30	11.835
	3/4	4	430	0.0036	0.750	0.750	2190	32	17.739
Stainless Steel 303 304	3/8	4	230	0.0016	0.375	0.375	2340	15	2.132
	1/2	4	230	0.0022	0.500	0.500	1760	15	3.849
	5/8	4	230	0.0026	0.625	0.625	1410	15	5.711
	3/4	4	230	0.0032	0.750	0.750	1170	15	8.529
Titanium	3/8	4	170	0.0015	0.375	0.375	1730	10	1.419
	1/2	4	170	0.0020	0.500	0.500	1300	10	2.559
	5/8	4	170	0.0023	0.625	0.625	1040	10	3.791
	3/4	4	170	0.0029	0.750	0.750	870	10	5.708
Nickel Alloys	3/8	4	60	0.0013	0.375	0.375	610	3	0.450
	1/2	4	60	0.0018	0.500	0.500	460	3	0.815
	5/8	4	60	0.0021	0.625	0.625	370	3	1.214
	3/4	4	60	0.0026	0.750	0.750	310	3	1.831

X-Generation Mid Length NB-NVD

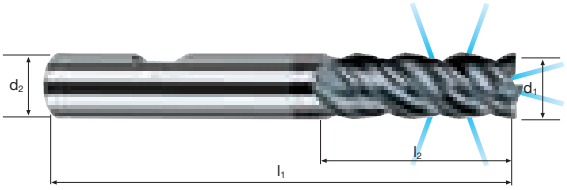
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

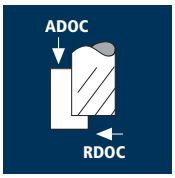
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5939432*	3/8	3/8	2 3/4	3/4	0.006	4	$81.90	•
P5939530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$123.80	•
P5939605*	5/8	5/8	4	1 9/16	0.006	4	$221.70	•
P5939652*	3/4	3/4	4 1/2	1 7/8	0.006	4	$320.00	•

*** with clamping flat**

5836



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	490	0.0008	0.250	0.038	14980	48	0.449
	3/16	4	490	0.0012	0.375	0.056	9990	48	1.011
	1/4	4	490	0.0016	0.500	0.075	7490	49	1.833
	5/16	4	490	0.0020	0.625	0.094	5990	48	2.808
	3/8	4	490	0.0024	0.750	0.113	5000	48	4.043
	1/2	4	490	0.0031	1.000	0.150	3750	47	7.008
	5/8	4	490	0.0041	1.250	0.188	3000	49	11.455
	3/4	4	490	0.0048	1.500	0.225	2500	48	16.172
	1	4	490	0.0065	2.000	0.300	1880	49	29.110
Stainless Steel 303 304	1/8	4	260	0.0008	0.250	0.038	7950	24	0.209
	3/16	4	260	0.0011	0.375	0.056	5300	24	0.492
	1/4	4	260	0.0015	0.500	0.075	3980	24	0.891
	5/16	4	260	0.0019	0.625	0.094	3180	24	1.341
	3/8	4	260	0.0022	0.750	0.113	2650	24	1.967
	1/2	4	260	0.0029	1.000	0.150	1990	23	3.409
	5/8	4	260	0.0037	1.250	0.188	1590	24	5.572
	3/4	4	260	0.0044	1.500	0.225	1330	24	7.866
	1	4	260	0.0059	2.000	0.300	1000	24	14.159
Titanium	1/8	4	190	0.0008	0.250	0.038	5810	18	0.152
	3/16	4	190	0.0011	0.375	0.056	3880	18	0.359
	1/4	4	190	0.0015	0.500	0.075	2910	18	0.651
	5/16	4	190	0.0019	0.625	0.094	2330	18	0.980
	3/8	4	190	0.0022	0.750	0.113	1940	18	1.437
	1/2	4	190	0.0029	1.000	0.150	1460	17	2.491
	5/8	4	190	0.0037	1.250	0.188	1170	18	4.072
	3/4	4	190	0.0044	1.500	0.225	970	18	5.748
	1	4	190	0.0059	2.000	0.300	730	18	10.347
Nickel Alloys	1/8	4	70	0.0007	0.250	0.038	2140	6	0.048
	3/16	4	70	0.0010	0.375	0.056	1430	6	0.114
	1/4	4	70	0.0013	0.500	0.075	1070	6	0.207
	5/16	4	70	0.0018	0.625	0.094	860	6	0.301
	3/8	4	70	0.0019	0.750	0.113	720	6	0.457
	1/2	4	70	0.0025	1.000	0.150	540	6	0.793
	5/8	4	70	0.0032	1.250	0.188	430	6	1.296
	3/4	4	70	0.0038	1.500	0.225	360	6	1.829
	1	4	70	0.0051	2.000	0.300	270	6	3.292

5836

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	392	0.0004	0.250	0.125	11980	20	0.599
	3/16	4	392	0.0006	0.375	0.188	7990	20	1.348
	1/4	4	392	0.0008	0.500	0.250	5990	20	2.444
	5/16	4	392	0.0010	0.625	0.313	4800	20	3.744
	3/8	4	392	0.0012	0.750	0.375	4000	20	5.391
	1/2	4	392	0.0016	1.000	0.500	3000	19	9.344
	5/8	4	392	0.0020	1.250	0.625	2400	20	15.274
	3/4	4	392	0.0024	1.500	0.750	2000	20	21.563
	1	4	392	0.0032	2.000	1.000	1500	20	38.814
Stainless Steel 303 304	1/8	4	208	0.0004	0.250	0.125	6360	10	0.318
	3/16	4	208	0.0006	0.375	0.188	4240	10	0.656
	1/4	4	208	0.0007	0.500	0.250	3180	10	1.189
	5/16	4	208	0.0010	0.625	0.313	2550	10	1.986
	3/8	4	208	0.0011	0.750	0.375	2120	10	2.622
	1/2	4	208	0.0014	1.000	0.500	1590	10	4.545
	5/8	4	208	0.0019	1.250	0.625	1280	10	7.429
	3/4	4	208	0.0022	1.500	0.750	1060	10	10.488
	1	4	208	0.0030	2.000	1.000	800	10	18.879
Titanium	1/8	4	152	0.0004	0.250	0.125	4650	7	0.232
	3/16	4	152	0.0006	0.375	0.188	3100	7	0.479
	1/4	4	152	0.0007	0.500	0.250	2330	7	0.869
	5/16	4	152	0.0009	0.625	0.313	1860	7	1.452
	3/8	4	152	0.0011	0.750	0.375	1550	7	1.916
	1/2	4	152	0.0014	1.000	0.500	1170	7	3.321
	5/8	4	152	0.0019	1.250	0.625	930	7	5.429
	3/4	4	152	0.0022	1.500	0.750	780	7	7.664
	1	4	152	0.0030	2.000	1.000	590	7	13.796
Nickel Alloys	1/8	4	56	0.0004	0.250	0.125	1120	3	0.068
	3/16	4	56	0.0005	0.375	0.188	1150	3	0.152
	1/4	4	56	0.0006	0.500	0.250	860	3	0.276
	5/16	4	56	0.0011	0.625	0.313	690	3	0.428
	3/8	4	56	0.0010	0.750	0.375	580	3	0.610
	1/2	4	56	0.0012	1.000	0.500	430	3	1.057
	5/8	4	56	0.0016	1.250	0.625	350	3	1.727
	3/4	4	56	0.0019	1.500	0.750	290	3	2.439
	1	4	56	0.0026	2.000	1.000	220	3	4.390

X-Generation Mid Length NB-NVD

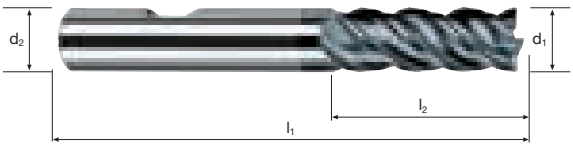
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

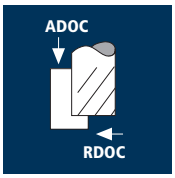
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P5836188	1/8	1/4	2 1/4	5/16	0.004	5°	4	$37.40	
P5836252	3/16	1/4	2 1/4	15/32	0.004	3°	4	$37.40	
P5836312	1/4	1/4	2 1/4	5/8	0.004	—	4	$42.70	
P5836372	5/16	5/16	2 1/2	25/32	0.004	—	4	$58.80	
P5936432*	3/8	3/8	2 3/4	15/16	0.006	—	4	$70.90	•
P5936530*	1/2	1/2	3 1/4	1 1/4	0.006	—	4	$107.20	•
P5936605*	5/8	5/8	4	1 9/16	0.006	—	4	$192.00	•
P5936652*	3/4	3/4	4 1/2	1 7/8	0.006	—	4	$277.30	•
P5936775*	1	1	5 1/2	2 1/2	0.008	—	4	$390.60	•

*** with clamping flat**

5833



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	490	0.0008	0.250	0.038	14980	48	0.449
	3/16	4	490	0.0012	0.375	0.056	9990	48	1.011
	1/4	4	490	0.0016	0.500	0.075	7490	49	1.833
	5/16	4	490	0.0020	0.625	0.094	5990	48	2.808
	3/8	4	490	0.0024	0.750	0.113	5000	48	4.043
	1/2	4	490	0.0031	1.000	0.150	3750	47	7.008
Stainless Steel 303 304	1/8	4	260	0.0008	0.250	0.038	7950	24	0.209
	3/16	4	260	0.0011	0.375	0.056	5300	24	0.492
	1/4	4	260	0.0015	0.500	0.075	3980	24	0.891
	5/16	4	260	0.0019	0.625	0.094	3180	24	1.341
	3/8	4	260	0.0022	0.750	0.113	2650	24	1.967
	1/2	4	260	0.0029	1.000	0.150	1990	23	3.409
Titanium	1/8	4	190	0.0008	0.250	0.038	5810	18	0.152
	3/16	4	190	0.0011	0.375	0.056	3880	18	0.359
	1/4	4	190	0.0015	0.500	0.075	2910	18	0.651
	5/16	4	190	0.0019	0.625	0.094	2330	18	0.980
	3/8	4	190	0.0022	0.750	0.113	1940	18	1.437
	1/2	4	190	0.0029	1.000	0.150	1460	17	2.491
Nickel Alloys	1/8	4	70	0.0007	0.250	0.038	2140	6	0.048
	3/16	4	70	0.0010	0.375	0.056	1430	6	0.114
	1/4	4	70	0.0013	0.500	0.075	1070	6	0.207
	5/16	4	70	0.0018	0.625	0.094	860	6	0.301
	3/8	4	70	0.0019	0.750	0.113	720	6	0.457
	1/2	4	70	0.0025	1.000	0.150	540	6	0.793

5833

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	392	0.0004	0.250	0.125	11980	20	0.599
	3/16	4	392	0.0006	0.375	0.188	7990	20	1.348
	1/4	4	392	0.0008	0.500	0.250	5990	20	2.444
	5/16	4	392	0.0010	0.625	0.313	4800	20	3.744
	3/8	4	392	0.0012	0.750	0.375	4000	20	5.391
	1/2	4	392	0.0016	1.000	0.500	3000	19	9.344
Stainless Steel 303 304	1/8	4	208	0.0004	0.250	0.125	6360	10	0.318
	3/16	4	208	0.0006	0.375	0.188	4240	10	0.656
	1/4	4	208	0.0007	0.500	0.250	3180	10	1.189
	5/16	4	208	0.0010	0.625	0.313	2550	10	1.986
	3/8	4	208	0.0011	0.750	0.375	2120	10	2.622
	1/2	4	208	0.0014	1.000	0.500	1590	10	4.545
Titanium	1/8	4	152	0.0004	0.250	0.125	4650	7	0.232
	3/16	4	152	0.0006	0.375	0.188	3100	7	0.479
	1/4	4	152	0.0007	0.500	0.250	2330	7	0.869
	5/16	4	152	0.0009	0.625	0.313	1860	7	1.452
	3/8	4	152	0.0011	0.750	0.375	1550	7	1.916
	1/2	4	152	0.0014	1.000	0.500	1170	7	3.321
Nickel Alloys	1/8	4	56	0.0004	0.250	0.125	1120	3	0.068
	3/16	4	56	0.0005	0.375	0.188	1150	3	0.152
	1/4	4	56	0.0006	0.500	0.250	860	3	0.276
	5/16	4	56	0.0011	0.625	0.313	690	3	0.428
	3/8	4	56	0.0010	0.750	0.375	580	3	0.610
	1/2	4	56	0.0012	1.000	0.500	430	3	1.057

X-Generation Mid Length Sharp Corner NB-NVD

HSS | Favora® | Base-X | X-Generation

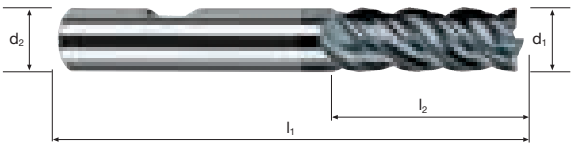
HM MG10

Helix **45°**
Rake **0°**

90°

Vario

new!



Performance roughing

Performance finishing

Machines the following materials:

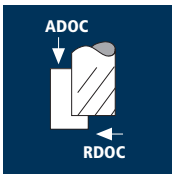
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5833188	1/8	1/4	2 1/4	5/16	5°	4	$37.40	
P5833252	3/16	1/4	2 1/4	15/32	3°	4	$37.40	
P5833312	1/4	1/4	2 1/4	5/8	—	4	$42.80	
P5833372	5/16	5/16	2 1/2	25/32	—	4	$59.50	
P5933432	3/8	3/8	2 3/4	15/16	—	4	$70.90	•
P5933530	1/2	1/2	3 1/4	1 1/4	—	4	$107.20	•

*** with clamping flat**

5837



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	490	0.0012	0.469	0.047	9990	48	1.053
	1/4	4	490	0.0016	0.625	0.063	7490	49	1.909
	3/8	4	490	0.0024	0.938	0.094	5000	48	4.212
	1/2	4	490	0.0031	1.250	0.125	3750	47	7.300
	5/8	4	490	0.0041	1.563	0.156	3000	49	11.933
	3/4	4	490	0.0048	1.875	0.188	2500	48	16.846
	1	4	490	0.0065	2.500	0.250	1880	49	30.323
Stainless Steel 303 304	3/16	4	260	0.0011	0.469	0.047	5300	24	0.512
	1/4	4	260	0.0015	0.625	0.063	3980	24	0.929
	3/8	4	260	0.0022	0.938	0.094	2650	24	2.048
	1/2	4	260	0.0029	1.250	0.125	1990	23	3.551
	5/8	4	260	0.0037	1.563	0.156	1590	24	5.804
	3/4	4	260	0.0044	1.875	0.188	1330	24	8.194
	1	4	260	0.0059	2.500	0.250	1000	4	14.749
Titanium	3/16	4	190	0.0011	0.469	0.047	3880	18	0.374
	1/4	4	190	0.0015	0.625	0.063	2910	18	0.679
	3/8	4	190	0.0022	0.938	0.094	1940	18	1.497
	1/2	4	190	0.0029	1.250	0.125	1460	17	2.595
	5/8	4	190	0.0037	1.563	0.156	1170	18	4.241
	3/4	4	190	0.0044	1.875	0.188	970	18	5.988
	1	4	190	0.0059	2.500	0.250	730	18	10.778
Nickel Alloys	3/16	4	70	0.0010	0.469	0.047	1430	6	0.119
	1/4	4	70	0.0013	0.625	0.063	1070	6	0.216
	3/8	4	70	0.0019	0.938	0.094	720	6	0.476
	1/2	4	70	0.0025	1.250	0.125	540	6	0.826
	5/8	4	70	0.0032	1.563	0.156	430	6	1.350
	3/4	4	70	0.0038	1.875	0.188	360	6	1.905
	1	4	70	0.0051	2.500	0.250	270	6	3.429

5837

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	392	0.0006	0.375	0.188	7990	19	1.267
	1/4	4	392	0.0008	0.500	0.250	5990	19	2.297
	3/8	4	392	0.0011	0.750	0.375	4000	19	5.067
	1/2	4	392	0.0015	1.000	0.500	3000	18	8.783
	5/8	4	392	0.0019	1.250	0.625	2400	19	14.357
	3/4	4	392	0.0023	1.500	0.750	2000	19	20.269
	1	4	392	0.0030	2.000	1.000	1500	19	36.485
Stainless Steel 303 304	3/16	4	208	0.0005	0.375	0.188	4240	9	0.616
	1/4	4	208	0.0007	0.500	0.250	3180	9	1.117
	3/8	4	208	0.0010	0.750	0.375	2120	9	2.465
	1/2	4	208	0.0013	1.000	0.500	1590	9	4.272
	5/8	4	208	0.0018	1.250	0.625	1280	9	6.983
	3/4	4	208	0.0021	1.500	0.750	1060	9	9.859
	1	4	208	0.0028	2.000	1.000	800	9	17.746
Titanium	3/16	4	152	0.0005	0.375	0.188	3100	7	0.450
	1/4	4	152	0.0007	0.500	0.250	2330	7	0.817
	3/8	4	152	0.0010	0.750	0.375	1550	7	1.801
	1/2	4	152	0.0013	1.000	0.500	1170	7	3.122
	5/8	4	152	0.0018	1.250	0.625	930	7	5.103
	3/4	4	152	0.0021	1.500	0.750	780	7	7.205
	1	4	152	0.0028	2.000	1.000	590	7	12.968
Nickel Alloys	3/16	4	56	0.0004	0.375	0.188	1150	3	0.143
	1/4	4	56	0.0006	0.500	0.250	860	3	0.260
	3/8	4	56	0.0009	0.750	0.375	580	3	0.573
	1/2	4	56	0.0012	1.000	0.500	430	3	0.993
	5/8	4	56	0.0015	1.250	0.625	350	3	1.624
	3/4	4	56	0.0018	1.500	0.750	290	3	2.292
	1	4	56	0.0024	2.000	1.000	220	3	4.126

X-Generation Long Length NB-NVD

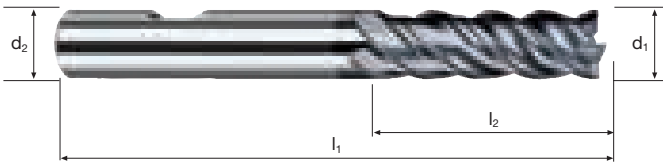
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

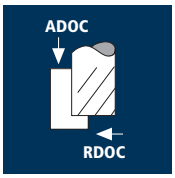
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P5837252	3/16	1/4	2 1/4	9/16	0.004	3°	4	$43.20	
P5837312	1/4	1/4	2 1/2	3/4	0.004	—	4	$49.40	
P5937432*	3/8	3/8	3	1 1/8	0.006	—	4	$81.90	•
P5937530*	1/2	1/2	3 3/4	1 1/2	0.006	—	4	$122.90	•
P5937605*	5/8	5/8	4 1/4	1 7/8	0.006	—	4	$221.90	•
P5937652*	3/4	3/4	4 3/4	2 1/4	0.006	—	4	$320.70	•
P5937775*	1	1	6	3	0.008	—	4	$457.00	•

*** with clamping flat**

5832



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	390	0.0010	0.750	0.063	5960	25	1.153
	3/8	4	390	0.0017	1.125	0.094	3980	28	2.883
	1/2	4	390	0.0023	1.500	0.125	2980	28	5.140
	5/8	4	390	0.0026	1.875	0.156	2390	25	7.207
	3/4	4	390	0.0031	2.250	0.188	1990	25	10.378
Stainless Steel 303 304	1/4	4	133	0.0010	0.750	0.063	2040	9	0.389
	3/8	4	133	0.0017	1.125	0.094	1360	10	0.972
	1/2	4	133	0.0022	1.500	0.125	1020	9	1.684
	5/8	4	133	0.0026	1.875	0.156	820	9	2.429
	3/4	4	133	0.0031	2.250	0.188	680	9	3.498
Titanium	1/4	4	97	0.0010	0.750	0.063	1490	7	0.283
	3/8	4	97	0.0017	1.125	0.094	990	7	0.709
	1/2	4	97	0.0022	1.500	0.125	750	7	1.228
	5/8	4	97	0.0026	1.875	0.156	600	7	1.772
	3/4	4	97	0.0031	2.250	0.188	500	7	2.551
Nickel Alloys	1/4	4	35	0.0009	0.750	0.063	540	2	0.090
	3/8	4	35	0.0015	1.125	0.094	360	3	0.226
	1/2	4	35	0.0020	1.500	0.125	270	3	0.391
	5/8	4	35	0.0023	1.875	0.156	220	2	0.564
	3/4	4	35	0.0027	2.250	0.188	180	2	0.812

5832

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	315	0.0004	0.500	0.250	4820	9	1.059
	3/8	4	315	0.0007	0.750	0.375	3210	9	2.383
	1/2	4	315	0.0011	1.000	0.500	2410	11	5.295
	5/8	4	315	0.0014	1.250	0.625	1930	12	8.604
	3/4	4	315	0.0017	1.500	0.750	1610	11	11.913
Stainless Steel 303 304	1/4	4	106	0.0004	0.500	0.250	1620	3	0.324
	3/8	4	106	0.0006	0.750	0.375	1080	3	0.729
	1/2	4	106	0.0010	1.000	0.500	810	4	1.620
	5/8	4	106	0.0013	1.250	0.625	650	4	2.632
	3/4	4	106	0.0015	1.500	0.750	540	4	3.644
Titanium	1/4	4	76	0.0004	0.500	0.250	1170	2	0.232
	3/8	4	76	0.0006	0.750	0.375	780	2	0.523
	1/2	4	76	0.0010	1.000	0.500	590	3	1.161
	5/8	4	76	0.0013	1.250	0.625	470	3	1.887
	3/4	4	76	0.0015	1.500	0.750	390	3	2.613
Nickel Alloys	1/4	4	28	0.0003	0.500	0.250	430	1	0.068
	3/8	4	28	0.0005	0.750	0.375	290	1	0.154
	1/2	4	28	0.0008	1.000	0.500	220	1	0.342
	5/8	4	28	0.0010	1.250	0.625	180	1	0.556
	3/4	4	28	0.0012	1.500	0.750	150	1	0.770

X-Generation Extended Length NB-NVD

HSS | Favora® | Base-X | X-Generation

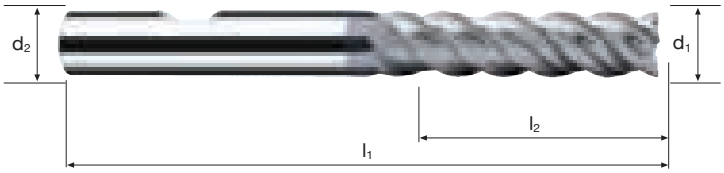
HM MG10

Helix **45°**
Rake **0°**

45°

Vario

new!



Performance roughing

Performance finishing

Machines the following materials:

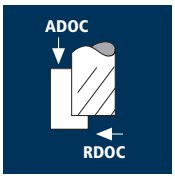
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5832312	1/4	1/4	3	1	0.004	4	$51.30	
P5932432	3/8	3/8	3 1/2	1 1/2	0.006	4	$85.10	•
P5932530	1/2	1/2	4 1/4	2	0.006	4	$128.60	•
P5932605	5/8	5/8	5	2 1/2	0.006	4	$230.40	•
P5932652	3/4	3/4	5 1/2	3	0.006	4	$332.70	•
P5932775	1	1	7	4	0.008	4	$474.30	•

*** with clamping flat**

5831



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	240	0.0014	0.500	0.063	3670	20	0.619
	3/8	4	240	0.0023	0.750	0.094	2450	23	1.547
	1/2	4	240	0.0030	1.000	0.125	1840	23	2.750
	5/8	4	240	0.0034	1.250	0.156	1470	20	3.868
	3/4	4	240	0.0041	1.500	0.188	1230	20	5.570
Stainless Steel 303 304	1/4	4	130	0.0013	0.500	0.063	1990	11	0.313
	3/8	4	130	0.0021	0.750	0.094	1330	12	0.782
	1/2	4	130	0.0027	1.000	0.125	1000	11	1.356
	5/8	4	130	0.0032	1.250	0.156	800	11	1.955
	3/4	4	130	0.0038	1.500	0.188	670	11	2.816
Titanium	1/4	4	93	0.0013	0.500	0.063	1430	8	0.224
	3/8	4	93	0.0021	0.750	0.094	950	8	0.560
	1/2	4	93	0.0027	1.000	0.125	720	8	0.970
	5/8	4	93	0.0032	1.250	0.156	570	8	1.399
	3/4	4	93	0.0038	1.500	0.188	480	8	2.014
Nickel Alloys	1/4	4	35	0.0011	0.500	0.063	540	3	0.072
	3/8	4	35	0.0018	0.750	0.094	360	3	0.180
	1/2	4	35	0.0023	1.000	0.125	270	3	0.313
	5/8	4	35	0.0027	1.250	0.156	220	3	0.451
	3/4	4	35	0.0032	1.500	0.188	180	3	0.650

5831

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	4	380	0.0005	0.250	0.250	5810	13	0.755
	3/8	4	380	0.0008	0.375	0.375	3880	13	1.698
	1/2	4	380	0.0013	0.500	0.500	2910	16	3.774
	5/8	4	380	0.0017	0.625	0.625	2330	16	6.133
	3/4	4	380	0.0020	0.750	0.750	1940	16	8.492
Stainless Steel 303 304	1/4	4	200	0.0004	0.250	0.250	3060	6	0.336
	3/8	4	200	0.0007	0.375	0.375	2040	6	0.756
	1/2	4	200	0.0011	0.500	0.500	1530	7	1.681
	5/8	4	200	0.0014	0.625	0.625	1230	7	2.731
	3/4	4	200	0.0017	0.750	0.750	1020	7	3.782
Titanium	1/4	4	147	0.0004	0.250	0.250	2250	4	0.247
	3/8	4	147	0.0007	0.375	0.375	1500	4	0.556
	1/2	4	147	0.0011	0.500	0.500	1130	5	1.235
	5/8	4	147	0.0014	0.625	0.625	900	6	2.008
	3/4	4	147	0.0017	0.750	0.750	750	5	2.780
Nickel Alloys	1/4	4	54	0.0004	0.250	0.250	830	2	0.083
	3/8	4	54	0.0006	0.375	0.375	560	2	0.186
	1/2	4	54	0.0010	0.500	0.500	420	2	0.413
	5/8	4	54	0.0013	0.625	0.625	340	2	0.670
	3/4	4	54	0.0015	0.750	0.750	280	2	0.928

X-Generation Extended Reach NB-NVD

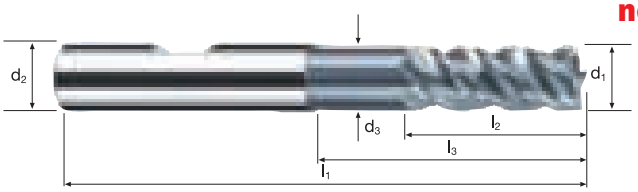
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **0°**

45°

Vario



new!

Performance roughing

Performance finishing

Machines the following materials:

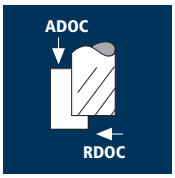
Best = Good =

Steel <24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P5831312	1/4	1/4	0.230	3	5/8	1 1/4	0.004		4	$48.70	
P5931432	3/8	3/8	0.345	3 1/2	15/16	1 7/8	0.006		4	$80.90	•
P5931530	1/2	1/2	0.460	4 1/2	1 1/4	2 1/2	0.006		4	$122.10	•
P5931605	5/8	5/8	0.575	5	1 9/16	3 1/8	0.006		4	$218.80	•
P5931652	3/4	3/4	0.710	6	1 7/8	3 3/4	0.006		4	$316.10	•

*** with clamping flat**

5834



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	5	490	0.0016	0.5000	0.075	7490	59	2.1760
	3/8	5	490	0.0023	0.7500	0.113	5000	59	4.8959
	1/2	5	490	0.0031	1.0000	0.150	3750	59	8.7039
	5/8	5	490	0.0039	1.2500	0.188	3000	59	13.5998
	3/4	5	490	0.0047	1.5000	0.225	2500	59	19.5837
Stainless Steel 303 304	1/4	5	260	0.0016	0.5000	0.075	3980	31	1.1546
	3/8	5	260	0.0023	0.7500	0.113	2650	31	2.5978
	1/2	5	260	0.0031	1.0000	0.150	1990	31	4.6184
	5/8	5	260	0.0039	1.2500	0.188	1590	31	7.2162
	3/4	5	260	0.0047	1.5000	0.225	1330	31	10.3914
Titanium	1/4	5	190	0.0016	0.5000	0.075	2910	23	0.8437
	3/8	5	190	0.0023	0.7500	0.113	1940	23	1.8984
	1/2	5	190	0.0031	1.0000	0.150	1460	23	3.3750
	5/8	5	190	0.0039	1.2500	0.188	1170	23	5.2734
	3/4	5	190	0.0047	1.5000	0.225	970	23	7.5937
Nickel Alloys	1/4	5	70	0.0016	0.5000	0.075	1070	9	0.3109
	3/8	5	70	0.0023	0.7500	0.113	720	9	0.6994
	1/2	5	70	0.0031	1.0000	0.150	540	9	1.2434
	5/8	5	70	0.0039	1.2500	0.188	430	9	1.9428
	3/4	5	70	0.0047	1.5000	0.225	360	9	2.7977

5834

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/4	5	392	0.0008	0.5000	0.2500	5990	24	2.9949
	3/8	5	392	0.0012	0.7500	0.3750	4000	24	6.7385
	1/2	5	392	0.0016	1.0000	0.5000	3000	24	11.9795
	5/8	5	392	0.0020	1.2500	0.6250	2400	24	18.7180
	3/4	5	392	0.0024	1.5000	0.7500	2000	24	26.9539
Stainless Steel 303 304	1/4	5	208	0.0008	0.5000	0.2500	3180	13	1.5891
	3/8	5	208	0.0012	0.7500	0.3750	2120	13	3.5755
	1/2	5	208	0.0016	1.0000	0.5000	1590	13	6.3565
	5/8	5	208	0.0020	1.2500	0.6250	1280	13	9.9320
	3/4	5	208	0.0024	1.5000	0.7500	1060	13	14.3021
Titanium	1/4	5	152	0.0008	0.5000	0.2500	2330	10	1.1613
	3/8	5	152	0.0012	0.7500	0.3750	1550	10	2.6129
	1/2	5	152	0.0016	1.0000	0.5000	1170	10	4.6451
	5/8	5	152	0.0020	1.2500	0.6250	930	10	7.2580
	3/4	5	152	0.0024	1.5000	0.7500	780	10	10.4515
Nickel Alloys	1/4	5	56	0.0008	0.5000	0.2500	860	4	0.083
	3/8	5	56	0.0012	0.7500	0.3750	580	4	0.186
	1/2	5	56	0.0016	1.0000	0.5000	430	4	0.413
	5/8	5	56	0.0020	1.2500	0.6250	350	4	0.670
	3/4	5	56	0.0024	1.5000	0.7500	290	4	0.928

X-Generation Mid Length NB-NVD5

HSS | Favora® | Base-X | X-Generation

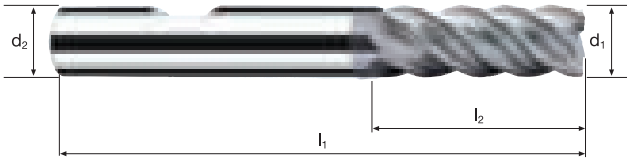
HM MG10

Helix **45°**
Rake **0°**

45°

Vario

new!



Performance roughing

Performance finishing

Machines the following materials:

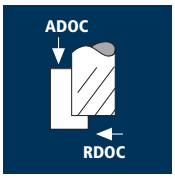
Best = Good =

Steel <24 HRC | **Steel** 24 - 34 HRC | **Steel** 34 - 42 HRC | **Steel** 42 - 48 HRC | **Stainless** | **Titanium**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P5834312	1/4	1/4	2 1/2	5/8	0.004		5	$47.00	
P5934432	3/8	3/8	2 3/4	15/16	0.006		5	$78.00	
P5934530	1/2	1/2	3 1/2	1 1/4	0.006		5	$117.90	
P5934605	5/8	5/8	4	1 9/16	0.006		5	$211.20	
P5934652	3/4	3/4	4 1/2	1 7/8	0.006		5	$305.00	

*** with clamping flat**

15822



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	490	0.0014	0.281	0.075	9990	56	1.179
	1/4	4	490	0.0019	0.375	0.100	7490	58	2.138
	5/16	4	490	0.0022	0.469	0.125	5990	54	3.145
	3/8	4	490	0.0028	0.563	0.150	5000	56	4.717
	1/2	4	490	0.0036	0.750	0.200	3750	55	8.176
	5/8	4	490	0.0048	0.938	0.250	3000	58	13.365
	3/4	4	490	0.0056	1.125	0.300	2500	56	18.868
	1	4	490	0.0076	1.500	0.400	1880	57	33.962
Steel 34 - 42 HRC	3/16	4	260	0.0012	0.281	0.075	5300	26	0.536
	1/4	4	260	0.0016	0.375	0.100	3980	26	0.973
	5/16	4	260	0.0019	0.469	0.125	3180	25	1.430
	3/8	4	260	0.0024	0.563	0.150	2650	26	2.145
	1/2	4	260	0.0031	0.750	0.200	1990	25	3.719
	5/8	4	260	0.0041	0.938	0.250	1590	26	6.078
	3/4	4	260	0.0048	1.125	0.300	1330	26	8.581
	1	4	260	0.0065	1.500	0.400	1000	26	15.446
Steel 42 - 48 HRC	3/16	4	190	0.0011	0.281	0.075	3880	18	0.359
	1/4	4	190	0.0015	0.375	0.100	2910	18	0.651
	5/16	4	190	0.0018	0.469	0.125	2330	17	0.958
	3/8	4	190	0.0022	0.563	0.150	1940	18	1.437
	1/2	4	190	0.0029	0.750	0.200	1460	17	2.491
	5/8	4	190	0.0037	0.938	0.250	1170	18	4.072
	3/4	4	190	0.0044	1.125	0.300	970	18	5.748
	1	4	190	0.0059	1.500	0.400	730	18	10.347
Cast Iron	3/16	4	590	0.0016	0.281	0.075	12030	77	1.623
	1/4	4	590	0.0022	0.375	0.100	9020	79	2.943
	5/16	4	590	0.0026	0.469	0.125	7220	74	4.327
	3/8	4	590	0.0032	0.563	0.150	6020	77	6.491
	1/2	4	590	0.0042	0.750	0.200	4510	76	11.251
	5/8	4	590	0.0054	0.938	0.250	3610	79	18.391
	3/4	4	590	0.0064	1.125	0.300	3010	77	25.964
	1	4	590	0.0086	1.500	0.400	2260	78	46.735

15822

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	392	0.0011	0.281	0.188	7990	36	1.887
	1/4	4	392	0.0015	0.375	0.250	5990	37	3.421
	5/16	4	392	0.0018	0.469	0.313	4800	35	5.031
	3/8	4	392	0.0022	0.563	0.375	4000	36	7.547
	1/2	4	392	0.0029	0.750	0.500	3000	35	13.082
	5/8	4	392	0.0038	0.938	0.625	2400	37	21.383
	3/4	4	392	0.0045	1.125	0.750	2000	36	30.188
	1	4	392	0.0060	1.500	1.000	1500	37	54.339
Steel 34 - 42 HRC	3/16	4	208	0.0010	0.281	0.188	4240	17	0.858
	1/4	4	208	0.0013	0.375	0.250	3180	17	1.556
	5/16	4	208	0.0015	0.469	0.313	2550	16	2.288
	3/8	4	208	0.0019	0.563	0.375	2120	17	3.432
	1/2	4	208	0.0025	0.750	0.500	1590	16	5.950
	5/8	4	208	0.0033	0.938	0.625	1280	17	9.725
	3/4	4	208	0.0038	1.125	0.750	1060	17	13.730
	1	4	208	0.0052	1.500	1.000	800	17	24.714
Steel 42 - 48 HRC	3/16	4	152	0.0009	0.281	0.188	3100	11	0.575
	1/4	4	152	0.0012	0.375	0.250	2330	12	1.042
	5/16	4	152	0.0014	0.469	0.313	1860	11	1.533
	3/8	4	152	0.0018	0.563	0.375	1550	11	2.299
	1/2	4	152	0.0023	0.750	0.500	1170	11	3.986
	5/8	4	152	0.0030	0.938	0.625	930	12	6.515
	3/4	4	152	0.0035	1.125	0.750	780	11	9.197
	1	4	152	0.0048	1.500	1.000	590	12	16.555
Cast Iron	3/16	4	472	0.0013	0.281	0.188	9620	50	2.596
	1/4	4	472	0.0017	0.375	0.250	7220	51	4.708
	5/16	4	472	0.0020	0.469	0.313	5770	48	6.924
	3/8	4	472	0.0026	0.563	0.375	4810	50	10.386
	1/2	4	472	0.0033	0.750	0.500	3610	49	18.002
	5/8	4	472	0.0044	0.938	0.625	2890	51	29.426
	3/4	4	472	0.0051	1.125	0.750	2410	50	41.542
	1	4	472	0.0069	1.500	1.000	1810	50	74.776

X-Generation Standard Length NX-NVD

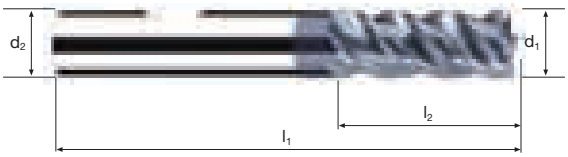
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **-10°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

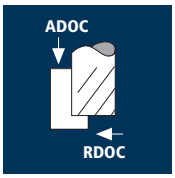
Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC				Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P15822252	3/16	1/4	2	3/8	0.004	3°	4	$36.00	
P15822312	1/4	1/4	2 1/4	1/2	0.004	—	4	$41.10	
P15822372	5/16	5/16	2 1/2	5/8	0.004	—	4	$56.70	
P15922432*	3/8	3/8	2 3/4	3/4	0.006	—	4	$68.30	•
P15922530*	1/2	1/2	3 1/4	1	0.006	—	4	$103.20	•
P15922605*	5/8	5/8	3 1/2	1 1/4	0.006	—	4	$184.80	•
P15922652*	3/4	3/4	4	1 1/2	0.006	—	4	$266.70	•
P15922775*	1	1	5	2	0.008	—	4	$380.10	•

*** with clamping flat**

15824



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	490	0.0008	0.250	0.038	14980	48	0.449
	3/16	4	490	0.0012	0.375	0.056	9990	48	1.011
	1/4	4	490	0.0016	0.500	0.075	7490	49	1.833
	5/16	4	490	0.0020	0.625	0.094	5990	48	2.808
	3/8	4	490	0.0024	0.750	0.113	5000	48	4.043
	1/2	4	490	0.0031	1.000	0.150	3750	47	7.008
	5/8	4	490	0.0041	1.250	0.188	3000	49	11.455
	3/4	4	490	0.0048	1.500	0.225	2500	48	16.172
	1	4	490	0.0065	2.000	0.300	1880	49	29.110
Steel 34 - 42 HRC	1/8	4	260	0.0007	0.250	0.038	7950	23	0.209
	3/16	4	260	0.0011	0.375	0.056	5300	23	0.469
	1/4	4	260	0.0014	0.500	0.075	3980	23	0.851
	5/16	4	260	0.0018	0.625	0.094	3180	23	1.341
	3/8	4	260	0.0021	0.750	0.113	2650	23	1.877
	1/2	4	260	0.0027	1.000	0.150	1990	22	3.254
	5/8	4	260	0.0036	1.250	0.188	1590	23	5.319
	3/4	4	260	0.0042	1.500	0.225	1330	23	7.509
	1	4	260	0.0057	2.000	0.300	1000	23	13.515
Steel 42 - 48 HRC	1/8	4	190	0.0006	0.250	0.038	5810	15	0.152
	3/16	4	190	0.0010	0.375	0.056	3880	15	0.310
	1/4	4	190	0.0013	0.500	0.075	2910	16	0.563
	5/16	4	190	0.0016	0.625	0.094	2330	15	0.817
	3/8	4	190	0.0019	0.750	0.113	1940	15	1.241
	1/2	4	190	0.0025	1.000	0.150	1460	15	2.151
	5/8	4	190	0.0032	1.250	0.188	1170	16	3.517
	3/4	4	190	0.0038	1.500	0.225	970	15	4.964
	1	4	190	0.0051	2.000	0.300	730	15	8.936
Cast Iron	1/8	4	590	0.0010	0.250	0.038	18040	70	0.676
	3/16	4	590	0.0015	0.375	0.056	12030	70	1.471
	1/4	4	590	0.0020	0.500	0.075	9020	72	2.667
	5/16	4	590	0.0010	0.625	0.094	7220	72	4.057
	3/8	4	590	0.0029	0.750	0.113	6020	70	5.882
	1/2	4	590	0.0038	1.000	0.150	4510	68	10.196
	5/8	4	590	0.0049	1.250	0.188	3610	72	16.667
	3/4	4	590	0.0058	1.500	0.225	3010	70	23.530
	1	4	590	0.0078	2.000	0.300	2260	71	42.353

15824

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	392	0.0004	0.250	0.125	11980	20	0.599
	3/16	4	392	0.0006	0.375	0.188	7990	20	1.348
	1/4	4	392	0.0008	0.500	0.250	5990	20	2.444
	5/16	4	392	0.0010	0.625	0.313	4800	20	3.744
	3/8	4	392	0.0012	0.750	0.375	4000	20	5.391
	1/2	4	392	0.0016	1.000	0.500	3000	19	9.344
	5/8	4	392	0.0020	1.250	0.625	2400	20	15.274
	3/4	4	392	0.0024	1.500	0.750	2000	20	21.563
	1	4	392	0.0032	2.000	1.000	1500	20	38.814
Steel 34 - 42 HRC	1/8	4	208	0.0004	0.250	0.125	6360	9	0.318
	3/16	4	208	0.0005	0.375	0.188	4240	9	0.626
	1/4	4	208	0.0007	0.500	0.250	3180	10	1.135
	5/16	4	208	0.0009	0.625	0.313	2550	9	1.986
	3/8	4	208	0.0011	0.750	0.375	2120	9	2.503
	1/2	4	208	0.0014	1.000	0.500	1590	9	4.338
	5/8	4	208	0.0018	1.250	0.625	1280	10	7.091
	3/4	4	208	0.0021	1.500	0.750	1060	9	10.011
	1	4	208	0.0028	2.000	1.000	800	10	18.021
Steel 42 - 48 HRC	1/8	4	152	0.0003	0.250	0.125	4650	5	0.209
	3/16	4	152	0.0005	0.375	0.188	3100	6	0.414
	1/4	4	152	0.0006	0.500	0.250	2330	7	0.750
	5/16	4	152	0.0008	0.625	0.313	1860	6	1.306
	3/8	4	152	0.0010	0.750	0.375	1550	6	1.655
	1/2	4	152	0.0012	1.000	0.500	1170	6	2.868
	5/8	4	152	0.0016	1.250	0.625	930	7	4.689
	3/4	4	152	0.0019	1.500	0.750	780	6	6.619
	1	4	152	0.0026	2.000	1.000	590	6	11.915
Cast Iron	1/8	4	472	0.0005	0.250	0.125	14430	28	0.865
	3/16	4	472	0.0007	0.375	0.188	9620	28	1.961
	1/4	4	472	0.0010	0.500	0.250	7220	29	3.556
	5/16	4	472	0.0012	0.625	0.313	5770	28	5.409
	3/8	4	472	0.0015	0.750	0.375	4810	28	7.843
	1/2	4	472	0.0019	1.000	0.500	3610	28	13.595
	5/8	4	472	0.0025	1.250	0.625	2890	29	22.222
	3/4	4	472	0.0029	1.500	0.750	2410	28	31.373
	1	4	472	0.0039	2.000	1.000	1810	29	56.471

X-Generation Mid Length NX-NVD

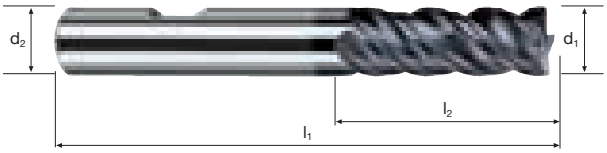
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **-10°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

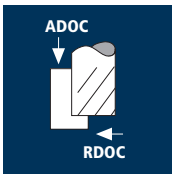
Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC				Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P15824188	1/8	1/4	2 1/4	5/16	0.004	5°	4	$37.40	
P15824252	3/16	3/16	2 1/4	15/32	0.004	3°	4	$37.40	
P15824312	1/4	1/4	2 1/4	5/8	0.004	—	4	$42.70	
P15824372	5/16	5/16	2 1/2	25/32	0.004	—	4	$59.50	
P15924432*	3/8	3/8	2 3/4	15/16	0.006	—	4	$70.90	•
P15924530*	1/2	1/2	3 1/4	1 1/4	0.006	—	4	$107.20	•
P15924605*	5/8	5/8	4	1 9/16	0.006	—	4	$192.00	•
P15924652*	3/4	3/4	4 1/2	1 7/8	0.006	—	4	$277.30	•
P15924775*	1	1	5 1/2	2 1/2	0.008	—	4	$395.30	•

*** with clamping flat**

15823



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	490	0.0013	0.469	0.047	9990	52	1.141
	1/4	4	490	0.0018	0.625	0.063	7490	53	2.068
	5/16	4	490	0.0021	0.781	0.078	5990	50	3.042
	3/8	4	490	0.0026	0.938	0.094	5000	52	4.563
	1/2	4	490	0.0034	1.250	0.125	3750	51	7.908
	5/8	4	490	0.0044	1.563	0.156	3000	53	12.927
	3/4	4	490	0.0052	1.875	0.188	2500	52	18.250
Steel 34 - 42 HRC	3/16	4	260	0.0012	0.469	0.047	5300	26	0.559
	1/4	4	260	0.0016	0.625	0.063	3980	26	1.013
	5/16	4	260	0.0019	0.781	0.078	3180	25	1.490
	3/8	4	260	0.0024	0.938	0.094	2650	26	2.235
	1/2	4	260	0.0031	1.250	0.125	1990	25	3.873
	5/8	4	260	0.0041	1.563	0.156	1590	26	6.332
	3/4	4	260	0.0048	1.875	0.188	1330	26	8.939
Steel 42 - 48 HRC	3/16	4	190	0.0011	0.469	0.047	3880	18	0.374
	1/4	4	190	0.0015	0.625	0.063	2910	18	0.679
	5/16	4	190	0.0018	0.781	0.078	2330	17	0.998
	3/8	4	190	0.0022	0.938	0.094	1940	18	1.497
	1/2	4	190	0.0029	1.250	0.125	1460	17	2.595
	5/8	4	190	0.0037	1.563	0.156	1170	18	4.241
	3/4	4	190	0.0044	1.875	0.188	970	18	5.988
Cast Iron	3/16	4	590	0.0014	0.469	0.047	12030	68	1.479
	1/4	4	590	0.0019	0.625	0.063	9020	69	2.682
	5/16	4	590	0.0022	0.781	0.078	7220	65	3.944
	3/8	4	590	0.0028	0.938	0.094	6020	68	5.916
	1/2	4	590	0.0036	1.250	0.125	4510	66	10.255
	5/8	4	590	0.0048	1.563	0.156	3610	69	16.763
	3/4	4	590	0.0056	1.875	0.188	3010	68	23.665

15823

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	392	0.0007	0.375	0.188	7990	23	1.606
	1/4	4	392	0.0010	0.500	0.250	5990	24	2.912
	5/16	4	392	0.0011	0.625	0.313	4800	22	4.283
	3/8	4	392	0.0014	0.750	0.375	4000	23	6.424
	1/2	4	392	0.0019	1.000	0.500	3000	23	11.135
	5/8	4	392	0.0024	1.250	0.625	2400	24	18.201
	3/4	4	392	0.0029	1.500	0.750	2000	23	25.696
Steel 34 - 42 HRC	3/16	4	208	0.0007	0.375	0.188	4240	12	0.787
	1/4	4	208	0.0009	0.500	0.250	3180	12	1.426
	5/16	4	208	0.0011	0.625	0.313	2550	11	2.098
	3/8	4	208	0.0013	0.750	0.375	2120	12	3.146
	1/2	4	208	0.0017	1.000	0.500	1590	11	5.454
	5/8	4	208	0.0022	1.250	0.625	1280	12	8.915
	3/4	4	208	0.0026	1.500	0.750	1060	12	12.586
Steel 42 - 48 HRC	3/16	4	152	0.0006	0.375	0.188	3100	8	0.527
	1/4	4	152	0.0008	0.500	0.250	2330	8	0.956
	5/16	4	152	0.0010	0.625	0.313	1860	8	1.405
	3/8	4	152	0.0012	0.750	0.375	1550	8	2.108
	1/2	4	152	0.0016	1.000	0.500	1170	8	3.653
	5/8	4	152	0.0021	1.250	0.625	930	8	5.972
	3/4	4	152	0.0024	1.500	0.750	780	8	8.431
Cast Iron	3/16	4	472	0.0008	0.375	0.188	9620	30	2.083
	1/4	4	472	0.0010	0.500	0.250	7220	31	3.776
	5/16	4	472	0.0012	0.625	0.313	5770	29	5.553
	3/8	4	472	0.0015	0.750	0.375	4810	30	8.330
	1/2	4	472	0.0020	1.000	0.500	3610	29	14.439
	5/8	4	472	0.0026	1.250	0.625	2890	31	23.602
	3/4	4	472	0.0031	1.500	0.750	2410	30	33.320

X-Generation Long Length NX-NVD

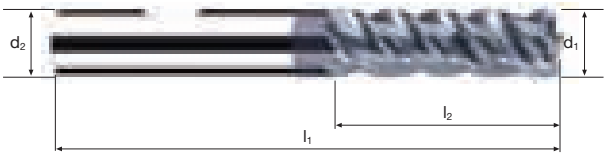
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **45°**
Rake **-10°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

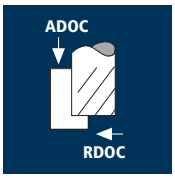
Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC				Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P15823252	3/16	1/4	2 1/4	9/16	0.004	2.5°	4	$43.20	
P15823312	1/4	1/4	2 1/2	3/4	0.004	—	4	$49.40	
P15823372	5/16	5/16	2 3/4	15/16	0.004	—	4	$67.80	
P15923432*	3/8	3/8	3	1 1/8	0.006	—	4	$82.00	•
P15923530*	1/2	1/2	3 3/4	1 1/2	0.006	—	4	$122.90	•
P15923605*	5/8	5/8	4 1/4	1 7/8	0.006	—	4	$221.90	•
P15923652*	3/4	3/4	4 3/4	2 1/4	0.006	—	4	$320.70	•

*** with clamping flat**

5949



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/32	3	395	0.0003	0.031	0.018	48280	43	0.024
	1/8	4	395	0.0012	0.125	0.073	12070	58	0.529
	3/16	4	395	0.0017	0.188	0.106	8045	55	1.096
	1/4	4	395	0.0023	0.250	0.142	6035	56	1.988
	5/16	4	395	0.0029	0.313	0.171	4830	56	2.997
	3/8	4	395	0.0034	0.375	0.217	4025	55	4.476
	7/16	4	395	0.0039	0.438	0.253	3450	54	5.984
	1/2	4	395	0.0046	0.500	0.295	3020	56	8.260
	5/8	4	395	0.0057	0.625	0.144	2415	55	4.950
Hardened Tool Steel 48 - 52 HRC Titanium	1/32	3	260	0.0003	0.031	0.018	31780	29	0.016
	1/8	4	260	0.0008	0.125	0.073	7945	25	0.228
	3/16	4	260	0.0011	0.188	0.106	5295	23	0.458
	1/4	4	260	0.0015	0.250	0.142	3975	24	0.852
	5/16	4	260	0.0020	0.313	0.171	3180	25	1.338
	3/8	4	260	0.0022	0.375	0.217	2650	23	1.872
	7/16	4	260	0.0026	0.438	0.253	2270	24	2.660
	1/2	4	260	0.0031	0.500	0.295	1985	25	3.688
	5/8	4	260	0.0039	0.625	0.144	1560	25	2.250
Hardened Tool Steel 52 - 56 HRC	1/32	3	195	0.0002	0.031	0.018	23835	14	0.008
	1/8	4	195	0.0006	0.125	0.073	5960	14	0.128
	3/16	4	195	0.0009	0.188	0.106	3975	14	0.279
	1/4	4	195	0.0012	0.250	0.142	2980	14	0.497
	5/16	4	195	0.0016	0.313	0.171	2385	15	0.803
	3/8	4	195	0.0019	0.375	0.217	1985	15	1.221
	7/16	4	195	0.0022	0.438	0.253	1705	15	1.662
	1/2	4	195	0.0025	0.500	0.295	1490	15	2.213
	5/8	4	195	0.0031	0.625	0.144	1190	15	1.350
Hardened Tool Steel 56 - 60 HRC	1/32	3	100	0.0001	0.031	0.018	12225	4	0.002
	1/8	4	100	0.0004	0.125	0.073	3055	5	0.046
	3/16	4	100	0.0007	0.188	0.106	2035	6	0.120
	1/4	4	100	0.0008	0.250	0.142	1530	5	0.178
	5/16	4	100	0.0012	0.313	0.171	1220	6	0.321
	3/8	4	100	0.0013	0.375	0.217	1020	5	0.407
	7/16	4	100	0.0015	0.438	0.253	875	5	0.554
	1/2	4	100	0.0019	0.500	0.295	765	6	0.885
	5/8	4	100	0.0023	0.625	0.144	610	6	0.540

5949

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/32	3	330	0.0003	0.015	0.031	40335	36	0.017
	1/8	4	330	0.0008	0.061	0.125	10085	32	0.244
	3/16	4	330	0.0013	0.089	0.188	6725	35	0.586
	1/4	4	330	0.0019	0.118	0.250	5040	38	1.121
	5/16	4	330	0.0023	0.143	0.313	4035	37	1.656
	3/8	4	330	0.0028	0.180	0.375	3360	38	2.565
	7/16	4	330	0.0033	0.210	0.438	2880	38	3.495
	1/2	4	330	0.0037	0.246	0.500	2520	37	4.551
	5/8	4	330	0.0045	0.144	0.625	2015	36	3.240
Hardened Tool Steel 48 - 52 HRC Titanium	1/32	3	195	0.0002	0.015	0.031	23835	14	0.007
	1/8	4	195	0.0006	0.061	0.125	5960	14	0.107
	3/16	4	195	0.0011	0.089	0.188	3975	17	0.284
	1/4	4	195	0.0015	0.118	0.250	2980	18	0.531
	5/16	4	195	0.0018	0.143	0.313	2385	17	0.761
	3/8	4	195	0.0021	0.180	0.375	1985	17	1.148
	7/16	4	195	0.0024	0.210	0.438	1705	16	1.472
	1/2	4	195	0.0027	0.246	0.500	1490	16	1.968
	5/8	4	195	0.0035	0.144	0.625	1190	17	1.530
Hardened Tool Steel 52 - 56 HRC	1/32	3	130	0.0002	0.015	0.031	15890	10	0.005
	1/8	4	130	0.0006	0.061	0.125	3975	10	0.076
	3/16	4	130	0.0007	0.089	0.188	2650	7	0.117
	1/4	4	130	0.0010	0.118	0.250	1985	8	0.236
	5/16	4	130	0.0014	0.143	0.313	1590	9	0.403
	3/8	4	130	0.0017	0.180	0.375	1325	9	0.608
	7/16	4	130	0.0020	0.210	0.438	1135	9	0.828
	1/2	4	130	0.0023	0.246	0.500	995	9	1.107
	5/8	4	130	0.0027	0.144	0.625	795	9	0.810
Hardened Tool Steel 56 - 60 HRC	1/32	3	65	0.0001	0.015	0.031	7945	2	0.001
	1/8	4	65	0.0004	0.061	0.125	1985	3	0.023
	3/16	4	65	0.0006	0.089	0.188	1325	3	0.050
	1/4	4	65	0.0008	0.118	0.250	995	3	0.089
	5/16	4	65	0.0010	0.143	0.313	795	3	0.134
	3/8	4	65	0.0012	0.180	0.375	660	3	0.203
	7/16	4	65	0.0014	0.210	0.438	570	3	0.276
	1/2	4	65	0.0016	0.246	0.500	495	3	0.369
	5/8	4	65	0.0020	0.144	0.625	395	3	0.270

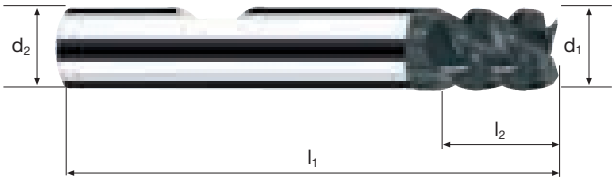
X-Generation Stub Length HX

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **-10°**

45°



Performance roughing

Performance finishing

Machines the following materials:

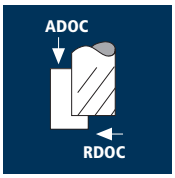
Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC		Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN								
D5949079	1/32	1/8	2 1/4	3/64	0.0015	10°	3	$47.70	
D5949124	1/16	1/8	2 1/4	5/64	0.0015	8°	3	$47.70	
D5949188	1/8	1/8	2 1/4	5/32	0.002	—	4	$47.70	
D5949252	3/16	1/4	2 1/4	1/4	0.004	4°	4	$47.70	
D5949312	1/4	1/4	2 1/2	5/16	0.004	—	4	$47.70	
D5949372	5/16	5/16	2 1/2	3/8	0.004	—	4	$55.70	
D5949432*	3/8	3/8	3	7/16	0.006	—	4	$68.60	•
D5949482*	7/16	7/16	3	1/2	0.006	—	4	$90.40	•
D5949530*	1/2	1/2	3 1/4	9/16	0.006	—	4	$113.60	•
D5949605*	5/8	5/8	3 1/2	3/4	0.006	—	4	$169.40	•

*** with clamping flat**

5949



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/32	3	395	0.0003	0.031	0.018	48280	43	0.024
	1/8	4	395	0.0012	0.125	0.073	12070	58	0.529
	3/16	4	395	0.0017	0.188	0.106	8045	55	1.096
	1/4	4	395	0.0023	0.250	0.142	6035	56	1.988
	5/16	4	395	0.0029	0.313	0.171	4830	56	2.997
	3/8	4	395	0.0034	0.375	0.217	4025	55	4.476
	7/16	4	395	0.0039	0.438	0.253	3450	54	5.984
	1/2	4	395	0.0046	0.500	0.295	3020	56	8.260
	5/8	4	395	0.0057	0.625	0.144	2415	55	4.950
Hardened Tool Steel 48 - 52 HRC Titanium	1/32	3	260	0.0003	0.031	0.018	31780	29	0.016
	1/8	4	260	0.0008	0.125	0.073	7945	25	0.228
	3/16	4	260	0.0011	0.188	0.106	5295	23	0.458
	1/4	4	260	0.0015	0.250	0.142	3975	24	0.852
	5/16	4	260	0.0020	0.313	0.171	3180	25	1.338
	3/8	4	260	0.0022	0.375	0.217	2650	23	1.872
	7/16	4	260	0.0026	0.438	0.253	2270	24	2.660
	1/2	4	260	0.0031	0.500	0.295	1985	25	3.688
	5/8	4	260	0.0039	0.625	0.144	1560	25	2.250
Hardened Tool Steel 52 - 56 HRC	1/32	3	195	0.0002	0.031	0.018	23835	14	0.008
	1/8	4	195	0.0006	0.125	0.073	5960	14	0.128
	3/16	4	195	0.0009	0.188	0.106	3975	14	0.279
	1/4	4	195	0.0012	0.250	0.142	2980	14	0.497
	5/16	4	195	0.0016	0.313	0.171	2385	15	0.803
	3/8	4	195	0.0019	0.375	0.217	1985	15	1.221
	7/16	4	195	0.0022	0.438	0.253	1705	15	1.662
	1/2	4	195	0.0025	0.500	0.295	1490	15	2.213
	5/8	4	195	0.0031	0.625	0.144	1190	15	1.350
Hardened Tool Steel 56 - 60 HRC	1/32	3	100	0.0001	0.031	0.018	12225	4	0.002
	1/8	4	100	0.0004	0.125	0.073	3055	5	0.046
	3/16	4	100	0.0007	0.188	0.106	2035	6	0.120
	1/4	4	100	0.0008	0.250	0.142	1530	5	0.178
	5/16	4	100	0.0012	0.313	0.171	1220	6	0.321
	3/8	4	100	0.0013	0.375	0.217	1020	5	0.407
	7/16	4	100	0.0015	0.438	0.253	875	5	0.554
	1/2	4	100	0.0019	0.500	0.295	765	6	0.885
	5/8	4	100	0.0023	0.625	0.144	610	6	0.540

5949

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/32	3	330	0.0003	0.015	0.031	40335	36	0.017
	1/8	4	330	0.0008	0.061	0.125	10085	32	0.244
	3/16	4	330	0.0013	0.089	0.188	6725	35	0.586
	1/4	4	330	0.0019	0.118	0.250	5040	38	1.121
	5/16	4	330	0.0023	0.143	0.313	4035	37	1.656
	3/8	4	330	0.0028	0.180	0.375	3360	38	2.565
	7/16	4	330	0.0033	0.210	0.438	2880	38	3.495
	1/2	4	330	0.0037	0.246	0.500	2520	37	4.551
	5/8	4	330	0.0045	0.144	0.625	2015	36	3.240
Hardened Tool Steel 48 - 52 HRC Titanium	1/32	3	195	0.0002	0.015	0.031	23835	14	0.007
	1/8	4	195	0.0006	0.061	0.125	5960	14	0.107
	3/16	4	195	0.0011	0.089	0.188	3975	17	0.284
	1/4	4	195	0.0015	0.118	0.250	2980	18	0.531
	5/16	4	195	0.0018	0.143	0.313	2385	17	0.761
	3/8	4	195	0.0021	0.180	0.375	1985	17	1.148
	7/16	4	195	0.0024	0.210	0.438	1705	16	1.472
	1/2	4	195	0.0027	0.246	0.500	1490	16	1.968
	5/8	4	195	0.0035	0.144	0.625	1190	17	1.530
Hardened Tool Steel 52 - 56 HRC	1/32	3	130	0.0002	0.015	0.031	15890	10	0.005
	1/8	4	130	0.0006	0.061	0.125	3975	10	0.076
	3/16	4	130	0.0007	0.089	0.188	2650	7	0.117
	1/4	4	130	0.0010	0.118	0.250	1985	8	0.236
	5/16	4	130	0.0014	0.143	0.313	1590	9	0.403
	3/8	4	130	0.0017	0.180	0.375	1325	9	0.608
	7/16	4	130	0.0020	0.210	0.438	1135	9	0.828
	1/2	4	130	0.0023	0.246	0.500	995	9	1.107
	5/8	4	130	0.0027	0.144	0.625	795	9	0.810
Hardened Tool Steel 56 - 60 HRC	1/32	3	65	0.0001	0.015	0.031	7945	2	0.001
	1/8	4	65	0.0004	0.061	0.125	1985	3	0.023
	3/16	4	65	0.0006	0.089	0.188	1325	3	0.050
	1/4	4	65	0.0008	0.118	0.250	995	3	0.089
	5/16	4	65	0.0010	0.143	0.313	795	3	0.134
	3/8	4	65	0.0012	0.180	0.375	660	3	0.203
	7/16	4	65	0.0014	0.210	0.438	570	3	0.276
	1/2	4	65	0.0016	0.246	0.500	495	3	0.369
	5/8	4	65	0.0020	0.144	0.625	395	3	0.270

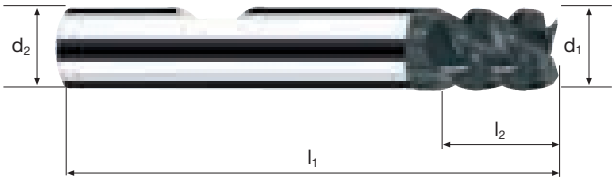
X-Generation Stub Length HX

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **-10°**

45°



Performance roughing

Performance finishing

Machines the following materials:

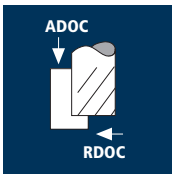
Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC		Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P5949079	1/32	1/8	2 1/4	3/64	0.0015	10°	3	$47.70	
P5949124	1/16	1/8	2 1/4	5/64	0.0015	8°	3	$47.70	
P5949188	1/8	1/8	2 1/4	5/32	0.002	—	4	$47.70	
P5949252	3/16	1/4	2 1/4	1/4	0.004	4°	4	$47.70	
P5949312	1/4	1/4	2 1/2	5/16	0.004	—	4	$47.70	
P5949372	5/16	5/16	2 1/2	3/8	0.004	—	4	$55.70	
P5949432*	3/8	3/8	3	7/16	0.006	—	4	$68.60	•
P5949482*	7/16	7/16	3	1/2	0.006	—	4	$90.40	•
P5949530*	1/2	1/2	3 1/4	9/16	0.006	—	4	$113.60	•
P5949605*	5/8	5/8	3 1/2	3/4	0.006	—	4	$169.40	•

*** with clamping flat**

5948



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/8	4	395	0.0010	0.125	0.101	12070	48	0.606
	3/16	4	395	0.0015	0.188	0.114	8045	48	1.029
	1/4	4	395	0.0021	0.250	0.150	6035	51	1.912
	5/16	4	395	0.0025	0.313	0.186	4830	48	2.794
	3/8	4	395	0.0032	0.375	0.230	4025	52	4.485
	1/2	4	395	0.0042	0.500	0.327	3020	51	8.339
	5/8	4	395	0.0053	0.625	0.162	2415	51	5.164
	3/4	4	395	0.0062	0.750	0.192	2010	50	7.200
Hardened Tool Steel 48 - 52 HRC Titanium	1/8	4	260	0.0006	0.125	0.101	7945	19	0.240
	3/16	4	260	0.0011	0.188	0.114	5295	23	0.493
	1/4	4	260	0.0015	0.250	0.150	3975	24	0.900
	5/16	4	260	0.0018	0.313	0.186	3180	23	1.339
	3/8	4	260	0.0021	0.375	0.230	2650	22	1.898
	1/2	4	260	0.0027	0.500	0.327	1985	21	3.434
	5/8	4	260	0.0035	0.625	0.162	1590	22	2.228
	3/4	4	260	0.0041	0.750	0.192	1325	22	3.168
Hardened Tool Steel 52 - 56 HRC	1/8	4	195	0.0006	0.125	0.101	5960	14	0.177
	3/16	4	195	0.0009	0.188	0.114	3975	14	0.300
	1/4	4	195	0.0010	0.250	0.150	2980	12	0.450
	5/16	4	195	0.0014	0.313	0.186	2385	13	0.757
	3/8	4	195	0.0017	0.375	0.230	1985	13	1.121
	1/2	4	195	0.0023	0.500	0.327	1490	14	2.289
	5/8	4	195	0.0029	0.625	0.162	1190	14	1.418
	3/4	4	195	0.0034	0.750	0.192	995	14	2.016
Hardened Tool Steel 56 - 60 HRC	1/8	4	100	0.0004	0.125	0.101	3055	5	0.063
	3/16	4	100	0.0006	0.188	0.114	2035	5	0.107
	1/4	4	100	0.0008	0.250	0.150	1530	5	0.188
	5/16	4	100	0.0010	0.313	0.186	1220	5	0.291
	3/8	4	100	0.0013	0.375	0.230	1020	5	0.431
	1/2	4	100	0.0017	0.500	0.327	765	5	0.818
	5/8	4	100	0.0021	0.625	0.162	610	5	0.506
	3/4	4	100	0.0024	0.750	0.192	510	5	0.720

5948

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/8	4	330	0.0008	0.084	0.125	10085	32	0.336
	3/16	4	330	0.0013	0.095	0.188	6725	35	0.625
	1/4	4	330	0.0017	0.125	0.250	5040	34	1.063
	5/16	4	330	0.0021	0.155	0.313	4035	34	1.650
	3/8	4	330	0.0024	0.191	0.375	3360	32	2.292
	1/2	4	330	0.0033	0.272	0.500	2520	33	4.488
	5/8	4	330	0.0041	0.162	0.625	2015	33	3.341
	3/4	4	330	0.0051	0.192	0.750	1680	34	4.896
Hardened Tool Steel 48 - 52 HRC Titanium	1/8	4	195	0.0006	0.084	0.125	5960	14	0.147
	3/16	4	195	0.0009	0.095	0.188	3975	14	0.250
	1/4	4	195	0.0012	0.125	0.250	2980	14	0.438
	5/16	4	195	0.0016	0.155	0.313	2385	15	0.728
	3/8	4	195	0.0019	0.191	0.375	1985	15	1.074
	1/2	4	195	0.0025	0.272	0.500	1490	15	2.040
	5/8	4	195	0.0031	0.162	0.625	1190	15	1.519
	3/4	4	195	0.0037	0.192	0.750	995	15	2.160
Hardened Tool Steel 52 - 56 HRC	1/8	4	130	0.0004	0.084	0.125	3975	6	0.063
	3/16	4	130	0.0007	0.095	0.188	2650	7	0.125
	1/4	4	130	0.0010	0.125	0.250	1985	8	0.250
	5/16	4	130	0.0012	0.155	0.313	1590	8	0.388
	3/8	4	130	0.0015	0.191	0.375	1325	8	0.573
	1/2	4	130	0.0021	0.272	0.500	995	8	1.088
	5/8	4	130	0.0025	0.162	0.625	795	8	0.810
	3/4	4	130	0.0030	0.192	0.750	660	8	1.152
Hardened Tool Steel 56 - 60 HRC	1/8	4	65	0.0004	0.084	0.125	1985	3	0.032
	3/16	4	65	0.0005	0.095	0.188	1325	3	0.054
	1/4	4	65	0.0007	0.125	0.250	995	3	0.094
	5/16	4	65	0.0009	0.155	0.313	795	3	0.146
	3/8	4	65	0.0011	0.191	0.375	660	3	0.215
	1/2	4	65	0.0014	0.272	0.500	495	3	0.408
	5/8	4	65	0.0018	0.162	0.625	395	3	0.304
	3/4	4	65	0.0021	0.192	0.750	330	3	0.432

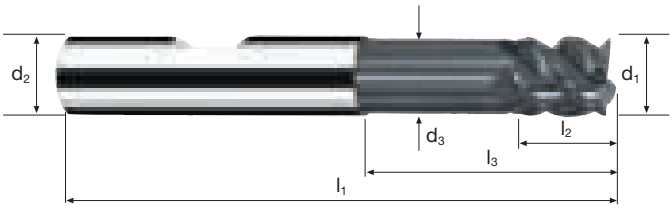
X-Generation Standard Reach HX

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **-10°**

45°



Performance roughing

Performance finishing

Machines the following materials:

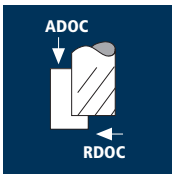
Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC		Titanium	

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN									
D5948188	1/8	1/8	0.115	1 1/2	5/32	3/4	0.002	4	$48.70	
D5948248	3/16	3/16	0.175	2	1/4	1	0.004	4	$48.70	
D5948312	1/4	1/4	0.230	2 1/2	5/16	1	0.004	4	$48.70	
D5948372	5/16	5/16	0.288	2 1/2	3/8	1	0.004	4	$59.10	
D5948432*	3/8	3/8	0.345	2 1/2	7/16	1	0.006	4	$73.00	•
D5948530*	1/2	1/2	0.460	3	9/16	1 1/4	0.006	4	$125.10	•
D5948605*	5/8	5/8	0.575	3 1/2	3/4	1 1/2	0.006	4	$191.00	•
D5948652*	3/4	3/4	0.710	4	13/16	1 3/4	0.006	4	$250.00	•

*** with clamping flat**

5958



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/4	4	395	0.0021	0.375	0.037	6035	51	0.708
	5/16	4	395	0.0025	0.469	0.047	4830	48	1.058
	3/8	4	395	0.0032	0.563	0.053	4025	52	1.552
	1/2	4	395	0.0042	0.750	0.075	3020	51	2.869
	5/8	4	395	0.0053	0.938	0.097	2415	51	4.640
Hardened Tool Steel 48 - 52 HRC Titanium	1/4	4	260	0.0015	0.375	0.037	3975	24	0.333
	5/16	4	260	0.0018	0.469	0.047	3180	23	0.507
	3/8	4	260	0.0021	0.563	0.053	2650	22	0.656
	1/2	4	260	0.0027	0.750	0.075	1985	21	1.181
	5/8	4	260	0.0035	0.938	0.097	1590	22	2.002
Hardened Tool Steel 52 - 56 HRC	1/4	4	195	0.0010	0.375	0.037	2980	12	0.166
	5/16	4	195	0.0014	0.469	0.047	2385	13	0.287
	3/8	4	195	0.0017	0.563	0.053	1985	13	0.388
	1/2	4	195	0.0023	0.750	0.075	1490	14	0.787
	5/8	4	195	0.0029	0.938	0.097	1190	14	1.274
Hardened Tool Steel 56 - 60 HRC	1/4	4	100	0.0008	0.375	0.037	1530	5	0.069
	5/16	4	100	0.0010	0.469	0.047	1220	5	0.110
	3/8	4	100	0.0013	0.563	0.053	1020	5	0.149
	1/2	4	100	0.0017	0.750	0.075	765	5	0.281
	5/8	4	100	0.0021	0.938	0.097	610	5	0.455

5958

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 42 - 48 HRC	1/4	4	330	0.0017	0.125	0.250	5040	34	1.063
	5/16	4	330	0.0021	0.155	0.313	4035	34	1.650
	3/8	4	330	0.0024	0.177	0.375	3360	32	2.124
	1/2	4	330	0.0033	0.251	0.500	2520	33	4.142
	5/8	4	330	0.0041	0.162	0.625	2015	33	3.341
Hardened Tool Steel 48 - 52 HRC Titanium	1/4	4	195	0.0012	0.125	0.250	2980	14	0.438
	5/16	4	195	0.0016	0.155	0.313	2385	15	0.728
	3/8	4	195	0.0019	0.177	0.375	1985	15	0.996
	1/2	4	195	0.0025	0.251	0.500	1490	15	1.883
	5/8	4	195	0.0031	0.162	0.625	1190	15	1.519
Hardened Tool Steel 52 - 56 HRC	1/4	4	130	0.0010	0.125	0.250	1985	8	0.250
	5/16	4	130	0.0012	0.155	0.313	1590	8	0.388
	3/8	4	130	0.0015	0.177	0.375	1325	8	0.531
	1/2	4	130	0.0021	0.251	0.500	995	8	1.004
	5/8	4	130	0.0025	0.162	0.625	795	8	0.810
Hardened Tool Steel 56 - 60 HRC	1/4	4	65	0.0007	0.125	0.250	995	3	0.094
	5/16	4	65	0.0009	0.155	0.313	795	3	0.146
	3/8	4	65	0.0011	0.177	0.375	660	3	0.199
	1/2	4	65	0.0014	0.251	0.500	495	3	0.377
	5/8	4	65	0.0018	0.162	0.625	395	3	0.304

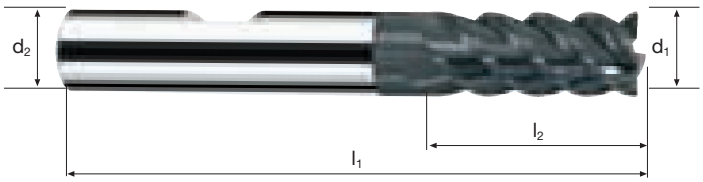
X-Generation Standard Length HX

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **-10°**

45°



Performance roughing

Performance finishing

Machines the following materials:

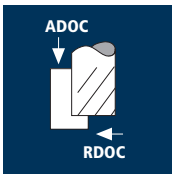
Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC		Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN							
D5958312	1/4	1/4	2 1/2	3/4	0.004	4	$48.70	
D5958372	5/16	5/16	2 1/2	1	0.004	4	$59.10	
D5958432*	3/8	3/8	3	1	0.006	4	$73.00	•
D5958530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$125.10	•
D5958605*	5/8	5/8	3 1/2	1 1/4	0.006	4	$191.00	•

*** with clamping flat**

5947



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	295	0.0008	0.125	0.067	9015	29	0.243
	3/16	4	295	0.0011	0.188	0.076	6010	26	0.371
	1/4	4	295	0.0017	0.250	0.100	4505	31	0.775
	5/16	4	295	0.0020	0.313	0.124	3605	29	1.126
	3/8	4	295	0.0024	0.375	0.153	3005	29	1.664
	1/2	4	295	0.0031	0.500	0.218	2255	28	3.052
Hardened Tool Steel 52 - 56 HRC	1/8	4	230	0.0006	0.125	0.067	7030	17	0.142
	3/16	4	230	0.0011	0.188	0.076	4685	21	0.300
	1/4	4	230	0.0015	0.250	0.100	3515	21	0.525
	5/16	4	230	0.0018	0.313	0.124	2810	20	0.776
	3/8	4	230	0.0021	0.375	0.153	2345	20	1.148
	1/2	4	230	0.0027	0.500	0.218	1755	19	2.071
Hardened Tool Steel 56 - 60 HRC	1/8	4	115	0.0006	0.125	0.067	3515	8	0.067
	3/16	4	115	0.0009	0.188	0.076	2345	8	0.114
	1/4	4	115	0.0010	0.250	0.100	1755	7	0.175
	5/16	4	115	0.0014	0.313	0.124	1405	8	0.310
	3/8	4	115	0.0017	0.375	0.153	1170	8	0.459
	1/2	4	115	0.0023	0.500	0.218	880	8	0.872
Hardened Tool Steel > 60 HRC	1/8	4	80	0.0004	0.125	0.067	2445	4	0.034
	3/16	4	80	0.0006	0.188	0.076	1630	4	0.057
	1/4	4	80	0.0006	0.250	0.100	1220	3	0.075
	5/16	4	80	0.0010	0.313	0.124	980	4	0.155
	3/8	4	80	0.0011	0.375	0.153	815	4	0.229
	1/2	4	80	0.0015	0.500	0.218	610	4	0.436

5947

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	230	0.0006	0.084	0.125	7030	17	0.179
	3/16	4	230	0.0011	0.095	0.188	4685	21	0.375
	1/4	4	230	0.0015	0.125	0.250	3515	21	0.656
	5/16	4	230	0.0018	0.155	0.313	2810	20	0.970
	3/8	4	230	0.0021	0.191	0.375	2345	20	1.432
	1/2	4	230	0.0027	0.272	0.500	1755	19	2.584
Hardened Tool Steel 52 - 56 HRC	1/8	4	165	0.0006	0.084	0.125	5040	12	0.126
	3/16	4	165	0.0009	0.095	0.188	3360	12	0.214
	1/4	4	165	0.0010	0.125	0.250	2520	10	0.313
	5/16	4	165	0.0014	0.155	0.313	2015	11	0.534
	3/8	4	165	0.0017	0.191	0.375	1680	11	0.788
	1/2	4	165	0.0023	0.272	0.500	1260	12	1.632
Hardened Tool Steel 56 - 60 HRC	1/8	4	100	0.0004	0.084	0.125	3055	5	0.053
	3/16	4	100	0.0006	0.095	0.188	2035	5	0.089
	1/4	4	100	0.0008	0.125	0.250	1530	5	0.156
	5/16	4	100	0.0011	0.155	0.313	1220	5	0.243
	3/8	4	100	0.0012	0.191	0.375	1020	5	0.358
	1/2	4	100	0.0017	0.272	0.500	765	5	0.680
Hardened Tool Steel > 60 HRC	1/8	4	65	0.0003	0.084	0.125	1985	2	0.021
	3/16	4	65	0.0005	0.095	0.188	1325	3	0.054
	1/4	4	65	0.0007	0.125	0.250	995	3	0.094
	5/16	4	65	0.0008	0.155	0.313	795	3	0.146
	3/8	4	65	0.0010	0.191	0.375	660	3	0.215
	1/2	4	65	0.0013	0.272	0.500	495	3	0.408

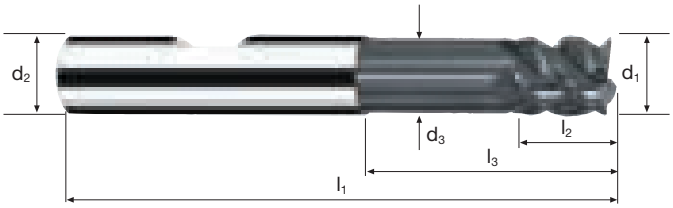
X-Generation Standard Reach HX-H

HSS | Favora® | Base-X | X-Generation

HM XT

Helix **55°**
Rake **-10°**

45°



Performance roughing

Performance finishing

Machines the following materials:

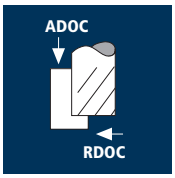
Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN									
D5947188	1/8	1/8	0.115	1 1/2	5/32	3/4	0.002	4	$53.50	
D5947248	3/16	3/16	0.175	2	1/4	1	0.004	4	$53.50	
D5947312	1/4	1/4	0.230	2 1/2	5/16	1	0.004	4	$53.50	
D5947372	5/16	5/16	0.288	2 1/2	3/8	1	0.004	4	$65.10	
D5947432*	3/8	3/8	0.345	2 1/2	7/16	1	0.006	4	$80.30	•
D5947530*	1/2	1/2	0.460	3	9/16	1 1/4	0.006	4	$136.50	•

*** with clamping flat**

5925



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/8	4	655	0.0008	0.125	0.069	20015	64	0.552
	3/16	4	655	0.0015	0.188	0.095	13345	80	1.429
	1/4	4	655	0.0021	0.250	0.125	10010	84	2.625
	3/8	4	655	0.0030	0.375	0.191	6670	80	5.730
	1/2	4	655	0.0040	0.500	0.272	5005	80	10.880
	5/8	4	655	0.0049	0.625	0.323	4005	78	15.746
	3/4	4	655	0.0058	0.750	0.384	3335	77	22.176
Steel 24 - 34 HRC	1/8	4	490	0.0008	0.125	0.069	14975	48	0.414
	3/16	4	490	0.0015	0.188	0.095	9980	60	1.072
	1/4	4	490	0.0021	0.250	0.125	7485	63	1.969
	3/8	4	490	0.0030	0.375	0.191	4990	60	4.297
	1/2	4	490	0.0040	0.500	0.272	3745	60	8.160
	5/8	4	490	0.0049	0.625	0.323	2995	59	11.911
	3/4	4	490	0.0058	0.750	0.384	2495	58	16.704
Cold Work Tool Steel (12% Cr), High Alloyed Steel 34 - 42 HRC	1/8	4	330	0.0008	0.125	0.069	10085	32	0.276
	3/16	4	330	0.0013	0.188	0.095	6725	35	0.625
	1/4	4	330	0.0019	0.250	0.125	5040	38	1.188
	3/8	4	330	0.0026	0.375	0.191	3360	35	2.507
	1/2	4	330	0.0035	0.500	0.272	2520	35	4.760
	5/8	4	330	0.0043	0.625	0.323	2015	35	7.066
	3/4	4	330	0.0052	0.750	0.384	1680	35	10.080
Cast Iron	1/8	4	590	0.0010	0.125	0.069	18030	72	0.621
	3/16	4	590	0.0017	0.188	0.095	12020	82	1.465
	1/4	4	590	0.0023	0.250	0.125	9015	83	2.594
	3/8	4	590	0.0034	0.375	0.191	6010	82	5.873
	1/2	4	590	0.0044	0.500	0.272	4505	79	10.744
	5/8	4	590	0.0055	0.625	0.323	3605	79	15.948
	3/4	4	590	0.0066	0.750	0.384	3005	79	22.752

5925

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/8	4	590	0.0006	0.138	0.125	18030	43	0.742
	3/16	4	590	0.0011	0.189	0.188	12020	53	1.883
	1/4	4	590	0.0017	0.249	0.250	9015	61	3.797
	3/8	4	590	0.0024	0.383	0.375	6010	58	8.330
	1/2	4	590	0.0031	0.545	0.500	4505	56	15.260
	5/8	4	590	0.0029	0.323	0.625	3605	42	8.479
	3/4	4	590	0.0036	0.384	0.750	3005	43	12.384
Steel 24 - 34 HRC	1/8	4	395	0.0006	0.138	0.125	12070	29	0.500
	3/16	4	395	0.0011	0.189	0.188	8045	35	1.244
	1/4	4	395	0.0017	0.249	0.250	6035	41	2.552
	3/8	4	395	0.0024	0.383	0.375	4025	39	5.601
	1/2	4	395	0.0031	0.545	0.500	3020	37	10.083
	5/8	4	395	0.0029	0.323	0.625	2415	28	5.653
	3/4	4	395	0.0036	0.384	0.750	2010	29	8.352
Cold Work Tool Steel (12% Cr), High Alloyed Steel 34 - 42 HRC	1/8	4	260	0.0006	0.138	0.125	7925	19	0.328
	3/16	4	260	0.0011	0.189	0.188	5295	23	0.817
	1/4	4	260	0.0015	0.249	0.250	3975	24	1.494
	3/8	4	260	0.0021	0.383	0.375	2650	22	3.160
	1/2	4	260	0.0025	0.545	0.500	1985	20	5.450
	5/8	4	260	0.0029	0.323	0.625	1590	18	3.634
	3/4	4	260	0.0036	0.384	0.750	1325	19	5.472
Cast Iron	1/8	4	525	0.0008	0.138	0.125	16045	51	0.880
	3/16	4	525	0.0011	0.189	0.188	10695	47	1.670
	1/4	4	525	0.0017	0.249	0.250	8020	55	3.424
	3/8	4	525	0.0026	0.383	0.375	5350	56	8.043
	1/2	4	525	0.0029	0.545	0.500	4010	47	12.808
	5/8	4	525	0.0035	0.323	0.625	3210	45	9.084
	3/4	4	525	0.0041	0.384	0.750	2675	44	12.672

X-Generation Standard Reach NX-V

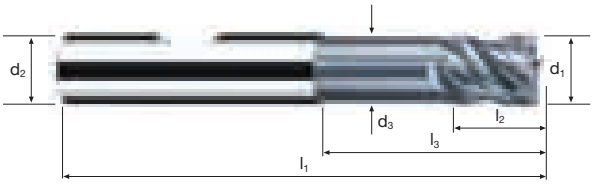
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

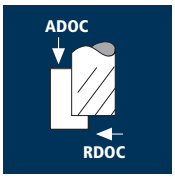
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Cast Iron Tool Steel

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN									
P5925188	1/8	1/8	0.115	1 1/2	5/32	3/4	0.002	4	$51.80	
P5925252	3/16	3/16	0.175	2	1/4	1	0.004	4	$51.80	
P5925312	1/4	1/4	0.230	2 1/2	5/16	1	0.004	4	$51.80	
P5925432*	3/8	3/8	0.345	2 1/2	7/16	1	0.006	4	$77.20	•
P5925530*	1/2	1/2	0.460	3	9/16	1 1/4	0.006	4	$132.70	•
P5925605*	5/8	5/8	0.575	3 1/2	3/4	1 1/2	0.006	4	$200.00	•
P5925652*	3/4	3/4	0.710	4	13/16	1 3/4	0.006	4	$267.00	•

*** with clamping flat**

5927



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	655	0.0017	0.375	0.100	10010	68	2.550
	5/16	4	655	0.0021	0.469	0.124	8005	67	3.896
	3/8	4	655	0.0026	0.563	0.142	6670	69	5.516
	1/2	4	655	0.0031	0.750	0.201	5005	62	9.346
	5/8	4	655	0.0039	0.938	0.259	4005	62	15.062
Steel 24 - 34 HRC	1/4	4	490	0.0017	0.375	0.100	7485	51	1.913
	5/16	4	490	0.0021	0.469	0.124	5990	50	2.908
	3/8	4	490	0.0026	0.563	0.142	4990	52	4.157
	1/2	4	490	0.0031	0.750	0.201	3745	46	6.935
	5/8	4	490	0.0039	0.938	0.259	2995	47	11.418
Cold Work Tool Steel (12% Cr), High Alloyed Steel 34 - 42 HRC	1/4	4	330	0.0017	0.375	0.100	5040	34	1.275
	5/16	4	330	0.0020	0.469	0.124	4035	32	1.861
	3/8	4	330	0.0024	0.563	0.142	3360	32	2.558
	1/2	4	330	0.0031	0.750	0.201	2520	31	4.673
	5/8	4	330	0.0037	0.938	0.259	2015	30	7.288
Cast Iron	1/4	4	590	0.0021	0.375	0.100	9015	76	2.850
	5/16	4	590	0.0025	0.469	0.124	7210	72	4.187
	3/8	4	590	0.0030	0.563	0.142	6010	72	5.756
	1/2	4	590	0.0040	0.750	0.201	4505	72	10.854
	5/8	4	590	0.0051	0.938	0.259	3605	74	17.978

5927

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	590	0.0015	0.249	0.250	9015	54	3.362
	5/16	4	590	0.0018	0.310	0.313	7210	52	5.046
	3/8	4	590	0.0021	0.354	0.375	6010	50	6.637
	1/2	4	590	0.0025	0.503	0.500	4505	45	11.318
	5/8	4	590	0.0029	0.323	0.625	3605	42	8.479
Steel 24 - 34 HRC	1/4	4	395	0.0015	0.249	0.250	6035	36	2.241
	5/16	4	395	0.0018	0.310	0.313	4830	35	3.396
	3/8	4	395	0.0021	0.354	0.375	4025	34	4.513
	1/2	4	395	0.0025	0.503	0.500	3020	30	7.545
	5/8	4	395	0.0029	0.323	0.625	2415	28	5.653
Cold Work Tool Steel (12% Cr), High Alloyed Steel 34 - 42 HRC	1/4	4	260	0.0015	0.249	0.250	3975	24	1.494
	5/16	4	260	0.0018	0.310	0.313	3180	23	2.232
	3/8	4	260	0.0021	0.354	0.375	2650	22	2.920
	1/2	4	260	0.0025	0.503	0.500	1985	20	5.030
	5/8	4	260	0.0029	0.323	0.625	1590	18	3.634
Cast Iron	1/4	4	525	0.0017	0.249	0.250	8020	55	3.424
	5/16	4	525	0.0020	0.310	0.313	6415	51	4.949
	3/8	4	525	0.0024	0.354	0.375	5350	51	6.770
	1/2	4	525	0.0027	0.503	0.500	4010	43	10.815
	5/8	4	525	0.0035	0.323	0.625	3210	45	9.084

X-Generation Standard Length NX-NV

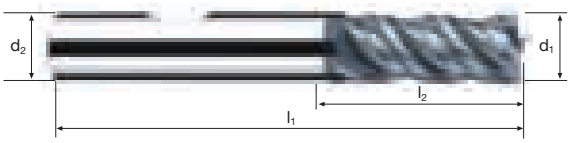
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

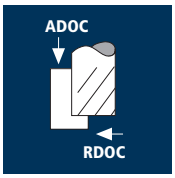
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Cast Iron Tool Steel

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5927312	1/4	1/4	2 1/2	3/4	0.004	4	$51.80	
P5927372	5/16	5/16	2 1/2	1	0.004	4	$61.30	
P5927432*	3/8	3/8	3	1	0.006	4	$77.20	•
P5927530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$132.70	•
P5927605*	5/8	5/8	3 1/2	1 1/4	0.006	4	$200.00	•

*** with clamping flat**

15925



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	655	0.0021	0.250	0.092	10010	84	1.932
	3/8	4	655	0.0030	0.375	0.142	6670	80	4.260
	1/2	4	655	0.0040	0.500	0.191	5005	80	7.640
	5/8	4	655	0.0049	0.625	0.113	4005	78	5.509
	3/4	4	655	0.0058	0.750	0.142	3335	77	8.201
Steel 24 - 34 HRC	1/4	4	490	0.0021	0.250	0.092	7485	63	1.449
	3/8	4	490	0.0030	0.375	0.142	4990	60	3.195
	1/2	4	490	0.0040	0.500	0.191	3745	60	5.730
	5/8	4	490	0.0049	0.625	0.113	2995	59	4.167
	3/4	4	490	0.0058	0.750	0.142	2495	58	6.177
Cold Work Tool Steel (12% Cr), High Alloyed Steel 34 - 42 HRC	1/4	4	330	0.0019	0.250	0.092	5040	38	0.874
	3/8	4	330	0.0026	0.375	0.142	3360	35	1.864
	1/2	4	330	0.0035	0.500	0.191	2520	35	3.343
	5/8	4	330	0.0043	0.625	0.113	2015	35	2.472
	3/4	4	330	0.0052	0.750	0.142	1680	35	3.728
Cast Iron	1/4	4	590	0.0023	0.250	0.092	9015	83	1.909
	3/8	4	590	0.0034	0.375	0.142	6010	82	4.367
	1/2	4	590	0.0044	0.500	0.191	4505	79	7.545
	5/8	4	590	0.0055	0.625	0.113	3605	79	5.579
	3/4	4	590	0.0066	0.750	0.142	3005	79	8.414

15925

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	590	0.0017	0.161	0.250	9015	61	2.455
	3/8	4	590	0.0024	0.248	0.375	6010	58	5.394
	1/2	4	590	0.0031	0.334	0.500	4505	56	9.352
	5/8	4	590	0.0029	0.227	0.625	3605	42	5.959
	3/4	4	590	0.0036	0.284	0.750	3005	43	9.159
Steel 24 - 34 HRC	1/4	4	395	0.0017	0.161	0.250	6035	41	1.650
	3/8	4	395	0.0024	0.248	0.375	4025	39	3.627
	1/2	4	395	0.0031	0.334	0.500	3020	37	6.179
	5/8	4	395	0.0029	0.227	0.625	2415	28	3.973
	3/4	4	395	0.0036	0.284	0.750	2010	29	6.177
Cold Work Tool Steel (12% Cr), High Alloyed Steel 34 - 42 HRC	1/4	4	260	0.0015	0.161	0.250	3975	24	0.966
	3/8	4	260	0.0021	0.248	0.375	2650	22	2.046
	1/2	4	260	0.0025	0.334	0.500	1985	20	3.340
	5/8	4	260	0.0029	0.227	0.625	1590	18	2.554
	3/4	4	260	0.0036	0.284	0.750	1325	19	4.047
Cast Iron	1/4	4	525	0.0017	0.161	0.250	8020	55	2.214
	3/8	4	525	0.0026	0.248	0.375	5350	56	5.208
	1/2	4	525	0.0029	0.334	0.500	4010	47	7.849
	5/8	4	525	0.0035	0.227	0.625	3210	45	6.384
	3/4	4	525	0.0041	0.284	0.750	2675	44	9.372

X-Generation Long Reach NX-V

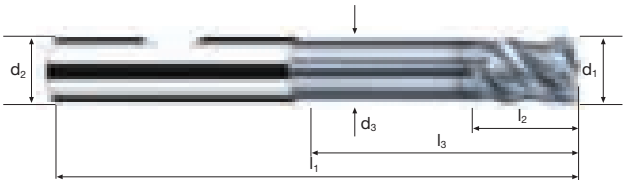
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **0°**

45°

Vario



Performance roughing

Performance finishing

Machines the following materials:

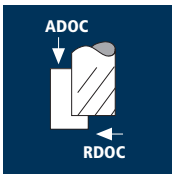
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Cast Iron Tool Steel

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN									
P15925312	1/4	1/4	0.230	3	5/16	1 1/2	0.004	4	$61.20	
P15925432*	3/8	3/8	0.345	3 1/2	7/16	2	0.006	4	$91.90	•
P15925530*	1/2	1/2	0.460	4	9/16	2 1/4	0.006	4	$153.80	•
P15925605*	5/8	5/8	0.575	5	3/4	3	0.006	4	$221.20	•
P15925652*	3/4	3/4	0.710	6	13/16	3 3/4	0.006	4	$297.90	•

*** with clamping flat**

15913



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Stainless Steel [Cr-Ni/304]	1/8	4	260	0.0006	0.125	0.073	7945	19	0.173
	3/16	4	260	0.0009	0.188	0.106	5295	19	0.379
	1/4	4	260	0.0012	0.225	0.142	3975	19	0.607
	3/8	4	260	0.0019	0.375	0.217	2650	20	1.628
	1/2	4	260	0.0025	0.500	0.295	1985	20	2.950
	5/8	4	260	0.0029	0.625	0.231	1590	18	2.599
Stainless Steel [Cr-Ni-Mo-.../316Ti]	1/8	4	130	0.0006	0.125	0.073	3975	10	0.091
	3/16	4	130	0.0009	0.188	0.106	2650	10	0.199
	1/4	4	130	0.0012	0.225	0.142	1985	10	0.320
	3/8	4	130	0.0019	0.375	0.217	1325	10	0.814
	1/2	4	130	0.0025	0.500	0.295	995	10	1.475
	5/8	4	130	0.0029	0.625	0.231	795	9	1.299
Heat resistant Steel [17-4 PH]	1/8	4	80	0.0006	0.125	0.073	2445	6	0.055
	3/16	4	80	0.0009	0.188	0.106	1630	6	0.120
	1/4	4	80	0.0012	0.225	0.142	1220	6	0.192
	3/8	4	80	0.0017	0.375	0.217	815	6	0.488
	1/2	4	80	0.0021	0.500	0.295	610	5	0.737
	5/8	4	80	0.0023	0.625	0.231	490	5	0.722
Nickel Base Alloys Prec.-Hard. [Inconel 718]	1/8	4	50	0.0006	0.125	0.073	1530	4	0.037
	3/16	4	50	0.0009	0.188	0.106	1020	4	0.080
	1/4	4	50	0.0012	0.225	0.142	765	4	0.128
	3/8	4	50	0.0017	0.375	0.217	510	3	0.244
	1/2	4	50	0.0021	0.500	0.295	380	3	0.443
	5/8	4	50	0.0023	0.625	0.231	305	3	0.433

15913

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Stainless Steel [Cr-Ni/304]	1/8	4	260	0.0006	0.085	0.125	7945	19	0.202
	3/16	4	260	0.0009	0.124	0.188	5295	19	0.443
	1/4	4	260	0.0012	0.165	0.250	3975	19	0.784
	3/8	4	260	0.0017	0.253	0.375	2650	18	1.708
	1/2	4	260	0.0019	0.344	0.500	1985	15	2.580
	5/8	4	260	0.0025	0.231	0.625	1590	16	2.310
Stainless Steel [Cr-Ni-Mo-.../316Ti]	1/8	4	130	0.0006	0.085	0.125	3975	10	0.106
	3/16	4	130	0.0009	0.124	0.188	2650	10	0.233
	1/4	4	130	0.0012	0.165	0.250	1985	10	0.413
	3/8	4	130	0.0017	0.253	0.375	1325	9	0.854
	1/2	4	130	0.0019	0.344	0.500	995	8	1.376
	5/8	4	130	0.0025	0.231	0.625	795	8	1.155
Heat Resistant Steel [17-4 PH]	1/8	4	80	0.0006	0.085	0.125	2445	6	0.064
	3/16	4	80	0.0009	0.124	0.188	1630	6	0.140
	1/4	4	80	0.0012	0.165	0.250	1220	6	0.248
	3/8	4	80	0.0017	0.253	0.375	815	6	0.569
	1/2	4	80	0.0019	0.344	0.500	610	5	0.860
	5/8	4	80	0.0023	0.231	0.625	490	5	0.722
Nickel Base Alloys Prec.-Hard. [Inconel 718]	1/8	4	50	0.0006	0.085	0.125	1530	4	0.043
	3/16	4	50	0.0009	0.124	0.188	1020	4	0.093
	1/4	4	50	0.0012	0.165	0.250	765	4	0.165
	3/8	4	50	0.0017	0.253	0.375	510	3	0.285
	1/2	4	50	0.0019	0.344	0.500	380	3	0.516
	5/8	4	50	0.0023	0.231	0.625	305	3	0.433

X-Generation Stub Length SX

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **15°**

45°

Performance roughing

Performance finishing

Machines the following materials:

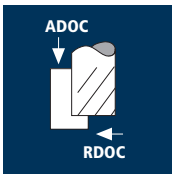
Best = Good =

Steel < 24 HRC | **Stainless** | **Nickel Alloys High Chrome Steel**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15913188	1/8	1/8	2 1/4	5/32	0.002	4	$47.70	
P15913252	3/16	3/16	2 1/4	1/4	0.004	4	$47.70	
P15913312	1/4	1/4	2 1/2	1/4	0.004	4	$47.70	
P15913432*	3/8	3/8	3	7/16	0.006	4	$68.60	•
P15913530*	1/2	1/2	3 1/4	9/16	0.006	4	$113.60	•
P15913605*	5/8	5/8	3 1/2	3/4	0.006	4	$169.40	•

*** with clamping flat**

5918



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Stainless Steel [Cr-Ni/304]	1/4	4	260	0.0012	0.250	0.100	3975	19	0.594
	5/16	4	260	0.0016	0.313	0.124	3180	20	0.970
	3/8	4	260	0.0021	0.375	0.142	2650	22	1.460
	1/2	4	260	0.0027	0.500	0.201	1985	18	2.259
	5/8	4	260	0.0033	0.625	0.162	1590	21	2.126
Stainless Steel [Cr-Ni-Mo-.../316Ti]	1/4	4	130	0.0012	0.250	0.100	1985	10	0.250
	5/16	4	130	0.0016	0.313	0.124	1590	10	0.388
	3/8	4	130	0.0021	0.375	0.142	1325	11	0.586
	1/2	4	130	0.0027	0.500	0.201	995	11	1.106
	5/8	4	130	0.0033	0.625	0.162	795	10	1.013
Heat Resistant Steel [17-4 PH]	1/4	4	80	0.0012	0.250	0.100	1220	6	0.150
	5/16	4	80	0.0014	0.313	0.124	980	5	0.194
	3/8	4	80	0.0017	0.375	0.142	815	6	0.320
	1/2	4	80	0.0021	0.500	0.201	610	5	0.503
	5/8	4	80	0.0025	0.625	0.162	490	5	0.506
Nickel Base Alloys Prec.-Hard. [Inconel 718]	1/4	4	50	0.0012	0.250	0.100	765	4	0.100
	5/16	4	50	0.0014	0.313	0.124	610	3	0.116
	3/8	4	50	0.0017	0.375	0.142	510	3	0.160
	1/2	4	50	0.0021	0.500	0.201	380	3	0.302
	5/8	4	50	0.0025	0.625	0.162	305	3	0.304

5918

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Stainless Steel [Cr-Ni/304]	1/4	4	260	0.0012	0.125	0.250	3975	19	0.594
	5/16	4	260	0.0016	0.155	0.313	3180	20	0.970
	3/8	4	260	0.0021	0.177	0.375	2650	22	1.460
	1/2	4	260	0.0027	0.251	0.500	1985	18	2.259
	5/8	4	260	0.0033	0.162	0.625	1590	21	2.126
Stainless Steel [Cr-Ni-Mo-.../316Ti]	1/4	4	130	0.0012	0.125	0.250	1985	10	0.313
	5/16	4	130	0.0016	0.155	0.313	1590	10	0.485
	3/8	4	130	0.0021	0.177	0.375	1325	11	0.730
	1/2	4	130	0.0027	0.251	0.500	995	11	1.381
	5/8	4	130	0.0033	0.162	0.625	795	10	1.013
Heat Resistant Steel [17-4 PH]	1/4	4	80	0.0012	0.125	0.250	1220	6	0.188
	5/16	4	80	0.0014	0.155	0.313	980	5	0.243
	3/8	4	80	0.0017	0.177	0.375	815	6	0.398
	1/2	4	80	0.0021	0.251	0.500	610	5	0.627
	5/8	4	80	0.0027	0.162	0.625	490	5	0.506
Nickel Base Alloys Prec.-Hard. [Inconel 718]	1/4	4	50	0.0012	0.125	0.250	765	4	0.125
	5/16	4	50	0.0014	0.155	0.313	610	3	0.146
	3/8	4	50	0.0017	0.177	0.375	510	3	0.199
	1/2	4	50	0.0021	0.251	0.500	380	3	0.377
	5/8	4	50	0.0027	0.162	0.625	305	3	0.304

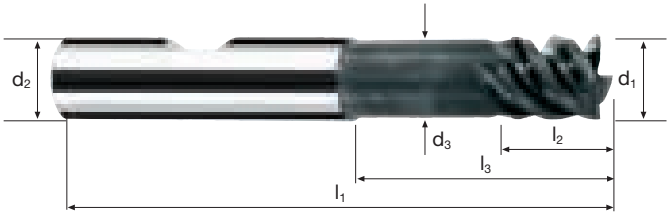
X-Generation Standard Reach SX

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **15°**

45°



Performance roughing

Performance finishing

Machines the following materials:

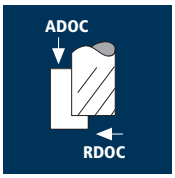
Best = Good =

Steel < 24 HRC | **Stainless** | **Nickel Alloys High Chrome Steel**

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN									
P5918312	1/4	1/4	0.230	2 1/2	5/16	1	0.004	4	$48.70	
P5918372	5/16	5/16	0.288	2 1/2	3/8	1	0.004	4	$59.10	
P5918432*	3/8	3/8	0.345	3	7/16	1	0.006	4	$73.00	•
P5918530*	1/2	1/2	0.460	3 1/4	9/16	1 1/4	0.006	4	$125.10	•
P5918605*	5/8	5/8	0.575	3 1/2	3/4	1 1/2	0.006	4	$191.00	•

*** with clamping flat**

15914



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Stainless Steel [Cr-Ni/304]	1/8	4	260	0.0006	0.188	0.050	7945	19	0.179
	3/16	4	260	0.0009	0.281	0.075	5295	19	0.400
	1/4	4	260	0.0010	0.375	0.100	3975	16	0.600
	3/8	4	260	0.0017	0.563	0.142	2650	18	1.439
	1/2	4	260	0.0021	0.750	0.201	1985	17	2.563
	5/8	4	260	0.0029	0.938	0.129	1590	18	2.178
Stainless Steel [Cr-Ni-Mo-.../316Ti]	1/8	4	130	0.0006	0.188	0.050	3975	10	0.094
	3/16	4	130	0.0009	0.281	0.075	2650	10	0.211
	1/4	4	130	0.0010	0.375	0.100	1985	8	0.300
	3/8	4	130	0.0017	0.563	0.142	1325	9	0.720
	1/2	4	130	0.0021	0.750	0.201	995	8	1.206
	5/8	4	130	0.0029	0.938	0.129	795	9	1.089
Heat Resistant Steel [17-4 PH]	1/8	4	80	0.0004	0.188	0.050	2445	4	0.038
	3/16	4	80	0.0007	0.281	0.075	1630	5	0.105
	1/4	4	80	0.0008	0.375	0.100	1220	4	0.150
	3/8	4	80	0.0013	0.563	0.142	815	4	0.320
	1/2	4	80	0.0017	0.750	0.201	610	4	0.603
	5/8	4	80	0.0023	0.938	0.129	490	5	0.605
Nickel Base Alloys Prec.-Hard. [Inconel 718]	1/8	4	50	0.0004	0.188	0.050	1530	2	0.019
	3/16	4	50	0.0007	0.281	0.075	1020	3	0.063
	1/4	4	50	0.0008	0.375	0.100	765	2	0.075
	3/8	4	50	0.0013	0.563	0.142	510	3	0.240
	1/2	4	50	0.0017	0.750	0.201	380	3	0.452
	5/8	4	50	0.0023	0.938	0.129	305	3	0.363

15914

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Stainless Steel [Cr-Ni/304]	1/8	4	260	0.0006	0.062	0.125	7945	19	0.147
	3/16	4	260	0.0009	0.093	0.188	5295	19	0.332
	1/4	4	260	0.0012	0.125	0.250	3975	19	0.594
	3/8	4	260	0.0021	0.177	0.375	2650	22	1.460
	1/2	4	260	0.0023	0.251	0.500	1985	18	2.259
	5/8	4	260	0.0033	0.162	0.625	1590	21	2.126
Stainless Steel [Cr-Ni-Mo-.../316Ti]	1/8	4	130	0.0006	0.062	0.125	3975	10	0.078
	3/16	4	130	0.0009	0.093	0.188	2650	10	0.175
	1/4	4	130	0.0012	0.125	0.250	1985	10	0.313
	3/8	4	130	0.0021	0.177	0.375	1325	11	0.730
	1/2	4	130	0.0023	0.251	0.500	995	9	1.130
	5/8	4	130	0.0033	0.162	0.625	795	10	1.013
Heat Resistant Steel [17-4 PH]	1/8	4	80	0.0006	0.062	0.125	2445	6	0.047
	3/16	4	80	0.0009	0.093	0.188	1630	6	0.105
	1/4	4	80	0.0010	0.125	0.250	1220	5	0.156
	3/8	4	80	0.0017	0.177	0.375	815	6	0.398
	1/2	4	80	0.0021	0.251	0.500	610	5	0.627
	5/8	4	80	0.0029	0.162	0.625	490	6	0.608
Nickel Base Alloys Prec.-Hard. [Inconel 718]	1/8	4	50	0.0006	0.062	0.125	1530	4	0.031
	3/16	4	50	0.0009	0.093	0.188	1020	4	0.070
	1/4	4	50	0.0010	0.125	0.250	765	3	0.094
	3/8	4	50	0.0017	0.177	0.375	510	3	0.199
	1/2	4	50	0.0021	0.251	0.500	380	3	0.377
	5/8	4	50	0.0029	0.162	0.625	305	4	0.405

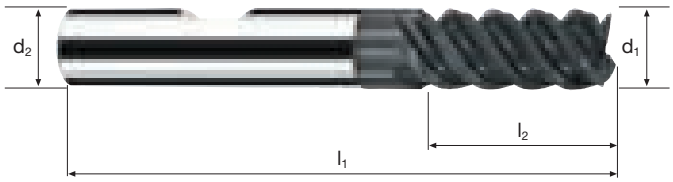
X-Generation Standard Length SX

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **15°**

45°



Performance roughing

Performance finishing

Machines the following materials:

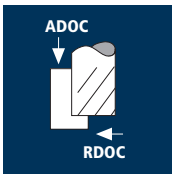
Best = Good =

Steel < 24 HRC | **Stainless** | **Nickel Alloys High Chrome Steel**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15914188	1/8	1/8	2 1/4	1/2	0.002	4	$48.62	
P15914252	3/16	3/16	2 1/4	5/8	0.004	4	$48.62	
P15914312	1/4	1/4	2 1/2	3/4	0.004	4	$48.62	
P15914432*	3/8	3/8	3	1	0.006	4	$72.93	•
P15914530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$125.10	•
P15914605*	5/8	5/8	3 1/2	1 1/4	0.006	4	$190.92	•

*** with clamping flat**

15991



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel < 24 HRC	1/8	4	590	0.0009	0.150	0.050	18040	66	0.492
	3/16	4	590	0.0013	0.225	0.075	12030	63	1.055
	1/4	4	590	0.0018	0.300	0.100	9020	64	1.913
	3/8	4	590	0.0026	0.450	0.150	6020	63	4.219
	1/2	4	590	0.0034	0.600	0.200	4510	61	7.313
	5/8	4	590	0.0044	0.750	0.250	3610	64	11.954
	3/4	4	590	0.0052	0.900	0.300	3010	63	16.876
Steel 24 - 34 HRC	1/8	4	490	0.0007	0.150	0.050	14980	45	0.330
	3/16	4	490	0.0011	0.225	0.075	9990	42	0.708
	1/4	4	490	0.0014	0.300	0.100	7490	43	1.283
	3/8	4	490	0.0021	0.450	0.150	5000	42	2.830
	1/2	4	490	0.0027	0.600	0.200	3750	41	4.906
	5/8	4	490	0.0036	0.750	0.250	3000	43	8.019
	3/4	4	490	0.0042	0.900	0.300	2500	42	11.321
Stainless Steel 303 304	1/8	4	260	0.0007	0.150	0.050	7950	23	0.167
	3/16	4	260	0.0010	0.225	0.075	5300	22	0.358
	1/4	4	260	0.0014	0.300	0.100	3980	22	0.648
	3/8	4	260	0.0020	0.450	0.150	2650	22	1.430
	1/2	4	260	0.0026	0.600	0.200	1990	21	2.479
	5/8	4	260	0.0034	0.750	0.250	1590	22	4.052
	3/4	4	260	0.0040	0.900	0.300	1330	22	5.721
Titanium	1/8	4	190	0.0007	0.150	0.050	5810	17	0.122
	3/16	4	190	0.0010	0.225	0.075	3880	16	0.261
	1/4	4	190	0.0014	0.300	0.100	2910	16	0.474
	3/8	4	190	0.0020	0.450	0.150	1940	16	1.045
	1/2	4	190	0.0026	0.600	0.200	1460	16	1.812
	5/8	4	190	0.0034	0.750	0.250	1170	16	2.961
	3/4	4	190	0.0040	0.900	0.300	970	16	4.181

15991

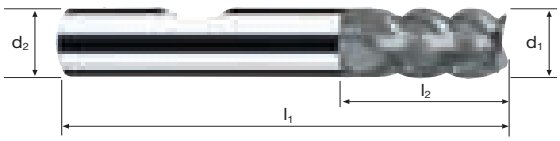
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel < 24 HRC	1/8	4	472	0.0007	0.125	0.125	14430	32	0.492
	3/16	4	472	0.0010	0.188	0.188	9620	41	1.406
	1/4	4	472	0.0014	0.250	0.250	7220	41	2.550
	3/8	4	472	0.0021	0.375	0.375	4810	41	5.625
	1/2	4	472	0.0027	0.500	0.500	3610	40	9.751
	5/8	4	472	0.0035	0.625	0.625	2890	41	15.939
	3/4	4	472	0.0042	0.750	0.750	2410	41	22.502
Steel 24 - 34 HRC	1/8	4	392	0.0006	0.125	0.125	11980	22	0.330
	3/16	4	392	0.0008	0.188	0.188	7990	27	0.943
	1/4	4	392	0.0011	0.250	0.250	5990	28	1.711
	3/8	4	392	0.0017	0.375	0.375	4000	27	3.774
	1/2	4	392	0.0022	0.500	0.500	3000	27	6.541
	5/8	4	392	0.0029	0.625	0.625	2400	28	10.692
	3/4	4	392	0.0034	0.750	0.750	2000	27	15.094
Stainless Steel 303 304	1/8	4	208	0.0006	0.125	0.125	6360	11	0.167
	3/16	4	208	0.0008	0.188	0.188	4240	14	0.477
	1/4	4	208	0.0011	0.250	0.250	3180	14	0.864
	3/8	4	208	0.0016	0.375	0.375	2120	14	1.907
	1/2	4	208	0.0021	0.500	0.500	1590	14	3.305
	5/8	4	208	0.0027	0.625	0.625	1280	14	5.403
	3/4	4	208	0.0032	0.750	0.750	1060	14	7.628
Titanium	1/8	4	152	0.0006	0.125	0.125	4650	8	0.122
	3/16	4	152	0.0008	0.188	0.188	3200	10	0.348
	1/4	4	152	0.0011	0.250	0.250	2330	11	0.632
	3/8	4	152	0.0016	0.375	0.375	1550	10	1.394
	1/2	4	152	0.0021	0.500	0.500	1170	10	2.415
	5/8	4	152	0.0027	0.625	0.625	930	11	3.948
	3/4	4	152	0.0032	0.750	0.750	780	10	5.574

Base-X Stub Length Vario

HSS | Favora® | Base-X **B** | X-Generation

HM	Helix **40°** Rake **6°**
45°	
Vario	



Performance roughing

Performance finishing

Machines the following materials:

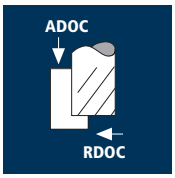
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15991188	1/8	1/8	1 1/2	3/16	0.002	4	$21.00	
P15991252	3/16	3/16	2	1/4	0.004	4	$27.00	
P15991312	1/4	1/4	2	5/16	0.004	4	$30.30	
P15991432*	3/8	3/8	2	1/2	0.006	4	$50.30	•
P15991530*	1/2	1/2	2 1/2	5/8	0.006	4	$76.00	•
P15991605*	5/8	5/8	3	3/4	0.006	4	$135.50	•
P15991652*	3/4	3/4	3 1/2	1	0.006	4	$195.80	•

*** with clamping flat**

15990



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	590	0.0008	0.188	0.050	18040	61	0.568
	3/16	4	590	0.0012	0.281	0.075	12030	58	1.217
	1/4	4	590	0.0016	0.375	0.100	9020	59	2.207
	5/16	4	590	0.0019	0.469	0.125	7220	56	3.245
	3/8	4	590	0.0024	0.563	0.150	6020	58	4.868
	1/2	4	590	0.0031	0.750	0.200	4510	57	8.438
	5/8	4	590	0.0041	0.938	0.250	3610	59	13.793
	3/4	4	590	0.0048	1.125	0.300	3010	58	19.473
	1	4	590	0.0065	1.500	0.400	2260	59	35.051
Steel 24 - 34 HRC	1/8	4	490	0.0007	0.188	0.050	14980	42	0.393
	3/16	4	490	0.0010	0.281	0.075	9990	40	0.842
	1/4	4	490	0.0014	0.375	0.100	7490	41	1.527
	5/16	4	490	0.0016	0.469	0.125	5990	39	2.246
	3/8	4	490	0.0020	0.563	0.150	5000	40	3.369
	1/2	4	490	0.0026	0.750	0.200	3750	39	5.840
	5/8	4	490	0.0034	0.938	0.250	3000	41	9.546
	3/4	4	490	0.0040	1.125	0.300	2500	40	13.477
	1	4	490	0.0054	1.500	0.400	1880	41	24.259
Stainless Steel 303 304	1/8	4	260	0.0007	0.188	0.050	7950	22	0.198
	3/16	4	260	0.0010	0.281	0.075	5300	21	0.425
	1/4	4	260	0.0013	0.375	0.100	3980	21	0.770
	5/16	4	260	0.0016	0.469	0.125	3180	21	1.192
	3/8	4	260	0.0019	0.563	0.150	2650	21	1.698
	1/2	4	260	0.0025	0.750	0.200	1990	20	2.944
	5/8	4	260	0.0032	0.938	0.250	1590	21	4.812
	3/4	4	260	0.0038	1.125	0.300	1330	21	6.793
	1	4	260	0.0051	1.500	0.400	1000	21	12.228
Titanium	1/8	4	190	0.0007	0.188	0.050	5810	16	0.145
	3/16	4	190	0.0010	0.281	0.075	3880	15	0.310
	1/4	4	190	0.0013	0.375	0.100	2910	16	0.563
	5/16	4	190	0.0016	0.469	0.125	2330	15	0.871
	3/8	4	190	0.0019	0.563	0.150	1940	15	1.241
	1/2	4	190	0.0025	0.750	0.200	1460	15	2.151
	5/8	4	190	0.0032	0.938	0.250	1170	16	3.517
	3/4	4	190	0.0038	1.125	0.300	970	15	4.964
	1	4	190	0.0051	1.500	0.400	730	15	8.936

15990

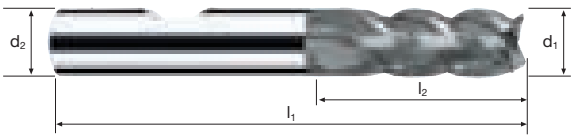
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	472	0.0007	0.125	0.125	14430	39	0.606
	3/16	4	472	0.0010	0.188	0.188	9620	37	1.298
	1/4	4	472	0.0013	0.250	0.250	7220	38	2.354
	5/16	4	472	0.0015	0.313	0.313	5770	36	3.462
	3/8	4	472	0.0019	0.375	0.375	4810	37	5.193
	1/2	4	472	0.0025	0.500	0.500	3610	37	9.001
	5/8	4	472	0.0033	0.625	0.625	2890	38	14.713
	3/4	4	472	0.0038	0.750	0.750	2410	37	20.771
	1	4	472	0.0052	1.000	1.000	1810	38	37.388
Steel 24 - 34 HRC	1/8	4	392	0.0006	0.125	0.125	11980	27	0.419
	3/16	4	392	0.0008	0.188	0.188	7990	26	0.898
	1/4	4	392	0.0011	0.250	0.250	5990	27	1.629
	5/16	4	392	0.0013	0.313	0.313	4800	25	2.396
	3/8	4	392	0.0016	0.375	0.375	4000	26	3.594
	1/2	4	392	0.0021	0.500	0.500	3000	25	6.229
	5/8	4	392	0.0027	0.625	0.625	2400	27	10.183
	3/4	4	392	0.0033	0.750	0.750	2000	26	14.375
	1	4	392	0.0043	1.000	1.000	1500	26	25.876
Stainless Steel 303 304	1/8	4	208	0.0005	0.125	0.125	6360	14	0.211
	3/16	4	208	0.0008	0.188	0.188	4240	13	0.453
	1/4	4	208	0.0010	0.250	0.250	3180	14	0.821
	5/16	4	208	0.0013	0.313	0.313	2550	14	1.291
	3/8	4	208	0.0015	0.375	0.375	2120	13	1.812
	1/2	4	208	0.0020	0.500	0.500	1590	13	3.140
	5/8	4	208	0.0026	0.625	0.625	1280	14	5.133
	3/4	4	208	0.0030	0.750	0.750	1060	13	7.246
	1	4	208	0.0041	1.000	1.000	800	14	13.043
Titanium	1/8	4	152	0.0005	0.125	0.125	3100	10	0.331
	3/16	4	152	0.0008	0.188	0.188	3200	10	0.331
	1/4	4	152	0.0010	0.250	0.250	2330	10	0.600
	5/16	4	152	0.0013	0.313	0.313	1860	10	1.324
	3/8	4	152	0.0015	0.375	0.375	1550	10	1.324
	1/2	4	152	0.0020	0.500	0.500	1170	10	2.295
	5/8	4	152	0.0026	0.625	0.625	930	10	3.751
	3/4	4	152	0.0030	0.750	0.750	780	10	5.295
	1	4	152	0.0041	1.000	1.000	590	10	9.532

Base-X Standard Length Vario

HSS | Favora® | Base-X | B | X-Generation

HM	Helix 40° Rake 6°
45°	
Vario	



Performance roughing

Performance finishing

Machines the following materials:

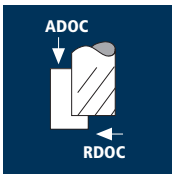
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15990188	1/8	1/8	2 1/4	1/4	0.002	4	$21.80	
P15990219	5/32	3/16	2 1/4	5/16	0.002	4	$27.70	
P15990252	3/16	3/16	2 1/4	1/2	0.004	4	$27.70	
P15990312	1/4	1/4	2 1/2	5/8	0.004	4	$31.60	
P15990372	5/16	3/8	2 1/2	3/4	0.004	4	$43.40	
P15990432*	3/8	3/8	3	7/8	0.006	4	$52.40	•
P15990530*	1/2	1/2	3 1/4	1 1/16	0.006	4	$79.00	•
P15990605*	5/8	5/8	3 1/2	1 1/4	0.006	4	$141.10	•
P15990652*	3/4	3/4	4	1 3/8	0.006	4	$203.90	•
P15990775*	1	1	5	1 3/4	0.008	4	$346.60	•

*** with clamping flat**

15994



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	530	0.0008	0.1875	0.050	16200	51	0.4707
	3/16	4	530	0.0012	0.2813	0.075	10800	51	1.0591
	1/4	4	530	0.0016	0.3750	0.100	8100	51	1.8829
	5/16	4	530	0.0019	0.4688	0.125	6480	51	2.9420
	3/8	4	530	0.0023	0.5625	0.150	5400	51	4.2365
	1/2	4	530	0.0031	0.7500	0.200	4050	51	7.5315
	3/4	4	530	0.0047	1.1250	0.300	2700	51	16.9459
	1	4	530	0.0062	1.5000	0.400	2030	51	30.1260
Steel 24 - 34 HRC	1/8	4	440	0.0002	0.0469	0.013	53790	42	0.0244
	3/16	4	440	0.0004	0.0938	0.025	26900	42	0.0977
	1/4	4	440	0.0008	0.1875	0.050	13450	42	0.3908
	5/16	4	440	0.0012	0.2813	0.075	8970	42	0.8793
	3/8	4	440	0.0016	0.3750	0.100	6730	42	1.5631
	1/2	4	440	0.0019	0.4688	0.125	5380	42	2.4424
	3/4	4	440	0.0031	0.7500	0.200	3370	42	6.2526
	1	4	440	0.0062	1.5000	0.400	1690	42	25.0103
Stainless Steel 303 304	1/8	4	235	0.0002	0.0469	0.013	28730	23	0.0130
	3/16	4	235	0.0004	0.0938	0.025	14370	23	0.0522
	1/4	4	235	0.0008	0.1875	0.050	7190	23	0.2087
	5/16	4	235	0.0012	0.2813	0.075	4790	23	0.4696
	3/8	4	235	0.0016	0.3750	0.100	3600	23	0.8349
	1/2	4	235	0.0019	0.4688	0.125	2880	23	1.3045
	3/4	4	235	0.0031	0.7500	0.200	1800	23	3.3394
	1	4	235	0.0062	1.5000	0.400	900	23	13.3578
Titanium	1/8	4	170	0.0002	0.0469	0.013	20790	17	0.0094
	3/16	4	170	0.0004	0.0938	0.025	10400	17	0.0377
	1/4	4	170	0.0008	0.1875	0.050	5200	17	0.1510
	5/16	4	170	0.0012	0.2813	0.075	3470	17	0.3397
	3/8	4	170	0.0016	0.3750	0.100	2600	17	0.6039
	1/2	4	170	0.0019	0.4688	0.125	2080	17	0.9437
	3/4	4	170	0.0031	0.7500	0.200	1300	17	2.4158
	1	4	170	0.0062	1.5000	0.400	650	17	9.6631

15994

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	425	0.0002	0.0313	0.0313	51960	33	0.0317
	3/16	4	425	0.0003	0.0625	0.0625	25980	33	0.1268
	1/4	4	425	0.0006	0.1250	0.1250	12990	33	0.5073
	5/16	4	425	0.0009	0.1875	0.1875	8660	33	1.1415
	3/8	4	425	0.0013	0.2500	0.2500	6500	33	2.0294
	1/2	4	425	0.0016	0.3125	0.3125	5200	33	3.1709
	3/4	4	425	0.0025	0.5000	0.5000	3250	33	8.1175
	1	4	425	0.0050	1.0000	1.0000	1630	33	32.4700
Steel 24 - 34 HRC	1/8	4	350	0.0002	0.0313	0.0313	42790	27	0.0261
	3/16	4	350	0.0003	0.0625	0.0625	21400	27	0.1045
	1/4	4	350	0.0006	0.1250	0.1250	10700	27	0.4178
	5/16	4	350	0.0009	0.1875	0.1875	7140	27	0.9401
	3/8	4	350	0.0013	0.2500	0.2500	5350	27	1.6713
	1/2	4	350	0.0016	0.3125	0.3125	4280	27	2.6113
	3/4	4	350	0.0025	0.5000	0.5000	2680	27	6.6850
	1	4	350	0.0050	1.0000	1.0000	1340	27	26.7400
Stainless Steel 303 304	1/8	4	190	0.0002	0.0313	0.0313	23230	15	0.0142
	3/16	4	190	0.0003	0.0625	0.0625	11620	15	0.0567
	1/4	4	190	0.0006	0.1250	0.1250	5810	15	0.2268
	5/16	4	190	0.0009	0.1875	0.1875	3880	15	0.5103
	3/8	4	190	0.0013	0.2500	0.2500	2910	15	0.9073
	1/2	4	190	0.0016	0.3125	0.3125	2330	15	1.4176
	3/4	4	190	0.0025	0.5000	0.5000	1460	15	3.6290
	1	4	190	0.0050	1.0000	1.0000	730	15	14.5160
Titanium	1/8	4	135	0.0002	0.0313	0.0313	16510	11	0.0101
	3/16	4	135	0.0003	0.0625	0.0625	8260	11	0.0403
	1/4	4	135	0.0006	0.1250	0.1250	4130	11	0.1612
	5/16	4	135	0.0009	0.1875	0.1875	2760	11	0.3626
	3/8	4	135	0.0013	0.2500	0.2500	2070	11	0.6446
	1/2	4	135	0.0016	0.3125	0.3125	1660	11	1.0072
	3/4	4	135	0.0025	0.5000	0.5000	1040	11	2.5785
	1	4	135	0.0050	1.0000	1.0000	520	11	10.3140

Base-X Mid Length Vario

HSS | Favora® | Base-X **B** | X-Generation

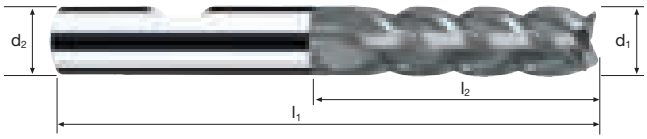
HM

Helix **40°**
Rake **6°**

45°

Vario

new!



Performance roughing

Performance finishing

Machines the following materials:

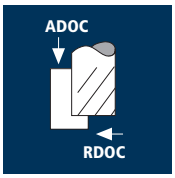
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15994188	1/8	1/8	2 1/4	1/2	0.002	4	$27.30	
P15994252	3/16	3/16	2 1/2	5/8	0.004	4	$34.70	
P15994312	1/4	1/4	2 1/2	3/4	0.004	4	$39.40	
P15994372	5/16	5/16	3	1	0.006	4	$65.50	•
P15994432	3/8	3/8	3	1	0.006	4	$98.90	•
P15994530	1/2	1/2	3 1/2	1 1/4	0.006	4	$176.30	•
P15994652	3/4	3/4	4	1 1/2	0.006	4	$254.80	•
P15994772	1	1	5	2	0.008	4	$433.10	•

*** with clamping flat**

15993



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	380	0.0007	0.250	0.250	11620	35	0.217
	3/16	4	380	0.0011	0.375	0.038	7750	35	0.479
	1/4	4	380	0.0015	0.500	0.050	5810	35	0.869
	3/8	4	380	0.0022	0.750	0.075	3880	35	1.916
	1/2	4	380	0.0029	1.000	0.100	2910	34	3.321
	5/8	4	380	0.0037	1.250	0.125	2330	35	5.429
	3/4	4	380	0.0044	1.500	0.150	1940	35	7.664
Steel 24 - 34 HRC	1/8	4	310	0.0006	0.250	0.250	9480	24	0.145
	3/16	4	310	0.0009	0.375	0.038	6320	23	0.320
	1/4	4	310	0.0012	0.500	0.050	4740	24	0.580
	3/8	4	310	0.0018	0.750	0.075	3160	23	1.279
	1/2	4	310	0.0023	1.000	0.100	2370	23	2.217
	5/8	4	310	0.0031	1.250	0.125	1900	24	3.624
	3/4	4	310	0.0036	1.500	0.150	1580	23	5.116
Stainless Steel 303 304	1/8	4	170	0.0006	0.250	0.250	5200	13	0.075
	3/16	4	170	0.0009	0.375	0.038	3470	12	0.166
	1/4	4	170	0.0012	0.500	0.050	2600	13	0.300
	3/8	4	170	0.0017	0.750	0.075	1740	12	0.662
	1/2	4	170	0.0022	1.000	0.100	1300	12	1.148
	5/8	4	170	0.0029	1.250	0.125	1040	13	1.877
	3/4	4	170	0.0034	1.500	0.150	870	12	2.650
Titanium	1/8	4	120	0.0006	0.250	0.250	3670	9	0.053
	3/16	4	120	0.0009	0.375	0.038	2450	9	0.117
	1/4	4	120	0.0012	0.500	0.050	1840	9	0.212
	3/8	4	120	0.0017	0.750	0.075	1230	9	0.468
	1/2	4	120	0.0022	1.000	0.100	920	9	0.810
	5/8	4	120	0.0029	1.250	0.125	740	9	1.325
	3/4	4	120	0.0034	1.500	0.150	620	9	1.870

15993

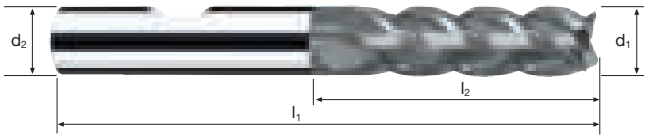
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	304	0.0006	0.125	0.125	9300	23	0.347
	3/16	4	304	0.0009	0.188	0.188	6200	22	0.766
	1/4	4	304	0.0012	0.250	0.250	4650	23	1.390
	3/8	4	304	0.0018	0.375	0.375	3100	22	3.066
	1/2	4	304	0.0023	0.500	0.500	2330	22	5.314
	5/8	4	304	0.0030	0.625	0.625	1860	23	8.686
	3/4	4	304	0.0035	0.750	0.750	1550	22	12.263
Steel 24 - 34 HRC	1/8	4	248	0.0005	0.125	0.125	7580	12	0.174
	3/16	4	248	0.0007	0.188	0.188	5060	15	0.512
	1/4	4	248	0.0010	0.250	0.250	3790	15	0.928
	3/8	4	248	0.0014	0.375	0.375	2530	15	2.046
	1/2	4	248	0.0019	0.500	0.500	1900	15	3.547
	5/8	4	248	0.0024	0.625	0.625	1520	15	5.798
	3/4	4	248	0.0029	0.750	0.750	1270	15	8.185
Stainless Steel 303 304	1/8	4	136	0.0005	0.125	0.125	4160	8	0.120
	3/16	4	136	0.0007	0.188	0.188	2780	8	0.265
	1/4	4	136	0.0009	0.250	0.250	2080	8	0.480
	3/8	4	136	0.0014	0.375	0.375	1390	8	1.060
	1/2	4	136	0.0018	0.500	0.500	1040	8	1.837
	5/8	4	136	0.0023	0.625	0.625	840	8	3.003
	3/4	4	136	0.0027	0.750	0.750	700	8	4.239
Titanium	1/8	4	96	0.0005	0.125	0.125	2940	6	0.085
	3/16	4	96	0.0007	0.188	0.188	1960	6	0.187
	1/4	4	96	0.0009	0.250	0.250	1470	6	0.339
	3/8	4	96	0.0014	0.375	0.375	980	6	0.748
	1/2	4	96	0.0018	0.500	0.500	740	6	1.297
	5/8	4	96	0.0023	0.625	0.625	590	6	2.120
	3/4	4	96	0.0027	0.750	0.750	490	6	2.992

Base-X Long Length Vario

HSS | Favora® | Base-X **B** | X-Generation

HM	Helix **40°** Rake **6°**
45°	
Vario	



Performance roughing

Performance finishing

Machines the following materials:

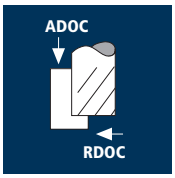
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15993188	1/8	1/8	3	3/4	0.002	4	$27.30	
P15993252	3/16	3/16	3	1 1/8	0.004	4	$34.70	
P15993312	1/4	1/4	4	1 1/2	0.004	4	$39.40	
P15993432*	3/8	3/8	4	2	0.006	4	$65.50	•
P15993530*	1/2	1/2	4	2	0.006	4	$98.90	•
P15993605*	5/8	5/8	6	3	0.006	4	$176.30	•
P15993652*	3/4	3/4	6	3	0.006	4	$254.80	•
P15993775*	1	1	6	3	0.008	4	$433.10	•

*** with clamping flat**

15995



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/4	5	590	0.0016	0.375	0.100	9020	74	2.759
	3/8	5	590	0.0024	0.563	0.150	6020	73	6.085
	1/2	5	590	0.0031	0.750	0.200	4510	71	10.548
	5/8	5	590	0.0041	0.938	0.250	3610	74	17.242
	3/4	5	590	0.0048	1.125	0.300	3010	73	24.341
	1	5	590	0.0065	1.500	0.400	2260	74	43.814
Steel 24 - 34 HRC	1/4	5	490	0.0014	0.375	0.100	7490	51	1.909
	3/8	5	490	0.0020	0.563	0.150	5000	50	4.212
	1/2	5	490	0.0026	0.750	0.200	3750	49	7.300
	5/8	5	490	0.0034	0.938	0.250	3000	51	11.933
	3/4	5	490	0.0040	1.125	0.300	2500	50	16.846
	1	5	490	0.0054	1.500	0.400	1880	51	30.323
Stainless Steel 303 304	1/4	5	260	0.0013	0.375	0.100	3980	26	0.962
	3/8	5	260	0.0019	0.563	0.150	2650	26	2.123
	1/2	5	260	0.0025	0.750	0.200	1990	25	3.680
	5/8	5	260	0.0032	0.938	0.250	1590	26	6.015
	3/4	5	260	0.0038	1.125	0.300	1330	26	8.492
	1	5	260	0.0051	1.500	0.400	1000	26	15.285
Titanium	1/4	5	190	0.0013	0.375	0.100	2910	19	0.703
	3/8	5	190	0.0019	0.563	0.150	1940	19	1.551
	1/2	5	190	0.0025	0.750	0.200	1460	18	2.689
	5/8	5	190	0.0032	0.938	0.250	1170	19	4.396
	3/4	5	190	0.0038	1.125	0.300	970	19	6.206
	1	5	190	0.0051	1.500	0.400	730	19	11.170

15995

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/4	5	472	0.0013	0.250	0.250	7220	48	2.943
	3/8	5	472	0.0019	0.375	0.375	4810	47	6.491
	1/2	5	472	0.0025	0.500	0.500	3610	46	11.251
	5/8	5	472	0.0033	0.625	0.625	2890	48	18.391
	3/4	5	472	0.0038	0.750	0.750	2410	47	25.964
	1	5	472	0.0052	1.000	1.000	1810	47	46.735
Steel 24 - 34 HRC	1/4	5	392	0.0011	0.250	0.250	5990	33	2.037
	3/8	5	392	0.0016	0.375	0.375	4000	32	4.492
	1/2	5	392	0.0021	0.500	0.500	3000	32	7.787
	5/8	5	392	0.0027	0.625	0.625	2400	33	12.728
	3/4	5	392	0.0032	0.750	0.750	2000	32	17.969
	1	5	392	0.0043	1.000	1.000	1500	33	32.345
Stainless Steel 303 304	1/4	5	208	0.0010	0.250	0.250	3180	17	1.027
	3/8	5	208	0.0015	0.375	0.375	2120	17	2.264
	1/2	5	208	0.0020	0.500	0.500	1590	16	3.925
	5/8	5	208	0.0026	0.625	0.625	1280	17	6.416
	3/4	5	208	0.0030	0.750	0.750	1060	17	9.058
	1	5	208	0.0041	1.000	1.000	800	17	16.304
Titanium	1/4	5	152	0.0010	0.250	0.250	2330	13	0.750
	3/8	5	152	0.0015	0.375	0.375	1550	12	1.655
	1/2	5	152	0.0020	0.500	0.500	1170	12	2.868
	5/8	5	152	0.0026	0.625	0.625	930	13	4.689
	3/4	5	152	0.0030	0.750	0.750	780	12	6.619
	1	5	152	0.0041	1.000	1.000	590	12	11.915

Base-X Standard Length Vario 5

HSS | Favora® | Base-X B | X-Generation

HM

Helix **40°**
Rake **6°**

45°

Vario

Performance roughing

Performance finishing

Machines the following materials:

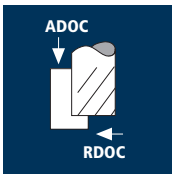
Best = Good =

Steel < 24 HRC | **Steel** 24 - 34 HRC | **Steel** 34 - 42 HRC | **Stainless** | **Titanium** | **Nickel Alloys**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15995312	1/4	1/4	2 1/2	5/8	0.004	5	$34.70	
P15995432*	3/8	3/8	3	7/8	0.006	5	$57.60	•
P15995530*	1/2	1/2	3 1/4	1 1/16	0.006	5	$87.00	•
P15995532*	1/2	1/2	3 1/4	1 1/4	0.006	5	$87.00	•
P15995605*	5/8	5/8	3 1/2	1 1/4	0.006	5	$155.10	•
P15995652*	3/4	3/4	4	1 3/8	0.006	5	$224.20	•
P15995775*	1	1	5	1 3/4	0.008	5	$381.20	•

*** with clamping flat**

5840



Side Milling

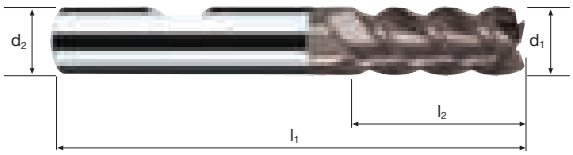
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel up to 24 HRC	1/8	4	560	0.0004	0.188	0.012	17115	27
	3/16	4	560	0.0006	0.281	0.018	11410	27
	1/4	4	560	0.0008	0.375	0.025	8555	27
	5/16	4	560	0.0010	0.469	0.031	6845	27
	3/8	4	560	0.0013	0.563	0.035	5705	30
	1/2	4	560	0.0017	0.750	0.050	4280	29
	5/8	4	560	0.0021	0.938	0.065	3425	29
	3/4	4	560	0.0024	1.125	0.077	2850	27
	1	4	560	0.0028	1.500	0.095	2140	24
Steel 24 - 34 HRC	1/8	4	360	0.0004	0.188	0.012	11000	18
	3/16	4	360	0.0006	0.281	0.018	7335	18
	1/4	4	360	0.0008	0.375	0.025	5500	18
	5/16	4	360	0.0010	0.469	0.031	4400	18
	3/8	4	360	0.0013	0.563	0.035	3665	19
	1/2	4	360	0.0017	0.750	0.050	2750	19
	5/8	4	360	0.0021	0.938	0.065	2200	18
	3/4	4	360	0.0024	1.125	0.077	1835	18
	1	4	360	0.0028	1.500	0.095	1375	15
Steel 34 - 42 HRC	1/8	4	260	0.0004	0.188	0.012	7945	13
	3/16	4	260	0.0006	0.281	0.018	5295	13
	1/4	4	260	0.0008	0.375	0.025	3975	13
	5/16	4	260	0.0010	0.469	0.031	3180	13
	3/8	4	260	0.0013	0.563	0.035	2650	14
	1/2	4	260	0.0017	0.750	0.050	1985	13
	5/8	4	260	0.0021	0.938	0.065	1590	13
	3/4	4	260	0.0024	1.125	0.077	1325	13
	1	4	260	0.0028	1.500	0.095	995	11
Cold Work Tool Steel (12% Cr), High Alloyed Stainless Steel [Cr-Ni/304]	1/8	4	230	0.0004	0.188	0.012	7030	11
	3/16	4	230	0.0006	0.281	0.018	4685	11
	1/4	4	230	0.0008	0.375	0.025	3515	11
	5/16	4	230	0.0010	0.469	0.031	2810	11
	3/8	4	230	0.0013	0.563	0.035	2345	12
	1/2	4	230	0.0017	0.750	0.050	1755	12
	5/8	4	230	0.0021	0.938	0.065	1405	12
	3/4	4	230	0.0024	1.125	0.077	1170	11
	1	4	230	0.0028	1.500	0.095	880	10

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Cast Iron (lamellar / spheroidal)	1/8	4	425	0.0004	0.187	0.013	12985	21
	3/16	4	425	0.0006	0.273	0.019	8660	21
	1/4	4	425	0.0008	0.374	0.025	6495	21
	5/16	4	425	0.0010	0.465	0.031	5195	21
	3/8	4	425	0.0013	0.532	0.038	4330	23
	1/2	4	425	0.0017	0.754	0.050	3245	22
	5/8	4	425	0.0021	0.970	0.063	2595	22
	3/4	4	425	0.0024	1.152	0.075	2165	21
	1	4	425	0.0028	1.430	0.100	1625	18
Unalloyed Copper	1/8	4	755	0.0004	0.187	0.013	23070	37
	3/16	4	755	0.0006	0.273	0.019	15380	37
	1/4	4	755	0.0008	0.374	0.025	11535	37
	5/16	4	755	0.0010	0.465	0.031	9230	37
	3/8	4	755	0.0013	0.532	0.038	7690	40
	1/2	4	755	0.0017	0.754	0.050	5770	39
	5/8	4	755	0.0021	0.970	0.063	4615	39
	3/4	4	755	0.0024	1.152	0.075	3845	37
	1	4	755	0.0028	1.430	0.100	2885	32
Titanium Alloys up to 300 HB [Ti5Al2.5Sn]	1/8	4	260	0.0004	0.187	0.013	7945	13
	3/16	4	260	0.0006	0.273	0.019	5295	13
	1/4	4	260	0.0006	0.374	0.025	3975	10
	5/16	4	260	0.0008	0.465	0.031	3180	10
	3/8	4	260	0.0009	0.532	0.038	2650	10
	1/2	4	260	0.0015	0.754	0.050	1985	12
	5/8	4	260	0.0016	0.970	0.063	1590	10
	3/4	4	260	0.0021	1.152	0.075	1325	11
	1	4	260	0.0028	1.430	0.100	995	11
Heat Resistant Steel [17-4 PH]	1/8	4	130	0.0004	0.187	0.013	3975	6
	3/16	4	130	0.0006	0.273	0.019	2650	6
	1/4	4	130	0.0008	0.374	0.025	1985	6
	5/16	4	130	0.0010	0.465	0.031	1590	6
	3/8	4	130	0.0013	0.532	0.038	1325	7
	1/2	4	130	0.0017	0.754	0.050	995	7
	5/8	4	130	0.0021	0.970	0.063	795	7
	3/4	4	130	0.0024	1.152	0.075	660	6
	1	4	130	0.0028	1.430	0.100	495	6

Base-X Standard Length

HSS | Favora® | Base-X **B** | X-Generation

HM	Helix **45°** Rake **15°**
45°	



Performance roughing

Performance finishing

Machines the following materials:

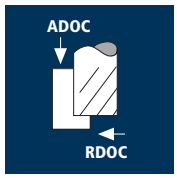
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC						Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN								
U5840188	1/8	1/8	2 1/4	1/2	0.002	—	4	$18.40	
U5840252	3/16	1/4	2 1/4	5/8	0.004	2.5°	4	$23.70	
U5840312	1/4	1/4	2 1/2	3/4	0.004	—	4	$27.20	
U5840372	5/16	5/16	2 1/2	1	0.004	—	4	$37.90	
U5840432	3/8	3/8	3	1	0.006	—	4	$45.00	•
U5840530	1/2	1/2	3 1/4	1 1/4	0.006	—	4	$68.20	•
U5840605	5/8	5/8	3 1/2	1 1/4	0.006	—	4	$122.60	•
U5840652	3/4	3/4	4	1 1/2	0.006	—	4	$177.00	•
U5840775	1	1	5	2	0.008	—	4	$289.00	•
U5940432*	3/8	3/8	3	1	0.006	—	4	$45.00	•
U5940530*	1/2	1/2	3 1/4	1 1/4	0.006	—	4	$68.20	•
U5940605*	5/8	5/8	3 1/2	1 1/4	0.006	—	4	$122.60	•
U5940652*	3/4	3/4	4	1 1/2	0.006	—	4	$177.00	•
U5940775*	1	1	5	2	0.008	—	4	$289.00	•

*** with clamping flat**

5945



Side Milling

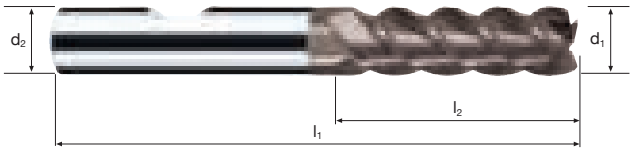
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel up to 24 HRC	3/8	4	460	0.0011	0.750	0.028	4685	21
	1/2	4	460	0.0015	1.000	0.038	3515	21
	5/8	4	460	0.0018	1.250	0.047	2810	20
	3/4	4	460	0.0021	1.500	0.058	2345	20
	1	4	460	0.0028	2.000	0.076	1755	20
Steel 24 - 34 HRC	3/8	4	295	0.0011	0.750	0.028	3005	13
	1/2	4	295	0.0015	1.000	0.038	2255	14
	5/8	4	295	0.0018	1.250	0.047	1805	13
	3/4	4	295	0.0021	1.500	0.058	1500	13
	1	4	295	0.0028	2.000	0.076	1125	13
Steel 34 - 42 HRC	3/8	4	215	0.0011	0.750	0.028	2190	10
	1/2	4	215	0.0015	1.000	0.038	1640	10
	5/8	4	215	0.0018	1.250	0.047	1315	9
	3/4	4	215	0.0021	1.500	0.058	1095	9
	1	4	215	0.0028	2.000	0.076	820	9
Cold Work Tool Steel (12% Cr), High Alloyed Stainless Steel [Cr-Ni/304]	3/8	4	180	0.0011	0.750	0.028	1835	8
	1/2	4	180	0.0015	1.000	0.038	1375	8
	5/8	4	180	0.0018	1.250	0.047	1100	8
	3/4	4	180	0.0021	1.500	0.058	915	8
	1	4	180	0.0028	2.000	0.076	690	8

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Cast Iron (lamellar / spheroidal)	3/8	4	330	0.0011	0.689	0.030	3360	15
	1/2	4	330	0.0015	0.955	0.040	2520	15
	5/8	4	330	0.0018	1.181	0.050	2015	15
	3/4	4	330	0.0021	1.442	0.060	1680	14
	1	4	330	0.0028	1.890	0.080	1260	14
Unalloyed Copper	3/8	4	590	0.0011	0.689	0.030	6010	26
	1/2	4	590	0.0015	0.955	0.040	4505	27
	5/8	4	590	0.0018	1.181	0.050	3605	26
	3/4	4	590	0.0021	1.442	0.060	3005	25
	1	4	590	0.0028	1.890	0.080	2255	25
Titanium Alloys up to 300 HB [Ti5Al2.5Sn]	3/8	4	215	0.0011	0.689	0.030	2190	10
	1/2	4	215	0.0015	0.955	0.040	1640	10
	5/8	4	215	0.0018	1.181	0.050	1315	9
	3/4	4	215	0.0021	1.442	0.060	1095	9
	1	4	215	0.0028	1.890	0.080	820	9
Heat Resistant Steel [17-4 PH]	3/8	4	100	0.0011	0.689	0.030	1020	4
	1/2	4	100	0.0015	0.955	0.040	765	5
	5/8	4	100	0.0018	1.181	0.050	610	4
	3/4	4	100	0.0021	1.442	0.060	510	4
	1	4	100	0.0028	1.890	0.080	380	4

Base-X Long Length

HSS | Favora® | Base-X | B | X-Generation

HM	Helix 45° Rake 15°
45°	



Performance roughing

Performance finishing

Machines the following materials:

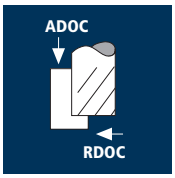
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC						Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN							
U5945432*	3/8	3/8	3 1/2	1 1/2	0.006	4	$64.60	•
U5945434*	3/8	3/8	4	2	0.006	4	$68.10	•
U5945530*	1/2	1/2	4	2	0.006	4	$82.60	•
U5945605*	5/8	5/8	5	2 1/2	0.006	4	$148.10	•
U5945652*	3/4	3/4	5	2 1/2	0.006	4	$207.30	•
U5945775*	1	1	6	3	0.008	4	$341.80	•

*** with clamping flat**

45811



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	590	0.0006	0.188	0.050	18030	38	0.352
	3/16	4	590	0.0010	0.281	0.075	12020	37	0.776
	1/4	4	590	0.0013	0.375	0.100	9015	38	1.407
	3/8	4	590	0.0019	0.563	0.150	6010	37	3.103
	1/2	4	590	0.0025	0.750	0.200	4508	36	5.378
	5/8	4	590	0.0032	0.938	0.250	3606	38	8.791
	3/4	4	590	0.0038	1.125	0.300	3005	37	12.411
	1	4	590	0.0051	1.500	0.400	2254	38	22.340
Steel 24 - 34 HRC	1/8	4	490	0.0005	0.188	0.050	14974	26	0.243
	3/16	4	490	0.0008	0.281	0.075	9983	26	0.536
	1/4	4	490	0.0011	0.375	0.100	7487	26	0.973
	3/8	4	490	0.0016	0.563	0.150	4991	26	2.145
	1/2	4	490	0.0021	0.750	0.200	3744	25	3.719
	5/8	4	490	0.0027	0.938	0.250	2995	26	6.078
	3/4	4	490	0.0032	1.125	0.300	2496	26	8.581
	1	4	490	0.0043	1.500	0.400	1872	26	15.446
Steel 34 - 42 HRC	1/8	4	260	0.0005	0.188	0.050	7946	14	0.123
	3/16	4	260	0.0008	0.281	0.075	5297	13	0.271
	1/4	4	260	0.0010	0.375	0.100	3973	14	0.491
	3/8	4	260	0.0015	0.563	0.150	2649	13	1.083
	1/2	4	260	0.0020	0.750	0.200	1986	13	1.877
	5/8	4	260	0.0026	0.938	0.250	1589	14	3.068
	3/4	4	260	0.0030	1.125	0.300	1324	13	4.332
	1	4	260	0.0041	1.500	0.400	993	13	7.797
Stainless Steel 303 304	1/8	4	230	0.0005	0.188	0.050	7029	12	0.108
	3/16	4	230	0.0008	0.281	0.075	4686	12	0.239
	1/4	4	230	0.0010	0.375	0.100	3514	12	0.433
	3/8	4	230	0.0015	0.563	0.150	2343	12	0.954
	1/2	4	230	0.0020	0.750	0.200	1757	12	1.654
	5/8	4	230	0.0026	0.938	0.250	1406	12	2.703
	3/4	4	230	0.0030	1.125	0.300	1171	12	3.816
	1	4	230	0.0041	1.500	0.400	879	12	6.869

45811

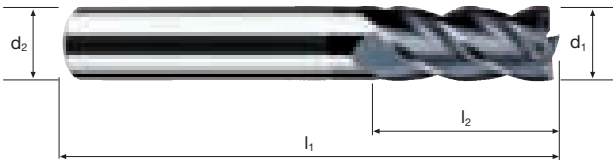
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	472	0.0005	0.125	0.125	14424	25	0.375
	3/16	4	472	0.0008	0.188	0.188	9616	24	0.827
	1/4	4	472	0.0010	0.250	0.250	7212	25	1.500
	3/8	4	472	0.0015	0.375	0.375	4808	24	3.310
	1/2	4	472	0.0020	0.500	0.500	3606	23	5.737
	5/8	4	472	0.0026	0.625	0.625	2885	25	9.377
	3/4	4	472	0.0030	0.750	0.750	2404	24	13.239
	1	4	472	0.0041	1.000	1.000	1803	24	23.829
Steel 24 - 34 HRC	1/8	4	392	0.0004	0.125	0.125	11980	17	0.259
	3/16	4	392	0.0006	0.188	0.188	7986	17	0.572
	1/4	4	392	0.0009	0.250	0.250	5990	17	1.037
	3/8	4	392	0.0013	0.375	0.375	3993	17	2.288
	1/2	4	392	0.0017	0.500	0.500	2995	16	3.966
	5/8	4	392	0.0022	0.625	0.625	2396	17	6.484
	3/4	4	392	0.0026	0.750	0.750	1997	17	9.153
	1	4	392	0.0035	1.000	1.000	1497	17	16.476
Steel 34 -4 2 HRC	1/8	4	208	0.0004	0.125	0.125	6356	9	0.131
	3/16	4	208	0.0006	0.188	0.188	4238	9	0.289
	1/4	4	208	0.0008	0.250	0.250	3178	9	0.524
	3/8	4	208	0.0012	0.375	0.375	2119	9	1.155
	1/2	4	208	0.0016	0.500	0.500	1589	9	2.002
	5/8	4	208	0.0020	0.625	0.625	1271	9	3.273
	3/4	4	208	0.0024	0.750	0.750	1059	9	4.621
	1	4	208	0.0032	1.000	1.000	795	9	8.317
Stainless Steel 303 304	1/8	4	184	0.0004	0.125	0.125	5623	8	0.115
	3/16	4	184	0.0006	0.188	0.188	3749	8	0.254
	1/4	4	184	0.0008	0.250	0.250	2812	8	0.461
	3/8	4	184	0.0012	0.375	0.375	1874	8	1.018
	1/2	4	184	0.0016	0.500	0.500	1406	8	1.764
	5/8	4	184	0.0020	0.625	0.625	1125	8	2.883
	3/4	4	184	0.0024	0.750	0.750	937	8	4.071
	1	4	184	0.0032	1.000	1.000	703	8	7.327

Favora Standard Length

HSS | Favora® F | Base-X | X-Generation

HM	Helix **40°** Rake **5°**
90°	
Vario P	



Performance roughing

Performance finishing

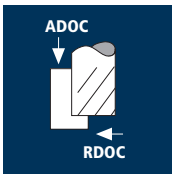
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN						
P45811188	1/8	1/8	1 1/2	1/4	4	$16.20	
P45811252	3/16	3/16	2	3/8	4	$16.20	
P45811312	1/4	1/4	2 1/4	1/2	4	$21.60	
P45811372	5/16	5/16	2 1/4	5/8	4	$31.00	
P45811432	3/8	3/8	2 1/2	3/4	4	$36.60	•
P45811530	1/2	1/2	3	1	4	$49.90	•
P45811605	5/8	5/8	3 1/2	1 1/4	4	$100.10	•
P45811652	3/4	3/4	4	1 1/2	4	$142.90	•
P45811775	1	1	5	2	4	$213.00	•

45812



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	475	0.0006	0.250	0.038	14520	36	0.333
	3/16	4	475	0.0009	0.375	0.056	9680	35	0.735
	1/4	4	475	0.0012	0.500	0.075	7260	36	1.333
	5/16	4	475	0.0015	0.625	0.094	5810	35	2.041
	3/8	4	475	0.0018	0.750	0.113	4840	35	2.939
	1/2	4	475	0.0023	1.000	0.150	3630	34	5.095
	3/4	4	475	0.0036	1.500	0.225	2420	35	11.758
Steel 24 - 34 HRC	1/8	4	390	0.0005	0.250	0.038	11920	25	0.228
	3/16	4	390	0.0008	0.375	0.056	7950	24	0.503
	1/4	4	390	0.0010	0.500	0.075	5960	25	0.912
	5/16	4	390	0.0013	0.625	0.094	4770	25	1.453
	3/8	4	390	0.0015	0.750	0.113	3980	24	2.011
	1/2	4	390	0.0020	1.000	0.150	2980	24	3.486
	3/4	4	390	0.0030	1.500	0.225	1990	24	8.045
Steel 34 - 42 HRC	1/8	4	210	0.0005	0.250	0.038	6420	13	0.115
	3/16	4	210	0.0007	0.375	0.056	4280	12	0.253
	1/4	4	210	0.0010	0.500	0.075	3210	13	0.458
	5/16	4	210	0.0012	0.625	0.094	2570	13	0.722
	3/8	4	210	0.0014	0.750	0.113	2140	12	1.011
	1/2	4	210	0.0018	1.000	0.150	1610	12	1.752
	3/4	4	210	0.0028	1.500	0.225	1070	12	4.043
Stainless Steel 303 304	1/8	4	185	0.0005	0.250	0.038	5660	11	0.101
	3/16	4	185	0.0007	0.375	0.056	3770	11	0.223
	1/4	4	185	0.0010	0.500	0.075	2830	11	0.404
	5/16	4	185	0.0012	0.625	0.094	2270	11	0.636
	3/8	4	185	0.0014	0.750	0.113	1890	11	0.890
	1/2	4	185	0.0018	1.000	0.150	1420	11	1.543
	3/4	4	185	0.0028	1.500	0.225	950	11	3.562

45812

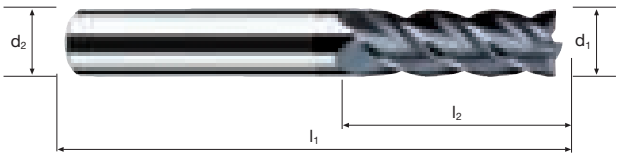
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel <24 HRC	1/8	4	380	0.0004	0.125	0.125	11620	23	0.355
	3/16	4	380	0.0007	0.188	0.188	7750	23	0.784
	1/4	4	380	0.0010	0.250	0.250	5810	23	1.421
	5/16	4	380	0.0012	0.313	0.313	4650	23	2.177
	3/8	4	380	0.0014	0.375	0.375	3880	23	3.135
	1/2	4	380	0.0019	0.500	0.500	2910	22	5.435
	3/4	4	380	0.0029	0.750	0.750	1940	23	12.542
Steel 24 - 34 HRC	1/8	4	312	0.0004	0.125	0.125	9540	16	0.243
	3/16	4	312	0.0006	0.188	0.188	6360	16	0.536
	1/4	4	312	0.0008	0.250	0.250	4770	16	0.973
	5/16	4	312	0.0010	0.313	0.313	3820	16	1.549
	3/8	4	312	0.0012	0.375	0.375	3180	16	2.145
	1/2	4	312	0.0016	0.500	0.500	2390	15	3.719
	3/4	4	312	0.0024	0.750	0.750	1590	16	8.581
Steel 34 - 42 HRC	1/8	4	168	0.0004	0.125	0.125	5140	8	0.122
	3/16	4	168	0.0006	0.188	0.188	3430	8	0.270
	1/4	4	168	0.0008	0.250	0.250	2570	8	0.489
	5/16	4	168	0.0009	0.313	0.313	2060	8	0.722
	3/8	4	168	0.0011	0.375	0.375	1720	8	1.078
	1/2	4	168	0.0015	0.500	0.500	1290	8	1.869
	3/4	4	168	0.0022	0.750	0.750	860	8	4.313
Stainless Steel 303 304	1/8	4	148	0.0004	0.125	0.125	4530	7	0.108
	3/16	4	148	0.0006	0.188	0.188	3020	7	0.237
	1/4	4	148	0.0008	0.250	0.250	2270	7	0.431
	5/16	4	148	0.0009	0.313	0.313	1810	7	0.636
	3/8	4	148	0.0011	0.375	0.375	1510	7	0.950
	1/2	4	148	0.0015	0.500	0.500	1140	7	1.646
	3/4	4	148	0.0022	0.750	0.750	760	7	3.799

Favora Mid Length

HSS | Favora® F | Base-X | X-Generation

HM	Helix **40°** Rake **5°**
90°	
Vario P	



Performance roughing

Performance finishing

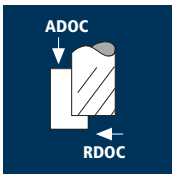
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN						
P45812188	1/8	1/8	2	1/2	4	$17.10	
P45812252	3/16	3/16	2 1/4	5/8	4	$17.10	
P45812312	1/4	1/4	2 1/2	3/4	4	$23.00	
P45812372	5/16	5/16	2 1/2	7/8	4	$33.00	
P45812432	3/8	3/8	2 3/4	1	4	$38.80	•
P45812530	1/2	1/2	3 1/4	1 1/4	4	$53.40	•
P45812652	3/4	3/4	4 1/2	2	4	$151.40	•

15850



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 24 - 34 HRC	1/8	5	590	0.0004	0.250	0.002	18040	37
	3/16	5	590	0.0006	0.375	0.003	12030	37
	1/4	5	590	0.0008	0.500	0.004	9020	37
	3/8	7	590	0.0012	0.750	0.006	6020	51
	1/2	7	590	0.0016	1.000	0.008	4510	50
	5/8	7	590	0.0020	1.250	0.009	3610	52
	3/4	7	590	0.0024	1.500	0.011	3010	51
	1	7	590	0.0032	2.000	0.015	2260	52
Steel 34 - 42 HRC	1/8	5	490	0.0004	0.250	0.002	14980	31
	3/16	5	490	0.0006	0.375	0.003	9990	30
	1/4	5	490	0.0008	0.500	0.004	7490	31
	3/8	7	490	0.0012	0.750	0.006	5000	42
	1/2	7	490	0.0016	1.000	0.008	3750	41
	5/8	7	490	0.0020	1.250	0.009	3000	43
	3/4	7	490	0.0024	1.500	0.011	2500	42
	1	7	490	0.0032	2.000	0.015	1880	43
Steel 42 - 48 HRC	1/8	5	390	0.0003	0.250	0.002	11920	21
	3/16	5	390	0.0005	0.375	0.003	7950	20
	1/4	5	390	0.0007	0.500	0.004	5960	21
	3/8	7	390	0.0010	0.750	0.006	3980	28
	1/2	7	390	0.0013	1.000	0.008	2980	28
	5/8	7	390	0.0017	1.250	0.009	2390	29
	3/4	7	390	0.0020	1.500	0.011	1990	28
	1	7	390	0.0027	2.000	0.015	1490	29
Steel 48 - 54 HRC	1/8	5	310	0.0003	0.250	0.002	9480	17
	3/16	5	310	0.0005	0.375	0.003	6320	16
	1/4	5	310	0.0007	0.500	0.004	4740	17
	3/8	7	310	0.0010	0.750	0.006	3160	23
	1/2	7	310	0.0013	1.000	0.008	2370	22
	5/8	7	310	0.0017	1.250	0.009	1900	23
	3/4	7	310	0.0020	1.500	0.011	1580	23
	1	7	310	0.0027	2.000	0.015	1190	23

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Stainless	1/8	5	280	0.0004	0.250	0.002	8560	18
	3/16	5	280	0.0006	0.375	0.003	5710	18
	1/4	5	280	0.0008	0.500	0.004	4280	18
	3/8	7	280	0.0012	0.750	0.006	2860	24
	1/2	7	280	0.0016	1.000	0.008	2140	24
	5/8	7	280	0.0020	1.250	0.009	1720	25
	3/4	7	280	0.0024	1.500	0.011	1430	24
	1	7	280	0.0032	2.000	0.015	1070	25
Titanium	1/8	5	250	0.0004	0.250	0.002	7640	16
	3/16	5	250	0.0006	0.375	0.003	5100	16
	1/4	5	250	0.0008	0.500	0.004	3820	16
	3/8	7	250	0.0012	0.750	0.006	2550	22
	1/2	7	250	0.0016	1.000	0.008	1910	21
	5/8	7	250	0.0020	1.250	0.009	1530	22
	3/4	7	250	0.0024	1.500	0.011	1280	22
	1	7	250	0.0032	2.000	0.015	960	22
Nickel Alloys	1/8	5	80	0.0004	0.250	0.002	2450	5
	3/16	5	80	0.0006	0.375	0.003	1630	5
	1/4	5	80	0.0007	0.500	0.004	1230	5
	3/8	7	80	0.0011	0.750	0.006	820	7
	1/2	7	80	0.0014	1.000	0.008	620	7
	5/8	7	80	0.0019	1.250	0.009	490	7
	3/4	7	80	0.0022	1.500	0.011	410	7
	1	7	80	0.0030	2.000	0.015	310	7
Cast Iron	1/8	5	650	0.0004	0.250	0.002	19870	41
	3/16	5	650	0.0006	0.375	0.003	13250	40
	1/4	5	650	0.0008	0.500	0.004	9940	41
	3/8	7	650	0.0012	0.750	0.006	6630	56
	1/2	7	650	0.0016	1.000	0.008	4970	55
	5/8	7	650	0.0020	1.250	0.009	3980	57
	3/4	7	650	0.0024	1.500	0.011	3320	56
	1	7	650	0.0032	2.000	0.015	2490	57

X-Generation Standard Length Multicut XF

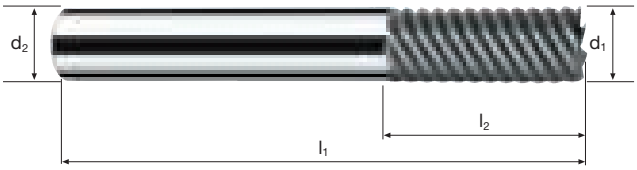
HSS | Favora® | Base-X | X-Generation

HM XA

Helix **65°**
Rake **8°**

45°

Vario P



Performance roughing

Performance finishing

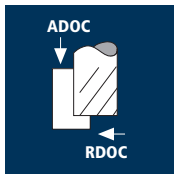
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC		Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15850188	1/8	1/4	2 1/4	1/4	—	5	$62.20	
P15850252	3/16	1/4	2 1/4	3/8	—	5	$62.20	
P15850312	1/4	1/4	2 1/2	3/4	0.004	5	$74.00	
P15850432	3/8	3/8	2 1/2	7/8	0.006	7	$124.90	•
P15850530	1/2	1/2	3	1	0.006	7	$157.00	•
P15850605	5/8	5/8	3 1/2	1 1/4	0.006	7	$205.80	•
P15850652	3/4	3/4	4	1 1/2	0.006	7	$266.40	•
P15850775	1	1	5	2	0.008	7	$437.50	•

15851



Side Milling

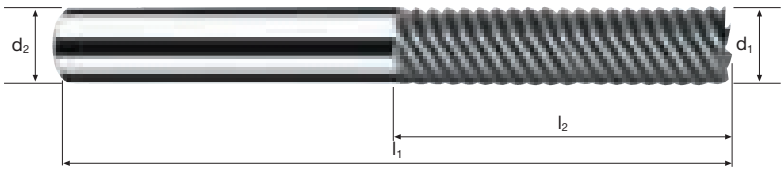
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 24 - 34 HRC	3/8	7	500	0.0012	1.125	0.006	5100	43
	1/2	7	500	0.0016	1.500	0.008	3820	42
	5/8	7	500	0.0020	1.875	0.009	3060	44
	3/4	7	500	0.0024	2.250	0.011	2550	43
	1	7	500	0.0032	3.000	0.015	1910	44
	1 1/4	9	500	0.0034	3.750	0.019	1530	47
Steel 34 - 42 HRC	3/8	7	410	0.0012	1.125	0.006	4180	36
	1/2	7	410	0.0016	1.500	0.008	3140	35
	5/8	7	410	0.0020	1.875	0.009	2510	36
	3/4	7	410	0.0024	2.250	0.011	2090	36
	1	7	410	0.0032	3.000	0.015	1570	36
	1 1/4	9	410	0.0034	3.750	0.019	1260	38
Steel 42 - 48 HRC	3/8	7	330	0.0012	1.125	0.006	3370	29
	1/2	7	330	0.0016	1.500	0.008	2530	28
	5/8	7	330	0.0020	1.875	0.009	2020	29
	3/4	7	330	0.0024	2.250	0.011	1690	29
	1	7	330	0.0032	3.000	0.015	1270	29
	1 1/4	9	330	0.0034	3.750	0.019	1010	31
Steel 48 - 54 HRC	3/8	7	260	0.0012	1.125	0.006	2650	23
	1/2	7	260	0.0016	1.500	0.008	1990	22
	5/8	7	260	0.0020	1.875	0.009	1590	23
	3/4	7	260	0.0024	2.250	0.011	1330	23
	1	7	260	0.0032	3.000	0.015	1000	23
	1 1/4	9	260	0.0034	3.750	0.019	800	25

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Stainless	3/8	7	240	0.0012	1.125	0.006	2450	21
	1/2	7	240	0.0016	1.500	0.008	1840	21
	5/8	7	240	0.0020	1.875	0.009	1470	21
	3/4	7	240	0.0024	2.250	0.011	1230	21
	1	7	240	0.0032	3.000	0.015	920	21
	1 1/4	9	240	0.0034	3.750	0.019	740	23
Titanium	3/8	7	210	0.0012	1.125	0.006	2140	18
	1/2	7	210	0.0016	1.500	0.008	1610	18
	5/8	7	210	0.0020	1.875	0.009	1290	19
	3/4	7	210	0.0024	2.250	0.011	1070	18
	1	7	210	0.0032	3.000	0.015	810	19
	1 1/4	9	210	0.0034	3.750	0.019	650	20
Nickel Alloys	3/8	7	65	0.0012	1.125	0.006	670	6
	1/2	7	65	0.0016	1.500	0.008	500	6
	5/8	7	65	0.0020	1.875	0.009	400	6
	3/4	7	65	0.0024	2.250	0.011	340	6
	1	7	65	0.0032	3.000	0.015	250	6
	1 1/4	9	65	0.0034	3.750	0.019	200	7
Cast Iron	3/8	7	550	0.0012	1.125	0.006	5610	48
	1/2	7	550	0.0016	1.500	0.008	4210	46
	5/8	7	550	0.0020	1.875	0.009	3370	49
	3/4	7	550	0.0024	2.250	0.011	2810	48
	1	7	550	0.0032	3.000	0.015	2110	48
	1 1/4	9	550	0.0034	3.750	0.019	1690	51

X-Generation Mid Length Multicut XF

HSS | Favora® | Base-X | X-Generation

HM XA	Helix 65° Rake 8°
45°	
Vario P	



Performance roughing

Performance finishing

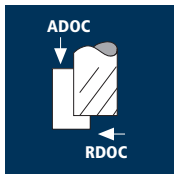
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC		Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15851430	3/8	3/8	3	1 1/8	0.006	7	$132.40	•
P15851432	3/8	3/8	3 1/2	1 1/2	0.006	7	$139.90	•
P15851528	1/2	1/2	3 1/2	1 1/2	0.006	7	$164.10	•
P15851530	1/2	1/2	4	2	0.006	7	$171.10	•
P15851603	5/8	5/8	4 1/2	2	0.006	7	$233.00	•
P15851605	5/8	5/8	5	2 1/2	0.006	7	$260.30	•
P15851652	3/4	3/4	5	2 1/2	0.006	7	$339.30	•
P15851654	3/4	3/4	5 1/2	3	0.006	7	$371.90	•
P15851775	1	1	6	3	0.008	7	$556.20	•
P15851777	1	1	7	4	0.008	7	$611.80	•
P15851815	1 1/4	1 1/4	8	5	0.008	9	$948.60	•

15852



Side Milling

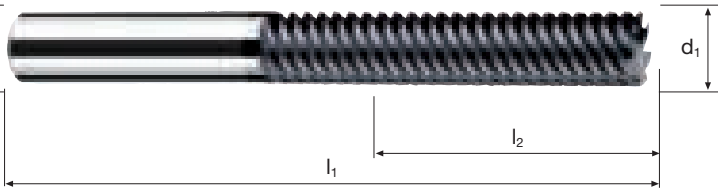
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 24 - 34 HRC	1/2	7	250	0.0016	2.500	0.008	910	21
	5/8	7	250	0.0020	3.125	0.009	1530	22
	3/4	7	250	0.0024	3.750	0.011	1280	22
	1	7	250	0.0032	5.000	0.015	960	22
	1 1/4	9	250	0.0034	6.000	0.019	770	24
Steel 34 - 42 HRC	1/2	7	205	0.0016	2.500	0.008	570	18
	5/8	7	205	0.0020	3.125	0.009	1260	18
	3/4	7	205	0.0024	3.750	0.011	1050	18
	1	7	205	0.0032	5.000	0.015	790	18
	1 1/4	9	205	0.0034	6.000	0.019	630	19
Steel 42 - 48 HRC	1/2	7	165	0.0014	2.500	0.008	270	13
	5/8	7	165	0.0019	3.125	0.009	1010	14
	3/4	7	165	0.0022	3.750	0.011	850	13
	1	7	165	0.0030	5.000	0.015	640	14
	1 1/4	9	165	0.0031	6.000	0.019	510	14
Steel 48 - 54 HRC	1/2	7	130	0.0014	2.500	0.008	1000	10
	5/8	7	130	0.0019	3.125	0.009	800	11
	3/4	7	130	0.0022	3.750	0.011	670	11
	1	7	130	0.0030	5.000	0.015	500	11
	1 1/4	9	130	0.0031	6.000	0.019	400	12

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Stainless	1/2	7	120	0.0016	2.500	0.008	920	11
	5/8	7	120	0.0020	3.125	0.009	740	11
	3/4	7	120	0.0024	3.750	0.011	620	11
	1	7	120	0.0032	5.000	0.015	460	11
	1 1/4	9	120	0.0034	6.000	0.019	370	12
Titanium	1/2	7	105	0.0016	2.500	0.008	810	9
	5/8	7	105	0.0020	3.125	0.009	650	10
	3/4	7	105	0.0024	3.750	0.011	540	9
	1	7	105	0.0032	5.000	0.015	410	10
	1 1/4	9	105	0.0034	6.000	0.019	330	10
Nickel Alloys	1/2	7	35	0.0016	2.500	0.008	270	3
	5/8	7	35	0.0020	3.125	0.009	220	4
	3/4	7	35	0.0024	3.750	0.011	180	3
	1	7	35	0.0032	5.000	0.015	140	4
	1 1/4	9	35	0.0034	6.000	0.019	110	4
Cast iron	1/2	7	275	0.0016	2.500	0.008	2110	23
	5/8	7	275	0.0020	3.125	0.009	1690	25
	3/4	7	275	0.0024	3.750	0.011	1410	24
	1	7	275	0.0032	5.000	0.015	1060	24
	1 1/4	9	275	0.0034	6.000	0.019	850	26

X-Generation Long Length Multicut XF

HSS | Favora® | Base-X | X-Generation

HM XA	Helix 65° Rake 8°
45°	
Vario P	



Performance roughing

Performance finishing

Machines the following materials: Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC		Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15852530	1/2	1/2	4 1/2	2 1/2	0.006	7	$179.60	•
P15852605	5/8	5/8	5 3/4	3 1/4	0.006	7	$273.20	•
P15852652	3/4	3/4	6 1/4	3 3/4	0.006	7	$391.90	•
P15852775	1	1	8	5	0.008	7	$642.50	•
P15852815	1 1/4	1 1/4	9	6	0.008	9	$995.10	•

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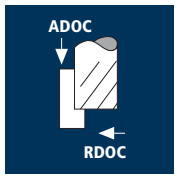


Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel up to 24 HRC	1/4	4	560	0.0008	0.375	0.062	8555	27
	5/16	4	560	0.0010	0.469	0.078	6845	27
	3/8	4	560	0.0013	0.563	0.089	5705	30
	1/2	4	560	0.0017	0.750	0.126	4280	29
	3/4	4	560	0.0024	1.125	0.192	2850	27
Steel 24 - 34 HRC	1/4	4	360	0.0008	0.375	0.062	5500	18
	5/16	4	360	0.0010	0.469	0.078	4400	18
	3/8	4	360	0.0013	0.563	0.089	3665	19
	1/2	4	360	0.0017	0.750	0.126	2750	19
	3/4	4	360	0.0024	1.125	0.192	1835	18
Steel 34 - 42 HRC	1/4	4	260	0.0008	0.375	0.062	3975	13
	5/16	4	260	0.0010	0.469	0.078	3180	13
	3/8	4	260	0.0013	0.563	0.089	2650	14
	1/2	4	260	0.0017	0.750	0.126	1985	13
	3/4	4	260	0.0024	1.125	0.192	1325	13
Cold Work Tool Steel (12% Cr), High Alloyed Stainless Steel [Cr-Ni/304]	1/4	4	230	0.0008	0.375	0.062	3515	11
	5/16	4	230	0.0010	0.469	0.078	2810	11
	3/8	4	230	0.0013	0.563	0.089	2345	12
	1/2	4	230	0.0017	0.750	0.126	1755	12
	3/4	4	230	0.0024	1.125	0.192	1170	11

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Cast Iron	1/4	4	425	0.0008	0.374	0.063	6495	21
	5/16	4	425	0.0010	0.465	0.078	5195	21
	3/8	4	425	0.0013	0.532	0.094	4330	23
	1/2	4	425	0.0017	0.754	0.125	3245	22
	3/4	4	425	0.0024	1.152	0.188	2165	21
Unalloyed Copper	1/4	4	755	0.0008	0.374	0.063	11535	37
	5/16	4	755	0.0010	0.465	0.078	9230	37
	3/8	4	755	0.0013	0.532	0.094	7690	40
	1/2	4	755	0.0017	0.754	0.125	5770	39
	3/4	4	755	0.0024	1.152	0.188	3845	37
Titanium Alloys up to 300 HB [TiAl2.5Sn]	1/4	4	260	0.0008	0.374	0.063	3975	13
	5/16	4	260	0.0010	0.465	0.078	3180	13
	3/8	4	260	0.0013	0.532	0.094	2650	14
	1/2	4	260	0.0017	0.754	0.125	1985	13
	3/4	4	260	0.0024	1.152	0.188	1325	13
Heat Resistant Steel [17-4 PH]	1/4	4	130	0.0008	0.374	0.063	1985	6
	5/16	4	130	0.0010	0.465	0.078	1590	6
	3/8	4	130	0.0013	0.532	0.094	1325	7
	1/2	4	130	0.0017	0.754	0.125	995	7
	3/4	4	130	0.0024	1.152	0.188	660	6

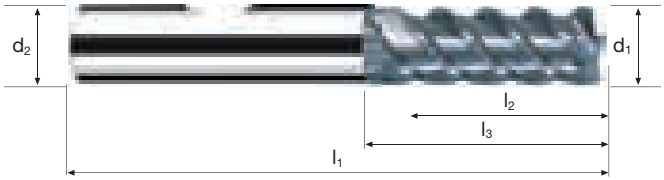
X-Generation Standard Length

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **55°**
Rake **15°**

45°



Performance roughing

Performance finishing

Machines the following materials:

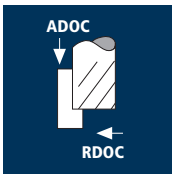
Best = Good =

Steel < 24 HRC | **Steel** 24 - 34 HRC | **Stainless** | **Titanium** | **Nickel Alloys**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5855312	1/4	1/4	2 1/2	3/4	0.004	4	$28.00	
P5855372	5/16	5/16	2 1/2	1	0.004	4	$29.00	
P5855432	3/8	3/8	3	1	0.006	4	$54.00	•
P5855530	1/2	1/2	3 1/4	1 1/4	0.006	4	$72.00	•
P5855652	3/4	3/4	4	1 1/2	0.006	4	$185.00	•
P5955432*	3/8	3/8	3	1	0.006	4	$54.00	•
P5955530*	1/2	1/2	3 1/4	1 1/4	0.006	4	$72.00	•
P5955652*	3/4	3/4	4	1 1/2	0.006	4	$185.00	•

*** with clamping flat**

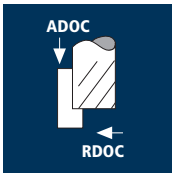
5866



Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	360	0.0006	0.188	0.004	11000	26	0.020
	3/16	5	360	0.0009	0.281	0.004	7330	33	0.037
	1/4	6	360	0.0012	0.375	0.004	5500	40	0.060
	5/16	6	360	0.0016	0.469	0.004	4400	42	0.079
	3/8	6	360	0.0019	0.563	0.004	3665	42	0.095
	1/2	6	360	0.0025	0.750	0.004	2750	41	0.123
	5/8	8	360	0.0031	0.938	0.004	2200	55	0.206
	3/4	8	360	0.0037	1.125	0.004	1835	54	0.243
Hardened Tool Steel 52 - 56 HRC	1/8	4	295	0.0005	0.188	0.004	9020	18	0.014
	3/16	5	295	0.0008	0.281	0.004	6010	23	0.025
	1/4	6	295	0.0010	0.375	0.004	4505	27	0.041
	5/16	6	295	0.0012	0.469	0.004	3605	26	0.049
	3/8	6	295	0.0015	0.563	0.004	3005	27	0.061
	1/2	6	295	0.0021	0.750	0.004	2255	28	0.084
	5/8	8	295	0.0025	0.938	0.004	1805	36	0.135
	3/4	8	295	0.0030	1.125	0.004	1500	36	0.162
Hardened Tool Steel 56 - 60 HRC	1/8	4	195	0.0004	0.188	0.004	5960	10	0.007
	3/16	5	195	0.0006	0.281	0.004	3970	12	0.013
	1/4	6	195	0.0008	0.375	0.004	2980	14	0.021
	5/16	6	195	0.0010	0.469	0.004	2385	14	0.026
	3/8	6	195	0.0013	0.563	0.004	1985	15	0.034
	1/2	6	195	0.0017	0.750	0.004	1490	15	0.045
	5/8	8	195	0.0021	0.938	0.004	1190	20	0.075
	3/4	8	195	0.0024	1.125	0.004	995	19	0.086
Hardened Tool Steel > 60 HRC	1/8	4	150	0.0003	0.188	0.004	4580	5	0.004
	3/16	5	150	0.0005	0.281	0.004	3060	7	0.008
	1/4	6	150	0.0006	0.375	0.004	2290	8	0.012
	5/16	6	150	0.0010	0.469	0.004	1835	11	0.021
	3/8	6	150	0.0011	0.563	0.004	1530	10	0.023
	1/2	6	150	0.0015	0.750	0.004	1145	10	0.030
	5/8	8	150	0.0018	0.938	0.004	915	13	0.049
	3/4	8	150	0.0021	1.125	0.004	765	13	0.059

5866



Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	295	0.0006	0.125	0.007	9020	22	0.018
	3/16	5	295	0.0009	0.187	0.010	6010	27	0.050
	1/4	6	295	0.0012	0.249	0.013	4505	32	0.104
	5/16	6	295	0.0016	0.310	0.016	3605	35	0.174
	3/8	6	295	0.0019	0.383	0.019	3005	34	0.247
	1/2	6	295	0.0025	0.545	0.025	2255	34	0.463
	5/8	8	295	0.0031	0.647	0.031	1805	45	0.903
	3/4	8	295	0.0037	0.768	0.038	1500	44	1.284
Hardened Tool Steel 52 - 56 HRC	1/8	4	195	0.0005	0.125	0.007	5960	12	0.010
	3/16	5	195	0.0008	0.187	0.010	3970	15	0.027
	1/4	6	195	0.0010	0.249	0.013	2980	18	0.058
	5/16	6	195	0.0012	0.310	0.016	2385	17	0.084
	3/8	6	195	0.0015	0.383	0.019	1985	18	0.131
	1/2	6	195	0.0021	0.545	0.025	1490	19	0.259
	5/8	8	195	0.0025	0.647	0.031	1190	24	0.481
	3/4	8	195	0.0030	0.768	0.038	995	24	0.700
Hardened Tool Steel 56 - 60 HRC	1/8	4	100	0.0004	0.125	0.007	3060	5	0.004
	3/16	5	100	0.0006	0.187	0.010	2040	6	0.011
	1/4	6	100	0.0008	0.249	0.013	1530	7	0.023
	5/16	6	100	0.0010	0.310	0.016	1220	7	0.035
	3/8	6	100	0.0013	0.383	0.019	1020	8	0.058
	1/2	6	100	0.0017	0.545	0.025	765	8	0.109
	5/8	8	100	0.0021	0.647	0.031	610	10	0.201
	3/4	8	100	0.0024	0.768	0.038	510	10	0.292
Hardened Tool Steel > 60 HRC	1/8	4	65	0.0003	0.125	0.007	1990	2	0.002
	3/16	5	65	0.0005	0.187	0.010	1320	3	0.005
	1/4	6	65	0.0006	0.249	0.013	995	4	0.013
	5/16	6	65	0.0010	0.310	0.016	795	5	0.025
	3/8	6	65	0.0011	0.383	0.019	660	4	0.029
	1/2	6	65	0.0015	0.545	0.025	495	4	0.055
	5/8	8	65	0.0018	0.647	0.031	395	6	0.120
	3/4	8	65	0.0021	0.768	0.038	330	6	0.175

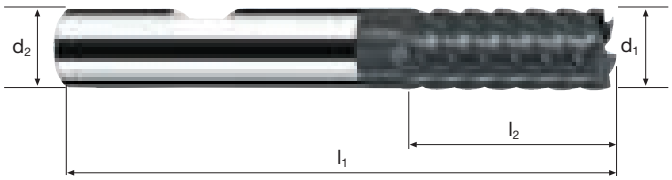
X-Generation Standard Length Multicut HX

HSS | Favora® | Base-X | X-Generation

HM XA

Helix **55°**
Rake **-10°**

45°



Performance roughing

Performance finishing

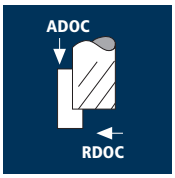
Machines the following materials:

Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN								
D5866188	1/8	1/8	2 1/4	3/8	0.002	—	4	$74.00	
D5866252	3/16	1/4	2 1/4	1/2	0.004	3°	5	$74.00	
D5866312	1/4	1/4	2 1/2	3/4	0.004	—	6	$74.00	
D5866372	5/16	5/16	2 1/2	3/4	0.004	—	6	$115.90	
D5866432	3/8	3/8	2 1/2	3/4	0.006	—	6	$124.90	•
D5866530	1/2	1/2	3	1	0.006	—	6	$157.00	•
D5866605	5/8	5/8	3 1/2	1 1/2	0.006	—	8	$205.80	•
D5866652	3/4	3/4	4	1 1/2	0.006	—	8	$266.40	•

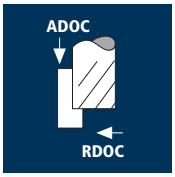
15866



Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/4	6	260	0.0010	0.625	0.004	3975	24	0.060
	3/8	6	260	0.0017	0.938	0.004	2650	27	0.101
	1/2	6	260	0.0023	1.250	0.004	1985	27	0.135
	5/8	8	260	0.0027	1.563	0.004	1590	35	0.213
	3/4	8	260	0.0034	1.875	0.004	1325	36	0.270
Hardened Tool Steel 52 - 56 HRC	1/4	6	195	0.0008	0.625	0.004	2980	14	0.035
	3/8	6	195	0.0013	0.938	0.004	1985	15	0.056
	1/2	6	195	0.0019	1.250	0.004	1490	17	0.085
	5/8	8	195	0.0023	1.563	0.004	1190	22	0.138
	3/4	8	195	0.0026	1.875	0.004	995	21	0.158
Hardened Tool Steel 56 - 60 HRC	1/4	6	130	0.0008	0.625	0.004	1985	10	0.025
	3/8	6	130	0.0011	0.938	0.004	1325	9	0.034
	1/2	6	130	0.0015	1.250	0.004	995	9	0.045
	5/8	8	130	0.0020	1.563	0.004	795	13	0.081
	3/4	8	130	0.0022	1.875	0.004	660	12	0.090
Hardened Tool Steel > 60 HRC	1/4	6	115	0.0006	0.625	0.004	1755	6	0.015
	3/8	6	115	0.0009	0.938	0.004	1170	6	0.023
	1/2	6	115	0.0012	1.250	0.004	880	6	0.030
	5/8	8	115	0.0016	1.563	0.004	705	9	0.056
	3/4	8	115	0.0019	1.875	0.004	585	9	0.068

15866



Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/4	6	230	0.0010	0.574	0.013	3515	21	0.157
	3/8	6	230	0.0017	0.886	0.019	2345	24	0.404
	1/2	6	230	0.0023	1.194	0.025	1755	24	0.716
	5/8	8	230	0.0027	1.476	0.031	1405	30	1.373
	3/4	8	230	0.0034	1.802	0.038	1170	32	2.191
Hardened Tool Steel 52 - 56 HRC	1/4	6	150	0.0008	0.574	0.013	2290	11	0.082
	3/8	6	150	0.0013	0.886	0.019	1530	12	0.202
	1/2	6	150	0.0019	1.194	0.025	1145	13	0.388
	5/8	8	150	0.0023	1.476	0.031	915	17	0.778
	3/4	8	150	0.0026	1.802	0.038	765	16	1.096
Hardened Tool Steel 56 - 60 HRC	1/4	6	65	0.0008	0.574	0.013	995	5	0.037
	3/8	6	65	0.0011	0.886	0.019	660	4	0.067
	1/2	6	65	0.0015	1.194	0.025	495	4	0.119
	5/8	8	65	0.0020	1.476	0.031	395	6	0.275
	3/4	8	65	0.0022	1.802	0.038	330	6	0.411
Hardened Tool Steel > 60 HRC	1/4	6	50	0.0006	0.574	0.013	765	3	0.022
	3/8	6	50	0.0009	0.886	0.019	510	3	0.051
	1/2	6	50	0.0012	1.194	0.025	380	3	0.090
	5/8	8	50	0.0016	1.476	0.031	305	4	0.183
	3/4	8	50	0.0019	1.802	0.038	255	4	0.274

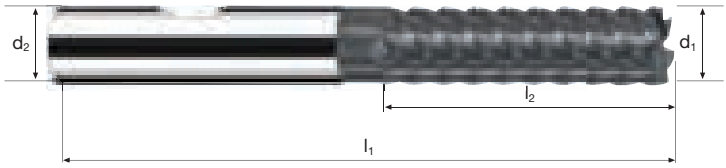
X-Generation Long Length Multicut HX

HSS | Favora® | Base-X | X-Generation

HM XA

Helix **55°**
Rake **-10°**

45°



Performance roughing

Performance finishing

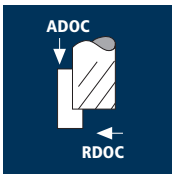
Machines the following materials:

Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN							
D15866312	1/4	1/4	3	1 1/4	0.004	6	$82.90	
D15866432	3/8	3/8	3 1/2	1 1/2	0.006	6	$139.90	•
D15866530	1/2	1/2	4	2	0.006	6	$171.10	•
D15866605	5/8	5/8	5	2 1/2	0.006	8	$260.30	•
D15866652	3/4	3/4	5	2 1/2	0.006	8	$339.30	•

5860



Finishing

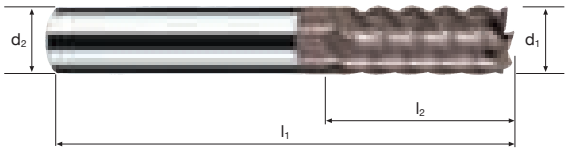
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel up to 24 HRC	1/4	6	560	0.0006	0.375	0.012	8555	31
	5/16	6	560	0.0010	0.469	0.016	6845	41
	3/8	6	560	0.0011	0.563	0.019	5705	38
	1/2	6	560	0.0015	0.750	0.027	4280	39
	5/8	8	560	0.0018	0.938	0.032	3425	49
	3/4	10	560	0.0021	1.125	0.038	2850	60
	1	12	560	0.0024	1.350	0.054	2140	62
Steel 24 - 34 HRC	1/4	6	360	0.0006	0.375	0.012	5500	20
	5/16	6	360	0.0010	0.469	0.016	4400	26
	3/8	6	360	0.0011	0.563	0.019	3665	24
	1/2	6	360	0.0015	0.750	0.027	2750	25
	5/8	8	360	0.0018	0.938	0.032	2200	32
	3/4	10	360	0.0021	1.125	0.038	1835	39
	1	12	360	0.0024	1.350	0.054	1375	40
Steel 34 - 42 HRC	1/4	6	260	0.0006	0.375	0.012	3975	14
	5/16	6	260	0.0010	0.469	0.016	3180	19
	3/8	6	260	0.0011	0.563	0.019	2650	17
	1/2	6	260	0.0015	0.750	0.027	1985	18
	5/8	8	260	0.0018	0.938	0.032	1590	23
	3/4	10	260	0.0021	1.125	0.038	1325	28
	1	12	260	0.0024	1.350	0.054	995	29
Cold Work Tool Steel (12% Cr), High Al-loyed	1/4	6	230	0.0006	0.375	0.012	3515	13
	5/16	6	230	0.0010	0.469	0.016	2810	17
	3/8	6	230	0.0011	0.563	0.019	2345	15
	1/2	6	230	0.0015	0.750	0.027	1755	16
	5/8	8	230	0.0018	0.938	0.032	1405	20
	3/4	10	230	0.0021	1.125	0.038	1170	25
	1	12	230	0.0024	1.350	0.054	880	25

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Cast Iron	1/4	6	425	0.0006	0.374	0.006	6495	23
	5/16	6	425	0.0010	0.465	0.008	5195	31
	3/8	6	425	0.0011	0.574	0.009	4330	29
	1/2	6	425	0.0015	0.817	0.013	3245	29
	5/8	8	425	0.0018	0.970	0.016	2595	37
	3/4	10	425	0.0021	0.152	0.019	2165	45
	1	12	425	0.0024	1.447	0.025	1625	47
Unalloyed Copper	1/4	6	755	0.0006	0.374	0.006	11535	42
	5/16	6	755	0.0010	0.465	0.008	9230	55
	3/8	6	755	0.0011	0.574	0.009	7690	51
	1/2	6	755	0.0015	0.817	0.013	5770	52
	5/8	8	755	0.0018	0.970	0.016	4615	66
	3/4	10	755	0.0021	0.152	0.019	3845	81
	1	12	755	0.0024	1.447	0.025	2885	83
Titanium Alloys up to 300 HB [TiAl2.5Sn]	1/4	6	260	0.0006	0.374	0.004	3975	14
	5/16	6	260	0.0010	0.465	0.004	3180	19
	3/8	6	260	0.0011	0.574	0.004	2650	17
	1/2	6	260	0.0015	0.817	0.004	1985	18
	5/8	8	260	0.0018	0.970	0.004	1590	23
	3/4	10	260	0.0021	1.152	0.004	1325	28
	1	12	260	0.0024	1.447	0.004	995	29
Heat Resistant Steel [17-4 PH]	1/4	6	130	0.0006	0.374	0.004	1985	7
	5/16	6	130	0.0010	0.465	0.004	1590	10
	3/8	6	130	0.0011	0.574	0.004	1325	9
	1/2	6	130	0.0015	0.817	0.004	995	9
	5/8	8	130	0.0018	0.970	0.004	795	11
	3/4	10	130	0.0021	1.152	0.004	660	14
	1	12	130	0.0024	1.447	0.004	495	14

X-Generation Standard Length Multicut N

HSS | Favora® | Base-X | B | X-Generation

HM MG10	Helix 45° Rake 8°
45°	



Performance roughing

Performance finishing

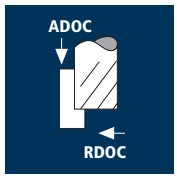
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN							
U5860312	1/4	1/4	2 1/2	3/4	0.004	6	$30.80	
U5860372	5/16	5/16	2 1/2	7/8	0.004	6	$43.70	
U5860432	3/8	3/8	2 1/2	7/8	0.006	6	$51.30	•
U5860530	1/2	1/2	3	1	0.006	6	$78.10	•
U5860605	5/8	5/8	3 1/2	1 1/4	0.006	8	$142.20	•
U5860652	3/4	3/4	4	1 1/2	0.006	10	$194.50	•
U5860775	1	1	4	1 1/2	0.008	12	$331.00	•

5865



Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel up to 24 HRC	1/2	6	425	0.0010	1.250	0.024	3245	19
	5/8	8	425	0.0012	1.563	0.030	2595	25
	3/4	10	425	0.0015	1.876	0.036	2165	32
	1	12	425	0.0018	2.500	0.049	1625	35
Steel 24 - 34 HRC	1/2	6	295	0.0010	1.250	0.024	2255	14
	5/8	8	295	0.0012	1.563	0.030	1805	17
	3/4	10	295	0.0015	1.876	0.036	1500	23
	1	12	295	0.0018	2.500	0.049	1125	24
Steel 34 - 42 HRC	1/2	6	195	0.0010	1.250	0.024	1490	9
	5/8	8	195	0.0012	1.563	0.030	1190	11
	3/4	10	195	0.0015	1.876	0.036	995	15
	1	12	195	0.0018	2.500	0.049	745	16
Cold Work Tool Steel (12% Cr), High Alloyed	1/2	6	165	0.0010	1.250	0.024	1260	8
	5/8	8	165	0.0012	1.563	0.030	1010	10
	3/4	10	165	0.0015	1.876	0.036	840	13
	1	12	165	0.0018	2.500	0.049	630	14

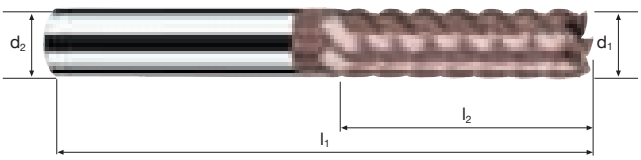
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Cast Iron	1/2	6	330	0.0010	1.194	0.025	2520	15
	5/8	8	330	0.0012	1.476	0.031	2015	19
	3/4	10	330	0.0015	1.802	0.038	1680	25
	1	12	330	0.0018	2.460	0.050	1260	27
Unalloyed Copper	1/2	6	590	0.0010	1.194	0.004	4505	27
	5/8	8	590	0.0012	1.476	0.004	3605	35
	3/4	10	590	0.0015	1.802	0.004	3005	45
	1	12	590	0.0018	2.460	0.004	2255	49

Base-X Mid Length

Multicut N

HSS | Favora® | Base-X | B | X-Generation

HM MG10	Helix 45° Rake 8°
45°	



Performance roughing

Performance finishing

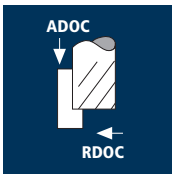
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN							
U5865530	1/2	1/2	4	2	0.006	6	$93.70	•
U5865605	5/8	5/8	5	2 1/2	0.006	8	$170.30	•
U5865652	3/4	3/4	5	2 1/2	0.006	10	$231.90	•
U5865775	1	1	6	3	0.008	12	$390.90	•

5868



Finishing

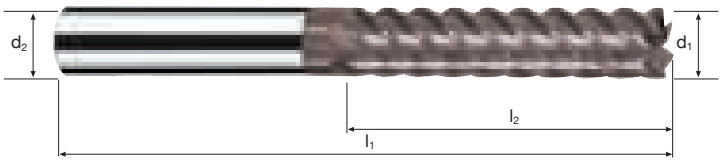
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel up to 24 HRC	5/8	8	100	0.0010	2.500	0.004	610	5
	3/4	10	100	0.0013	3.000	0.004	510	7
Steel 24 - 34 HRC	5/8	8	100	0.0010	2.500	0.004	610	5
	3/4	10	100	0.0013	3.000	0.004	510	7
Steel 34 - 42 HRC	5/8	8	65	0.0010	2.500	0.004	395	3
	3/4	10	65	0.0013	3.000	0.004	330	4
Cold Work Tool Steel (12% Cr), High Alloyed	5/8	8	65	0.0010	2.500	0.004	395	3
	3/4	10	65	0.0013	3.000	0.004	330	4

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Cast Iron	5/8	8	100	0.0010	2.460	0.004	610	5
	3/4	10	100	0.0013	3.267	0.004	510	7
Unalloyed Copper	5/8	8	100	0.0010	2.460	0.004	610	5
	3/4	10	100	0.0013	3.267	0.004	510	7

Base-X Long Length Multicut N

HSS | Favora® | Base-X | B | X-Generation

HM MG10	Helix 45° Rake 8°
45°	



Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN							
U5868605	5/8	5/8	6	3 1/2	0.006	8	$209.70	•
U5868652	3/4	3/4	6	3 1/2	0.006	10	$288.00	•

passion
for precision

fraisa

Corner radius end mills for steel, stainless steel, titanium, nickel alloys, etc.

Corner radius end mills for steel, stainless steel, titanium, nickel alloys, etc.

Corner Radius Tools for Roughing/Finishing

15883 / 15983	ZX-RNV	X-Generation X	Roughing / Finishing	d_1 3/16"- 3/4" r	Inox Stainless	Ti Titanium	Nickel Alloys	123
15846 / 15946	NB-RVD	X-Generation X	Roughing / Finishing	d_1 3/16"- 1" r	Steel <24-42	Inox Stainless	Ti Titanium	125
15845 / 15945	NB-RNVD	X-Generation X	Roughing / Finishing	d_1 3/16"- 1" r	Steel <24-42	Inox Stainless	Ti Titanium	127
15871 / 15971	NB-RVD	X-Generation X	Roughing / Finishing	d_1 3/16"- 1" r	Steel 24-48	Cast Iron	Steel 48-54	129
15862 / 15962	NX-RNVD	X-Generation X	Roughing / Finishing	d_1 3/16"- 3/4" r	Steel 24-48	Cast Iron	Steel 48-54	131
15870 / 15970	NX-RNVD	X-Generation X	Roughing / Finishing	d_1 3/16"- 1" r	Steel 24-48	Cast Iron	Steel 48-54	133
5957	HX-R	X-Generation X	Roughing / Finishing	d_1 1/4"- 5/8" r	Steel 48-54	Steel 42-48	Steel 54-60+	135
5867 / 5967	HX-RH	X-Generation X	Roughing / Finishing	d_1 1/8"- 1/2" r	Steel 48-60+	Steel 42-48		137
5869 / 5969	HX-RH	X-Generation X	Roughing / Finishing	d_1 1/8"- 1/2" r	Steel 48-60+	Steel 42-48		139
5926	NX-NVR	X-Generation X	Roughing / Finishing	d_1 1/4"- 5/8" r	Steel 24-42	Steel 42-48	Inox Stainless	141
15996	Vario	Base-X B	Roughing / Finishing	d_1 1/8"- 1" r	Steel <24-34	Inox Stainless	Ti Titanium	143
15997	Vario 5	Base-X B	Roughing / Finishing	d_1 1/4"- 1" r	Steel <24-34	Inox Stainless	Ti Titanium	145

Corner Radius Tools for High-Feed Machining

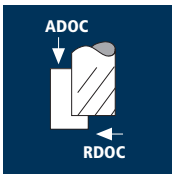
7860	XFeed	X-Generation X	Roughing / Finishing	d_1 1/8"- 1/2" HFC	Steel 24-60	Steel <24	Steel >60	147
7864	XFeed	X-Generation X	Roughing / Finishing	d_1 1/8"- 1/2" HFC	Steel 24-60	Steel <24	Steel >60	149

Corner radius end mills for steel, stainless steel, titanium, nickel alloys, etc.

Corner Radius Tools for Finishing

5850	**Multispeed**	X-Generation	Roughing / Finishing	d_1 1/8″ - 1/2″ r	**Steel** 34-48	**Steel** <24-34	**Steel** 48-60	151
5852	**Multispeed**	X-Generation	Roughing / Finishing	d_1 1/8″ - 1/2″ r	**Steel** 34-48	**Steel** <24-34	**Steel** 48-60	155
7800	**XSpeed**	X-Generation	Roughing / Finishing	d_1 1/8″ - 1/2″ r	**Steel** 42-60+	**Steel** 34-42	**Ti** Titanium	159
7804	**XSpeed**	X-Generation	Roughing / Finishing	d_1 1/8″ - 1/2″ r	**Steel** 42-60+	**Steel** 34-42	**Ti** Titanium	161
5864	**Multicut HX-R**	X-Generation	Roughing / Finishing	d_1 1/8″ - 5/8″ r	**Steel** 54-60+	**Cast Iron**	**Steel** 42-54	163
15853	**Multicut XF-R**	X-Generation	Roughing / Finishing	d_1 1/4″ - 1″ r	**Steel** <24-48	**Inox** Stainless	**Ti** Titanium	165

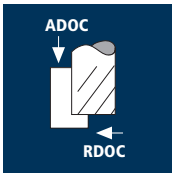
15883



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Annealed Nickel alloys (Inconel 718) <32 HRC	3/16	4	100	0.0006	0.338	0.113	2035	5	0.186
	1/4	4	100	0.0008	0.450	0.150	1530	5	0.330
	3/8	4	100	0.0014	0.675	0.225	1020	6	0.866
	1/2	4	100	0.0018	0.900	0.300	765	6	1.485
	5/8	4	100	0.0020	0.125	0.375	610	5	2.063
	3/4	4	100	0.0023	0.350	0.450	510	5	2.847
Hardened Nickel alloys (Inconel 718) >32 HRC	3/16	4	80	0.0005	0.338	0.113	1630	4	0.119
	1/4	4	80	0.0006	0.450	0.150	1225	4	0.211
	3/8	4	80	0.0011	0.675	0.225	815	4	0.554
	1/2	4	80	0.0014	0.900	0.300	610	4	0.951
	5/8	4	80	0.0016	0.125	0.375	490	4	1.320
	3/4	4	80	0.0018	0.350	0.450	405	3	1.822
Maganese Steel (Hardox 400) (Nitronic 50)	3/16	4	130	0.0006	0.338	0.113	5960	7	0.241
	1/4	4	130	0.0008	0.450	0.150	3970	7	0.429
	3/8	4	130	0.0014	0.675	0.225	2980	8	1.126
	1/2	4	130	0.0018	0.900	0.300	2385	8	1.931
	5/8	4	130	0.0020	0.125	0.375	1985	7	2.682
	3/4	4	130	0.0023	0.350	0.450	1705	7	3.701
Heat Resistant Steel (17-4 PH) (Duplex)	3/16	4	160	0.0009	0.338	0.113	4580	12	0.446
	1/4	4	160	0.0012	0.450	0.150	3060	12	0.792
	3/8	4	160	0.0021	0.675	0.225	2290	14	2.079
	1/2	4	160	0.0027	0.900	0.300	1835	14	3.565
	5/8	4	160	0.0030	0.125	0.375	1530	12	4.951
	3/4	4	160	0.0035	0.350	0.450	1310	12	6.832

15883



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
PM High Speed Steel Annealed	3/16	4	260	0.0006	0.338	0.113	5300	13	0.018
	1/4	4	260	0.0008	0.450	0.150	3980	13	0.050
	3/8	4	260	0.0014	0.675	0.225	2650	15	0.104
	1/2	4	260	0.0018	0.900	0.300	1990	15	0.174
	5/8	4	260	0.0020	0.125	0.375	1590	13	0.247
	3/4	4	260	0.0023	0.350	0.450	1330	13	0.309
Titanium Alloys 300 HB (Ti6Al4V)	3/16	4	200	0.0007	0.338	0.113	4080	12	0.010
	1/4	4	200	0.0009	0.450	0.150	3060	12	0.027
	3/8	4	200	0.0016	0.675	0.225	2040	14	0.058
	1/2	4	200	0.0021	0.900	0.300	1530	13	0.084
	5/8	4	200	0.0023	0.125	0.375	1230	12	0.131
	3/4	4	200	0.0026	0.350	0.450	1020	11	0.154
Annealed Nickel Alloys (Inconel 718) <32 HRC	3/16	4	80	0.0005	0.338	0.113	1630	4	0.004
	1/4	4	80	0.0006	0.450	0.150	1230	4	0.011
	3/8	4	80	0.0011	0.675	0.225	820	4	0.023
	1/2	4	80	0.0014	0.900	0.300	620	4	0.035
	5/8	4	80	0.0016	0.125	0.375	490	4	0.058
	3/4	4	80	0.0018	0.350	0.450	410	3	0.073
Hardened Nickel Alloys (Inconel 718) >32 HRC	3/16	4	65	0.0003	0.338	0.113	1330	2	0.002
	1/4	4	65	0.0004	0.450	0.150	1000	2	0.005
	3/8	4	65	0.0008	0.675	0.225	670	3	0.013
	1/2	4	65	0.0010	0.900	0.300	500	3	0.025
	5/8	4	65	0.0011	0.125	0.375	400	2	0.029
	3/4	4	65	0.0013	0.350	0.450	340	2	0.036

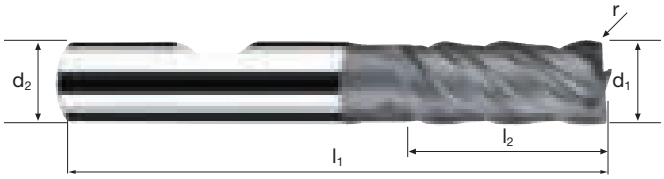
X-Generation Standard Length ZX-RNV

HSS | Favora® | Base-X | X-Generation

II

HM X10

Helix **40°**
Rake **5°**



Performance roughing

Performance finishing

Machines the following materials:

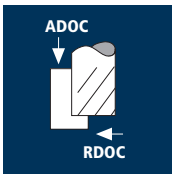
Best = Good =

Stainless | Titanium | **Nickel Alloys Manganese Steels HSS**

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P15883254	3/16	1/4	0.175	2 1/4	15/32	3/4	0.020	3°	4	$45.50	
P15883256	3/16	1/4	0.175	2 1/4	15/32	3/4	0.030	3°	4	$45.50	
P15883314	1/4	1/4	0.230	2 1/4	5/8	7/8	0.020	—	4	$51.90	
P15883316	1/4	1/4	0.230	2 1/4	5/8	7/8	0.030	—	4	$51.90	
P15983434*	3/8	3/8	0.345	3	15/16	1 1/4	0.030	—	4	$86.20	•
P15983436*	3/8	3/8	0.345	3	15/16	1 1/4	0.060	—	4	$86.20	•
P15983530*	1/2	1/2	0.460	3 1/2	1 1/4	1 5/8	0.030	—	4	$130.20	•
P15983532*	1/2	1/2	0.460	3 1/2	1 1/4	1 5/8	0.060	—	4	$130.20	•
P15983534*	1/2	1/2	0.460	3 1/2	1 1/4	1 5/8	0.090	—	4	$130.20	•
P15983607*	5/8	5/8	0.590	4	1 9/16	2	0.060	—	4	$233.30	•
P15983609*	5/8	5/8	0.590	4	1 9/16	2	0.090	—	4	$233.30	•
P15983652*	3/4	3/4	0.715	4 1/2	2	2 1/2	0.060	—	4	$337.00	•
P15983654*	3/4	3/4	0.715	4 1/2	2	2 1/2	0.090	—	4	$337.00	•
P15983656*	3/4	3/4	0.715	4 1/2	2	2 1/2	0.120	—	4	$337.00	•

*** with clamping flat**

15846



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	490	0.0015	0.188	0.126	9990	60	1.411
	1/4	4	490	0.0020	0.250	0.168	7490	62	2.558
	3/8	4	490	0.0030	0.375	0.251	5000	60	5.643
	1/2	4	490	0.0039	0.500	0.335	3750	59	9.782
	5/8	4	490	0.0051	0.625	0.419	3000	62	15.990
	3/4	4	490	0.0060	0.750	0.503	2500	60	22.574
	1	4	490	0.0081	1.000	0.670	1880	61	40.633
Stainless Steel 303 304	3/16	4	260	0.0012	0.188	0.126	5300	26	0.599
	1/4	4	260	0.0016	0.250	0.168	3980	26	1.086
	3/8	4	260	0.0024	0.375	0.251	2650	26	2.396
	1/2	4	260	0.0031	0.500	0.335	1990	25	4.152
	5/8	4	260	0.0041	0.625	0.419	1590	26	6.788
	3/4	4	260	0.0048	0.750	0.503	1330	26	9.582
	1	4	260	0.0065	1.000	0.670	1000	26	17.248
Titanium	3/16	4	190	0.0012	0.188	0.126	3880	19	0.438
	1/4	4	190	0.0016	0.250	0.168	2910	19	0.794
	3/8	4	190	0.0024	0.375	0.251	1940	19	1.751
	1/2	4	190	0.0031	0.500	0.335	1460	19	3.034
	5/8	4	190	0.0041	0.625	0.419	1170	19	4.960
	3/4	4	190	0.0048	0.750	0.503	970	19	7.003
	1	4	190	0.0065	1.000	0.670	730	19	12.605
Nickel Alloys	3/16	4	70	0.0011	0.188	0.126	1430	6	0.141
	1/4	4	70	0.0014	0.250	0.168	1070	7	0.256
	3/8	4	70	0.0021	0.375	0.251	720	6	0.564
	1/2	4	70	0.0027	0.500	0.335	540	6	0.978
	5/8	4	70	0.0036	0.625	0.419	430	7	1.599
	3/4	4	70	0.0042	0.750	0.503	360	6	2.257
	1	4	70	0.0057	1.000	0.670	270	7	4.063

15846

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	392	0.0012	0.188	0.188	7990	39	1.348
	1/4	4	392	0.0016	0.250	0.250	5990	40	2.444
	3/8	4	392	0.0024	0.375	0.375	4000	39	5.391
	1/2	4	392	0.0031	0.500	0.500	3000	38	9.344
	5/8	4	392	0.0041	0.625	0.625	2400	40	15.274
	3/4	4	392	0.0048	0.750	0.750	2000	39	21.563
	1	4	392	0.0065	1.000	1.000	1500	39	38.814
Stainless Steel 303 304	3/16	4	208	0.0010	0.188	0.188	4240	17	0.572
	1/4	4	208	0.0013	0.250	0.250	3180	17	1.037
	3/8	4	208	0.0019	0.375	0.375	2120	17	2.288
	1/2	4	208	0.0025	0.500	0.500	1590	16	3.966
	5/8	4	208	0.0033	0.625	0.625	1280	17	6.484
	3/4	4	208	0.0038	0.750	0.750	1060	17	9.153
	1	4	208	0.0052	1.000	1.000	800	17	16.476
Titanium	3/16	4	152	0.0010	0.188	0.188	3100	12	0.418
	1/4	4	152	0.0013	0.250	0.250	2330	13	0.758
	3/8	4	152	0.0019	0.375	0.375	1550	12	1.672
	1/2	4	152	0.0025	0.500	0.500	1170	12	2.899
	5/8	4	152	0.0033	0.625	0.625	930	13	4.738
	3/4	4	152	0.0038	0.750	0.750	780	12	6.689
	1	4	152	0.0052	1.000	1.000	590	13	12.040
Nickel Alloys	3/16	4	56	0.0008	0.188	0.188	1150	4	0.135
	1/4	4	56	0.0011	0.250	0.250	860	4	0.244
	3/8	4	56	0.0017	0.375	0.375	580	4	0.539
	1/2	4	56	0.0022	0.500	0.500	430	4	0.934
	5/8	4	56	0.0029	0.625	0.625	350	4	1.527
	3/4	4	56	0.0034	0.750	0.750	290	4	2.156
	1	4	56	0.0045	1.000	1.000	220	4	3.881

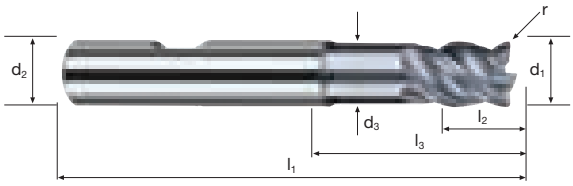
X-Generation Standard Reach NB-RVD

HM MG10

Helix **45°**
Rake **0°**

r

Vario



Performance roughing

Performance finishing

Machines the following materials:

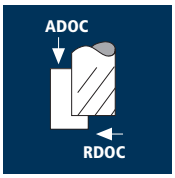
Best = Good =

Steel <24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P15846252	3/16	1/4	0.175	2 1/4	1/4	15/32	0.010	2°	4	$38.80	
P15846254	3/16	1/4	0.175	2 1/4	1/4	15/32	0.020	2°	4	$38.80	
P15846256	3/16	1/4	0.175	2 1/4	1/4	15/32	0.030	2°	4	$38.80	
P15846312	1/4	1/4	0.230	2 1/4	15/16	5/8	0.010	—	4	$44.50	
P15846314	1/4	1/4	0.230	2 1/4	15/16	5/8	0.020	—	4	$44.50	
P15846316	1/4	1/4	0.230	2 1/4	15/16	5/8	0.030	—	4	$44.50	
P15946432*	3/8	3/8	0.288	2 1/2	7/16	1	0.020	—	4	$74.00	•
P15946434*	3/8	3/8	0.288	2 1/2	7/16	1	0.030	—	4	$74.00	•
P15946436*	3/8	3/8	0.288	2 1/2	7/16	1	0.060	—	4	$74.00	•
P15946530*	1/2	1/2	0.345	3	9/16	1 1/16	0.030	—	4	$111.70	•
P15946532*	1/2	1/2	0.345	3	9/16	1 1/16	0.060	—	4	$111.70	•
P15946534*	1/2	1/2	0.345	3	9/16	1 1/16	0.090	—	4	$111.70	•
P15946605*	5/8	5/8	0.460	3 1/2	3/4	1 1/2	0.030	—	4	$199.60	•
P15946607*	5/8	5/8	0.460	3 1/2	3/4	1 1/2	0.060	—	4	$199.60	•
P15946609*	5/8	5/8	0.460	3 1/2	3/4	1 1/2	0.090	—	4	$199.60	•
P15946652*	3/4	3/4	0.710	4	13/16	1 3/4	0.060	—	4	$287.10	•
P15946654*	3/4	3/4	0.710	4	13/16	1 3/4	0.090	—	4	$287.10	•
P15946656*	3/4	3/4	0.710	4	13/16	1 3/4	0.120	—	4	$287.10	•
P15946775*	1	1	0.960	4 1/2	1 1/8	2	0.060	—	4	$409.30	•
P15946777*	1	1	0.960	4 1/2	1 1/8	2	0.090	—	4	$409.30	•
P15946779*	1	1	0.960	4 1/2	1 1/8	2	0.120	—	4	$409.30	•

*** with clamping flat**

15845



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	490	0.0008	0.250	0.038	14980	48	0.449
	3/16	4	490	0.0012	0.375	0.056	9990	48	1.011
	1/4	4	490	0.0016	0.500	0.075	7490	49	1.833
	3/8	4	490	0.0024	0.750	0.113	5000	48	4.043
	1/2	4	490	0.0031	1.000	0.150	3750	47	7.008
	5/8	4	490	0.0041	1.250	0.188	3000	49	11.455
	3/4	4	490	0.0048	1.500	0.225	2500	48	16.172
	1	4	490	0.0065	2.000	0.300	1880	49	29.110
Stainless Steel 303 304	1/8	4	260	0.0007	0.250	0.038	7950	23	0.209
	3/16	4	260	0.0011	0.375	0.056	5300	24	0.492
	1/4	4	260	0.0015	0.500	0.075	3980	24	0.891
	3/8	4	260	0.0022	0.750	0.113	2650	24	1.967
	1/2	4	260	0.0029	1.000	0.150	1990	23	3.409
	5/8	4	260	0.0037	1.250	0.188	1590	24	5.572
	3/4	4	260	0.0044	1.500	0.225	1330	24	7.866
	1	4	260	0.0059	2.000	0.300	1000	24	14.159
Titanium	1/8	4	190	0.0007	0.250	0.038	5810	17	0.152
	3/16	4	190	0.0011	0.375	0.056	3880	18	0.359
	1/4	4	190	0.0015	0.500	0.075	2910	18	0.651
	3/8	4	190	0.0022	0.750	0.113	1940	18	1.437
	1/2	4	190	0.0029	1.000	0.150	1460	17	2.491
	5/8	4	190	0.0037	1.250	0.188	1170	18	4.072
	3/4	4	190	0.0044	1.500	0.225	970	18	5.748
	1	4	190	0.0059	2.000	0.300	730	18	10.347
Nickel Alloys	1/8	4	70	0.0006	0.250	0.038	2140	6	0.048
	3/16	4	70	0.0010	0.375	0.056	1430	6	0.114
	1/4	4	70	0.0013	0.500	0.075	1070	6	0.207
	3/8	4	70	0.0019	0.750	0.113	720	6	0.457
	1/2	4	70	0.0025	1.000	0.150	540	6	0.793
	5/8	4	70	0.0032	1.250	0.188	430	6	1.296
	3/4	4	70	0.0038	1.500	0.225	360	6	1.829
	1	4	70	0.0051	2.000	0.300	270	6	3.292

15845

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	392	0.0004	0.250	0.125	11980	20	0.599
	3/16	4	392	0.0014	0.281	0.188	7990	34	1.752
	1/4	4	392	0.0014	0.375	0.250	5990	34	3.177
	3/8	4	392	0.0021	0.563	0.375	4000	34	7.008
	1/2	4	392	0.0027	0.750	0.500	3000	34	12.147
	5/8	4	392	0.0035	0.938	0.625	2400	34	19.856
	3/4	4	392	0.0042	1.125	0.750	2000	34	28.032
	1	4	392	0.0056	1.500	1.000	1500	34	50.458
Stainless Steel 303 304	1/8	4	208	0.0004	0.250	0.125	6360	11	0.318
	3/16	4	208	0.0010	0.281	0.188	4240	17	0.858
	1/4	4	208	0.0013	0.375	0.250	3180	17	1.556
	3/8	4	208	0.0019	0.563	0.375	2120	17	3.432
	1/2	4	208	0.0025	0.750	0.500	1590	16	5.950
	5/8	4	208	0.0033	0.938	0.625	1280	17	9.725
	3/4	4	208	0.0038	1.125	0.750	1060	17	13.730
	1	4	208	0.0052	1.500	1.000	800	17	24.714
Titanium	1/8	4	152	0.0004	0.250	0.125	4650	8	0.232
	3/16	4	152	0.0010	0.281	0.188	3100	12	0.627
	1/4	4	152	0.0013	0.375	0.250	2330	13	1.137
	3/8	4	152	0.0019	0.563	0.375	1550	12	2.508
	1/2	4	152	0.0025	0.750	0.500	1170	12	4.348
	5/8	4	152	0.0033	0.938	0.625	930	13	7.107
	3/4	4	152	0.0038	1.125	0.750	780	12	10.033
	1	4	152	0.0052	1.500	1.000	590	13	18.060
Nickel Alloys	1/8	4	56	0.0003	0.250	0.125	1720	3	0.064
	3/16	4	56	0.0008	0.281	0.188	1150	4	0.202
	1/4	4	56	0.0011	0.375	0.250	860	4	0.367
	3/8	4	56	0.0017	0.563	0.375	580	4	0.809
	1/2	4	56	0.0022	0.750	0.500	430	4	1.402
	5/8	4	56	0.0029	0.938	0.625	350	4	2.291
	3/4	4	56	0.0034	1.125	0.750	290	4	3.234
	1	4	56	0.0045	1.500	1.000	220	4	5.822

X-Generation Mid Length NB-RNVD

HM MG10

Helix **45°**
Rake **0°**

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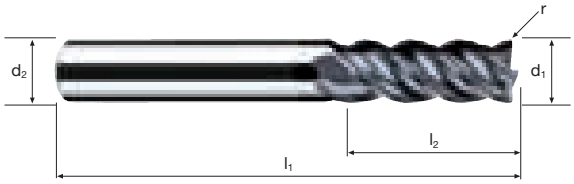
Vario



Performance roughing

Performance finishing

Machines the following materials:

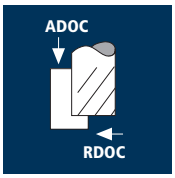
Best = Good =

Steel <24 HRC | **Steel** 24 - 34 HRC | **Steel** 34 - 42 HRC | **Steel** 42 - 48 HRC | **Stainless** | **Titanium** | **Nickel Alloys**

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P15845188	1/8	1/4	2 1/4	5/16	0.010	5°	4	$40.40	
P15845252	3/16	1/4	2 1/4	15/32	0.010	2°	4	$40.40	
P15845254	3/16	1/4	2 1/4	15/32	0.020	2°	4	$40.40	
P15845256	3/16	1/4	2 1/4	15/32	0.030	2°	4	$40.38	
P15845312	1/4	1/4	2 1/4	5/8	0.010	—	4	$46.30	
P15845314	1/4	1/4	2 1/4	5/8	0.020	—	4	$46.30	
P15845316	1/4	1/4	2 1/4	5/8	0.030	—	4	$46.30	
P15845318	1/4	1/4	2 1/4	5/8	0.060	—	4	$46.30	
P15945432*	3/8	3/8	2 3/4	15/16	0.020	—	4	$77.00	•
P15945434*	3/8	3/8	2 3/4	15/16	0.030	—	4	$77.00	•
P15945436*	3/8	3/8	2 3/4	15/16	0.060	—	4	$77.00	•
P15945530*	1/2	1/2	3 1/4	1 1/4	0.030	—	4	$116.10	•
P15945532*	1/2	1/2	3 1/4	1 1/4	0.060	—	4	$116.10	•
P15945534*	1/2	1/2	3 1/4	1 1/4	0.090	—	4	$116.10	•
P15945536*	1/2	1/2	3 1/4	1 1/4	0.120	—	4	$116.10	•
P15945605*	5/8	5/8	4	1 9/16	0.030	—	4	$207.60	•
P15945607*	5/8	5/8	4	1 9/16	0.060	—	4	$207.60	•
P15945609*	5/8	5/8	4	1 9/16	0.090	—	4	$207.60	•
P15945611*	5/8	5/8	4	1 9/16	0.120	—	4	$207.60	•
P15945652*	3/4	3/4	4 1/2	2	0.060	—	4	$298.60	•
P15945654*	3/4	3/4	4 1/2	2	0.090	—	4	$298.60	•
P15945656*	3/4	3/4	4 1/2	2	0.120	—	4	$298.60	•
P15945775*	1	1	5 1/2	2 1/2	0.060	—	4	$425.60	•
P15945777*	1	1	5 1/2	2 1/2	0.090	—	4	$425.60	•
P15945779*	1	1	5 1/2	2 1/2	0.120	—	4	$425.60	•

*** with clamping flat**

15871



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	490	0.0008	0.250	0.038	14980	48	0.449
	3/16	4	490	0.0015	0.188	0.126	9990	60	1.411
	1/4	4	490	0.0020	0.250	0.168	7490	62	2.558
	3/8	4	490	0.0030	0.375	0.251	5000	60	5.643
	1/2	4	490	0.0039	0.500	0.335	3750	59	9.782
	5/8	4	490	0.0051	0.625	0.419	3000	62	15.990
	3/4	4	490	0.0060	0.750	0.503	2500	60	22.574
	1	4	490	0.0081	1.000	0.670	1880	61	40.633
Steel 34 - 42 HRC	1/8	4	260	0.0007	0.250	0.038	7950	23	0.209
	3/16	4	260	0.0013	0.188	0.126	5300	28	0.649
	1/4	4	260	0.0018	0.250	0.168	3980	29	1.177
	3/8	4	260	0.0026	0.375	0.251	2650	28	2.595
	1/2	4	260	0.0034	0.500	0.335	1990	27	4.498
	5/8	4	260	0.0044	0.625	0.419	1590	29	7.353
	3/4	4	260	0.0052	0.750	0.503	1330	28	10.381
	1	4	260	0.0070	1.000	0.670	1000	28	18.686
Steel 42 - 48 HRC	1/8	4	190	0.0007	0.250	0.038	5810	17	0.152
	3/16	4	190	0.0012	0.188	0.126	3880	18	0.419
	1/4	4	190	0.0016	0.250	0.168	2910	19	0.761
	3/8	4	190	0.0023	0.375	0.251	1940	18	1.678
	1/2	4	190	0.0030	0.500	0.335	1460	18	2.908
	5/8	4	190	0.0039	0.625	0.419	1170	19	4.753
	3/4	4	190	0.0046	0.750	0.503	970	18	6.711
	1	4	190	0.0062	1.000	0.670	730	19	12.079
Cast Iron	1/8	4	590	0.0010	0.250	0.038	18040	73	0.676
	3/16	4	590	0.0016	0.188	0.126	12030	77	1.812
	1/4	4	590	0.0022	0.250	0.168	9020	79	3.286
	3/8	4	590	0.0032	0.375	0.251	6020	77	7.248
	1/2	4	590	0.0042	0.500	0.335	4510	76	12.564
	5/8	4	590	0.0054	0.625	0.419	3610	79	20.537
	3/4	4	590	0.0064	0.750	0.503	3010	77	28.993
	1	4	590	0.0086	1.000	0.670	2260	78	52.187

15871

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	392	0.0004	0.250	0.125	11980	20	0.599
	3/16	4	392	0.0012	0.188	0.188	7990	39	1.348
	1/4	4	392	0.0016	0.250	0.250	5990	40	2.444
	3/8	4	392	0.0024	0.375	0.375	4000	39	5.391
	1/2	4	392	0.0031	0.500	0.500	3000	38	9.344
	5/8	4	392	0.0041	0.625	0.625	2400	40	15.274
	3/4	4	392	0.0048	0.750	0.750	2000	39	21.563
	1	4	392	0.0065	1.000	1.000	1500	39	38.814
Steel 34 - 42 HRC	1/8	4	208	0.0004	0.250	0.125	6360	11	0.318
	3/16	4	208	0.0010	0.188	0.188	4240	18	0.620
	1/4	4	208	0.0014	0.250	0.250	3180	18	1.124
	3/8	4	208	0.0021	0.375	0.375	2120	18	2.479
	1/2	4	208	0.0027	0.500	0.500	1590	18	4.297
	5/8	4	208	0.0035	0.625	0.625	1280	18	7.024
	3/4	4	208	0.0042	0.750	0.750	1060	18	9.916
	1	4	208	0.0056	1.000	1.000	800	18	17.849
Steel 42 - 48 HRC	1/8	4	152	0.0004	0.250	0.125	4650	8	0.232
	3/16	4	152	0.0009	0.188	0.188	3100	12	0.401
	1/4	4	152	0.0013	0.250	0.250	2330	12	0.726
	3/8	4	152	0.0018	0.375	0.375	1550	12	1.603
	1/2	4	152	0.0024	0.500	0.500	1170	12	2.778
	5/8	4	152	0.0031	0.625	0.625	930	12	4.541
	3/4	4	152	0.0037	0.750	0.750	780	12	6.410
	1	4	152	0.0050	1.000	1.000	590	12	11.538
Cast Iron	1/8	4	472	0.0005	0.250	0.125	14430	29	0.902
	3/16	4	472	0.0013	0.188	0.188	9620	50	1.731
	1/4	4	472	0.0017	0.250	0.250	7220	51	3.139
	3/8	4	472	0.0026	0.375	0.375	4810	50	6.924
	1/2	4	472	0.0033	0.500	0.500	3610	49	12.001
	5/8	4	472	0.0044	0.625	0.625	2890	51	19.617
	3/4	4	472	0.0051	0.750	0.750	2410	50	27.695
	1	4	472	0.0069	1.000	1.000	1810	50	49.850

X-Generation Standard Reach NX-RVD

HM MG10

Helix **45°**
Rake **-10°**

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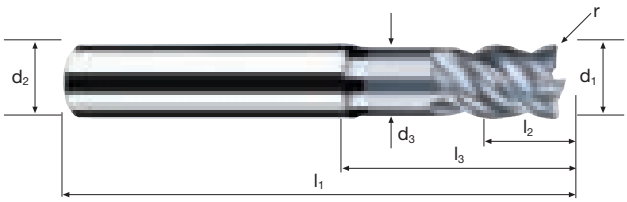
Vario



Performance roughing

Performance finishing

Machines the following materials:

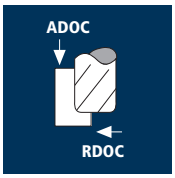
Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC				Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P15871252	3/16	1/4	0.175	2 1/4	1/4	15/32	0.010	2°	4	$38.80	
P15871254	3/16	1/4	0.175	2 1/4	1/4	15/32	0.020	2°	4	$38.80	
P15871256	3/16	1/4	0.175	2 1/4	1/4	15/32	0.030	2°	4	$38.80	
P15871312	1/4	1/4	0.230	2 1/4	5/16	5/8	0.010	—	4	$44.50	
P15871314	1/4	1/4	0.230	2 1/4	5/16	5/8	0.020	—	4	$44.50	
P15871316	1/4	1/4	0.230	2 1/4	5/16	5/8	0.030	—	4	$44.50	
P15971432*	3/8	3/8	0.288	2 1/2	7/16	1	0.020	—	4	$74.00	•
P15971434*	3/8	3/8	0.288	2 1/2	7/16	1	0.030	—	4	$74.00	•
P15971436*	3/8	3/8	0.288	2 1/2	7/16	1	0.060	—	4	$74.00	•
P15971530*	1/2	1/2	0.345	3	9/16	1 1/16	0.030	—	4	$111.70	•
P15971532*	1/2	1/2	0.345	3	9/16	1 1/16	0.060	—	4	$111.70	•
P15971534*	1/2	1/2	0.345	3	9/16	1 1/16	0.090	—	4	$111.70	•
P15971605*	5/8	5/8	0.460	3 1/2	3/4	1 1/2	0.030	—	4	$199.70	•
P15971607*	5/8	5/8	0.460	3 1/2	3/4	1 1/2	0.060	—	4	$199.70	•
P15971609*	5/8	5/8	0.460	3 1/2	3/4	1 1/2	0.090	—	4	$199.70	•
P15971652*	3/4	3/4	0.710	4	13/16	1 3/4	0.060	—	4	$287.10	•
P15971654*	3/4	3/4	0.710	4	13/16	1 3/4	0.090	—	4	$287.10	•
P15971656*	3/4	3/4	0.710	4	13/16	1 3/4	0.120	—	4	$287.10	•
P15971775*	1	1	0.960	4 1/2	1 1/8	2	0.060	—	4	$409.30	•
P15971777*	1	1	0.960	4 1/2	1 1/8	2	0.090	—	4	$409.30	•
P15971779*	1	1	0.960	4 1/2	1 1/8	2	0.120	—	4	$409.30	•

*** with clamping flat**

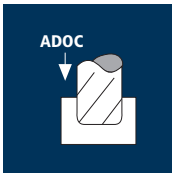
15862



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	490	0.0014	0.281	0.075	9990	56	1.179
	1/4	4	490	0.0019	0.375	0.100	7490	58	2.138
	5/16	4	490	0.0023	0.469	0.125	5990	56	3.229
	3/8	4	490	0.0028	0.563	0.150	5000	56	4.717
	7/16	4	490	0.0033	0.656	0.175	4280	57	6.486
	1/2	4	490	0.0036	0.750	0.200	3750	55	8.176
	5/8	4	490	0.0048	0.938	0.250	3000	58	13.365
	3/4	4	490	0.0056	1.125	0.300	2500	56	18.868
Steel 34 - 42 HRC	3/16	4	260	0.0012	0.281	0.075	5300	26	0.536
	1/4	4	260	0.0016	0.375	0.100	3980	26	0.973
	5/16	4	260	0.0020	0.469	0.125	3180	26	1.490
	3/8	4	260	0.0024	0.563	0.150	2650	26	2.145
	7/16	4	260	0.0028	0.656	0.175	2280	26	2.920
	1/2	4	260	0.0031	0.750	0.200	1990	25	3.719
	5/8	4	260	0.0041	0.938	0.250	1590	26	6.078
	3/4	4	260	0.0048	1.125	0.300	1330	26	8.581
Steel 42 - 48 HRC	3/16	4	190	0.0011	0.281	0.075	3880	18	0.359
	1/4	4	190	0.0015	0.375	0.100	2910	18	0.651
	5/16	4	190	0.0018	0.469	0.125	2330	17	0.980
	3/8	4	190	0.0022	0.563	0.150	1940	18	1.437
	7/16	4	190	0.0026	0.656	0.175	1660	18	1.981
	1/2	4	190	0.0029	0.750	0.200	1460	17	2.491
	5/8	4	190	0.0037	0.938	0.250	1170	18	4.072
	3/4	4	190	0.0044	1.125	0.300	970	18	5.748
Cast Iron	3/16	4	590	0.0016	0.281	0.075	12030	77	1.623
	1/4	4	590	0.0022	0.375	0.100	9020	79	2.943
	5/16	4	590	0.0026	0.469	0.125	7220	76	4.395
	3/8	4	590	0.0032	0.563	0.150	6020	77	6.491
	7/16	4	590	0.0037	0.656	0.175	5160	77	8.756
	1/2	4	590	0.0042	0.750	0.200	4510	76	11.251
	5/8	4	590	0.0054	0.938	0.250	3610	79	18.391
	3/4	4	590	0.0064	1.125	0.300	3010	77	25.964

15862



Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	3/16	4	392	0.0011	0.281	0.188	7990	36	1.887
	1/4	4	392	0.0015	0.375	0.250	5990	37	3.421
	5/16	4	392	0.0018	0.469	0.313	4800	35	5.054
	3/8	4	392	0.0022	0.563	0.375	4000	36	7.547
	7/16	4	392	0.0026	0.656	0.438	3430	36	10.220
	1/2	4	392	0.0029	0.750	0.500	3000	35	13.082
	5/8	4	392	0.0038	0.938	0.625	2400	37	21.383
	3/4	4	392	0.0045	1.125	0.750	2000	36	30.188
Steel 34 - 42 HRC	3/16	4	208	0.0010	0.281	0.188	4240	17	0.858
	1/4	4	208	0.0013	0.375	0.250	3180	17	1.556
	5/16	4	208	0.0016	0.469	0.313	2550	17	2.384
	3/8	4	208	0.0019	0.563	0.375	2120	17	3.432
	7/16	4	208	0.0022	0.656	0.438	1820	16	4.589
	1/2	4	208	0.0025	0.750	0.500	1590	16	5.950
	5/8	4	208	0.0033	0.938	0.625	1280	17	9.725
	3/4	4	208	0.0038	1.125	0.750	1060	17	13.730
Steel 42 - 48 HRC	3/16	4	152	0.0009	0.281	0.188	3100	11	0.575
	1/4	4	152	0.0012	0.375	0.250	2330	12	1.042
	5/16	4	152	0.0015	0.469	0.313	1860	12	1.633
	3/8	4	152	0.0018	0.563	0.375	1550	11	2.299
	7/16	4	152	0.0021	0.656	0.438	1330	12	3.201
	1/2	4	152	0.0023	0.750	0.500	1170	11	3.986
	5/8	4	152	0.0030	0.938	0.625	930	12	6.515
	3/4	4	152	0.0035	1.125	0.750	780	11	9.197
Cast Iron	3/16	4	472	0.0013	0.281	0.188	9620	50	2.596
	1/4	4	472	0.0017	0.375	0.250	7220	51	4.708
	5/16	4	472	0.0022	0.469	0.313	5770	51	7.438
	3/8	4	472	0.0026	0.563	0.375	4810	50	10.386
	7/16	4	472	0.0030	0.656	0.438	4130	50	14.199
	1/2	4	472	0.0033	0.750	0.500	3610	49	18.002
	5/8	4	472	0.0044	0.938	0.625	2890	51	29.426
	3/4	4	472	0.0051	1.125	0.750	2410	50	41.542

X-Generation Standard Length NX-RNVD

HM MG10

Helix **45°**
Rake **-10°**

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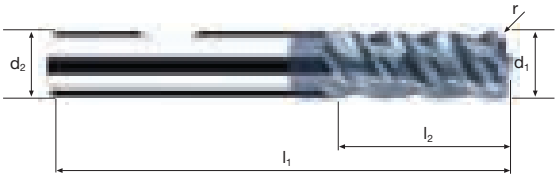
Vario



Performance roughing

Performance finishing

Machines the following materials:

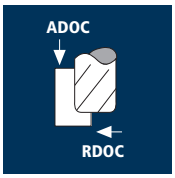
Best = Good =

Steel 24 - 34 HRC | **Steel** 34 - 42 HRC | **Steel** 42 - 48 HRC | **Steel** 48 - 54 HRC | **Titanium** | **Cast Iron**

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P15862252	3/16	1/4	2	3/8	0.010	3°	4	$38.90	
P15862312	1/4	1/4	2 1/4	1/2	0.010	—	4	$44.60	
P15862372	5/16	5/16	2 1/2	5/8	0.010	—	4	$61.20	
P15862432	3/8	3/8	2 3/4	3/4	0.020	—	4	$74.10	•
P15862482	7/16	7/16	3	7/8	0.020	—	4	$90.60	•
P15862530	1/2	1/2	3 1/4	1	0.020	—	4	$111.70	•
P15862605	5/8	5/8	3 1/2	1 1/4	0.020	—	4	$199.60	•
P15862652	3/4	3/4	4	1 1/2	0.020	—	4	$287.10	•
P15962432*	3/8	3/8	2 3/4	3/4	0.020	—	4	$74.10	•
P15962482*	7/16	7/16	3	7/8	0.020	—	4	$90.60	•
P15962530*	1/2	1/2	3 1/4	1	0.020	—	4	$111.70	•
P15962605*	5/8	5/8	3 1/2	1 1/4	0.020	—	4	$199.60	•
P15962652*	3/4	3/4	4	1 1/2	0.020	—	4	$287.10	•

*** with clamping flat**

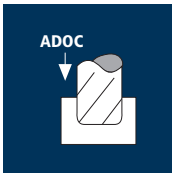
15870



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	490	0.0008	0.250	0.038	14980	48	0.449
	3/16	4	490	0.0012	0.375	0.056	9990	48	1.011
	1/4	4	490	0.0016	0.500	0.075	7490	49	1.833
	3/8	4	490	0.0024	0.750	0.113	5000	48	4.043
	1/2	4	490	0.0031	1.000	0.150	3750	47	7.008
	5/8	4	490	0.0041	1.250	0.188	3000	49	11.455
	3/4	4	490	0.0048	1.500	0.225	2500	48	16.172
	1	4	490	0.0065	2.000	0.300	1880	49	29.110
Steel 34 - 42 HRC	1/8	4	260	0.0007	0.250	0.038	7950	23	0.209
	3/16	4	260	0.0011	0.375	0.056	5300	23	0.449
	1/4	4	260	0.0014	0.500	0.075	3980	23	0.851
	3/8	4	260	0.0021	0.750	0.113	2650	23	1.877
	1/2	4	260	0.0027	1.000	0.150	1990	22	3.254
	5/8	4	260	0.0036	1.250	0.188	1590	23	5.319
	3/4	4	260	0.0042	1.500	0.225	1330	23	7.509
	1	4	260	0.0057	2.000	0.300	1000	23	13.515
Steel 42 - 48 HRC	1/8	4	190	0.0007	0.250	0.038	5810	17	0.152
	3/16	4	190	0.0010	0.375	0.056	3880	15	0.310
	1/4	4	190	0.0013	0.500	0.075	2910	16	0.563
	3/8	4	190	0.0019	0.750	0.113	1940	15	1.241
	1/2	4	190	0.0025	1.000	0.150	1460	15	2.151
	5/8	4	190	0.0032	1.250	0.188	1170	16	3.517
	3/4	4	190	0.0038	1.500	0.225	970	15	4.964
	1	4	190	0.0051	2.000	0.300	730	15	8.936
Cast Iron	1/8	4	590	0.0010	0.250	0.038	18040	73	0.676
	3/16	4	590	0.0015	0.375	0.056	12030	70	1.471
	1/4	4	590	0.0020	0.500	0.075	9020	72	2.667
	3/8	4	590	0.0029	0.750	0.113	6020	70	5.882
	1/2	4	590	0.0038	1.000	0.150	4510	68	10.196
	5/8	4	590	0.0049	1.250	0.188	3610	72	16.667
	3/4	4	590	0.0058	1.500	0.225	3010	70	23.530
	1	4	590	0.0078	2.000	0.300	2260	71	42.353

15870



Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	392	0.0004	0.250	0.125	11980	20	0.599
	3/16	4	392	0.0006	0.375	0.188	7990	20	1.348
	1/4	4	392	0.0008	0.500	0.250	5990	20	2.444
	3/8	4	392	0.0012	0.750	0.375	4000	20	5.391
	1/2	4	392	0.0016	1.000	0.500	3000	19	9.344
	5/8	4	392	0.0020	1.250	0.625	2400	20	15.274
	3/4	4	392	0.0024	1.500	0.750	2000	20	21.563
	1	4	392	0.0032	2.000	1.000	1500	20	38.814
Steel 34 - 42 HRC	1/8	4	208	0.0004	0.250	0.125	6360	11	0.626
	3/16	4	208	0.0005	0.375	0.188	4240	9	0.626
	1/4	4	208	0.0007	0.500	0.250	3180	10	1.135
	3/8	4	208	0.0011	0.750	0.375	2120	9	2.503
	1/2	4	208	0.0014	1.000	0.500	1590	9	4.338
	5/8	4	208	0.0018	1.250	0.625	1280	10	7.091
	3/4	4	208	0.0021	1.500	0.750	1060	9	10.011
	1	4	208	0.0028	2.000	1.000	800	10	18.021
Steel 42 - 48 HRC	1/8	4	152	0.0004	0.250	0.125	4650	8	0.232
	3/16	4	152	0.0005	0.375	0.188	3100	6	0.414
	1/4	4	152	0.0006	0.500	0.250	2330	7	0.750
	3/8	4	152	0.0010	0.750	0.375	1550	6	1.655
	1/2	4	152	0.0012	1.000	0.500	1170	6	2.868
	5/8	4	152	0.0016	1.250	0.625	930	7	4.689
	3/4	4	152	0.0019	1.500	0.750	780	6	6.619
	1	4	152	0.0026	2.000	1.000	590	6	11.915
Cast Iron	1/8	4	472	0.0005	0.250	0.125	14430	29	0.902
	3/16	4	472	0.0007	0.375	0.188	9620	28	1.961
	1/4	4	472	0.0010	0.500	0.250	7220	29	3.556
	3/8	4	472	0.0015	0.750	0.375	4810	28	7.843
	1/2	4	472	0.0019	1.000	0.500	3610	28	13.595
	5/8	4	472	0.0025	1.250	0.625	2890	29	22.222
	3/4	4	472	0.0029	1.500	0.750	2410	28	31.373
	1	4	472	0.0039	2.000	1.000	1810	29	56.471

X-Generation Standard Length NX-RNVD

HM MG10

Helix **45°**
Rake **-10°**

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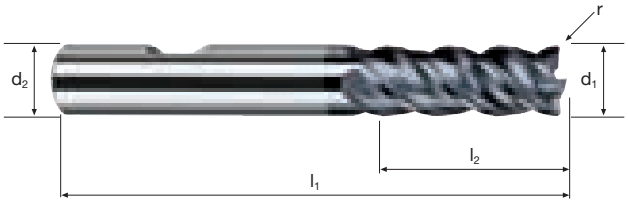
Vario



Performance roughing

Performance finishing

Machines the following materials:

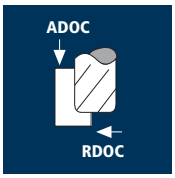
Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC				Titanium	Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN								
P15870252	3/16	1/4	2 1/4	15/32	0.010	3°	4	$40.40	
P15870254	3/16	1/4	2 1/4	15/32	0.020	3°	4	$40.40	
P15870256	3/16	1/4	2 1/4	15/32	0.030	3°	4	$40.40	
P15870312	1/4	1/4	2 1/4	5/8	0.010	—	4	$46.30	
P15870314	1/4	1/4	2 1/4	5/8	0.020	—	4	$46.30	
P15870316	1/4	1/4	2 1/4	5/8	0.030	—	4	$46.30	
P15970432*	3/8	3/8	2 3/4	15/16	0.020	—	4	$77.00	•
P15970434*	3/8	3/8	2 3/4	15/16	0.030	—	4	$77.00	•
P15970436*	3/8	3/8	2 3/4	15/16	0.060	—	4	$77.00	•
P15970530*	1/2	1/2	3 1/4	1 1/4	0.030	—	4	$116.10	•
P15970532*	1/2	1/2	3 1/4	1 1/4	0.060	—	4	$116.10	•
P15970534*	1/2	1/2	3 1/4	1 1/4	0.090	—	4	$116.10	•
P15970605*	5/8	5/8	4	1 9/16	0.030	—	4	$207.60	•
P15970607*	5/8	5/8	4	1 9/16	0.060	—	4	$207.60	•
P15970609*	5/8	5/8	4	1 9/16	0.090	—	4	$207.60	•
P15970652*	3/4	3/4	4 1/2	2	0.060	—	4	$298.60	•
P15970654*	3/4	3/4	4 1/2	2	0.090	—	4	$298.60	•
P15970656*	3/4	3/4	4 1/2	2	0.120	—	4	$298.60	•
P15970775*	1	1	5 1/2	2 1/2	0.060	—	4	$425.60	•
P15970777*	1	1	5 1/2	2 1/2	0.090	—	4	$425.60	•
P15970779*	1	1	5 1/2	2 1/2	0.120	—	4	$425.60	•

*** with clamping flat**

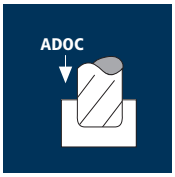
5957



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool steel 42 - 48 HRC	1/4	4	395	0.0019	0.250	0.092	6035	46	1.058
	3/8	4	395	0.0028	0.375	0.142	4025	45	2.396
	1/2	4	395	0.0037	0.500	0.191	3020	45	4.298
	5/8	4	395	0.0047	0.625	0.113	2415	45	3.178
Hardened Tool steel 48 - 52 HRC	1/4	4	260	0.0012	0.250	0.092	3975	19	0.437
	3/8	4	260	0.0019	0.375	0.142	2650	20	1.065
	1/2	4	260	0.0025	0.500	0.191	1985	20	1.910
	5/8	4	260	0.0031	0.625	0.113	1590	20	1.413
Hardened Tool steel 52 - 56 HRC	1/4	4	195	0.0010	0.250	0.092	2980	12	0.276
	3/8	4	195	0.0015	0.375	0.142	1985	12	0.639
	1/2	4	195	0.0021	0.500	0.191	1490	13	1.242
	5/8	4	195	0.0025	0.625	0.113	1190	12	0.848
Hardened Tool steel 56 - 60 HRC	1/4	4	100	0.0008	0.250	0.092	1530	5	0.115
	3/8	4	100	0.0011	0.375	0.142	1020	4	0.213
	1/2	4	100	0.0015	0.500	0.191	765	5	0.478
	5/8	4	100	0.0020	0.625	0.113	610	5	0.353

5957



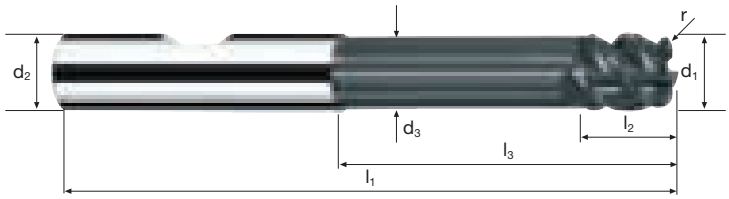
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool steel 42 - 48 HRC	1/4	4	330	0.0015	0.092	0.250	5040	30	0.690
	3/8	4	330	0.0022	0.142	0.375	3360	30	1.598
	1/2	4	330	0.0029	0.191	0.500	2520	29	2.770
	5/8	4	330	0.0037	0.113	0.625	2015	30	2.119
Hardened Tool steel 48 - 52 HRC	1/4	4	195	0.0010	0.092	0.250	2980	12	0.276
	3/8	4	195	0.0017	0.142	0.375	1985	13	0.692
	1/2	4	195	0.0023	0.191	0.500	1490	14	1.337
	5/8	4	195	0.0027	0.113	0.625	1190	13	0.918
Hardened Tool steel 52 - 56 HRC	1/4	4	130	0.0008	0.092	0.250	1985	6	0.138
	3/8	4	130	0.0013	0.142	0.375	1325	7	0.373
	1/2	4	130	0.0019	0.191	0.500	995	8	0.764
	5/8	4	130	0.0023	0.113	0.625	795	7	0.494
Hardened Tool steel 56 - 60 HRC	1/4	4	65	0.0006	0.092	0.250	995	2	0.046
	3/8	4	65	0.0010	0.142	0.375	660	3	0.160
	1/2	4	65	0.0013	0.191	0.500	495	3	0.286
	5/8	4	65	0.0016	0.113	0.625	395	3	0.212

X-Generation Long Reach HX-R

HM MG10

Helix **55°**
Rake **-10°**



Performance roughing

Performance finishing

Machines the following materials:

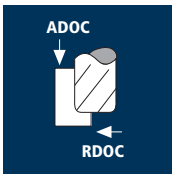
Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC		Titanium	

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN									
D5957312	1/4	1/4	0.230	3	5/16	1 1/2	0.060	4	$75.70	
D5957432*	3/8	3/8	0.345	3 1/2	7/16	2	0.080	4	$116.90	•
D5957530*	1/2	1/2	0.460	4	9/16	2 1/4	0.090	4	$146.40	•
D5957605*	5/8	5/8	0.575	5	3/4	3	0.090	4	$238.40	•

*** with clamping flat**

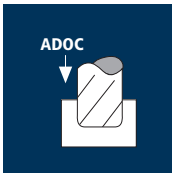
5867



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	295	0.0008	0.125	0.067	9015	29	0.243
	3/16	4	295	0.0011	0.188	0.076	6010	26	0.371
	1/4	4	295	0.0017	0.250	0.100	4505	31	0.775
	5/16	4	295	0.0020	0.313	0.124	3605	29	1.126
	3/8	4	295	0.0024	0.375	0.153	3005	29	1.664
	1/2	4	295	0.0031	0.500	0.218	2255	29	3.052
Hardened Tool Steel 52 - 56 HRC	1/8	4	230	0.0006	0.125	0.067	7030	17	0.142
	3/16	4	230	0.0011	0.188	0.076	4685	21	0.300
	1/4	4	230	0.0015	0.250	0.100	3515	21	0.525
	5/16	4	230	0.0018	0.313	0.124	2810	20	0.776
	3/8	4	230	0.0021	0.375	0.153	2345	20	1.148
	1/2	4	230	0.0027	0.500	0.218	1755	19	2.071
Hardened Tool Steel 56 - 60 HRC	1/8	4	115	0.0006	0.125	0.067	3515	8	0.067
	3/16	4	115	0.0009	0.188	0.076	2345	8	0.114
	1/4	4	115	0.0010	0.250	0.100	1755	7	0.175
	5/16	4	115	0.0014	0.313	0.124	1405	8	0.310
	3/8	4	115	0.0017	0.375	0.153	1170	8	0.459
	1/2	4	115	0.0023	0.500	0.218	880	8	0.872
Hardened Tool Steel > 60 HRC	1/8	4	80	0.0004	0.125	0.067	2445	4	0.034
	3/16	4	80	0.0006	0.188	0.076	1630	4	0.057
	1/4	4	80	0.0006	0.250	0.100	1220	3	0.075
	5/16	4	80	0.0010	0.313	0.124	980	4	0.155
	3/8	4	80	0.0011	0.375	0.153	815	4	0.229
	1/2	4	80	0.0015	0.500	0.218	610	4	0.436

5867



Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	230	0.0006	0.084	0.125	7030	17	0.179
	3/16	4	230	0.0011	0.095	0.188	4685	21	0.375
	1/4	4	230	0.0015	0.125	0.250	3515	21	0.656
	5/16	4	230	0.0018	0.155	0.313	2810	20	0.970
	3/8	4	230	0.0021	0.191	0.375	2345	20	1.432
	1/2	4	230	0.0027	0.272	0.500	1755	19	2.584
Hardened Tool Steel 52 - 56 HRC	1/8	4	165	0.0006	0.084	0.125	5040	12	0.126
	3/16	4	165	0.0009	0.095	0.188	3360	12	0.214
	1/4	4	165	0.0010	0.125	0.250	2520	10	0.313
	5/16	4	165	0.0014	0.155	0.313	2015	11	0.534
	3/8	4	165	0.0017	0.191	0.375	1680	11	0.788
	1/2	4	165	0.0023	0.272	0.500	1260	12	1.632
Hardened Tool Steel 56 - 60 HRC	1/8	4	100	0.0004	0.084	0.125	3055	5	0.053
	3/16	4	100	0.0006	0.095	0.188	2035	5	0.089
	1/4	4	100	0.0008	0.125	0.250	1530	5	0.156
	5/16	4	100	0.0011	0.155	0.313	1220	5	0.243
	3/8	4	100	0.0012	0.191	0.375	1020	5	0.358
	1/2	4	100	0.0017	0.272	0.500	765	5	0.680
Hardened Tool Steel > 60 HRC	1/8	4	65	0.0003	0.084	0.125	1985	2	0.021
	3/16	4	65	0.0005	0.095	0.188	1325	3	0.054
	1/4	4	65	0.0007	0.125	0.250	995	3	0.094
	5/16	4	65	0.0008	0.155	0.313	795	3	0.146
	3/8	4	65	0.0010	0.191	0.375	660	3	0.215
	1/2	4	65	0.0013	0.272	0.500	495	3	0.408

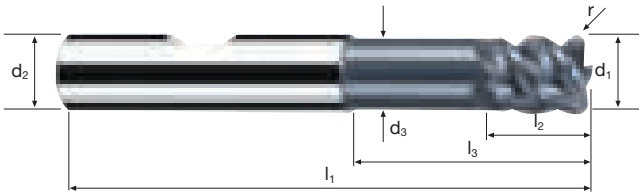
X-Generation Standard Reach HX-RH

HSS | Favora® | Base-X | X-Generation

II

HM XT

Helix **55°**
Rake **-10°**



Performance roughing

Performance finishing

Machines the following materials:

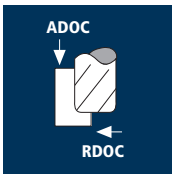
Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN									
D5867188	1/8	1/8	0.115	1 1/2	5/32	3/4	0.010	4	$63.60	
D5867248	3/16	3/16	0.175	2	1/4	1	0.010	4	$63.60	
D5867312	1/4	1/4	0.230	2 1/2	5/16	1	0.020	4	$63.60	
D5867372	5/16	5/16	0.288	2 1/2	3/8	1	0.020	4	$74.30	
D5867432	3/8	3/8	0.345	2 1/2	7/16	1	0.030	4	$91.70	•
D5867530	1/2	1/2	0.460	3	9/16	1 1/4	0.060	4	$157.00	•
D5967432*	3/8	3/8	0.345	2 1/2	7/16	1	0.030	4	$91.70	•
D5967530*	1/2	1/2	0.460	3	9/16	1 1/4	0.060	4	$157.00	•

*** with clamping flat**

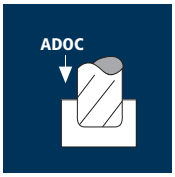
5869



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	295	0.0008	0.125	0.067	9015	29	0.243
	3/16	4	295	0.0011	0.188	0.076	6010	26	0.371
	1/4	4	295	0.0017	0.250	0.100	4505	31	0.775
	5/16	4	295	0.0020	0.313	0.124	3605	29	1.126
	3/8	4	295	0.0024	0.375	0.153	3005	29	1.664
	7/16	4	295	0.0028	0.438	0.165	2575	29	2.096
	1/2	4	295	0.0031	0.500	0.218	2255	29	3.052
Hardened Tool Steel 52 - 56 HRC	1/8	4	230	0.0006	0.125	0.067	7030	17	0.142
	3/16	4	230	0.0011	0.188	0.076	4685	21	0.300
	1/4	4	230	0.0015	0.250	0.100	3515	21	0.525
	5/16	4	230	0.0018	0.313	0.124	2810	20	0.776
	3/8	4	230	0.0021	0.375	0.153	2345	20	1.148
	7/16	4	230	0.0024	0.438	0.165	2010	19	1.373
	1/2	4	230	0.0027	0.500	0.218	1755	19	2.071
Hardened Tool Steel 56 - 60 HRC	1/8	4	115	0.0006	0.125	0.067	3515	8	0.067
	3/16	4	115	0.0009	0.188	0.076	2345	8	0.114
	1/4	4	115	0.0010	0.250	0.100	1755	7	0.175
	5/16	4	115	0.0014	0.313	0.124	1405	8	0.310
	3/8	4	115	0.0017	0.375	0.153	1170	8	0.459
	7/16	4	115	0.0020	0.438	0.165	1005	8	0.578
	1/2	4	115	0.0023	0.500	0.218	880	8	0.872
Hardened Tool Steel > 60 HRC	1/8	4	80	0.0004	0.125	0.067	2445	4	0.034
	3/16	4	80	0.0006	0.188	0.076	1630	4	0.057
	1/4	4	80	0.0006	0.250	0.100	1220	3	0.075
	5/16	4	80	0.0010	0.313	0.124	980	4	0.155
	3/8	4	80	0.0011	0.375	0.153	815	4	0.229
	7/16	4	80	0.0013	0.438	0.165	700	4	0.289
	1/2	4	80	0.0015	0.500	0.218	610	4	0.436

5869



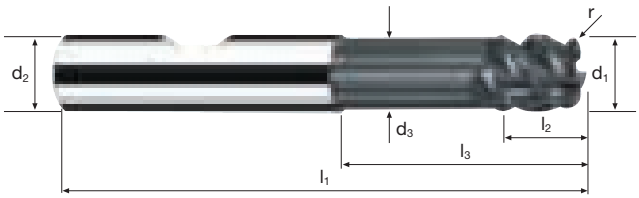
Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	230	0.0006	0.084	0.125	7030	17	0.179
	3/16	4	230	0.0011	0.095	0.188	4685	21	0.375
	1/4	4	230	0.0015	0.125	0.250	3515	21	0.656
	5/16	4	230	0.0018	0.155	0.313	2810	20	0.970
	3/8	4	230	0.0021	0.191	0.375	2345	20	1.432
	7/16	4	230	0.0024	0.207	0.438	2010	19	1.723
	1/2	4	230	0.0027	0.272	0.500	1755	19	2.584
Hardened Tool Steel 52 - 56 HRC	1/8	4	165	0.0006	0.084	0.125	5040	12	0.126
	3/16	4	165	0.0009	0.095	0.188	3360	12	0.214
	1/4	4	165	0.0010	0.125	0.250	2520	10	0.313
	5/16	4	165	0.0014	0.155	0.313	2015	11	0.534
	3/8	4	165	0.0017	0.191	0.375	1680	11	0.788
	7/16	4	165	0.0020	0.207	0.438	1440	12	1.088
	1/2	4	165	0.0023	0.272	0.500	1260	12	1.632
Hardened Tool Steel 56 - 60 HRC	1/8	4	100	0.0004	0.084	0.125	3055	5	0.053
	3/16	4	100	0.0006	0.095	0.188	2035	5	0.089
	1/4	4	100	0.0008	0.125	0.250	1530	5	0.156
	5/16	4	100	0.0011	0.155	0.313	1220	5	0.243
	3/8	4	100	0.0012	0.191	0.375	1020	5	0.358
	7/16	4	100	0.0014	0.207	0.438	875	5	0.453
	1/2	4	100	0.0017	0.272	0.500	765	5	0.680
Hardened Tool steel > 60 HRC	1/8	4	65	0.0003	0.084	0.125	1985	2	0.021
	3/16	4	65	0.0005	0.095	0.188	1325	3	0.054
	1/4	4	65	0.0007	0.125	0.250	995	3	0.094
	5/16	4	65	0.0008	0.155	0.313	795	3	0.146
	3/8	4	65	0.0010	0.191	0.375	660	3	0.215
	7/16	4	65	0.0011	0.207	0.438	570	3	0.272
	1/2	4	65	0.0013	0.272	0.500	495	3	0.408

X-Generation Standard Reach HX-RH

HM XT

Helix **55°**
Rake **-10°**



Performance roughing

Performance finishing

Machines the following materials:

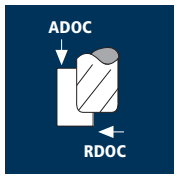
Best = Good =

Steel 42 - 48 HRC | **Steel** 48 - 54 HRC | **Steel** 54 - 60 HRC | **Steel** > 60 HRC

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN									
D5869188	1/8	1/8	0.115	1 1/2	5/32	3/4	0.015	4	$63.60	
D5869248	3/16	3/16	0.175	2	1/4	1	0.015	4	$63.60	
D5869312	1/4	1/4	0.230	2 1/2	5/16	1	0.060	4	$63.60	
D5869372	5/16	5/16	0.288	2 1/2	3/8	1	0.060	4	$74.30	
D5869432	3/8	3/8	0.345	2 1/2	7/16	1	0.080	4	$91.70	•
D5869530	1/2	1/2	0.460	3	9/16	1 1/4	0.090	4	$157.00	•
D5969432*	3/8	3/8	0.345	2 1/2	7/16	1	0.080	4	$91.70	•
D5969482*	7/16	7/16	0.403	3	1/2	1 1/8	0.080	4	$127.20	•
D5969530*	1/2	1/2	0.460	3	9/16	1 1/4	0.090	4	$157.00	•

*** with clamping flat**

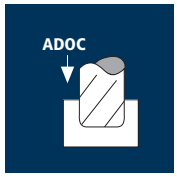
5926



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	655	0.0017	0.375	0.100	10010	68	2.550
	5/16	4	655	0.0021	0.469	0.124	8005	67	3.896
	3/8	4	655	0.0026	0.563	0.142	6670	69	5.516
	1/2	4	655	0.0031	0.750	0.201	5005	62	9.346
	5/8	4	655	0.0039	0.938	0.259	4005	62	15.062
Steel 24 - 34 HRC	1/4	4	490	0.0017	0.375	0.100	7485	51	1.913
	5/16	4	490	0.0021	0.469	0.124	5990	50	2.908
	3/8	4	490	0.0026	0.563	0.142	4990	52	4.157
	1/2	4	490	0.0031	0.750	0.201	3745	46	6.935
	5/8	4	490	0.0039	0.938	0.259	2995	47	11.418
Cold Work Tool Steel (12% Cr), high alloyed	1/4	4	330	0.0017	0.375	0.100	5040	34	1.275
	5/16	4	330	0.0020	0.469	0.124	4035	32	1.861
	3/8	4	330	0.0024	0.563	0.142	3360	32	2.558
	1/2	4	330	0.0031	0.750	0.201	2520	31	4.673
	5/8	4	330	0.0037	0.938	0.259	2015	30	7.288
Cast Iron	1/4	4	590	0.0021	0.375	0.100	9015	76	2.850
	5/16	4	590	0.0025	0.469	0.124	7210	72	4.187
	3/8	4	590	0.0030	0.563	0.142	6010	72	5.756
	1/2	4	590	0.0040	0.750	0.201	4505	72	10.854
	5/8	4	590	0.0051	0.938	0.259	3605	74	17.978

5926



Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel up to 24 HRC	1/4	4	590	0.0015	0.249	0.250	9015	54	3.362
	5/16	4	590	0.0018	0.310	0.313	7210	52	5.046
	3/8	4	590	0.0021	0.354	0.375	6010	50	6.637
	1/2	4	590	0.0025	0.503	0.500	4505	45	11.318
	5/8	4	590	0.0029	0.623	0.625	3605	42	8.479
Steel 24 - 34 HRC	1/4	4	395	0.0015	0.249	0.250	6035	36	2.241
	5/16	4	395	0.0018	0.310	0.313	4830	35	3.396
	3/8	4	395	0.0021	0.354	0.375	4025	34	4.513
	1/2	4	395	0.0025	0.503	0.500	3020	30	7.545
	5/8	4	395	0.0029	0.623	0.625	2415	28	5.653
Cold Work Tool Steel (12% Cr), high alloyed	1/4	4	260	0.0015	0.249	0.250	3975	24	1.494
	5/16	4	260	0.0018	0.310	0.313	3180	23	2.232
	3/8	4	260	0.0021	0.354	0.375	2650	22	2.920
	1/2	4	260	0.0025	0.503	0.500	1985	20	5.030
	5/8	4	260	0.0029	0.623	0.625	1590	18	3.634
Cast Iron	1/4	4	525	0.0017	0.249	0.250	8020	55	3.424
	5/16	4	525	0.0020	0.310	0.313	6415	51	4.949
	3/8	4	525	0.0024	0.354	0.375	5350	51	6.770
	1/2	4	525	0.0027	0.503	0.500	4010	43	10.815
	5/8	4	525	0.0035	0.623	0.625	3210	45	9.084

X-Generation Standard Length NX-NVR

HSS | Favora® | Base-X | X-Generation

II

HM MG10

Helix **40°**
Rake **0°**

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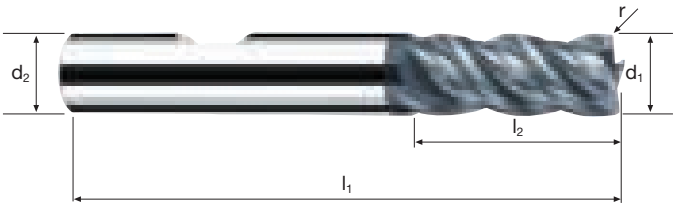
Vario



Performance roughing

Performance finishing

Machines the following materials:

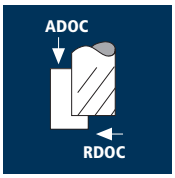
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Cast Iron Tool Steel

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P5926312	1/4	1/4	2 1/2	3/4	0.060	4	$70.90	
P5926372	5/16	5/16	2 1/2	1	0.060	4	$90.20	
P5926432*	3/8	3/8	3	1	0.080	4	$99.20	•
P5926530*	1/2	1/2	3 1/4	1 1/4	0.090	4	$139.00	•
P5926605*	5/8	5/8	3 1/2	1 1/4	0.090	4	$207.50	•

*** with clamping flat**

15996



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel < 24 HRC	1/8	4	590	0.0008	0.188	0.050	18040	59	0.552
	3/16	4	590	0.0012	0.281	0.075	12030	58	1.217
	1/4	4	590	0.0016	0.375	0.100	9020	59	2.207
	3/8	4	590	0.0024	0.563	0.150	6020	58	4.868
	1/2	4	590	0.0031	0.750	0.200	4510	57	8.438
	5/8	4	590	0.0041	0.938	0.250	3610	59	13.793
	3/4	4	590	0.0048	1.125	0.300	3010	58	19.473
	1	4	590	0.0065	1.500	0.400	2260	59	35.051
Steel 24 - 34 HRC	1/8	4	490	0.0007	0.188	0.050	14980	41	0.382
	3/16	4	490	0.0010	0.281	0.075	9990	40	0.842
	1/4	4	490	0.0014	0.375	0.100	7490	41	1.527
	3/8	4	490	0.0020	0.563	0.150	5000	40	3.369
	1/2	4	490	0.0026	0.750	0.200	3750	39	5.840
	5/8	4	490	0.0034	0.938	0.250	3000	41	9.546
	3/4	4	490	0.0040	1.125	0.300	2500	40	13.477
	1	4	490	0.0054	1.500	0.400	1880	41	24.259
Stainless Steel 303 304	1/8	4	260	0.0006	0.188	0.050	7950	21	0.192
	3/16	4	260	0.0010	0.281	0.075	5300	21	0.425
	1/4	4	260	0.0013	0.375	0.100	3980	21	0.770
	3/8	4	260	0.0019	0.563	0.150	2650	21	1.698
	1/2	4	260	0.0025	0.750	0.200	1990	20	2.944
	5/8	4	260	0.0032	0.938	0.250	1590	21	4.812
	3/4	4	260	0.0038	1.125	0.300	1330	21	6.793
	1	4	260	0.0051	1.500	0.400	1000	21	12.228
Titanium	1/8	4	190	0.0006	0.188	0.050	5810	16	0.141
	3/16	4	190	0.0010	0.281	0.075	3880	15	0.310
	1/4	4	190	0.0013	0.375	0.100	2910	16	0.563
	3/8	4	190	0.0019	0.563	0.150	1940	15	1.241
	1/2	4	190	0.0025	0.750	0.200	1460	15	2.151
	5/8	4	190	0.0032	0.938	0.250	1170	16	3.517
	3/4	4	190	0.0038	1.125	0.300	970	15	4.964
	1	4	190	0.0051	1.500	0.400	730	15	8.936

15996

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel < 24 HRC	1/8	4	472	0.0007	0.125	0.125	14430	38	0.589
	3/16	4	472	0.0010	0.188	0.188	9620	37	1.298
	1/4	4	472	0.0013	0.250	0.250	7220	38	2.354
	3/8	4	472	0.0019	0.375	0.375	4810	37	5.193
	1/2	4	472	0.0025	0.500	0.500	3610	37	9.001
	5/8	4	472	0.0033	0.625	0.625	2890	38	14.713
	3/4	4	472	0.0038	0.750	0.750	2410	37	20.771
	1	4	472	0.0052	1.000	1.000	1810	38	37.388
Steel 24 - 34 HRC	1/8	4	392	0.0005	0.125	0.125	11980	27	0.407
	3/16	4	392	0.0008	0.188	0.188	7990	26	0.898
	1/4	4	392	0.0011	0.250	0.250	5990	27	1.629
	3/8	4	392	0.0016	0.375	0.375	4000	26	3.594
	1/2	4	392	0.0021	0.500	0.500	3000	25	6.229
	5/8	4	392	0.0027	0.625	0.625	2400	27	10.183
	3/4	4	392	0.0032	0.750	0.750	2000	26	14.375
	1	4	392	0.0043	1.000	1.000	1500	26	25.876
Stainless Steel 303 304	1/8	4	208	0.0005	0.125	0.125	6360	14	0.205
	3/16	4	208	0.0008	0.188	0.188	4240	13	0.453
	1/4	4	208	0.0010	0.250	0.250	3180	14	0.821
	3/8	4	208	0.0015	0.375	0.375	2120	13	1.812
	1/2	4	208	0.0020	0.500	0.500	1590	13	3.140
	5/8	4	208	0.0026	0.625	0.625	1280	14	5.133
	3/4	4	208	0.0030	0.750	0.750	1060	13	7.246
	1	4	208	0.0041	1.000	1.000	800	14	13.043
Titanium	1/8	4	152	0.0005	0.125	0.125	4650	10	0.150
	3/16	4	152	0.0008	0.188	0.188	3100	10	0.331
	1/4	4	152	0.0010	0.250	0.250	2330	10	0.600
	3/8	4	152	0.0015	0.375	0.375	1550	10	1.324
	1/2	4	152	0.0020	0.500	0.500	1170	10	2.295
	5/8	4	152	0.0026	0.625	0.625	930	10	3.751
	3/4	4	152	0.0030	0.750	0.750	780	10	5.295
	1	4	152	0.0041	1.000	1.000	590	10	9.532

Base-X Standard Length Vario

HM	Helix 40° Rake 6°
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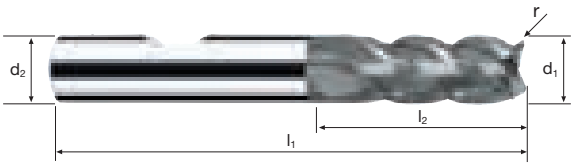
Vario	



Performance roughing

Performance finishing

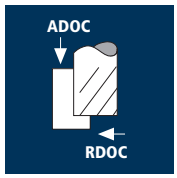
Machines the following materials: Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15996188	1/8	1/8	2 1/4	1/4	0.010	4	$24.60	
P15996192	1/8	1/8	2 1/4	1/4	0.020	4	$24.60	
P15996248	3/16	3/16	2 1/4	1/2	0.010	4	$31.20	
P15996252	3/16	3/16	2 1/4	1/2	0.020	4	$31.20	
P15996312	1/4	1/4	2 1/2	5/8	0.020	4	$35.40	
P15996314	1/4	1/4	2 1/2	5/8	0.030	4	$35.40	
P15996318	1/4	1/4	2 1/2	5/8	0.060	4	$35.40	
P15996372	5/16	3/8	2 1/2	3/4	0.020	4	$48.50	
P15996376	5/16	3/8	2 1/2	3/4	0.030	4	$48.50	
P15996432*	3/8	3/8	3	7/8	0.030	4	$58.80	•
P15996436*	3/8	3/8	3	7/8	0.060	4	$58.80	•
P15996530*	1/2	1/2	3 1/4	1 1/16	0.030	4	$88.50	•
P15996536*	1/2	1/2	3 1/4	1 1/16	0.060	4	$88.50	•
P15996538*	1/2	1/2	3 1/4	1 1/16	0.120	4	$88.50	•
P15996605*	5/8	5/8	3 1/2	1 1/4	0.060	4	$157.90	•
P15996611*	5/8	5/8	4	1 1/4	0.120	4	$157.90	•
P15996652*	3/4	3/4	4	1 3/8	0.090	4	$228.20	•
P15996778*	1	1	5	1 3/4	0.090	4	$388.10	•

*** with clamping flat**

15997



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel < 24 HRC	1/4	5	590	0.0016	0.375	0.100	9020	74	2.759
	3/8	5	590	0.0024	0.563	0.150	6020	73	6.085
	1/2	5	590	0.0031	0.750	0.200	4510	71	10.548
	5/8	5	590	0.0041	0.938	0.250	3610	74	17.242
	3/4	5	590	0.0048	1.125	0.300	3010	73	24.341
	1	5	590	0.0065	1.500	0.400	2260	74	43.814
Steel 24 - 34 HRC	1/4	5	490	0.0014	0.375	0.100	7490	51	1.909
	3/8	5	490	0.0020	0.563	0.150	5000	50	4.212
	1/2	5	490	0.0026	0.750	0.200	3750	49	7.300
	5/8	5	490	0.0034	0.938	0.250	3000	51	11.933
	3/4	5	490	0.0040	1.125	0.300	2500	50	16.846
	1	5	490	0.0054	1.500	0.400	1880	51	30.323
Stainless Steel 303 304	1/4	5	260	0.0013	0.375	0.100	3980	26	0.962
	3/8	5	260	0.0019	0.563	0.150	2650	26	2.123
	1/2	5	260	0.0025	0.750	0.200	1990	25	3.680
	5/8	5	260	0.0032	0.938	0.250	1590	26	6.015
	3/4	5	260	0.0038	1.125	0.300	1330	26	8.492
	1	5	260	0.0051	1.500	0.400	1000	26	15.285
Titanium	1/4	5	190	0.0013	0.375	0.100	2910	19	0.703
	3/8	5	190	0.0019	0.563	0.150	1940	19	1.551
	1/2	5	190	0.0025	0.750	0.200	1460	18	2.689
	5/8	5	190	0.0032	0.938	0.250	1170	19	4.396
	3/4	5	190	0.0038	1.125	0.300	970	19	6.206
	1	5	190	0.0051	1.500	0.400	730	19	11.170

15997

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel < 24 HRC	1/4	5	472	0.0013	0.250	0.250	7220	48	2.943
	3/8	5	472	0.0019	0.375	0.375	4810	47	6.491
	1/2	5	472	0.0025	0.500	0.500	3610	46	11.251
	5/8	5	472	0.0033	0.625	0.625	2890	48	18.391
	3/4	5	472	0.0038	0.750	0.750	2410	47	25.964
	1	5	472	0.0052	1.000	1.000	1810	47	46.735
Steel 24 - 34 HRC	1/4	5	392	0.0011	0.250	0.250	5990	33	2.037
	3/8	5	392	0.0016	0.375	0.375	4000	32	4.492
	1/2	5	392	0.0021	0.500	0.500	3000	32	7.787
	5/8	5	392	0.0027	0.625	0.625	2400	33	12.728
	3/4	5	392	0.0032	0.750	0.750	2000	32	17.969
	1	5	392	0.0043	1.000	1.000	1500	33	32.345
Stainless Steel 303 304	1/4	5	208	0.0010	0.250	0.250	3180	17	1.027
	3/8	5	208	0.0015	0.375	0.375	2120	17	2.264
	1/2	5	208	0.0020	0.500	0.500	1590	16	3.925
	5/8	5	208	0.0026	0.625	0.625	1280	17	6.416
	3/4	5	208	0.0030	0.750	0.750	1060	17	9.058
	1	5	208	0.0041	1.000	1.000	800	17	16.304
Titanium	1/4	5	152	0.0010	0.250	0.250	2330	13	0.750
	3/8	5	152	0.0015	0.375	0.375	1550	12	1.655
	1/2	5	152	0.0020	0.500	0.500	1170	12	2.868
	5/8	5	152	0.0026	0.625	0.625	930	13	4.689
	3/4	5	152	0.0030	0.750	0.750	780	12	6.619
	1	5	152	0.0041	1.000	1.000	590	12	11.915

Base-X Standard Length Vario 5

HM	Helix 40° Rake 6°
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Vario	

Performance roughing

Performance finishing

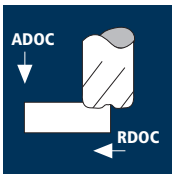
Machines the following materials: Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15997312	1/4	1/4	2 1/2	5/8	0.020	5	$38.80	
P15997432*	3/8	3/8	3	7/8	0.030	5	$64.50	•
P15997530*	1/2	1/2	3 1/4	1 1/16	0.060	5	$97.30	•
P15997605*	5/8	5/8	3 1/2	1 1/4	0.060	5	$173.80	•
P15997652*	3/4	3/4	4	1 3/8	0.060	5	$251.20	•
P15997775*	1	1	5	1 3/4	0.060	5	$427.10	•

*** with clamping flat**

7860



High Feed

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	820	0.0088	0.003	0.100	25060	887	0.277
	3/16	4	820	0.0130	0.005	0.150	16710	869	0.611
	1/4	4	820	0.0177	0.006	0.200	12530	887	1.108
	3/8	4	820	0.0260	0.009	0.300	8360	869	2.443
	1/2	4	820	0.0338	0.013	0.400	6270	848	4.235
Steel 34 - 42 HRC	1/8	4	720	0.0075	0.003	0.100	22010	659	0.206
	3/16	4	720	0.0110	0.005	0.150	14670	646	0.454
	1/4	4	720	0.0150	0.006	0.200	11010	659	0.823
	3/8	4	720	0.0220	0.009	0.300	7340	646	1.815
	1/2	4	720	0.0286	0.013	0.400	5510	630	3.146
Steel 42 - 48 HRC	1/8	4	650	0.0068	0.003	0.100	19870	541	0.169
	3/16	4	650	0.0100	0.005	0.150	13250	530	0.372
	1/4	4	650	0.0136	0.006	0.200	9940	541	0.675
	3/8	4	650	0.0200	0.009	0.300	6630	530	1.490
	1/2	4	650	0.0260	0.013	0.400	4970	517	2.582
Steel 48 - 52 HRC	1/8	4	590	0.0053	0.003	0.100	18040	385	0.120
	3/16	4	590	0.0079	0.005	0.150	12030	378	0.265
	1/4	4	590	0.0107	0.006	0.200	9020	385	0.481
	3/8	4	590	0.0157	0.009	0.300	6020	378	1.062
	1/2	4	590	0.0204	0.013	0.400	4510	369	1.840

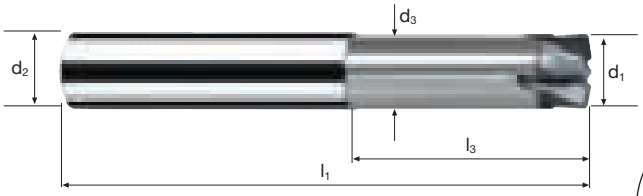
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 52 - 56 HRC	1/8	4	520	0.0040	0.003	0.100	15900	256	0.080
	3/16	4	520	0.0059	0.005	0.150	10600	251	0.176
	1/4	4	520	0.0080	0.006	0.200	7950	256	0.319
	3/8	4	520	0.0118	0.009	0.300	5300	251	0.703
	1/2	4	520	0.0153	0.013	0.400	3980	244	1.219
Steel 56 - 60 HRC	1/8	4	460	0.0025	0.003	0.100	14060	140	0.044
	3/16	4	460	0.0037	0.005	0.150	9380	137	0.096
	1/4	4	460	0.0050	0.006	0.200	7030	140	0.174
	3/8	4	460	0.0073	0.009	0.300	4690	137	0.385
	1/2	4	460	0.0095	0.013	0.400	3520	134	0.667
Steel > 60 HRC	1/8	4	260	0.0019	0.003	0.100	7950	62	0.019
	3/16	4	260	0.0029	0.005	0.150	5300	61	0.042
	1/4	4	260	0.0039	0.006	0.200	3980	62	0.077
	3/8	4	260	0.0057	0.009	0.300	2650	61	0.170
	1/2	4	260	0.0074	0.013	0.400	1990	59	0.294
Cast Iron	1/8	4	820	0.0088	0.003	0.100	25060	887	0.277
	3/16	4	820	0.0130	0.005	0.150	16710	869	0.611
	1/4	4	820	0.0177	0.006	0.200	12530	887	1.108
	3/8	4	820	0.0260	0.009	0.300	8360	869	2.443
	1/2	4	820	0.0338	0.013	0.400	6270	848	4.235

X-Generation Standard Reach XFeed

HSS | Favora® | Base-X | X-Generation

II

HM XT	Helix 0° Rake 0°
	HFC



Performance roughing

Performance finishing

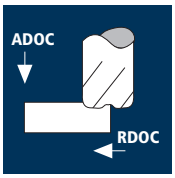
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			Cast iron

dimensions tolerances	d1 0/-0.02	d2 h6	d3	l1	l3	ADOC$_{max}$	R$_{theo.}$	draft ∡	fl	List Price	ReTool®
Order #	Coating: **X-Al** TiAlN/AlCrN										
X7860188	1/8	1/4	0.115	2 1/4	1/2	0.0047	0.011	5.5°	4	$62.20	
X7860252	3/16	1/4	0.175	2 1/4	1/2	0.0063	0.017	3°	4	$62.20	
X7860312	1/4	1/4	0.230	2 1/2	3/4	0.0098	0.023	—	4	$62.20	
X7860432	3/8	3/8	0.345	3	1	0.0161	0.034	—	4	$93.40	•
X7860530	1/2	1/2	0.460	3 1/4	1	0.0197	0.045	—	4	$127.00	•

7864



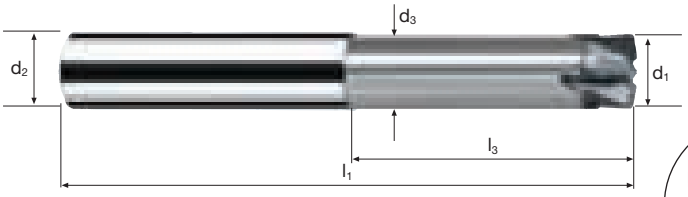
High Feed

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	4	650	0.0068	0.003	0.100	19870	541	0.135
	3/16	4	650	0.0100	0.004	0.150	13250	530	0.298
	1/4	4	650	0.0136	0.005	0.200	9940	541	0.540
	3/8	4	650	0.0200	0.008	0.300	6630	530	1.192
	1/2	4	650	0.0260	0.010	0.400	4970	517	2.066
Steel 34 - 42 HRC	1/8	4	575	0.0060	0.003	0.100	17580	419	0.105
	3/16	4	575	0.0088	0.004	0.150	11720	411	0.231
	1/4	4	575	0.0119	0.005	0.200	8790	419	0.418
	3/8	4	575	0.0175	0.008	0.300	5860	411	0.923
	1/2	4	575	0.0228	0.010	0.400	4400	400	1.599
Steel 42 - 48 HRC	1/8	4	520	0.0054	0.003	0.100	15900	346	0.086
	3/16	4	520	0.0080	0.004	0.150	10600	340	0.191
	1/4	4	520	0.0109	0.005	0.200	7950	346	0.346
	3/8	4	520	0.0160	0.008	0.300	5300	340	0.763
	1/2	4	520	0.0208	0.010	0.400	3980	331	1.322
Steel 48 - 52 HRC	1/8	4	475	0.0043	0.003	0.100	14520	247	0.062
	3/16	4	475	0.0063	0.004	0.150	9680	242	0.136
	1/4	4	475	0.0085	0.005	0.200	7260	247	0.247
	3/8	4	475	0.0125	0.008	0.300	4840	242	0.544
	1/2	4	475	0.0163	0.010	0.400	3630	236	0.944

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 52 - 56 HRC	1/8	4	410	0.0032	0.003	0.100	12530	161	0.040
	3/16	4	410	0.0047	0.004	0.150	8360	158	0.088
	1/4	4	410	0.0064	0.005	0.200	6270	161	0.160
	3/8	4	410	0.0094	0.008	0.300	4180	158	0.353
	1/2	4	410	0.0122	0.010	0.400	3140	154	0.612
Steel 56 - 60 HRC	1/8	4	370	0.0020	0.003	0.100	11310	90	0.022
	3/16	4	370	0.0029	0.004	0.150	7540	88	0.049
	1/4	4	370	0.0039	0.005	0.200	5660	90	0.089
	3/8	4	370	0.0058	0.008	0.300	3770	88	0.197
	1/2	4	370	0.0075	0.010	0.400	2830	86	0.341
Steel > 60 HRC	1/8	4	200	0.0015	0.003	0.100	6120	38	0.009
	3/16	4	200	0.0023	0.004	0.150	4080	37	0.021
	1/4	4	200	0.0031	0.005	0.200	3060	38	0.037
	3/8	4	200	0.0045	0.008	0.300	2040	37	0.083
	1/2	4	200	0.0059	0.010	0.400	1530	36	0.143
Cast Iron	1/8	4	650	0.0068	0.003	0.100	19870	541	0.135
	3/16	4	650	0.0100	0.004	0.150	13250	530	0.298
	1/4	4	650	0.0136	0.005	0.200	9940	541	0.540
	3/8	4	650	0.0200	0.008	0.300	6630	530	1.192
	1/2	4	650	0.0260	0.010	0.400	4970	517	2.066

X-Generation Long Reach XFeed

HM XT	Helix 0° Rake 0°
	HFC



Performance roughing

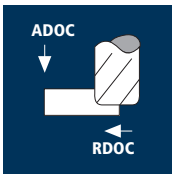
Performance finishing

Machines the following materials: Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			Cast iron

dimensions tolerances	d1 0/-0.02	d2 h6	d3	l1	l3	ADOC$_{max}$	R$_{theo.}$	draft ∡	fl	List Price	ReTool®
Order #	Coating: **X-Al** TiAlN/AlCrN										
X7864188	1/8	1/4	0.115	4	1 1/4	0.0047	0.011	3°	4	$67.50	
X7864252	3/16	1/4	0.175	4	1 1/2	0.0063	0.017	1.5°	4	$67.50	
X7864312	1/4	1/4	0.230	6	2	0.0098	0.023	—	4	$67.50	
X7864432	3/8	3/8	0.345	6	2 1/4	0.0161	0.034	—	4	$99.80	•
X7864530	1/2	1/2	0.460	6	2 1/2	0.0197	0.045	—	4	$136.20	•

5850



Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/8	4	560	0.0025	0.006	0.012	17115	171	0.012
	3/16	4	560	0.0032	0.009	0.019	11410	146	0.025
	1/4	6	560	0.0042	0.013	0.025	8555	216	0.070
	3/8	6	560	0.0047	0.019	0.035	5705	161	0.107
	1/2	6	560	0.0056	0.025	0.050	4280	144	0.180
Steel 48 - 52 HRC	1/8	4	490	0.0025	0.006	0.012	14975	150	0.011
	3/16	4	490	0.0032	0.009	0.019	9980	128	0.022
	1/4	6	490	0.0042	0.013	0.025	7485	189	0.061
	3/8	6	490	0.0047	0.019	0.035	4990	141	0.094
	1/2	6	490	0.0056	0.025	0.050	3745	126	0.158
Steel 52 - 56 HRC	1/8	4	395	0.0021	0.006	0.012	12070	101	0.007
	3/16	4	395	0.0026	0.009	0.019	8045	84	0.014
	1/4	6	395	0.0035	0.013	0.025	6035	127	0.041
	3/8	6	395	0.0041	0.019	0.035	4025	99	0.066
	1/2	6	395	0.0050	0.025	0.050	3020	91	0.114
Cast iron	1/8	4	820	0.0025	0.006	0.012	25060	251	0.018
	3/16	4	820	0.0032	0.009	0.019	16705	214	0.037
	1/4	6	820	0.0042	0.013	0.025	12530	316	0.103
	3/8	6	820	0.0047	0.019	0.035	8355	236	0.157
	1/2	6	820	0.0056	0.025	0.050	6265	211	0.264

5850

Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	1410	0.0033	0.002	0.003	43085	569
	3/16	4	1410	0.0037	0.004	0.004	28725	425
	1/4	6	1410	0.0046	0.005	0.005	21545	595
	3/8	6	1410	0.0045	0.007	0.008	14360	388
	1/2	6	1410	0.0054	0.010	0.010	10770	349
Steel 48 - 52 HRC	1/8	4	1245	0.0033	0.002	0.003	38045	502
	3/16	4	1245	0.0037	0.004	0.004	25365	375
	1/4	6	1245	0.0046	0.005	0.005	19020	525
	3/8	6	1245	0.0045	0.007	0.008	12680	342
	1/2	6	1245	0.0054	0.010	0.010	9510	308
Steel 52 - 56 HRC	1/8	4	985	0.0033	0.002	0.003	30100	397
	3/16	4	985	0.0037	0.004	0.004	20065	297
	1/4	6	985	0.0046	0.005	0.005	15050	415
	3/8	6	985	0.0045	0.007	0.008	10035	271
	1/2	6	985	0.0054	0.010	0.010	7525	244
Cast Iron	1/8	4	1870	0.0033	0.002	0.003	57145	754
	3/16	4	1870	0.0037	0.004	0.004	38095	564
	1/4	6	1870	0.0046	0.005	0.005	28570	789
	3/8	6	1870	0.0045	0.007	0.008	19050	514
	1/2	6	1870	0.0054	0.010	0.010	14285	463

X-Generation Standard Reach Multispeed

HM MG10

Helix **45°**
Rake **5°**

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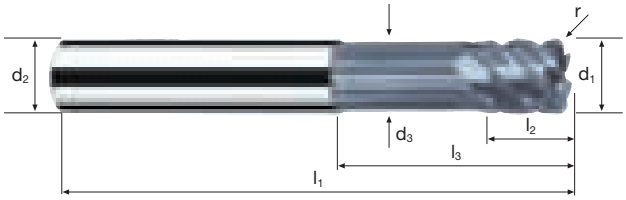


Performance roughing

Performance finishing

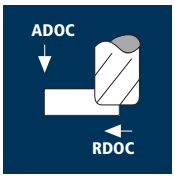
Machines the following materials:

Best = Good =

Steel <24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC			Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN										
D5850188	1/8	1/8	0.115	2 1/4	1/8	1/2	0.010	—	4	$62.00	
D5850194	1/8	1/8	0.115	2 1/4	1/8	1/2	0.015	—	4	$62.00	
D5850196	1/8	1/8	0.115	2 1/4	1/8	1/2	0.020	—	4	$62.00	
D5850252	3/16	1/4	0.175	2 1/4	3/16	1/2	0.010	3°	4	$62.00	
D5850254	3/16	1/4	0.175	2 1/4	3/16	1/2	0.020	3°	4	$62.00	
D5850256	3/16	1/4	0.175	2 1/4	3/16	1/2	0.030	3°	4	$62.00	
D5850312	1/4	1/4	0.230	2 1/2	1/4	3/4	0.010	—	6	$67.00	•
D5850314	1/4	1/4	0.230	2 1/2	1/4	3/4	0.020	—	6	$67.00	•
D5850316	1/4	1/4	0.230	2 1/2	1/4	3/4	0.030	—	6	$67.00	•
D5850432	3/8	3/8	0.345	3	3/8	1	0.010	—	6	$107.00	•
D5850434	3/8	3/8	0.345	3	3/8	1	0.020	—	6	$107.00	•
D5850436	3/8	3/8	0.345	3	3/8	1	0.030	—	6	$107.00	•
D5850530	1/2	1/2	0.460	3 1/4	1/2	1	0.015	—	6	$146.40	•
D5850532	1/2	1/2	0.460	3 1/4	1/2	1	0.030	—	6	$146.40	•
D5850536	1/2	1/2	0.460	3 1/4	1/2	1	0.060	—	6	$146.40	•

5850



Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/8	4	560	0.0025	0.006	0.012	17115	171	0.012
	3/16	4	560	0.0032	0.009	0.019	11410	146	0.025
	1/4	6	560	0.0042	0.013	0.025	8555	216	0.070
	3/8	6	560	0.0047	0.019	0.035	5705	161	0.107
	1/2	6	560	0.0056	0.025	0.050	4280	144	0.180
Steel 48 - 52 HRC	1/8	4	490	0.0025	0.006	0.012	14975	150	0.011
	3/16	4	490	0.0032	0.009	0.019	9980	128	0.022
	1/4	6	490	0.0042	0.013	0.025	7485	189	0.061
	3/8	6	490	0.0047	0.019	0.035	4990	141	0.094
	1/2	6	490	0.0056	0.025	0.050	3745	126	0.158
Steel 52 - 56 HRC	1/8	4	395	0.0021	0.006	0.012	12070	101	0.007
	3/16	4	395	0.0026	0.009	0.019	8045	84	0.014
	1/4	6	395	0.0035	0.013	0.025	6035	127	0.041
	3/8	6	395	0.0041	0.019	0.035	4025	99	0.066
	1/2	6	395	0.0050	0.025	0.050	3020	91	0.114
Cast Iron	1/8	4	820	0.0025	0.006	0.012	25060	251	0.018
	3/16	4	820	0.0032	0.009	0.019	16705	214	0.037
	1/4	6	820	0.0042	0.013	0.025	12530	316	0.103
	3/8	6	820	0.0047	0.019	0.035	8355	236	0.157
	1/2	6	820	0.0056	0.025	0.050	6265	211	0.264

5850

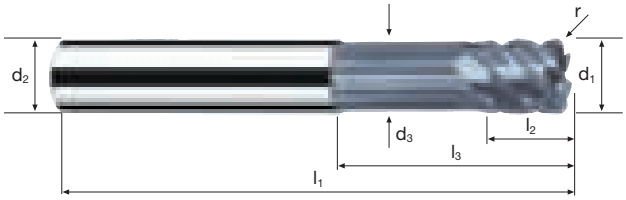
Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	1410	0.0033	0.002	0.003	43085	569
	3/16	4	1410	0.0037	0.004	0.004	28725	425
	1/4	6	1410	0.0046	0.005	0.005	21545	595
	3/8	6	1410	0.0045	0.007	0.008	14360	388
	1/2	6	1410	0.0054	0.010	0.010	10770	349
Steel 48 - 52 HRC	1/8	4	1245	0.0033	0.002	0.003	38045	502
	3/16	4	1245	0.0037	0.004	0.004	25365	375
	1/4	6	1245	0.0046	0.005	0.005	19020	525
	3/8	6	1245	0.0045	0.007	0.008	12680	342
	1/2	6	1245	0.0054	0.010	0.010	9510	308
Steel 52 - 56 HRC	1/8	4	985	0.0033	0.002	0.003	30100	397
	3/16	4	985	0.0037	0.004	0.004	20065	297
	1/4	6	985	0.0046	0.005	0.005	15050	415
	3/8	6	985	0.0045	0.007	0.008	10035	271
	1/2	6	985	0.0054	0.010	0.010	7525	244
Cast Iron	1/8	4	1870	0.0033	0.002	0.003	57145	754
	3/16	4	1870	0.0037	0.004	0.004	38095	564
	1/4	6	1870	0.0046	0.005	0.005	28570	789
	3/8	6	1870	0.0045	0.007	0.008	19050	514
	1/2	6	1870	0.0054	0.010	0.010	14285	463

X-Generation Standard Reach Multispeed

HM MG10

Helix **45°**
Rake **5°**



Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

Steel <24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC			Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P5850188	1/8	1/8	0.115	2 1/4	1/8	1/2	0.010	—	4	$62.00	
P5850194	1/8	1/8	0.115	2 1/4	1/8	1/2	0.015	—	4	$62.00	
P5850196	1/8	1/8	0.115	2 1/4	1/8	1/2	0.020	—	4	$62.00	
P5850252	3/16	1/4	0.175	2 1/4	3/16	1/2	0.010	3°	4	$62.00	
P5850254	3/16	1/4	0.175	2 1/4	3/16	1/2	0.020	3°	4	$62.00	
P5850256	3/16	1/4	0.175	2 1/4	3/16	1/2	0.030	3°	4	$62.00	
P5850312	1/4	1/4	0.230	2 1/2	1/4	3/4	0.010	—	6	$67.00	•
P5850314	1/4	1/4	0.230	2 1/2	1/4	3/4	0.020	—	6	$67.00	•
P5850316	1/4	1/4	0.230	2 1/2	1/4	3/4	0.030	—	6	$67.00	•
P5850432	3/8	3/8	0.345	3	3/8	1	0.010	—	6	$107.00	•
P5850434	3/8	3/8	0.345	3	3/8	1	0.020	—	6	$107.00	•
P5850436	3/8	3/8	0.345	3	3/8	1	0.030	—	6	$107.00	•
P5850530	1/2	1/2	0.460	3 1/4	1/2	1	0.015	—	6	$146.40	•
P5850532	1/2	1/2	0.460	3 1/4	1/2	1	0.030	—	6	$146.40	•
P5850536	1/2	1/2	0.460	3 1/4	1/2	1	0.060	—	6	$146.40	•

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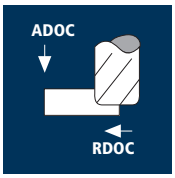


Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/8	4	560	0.0019	0.005	0.010	17115	130	0.007
	3/16	4	560	0.0024	0.008	0.014	11410	110	0.012
	1/4	6	560	0.0035	0.010	0.013	8555	180	0.023
	3/8	6	560	0.0041	0.015	0.023	5705	140	0.048
	1/2	6	560	0.0050	0.020	0.035	4280	128	0.090
Steel 48 - 52 HRC	1/8	4	490	0.0019	0.005	0.010	14975	114	0.006
	3/16	4	490	0.0024	0.008	0.014	9980	96	0.011
	1/4	6	490	0.0035	0.010	0.013	7485	157	0.020
	3/8	6	490	0.0041	0.015	0.023	4990	123	0.042
	1/2	6	490	0.0050	0.020	0.035	3745	112	0.078
Steel 52 - 56 HRC	1/8	4	395	0.0019	0.005	0.010	12070	92	0.005
	3/16	4	395	0.0024	0.008	0.014	8045	77	0.009
	1/4	6	395	0.0042	0.010	0.013	6035	152	0.020
	3/8	6	395	0.0047	0.015	0.023	4025	114	0.039
	1/2	6	395	0.0046	0.020	0.035	3020	83	0.058
Cast Iron	1/8	4	820	0.0019	0.005	0.010	25060	190	0.010
	3/16	4	820	0.0024	0.008	0.014	16705	160	0.018
	1/4	6	820	0.0042	0.010	0.013	12530	316	0.041
	3/8	6	820	0.0047	0.015	0.023	8355	236	0.081
	1/2	6	820	0.0056	0.020	0.035	6265	211	0.148

5852

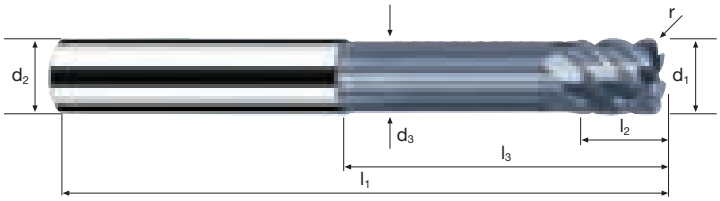
Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	1410	0.0015	0.002	0.003	43085	259
	3/16	4	1410	0.0021	0.003	0.004	28725	241
	1/4	6	1410	0.0046	0.003	0.005	21545	595
	3/8	6	1410	0.0045	0.005	0.008	14360	388
	1/2	6	1410	0.0054	0.007	0.010	10770	349
Steel 48 - 52 HRC	1/8	4	1245	0.0015	0.002	0.003	38045	228
	3/16	4	1245	0.0021	0.003	0.004	25365	213
	1/4	6	1245	0.0046	0.003	0.005	19020	525
	3/8	6	1245	0.0045	0.005	0.008	12680	342
	1/2	6	1245	0.0054	0.007	0.010	9510	308
Steel 52 - 56 HRC	1/8	4	985	0.0015	0.002	0.003	30100	181
	3/16	4	985	0.0021	0.003	0.004	20065	169
	1/4	6	985	0.0046	0.003	0.005	15050	415
	3/8	6	985	0.0045	0.005	0.008	10035	271
	1/2	6	985	0.0054	0.007	0.010	7525	244
Cast Iron	1/8	4	1870	0.0015	0.002	0.003	57145	343
	3/16	4	1870	0.0021	0.003	0.004	38095	320
	1/4	6	1870	0.0046	0.003	0.005	28570	789
	3/8	6	1870	0.0045	0.005	0.008	19050	514
	1/2	6	1870	0.0054	0.007	0.010	14285	463

X-Generation Long Reach Multispeed

HM MG10

Helix **45°**
Rake **5°**



Performance roughing

Performance finishing

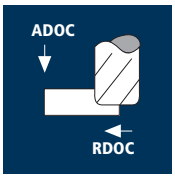
Machines the following materials:

Best = Good =

Steel <24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC			Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN										
D5852188	1/8	1/8	0.115	4	1/8	1 1/4	0.010	—	4	$69.40	
D5852194	1/8	1/8	0.115	4	1/8	1 1/4	0.015	—	4	$69.40	
D5852196	1/8	1/8	0.115	4	1/8	1 1/4	0.020	—	4	$69.40	
D5852252	3/16	1/4	0.175	4	3/16	1 1/2	0.010	1.5°	4	$69.40	
D5852254	3/16	1/4	0.175	4	3/16	1 1/2	0.020	1.5°	4	$69.40	
D5852256	3/16	1/4	0.175	4	3/16	1 1/2	0.030	1.5°	4	$69.40	
D5852312	1/4	1/4	0.230	6	1/4	2	0.010	—	6	$76.50	•
D5852314	1/4	1/4	0.230	6	1/4	2	0.020	—	6	$76.50	•
D5852316	1/4	1/4	0.230	6	1/4	2	0.030	—	6	$76.50	•
D5852432	3/8	3/8	0.345	6	3/8	2 1/4	0.010	—	6	$123.40	•
D5852434	3/8	3/8	0.345	6	3/8	2 1/4	0.020	—	6	$123.40	•
D5852436	3/8	3/8	0.345	6	3/8	2 1/4	0.030	—	6	$123.40	•
D5852530	1/2	1/2	0.460	6	1/2	2 1/2	0.015	—	6	$167.90	•
D5852532	1/2	1/2	0.460	6	1/2	2 1/2	0.030	—	6	$167.90	•
D5852536	1/2	1/2	0.460	6	1/2	2 1/2	0.060	—	6	$167.90	•

5852



Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/8	4	560	0.0019	0.005	0.010	17115	130	0.007
	3/16	4	560	0.0024	0.008	0.014	11410	110	0.012
	1/4	6	560	0.0035	0.010	0.013	8555	180	0.023
	3/8	6	560	0.0041	0.015	0.023	5705	140	0.048
	1/2	6	560	0.0050	0.020	0.035	4280	128	0.090
Steel 48 - 52 HRC	1/8	4	490	0.0019	0.005	0.010	14975	114	0.006
	3/16	4	490	0.0024	0.008	0.014	9980	96	0.011
	1/4	6	490	0.0035	0.010	0.013	7485	157	0.020
	3/8	6	490	0.0041	0.015	0.023	4990	123	0.042
	1/2	6	490	0.0050	0.020	0.035	3745	112	0.078
Steel 52 - 56 HRC	1/8	4	395	0.0019	0.005	0.010	12070	92	0.005
	3/16	4	395	0.0024	0.008	0.014	8045	77	0.009
	1/4	6	395	0.0042	0.010	0.013	6035	152	0.020
	3/8	6	395	0.0047	0.015	0.023	4025	114	0.039
	1/2	6	395	0.0046	0.020	0.035	3020	83	0.058
Cast Iron	1/8	4	820	0.0019	0.005	0.010	25060	190	0.010
	3/16	4	820	0.0024	0.008	0.014	16705	160	0.018
	1/4	6	820	0.0042	0.010	0.013	12530	316	0.041
	3/8	6	820	0.0047	0.015	0.023	8355	236	0.081
	1/2	6	820	0.0056	0.020	0.035	6265	211	0.148

5852

Profile Finishing

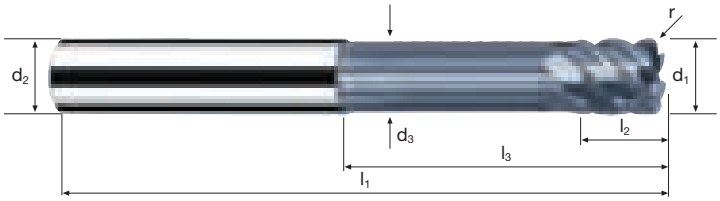
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	1410	0.0015	0.002	0.003	43085	259
	3/16	4	1410	0.0021	0.003	0.004	28725	241
	1/4	6	1410	0.0046	0.003	0.005	21545	595
	3/8	6	1410	0.0045	0.005	0.008	14360	388
	1/2	6	1410	0.0054	0.007	0.010	10770	349
Steel 48 - 52 HRC	1/8	4	1245	0.0015	0.002	0.003	38045	228
	3/16	4	1245	0.0021	0.003	0.004	25365	213
	1/4	6	1245	0.0046	0.003	0.005	19020	525
	3/8	6	1245	0.0045	0.005	0.008	12680	342
	1/2	6	1245	0.0054	0.007	0.010	9510	308
Steel 52 - 56 HRC	1/8	4	985	0.0015	0.002	0.003	30100	181
	3/16	4	985	0.0021	0.003	0.004	20065	169
	1/4	6	985	0.0046	0.003	0.005	15050	415
	3/8	6	985	0.0045	0.005	0.008	10035	271
	1/2	6	985	0.0054	0.007	0.010	7525	244
Cast Iron	1/8	4	1870	0.0015	0.002	0.003	57145	343
	3/16	4	1870	0.0021	0.003	0.004	38095	320
	1/4	6	1870	0.0046	0.003	0.005	28570	789
	3/8	6	1870	0.0045	0.005	0.008	19050	514
	1/2	6	1870	0.0054	0.007	0.010	14285	463

X-Generation Long Reach Multispeed

HSS | Favora® | Base-X | X-Generation

II

HM MG10	Helix 45° Rake 5°



Performance roughing

Performance finishing

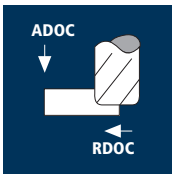
Machines the following materials:

Best = Good =

Steel <24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC			Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN										
P5852188	1/8	1/8	0.115	4	1/8	1 1/4	0.010	—	4	$69.40	
P5852194	1/8	1/8	0.115	4	1/8	1 1/4	0.015	—	4	$69.40	
P5852196	1/8	1/8	0.115	4	1/8	1 1/4	0.020	—	4	$69.40	
P5852252	3/16	1/4	0.175	4	3/16	1 1/2	0.010	1.5°	4	$69.40	
P5852254	3/16	1/4	0.175	4	3/16	1 1/2	0.020	1.5°	4	$69.40	
P5852256	3/16	1/4	0.175	4	3/16	1 1/2	0.030	1.5°	4	$69.40	
P5852312	1/4	1/4	0.230	6	1/4	2	0.010	—	6	$76.50	•
P5852314	1/4	1/4	0.230	6	1/4	2	0.020	—	6	$76.50	•
P5852316	1/4	1/4	0.230	6	1/4	2	0.030	—	6	$76.50	•
P5852432	3/8	3/8	0.345	6	3/8	2 1/4	0.010	—	6	$123.40	•
P5852434	3/8	3/8	0.345	6	3/8	2 1/4	0.020	—	6	$123.40	•
P5852436	3/8	3/8	0.345	6	3/8	2 1/4	0.030	—	6	$123.40	•
P5852530	1/2	1/2	0.460	6	1/2	2 1/2	0.015	—	6	$167.90	•
P5852532	1/2	1/2	0.460	6	1/2	2 1/2	0.030	—	6	$167.90	•
P5852536	1/2	1/2	0.460	6	1/2	2 1/2	0.060	—	6	$167.90	•

7800



Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	590	0.0013	0.004	0.044	18040	96
	3/16	4	590	0.0020	0.006	0.066	12030	94
	1/4	6	590	0.0027	0.008	0.088	9020	144
	3/8	6	590	0.0039	0.012	0.131	6020	141
	1/2	6	590	0.0051	0.017	0.175	4510	138
Steel 48 - 52 HRC	1/8	4	490	0.0013	0.004	0.044	14980	76
	3/16	4	490	0.0019	0.006	0.066	9990	74
	1/4	6	490	0.0025	0.008	0.088	7490	114
	3/8	6	490	0.0037	0.012	0.131	4990	111
	1/2	6	490	0.0048	0.017	0.175	3750	109
Steel 52 - 56 HRC	1/8	4	390	0.0012	0.004	0.044	11920	57
	3/16	4	390	0.0018	0.006	0.066	7950	56
	1/4	6	390	0.0024	0.008	0.088	5960	86
	3/8	6	390	0.0035	0.012	0.131	3980	84
	1/2	6	390	0.0046	0.017	0.175	2980	82
Steel 56 - 60 HRC	1/8	4	260	0.0011	0.004	0.044	7950	34
	3/16	4	260	0.0016	0.006	0.066	5300	33
	1/4	6	260	0.0021	0.008	0.088	3980	51
	3/8	6	260	0.0031	0.012	0.131	2650	50
	1/2	6	260	0.0040	0.017	0.175	1990	49

7800

Profile Finishing

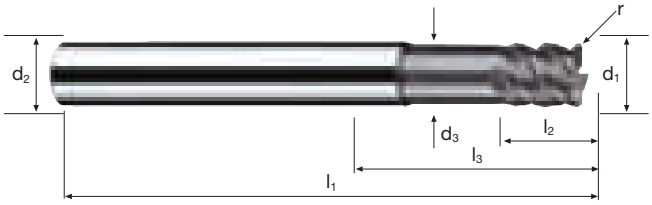
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	1350	0.0026	0.004	0.004	41260	421
	3/16	4	1350	0.0038	0.005	0.005	27510	413
	1/4	6	1350	0.0051	0.007	0.007	20630	632
	3/8	6	1350	0.0075	0.011	0.011	13760	619
	1/2	6	1350	0.0098	0.014	0.014	10320	604
Steel 48 - 52 HRC	1/8	4	1180	0.0025	0.004	0.004	36070	359
	3/16	4	1180	0.0037	0.005	0.005	24050	351
	1/4	6	1180	0.0050	0.007	0.007	18040	538
	3/8	6	1180	0.0073	0.011	0.011	12030	527
	1/2	6	1180	0.0095	0.014	0.014	9020	514
Steel 52 - 56 HRC	1/8	4	820	0.0022	0.004	0.004	25060	222
	3/16	4	820	0.0033	0.005	0.005	16710	218
	1/4	6	820	0.0044	0.007	0.007	12530	333
	3/8	6	820	0.0065	0.011	0.011	8360	326
	1/2	6	820	0.0085	0.014	0.014	6270	318
Steel 56 - 60 HRC	1/8	4	590	0.0021	0.004	0.004	18040	153
	3/16	4	590	0.0031	0.005	0.005	12030	150
	1/4	6	590	0.0042	0.007	0.007	9020	229
	3/8	6	590	0.0062	0.011	0.011	6020	224
	1/2	6	590	0.0081	0.014	0.014	4510	218

X-Generation Standard Reach XSpeed

HSS | Favora® | Base-X | X-Generation

II

HM XT	Helix 55° Rake -10°



Performance roughing

Performance finishing

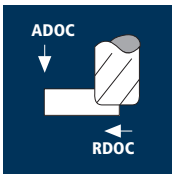
Machines the following materials:

Best = Good =

		Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC		Titanium	

dimensions tolerances	d1	d2	d3	l1	l2	l3	radius	draft ∡	fl	List Price	ReTool®
Order #	Coating: **X-Al** TiAlN/AlCrN										
X7800188	1/8	1/4	0.115	2 1/4	1/8	1/2	0.010	5.5°	4	$65.40	
X7800194	1/8	1/4	0.115	2 1/4	1/8	1/2	0.015	5.5°	4	$65.40	
X7800196	1/8	1/4	0.115	2 1/4	1/8	1/2	0.020	5.5°	4	$65.40	
X7800252	3/16	1/4	0.175	2 1/4	3/16	1/2	0.010	3°	4	$65.40	
X7800254	3/16	1/4	0.175	2 1/4	3/16	1/2	0.020	3°	4	$65.40	
X7800256	3/16	1/4	0.175	2 1/4	3/16	1/2	0.030	3°	4	$65.40	
X7800314	1/4	1/4	0.230	2 1/2	1/4	3/4	0.020	—	4	$70.80	•
X7800316	1/4	1/4	0.230	2 1/2	1/4	3/4	0.030	—	4	$70.80	•
X7800318	1/4	1/4	0.230	2 1/2	1/4	3/4	0.010	—	6	$70.80	•
X7800320	1/4	1/4	0.230	2 1/2	1/4	3/4	0.020	—	6	$70.80	•
X7800322	1/4	1/4	0.230	2 1/2	1/4	3/4	0.030	—	6	$70.80	•
X7800434	3/8	3/8	0.345	3	3/8	1	0.020	—	4	$114.50	•
X7800436	3/8	3/8	0.345	3	3/8	1	0.030	—	4	$114.50	•
X7800438	3/8	3/8	0.345	3	3/8	1	0.010	—	6	$114.50	•
X7800440	3/8	3/8	0.345	3	3/8	1	0.020	—	6	$114.50	•
X7800442	3/8	3/8	0.345	3	3/8	1	0.030	—	6	$114.50	•
X7800532	1/2	1/2	0.460	3 1/4	1/2	1	0.030	—	4	$164.60	•
X7800536	1/2	1/2	0.460	3 1/4	1/2	1	0.060	—	4	$164.60	•
X7800538	1/2	1/2	0.460	3 1/4	1/2	1	0.015	—	6	$164.60	•
X7800540	1/2	1/2	0.460	3 1/4	1/2	1	0.030	—	6	$164.60	•
X7800542	1/2	1/2	0.460	3 1/4	1/2	1	0.060	—	6	$164.60	•

7804



Semi Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	590	0.0012	0.003	0.031	18040	86
	3/16	4	590	0.0018	0.004	0.047	12030	85
	1/4	6	590	0.0024	0.005	0.063	9020	129
	3/8	6	590	0.0035	0.008	0.094	6020	127
	1/2	6	590	0.0046	0.010	0.125	4510	124
Steel 48 - 52 HRC	1/8	4	490	0.0011	0.003	0.031	14980	68
	3/16	4	490	0.0017	0.004	0.047	9990	66
	1/4	6	490	0.0022	0.005	0.063	7490	101
	3/8	6	490	0.0033	0.008	0.094	4990	99
	1/2	6	490	0.0043	0.010	0.125	3750	97
Steel 52 - 56 HRC	1/8	4	390	0.0011	0.003	0.031	11920	51
	3/16	4	390	0.0016	0.004	0.047	7950	50
	1/4	6	390	0.0021	0.005	0.063	5960	76
	3/8	6	390	0.0031	0.008	0.094	3980	74
	1/2	6	390	0.0040	0.010	0.125	2980	73
Steel 56 - 60 HRC	1/8	4	260	0.0010	0.003	0.031	7950	31
	3/16	4	260	0.0014	0.004	0.047	5300	30
	1/4	6	260	0.0019	0.005	0.063	3980	46
	3/8	6	260	0.0028	0.008	0.094	2650	45
	1/2	6	260	0.0036	0.010	0.125	1990	44

7804

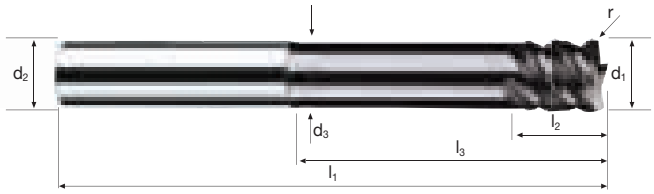
Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	4	1350	0.0012	0.003	0.003	41260	197
	3/16	4	1350	0.0018	0.004	0.004	27510	193
	1/4	6	1350	0.0024	0.005	0.005	20630	295
	3/8	6	1350	0.0035	0.008	0.008	13760	289
	1/2	6	1350	0.0046	0.010	0.010	10320	282
Steel 48 - 52 HRC	1/8	4	1180	0.0011	0.003	0.003	36070	162
	3/16	4	1180	0.0017	0.004	0.004	24050	159
	1/4	6	1180	0.0022	0.005	0.005	18040	243
	3/8	6	1180	0.0033	0.008	0.008	12030	239
	1/2	6	1180	0.0043	0.010	0.010	9020	233
Steel 52 - 56 HRC	1/8	4	820	0.0011	0.003	0.003	25060	106
	3/16	4	820	0.0016	0.004	0.004	16710	104
	1/4	6	820	0.0021	0.005	0.005	12530	159
	3/8	6	820	0.0031	0.008	0.008	8360	156
	1/2	6	820	0.0040	0.010	0.010	6270	152
Steel 56 - 60 HRC	1/8	4	590	0.0010	0.003	0.003	18040	69
	3/16	4	590	0.0014	0.004	0.004	12030	68
	1/4	6	590	0.0019	0.005	0.005	9020	103
	3/8	6	590	0.0028	0.008	0.008	6020	101
	1/2	6	590	0.0036	0.010	0.010	4510	99

X-Generation Long Reach XSpeed

HM XT

Helix **55°**
Rake **-10°**



Performance roughing

Performance finishing

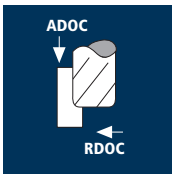
Machines the following materials:

Best = Good =

		Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC		Titanium	

dimensions tolerances	d1	d2	d3	l1	l2	l3	radius	draft ∡	fl	List Price	ReTool®
Order #	Coating: **X-AI** TiAlN/AlCrN										
X7804188	1/8	1/4	0.115	4	1/8	1 1/4	0.010	3°	4	$69.20	
X7804196	1/8	1/4	0.115	4	1/8	1 1/4	0.020	3°	4	$69.20	
X7804252	3/16	1/4	0.175	4	3/16	1 1/2	0.010	1.5°	4	$69.20	
X7804254	3/16	1/4	0.175	4	3/16	1 1/2	0.020	1.5°	4	$69.20	
X7804312	1/4	1/4	0.230	6	1/4	2	0.010	—	4	$75.00	•
X7804314	1/4	1/4	0.230	6	1/4	2	0.020	—	4	$75.00	•
X7804318	1/4	1/4	0.230	6	1/4	2	0.010	—	6	$75.00	•
X7804320	1/4	1/4	0.230	6	1/4	2	0.020	—	6	$75.00	•
X7804434	3/8	3/8	0.345	6	3/8	2 1/4	0.020	—	4	$121.40	•
X7804436	3/8	3/8	0.345	6	3/8	2 1/4	0.030	—	4	$121.40	•
X7804440	3/8	3/8	0.345	6	3/8	2 1/4	0.020	—	6	$121.40	•
X7804442	3/8	3/8	0.345	6	3/8	2 1/4	0.030	—	6	$121.40	•
X7804532	1/2	1/2	0.460	6	1/2	2 1/2	0.030	—	4	$174.50	•
X7804536	1/2	1/2	0.460	6	1/2	2 1/2	0.060	—	4	$174.50	•
X7804540	1/2	1/2	0.460	6	1/2	2 1/2	0.030	—	6	$174.50	•
X7804542	1/2	1/2	0.460	6	1/2	2 1/2	0.060	—	6	$174.50	•

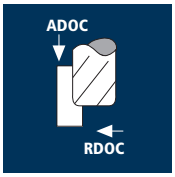
5864



Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	360	0.0006	0.188	0.004	11000	26	0.020
	3/16	5	360	0.0009	0.281	0.004	7330	33	0.037
	1/4	6	360	0.0012	0.375	0.004	5500	40	0.060
	3/8	6	360	0.0019	0.563	0.004	3665	42	0.095
	1/2	6	360	0.0025	0.750	0.004	2750	41	0.123
	5/8	8	360	0.0031	0.938	0.004	2200	55	0.206
Hardened Tool Steel 52 - 56 HRC	1/8	4	295	0.0005	0.188	0.004	9020	18	0.014
	3/16	5	295	0.0008	0.281	0.004	6010	23	0.025
	1/4	6	295	0.0010	0.375	0.004	4505	27	0.041
	3/8	6	295	0.0015	0.563	0.004	3005	27	0.061
	1/2	6	295	0.0021	0.750	0.004	2255	28	0.084
	5/8	8	295	0.0025	0.938	0.004	1805	36	0.135
Hardened Tool Steel 56 - 60 HRC	1/8	4	195	0.0004	0.188	0.004	5960	10	0.007
	3/16	5	195	0.0006	0.281	0.004	3970	12	0.013
	1/4	6	195	0.0008	0.375	0.004	2980	14	0.021
	3/8	6	195	0.0013	0.563	0.004	1985	15	0.034
	1/2	6	195	0.0017	0.750	0.004	1490	15	0.045
	5/8	8	195	0.0021	0.938	0.004	1190	20	0.075
Hardened Tool Steel > 60 HRC	1/8	4	150	0.0003	0.188	0.004	4580	5	0.004
	3/16	5	150	0.0005	0.281	0.004	3060	7	0.008
	1/4	6	150	0.0006	0.375	0.004	2290	8	0.012
	3/8	6	150	0.0011	0.563	0.004	1530	10	0.023
	1/2	6	150	0.0015	0.750	0.004	1145	10	0.030
	5/8	8	150	0.0018	0.938	0.004	915	13	0.049

5864



Semi Finishing

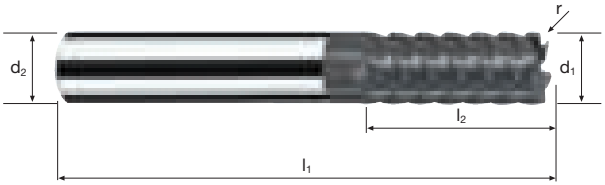
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	4	295	0.0006	0.125	0.007	9020	22	0.018
	3/16	5	295	0.0009	0.187	0.010	6010	27	0.050
	1/4	6	295	0.0012	0.249	0.013	4505	32	0.104
	3/8	6	295	0.0019	0.383	0.019	3005	34	0.247
	1/2	6	295	0.0025	0.545	0.025	2255	34	0.463
	5/8	8	295	0.0031	0.647	0.031	1805	45	0.903
Hardened Tool Steel 52 - 56 HRC	1/8	4	195	0.0005	0.125	0.007	5960	12	0.010
	3/16	5	195	0.0008	0.187	0.010	3970	15	0.027
	1/4	6	195	0.0010	0.249	0.013	2980	18	0.058
	3/8	6	195	0.0015	0.383	0.019	1985	18	0.131
	1/2	6	195	0.0021	0.545	0.025	1490	19	0.259
	5/8	8	195	0.0025	0.647	0.031	1190	24	0.481
Hardened Tool Steel 56 - 60 HRC	1/8	4	100	0.0004	0.125	0.007	3060	5	0.004
	3/16	5	100	0.0006	0.187	0.010	2040	6	0.011
	1/4	6	100	0.0008	0.249	0.013	1530	7	0.023
	3/8	6	100	0.0013	0.383	0.019	1020	8	0.058
	1/2	6	100	0.0017	0.545	0.025	765	8	0.109
	5/8	8	100	0.0021	0.647	0.031	610	10	0.201
Hardened Tool Steel > 60 HRC	1/8	4	65	0.0003	0.125	0.007	1990	2	0.002
	3/16	5	65	0.0005	0.187	0.010	1320	3	0.005
	1/4	6	65	0.0006	0.249	0.013	995	4	0.013
	3/8	6	65	0.0011	0.383	0.019	660	4	0.029
	1/2	6	65	0.0015	0.545	0.025	495	4	0.055
	5/8	8	65	0.0018	0.647	0.031	395	6	0.120

X-Generation Standard Length Multicut HX-R

HSS | Favora® | Base-X | X-Generation

II

HM XA	Helix 55° Rake -10°



Performance roughing

Performance finishing

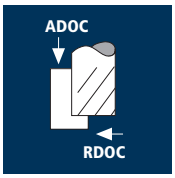
Machines the following materials:

Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			Cast Iron

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN							
D5864188	1/8	1/8	2 1/4	1/2	0.010	4	$72.40	
D5864252	3/16	3/16	2 1/4	5/8	0.010	5	$72.40	
D5864312	1/4	1/4	2 1/2	3/4	0.010	6	$72.40	•
D5864432	3/8	3/8	2 1/2	3/4	0.010	6	$128.50	•
D5864530	1/2	1/2	3	1	0.020	6	$166.10	•
D5864605	5/8	5/8	3 1/2	1 1/2	0.020	6	$218.70	•

15853



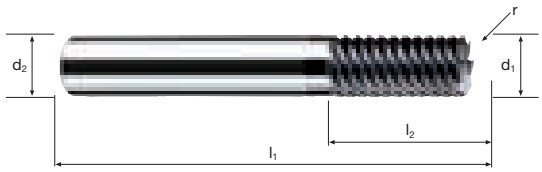
Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 24 - 34 HRC	1/4	5	590	0.0008	0.500	0.004	9020	37
	3/8	7	590	0.0012	0.750	0.006	6020	51
	1/2	7	590	0.0016	1.000	0.008	4510	50
	5/8	7	590	0.0020	1.250	0.009	3610	52
	3/4	7	590	0.0024	1.500	0.011	3010	51
	1	7	590	0.0032	2.000	0.015	2260	52
Steel 34 - 42 HRC	1/4	5	490	0.0008	0.500	0.004	7490	31
	3/8	7	490	0.0012	0.750	0.006	5000	42
	1/2	7	490	0.0016	1.000	0.008	3750	41
	5/8	7	490	0.0020	1.250	0.009	3000	43
	3/4	7	490	0.0024	1.500	0.011	2500	42
	1	7	490	0.0032	2.000	0.015	1880	43
Steel 42 - 48 HRC	1/4	5	390	0.0007	0.500	0.004	5960	21
	3/8	7	390	0.0010	0.750	0.006	3980	28
	1/2	7	390	0.0013	1.000	0.008	2980	28
	5/8	7	390	0.0017	1.250	0.009	2390	29
	3/4	7	390	0.0020	1.500	0.011	1990	28
	1	7	390	0.0027	2.000	0.015	1490	29
Steel 48 - 54 HRC	1/4	5	310	0.0007	0.500	0.004	4740	17
	3/8	7	310	0.0010	0.750	0.006	3160	23
	1/2	7	310	0.0013	1.000	0.008	2370	22
	5/8	7	310	0.0017	1.250	0.009	1900	23
	3/4	7	310	0.0020	1.500	0.011	1580	23
	1	7	310	0.0027	2.000	0.015	1190	23

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Stainless	1/4	5	280	0.0008	0.500	0.004	4280	18
	3/8	7	280	0.0012	0.750	0.006	2860	24
	1/2	7	280	0.0016	1.000	0.008	2140	24
	5/8	7	280	0.0020	1.250	0.009	1720	25
	3/4	7	280	0.0024	1.500	0.011	1430	24
	1	7	280	0.0032	2.000	0.015	1070	25
Titanium	1/4	5	250	0.0008	0.500	0.004	3820	16
	3/8	7	250	0.0012	0.750	0.006	2550	22
	1/2	7	250	0.0016	1.000	0.008	1910	21
	5/8	7	250	0.0020	1.250	0.009	1530	22
	3/4	7	250	0.0024	1.500	0.011	1280	22
	1	7	250	0.0032	2.000	0.015	960	22
Nickel Alloys	1/4	5	80	0.0007	0.500	0.004	1230	5
	3/8	7	80	0.0011	0.750	0.006	820	7
	1/2	7	80	0.0014	1.000	0.008	620	7
	5/8	7	80	0.0019	1.250	0.009	490	7
	3/4	7	80	0.0022	1.500	0.011	410	7
	1	7	80	0.0030	2.000	0.015	310	7
Cast Iron	1/4	5	650	0.0008	0.500	0.004	9940	41
	3/8	7	650	0.0012	0.750	0.006	6630	56
	1/2	7	650	0.0016	1.000	0.008	4970	55
	5/8	7	650	0.0020	1.250	0.009	3980	57
	3/4	7	650	0.0024	1.500	0.011	3320	56
	1	7	650	0.0032	2.000	0.015	2490	57

X-Generation Standard Length Multicut XF-R

HM XA	Helix 65° Rake 8°



Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC		Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** AlCrN							
P15853314	1/4	1/4	2	1/2	0.020	5	$84.90	
P15853434	3/8	3/8	2 1/2	3/4	0.030	7	$143.60	•
P15853530	1/2	1/2	3	1	0.060	7	$180.20	•
P15853605	5/8	5/8	3 1/2	1 1/4	0.060	7	$236.50	•
P15853652	3/4	3/4	4	1 1/2	0.090	7	$306.20	•
P15853775	1	1	5	2	0.090	7	$503.20	•

passion
for precision

fraisa

Ball nose end mills for steel, stainless steel, titanium, nickel alloys, etc.

passion
for precision

fraisa

Ball nose end mills for steel, stainless steel, titanium, nickel alloys, etc.

III

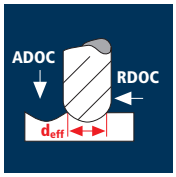
Ball Nose Tools for Roughing/Finishing

15820	Sphero-XR	X-Generation X	Roughing / Finishing	d_1 1/8" - 1/2"	Steel 34-60+	Steel 24-34		171
15821	Sphero-XR	X-Generation X	Roughing / Finishing	d_1 1/8" - 1/2"	Steel 34-60+	Steel 24-34		173
5810	NX-S	X-Generation X	Roughing / Finishing	d_1 1/32" - 1/2"	Steel <24-42	Inox Stainless	Steel 42-48	175
5822	NX-S	X-Generation X	Roughing / Finishing	d_1 1/8" - 1/2"	Steel <24-42	Inox Stainless	Steel 42-48	177
5886	Sphericut	Base-X B	Roughing / Finishing	d_1 1/32" - 5/8"	Steel 34-54	Steel 24-34	Steel 54-60	179
5887	Sphericut	Base-X B	Roughing / Finishing	d_1 1/32" - 1/2"	Steel 34-54	Steel 24-34	Steel 54-60	183
5885	new!	Base-X B	Roughing / Finishing	d_1 1/32" - 5/8"	Steel 34-54	Steel 24-34	Steel 54-60	187
5844		Base-X B	Roughing / Finishing	d_1 1/8" - 3/4"	Steel <24-34	Inox Stainless	Steel 34-42	189

Ball Nose Tools for Finishing

5820	Sphero-XF	X-Generation X	Roughing / Finishing	d_1 1/8" - 1/2"	Steel 34-60	Steel 24-34	Steel >60+	191
5821	Sphero-XF	X-Generation X	Roughing / Finishing	d_1 1/8" - 1/2"	Steel 34-60	Steel 24-34	Steel >60+	193
15840	HX-S4	X-Generation X	Roughing / Finishing	d_1 1/8" - 1/2"	Steel 54-60+	Steel 42-54	Cast Iron	195

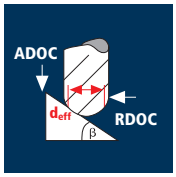
15820



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/8	2	525	0.0029	0.041	0.071	16040	93	0.271
	3/16	2	525	0.0036	0.065	0.106	10700	77	0.531
	1/4	2	525	0.0043	0.083	0.142	8020	69	0.810
	5/16	2	525	0.0049	0.110	0.189	6420	63	1.307
	3/8	2	525	0.0057	0.137	0.236	5350	61	1.972
	7/16	2	525	0.0058	0.151	0.259	4580	53	2.078
	1/2	2	525	0.0059	0.165	0.283	4010	47	2.213
Steel 48 - 52 HRC	1/8	2	425	0.0025	0.041	0.071	12990	66	0.192
	3/16	2	425	0.0032	0.065	0.106	8660	55	0.382
	1/4	2	425	0.0038	0.083	0.142	6490	49	0.574
	5/16	2	425	0.0043	0.110	0.189	5200	45	0.927
	3/8	2	425	0.0050	0.137	0.236	4330	43	1.396
	7/16	2	425	0.0058	0.151	0.259	3710	43	1.683
	1/2	2	425	0.0052	0.165	0.283	3250	34	1.569
Steel 52 - 56 HRC	1/8	2	360	0.0025	0.041	0.071	11000	56	0.163
	3/16	2	360	0.0031	0.065	0.106	7330	45	0.313
	1/4	2	360	0.0038	0.083	0.142	5500	41	0.486
	5/16	2	360	0.0043	0.110	0.189	4400	38	0.784
	3/8	2	360	0.0050	0.137	0.236	3670	37	1.184
	7/16	2	360	0.0058	0.151	0.259	3140	36	1.425
	1/2	2	360	0.0052	0.165	0.283	2750	28	1.328
Steel 56 - 60 HRC	1/8	2	260	0.0022	0.041	0.071	7950	35	0.101
	3/16	2	260	0.0027	0.065	0.106	5300	29	0.197
	1/4	2	260	0.0032	0.083	0.142	3970	26	0.301
	5/16	2	260	0.0037	0.110	0.189	3180	23	0.486
	3/8	2	260	0.0043	0.137	0.236	2650	23	0.733
	7/16	2	260	0.0058	0.151	0.259	2270	26	1.030
	1/2	2	260	0.0044	0.165	0.283	1990	18	0.824

15820



Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	β
Steel 42 - 48 HRC	1/8	2	525	0.0029	0.035	0.071	16040	93	45
	3/16	2	525	0.0036	0.052	0.105	10700	77	45
	1/4	2	525	0.0043	0.070	0.142	8020	69	45
	5/16	2	525	0.0049	0.094	0.189	6420	63	45
	3/8	2	525	0.0057	0.116	0.236	5350	61	45
	7/16	2	525	0.0058	0.127	0.259	4580	53	45
	1/2	2	525	0.0059	0.140	0.283	4010	47	45
Steel 48 - 52 HRC	1/8	2	425	0.0025	0.035	0.071	12990	66	45
	3/16	2	425	0.0031	0.052	0.105	8660	54	45
	1/4	2	425	0.0038	0.070	0.142	6490	49	45
	5/16	2	425	0.0043	0.094	0.189	5200	45	45
	3/8	2	425	0.0050	0.116	0.236	4330	43	45
	7/16	2	425	0.0051	0.127	0.259	3710	38	45
	1/2	2	425	0.0052	0.140	0.283	3250	34	45
Steel 52 - 56 HRC	1/8	2	360	0.0025	0.035	0.071	11000	56	45
	3/16	2	360	0.0031	0.052	0.105	7330	45	45
	1/4	2	360	0.0038	0.070	0.142	5500	41	45
	5/16	2	360	0.0043	0.094	0.189	4400	38	45
	3/8	2	360	0.0050	0.116	0.236	3670	37	45
	7/16	2	360	0.0051	0.127	0.259	3140	32	45
	1/2	2	360	0.0052	0.140	0.283	2750	28	45
Steel 56 - 60 HRC	1/8	2	260	0.0022	0.035	0.071	7950	35	45
	3/16	2	260	0.0027	0.052	0.105	5300	29	45
	1/4	2	260	0.0032	0.070	0.142	3970	26	45
	5/16	2	260	0.0037	0.094	0.189	3180	23	45
	3/8	2	260	0.0043	0.116	0.236	2650	23	45
	7/16	2	260	0.0043	0.127	0.259	2270	20	45
	1/2	2	260	0.0044	0.140	0.283	1990	18	45

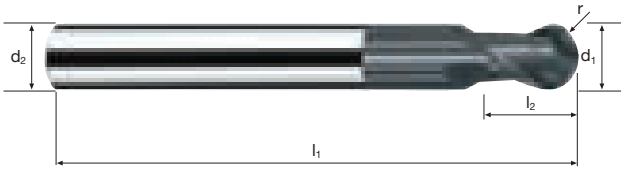
X-Generation Standard Length Sphero-XR

HSS | Favora® | Base-X | X-Generation

III

HM XT

Helix **30°**
Rake **-10°**



Performance roughing

Performance finishing

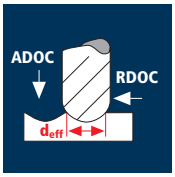
Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			

dimensions tolerances	d1 e8	d2 h6	l1	l2	radius f8	fl	List Price	ReTool®
Order #	Coating: **X-AI** TiAlN/AlCrN							
X15820186	1/8	1/8	3	1/8	1/16	2	$60.80	
X15820252	3/16	3/16	3	3/16	3/32	2	$60.80	
X15820312	1/4	1/4	4	1/4	1/8	2	$60.80	•
X15820372	5/16	5/16	4	5/16	5/32	2	$90.40	•
X15820432	3/8	3/8	4	3/8	3/16	2	$115.30	•
X15820482	7/16	7/16	4	7/16	7/32	2	$132.90	•
X15820596	1/2	1/2	4	1/2	1/4	2	$155.10	•

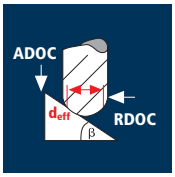
15821



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/8	2	525	0.0025	0.029	0.071	16040	81	0.169
	3/16	2	525	0.0031	0.035	0.105	10700	66	0.244
	1/4	2	525	0.0038	0.059	0.142	8020	60	0.507
	5/16	2	525	0.0043	0.079	0.189	6420	55	0.818
	3/8	2	525	0.0050	0.098	0.236	5350	53	1.234
	7/16	2	525	0.0051	0.108	0.257	4580	47	1.297
	1/2	2	525	0.0052	0.118	0.283	4010	41	1.384
Steel 48 - 52 HRC	1/8	2	425	0.0022	0.029	0.071	12990	56	0.117
	3/16	2	425	0.0027	0.041	0.104	8660	47	0.199
	1/4	2	425	0.0032	0.059	0.142	6490	42	0.349
	5/16	2	425	0.0036	0.079	0.189	5200	38	0.563
	3/8	2	425	0.0042	0.098	0.236	4330	37	0.849
	7/16	2	425	0.0043	0.108	0.251	3710	32	0.865
	1/2	2	425	0.0044	0.118	0.283	3250	29	0.954
Steel 52 - 56 HRC	1/8	2	360	0.0022	0.029	0.071	11000	47	0.099
	3/16	2	360	0.0027	0.041	0.104	7330	40	0.169
	1/4	2	360	0.0032	0.059	0.142	5500	35	0.295
	5/16	2	360	0.0036	0.079	0.189	4400	32	0.476
	3/8	2	360	0.0042	0.098	0.236	3670	31	0.719
	7/16	2	360	0.0043	0.108	0.251	3140	27	0.732
	1/2	2	360	0.0044	0.118	0.283	2750	24	0.807
Steel 56 - 60 HRC	1/8	2	260	0.0018	0.029	0.071	7950	29	0.060
	3/16	2	260	0.0024	0.041	0.104	5300	25	0.108
	1/4	2	260	0.0027	0.059	0.142	3970	21	0.179
	5/16	2	260	0.0031	0.079	0.189	3180	19	0.289
	3/8	2	260	0.0036	0.098	0.236	2650	19	0.436
	7/16	2	260	0.0036	0.108	0.251	2270	16	0.443
	1/2	2	260	0.0037	0.118	0.283	1990	15	0.490

15821



Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	β
Steel 42 - 48 HRC	1/8	2	525	0.0025	0.035	0.071	16040	81	45
	3/16	2	525	0.0031	0.047	0.104	10700	66	45
	1/4	2	525	0.0038	0.070	0.142	8020	60	45
	5/16	2	525	0.0043	0.094	0.189	6420	55	45
	3/8	2	525	0.0050	0.116	0.236	5350	53	45
	7/16	2	525	0.0051	0.129	0.251	4580	45	45
	1/2	2	525	0.0052	0.140	0.283	4010	41	45
Steel 48 - 52 HRC	1/8	2	425	0.0022	0.035	0.071	12990	56	45
	3/16	2	425	0.0027	0.047	0.104	8660	47	45
	1/4	2	425	0.0032	0.070	0.142	6490	42	45
	5/16	2	425	0.0036	0.094	0.189	5200	38	45
	3/8	2	425	0.0042	0.116	0.236	4330	37	45
	7/16	2	425	0.0043	0.129	0.251	3710	32	45
	1/2	2	425	0.0044	0.140	0.283	3250	29	45
Steel 52 - 56 HRC	1/8	2	360	0.0022	0.035	0.071	11000	47	45
	3/16	2	360	0.0027	0.047	0.104	7330	40	45
	1/4	2	360	0.0032	0.070	0.142	5500	35	45
	5/16	2	360	0.0036	0.094	0.189	4400	32	45
	3/8	2	360	0.0042	0.116	0.236	3670	31	45
	7/16	2	360	0.0043	0.129	0.251	3140	27	45
	1/2	2	360	0.0044	0.140	0.283	2750	24	45
Steel 56 - 60 HRC	1/8	2	260	0.0018	0.035	0.071	7950	29	45
	3/16	2	260	0.0024	0.047	0.104	5300	25	45
	1/4	2	260	0.0027	0.070	0.142	3970	21	45
	5/16	2	260	0.0031	0.094	0.189	3180	19	45
	3/8	2	260	0.0036	0.116	0.236	2650	19	45
	7/16	2	260	0.0036	0.129	0.251	2270	16	45
	1/2	2	260	0.0037	0.140	0.283	1990	15	45

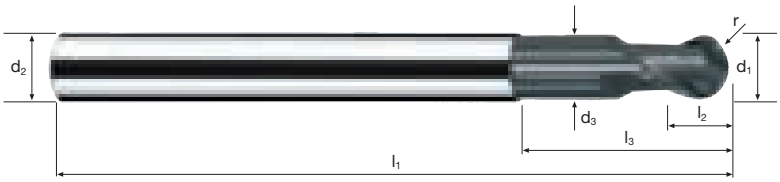
X-Generation Long Length Sphero-XR

HSS | Favora® | Base-X | X-Generation

III

HM XT

Helix **30°**
Rake **-10°**



Performance roughing

Performance finishing

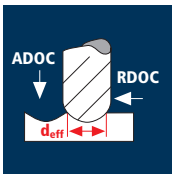
Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **X-Al** TiAlN/AlCrN										
X15821192	1/8	1/4	0.115	4	1/8	3/8	1/16	6°	2	$64.10	
X15821252	3/16	1/4	0.175	4	3/16	9/16	3/32	3°	2	$64.10	
X15821312	1/4	1/4	0.230	6	1/4	3/4	1/8	—	2	$64.10	•
X15821372	5/16	5/16	0.288	6	5/16	15/16	5/32	—	2	$94.50	•
X15821432	3/8	3/8	0.345	6	3/8	1 1/8	3/16	—	2	$123.40	•
X15821530	1/2	1/2	0.460	6	1/2	1 1/2	1/4	—	2	$164.70	•

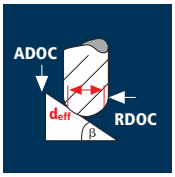
5810



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/32	2	820	0.0005	0.0009	0.0019	0.010	60000	60	0.0001
	1/16	2	820	0.0008	0.0019	0.0037	0.021	60000	96	0.0007
	3/32	2	820	0.0022	0.0028	0.0056	0.032	60000	264	0.0041
	1/8	2	820	0.0033	0.0038	0.0062	0.043	60000	396	0.0093
	3/16	2	820	0.0037	0.0056	0.0094	0.064	48940	362	0.0191
	1/4	2	820	0.0050	0.0075	0.0094	0.085	36850	369	0.0260
	5/16	2	820	0.0047	0.0094	0.0129	0.107	29275	275	0.0333
	3/8	2	820	0.0056	0.0112	0.0177	0.128	24470	24	0.0543
	1/2	2	820	0.0075	0.0150	0.0272	0.171	18320	25	0.1122
Steel 34 - 42 HRC	1/32	2	720	0.0005	0.0009	0.0019	0.010	60000	60	0.0001
	1/16	2	720	0.0008	0.0019	0.0037	0.021	60000	96	0.0007
	3/32	2	720	0.0022	0.0028	0.0056	0.032	60000	264	0.0041
	1/8	2	720	0.0033	0.0038	0.0062	0.043	60000	396	0.0093
	3/16	2	720	0.0037	0.0056	0.0094	0.064	42975	318	0.0167
	1/4	2	720	0.0050	0.0075	0.0094	0.085	32355	324	0.0228
	5/16	2	720	0.0047	0.0094	0.0129	0.107	25705	242	0.0293
	3/8	2	720	0.0056	0.0112	0.0177	0.128	21485	21	0.0478
	1/2	2	720	0.0075	0.0150	0.0272	0.171	16085	21	0.0983
Steel 42 - 48 HRC	1/32	2	655	0.0005	0.0009	0.0019	0.010	60000	60	0.0001
	1/16	2	655	0.0008	0.0019	0.0037	0.021	60000	96	0.0007
	3/32	2	655	0.0022	0.0028	0.0056	0.032	60000	264	0.0041
	1/8	2	655	0.0033	0.0038	0.0062	0.043	58185	384	0.0090
	3/16	2	655	0.0037	0.0056	0.0094	0.064	39095	289	0.0152
	1/4	2	655	0.0050	0.0075	0.0094	0.085	29435	294	0.0207
	5/16	2	655	0.0047	0.0094	0.0129	0.107	23385	220	0.0267
	3/8	2	655	0.0056	0.0112	0.0177	0.128	19545	19	0.0434
	1/2	2	655	0.0075	0.0150	0.0272	0.171	14630	19	0.0894
Stainless Steel 303 304	1/32	2	590	0.0005	0.0009	0.0019	0.010	60000	60	0.0001
	1/16	2	590	0.0008	0.0019	0.0037	0.021	60000	96	0.0007
	3/32	2	590	0.0022	0.0028	0.0019	0.032	60000	264	0.0041
	1/8	2	590	0.0033	0.0038	0.0019	0.043	52410	346	0.0082
	3/16	2	590	0.0037	0.0056	0.0019	0.064	35220	261	0.0137
	1/4	2	590	0.0050	0.0075	0.0019	0.085	26520	265	0.0187
	5/16	2	590	0.0052	0.0094	0.0019	0.107	21060	219	0.0266
	3/8	2	590	0.0056	0.0112	0.0019	0.128	17610	197	0.0391
	1/2	2	590	0.0075	0.0150	0.0019	0.171	13180	198	0.0808

5810



Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Steel 24 - 34 HRC	1/32	2	1675	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1675	0.0006	0.0008	0.0006	0.053	60000	72	45
	3/32	2	1675	0.0017	0.0011	0.0017	0.079	60000	204	45
	1/8	2	1675	0.0023	0.0015	0.0023	0.106	60000	276	45
	3/16	2	1245	0.0028	0.0023	0.0028	0.159	40240	225	45
	1/4	2	1675	0.0037	0.0030	0.0037	0.211	30325	224	45
	5/16	2	1675	0.0037	0.0038	0.0031	0.264	24235	180	45
	3/8	2	1675	0.0037	0.0045	0.0037	0.317	20185	149	45
	1/2	2	1675	0.0050	0.0060	0.0050	0.422	15160	152	45
Steel 34 - 42 HRC	1/32	2	1540	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1540	0.0006	0.0008	0.0006	0.053	60000	72	45
	3/32	2	1540	0.0017	0.0011	0.0017	0.079	60000	204	45
	1/8	2	1540	0.0023	0.0015	0.0023	0.106	55495	255	45
	3/16	2	1540	0.0028	0.0023	0.0028	0.159	37000	207	45
	1/4	2	1540	0.0037	0.0030	0.0037	0.211	27880	206	45
	5/16	2	1540	0.0037	0.0038	0.0031	0.264	22285	165	45
	3/8	2	1540	0.0037	0.0045	0.0037	0.317	18555	137	45
	1/2	2	1540	0.0050	0.0060	0.0050	0.422	13940	139	45
Steel 42 - 48 HRC	1/32	2	1410	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1410	0.0006	0.0008	0.0006	0.053	60000	72	45
	3/32	2	1410	0.0017	0.0011	0.0017	0.079	60000	204	45
	1/8	2	1410	0.0023	0.0015	0.0023	0.106	50810	234	45
	3/16	2	1410	0.0028	0.0023	0.0028	0.159	33875	190	45
	1/4	2	1410	0.0037	0.0030	0.0037	0.211	25525	189	45
	5/16	2	1410	0.0037	0.0038	0.0031	0.264	20400	150	45
	3/8	2	1410	0.0037	0.0045	0.0037	0.317	16990	126	45
	1/2	2	1410	0.0050	0.0060	0.0050	0.422	12765	128	45
Stainless Steel 303 304	1/32	2	1062	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1062	0.0006	0.0008	0.0006	0.053	60000	72	45
	3/32	2	1062	0.0017	0.0011	0.0017	0.079	51350	175	45
	1/8	2	1062	0.0023	0.0015	0.0023	0.106	38270	176	45
	3/16	2	1062	0.0028	0.0023	0.0028	0.159	25510	143	45
	1/4	2	1062	0.0037	0.0030	0.0037	0.211	19230	142	45
	5/16	2	1062	0.0037	0.0038	0.0037	0.264	15370	114	45
	3/8	2	1062	0.0037	0.0045	0.0037	0.317	12800	95	45
	1/2	2	1062	0.0050	0.0060	0.0050	0.422	9610	96	45

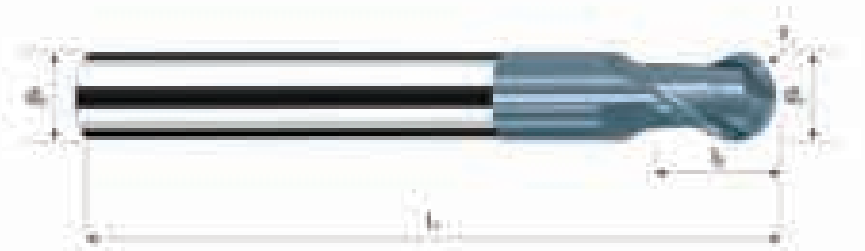
X-Generation Standard Length NX-S

HSS | Favora® | Base-X | X-Generation

III

HM MG10

Helix **30°**
Rake **5°**



Performance roughing

Performance finishing

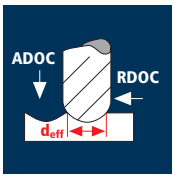
Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e6	d2 h6	l1	l2	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** TiAlCrN								
P5810079	1/32	1/8	2 1/2	1/32	1/64	11°	2	$59.70	
P5810124	1/16	1/8	2 1/2	1/16	1/32	9°	2	$59.70	
P5810157	3/32	1/8	2 1/2	3/32	3/64	5°	2	$59.70	
P5810186	1/8	1/8	3	1/8	1/16	5°	2	$59.70	
P5810252	3/16	3/16	3	3/16	3/32	—	2	$59.70	
P5810312	1/4	1/4	4	1/4	1/8	—	2	$59.70	•
P5810372	5/16	5/16	4	5/16	5/32	—	2	$88.70	•
P5810432	3/8	3/8	4	3/8	3/16	—	2	$111.30	•
P5810596	1/2	1/2	4	1/2	1/4	—	2	$152.30	•

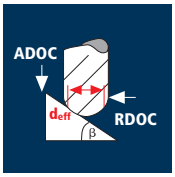
5822



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 24 - 34 HRC	1/8	2	820	0.0025	0.0025	0.0061	0.035	60000	300	0.005
	3/16	2	820	0.0037	0.0038	0.0098	0.053	59100	437	0.016
	1/4	2	820	0.0050	0.0050	0.0088	0.070	44745	447	0.020
	3/8	2	820	0.0056	0.0075	0.0164	0.105	29830	334	0.041
	1/2	2	820	0.0075	0.0100	0.0262	0.140	22375	336	0.088
Steel 34 - 42 HRC	1/8	2	720	0.0025	0.0025	0.0061	0.035	60000	300	0.005
	3/16	2	720	0.0037	0.0038	0.0098	0.053	51895	384	0.014
	1/4	2	720	0.0050	0.0050	0.0088	0.070	39290	393	0.017
	3/8	2	720	0.0056	0.0075	0.0164	0.105	26195	293	0.036
	1/2	2	720	0.0075	0.0100	0.0262	0.140	19645	295	0.077
Steel 42 - 48 HRC	1/8	2	655	0.0025	0.0025	0.0061	0.035	60000	300	0.005
	3/16	2	655	0.0037	0.0038	0.0098	0.053	47210	349	0.017
	1/4	2	655	0.0050	0.0050	0.0088	0.070	35745	357	0.022
	3/8	2	655	0.0056	0.0075	0.0164	0.105	23830	267	0.046
	1/2	2	655	0.0075	0.0100	0.0262	0.140	17870	268	0.099
Cast Iron	1/8	2	920	0.0025	0.0025	0.0061	0.035	60000	300	0.005
	3/16	2	920	0.0037	0.0038	0.0098	0.053	60000	444	0.017
	1/4	2	920	0.0050	0.0050	0.0088	0.070	50205	502	0.022
	3/8	2	920	0.0056	0.0075	0.0164	0.105	33470	375	0.046
	1/2	2	920	0.0075	0.0100	0.0262	0.140	25100	377	0.099

5822



Profile Finishing

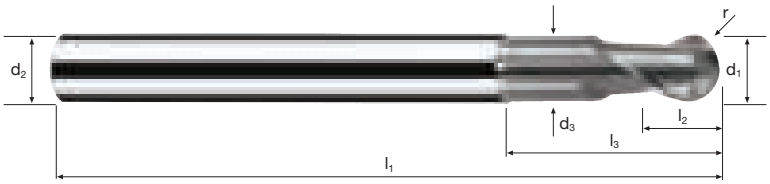
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Steel 24 - 34 HRC	1/8	2	1675	0.0021	0.0013	0.0021	0.104	60000	252	45
	3/16	2	1675	0.0028	0.0019	0.0028	0.156	41015	230	45
	1/4	2	1675	0.0037	0.0025	0.0037	0.208	30760	228	45
	3/8	2	1675	0.0037	0.0038	0.0037	0.313	20440	151	45
	1/2	2	1675	0.0050	0.0050	0.0050	0.417	15345	153	45
Steel 34 - 42 HRC	1/8	2	1540	0.0021	0.0013	0.0021	0.104	56565	238	45
	3/16	2	1540	0.0028	0.0019	0.0028	0.156	37710	211	45
	1/4	2	1540	0.0037	0.0025	0.0037	0.208	28280	209	45
	3/8	2	1540	0.0037	0.0038	0.0037	0.313	18795	139	45
	1/2	2	1540	0.0050	0.0050	0.0050	0.417	14105	141	45
Steel 42 - 48 HRC	1/8	2	1410	0.0021	0.0013	0.0021	0.104	51790	218	45
	3/16	2	1410	0.0028	0.0019	0.0028	0.156	34525	193	45
	1/4	2	1410	0.0037	0.0025	0.0037	0.208	25895	192	45
	3/8	2	1410	0.0037	0.0038	0.0037	0.313	17210	127	45
	1/2	2	1410	0.0050	0.0050	0.0050	0.417	12915	129	45
Cast Iron	1/8	2	1705	0.0021	0.0013	0.0021	0.104	6000	252	45
	3/16	2	1705	0.0028	0.0019	0.0028	0.156	41750	234	45
	1/4	2	1705	0.0037	0.0025	0.0037	0.208	31310	232	45
	3/8	2	1705	0.0037	0.0038	0.0037	0.313	20810	154	45
	1/2	2	1705	0.0050	0.0050	0.0050	0.417	15620	156	45

X-Generation Long Length NX-S

HSS | Favora® | Base-X | X-Generation

III

HM MG10	Helix 30° Rake 5°



Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC				Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1 e6	d2 h6	d3	l1	l2	l3	radius f8	draft ∠	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** TiAlCrN										
P5822188	1/8	1/4	0.115	4	1/8	3/8	1/16	6°	2	$63.10	
P5822252	3/16	1/4	0.175	4	3/16	9/16	3/32	3°	2	$63.10	
P5822312	1/4	1/4	0.230	6	1/4	3/4	1/8	—	2	$63.10	•
P5822432	3/8	3/8	0.345	6	3/8	1 1/8	3/16	—	2	$114.50	•
P5822530	1/2	1/2	0.460	6	1/2	1 1/2	1/4	—	2	$161.70	•

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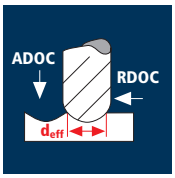
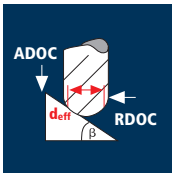


Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/32	2	655	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	655	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	655	0.0025	0.0038	0.0062	0.043	58185	291	0.0069
	3/16	2	655	0.0037	0.0056	0.0094	0.064	39095	289	0.0152
	1/4	2	655	0.0037	0.0075	0.0125	0.085	29435	218	0.0204
	5/16	2	655	0.0047	0.0094	0.0172	0.107	23385	220	0.0356
	3/8	2	655	0.0056	0.0112	0.0203	0.128	19545	219	0.0498
	1/2	2	655	0.0050	0.0150	0.0272	0.171	14630	146	0.0596
	5/8	2	655	0.0062	0.0187	0.0335	0.213	11745	146	0.0915
Steel 48 - 52 HRC	1/32	2	525	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	525	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	525	0.0025	0.0038	0.0062	0.043	46640	233	0.0055
	3/16	2	525	0.0037	0.0056	0.0094	0.064	31335	232	0.0122
	1/4	2	525	0.0037	0.0075	0.0125	0.085	23595	175	0.0164
	5/16	2	525	0.0047	0.0094	0.0172	0.107	18740	176	0.0285
	3/8	2	525	0.0056	0.0112	0.0203	0.128	15665	175	0.0389
	1/2	2	525	0.0050	0.0150	0.0272	0.171	11730	117	0.0477
	5/8	2	525	0.0062	0.0187	0.0335	0.213	9415	117	0.0733
Steel 52 - 56 HRC	1/32	2	425	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	425	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	425	0.0025	0.0038	0.0062	0.043	37755	189	0.0045
	3/16	2	425	0.0037	0.0056	0.0094	0.064	25365	188	0.0099
	1/4	2	425	0.0037	0.0075	0.0125	0.085	19100	141	0.0132
	5/16	2	425	0.0047	0.0094	0.0172	0.107	15170	143	0.0231
	3/8	2	425	0.0056	0.0112	0.0203	0.128	12685	142	0.0323
	1/2	2	425	0.0050	0.0150	0.0272	0.171	9495	95	0.0388
	5/8	2	425	0.0062	0.0187	0.0335	0.213	7620	94	0.0589
Cast Iron	1/32	2	820	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	820	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	820	0.0025	0.0038	0.0062	0.043	60000	300	0.0071
	3/16	2	820	0.0037	0.0056	0.0094	0.064	48940	362	0.0191
	1/4	2	820	0.0037	0.0075	0.0125	0.085	36850	273	0.0256
	5/16	2	820	0.0047	0.0094	0.0172	0.107	29275	275	0.0445
	3/8	2	820	0.0056	0.0112	0.0203	0.128	24470	274	0.0623
	1/2	2	820	0.0050	0.0150	0.0272	0.171	18320	183	0.0747
	5/8	2	820	0.0062	0.0187	0.0335	0.213	14705	182	0.1140

5886



Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Steel 42 - 48 HRC	1/32	2	1410	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1410	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1410	0.0019	0.0015	0.0019	0.106	50810	193	45
	3/16	2	1410	0.0028	0.0023	0.0028	0.159	33875	190	45
	1/4	2	1410	0.0025	0.0030	0.0025	0.211	25525	128	45
	5/16	2	1410	0.0031	0.0038	0.0031	0.264	20400	126	45
	3/8	2	1410	0.0037	0.0045	0.0037	0.317	16990	126	45
	1/2	2	1410	0.0025	0.0060	0.0025	0.422	12765	64	45
	5/8	2	1410	0.0031	0.0075	0.0031	0.528	10200	63	45
Steel 48 - 52 HRC	1/32	2	1245	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1245	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1245	0.0019	0.0015	0.0019	0.106	44865	170	45
	3/16	2	1245	0.0028	0.0023	0.0028	0.159	29910	167	45
	1/4	2	1245	0.0025	0.0030	0.0025	0.211	22540	113	45
	5/16	2	1245	0.0031	0.0038	0.0031	0.264	18015	112	45
	3/8	2	1245	0.0037	0.0045	0.0037	0.317	15000	111	45
	1/2	2	1245	0.0025	0.0060	0.0025	0.422	11270	56	45
	5/8	2	1245	0.0031	0.0075	0.0031	0.528	9005	56	45
Steel 52 - 56 HRC	1/32	2	985	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	985	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	985	0.0019	0.0015	0.0019	0.106	35495	135	45
	3/16	2	985	0.0028	0.0023	0.0028	0.159	23665	133	45
	1/4	2	985	0.0025	0.0030	0.0025	0.211	17830	89	45
	5/16	2	985	0.0031	0.0038	0.0031	0.264	14250	88	45
	3/8	2	985	0.0037	0.0045	0.0037	0.317	11870	88	45
	1/2	2	985	0.0025	0.0060	0.0025	0.422	8915	45	45
	5/8	2	985	0.0031	0.0075	0.0031	0.528	7125	44	45
Cast Iron	1/32	2	1870	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1870	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1870	0.0019	0.0015	0.0019	0.106	60000	228	45
	3/16	2	1870	0.0028	0.0023	0.0028	0.159	44925	252	45
	1/4	2	1870	0.0025	0.0030	0.0025	0.211	33855	169	45
	5/16	2	1870	0.0031	0.0038	0.0031	0.264	27055	168	45
	3/8	2	1870	0.0037	0.0045	0.0037	0.317	22535	167	45
	1/2	2	1870	0.0025	0.0060	0.0025	0.422	16925	85	45
	5/8	2	1870	0.0031	0.0075	0.0031	0.528	13530	84	45

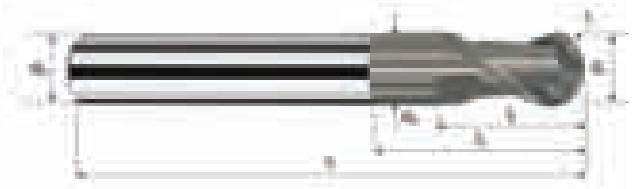
Base-X Standard Reach Sphericut

HSS | Favora® | Base-X **B** | X-Generation

III

MG Plus

Helix **30°**
Rake **-10°**



Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC				

dimensions tolerances	d1 e6	d2 h6	d3	l1	l2	l3	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN										
D5886079	1/32	1/8	0.027	2 1/2	1/32	3/32	1/64	6°	2	$52.20	
D5886123	1/16	1/8	0.053	2 1/2	1/16	3/16	1/32	4°	2	$52.20	
D5886124	1/16	1/4	0.053	2 1/2	1/16	3/16	1/32	6°	2	$52.20	
D5886128	1/16	1/4	0.053	2	1/16	3/16	1/32	6°	2	$52.20	
D5886136	5/64	1/8	0.067	2	1/8	3/16	5/128	4°	2	$52.20	
D5886186	1/8	1/8	0.115	3	1/8	3/8	1/16	—	2	$52.20	
D5886188	1/8	1/4	0.115	3	1/8	3/8	1/16	3°	2	$52.20	
D5886192	1/8	1/4	0.115	2 1/4	1/8	3/8	1/16	5°	2	$52.20	
D5886246	3/16	3/16	0.175	3	3/16	9/16	3/32	—	2	$52.20	
D5886248	3/16	1/4	0.175	3	3/16	9/16	3/32	2°	2	$52.20	
D5886252	3/16	1/4	0.175	2 1/4	3/16	9/16	3/32	3°	2	$52.20	
D5886312	1/4	1/4	0.230	3	1/4	1 1/2	1/8	—	2	$52.20	•
D5886316	1/4	1/4	0.230	2 1/4	1/4	3/4	1/8	—	2	$52.20	•
D5886372	5/16	5/16	0.285	3	5/16	2	5/32	—	2	$78.50	•
D5886432	3/8	3/8	0.345	3 1/2	3/8	2 1/4	3/16	—	2	$98.50	•
D5886436	3/8	3/8	0.345	2 1/2	3/8	1 1/4	3/16	—	2	$98.50	•
D5886530	1/2	1/2	0.460	4	1/2	2 1/2	1/4	—	2	$140.60	•
D5886534	1/2	1/2	0.460	3	1/2	1 1/2	1/4	—	2	$140.60	•
D5886591	5/8	5/8	0.575	4 1/2	5/8	2 1/4	5/16	—	2	$226.00	•

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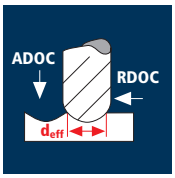

Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/32	2	655	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	655	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	655	0.0025	0.0038	0.0062	0.043	58185	291	0.0069
	3/16	2	655	0.0037	0.0056	0.0094	0.064	39095	289	0.0152
	1/4	2	655	0.0037	0.0075	0.0125	0.085	29435	218	0.0204
	5/16	2	655	0.0047	0.0094	0.0172	0.107	23385	220	0.0356
	3/8	2	655	0.0056	0.0112	0.0203	0.128	19545	219	0.0498
	1/2	2	655	0.0050	0.0150	0.0272	0.171	14630	146	0.0596
	5/8	2	655	0.0062	0.0187	0.0335	0.213	11745	146	0.0915
Steel 48 - 52 HRC	1/32	2	525	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	525	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	525	0.0025	0.0038	0.0062	0.043	46640	233	0.0055
	3/16	2	525	0.0037	0.0056	0.0094	0.064	31335	232	0.0122
	1/4	2	525	0.0037	0.0075	0.0125	0.085	23595	175	0.0164
	5/16	2	525	0.0047	0.0094	0.0172	0.107	18740	176	0.0285
	3/8	2	525	0.0056	0.0112	0.0203	0.128	15665	175	0.0389
	1/2	2	525	0.0050	0.0150	0.0272	0.171	11730	117	0.0477
	5/8	2	525	0.0062	0.0187	0.0335	0.213	9415	117	0.0733
Steel 52 - 56 HRC	1/32	2	425	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	425	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	425	0.0025	0.0038	0.0062	0.043	37755	189	0.0045
	3/16	2	425	0.0037	0.0056	0.0094	0.064	25365	188	0.0099
	1/4	2	425	0.0037	0.0075	0.0125	0.085	19100	141	0.0132
	5/16	2	425	0.0047	0.0094	0.0172	0.107	15170	143	0.0231
	3/8	2	425	0.0056	0.0112	0.0203	0.128	12685	142	0.0323
	1/2	2	425	0.0050	0.0150	0.0272	0.171	9495	95	0.0388
	5/8	2	425	0.0062	0.0187	0.0335	0.213	7620	94	0.0589
Cast Iron	1/32	2	820	0.0003	0.0009	0.0018	0.010	60000	36	0.0001
	1/16	2	820	0.0012	0.0019	0.0035	0.021	60000	144	0.0010
	1/8	2	820	0.0025	0.0038	0.0062	0.043	60000	300	0.0071
	3/16	2	820	0.0037	0.0056	0.0094	0.064	48940	362	0.0191
	1/4	2	820	0.0037	0.0075	0.0125	0.085	36850	273	0.0256
	5/16	2	820	0.0047	0.0094	0.0172	0.107	29275	275	0.0445
	3/8	2	820	0.0056	0.0112	0.0203	0.128	24470	274	0.0623
	1/2	2	820	0.0050	0.0150	0.0272	0.171	18320	183	0.0747
	5/8	2	820	0.0062	0.0187	0.0335	0.213	14705	182	0.1140

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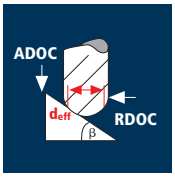


Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Steel 42 - 48 HRC	1/32	2	1410	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1410	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1410	0.0019	0.0015	0.0019	0.106	50810	193	45
	3/16	2	1410	0.0028	0.0023	0.0028	0.159	33875	190	45
	1/4	2	1410	0.0025	0.0030	0.0025	0.211	25525	128	45
	5/16	2	1410	0.0031	0.0038	0.0031	0.264	20400	126	45
	3/8	2	1410	0.0037	0.0045	0.0037	0.317	16990	126	45
	1/2	2	1410	0.0025	0.0060	0.0025	0.422	12765	64	45
	5/8	2	1410	0.0031	0.0075	0.0031	0.528	10200	63	45
Steel 48 - 52 HRC	1/32	2	1245	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1245	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1245	0.0019	0.0015	0.0019	0.106	44865	170	45
	3/16	2	1245	0.0028	0.0023	0.0028	0.159	29910	167	45
	1/4	2	1245	0.0025	0.0030	0.0025	0.211	22540	113	45
	5/16	2	1245	0.0031	0.0038	0.0031	0.264	18015	112	45
	3/8	2	1245	0.0037	0.0045	0.0037	0.317	15000	111	45
	1/2	2	1245	0.0025	0.0060	0.0025	0.422	11270	56	45
	5/8	2	1245	0.0031	0.0075	0.0031	0.528	9005	56	45
Steel 52 - 56 HRC	1/32	2	985	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	985	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	985	0.0019	0.0015	0.0019	0.106	35495	135	45
	3/16	2	985	0.0028	0.0023	0.0028	0.159	23665	133	45
	1/4	2	985	0.0025	0.0030	0.0025	0.211	17830	89	45
	5/16	2	985	0.0031	0.0038	0.0031	0.264	14250	88	45
	3/8	2	985	0.0037	0.0045	0.0037	0.317	11870	88	45
	1/2	2	985	0.0025	0.0060	0.0025	0.422	8915	45	45
	5/8	2	985	0.0031	0.0075	0.0031	0.528	7125	44	45
Cast Iron	1/32	2	1870	0.0003	0.0004	0.0003	0.026	60000	36	45
	1/16	2	1870	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1870	0.0019	0.0015	0.0019	0.106	60000	228	45
	3/16	2	1870	0.0028	0.0023	0.0028	0.159	44925	252	45
	1/4	2	1870	0.0025	0.0030	0.0025	0.211	33855	169	45
	5/16	2	1870	0.0031	0.0038	0.0031	0.264	27055	168	45
	3/8	2	1870	0.0037	0.0045	0.0037	0.317	22535	167	45
	1/2	2	1870	0.0025	0.0060	0.0025	0.422	16925	85	45
	5/8	2	1870	0.0031	0.0075	0.0031	0.528	13530	84	45

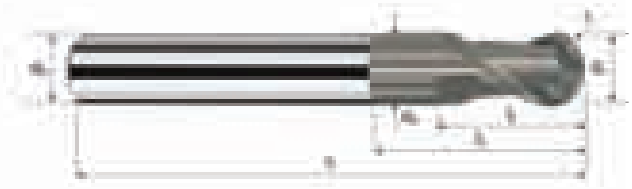
Base-X Standard Reach Sphericut

HSS | Favora® | Base-X **B** | X-Generation

III

MG Plus

Helix **30°**
Rake **-10°**



Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC				

dimensions tolerances	d1 e6	d2 h6	d3	l1	l2	l3	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN										
U5886079	1/32	1/8	0.027	2 1/2	1/32	3/32	1/64	6°	2	$52.20	
U5886123	1/16	1/8	0.053	2 1/2	1/16	3/16	1/32	4°	2	$52.20	
U5886124	1/16	1/4	0.053	2 1/2	1/16	3/16	1/32	6°	2	$52.20	
U5886128	1/16	1/4	0.053	2	1/16	3/16	1/32	6°	2	$52.20	
U5886136	5/64	1/8	0.067	2	1/8	3/16	5/128	4°	2	$52.20	
U5886186	1/8	1/8	0.115	3	1/8	3/8	1/16	—	2	$52.20	
U5886188	1/8	1/4	0.115	3	1/8	3/8	1/16	3°	2	$52.20	
U5886192	1/8	1/4	0.115	2 1/4	1/8	3/8	1/16	5°	2	$52.20	
U5886246	3/16	3/16	0.175	3	3/16	9/16	3/32	—	2	$52.20	
U5886248	3/16	1/4	0.175	3	3/16	9/16	3/32	2°	2	$52.20	
U5886252	3/16	1/4	0.175	2 1/4	3/16	9/16	3/32	3°	2	$52.20	
U5886312	1/4	1/4	0.230	3	1/4	1 1/2	1/8	—	2	$52.20	•
U5886316	1/4	1/4	0.230	2 1/4	1/4	3/4	1/8	—	2	$52.20	•
U5886372	5/16	5/16	0.285	3	5/16	2	5/32	—	2	$78.50	•
U5886432	3/8	3/8	0.345	3 1/2	3/8	2 1/4	3/16	—	2	$98.50	•
U5886436	3/8	3/8	0.345	2 1/2	3/8	1 1/4	3/16	—	2	$98.50	•
U5886530	1/2	1/2	0.460	4	1/2	2 1/2	1/4	—	2	$140.60	•
U5886534	1/2	1/2	0.460	3	1/2	1 1/2	1/4	—	2	$140.60	•
U5886591	5/8	5/8	0.575	4 1/2	5/8	2 1/4	5/16	—	2	$226.00	•

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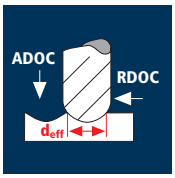

Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/32	2	655	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	655	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	655	0.0025	0.0025	0.0079	0.035	60000	300	0.0059
	3/16	2	655	0.0037	0.0038	0.0142	0.053	47210	349	0.0188
	1/4	2	655	0.0037	0.0050	0.0170	0.070	35745	265	0.0225
	5/16	2	655	0.0047	0.0063	0.0239	0.088	28430	267	0.0402
	3/8	2	655	0.0056	0.0075	0.0266	0.105	28430	267	0.0533
	1/2	2	655	0.0050	0.0100	0.0393	0.104	17870	179	0.0703
Steel 48 - 52 HRC	1/32	2	525	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	525	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	525	0.0025	0.0025	0.0079	0.035	57300	287	0.0057
	3/16	2	525	0.0037	0.0038	0.0142	0.053	37840	280	0.0151
	1/4	2	525	0.0037	0.0050	0.0170	0.070	28650	212	0.0180
	5/16	2	525	0.0047	0.0063	0.0239	0.088	22790	214	0.0322
	3/8	2	525	0.0056	0.0075	0.0266	0.105	19100	214	0.0427
	1/2	2	525	0.0050	0.0100	0.0393	0.104	14325	143	0.0562
Steel 52 - 56 HRC	1/32	2	425	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	425	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	425	0.0025	0.0025	0.0079	0.035	46385	232	0.0046
	3/16	2	425	0.0037	0.0038	0.0142	0.053	30630	227	0.0122
	1/4	2	425	0.0037	0.0050	0.0170	0.070	23190	172	0.0146
	5/16	2	425	0.0047	0.0063	0.0239	0.088	18450	173	0.0260
	3/8	2	425	0.0056	0.0075	0.0266	0.105	15460	173	0.0345
	1/2	2	425	0.0050	0.0100	0.0393	0.104	11595	116	0.0456
Cast Iron	1/32	2	820	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	820	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	820	0.0025	0.0025	0.0079	0.035	60000	300	0.0059
	3/16	2	820	0.0037	0.0038	0.0142	0.053	59100	437	0.0236
	1/4	2	820	0.0037	0.0050	0.0170	0.070	44745	331	0.0281
	5/16	2	820	0.0047	0.0063	0.0239	0.088	35595	335	0.0504
	3/8	2	820	0.0056	0.0075	0.0266	0.105	29830	334	0.0666
	1/2	2	820	0.0050	0.0100	0.0393	0.104	22375	224	0.0880

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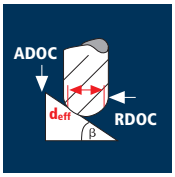

Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Steel 42 - 48 HRC	1/32	2	1410	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	1410	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	1410	0.0019	0.0013	0.0019	0.104	51790	197	45
	3/16	2	1410	0.0028	0.0019	0.0028	0.156	34525	193	45
	1/4	2	1410	0.0025	0.0025	0.0025	0.208	25895	129	45
	5/16	2	1410	0.0031	0.0031	0.0031	0.260	20715	128	45
	3/8	2	1410	0.0037	0.0038	0.0037	0.313	17210	127	45
	1/2	2	1410	0.0025	0.0050	0.0025	0.417	12915	65	45
Steel 48 - 52 HRC	1/32	2	1245	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	1245	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	1245	0.0019	0.0013	0.0019	0.104	45730	174	45
	3/16	2	1245	0.0028	0.0019	0.0028	0.156	30485	171	45
	1/4	2	1245	0.0025	0.0025	0.0025	0.208	22865	114	45
	5/16	2	1245	0.0031	0.0031	0.0031	0.260	18290	113	45
	3/8	2	1245	0.0037	0.0038	0.0037	0.313	15195	112	45
	1/2	2	1245	0.0025	0.0050	0.0025	0.417	11405	57	45
Steel 48 - 52 HRC	1/32	2	985	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	985	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	985	0.0019	0.0013	0.0019	0.104	36180	137	45
	3/16	2	985	0.0028	0.0019	0.0028	0.156	24120	135	45
	1/4	2	985	0.0025	0.0025	0.0025	0.208	18090	90	45
	5/16	2	985	0.0031	0.0031	0.0031	0.260	14470	90	45
	3/8	2	985	0.0037	0.0038	0.0037	0.313	12020	89	45
	1/2	2	985	0.0025	0.0050	0.0025	0.417	9025	45	45
Cast Iron	1/32	2	1870	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	1870	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	1870	0.0019	0.0013	0.0019	0.104	60000	228	45
	3/16	2	1870	0.0028	0.0019	0.0028	0.156	45790	256	45
	1/4	2	1870	0.0025	0.0025	0.0025	0.208	34040	172	45
	5/16	2	1870	0.0031	0.0031	0.0031	0.260	27475	170	45
	3/8	2	1870	0.0037	0.0038	0.0037	0.313	22820	169	45
	1/2	2	1870	0.0025	0.0050	0.0025	0.417	17130	86	45

Base-X Standard Length Sphericut

HSS | Favora® | Base-X | B | X-Generation

III

MG Plus

Helix **30°**
Rake **-10°**

Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC				

dimensions tolerances	d1 e6	d2 h6	l1	l2	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN								
D5887079	1/32	1/8	2 1/4	1/32	1/64	11°	2	$51.40	
D5887124	1/16	1/8	2 1/4	1/16	1/32	9°	2	$51.40	
D5887188	1/8	1/8	2 1/4	1/8	1/16	—	2	$51.40	
D5887248	3/16	3/16	2 1/4	3/16	3/32	—	2	$51.40	
D5887312	1/4	1/4	2 1/2	1/4	1/8	—	2	$51.40	•
D5887372	5/16	5/16	2 1/2	5/16	5/32	—	2	$73.40	•
D5887432	3/8	3/8	3	3/8	3/16	—	2	$95.50	•
D5887530	1/2	1/2	3 1/4	1/2	1/4	—	2	$129.30	•

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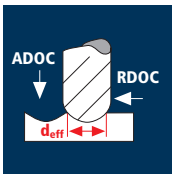

Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/32	2	655	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	655	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	655	0.0025	0.0025	0.0079	0.035	60000	300	0.0059
	3/16	2	655	0.0037	0.0038	0.0142	0.053	47210	349	0.0188
	1/4	2	655	0.0037	0.0050	0.0170	0.070	35745	265	0.0225
	5/16	2	655	0.0047	0.0063	0.0239	0.088	28430	267	0.0402
	3/8	2	655	0.0056	0.0075	0.0266	0.105	28430	267	0.0533
	1/2	2	655	0.0050	0.0100	0.0393	0.104	17870	179	0.0703
Steel 48 - 52 HRC	1/32	2	525	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	525	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	525	0.0025	0.0025	0.0079	0.035	57300	287	0.0057
	3/16	2	525	0.0037	0.0038	0.0142	0.053	37840	280	0.0151
	1/4	2	525	0.0037	0.0050	0.0170	0.070	28650	212	0.0180
	5/16	2	525	0.0047	0.0063	0.0239	0.088	22790	214	0.0322
	3/8	2	525	0.0056	0.0075	0.0266	0.105	19100	214	0.0427
	1/2	2	525	0.0050	0.0100	0.0393	0.104	14325	143	0.0562
Steel 52 - 56 HRC	1/32	2	425	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	425	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	425	0.0025	0.0025	0.0079	0.035	46385	232	0.0046
	3/16	2	425	0.0037	0.0038	0.0142	0.053	30630	227	0.0122
	1/4	2	425	0.0037	0.0050	0.0170	0.070	23190	172	0.0146
	5/16	2	425	0.0047	0.0063	0.0239	0.088	18450	173	0.0260
	3/8	2	425	0.0056	0.0075	0.0266	0.105	15460	173	0.0345
	1/2	2	425	0.0050	0.0100	0.0393	0.104	11595	116	0.0456
Cast Iron	1/32	2	820	0.0004	0.0006	0.0020	0.009	60000	48	0.0001
	1/16	2	820	0.0012	0.0013	0.0039	0.018	60000	144	0.0007
	1/8	2	820	0.0025	0.0025	0.0079	0.035	60000	300	0.0059
	3/16	2	820	0.0037	0.0038	0.0142	0.053	59100	437	0.0236
	1/4	2	820	0.0037	0.0050	0.0170	0.070	44745	331	0.0281
	5/16	2	820	0.0047	0.0063	0.0239	0.088	35595	335	0.0504
	3/8	2	820	0.0056	0.0075	0.0266	0.105	29830	334	0.0666
	1/2	2	820	0.0050	0.0100	0.0393	0.104	22375	224	0.0880

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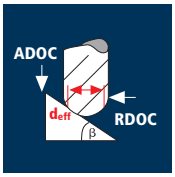


Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Steel 42 - 48 HRC	1/32	2	1410	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	1410	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	1410	0.0019	0.0013	0.0019	0.104	51790	197	45
	3/16	2	1410	0.0028	0.0019	0.0028	0.156	34525	193	45
	1/4	2	1410	0.0025	0.0025	0.0025	0.208	25895	129	45
	5/16	2	1410	0.0031	0.0031	0.0031	0.260	20715	128	45
	3/8	2	1410	0.0037	0.0038	0.0037	0.313	17210	127	45
	1/2	2	1410	0.0025	0.0050	0.0025	0.417	12915	65	45
Steel 48 - 52 HRC	1/32	2	1245	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	1245	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	1245	0.0019	0.0013	0.0019	0.104	45730	174	45
	3/16	2	1245	0.0028	0.0019	0.0028	0.156	30485	171	45
	1/4	2	1245	0.0025	0.0025	0.0025	0.208	22865	114	45
	5/16	2	1245	0.0031	0.0031	0.0031	0.260	18290	113	45
	3/8	2	1245	0.0037	0.0038	0.0037	0.313	15195	112	45
	1/2	2	1245	0.0025	0.0050	0.0025	0.417	11405	57	45
Steel 48 - 52 HRC	1/32	2	985	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	985	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	985	0.0019	0.0013	0.0019	0.104	36180	137	45
	3/16	2	985	0.0028	0.0019	0.0028	0.156	24120	135	45
	1/4	2	985	0.0025	0.0025	0.0025	0.208	18090	90	45
	5/16	2	985	0.0031	0.0031	0.0031	0.260	14470	90	45
	3/8	2	985	0.0037	0.0038	0.0037	0.313	12020	89	45
	1/2	2	985	0.0025	0.0050	0.0025	0.417	9025	45	45
Cast Iron	1/32	2	1870	0.0001	0.0003	0.0004	0.026	60000	48	45
	1/16	2	1870	0.0010	0.0006	0.0010	0.052	60000	120	45
	1/8	2	1870	0.0019	0.0013	0.0019	0.104	60000	228	45
	3/16	2	1870	0.0028	0.0019	0.0028	0.156	45790	256	45
	1/4	2	1870	0.0025	0.0025	0.0025	0.208	34040	172	45
	5/16	2	1870	0.0031	0.0031	0.0031	0.260	27475	170	45
	3/8	2	1870	0.0037	0.0038	0.0037	0.313	22820	169	45
	1/2	2	1870	0.0025	0.0050	0.0025	0.417	17130	86	45

Base-X Standard Length Sphericut

HSS | Favora® | Base-X **B** | X-Generation

III

MG Plus

Helix **30°**
Rake **-10°**

Performance roughing

Performance finishing

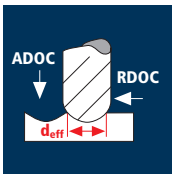
Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC				

dimensions tolerances	d1	d2 h6	l1	l2	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN								
U5887079	1/32	1/8	2 1/4	1/32	1/64	11°	2	$51.40	
U5887124	1/16	1/8	2 1/4	1/16	1/32	9°	2	$51.40	
U5887188	1/8	1/8	2 1/4	1/8	1/16	—	2	$51.40	
U5887248	3/16	3/16	2 1/4	3/16	3/32	—	2	$51.40	
U5887312	1/4	1/4	2 1/2	1/4	1/8	—	2	$51.40	•
U5887372	5/16	5/16	2 1/2	5/16	5/32	—	2	$73.40	•
U5887432	3/8	3/8	3	3/8	3/16	—	2	$95.50	•
U5887530	1/2	1/2	3 1/4	1/2	1/4	—	2	$129.30	•

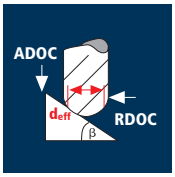
5885



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Steel 42 - 48 HRC	1/8	2	440	0.0019	0.0025	0.010	13450	50	0.0012
	3/16	2	440	0.0028	0.0038	0.015	8970	50	0.0027
	1/4	2	440	0.0037	0.0050	0.020	6730	50	0.0049
	5/16	2	440	0.0046	0.0063	0.025	5380	50	0.0076
	3/8	2	440	0.0056	0.0075	0.029	4490	50	0.0110
	1/2	2	440	0.0074	0.0100	0.039	3370	50	0.0196
Steel 48 - 52 HRC	1/8	2	350	0.0019	0.0025	0.010	10700	40	0.0010
	3/16	2	350	0.0028	0.0038	0.015	7140	40	0.0022
	1/4	2	350	0.0037	0.0050	0.020	5350	40	0.0039
	5/16	2	350	0.0046	0.0063	0.025	4280	40	0.0061
	3/8	2	350	0.0056	0.0075	0.029	3570	40	0.0087
	1/2	2	350	0.0074	0.0100	0.039	2680	40	0.0156
Steel 52 - 56 HRC	1/8	2	285	0.0019	0.0025	0.010	8710	33	0.0008
	3/16	2	285	0.0028	0.0038	0.015	5810	33	0.0018
	1/4	2	285	0.0037	0.0050	0.020	4360	33	0.0032
	5/16	2	285	0.0046	0.0063	0.025	3490	33	0.0049
	3/8	2	285	0.0056	0.0075	0.029	2910	33	0.0071
	1/2	2	285	0.0074	0.0100	0.039	2180	33	0.0127
Cast Iron	1/8	2	545	0.0019	0.0025	0.010	16660	62	0.0015
	3/16	2	545	0.0028	0.0038	0.015	11110	62	0.0034
	1/4	2	545	0.0037	0.0050	0.020	8330	62	0.0061
	5/16	2	545	0.0046	0.0063	0.025	6670	62	0.0095
	3/8	2	545	0.0056	0.0075	0.029	5560	62	0.0136
	1/2	2	545	0.0074	0.0100	0.039	4170	62	0.0242

5885



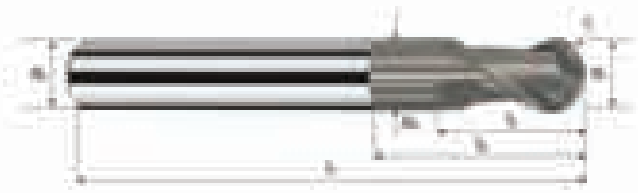
Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel 42 - 48 HRC	1/8	2	940	0.0013	0.0013	0.0006	28730	72
	3/16	2	940	0.0019	0.0019	0.0009	19160	72
	1/4	2	940	0.0025	0.0025	0.0013	14370	72
	5/16	2	940	0.0031	0.0031	0.0016	11500	72
	3/8	2	940	0.0038	0.0038	0.0019	9580	72
	1/2	2	940	0.0050	0.0050	0.0025	7190	72
Steel 48 - 52 HRC	1/8	2	830	0.0013	0.0013	0.0006	25370	64
	3/16	2	830	0.0019	0.0019	0.0009	16910	64
	1/4	2	830	0.0025	0.0025	0.0013	12690	64
	5/16	2	830	0.0031	0.0031	0.0016	10150	64
	3/8	2	830	0.0038	0.0038	0.0019	8460	64
	1/2	2	830	0.0050	0.0050	0.0025	6350	64
Steel 48 - 52 HRC	1/8	2	660	0.0013	0.0013	0.0006	20170	51
	3/16	2	660	0.0019	0.0019	0.0009	13450	51
	1/4	2	660	0.0025	0.0025	0.0013	10090	51
	5/16	2	660	0.0031	0.0031	0.0016	8070	51
	3/8	2	660	0.0038	0.0038	0.0019	6730	51
	1/2	2	660	0.0050	0.0050	0.0025	5050	51
Cast Iron	1/8	2	1250	0.0013	0.0013	0.0006	38200	96
	3/16	2	1250	0.0019	0.0019	0.0009	25470	96
	1/4	2	1250	0.0025	0.0025	0.0013	19100	96
	5/16	2	1250	0.0031	0.0031	0.0016	15280	96
	3/8	2	1250	0.0038	0.0038	0.0019	12740	96
	1/2	2	1250	0.0050	0.0050	0.0025	9550	96

HSS | Favora® | Base-X | B | X-Generation

HM MG10

Helix **30°**
Rake **-10°**



new!

III

Performance roughing

Performance finishing

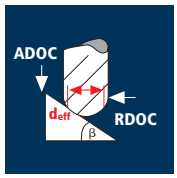
Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC				

dimensions tolerances	d1 e6	d2 h6	l1	l2	fl	List Price	ReTool®
Order #	Coating: **POLYCHROM** TiAlCrN						
P5885188	1/8	1/8	2 1/4	1/8	2	$35.60	
P5885252	3/16	3/16	2 1/4	3/16	2	$35.60	
P5885312	1/4	1/4	2 1/2	1/4	2	$35.60	
P5885372	5/16	5/16	2 1/2	5/16	2	$50.90	
P5885432	3/8	3/8	3	3/8	2	$66.20	
P5885530	1/2	1/2	3 1/4	1/2	2	$89.60	

5844



Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Steel up to 24 HRC	1/8	4	560	0.0004	0.125	0.006	17115	27
	3/16	4	560	0.0006	0.188	0.009	11410	27
	1/4	4	560	0.0008	0.250	0.012	8555	27
	5/16	4	560	0.0010	0.313	0.016	6845	27
	3/8	4	560	0.0013	0.375	0.019	5705	30
	1/2	4	560	0.0017	0.500	0.025	4280	29
	5/8	4	560	0.0021	0.625	0.031	3425	29
	3/4	4	560	0.0024	0.750	0.037	2850	27
Steel 24 - 34 HRC	1/8	4	360	0.0004	0.125	0.006	11000	18
	3/16	4	360	0.0006	0.188	0.009	7335	18
	1/4	4	360	0.0008	0.250	0.012	5500	18
	5/16	4	360	0.0010	0.313	0.016	4400	18
	3/8	4	360	0.0013	0.375	0.019	3665	18
	1/2	4	360	0.0017	0.500	0.025	2750	18
	5/8	4	360	0.0021	0.625	0.031	2200	18
	3/4	4	360	0.0024	0.750	0.037	1835	18
Steel 34 - 42 HRC	1/8	4	260	0.0004	0.125	0.006	7945	13
	3/16	4	260	0.0006	0.188	0.009	5295	13
	1/4	4	260	0.0008	0.250	0.012	3975	13
	5/16	4	260	0.0010	0.313	0.016	3180	13
	3/8	4	260	0.0013	0.375	0.019	2650	14
	1/2	4	260	0.0017	0.500	0.025	1985	13
	5/8	4	260	0.0021	0.625	0.031	1590	13
	3/4	4	260	0.0024	0.750	0.037	1325	13
Cold Work Tool Steel (12% Cr) High Alloyed Stainless Steel [Cr-Ni/304]	1/8	4	230	0.0004	0.125	0.006	7030	11
	3/16	4	230	0.0006	0.188	0.009	4685	11
	1/4	4	230	0.0008	0.250	0.012	3515	11
	5/16	4	230	0.0010	0.313	0.016	2810	11
	3/8	4	230	0.0013	0.375	0.019	2345	12
	1/2	4	230	0.0017	0.500	0.025	1755	12
	5/8	4	230	0.0021	0.625	0.031	1405	12
	3/4	4	230	0.0024	0.750	0.037	1170	11

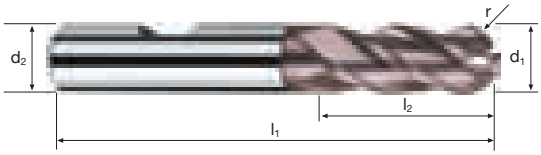
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]
Cast Iron	1/8	4	425	0.0004	0.125	0.006	12985	21
	3/16	4	425	0.0006	0.187	0.009	8660	21
	1/4	4	425	0.0008	0.248	0.013	6495	21
	5/16	4	425	0.0010	0.310	0.016	5195	21
	3/8	4	425	0.0013	0.374	0.019	4330	23
	1/2	4	425	0.0017	0.497	0.025	3245	22
	5/8	4	425	0.0021	0.619	0.031	2595	22
	3/4	4	425	0.0024	0.746	0.038	2165	21
Unalloyed Copper	1/8	4	755	0.0004	0.125	0.006	23070	37
	3/16	4	755	0.0006	0.187	0.009	15380	37
	1/4	4	755	0.0008	0.248	0.013	11535	37
	5/16	4	755	0.0010	0.310	0.016	9230	37
	3/8	4	755	0.0013	0.374	0.019	7690	40
	1/2	4	755	0.0017	0.497	0.025	5770	39
	5/8	4	755	0.0021	0.619	0.031	4615	39
	3/4	4	755	0.0024	0.746	0.038	3845	37
Titanium Alloys up to 300 HB [Ti5Al2.5Sn]	1/8	4	260	0.0004	0.125	0.006	7945	13
	3/16	4	260	0.0006	0.187	0.009	5295	13
	1/4	4	260	0.0008	0.248	0.013	3975	13
	5/16	4	260	0.0010	0.310	0.016	3180	13
	3/8	4	260	0.0013	0.374	0.019	2650	14
	1/2	4	260	0.0017	0.497	0.025	1985	13
	5/8	4	260	0.0021	0.619	0.031	1590	13
	3/4	4	260	0.0024	0.746	0.038	1325	13
Heat Resistant Steel [17-4 PH]	1/8	4	130	0.0004	0.125	0.006	3975	6
	3/16	4	130	0.0006	0.187	0.009	2650	6
	1/4	4	130	0.0008	0.248	0.013	1985	6
	5/16	4	130	0.0010	0.310	0.016	1590	6
	3/8	4	130	0.0013	0.374	0.019	1325	7
	1/2	4	130	0.0017	0.497	0.025	995	7
	5/8	4	130	0.0021	0.619	0.031	795	7
	3/4	4	130	0.0024	0.746	0.038	660	6

Base-X Standard Length

HSS | Favora® | Base-X **B** | X-Generation

III

HM	Helix 30° Rake 10°



Performance roughing

Performance finishing

Machines the following materials:

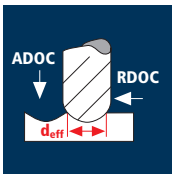
Best = Good =

Steel < 24 HRC	Steel 24 - 34 HRC	Steel 34 - 42 HRC					Stainless	Titanium	Nickel Alloys

dimensions tolerances	d1	d2 h6	l1	l2	radius f8	fl	List Price	ReTool®
Order #	Coating: **UNICUT-4X** TiAlCN							
U5844188	1/8	1/8	2 1/4	1/2	1/16	4	$22.70	
U5844252	3/16	3/16	2 1/4	5/8	3/32	4	$27.90	
U5844312	1/4	1/4	2 1/2	3/4	1/8	4	$33.80	
U5844372	5/16	5/16	2 1/2	1	5/32	4	$47.40	•
U5844432	3/8	3/8	3	1	3/16	4	$57.50	•
U5844530	1/2	1/2	3 1/4	1 1/4	1/4	4	$86.90	•
U5944432*	3/8	3/8	3	1	3/16	4	$57.50	•
U5944530*	1/2	1/2	3 1/4	1 1/4	1/4	4	$86.90	•
U5944605*	5/8	5/8	3 1/2	1 1/4	5/16	4	$153.30	•
U5944652*	3/4	3/4	4	1 1/2	3/8	4	$220.80	•

*** with clamping flat**

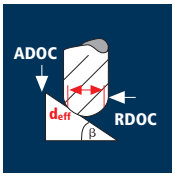
5820



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	2	590	0.0025	0.0025	0.0074	0.035	60000	300	0.006
	3/16	2	590	0.0037	0.0038	0.0118	0.053	45525	315	0.014
	1/4	2	590	0.0037	0.0050	0.0131	0.070	32195	238	0.016
	5/16	2	590	0.0047	0.0063	0.0185	0.088	25610	241	0.028
	3/8	2	590	0.0056	0.0075	0.0221	0.105	21465	240	0.040
	1/2	2	590	0.0050	0.0100	0.0319	0.140	16100	161	0.051
Hardened Tool Steel 52 - 56 HRC	1/8	2	525	0.0025	0.0025	0.0074	0.035	57300	287	0.005
	3/16	2	525	0.0037	0.0038	0.0118	0.053	37840	280	0.013
	1/4	2	525	0.0037	0.0050	0.0131	0.070	28650	212	0.014
	5/16	2	525	0.0047	0.0063	0.0185	0.088	22790	214	0.025
	3/8	2	525	0.0056	0.0075	0.0221	0.105	19100	214	0.035
	1/2	2	525	0.0050	0.0100	0.0319	0.140	14325	143	0.046
Hardened Tool Steel 56 - 60 HRC	1/8	2	330	0.0025	0.0025	0.0074	0.035	36015	180	0.003
	3/16	2	330	0.0037	0.0038	0.0118	0.053	23785	176	0.008
	1/4	2	330	0.0037	0.0050	0.0131	0.070	18010	133	0.009
	5/16	2	330	0.0047	0.0063	0.0185	0.088	14325	135	0.016
	3/8	2	330	0.0056	0.0075	0.0221	0.105	12005	134	0.022
	1/2	2	330	0.0050	0.0100	0.0319	0.140	9005	90	0.029
Hardened Tool Steel > 60 HRC	1/8	2	260	0.0025	0.0025	0.0074	0.035	28375	142	0.003
	3/16	2	260	0.0037	0.0038	0.0118	0.053	18740	139	0.006
	1/4	2	260	0.0037	0.0050	0.0131	0.070	14190	105	0.007
	5/16	2	260	0.0047	0.0063	0.0185	0.088	11285	106	0.012
	3/8	2	260	0.0056	0.0075	0.0221	0.105	9460	106	0.018
	1/2	2	260	0.0050	0.0100	0.0319	0.140	7095	71	0.023

5820



Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Hardened Tool Steel 48 - 52 HRC	1/8	2	1245	0.0019	0.0015	0.0019	0.106	44865	170	45
	3/16	2	1245	0.0028	0.0023	0.0028	0.159	29910	167	45
	1/4	2	1245	0.0025	0.0030	0.0025	0.211	22540	113	45
	5/16	2	1245	0.0031	0.0038	0.0031	0.264	18015	112	45
	3/8	2	1245	0.0037	0.0045	0.0037	0.317	15000	111	45
	1/2	2	1245	0.0025	0.0060	0.0025	0.422	11270	56	45
Hardened Tool Steel 52 - 56 HRC	1/8	2	920	0.0019	0.0015	0.0019	0.106	33155	126	45
	3/16	2	920	0.0028	0.0023	0.0028	0.159	22100	124	45
	1/4	2	920	0.0025	0.0030	0.0025	0.211	16655	83	45
	5/16	2	920	0.0031	0.0038	0.0031	0.264	13310	83	45
	3/8	2	920	0.0037	0.0045	0.0037	0.317	11085	82	45
	1/2	2	920	0.0025	0.0060	0.0025	0.422	8330	42	45
Hardened Tool Steel 56 - 60 HRC	1/8	2	525	0.0019	0.0015	0.0019	0.106	18920	72	45
	3/16	2	525	0.0028	0.0023	0.0028	0.159	12615	71	45
	1/4	2	525	0.0025	0.0030	0.0025	0.211	9505	48	45
	5/16	2	525	0.0031	0.0038	0.0031	0.264	7595	47	45
	3/8	2	525	0.0037	0.0045	0.0037	0.317	6325	47	45
	1/2	2	525	0.0025	0.0060	0.0025	0.422	4750	24	45
Hardened Tool Steel > 60 HRC	1/8	2	330	0.0019	0.0015	0.0019	0.106	11890	45	45
	3/16	2	330	0.0028	0.0023	0.0028	0.159	7930	44	45
	1/4	2	330	0.0025	0.0030	0.0025	0.211	5975	30	45
	5/16	2	330	0.0031	0.0038	0.0031	0.264	4775	30	45
	3/8	2	330	0.0037	0.0045	0.0037	0.317	3975	29	45
	1/2	2	330	0.0025	0.0060	0.0025	0.422	2985	15	45

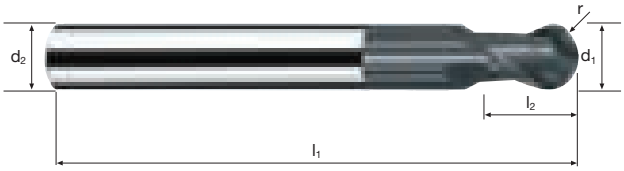
X-Generation Standard Length Sphero-XF

HSS | Favora® | Base-X | X-Generation

III

HM XA

Helix **30°**
Rake **-10°**



Performance roughing

Performance finishing

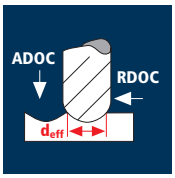
Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			

dimensions tolerances	d1 e6	d2 h6	l1	l2	radius f8	fl	List Price	ReTool®
Order #	Coating: **X-AI** TiAlN/AlCrN							
X5820186	1/8	1/8	3	1/8	1/16	2	$60.80	
X5820252	3/16	3/16	3	3/16	3/32	2	$60.80	
X5820312	1/4	1/4	4	1/4	1/8	2	$60.80	•
X5820372	5/16	5/16	4	5/16	5/32	2	$90.40	•
X5820432	3/8	3/8	4	3/8	3/16	2	$115.30	•
X5820596	1/2	1/2	4	1/2	1/4	2	$155.10	•

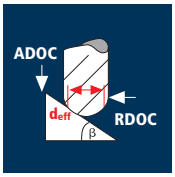
5821



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Hardened Tool Steel 48 - 52 HRC	1/8	2	590	0.0025	0.0019	0.0049	0.031	60000	300	0.003
	3/16	2	590	0.0037	0.0028	0.0081	0.045	50085	371	0.008
	1/4	2	590	0.0050	0.0038	0.0080	0.061	36945	369	0.011
	5/16	2	590	0.0047	0.0047	0.0100	0.076	29655	279	0.013
	3/8	2	590	0.0056	0.0056	0.0142	0.091	24765	277	0.022
	1/2	2	590	0.0075	0.0075	0.0184	0.122	18475	277	0.038
Hardened Tool Steel 52 - 56 HRC	1/8	2	525	0.0025	0.0019	0.0049	0.031	60000	300	0.003
	3/16	2	525	0.0037	0.0028	0.0081	0.045	44565	330	0.007
	1/4	2	525	0.0050	0.0038	0.0080	0.061	32875	329	0.010
	5/16	2	525	0.0047	0.0047	0.0100	0.076	26385	248	0.012
	3/8	2	525	0.0056	0.0056	0.0142	0.091	22040	247	0.020
	1/2	2	525	0.0075	0.0075	0.0184	0.122	16440	247	0.034
Hardened Tool Steel 56 - 60 HRC	1/8	2	330	0.0025	0.0019	0.0049	0.031	40665	203	0.002
	3/16	2	330	0.0037	0.0028	0.0081	0.045	28010	207	0.005
	1/4	2	330	0.0050	0.0038	0.0080	0.061	20665	207	0.006
	5/16	2	330	0.0047	0.0047	0.0100	0.076	16585	156	0.007
	3/8	2	330	0.0056	0.0056	0.0142	0.091	13850	155	0.012
	1/2	2	330	0.0075	0.0075	0.0184	0.122	10330	155	0.021
Hardened Tool Steel > 60 HRC	1/8	2	260	0.0025	0.0019	0.0049	0.031	32040	160	0.001
	3/16	2	260	0.0037	0.0028	0.0081	0.045	22070	163	0.004
	1/4	2	260	0.0050	0.0038	0.0080	0.061	16280	163	0.005
	5/16	2	260	0.0047	0.0047	0.0100	0.076	13070	123	0.006
	3/8	2	260	0.0056	0.0056	0.0142	0.091	10915	122	0.010
	7/16	2	260	0.0066	0.0066	0.0166	0.107	9280	122	0.013
	1/2	2	260	0.0075	0.0075	0.0184	0.122	8140	122	0.017

5821



Profile Finishing

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Hardened Tool Steel 48 - 52 HRC	1/8	2	1245	0.0019	0.0013	0.0019	0.104	45730	174	45
	3/16	2	1245	0.0028	0.0019	0.0028	0.156	30485	171	45
	1/4	2	1245	0.0037	0.0025	0.0037	0.208	22865	169	45
	5/16	2	1245	0.0037	0.0031	0.0031	0.260	18290	135	45
	3/8	2	1245	0.0037	0.0038	0.0037	0.313	15195	112	45
	1/2	2	1245	0.0050	0.0050	0.0050	0.417	11405	114	45
Hardened Tool Steel 52 - 56 HRC	1/8	2	920	0.0019	0.0013	0.0019	0.104	33790	128	45
	3/16	2	920	0.0028	0.0019	0.0028	0.156	22525	126	45
	1/4	2	920	0.0037	0.0025	0.0037	0.208	16895	125	45
	5/16	2	920	0.0037	0.0031	0.0031	0.260	13515	100	45
	3/8	2	920	0.0037	0.0038	0.0037	0.313	11230	83	45
	1/2	2	920	0.0050	0.0050	0.0050	0.417	8430	84	45
Hardened Tool Steel 56 - 60 HRC	1/8	2	525	0.0019	0.0013	0.0019	0.104	19285	73	45
	3/16	2	525	0.0028	0.0019	0.0028	0.156	12855	72	45
	1/4	2	525	0.0037	0.0025	0.0037	0.208	9640	71	45
	5/16	2	525	0.0037	0.0031	0.0031	0.260	7715	57	45
	3/8	2	525	0.0037	0.0038	0.0037	0.313	6405	47	45
	1/2	2	525	0.0050	0.0050	0.0050	0.417	4810	48	45
Hardened Tool Steel > 60 HRC	1/8	2	330	0.0019	0.0013	0.0019	0.104	12120	46	45
	3/16	2	330	0.0028	0.0019	0.0028	0.156	8080	45	45
	1/4	2	330	0.0037	0.0025	0.0037	0.208	6060	45	45
	5/16	2	330	0.0037	0.0031	0.0031	0.260	4850	36	45
	3/8	2	330	0.0037	0.0038	0.0037	0.313	4025	30	45
	1/2	2	330	0.0050	0.0050	0.0050	0.417	3025	30	45

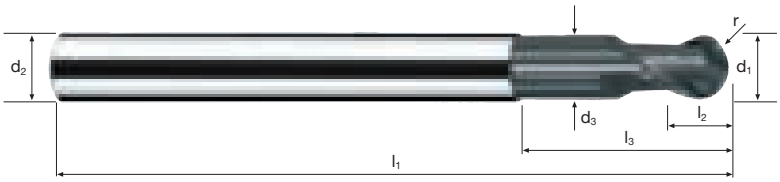
X-Generation Long Length Sphero-XF

HSS | Favora® | Base-X | X-Generation

III

HM XA

Helix **30°**
Rake **-10°**



Performance roughing

Performance finishing

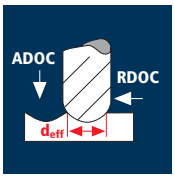
Machines the following materials:

Best = Good =

	Steel 24 - 34 HRC	Steel 34 - 42 HRC	Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			

dimensions tolerances	d1 e6	d2 h6	d3	l1	l2	l3	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **X-Al** TiAlN/AlCrN										
X5821192	1/8	1/4	0.115	4	1/8	3/8	1/16	6°	2	$64.10	
X5821252	3/16	1/4	0.175	4	3/16	9/16	3/32	3°	2	$64.10	
X5821312	1/4	1/4	0.230	6	1/4	3/4	1/8	—	2	$64.10	•
X5821372	5/16	5/16	0.288	6	5/16	15/16	5/32	—	2	$94.50	•
X5821432	3/8	3/8	0.345	6	3/8	1 1/8	3/16	—	2	$123.40	•
X5821596	1/2	1/2	0.460	6	1/2	1 1/2	1/4	—	2	$164.70	•

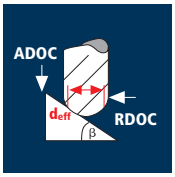
15840



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Hardened Tool Steel 48 - 52 HRC	1/8	4	1245	0.0019	0.0038	0.0016	0.096	49540	377	30
	3/16	4	1245	0.0028	0.0056	0.0024	0.143	33255	372	30
	1/4	4	1245	0.0037	0.0075	0.0022	0.191	24900	369	30
	3/8	4	1245	0.0056	0.0112	0.0041	0.287	16570	371	30
	1/2	4	1245	0.0050	0.0300	0.0044	0.426	11165	223	30
Hardened Tool Steel 52 - 56 HRC	1/8	4	920	0.0019	0.0038	0.0016	0.096	36605	278	30
	3/16	4	920	0.0028	0.0056	0.0024	0.143	24575	275	30
	1/4	4	920	0.0037	0.0075	0.0022	0.191	18400	272	30
	3/8	4	920	0.0056	0.0112	0.0041	0.287	12245	274	30
	1/2	4	920	0.0050	0.0300	0.0044	0.426	8250	165	30
Hardened Tool Steel 56 - 60 HRC	1/8	4	525	0.0019	0.0038	0.0016	0.096	20890	159	30
	3/16	4	525	0.0028	0.0056	0.0024	0.143	14025	157	30
	1/4	4	525	0.0037	0.0075	0.0022	0.191	10500	155	30
	3/8	4	525	0.0056	0.0112	0.0041	0.287	6990	157	30
	1/2	4	525	0.0050	0.0300	0.0044	0.426	4710	94	30
Hardened Tool Steel > 60 HRC	1/8	4	330	0.0019	0.0038	0.0016	0.096	13130	100	30
	3/16	4	330	0.0028	0.0056	0.0024	0.143	8815	99	30
	1/4	4	330	0.0037	0.0075	0.0022	0.191	6600	98	30
	3/8	4	330	0.0056	0.0112	0.0041	0.287	4390	98	30
	1/2	4	330	0.0050	0.0300	0.0044	0.426	2960	59	30

15840



Profile Finishing

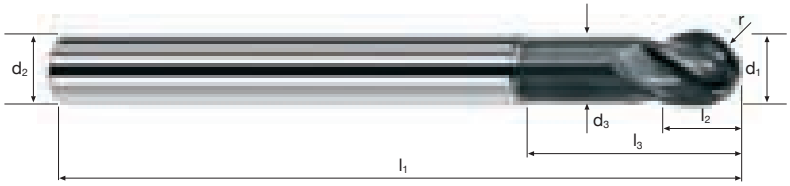
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Hardened Tool Steel 48 - 52 HRC	1/8	4	1245	0.0019	0.0038	0.0016	0.123	38665	294	60
	3/16	4	1245	0.0028	0.0056	0.0024	0.185	25705	288	60
	1/4	4	1245	0.0037	0.0075	0.0022	0.246	19330	286	60
	3/8	4	1245	0.0056	0.0112	0.0041	0.369	12890	289	60
	1/2	4	1245	0.0050	0.0300	0.0044	0.500	9510	190	60
Hardened Tool Steel 52 - 56 HRC	1/8	4	920	0.0019	0.0038	0.0016	0.123	28570	217	60
	3/16	4	920	0.0028	0.0056	0.0024	0.185	18995	213	60
	1/4	4	920	0.0037	0.0075	0.0022	0.246	14285	211	60
	3/8	4	920	0.0056	0.0112	0.0041	0.369	9525	213	60
	1/2	4	920	0.0050	0.0300	0.0044	0.500	7030	141	60
Hardened Tool Steel 56 - 60 HRC	1/8	4	525	0.0019	0.0038	0.0016	0.123	16305	124	60
	3/16	4	525	0.0028	0.0056	0.0024	0.185	10840	121	60
	1/4	4	525	0.0037	0.0075	0.0022	0.246	8150	121	60
	3/8	4	525	0.0056	0.0112	0.0041	0.369	5435	122	60
	1/2	4	525	0.0050	0.0300	0.0044	0.500	4010	80	60
Hardened Tool Steel > 60 HRC	1/8	4	330	0.0019	0.0038	0.0016	0.123	10250	78	60
	3/16	4	330	0.0028	0.0056	0.0024	0.185	6815	76	60
	1/4	4	330	0.0037	0.0075	0.0022	0.246	5125	76	60
	3/8	4	330	0.0056	0.0112	0.0041	0.369	3415	76	60
	1/2	4	330	0.0050	0.0300	0.0044	0.500	2520	50	60

X-Generation Standard Length HX-S4

HSS | Favora® | Base-X | X-Generation

III

HM XT	Helix 30° Rake -10°



Performance roughing

Performance finishing

Machines the following materials:

Best = Good =

			Steel 42 - 48 HRC	Steel 48 - 54 HRC	Steel 54 - 60 HRC	Steel > 60 HRC			Cast Iron

dimensions tolerances	d1 e6	d2 h6	d3	l1	l2	l3	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **DURO-S** AlTiN										
D15840188	1/8	1/4	0.115	4	1/8	3/8	0.063	6°	4	$70.40	
D15840252	3/16	1/4	0.175	4	3/16	9/16	0.094	3°	4	$70.40	
D15840312	1/4	1/4	0.230	6	1/4	3/4	0.125	—	4	$70.40	•
D15840432	3/8	3/8	0.345	6	3/8	1 1/8	0.188	—	4	$131.10	•
D15840530	1/2	1/2	0.460	6	1/2	1 1/2	0.250	—	4	$174.20	•

passion
for precision

fraisa

End mills for aluminum, copper and plastics

passion
for precision

fraisa

Square end mills for aluminum, copper and plastics

Square Tools for Roughing

5897	AX-FP	X-Generation	Roughing / Finishing	d_1 3/8″ - 3/4″ 45°	Alumi-num	Copper	Plastics	201
15897	AX-FP	X-Generation	Roughing / Finishing	d_1 3/8″ - 1″ 45°	Alumi-num	Copper	Plastics	203

Square Tools for Roughing/Finishing

15835	AX-NV2	X-Generation	Roughing / Finishing	d_1 1/8″ - 1″ 90°	Alumi-num	Copper	Plastics	205
15839	AX-NV2	X-Generation	Roughing / Finishing	d_1 3/16″ - 1″ 90°	Alumi-num	Copper	Plastics	207
15831	AX-NV3	X-Generation	Roughing / Finishing	d_1 1/8″ - 1″ 90°	Alumi-num	Copper	Plastics	209
15834	AX-NV3	X-Generation	Roughing / Finishing	d_1 3/16″ - 1″ 90°	Alumi-num	Copper	Plastics	211

Corner radius end mills for aluminum, copper and plastics

Corner Radius Tools for Roughing/Finishing

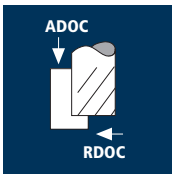
15838	AX-RNV3	X-Generation	Roughing / Finishing	d_1 3/16″ - 1″ r	Alumi-num	Copper	Plastics	213
5875	AX-R	X-Generation	Roughing / Finishing	d_1 1/4″ - 1″ r	Alumi-num	Copper	Plastics	215
5877	AX-R	X-Generation	Roughing / Finishing	d_1 5/8″ - 1″ r	Alumi-num	Copper	Plastics	217

Ball nose end mills for aluminum, copper and plastics

Ball Nose Tools for Roughing/Finishing

5891	Sphericut-Alu	X-Generation	Roughing / Finishing	d_1 1/32″ - 1/2″	Alumi-num	Copper	Plastics	219
5890	Sphericut-Alu	X-Generation	Roughing / Finishing	d_1 1/32″ - 1/2″	Alumi-num	Copper	Plastics	221

5897



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminum Si < 6%	3/8	3	1970	0.0041	0.563	0.213	20065	247	29.620
	1/2	3	1970	0.0056	0.750	0.302	15050	253	57.304
	5/8	3	1970	0.0070	0.938	0.388	12040	253	92.078
	3/4	3	1970	0.0082	1.125	0.461	10035	247	128.100
Unalloyed Copper	3/8	3	1310	0.0041	0.563	0.213	13345	164	19.667
	1/2	3	1310	0.0056	0.750	0.302	10010	168	38.052
	5/8	3	1310	0.0070	0.938	0.388	8005	168	61.143
	3/4	3	1310	0.0082	1.125	0.461	6670	164	85.055
Thermoplastics	3/8	3	2625	0.0041	0.563	0.213	26740	329	39.453
	1/2	3	2625	0.0056	0.750	0.302	20055	337	76.330
	5/8	3	2625	0.0070	0.938	0.388	16045	337	122.649
	3/4	3	2625	0.0082	1.125	0.461	13370	329	170.628

5897

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminum Si < 6%	3/8	3	1640	0.0037	0.532	0.375	16705	185	36.908
	1/2	3	1640	0.0050	0.754	0.500	12530	188	70.876
	5/8	3	1640	0.0062	0.970	0.625	10025	186	112.762
	3/4	3	1640	0.0075	1.152	0.750	8355	188	162.432
Unalloyed Copper	3/8	3	885	0.0037	0.532	0.375	9015	100	19.950
	1/2	3	885	0.0050	0.754	0.500	6760	101	38.077
	5/8	3	885	0.0062	0.970	0.625	5410	101	61.231
	3/4	3	885	0.0075	1.152	0.750	4505	101	87.264
Thermoplastics	3/8	3	2625	0.0037	0.532	0.375	26740	297	59.252
	1/2	3	2625	0.0050	0.754	0.500	20055	301	113.477
	5/8	3	2625	0.0062	0.970	0.625	16045	298	180.663
	3/4	3	2625	0.0075	1.152	0.750	13370	301	260.064

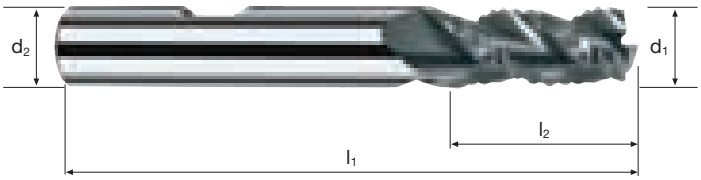
X-Generation Standard Length AX-FP

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

45°



Performance roughing

Performance finishing

IV

Machines the following materials:

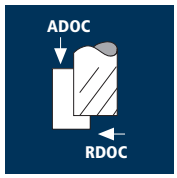
Best = Good =

Copper Plastics | **Aluminum**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **CELERO** TiB_2							
C5897432*	3/8	3/8	3	1	0.006	3	$56.80	•
C5897530*	1/2	1/2	3 1/4	1 1/4	0.006	3	$76.30	•
C5897605*	5/8	5/8	3 1/2	1 1/4	0.006	3	$126.20	•
C5897652*	3/4	3/4	4	1 1/2	0.006	3	$172.00	•

*** clamping flat available upon request**

15897



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminum Si < 6%	3/8	3	1970	0.0041	0.750	0.106	20065	247	19.637
	1/2	3	1970	0.0056	1.000	0.143	15050	253	36.179
	5/8	3	1970	0.0070	1.250	0.177	12040	253	55.976
	3/4	3	1970	0.0082	1.500	0.216	10035	247	80.028
	1	3	1970	0.0112	2.000	0.284	7525	253	143.704
Unalloyed Copper	3/8	3	1310	0.0041	0.750	0.106	13345	164	13.038
	1/2	3	1310	0.0056	1.000	0.143	10010	168	24.024
	5/8	3	1310	0.0070	1.250	0.177	8005	168	37.170
	3/4	3	1310	0.0082	1.500	0.216	6670	164	53.136
	1	3	1310	0.0112	2.000	0.284	5005	168	95.424
Thermoplastics	3/8	3	2625	0.0041	0.750	0.106	26740	329	26.156
	1/2	3	2625	0.0056	1.000	0.143	20055	337	48.191
	5/8	3	2625	0.0070	1.250	0.177	16045	337	74.561
	3/4	3	2625	0.0082	1.500	0.216	13370	329	106.596
	1	3	2625	0.0112	2.000	0.284	10025	337	191.416

15897

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminum Si < 6%	3/8	3	1640	0.0037	0.248	0.375	16705	185	17.205
	1/2	3	1640	0.0050	0.334	0.500	12530	188	31.396
	5/8	3	1640	0.0062	0.413	0.625	10025	186	48.011
	3/4	3	1640	0.0075	0.505	0.750	8355	188	71.205
	1	3	1640	0.0100	0.662	1.000	6265	188	124.456
Unalloyed Copper	3/8	3	885	0.0037	0.248	0.375	9015	100	9.300
	1/2	3	885	0.0050	0.334	0.500	6760	101	16.867
	5/8	3	885	0.0062	0.413	0.625	5410	101	26.071
	3/4	3	885	0.0075	0.505	0.750	4505	101	38.254
	1	3	885	0.0100	0.662	1.000	3380	101	66.862
Thermoplastics	3/8	3	2625	0.0037	0.248	0.375	26740	297	27.621
	1/2	3	2625	0.0050	0.334	0.500	20055	301	50.267
	5/8	3	2625	0.0062	0.413	0.625	16045	298	76.921
	3/4	3	2625	0.0075	0.505	0.750	13370	301	114.004
	1	3	2625	0.0100	0.662	1.000	10025	301	199.262

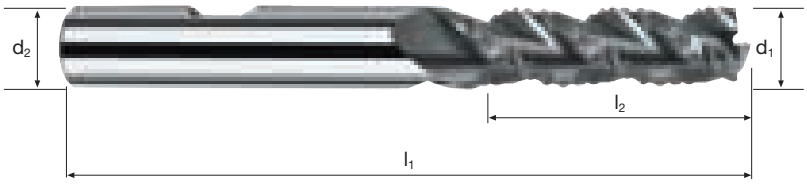
X-Generation Long Length AX-FP

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

45°



Performance roughing

Performance finishing

IV

Machines the following materials:

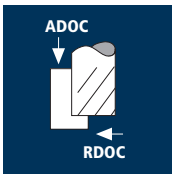
Best = Good =

Copper Plastics | **Aluminum**

dimensions tolerances	d1 e8	d2 h6	l1	l2	chamfer 0/+0.002"	fl	List Price	ReTool®
Order #	Coating: **CELERO** TiB_2							
C15897432*	3/8	3/8	3 1/2	1 1/2	0.006	3	$63.80	•
C15897530*	1/2	1/2	4	2	0.006	3	$90.60	•
C15897605*	5/8	5/8	5	2 1/2	0.006	3	$164.10	•
C15897652*	3/4	3/4	5	2 1/2	0.006	3	$210.50	•
C15897775*	1	1	6	2 3/4	0.008	3	$326.60	•

*** clamping flat available upon request**

15835



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	1/8	2	1800	0.0027	0.235	0.094	55010	292	6.409
	3/16	2	1800	0.0039	0.281	0.113	36672	287	9.051
	1/4	2	1800	0.0053	0.375	0.150	27504	292	16.412
	3/8	2	1800	0.0076	0.750	0.300	18336	279	62.750
	1/2	2	1800	0.0106	0.938	0.375	13752	292	102.573
	5/8	2	1800	0.0130	1.125	0.450	11002	287	144.809
	3/4	2	1800	0.0158	1.500	0.600	9168	290	260.655
	1	2	1800	0.0212	1.876	0.750	6880	292	410.200
Unalloyed Copper	1/8	2	1320	0.0027	0.235	0.094	40340	214	4.700
	3/16	2	1320	0.0032	0.281	0.113	26893	170	5.361
	1/4	2	1320	0.0043	0.375	0.150	20170	173	9.721
	3/8	2	1320	0.0062	0.750	0.300	13446	166	37.168
	1/2	2	1320	0.0086	0.938	0.375	10085	173	60.755
	5/8	2	1320	0.0105	1.125	0.450	8068	170	85.771
	3/4	2	1320	0.0128	1.500	0.600	6723	172	154.388
	1	2	1320	0.0212	1.876	0.750	5050	214	300.813
Plastics	1/8	2	3300	0.0027	0.235	0.094	100850	535	11.751
	3/16	2	3300	0.0039	0.281	0.113	67232	525	16.593
	1/4	2	3300	0.0053	0.375	0.150	50424	535	30.088
	3/8	2	3300	0.0076	0.750	0.300	33616	512	115.042
	1/2	2	3300	0.0106	0.938	0.375	25212	535	188.050
	5/8	2	3300	0.0130	1.125	0.450	20170	525	265.482
	3/4	2	3300	0.0158	1.500	0.600	16808	531	477.868
	1	2	3300	0.0212	1.876	0.750	12610	535	752.037
Cast Aluminum	1/8	2	1150	0.0027	0.235	0.094	35150	187	4.095
	3/16	2	1150	0.0028	0.281	0.113	23429	129	4.077
	1/4	2	1150	0.0038	0.375	0.150	17572	132	7.393
	3/8	2	1150	0.0054	0.750	0.300	11715	126	28.269
	1/2	2	1150	0.0075	0.938	0.375	8786	132	46.209
	5/8	2	1150	0.0092	1.125	0.450	7029	129	65.236
	3/4	2	1150	0.0112	1.500	0.600	5857	131	117.425
	1	2	1150	0.0212	1.876	0.750	4400	187	262.072

15835

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	1/8	2	1440	0.0019	0.156	0.125	44010	166	3.223
	3/16	2	1440	0.0027	0.188	0.188	29338	161	5.631
	1/4	2	1440	0.0037	0.250	0.250	22003	164	10.212
	3/8	2	1440	0.0054	0.500	0.500	14669	157	39.045
	1/2	2	1440	0.0075	0.625	0.625	11002	164	63.823
	5/8	2	1440	0.0091	0.750	0.750	8801	161	90.103
	3/4	2	1440	0.0111	1.000	1.000	7334	163	162.186
	1	2	1440	0.0150	1.250	1.000	5510	166	206.280
Unalloyed Copper	1/8	2	1056	0.0019	0.156	0.125	32280	122	2.364
	3/16	2	1056	0.0022	0.188	0.188	21514	95	3.336
	1/4	2	1056	0.0030	0.250	0.250	16136	97	6.048
	3/8	2	1056	0.0043	0.500	0.500	10757	93	23.126
	1/2	2	1056	0.0060	0.625	0.625	8068	97	37.803
	5/8	2	1056	0.0074	0.750	0.750	6454	95	53.369
	3/4	2	1056	0.0090	1.000	1.000	5379	97	96.064
	1	2	1056	0.0150	1.250	1.000	4040	122	151.272
Plastics	1/8	2	2640	0.0019	0.156	0.125	60000	225	4.395
	3/16	2	2640	0.0027	0.188	0.188	53786	294	10.324
	1/4	2	2640	0.0037	0.250	0.250	40339	300	18.721
	3/8	2	2640	0.0053	0.500	0.500	26893	287	71.582
	1/2	2	2640	0.0074	0.625	0.625	20170	300	117.009
	5/8	2	2640	0.0091	0.750	0.750	16136	294	165.189
	3/4	2	2640	0.0111	1.000	1.000	13446	298	297.340
	1	2	2640	0.0150	1.250	1.000	10090	303	378.180
Cast Aluminum	1/8	2	920	0.0019	0.156	0.125	28120	106	2.059
	3/16	2	920	0.0019	0.188	0.188	18743	73	2.537
	1/4	2	920	0.0026	0.250	0.250	14058	74	4.600
	3/8	2	920	0.0038	0.500	0.500	9372	71	17.590
	1/2	2	920	0.0053	0.625	0.625	7029	74	28.752
	5/8	2	920	0.0065	0.750	0.750	5623	73	40.591
	3/4	2	920	0.0079	1.000	1.000	4686	74	73.064
	1	2	920	0.0150	1.250	1.000	3520	106	131.790

X-Generation Standard Length AX-NV2

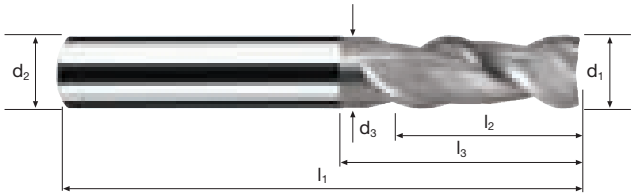
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

90°

Vario



Performance roughing

Performance finishing

IV

Machines the following materials:

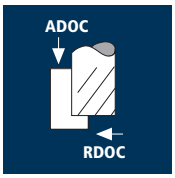
Best = Good =

Plastics | Aluminum Copper

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	draft ∠	fl	List Price	ReTool®
Order #										
15835188	1/8	1/8	0.115	2	1/4	3/8	—	2	$25.30	
15835252	3/16	1/4	0.175	2	3/8	9/16	1.5°	2	$25.30	
15835312	1/4	1/4	0.230	2 1/2	1/2	3/4	—	2	$29.60	
15835432*	3/8	3/8	0.345	2 3/4	3/4	1 1/8	—	2	$42.10	•
15835530*	1/2	1/2	0.460	3 1/4	1	1 1/2	—	2	$68.80	•
15835605*	5/8	5/8	0.575	4	1 1/4	1 7/8	—	2	$109.60	•
15835652*	3/4	3/4	0.710	4	1 1/2	2 1/4	—	2	$167.20	•
15835775*	1	1	0.960	5	2	3	—	2	$250.00	•

*** clamping flat available upon request**

15839



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	2	1800	0.0035	0.281	0.075	36680	257	5.415
	1/4	2	1800	0.0048	0.375	0.100	27510	262	9.819
	3/8	2	1800	0.0070	0.563	0.150	18340	257	21.659
	1/2	2	1800	0.0091	0.750	0.200	13760	251	37.543
	5/8	2	1800	0.0119	0.938	0.250	11010	262	61.368
	3/4	2	1800	0.0140	1.125	0.300	9170	257	86.638
	1	2	1800	0.0189	1.500	0.400	6880	260	155.948
Unalloyed Copper	3/16	2	1320	0.0033	0.281	0.075	26900	175	3.686
	1/4	2	1320	0.0044	0.375	0.100	20170	179	6.686
	3/8	2	1320	0.0065	0.563	0.150	13450	175	14.749
	1/2	2	1320	0.0085	0.750	0.200	10090	171	25.565
	5/8	2	1320	0.0111	0.938	0.250	8070	179	41.789
	3/4	2	1320	0.0130	1.125	0.300	6730	175	58.996
	1	2	1320	0.0176	1.500	0.400	5050	177	106.193
Plastics	3/16	2	3300	0.0035	0.281	0.075	67240	471	9.927
	1/4	2	3300	0.0048	0.375	0.100	50430	481	18.001
	3/8	2	3300	0.0070	0.563	0.150	33620	471	39.709
	1/2	2	3300	0.0091	0.750	0.200	25220	459	68.829
	5/8	2	3300	0.0119	0.938	0.250	20170	481	112.509
	3/4	2	3300	0.0140	1.125	0.300	16810	471	158.836
	1	2	3300	0.0189	1.500	0.400	12610	477	285.904
Cast Aluminum	3/16	2	1150	0.0025	0.281	0.075	23430	118	2.471
	1/4	2	1150	0.0034	0.375	0.100	17580	120	4.481
	3/8	2	1150	0.0050	0.563	0.150	11720	118	9.884
	1/2	2	1150	0.0065	0.750	0.200	8790	115	17.133
	5/8	2	1150	0.0085	0.938	0.250	7030	120	28.005
	3/4	2	1150	0.0100	1.125	0.300	5860	118	39.537
	1	2	1150	0.0135	1.500	0.400	4400	119	71.167

15839

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	2	1440	0.0025	0.131	0.188	29340	144	3.538
	1/4	2	1440	0.0033	0.175	0.250	22010	147	6.415
	3/8	2	1440	0.0049	0.263	0.375	14670	144	14.151
	1/2	2	1440	0.0064	0.350	0.500	11010	141	24.528
	5/8	2	1440	0.0083	0.438	0.625	8810	147	40.094
	3/4	2	1440	0.0098	0.525	0.750	7340	144	56.603
	1	2	1440	0.0132	0.700	1.000	5510	146	101.886
Unalloyed Copper	3/16	2	1056	0.0023	0.131	0.188	21520	98	2.409
	1/4	2	1056	0.0031	0.175	0.250	16140	100	4.368
	3/8	2	1056	0.0046	0.263	0.375	10760	98	9.636
	1/2	2	1056	0.0059	0.350	0.500	8070	96	16.702
	5/8	2	1056	0.0077	0.438	0.625	6460	100	27.302
	3/4	2	1056	0.0091	0.525	0.750	5380	98	38.544
	1	2	1056	0.0123	0.700	1.000	4040	100	69.379
Plastics	3/16	2	2640	0.0025	0.131	0.188	53790	264	6.486
	1/4	2	2640	0.0033	0.175	0.250	40340	269	11.761
	3/8	2	2640	0.0049	0.263	0.375	26900	264	25.943
	1/2	2	2640	0.0064	0.350	0.500	20170	257	44.968
	5/8	2	2640	0.0083	0.438	0.625	16140	269	73.506
	3/4	2	2640	0.0098	0.525	0.750	13450	264	103.773
	1	2	2640	0.0132	0.700	1.000	10090	267	186.791
Cast Aluminum	3/16	2	920	0.0018	0.131	0.188	18750	66	1.614
	1/4	2	920	0.0024	0.175	0.250	14060	67	2.927
	3/8	2	920	0.0035	0.263	0.375	9380	66	6.458
	1/2	2	920	0.0046	0.350	0.500	7030	64	11.193
	5/8	2	920	0.0060	0.438	0.625	5630	67	18.297
	3/4	2	920	0.0070	0.525	0.750	4690	66	25.831
	1	2	920	0.0095	0.700	1.000	3520	67	46.496

X-Generation Long Reach AX-NV2

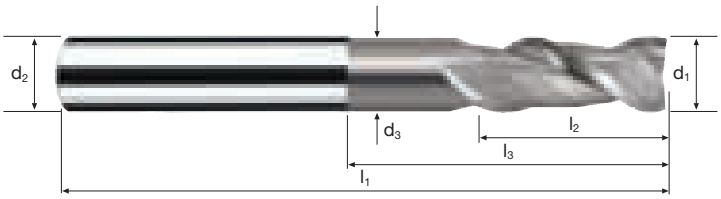
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

90°

Vario



Performance roughing

Performance finishing

IV

Machines the following materials:

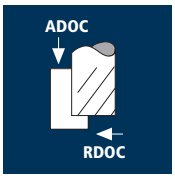
Best = Good =

Plastics | Aluminum Copper

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	draft ∠	fl	List Price	ReTool®
Order #										
15839252	3/16	1/4	0.175	2	3/8	3/4	2°	2	$30.20	
15839312	1/4	1/4	0.230	2 1/2	1/2	1	—	2	$43.60	
15839432*	3/8	3/8	0.345	3	3/4	1 1/2	—	2	$50.20	•
15839530*	1/2	1/2	0.460	4	1	2	—	2	$82.10	•
15839605*	5/8	5/8	0.575	5	1 1/4	2 1/2	—	2	$130.30	•
15839652*	3/4	3/4	0.710	5	1 1/2	3	—	2	$198.80	•
15839775*	1	1	0.960	6	2	4	—	2	$286.10	•

*** clamping flat available upon request**

15831



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	3	1800	0.0035	0.281	0.088	36670	385	9.54
	1/4	3	1800	0.0043	0.375	0.118	27500	355	15.63
	5/16	3	1800	0.0052	0.469	0.147	22000	343	23.64
	3/8	3	1800	0.0064	0.563	0.176	18340	352	34.89
	1/2	3	1800	0.0079	0.750	0.235	13750	326	57.44
	5/8	3	1800	0.0085	0.938	0.294	11000	281	77.25
	3/4	3	1800	0.0098	1.125	0.353	9170	270	106.91
Unalloyed Copper	3/16	3	1320	0.0035	0.281	0.088	26890	282	7.00
	1/4	3	1320	0.0043	0.375	0.118	20170	260	11.46
	5/16	3	1320	0.0052	0.469	0.147	16140	252	17.61
	3/8	3	1320	0.0064	0.563	0.176	13450	258	15.56
	1/2	3	1320	0.0079	0.750	0.235	10080	239	42.11
	5/8	3	1320	0.0085	0.938	0.294	8070	206	56.67
	3/4	3	1320	0.0098	1.125	0.353	6720	198	78.35
Plastics	3/16	3	3300	0.0035	0.281	0.088	67230	706	17.50
	1/4	3	3300	0.0043	0.375	0.118	50420	650	28.66
	5/16	3	3300	0.0052	0.469	0.147	40340	630	44.03
	3/8	3	3300	0.0064	0.563	0.176	33620	645	63.91
	1/2	3	3300	0.0079	0.750	0.235	25210	597	105.31
	5/8	3	3300	0.0085	0.938	0.294	20170	514	141.64
	3/4	3	3300	0.0098	1.125	0.353	16810	494	195.99
Cast Aluminum	3/16	3	1150	0.0035	0.281	0.088	23430	246	6.10
	1/4	3	1150	0.0043	0.375	0.118	17570	227	9.99
	5/16	3	1150	0.0052	0.469	0.147	14060	220	15.37
	3/8	3	1150	0.0064	0.563	0.176	11710	225	22.29
	1/2	3	1150	0.0079	0.750	0.235	8790	208	36.72
	5/8	3	1150	0.0085	0.938	0.294	7030	179	49.37
	3/4	3	1150	0.0098	1.125	0.353	5860	172	68.32

15831

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	3	1480	0.0020	0.110	0.188	30150	181	3.73
	1/4	3	1480	0.0030	0.150	0.250	22610	203	7.63
	5/16	3	1480	0.0041	0.190	0.313	18090	222	13.20
	3/8	3	1480	0.0045	0.230	0.375	15080	204	17.60
	1/2	3	1480	0.0055	0.300	0.500	11310	187	27.99
	5/8	3	1480	0.0059	0.380	0.625	9050	160	38.04
	3/4	3	1480	0.0069	0.450	0.750	7540	156	52.68
Unalloyed Copper	3/16	3	1150	0.0020	0.110	0.188	23430	141	2.90
	1/4	3	1150	0.0030	0.150	0.250	17570	158	5.93
	5/16	3	1150	0.0041	0.190	0.313	14060	173	10.29
	3/8	3	1150	0.0045	0.230	0.375	11710	158	13.63
	1/2	3	1150	0.0055	0.300	0.500	8790	145	21.76
	5/8	3	1150	0.0059	0.380	0.625	7030	124	29.55
	3/4	3	1150	0.0069	0.450	0.750	5860	121	40.94
Plastics	3/16	3	2640	0.0020	0.110	0.188	53790	323	6.66
	1/4	3	2640	0.0030	0.150	0.250	40340	363	13.61
	5/16	3	2640	0.0041	0.190	0.313	32270	397	23.61
	3/8	3	2640	0.0045	0.230	0.375	26890	363	31.31
	1/2	3	2640	0.0055	0.300	0.500	20170	333	49.92
	5/8	3	2640	0.0059	0.380	0.625	16140	286	67.85
	3/4	3	2640	0.0069	0.450	0.750	13450	278	93.97
Cast Aluminum	3/16	3	990	0.0020	0.110	0.188	20170	121	2.50
	1/4	3	990	0.0030	0.150	0.250	15130	136	5.11
	5/16	3	990	0.0041	0.190	0.313	12100	149	8.86
	3/8	3	990	0.0045	0.230	0.375	10080	136	11.73
	1/2	3	990	0.0055	0.300	0.500	7560	125	18.71
	5/8	3	990	0.0059	0.380	0.625	6050	107	25.43
	3/4	3	990	0.0069	0.450	0.750	5040	104	35.21

X-Generation Standard Reach AX-NV3

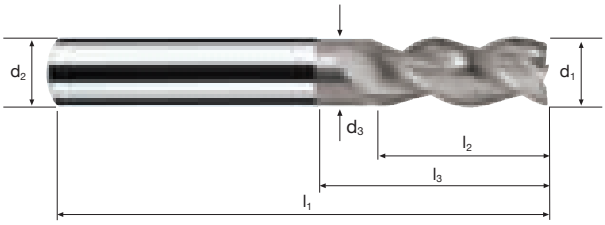
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

90°

Vario



Performance roughing

Performance finishing

IV

Machines the following materials:

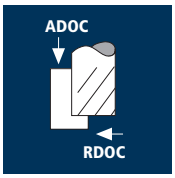
Best = Good =

Plastics | Aluminum Copper

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	fl	List Price	ReTool®
Order #									
15831188	1/8	1/8	0.115	2	1/4	3/8	3	$26.80	
15831252	3/16	3/16	0.175	2	3/8	9/16	3	$26.80	
15831312	1/4	1/4	0.230	2 1/2	1/2	3/4	3	$30.90	
15831372	5/16	5/16	0.285	2 1/2	5/8	15/16	3	$38.70	
15831432*	3/8	3/8	0.345	2 3/4	3/4	1 1/8	3	$44.30	•
15831530*	1/2	1/2	0.460	3 1/4	1	1 1/2	3	$72.40	•
15831605*	5/8	5/8	0.575	4	1 1/4	1 7/8	3	$115.30	•
15831652*	3/4	3/4	0.710	4	1 1/2	2 1/4	3	$175.70	•
15831775*	1	1	0.960	5	2	3	3	$259.90	•

*** clamping flat available upon request**

15834



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	3	1800	0.0028	0.469	0.038	36670	308	5.49
	1/4	3	1800	0.0034	0.625	0.051	27500	281	8.94
	5/16	3	1800	0.0042	0.781	0.063	22000	277	13.64
	3/8	3	1800	0.0051	0.938	0.076	18340	281	19.99
	1/2	3	1800	0.0063	1.250	0.101	13750	260	32.81
	5/8	3	1800	0.0068	1.563	0.127	11000	224	44.53
	3/4	3	1800	0.0078	1.875	0.152	9170	215	61.15
Unalloyed Copper	3/16	3	1320	0.0028	0.469	0.038	26890	226	4.02
	1/4	3	1320	0.0034	0.625	0.051	20170	206	6.56
	5/16	3	1320	0.0042	0.781	0.063	16140	203	10.01
	3/8	3	1320	0.0051	0.938	0.076	13450	206	14.66
	1/2	3	1320	0.0063	1.250	0.101	10080	191	24.05
	5/8	3	1320	0.0068	1.563	0.127	8070	165	32.67
	3/4	3	1320	0.0078	1.875	0.152	6720	157	44.82
Plastics	3/16	3	3300	0.0028	0.469	0.038	67230	565	10.06
	1/4	3	3300	0.0034	0.625	0.051	50420	514	16.39
	5/16	3	3300	0.0042	0.781	0.063	40340	508	25.02
	3/8	3	3300	0.0051	0.938	0.076	33620	514	36.65
	1/2	3	3300	0.0063	1.250	0.101	25210	476	60.15
	5/8	3	3300	0.0068	1.563	0.127	20170	411	81.65
	3/4	3	3300	0.0078	1.875	0.152	16810	393	112.11
Cast Aluminum	3/16	3	1150	0.0028	0.469	0.038	23430	197	3.51
	1/4	3	1150	0.0034	0.625	0.051	17570	179	5.71
	5/16	3	1150	0.0042	0.781	0.063	14060	177	8.72
	3/8	3	1150	0.0051	0.938	0.076	11710	179	12.77
	1/2	3	1150	0.0063	1.250	0.101	8790	166	20.97
	5/8	3	1150	0.0068	1.563	0.127	7030	143	28.46
	3/4	3	1150	0.0078	1.875	0.152	5860	137	39.08

15834

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	3	1480	0.0017	0.074	0.188	30150	154	2.13
	1/4	3	1480	0.0026	0.101	0.250	22610	176	4.45
	5/16	3	1480	0.0035	0.127	0.313	18090	190	7.54
	3/8	3	1480	0.0039	0.154	0.375	15080	176	10.19
	1/2	3	1480	0.0047	0.201	0.500	11310	159	16.03
	5/8	3	1480	0.0051	0.255	0.625	9050	138	22.07
	3/4	3	1480	0.0059	0.302	0.750	7540	133	30.23
Unalloyed Copper	3/16	3	1150	0.0017	0.074	0.188	23430	119	1.66
	1/4	3	1150	0.0026	0.101	0.250	17570	137	3.46
	5/16	3	1150	0.0035	0.127	0.313	14060	148	5.86
	3/8	3	1150	0.0039	0.154	0.375	11710	137	7.91
	1/2	3	1150	0.0047	0.201	0.500	8790	124	12.46
	5/8	3	1150	0.0051	0.255	0.625	7030	108	17.14
	3/4	3	1150	0.0059	0.302	0.750	5860	104	23.49
Plastics	3/16	3	2640	0.0017	0.074	0.188	53790	274	3.81
	1/4	3	2640	0.0026	0.101	0.250	40340	315	7.94
	5/16	3	2640	0.0035	0.127	0.313	32270	339	13.45
	3/8	3	2640	0.0039	0.154	0.375	26890	315	18.17
	1/2	3	2640	0.0047	0.201	0.500	20170	284	28.58
	5/8	3	2640	0.0051	0.255	0.625	16140	247	39.36
	3/4	3	2640	0.0059	0.302	0.750	13450	238	53.92
Cast Aluminum	3/16	3	990	0.0017	0.074	0.188	20170	103	1.43
	1/4	3	990	0.0026	0.101	0.250	15130	118	2.98
	5/16	3	990	0.0035	0.127	0.313	12100	127	5.04
	3/8	3	990	0.0039	0.154	0.375	10080	118	6.81
	1/2	3	990	0.0047	0.201	0.500	7560	107	10.71
	5/8	3	990	0.0051	0.255	0.625	6050	93	14.75
	3/4	3	990	0.0059	0.302	0.750	5040	89	20.21

X-Generation Long Reach AX-NV3

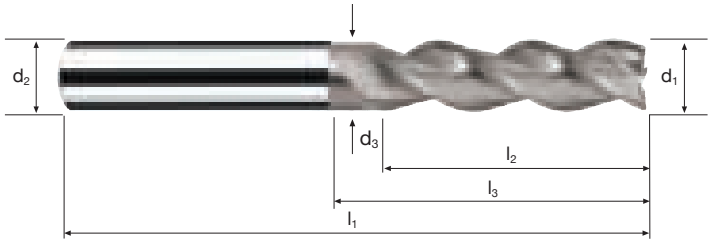
HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

90°

Vario



Performance roughing

Performance finishing

IV

Machines the following materials:

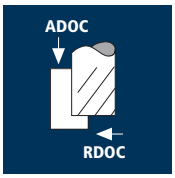
Best = Good =

Plastics | Aluminum Copper

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	fl	List Price	ReTool®
Order #									
15834252	3/16	3/16	0.175	2	9/16	3/4	3	$30.30	
15834312	1/4	1/4	0.230	2 1/2	3/4	1	3	$35.20	
15834372	5/16	5/16	0.285	2 1/2	15/16	1 1/4	3	$43.60	
15834432*	3/8	3/8	0.345	3	1 1/8	1 1/2	3	$50.30	•
15834530*	1/2	1/2	0.460	4	1 1/2	2	3	$82.30	•
15834605*	5/8	5/8	0.575	5	1 7/8	2 1/2	3	$130.30	•
15834652*	3/4	3/4	0.710	5	2 1/4	3	3	$198.90	•
15834775*	1	1	0.960	6	3	4	3	$286.30	•

*** clamping flat available upon request**

15838



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	3	1800	0.0035	0.281	0.088	36670	385	9.54
	1/4	3	1800	0.0043	0.375	0.118	27500	355	15.63
	5/16	3	1800	0.0052	0.469	0.147	22000	343	23.64
	3/8	3	1800	0.0064	0.563	0.176	18340	352	34.89
	1/2	3	1800	0.0079	0.750	0.235	13750	326	57.44
	5/8	3	1800	0.0085	0.938	0.294	11000	281	77.25
	3/4	3	1800	0.0098	1.125	0.353	9170	270	106.91
Unalloyed Copper	3/16	3	1320	0.0035	0.281	0.088	26890	282	7.00
	1/4	3	1320	0.0043	0.375	0.118	20170	260	11.46
	5/16	3	1320	0.0052	0.469	0.147	16140	252	17.61
	3/8	3	1320	0.0064	0.563	0.176	13450	258	25.56
	1/2	3	1320	0.0079	0.750	0.235	10080	239	42.11
	5/8	3	1320	0.0085	0.938	0.294	8070	206	56.67
	3/4	3	1320	0.0098	1.125	0.353	6720	198	78.35
Plastics	3/16	3	3300	0.0035	0.281	0.088	67230	706	17.50
	1/4	3	3300	0.0043	0.375	0.118	50420	650	28.66
	5/16	3	3300	0.0052	0.469	0.147	40340	630	44.03
	3/8	3	3300	0.0064	0.563	0.176	33620	645	63.91
	1/2	3	3300	0.0079	0.750	0.235	25210	597	105.31
	5/8	3	3300	0.0085	0.938	0.294	20170	514	141.64
	3/4	3	3300	0.0098	1.125	0.353	16810	494	195.99
Cast Aluminum	3/16	3	1150	0.0035	0.281	0.088	23430	246	6.10
	1/4	3	1150	0.0043	0.375	0.118	17570	227	9.99
	5/16	3	1150	0.0052	0.469	0.147	14060	220	15.37
	3/8	3	1150	0.0064	0.563	0.176	11710	225	22.29
	1/2	3	1150	0.0079	0.750	0.235	8790	208	36.72
	5/8	3	1150	0.0085	0.938	0.294	7030	179	49.37
	3/4	3	1150	0.0098	1.125	0.353	5860	172	68.32

15838

Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Aluminum Alloys	3/16	3	1480	0.0020	0.110	0.188	30150	181	3.73
	1/4	3	1480	0.0030	0.150	0.250	22610	203	7.63
	5/16	3	1480	0.0041	0.190	0.313	18090	222	13.20
	3/8	3	1480	0.0045	0.230	0.375	15080	204	17.60
	1/2	3	1480	0.0055	0.300	0.500	11310	187	27.99
	5/8	3	1480	0.0059	0.380	0.625	9050	160	38.04
	3/4	3	1480	0.0069	0.450	0.750	7540	156	52.68
Unalloyed Copper	3/16	3	1150	0.0020	0.110	0.188	23430	141	2.90
	1/4	3	1150	0.0030	0.150	0.250	17570	158	5.93
	5/16	3	1150	0.0041	0.190	0.313	14060	173	10.29
	3/8	3	1150	0.0045	0.230	0.375	11710	158	13.63
	1/2	3	1150	0.0055	0.300	0.500	8790	145	21.76
	5/8	3	1150	0.0059	0.380	0.625	7030	124	29.55
	3/4	3	1150	0.0069	0.450	0.750	5860	121	40.94
Plastics	3/16	3	2640	0.0020	0.110	0.188	53790	323	6.66
	1/4	3	2640	0.0030	0.150	0.250	40340	363	13.61
	5/16	3	2640	0.0041	0.190	0.313	32270	397	23.61
	3/8	3	2640	0.0045	0.230	0.375	26890	363	31.31
	1/2	3	2640	0.0055	0.300	0.500	20170	333	49.92
	5/8	3	2640	0.0059	0.380	0.625	16140	286	67.85
	3/4	3	2640	0.0069	0.450	0.750	13450	278	93.97
Cast Aluminum	3/16	3	990	0.0020	0.110	0.188	20170	121	2.50
	1/4	3	990	0.0030	0.150	0.250	15130	136	5.11
	5/16	3	990	0.0041	0.190	0.313	12100	149	8.86
	3/8	3	990	0.0045	0.230	0.375	10080	136	11.73
	1/2	3	990	0.0055	0.300	0.500	7560	125	18.71
	5/8	3	990	0.0059	0.380	0.625	6050	107	25.43
	3/4	3	990	0.0069	0.450	0.750	5040	104	35.21

X-Generation Standard Reach AX-RNV3

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

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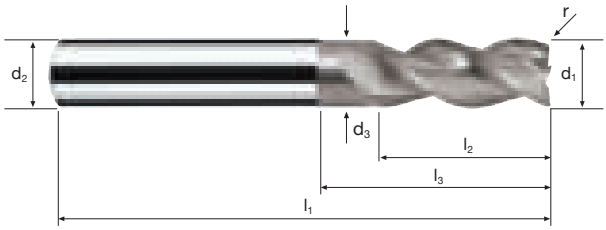
Vario



Performance roughing

Performance finishing

Machines the following materials:

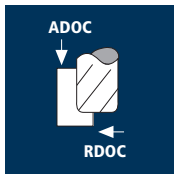
Best = Good =

Plastics | Aluminum Copper

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	fl	List Price	ReTool®
Order #										
15838248	3/16	3/16	0.175	2 1/4	1/2	9/16	0.010	3	$31.80	
15838252	3/16	3/16	0.175	2 1/4	1/2	9/16	0.020	3	$31.80	
15838312	1/4	1/4	0.230	2 1/2	5/8	3/4	0.020	3	$36.70	
15838314	1/4	1/4	0.230	2 1/2	5/8	3/4	0.030	3	$36.70	
15838372	5/16	5/16	0.285	2 1/2	3/4	15/16	0.020	3	$45.70	
15838376	5/16	5/16	0.285	2 1/2	3/4	15/16	0.030	3	$45.70	
15838432*	3/8	3/8	0.345	3	7/8	1 1/8	0.030	3	$52.60	•
15838436*	3/8	3/8	0.345	3	7/8	1 1/8	0.060	3	$52.60	•
15838530*	1/2	1/2	0.460	3 1/4	1 1/16	1 1/2	0.030	3	$85.90	•
15838536*	1/2	1/2	0.460	3 1/4	1 1/16	1 1/2	0.060	3	$85.90	•
15838591*	5/8	5/8	0.575	4	1 1/4	1 7/8	0.030	3	$137.00	•
15838605*	5/8	5/8	0.575	4	1 1/4	1 7/8	0.060	3	$137.00	•
15838648*	3/4	3/4	0.710	4	1 3/8	2 1/4	0.060	3	$208.60	•
15838652*	3/4	3/4	0.710	4	1 3/8	2 1/4	0.090	3	$208.60	•
15838775*	1	1	0.960	5	2	3	0.060	3	$302.90	•
15838778*	1	1	0.960	5	2	3	0.125	3	$302.90	•

*** clamping flat available upon request**

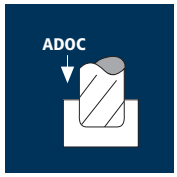
5875



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminium Si < 6%	1/4	2	2955	0.0031	0.250	0.125	45150	280	8.750
	3/8	2	2955	0.0047	0.375	0.191	30100	283	20.270
	1/2	2	2955	0.0062	0.500	0.272	22575	280	38.080
	5/8	2	2955	0.0062	0.625	0.323	18060	224	45.220
	3/4	2	2955	0.0086	0.750	0.384	15050	259	74.592
	1	2	2955	0.0106	1.000	0.536	11285	239	128.104
Unalloyed Copper	1/4	2	1970	0.0029	0.250	0.125	30100	175	5.469
	3/8	2	1970	0.0043	0.375	0.191	20065	173	12.391
	1/2	2	1970	0.0056	0.500	0.272	15050	169	22.984
	5/8	2	1970	0.0070	0.625	0.323	12040	169	34.117
	3/4	2	1970	0.0084	0.750	0.384	10035	169	48.672
	1	2	1970	0.0112	1.000	0.536	7525	169	90.584
Thermoplastics	1/4	2	3935	0.0025	0.250	0.125	60125	301	9.406
	3/8	2	3935	0.0037	0.375	0.191	40080	297	21.273
	1/2	2	3935	0.0050	0.500	0.272	30060	301	40.936
	5/8	2	3935	0.0062	0.625	0.323	24050	298	60.159
	3/4	2	3935	0.0075	0.750	0.384	20040	301	86.688
	1	2	3935	0.0100	1.000	0.536	15030	301	161.336

5875



Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminium Si < 6%	1/4	2	2625	0.0021	0.125	0.250	40110	168	5.250
	3/8	2	2625	0.0032	0.191	0.375	26740	171	12.248
	1/2	2	2625	0.0042	0.272	0.500	20055	168	22.848
	5/8	2	2625	0.0053	0.323	0.625	16045	170	34.319
	3/4	2	2625	0.0062	0.384	0.750	13370	166	47.808
	1	2	2625	0.0084	0.536	1.000	10025	168	90.048
Unalloyed Copper	1/4	2	1310	0.0019	0.125	0.250	20015	76	2.375
	3/8	2	1310	0.0028	0.191	0.375	13345	75	5.372
	1/2	2	1310	0.0037	0.272	0.500	10010	74	10.064
	5/8	2	1310	0.0047	0.323	0.625	8005	75	15.141
	3/4	2	1310	0.0056	0.384	0.750	6670	75	21.600
	1	2	1310	0.0076	0.536	1.000	5005	76	40.736
Thermoplastics	1/4	2	3935	0.0017	0.125	0.250	60125	204	6.375
	3/8	2	3935	0.0024	0.191	0.375	40080	192	13.752
	1/2	2	3935	0.0033	0.272	0.500	30060	198	26.928
	5/8	2	3935	0.0041	0.323	0.625	24050	197	39.769
	3/4	2	3935	0.0051	0.384	0.750	20040	204	58.752
	1	2	3935	0.0066	0.536	1.000	15030	198	106.128

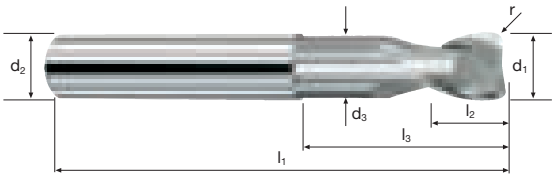
X-Generation Standard Reach AX-R

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

r



Performance roughing

Performance finishing

IV

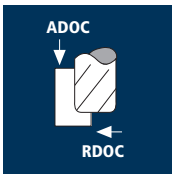
Machines the following materials:

Best = Good =

Plastics **Aluminum Copper**

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **CELERO** TiB_2									
C5875314	1/4	1/4	0.230	2 1/2	5/16	1 1/2	0.020	2	$39.70	
C5875436	3/8	3/8	0.345	2 1/2	7/16	1 1/4	0.030	2	$77.60	•
C5875528	1/2	1/2	0.460	3	9/16	1 1/2	0.045	2	$109.90	•
C5875591	5/8	5/8	0.575	3 1/2	3/4	1 1/2	0.120	2	$152.30	•
C5875596	5/8	5/8	0.575	3 1/2	3/4	1 1/2	0.080	2	$152.30	•
C5875648	3/4	3/4	0.710	4	13/16	2	0.060	2	$213.20	•
C5875652	3/4	3/4	0.710	4	13/16	2	0.120	2	$213.20	•
C5875775	1	1	0.960	4	1 1/16	2	0.120	2	$323.20	•

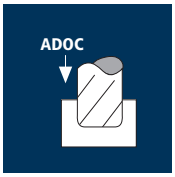
5877



Side Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminium Si < 6%	5/8	2	2135	0.0062	0.156	0.283	13050	162	7.152
	3/4	2	2135	0.0086	0.188	0.355	10875	187	12.480
	1	2	2135	0.0114	0.250	0.496	8155	186	23.064
Unalloyed Copper	5/8	2	1575	0.0062	0.156	0.283	9625	119	5.254
	3/4	2	1575	0.0086	0.188	0.355	8020	138	9.210
	1	2	1575	0.0114	0.250	0.496	6015	137	16.988
Thermoplastics	5/8	2	3115	0.0062	0.156	0.283	19040	236	10.419
	3/4	2	3115	0.0075	0.188	0.355	15865	238	15.884
	1	2	3115	0.0100	0.250	0.496	11900	238	29.512

5877



Slotting

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminium Si < 6%	5/8	2	1805	0.0053	0.142	0.625	11030	117	10.384
	3/4	2	1805	0.0062	0.178	0.750	9195	114	15.219
	1	2	1805	0.0084	0.248	1.000	6895	116	28.768
Unalloyed Copper	5/8	2	1245	0.0047	0.142	0.625	7610	72	6.390
	3/4	2	1245	0.0056	0.178	0.750	6340	71	9.479
	1	2	1245	0.0076	0.248	1.000	4755	72	17.856
Thermoplastics	5/8	2	2790	0.0053	0.142	0.625	17050	181	16.064
	3/4	2	2790	0.0062	0.178	0.750	14210	176	23.496
	1	2	2790	0.0084	0.248	1.000	10655	179	44.392

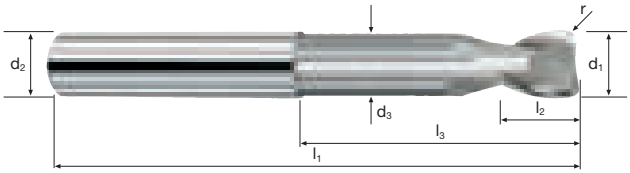
X-Generation Long Reach AX-R

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **18°**

r



Performance roughing

Performance finishing

IV

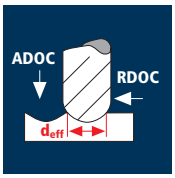
Machines the following materials:

Best = Good =

Plastics | Aluminum Copper

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius 0/+0.0012"	fl	List Price	ReTool®
Order #	Coating: **CELERO** TiB_2									
C5877591	5/8	5/8	0.575	5	3/4	3	0.120	2	$164.70	•
C5877652	3/4	3/4	0.710	6	13/16	4	0.120	2	$236.80	•
C5877775	1	1	0.960	6	1 1/16	4	0.120	2	$345.10	•

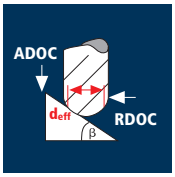
5891



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminium Si < 6%	1/32	2	2995	0.0006	0.0031	0.0062	0.019	60000	72	0.001
	1/16	2	2995	0.0012	0.0063	0.0125	0.038	60000	144	0.011
	1/8	2	2995	0.0025	0.0125	0.0249	0.075	60000	300	0.093
	3/16	2	2995	0.0037	0.0187	0.0374	0.122	60000	444	0.311
	1/4	2	2995	0.0037	0.0250	0.0499	0.150	60000	444	0.554
	3/8	2	2995	0.0056	0.0375	0.0709	0.225	50170	562	1.494
	1/2	2	2995	0.0050	0.0500	0.1005	0.300	37625	376	1.889
Unalloyed Copper	1/32	2	1970	0.0006	0.0031	0.0062	0.019	60000	72	0.001
	1/16	2	1970	0.0012	0.0063	0.0125	0.038	60000	144	0.011
	1/8	2	1970	0.0025	0.0125	0.0249	0.075	60000	300	0.093
	3/16	2	1970	0.0037	0.0187	0.0374	0.122	60000	444	0.311
	1/4	2	1970	0.0037	0.0250	0.0499	0.150	50170	371	0.463
	3/8	2	1970	0.0056	0.0375	0.0709	0.225	33445	375	0.997
	1/2	2	1970	0.0050	0.0500	0.1005	0.300	25085	251	1.261
Thermoplastics	1/32	2	3935	0.0006	0.0031	0.0062	0.019	60000	72	0.001
	1/16	2	3935	0.0012	0.0063	0.0125	0.038	60000	144	0.011
	1/8	2	3935	0.0025	0.0125	0.0249	0.075	60000	504	0.157
	3/16	2	3935	0.0037	0.0187	0.0374	0.122	60000	444	0.311
	1/4	2	3935	0.0037	0.0250	0.0499	0.150	60000	444	0.554
	3/8	2	3935	0.0056	0.0375	0.0709	0.225	60000	672	1.787
	1/2	2	3935	0.0050	0.0500	0.1005	0.300	50105	501	2.518

5891



Profile Finishing

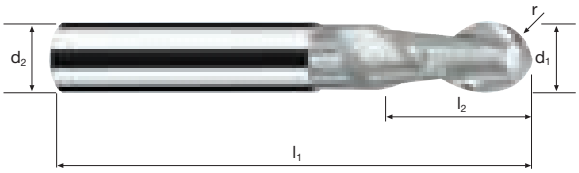
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Wrought Aluminium Si < 6%	1/32	2	2995	0.0004	0.0004	0.0004	0.026	60000	48	45
	1/16	2	2995	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	2995	0.0019	0.0015	0.0019	0.106	60000	228	45
	3/16	2	2995	0.0028	0.0023	0.0028	0.159	60000	336	45
	1/4	2	2995	0.0025	0.0030	0.0025	0.211	53495	267	45
	3/8	2	2995	0.0037	0.0045	0.0037	0.317	35610	264	45
	1/2	2	2995	0.0025	0.0060	0.0025	0.422	26750	134	45
Unalloyed Copper	1/32	2	1970	0.0004	0.0004	0.0004	0.026	60000	48	45
	1/16	2	1970	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1970	0.0019	0.0015	0.0019	0.106	60000	228	45
	3/16	2	1970	0.0028	0.0023	0.0028	0.159	47330	265	45
	1/4	2	1970	0.0025	0.0030	0.0025	0.211	35665	178	45
	3/8	2	1970	0.0037	0.0045	0.0037	0.317	23740	176	45
	1/2	2	1970	0.0025	0.0060	0.0025	0.422	17830	89	45
Thermoplastics	1/32	2	3935	0.0004	0.0004	0.0004	0.026	60000	48	45
	1/16	2	3935	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	3935	0.0019	0.0015	0.0019	0.106	60000	228	45
	3/16	2	3935	0.0028	0.0023	0.0028	0.159	60000	336	45
	1/4	2	3935	0.0025	0.0030	0.0025	0.211	60000	300	45
	3/8	2	3935	0.0037	0.0045	0.0037	0.317	47415	351	45
	1/2	2	3935	0.0025	0.0060	0.0025	0.422	35620	178	45

X-Generation Standard Length Sphericut-Alu

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **20°**



Performance roughing

Performance finishing

IV

Machines the following materials:

Best = Good =

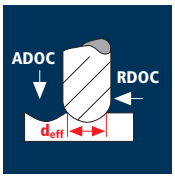
Plastics **Aluminum Copper**

dimensions tolerances	d1	d2 h6	l1	l2	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **CELERO** TiB_2								
C5891079	1/32	1/8	2 1/4	1/32	1/64	11°	2	$50.50	
C5891124	1/16	1/8	2 1/4	1/16	1/32	9°	2	$50.50	
C5891188	1/8	1/8	2 1/4	1/8	1/16	—	2	$50.50	
C5891248	3/16	3/16	2 1/4	3/16	3/32	—	2	$50.50	
C5891312	1/4	1/4	2 1/2	1/4	1/8	—	2	$50.50	•
C5891432	3/8	3/8	3	3/8	3/16	—	2	$94.30	•
C5891530	1/2	1/2	3 1/4	1/2	1/4	—	2	$118.50	•

CNC Radius R

d1	r	Tolerance f8 (inch)		Radius (inch) Minimum	Maximum	**R**
1/32	1/64	-0.0008	-0.0002	**0.01482**	**0.01542**	**0.01512**
1/16	1/32			**0.03045**	**0.03105**	**0.03075**
1/8	1/16			**0.06170**	**0.06230**	**0.06200**
3/16	3/32			**0.09295**	**0.09355**	**0.09325**
1/4	1/8	-0.0011	-0.0004	**0.12390**	**0.12460**	**0.12425**
3/8	3/16			**0.18640**	**0.18710**	**0.18675**
1/2	1/4	-0.0014	-0.0005	**0.24860**	**0.24950**	**0.24905**

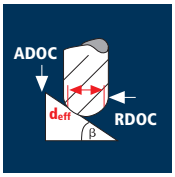
5890



Tip Milling

Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	MRR [in³/min]
Wrought Aluminium Si < 6%	1/32	2	2135	0.0006	0.0016	0.0031	0.014	60000	72	0.0004
	1/16	2	2135	0.0012	0.0031	0.0062	0.027	60000	144	0.0028
	1/8	2	2135	0.0025	0.0063	0.0123	0.055	60000	300	0.0232
	3/16	2	2135	0.0037	0.0094	0.0197	0.082	60000	444	0.0822
	1/4	2	2135	0.0037	0.0125	0.0263	0.109	60000	444	0.1460
	3/8	2	2135	0.0056	0.0187	0.0380	0.163	50035	560	0.3979
	1/2	2	2135	0.0050	0.0250	0.0531	0.218	37410	374	0.4965
Unalloyed Copper	1/32	2	1575	0.0006	0.0016	0.0031	0.014	60000	72	0.0004
	1/16	2	1575	0.0012	0.0031	0.0062	0.027	60000	144	0.0028
	1/8	2	1575	0.0025	0.0063	0.0123	0.055	60000	300	0.0232
	3/16	2	1575	0.0037	0.0094	0.0197	0.082	60000	444	0.0822
	1/4	2	1575	0.0037	0.0125	0.0263	0.109	55195	408	0.1341
	3/8	2	1575	0.0056	0.0187	0.0380	0.163	36910	413	0.2935
	1/2	2	1575	0.0050	0.0250	0.0531	0.218	27600	276	0.3664
Thermoplastics	1/32	2	3115	0.0006	0.0016	0.0031	0.014	60000	72	0.0004
	1/16	2	3115	0.0012	0.0031	0.0062	0.027	60000	144	0.0028
	1/8	2	3115	0.0025	0.0063	0.0123	0.055	60000	300	0.0232
	3/16	2	3115	0.0037	0.0094	0.0197	0.082	60000	444	0.0822
	1/4	2	3115	0.0037	0.0125	0.0263	0.109	60000	444	0.1460
	3/8	2	3115	0.0056	0.0187	0.0380	0.163	60000	672	0.4775
	1/2	2	3115	0.0050	0.0250	0.0531	0.218	54580	546	0.7248

5890



Profile Finishing

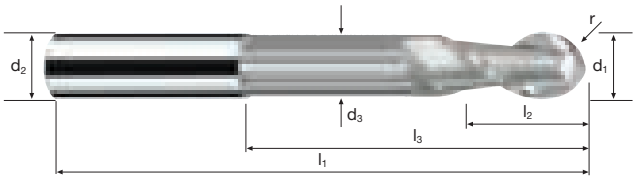
Application	d1 [in]	Flutes	Speed [ft/min]	FPT [in]	ADOC [in]	RDOC [in]	d_{eff} [in]	RPM	Feed [in/min]	β
Wrought Aluminium Si < 6%	1/32	2	1805	0.0004	0.0004	0.0004	0.026	60000	48	45
	1/16	2	1805	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1805	0.0019	0.0015	0.0019	0.106	60000	228	45
	3/16	2	1805	0.0028	0.0023	0.0028	0.159	43365	243	45
	1/4	2	1805	0.0025	0.0030	0.0025	0.211	32675	163	45
	3/8	2	1805	0.0037	0.0045	0.0037	0.317	21750	161	45
	1/2	2	1805	0.0025	0.0060	0.0025	0.422	16340	82	45
Unalloyed Copper	1/32	2	1245	0.0004	0.0004	0.0004	0.026	60000	48	45
	1/16	2	1245	0.0010	0.0008	0.0010	0.053	60000	120	45
	1/8	2	1245	0.0019	0.0015	0.0019	0.106	44865	170	45
	3/16	2	1245	0.0028	0.0023	0.0028	0.159	29910	167	45
	1/4	2	1245	0.0025	0.0030	0.0025	0.211	22540	113	45
	3/8	2	1245	0.0037	0.0045	0.0037	0.317	15000	111	45
	1/2	2	1245	0.0025	0.0060	0.0025	0.422	11270	56	45
Thermoplastics	1/32	2	2790	0.0004	0.0004	0.0004	0.026	60000	216	45
	1/16	2	2790	0.0010	0.0008	0.0010	0.053	60000	300	45
	1/8	2	2790	0.0019	0.0015	0.0019	0.106	60000	228	45
	3/16	2	2790	0.0028	0.0023	0.0028	0.159	60000	336	45
	1/4	2	2790	0.0025	0.0030	0.0025	0.211	50510	253	45
	3/8	2	2790	0.0037	0.0045	0.0037	0.317	33620	249	45
	1/2	2	2790	0.0025	0.0060	0.0025	0.422	25255	126	45

X-Generation Long Reach Sphericut-Alu

HSS | Favora® | Base-X | X-Generation

HM MG10

Helix **40°**
Rake **20°**



Performance roughing

Performance finishing

IV

Machines the following materials:

Best = Good =

Plastics | Aluminum Copper

dimensions tolerances	d1	d2 h6	d3	l1	l2	l3	radius f8	draft ∡	fl	List Price	ReTool®
Order #	Coating: **CELERO** TiB_2										
C5890079	1/32	1/8	0.027	2 1/2	1/32	3/32	1/64	9°	2	$52.20	
C5890124	1/16	1/8	0.053	2 1/2	1/16	3/16	1/32	6°	2	$52.20	
C5890188	1/8	1/8	0.115	3	1/8	3/8	1/16	—	2	$52.20	
C5890248	3/16	3/16	0.175	3	3/16	9/16	3/32	—	2	$52.20	
C5890312	1/4	1/4	0.230	3	1/4	2	1/8	—	2	$52.20	•
C5890432	3/8	3/8	0.345	3 1/2	3/8	2 1/4	3/16	—	2	$97.50	•
C5890530	1/2	1/2	0.460	4	1/2	2 1/2	1/4	—	2	$123.40	•

CNC Radius R

d1	r	Tolerance f8 (inch)		Radius (inch) Minimum	Maximum	**R**
1/32	1/64	-0.0008	-0.0002	**0.01482**	**0.01542**	**0.01512**
1/16	1/32			**0.03045**	**0.03105**	**0.03075**
1/8	1/16			**0.06170**	**0.06230**	**0.06200**
3/16	3/32			**0.09295**	**0.09355**	**0.09325**
1/4	1/8	-0.0011	-0.0004	**0.12390**	**0.12460**	**0.12425**
3/8	3/16			**0.18640**	**0.18710**	**0.18675**
1/2	1/4	-0.0014	-0.0005	**0.24860**	**0.24950**	**0.24905**

passion
for precision

fraisa

End mills for graphite

passion
for precision

fraisa

Square end mills for graphite

Square Diamond Coated Tools

15640	**GX**	Base-X **B**	R F	d_1 1/8" - 1/2" 90°	**Graphite**			227
15645	**GX**	Base-X **B**	R F	d_1 1/8" - 1/2" 90°	**Graphite**			229

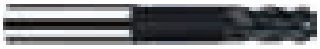
Corner radius end mills for graphite

Corner Radius Diamond Coated Tools

15650	**GSpeed**	Base-X **B**	R F	d_1 1/8" - 1/2" r	**Graphite**			231
15652	**GSpeed**	Base-X **B**	R F	d_1 1/8" - 1/2" r	**Graphite**			233

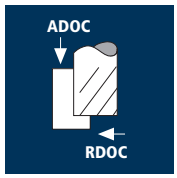
Ball nose end mills for graphite

Ball Nose Diamond Coated Tools

15680	**GX**	Base-X **B**	R F	d_1 1/8" - 1/2"	**Graphite**			235
15685	**GX**	Base-X **B**	R F	d_1 1/8" - 1/2"	**Graphite**			237
15690 	**GX**	Base-X **B**	R F	d_1 1/8" - 1/2"	**Graphite**			239

V

15640



Side Milling

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0013	0.031	0.073	52	78	104	156
	3/16	4	0.0019	0.047	0.137	76	114	152	228
	1/4	4	0.0025	0.063	0.192	100	150	200	300
	5/16	4	0.0031	0.078	0.240	124	186	248	372
	3/8	4	0.0030	0.094	0.277	120	180	240	360
	1/2	4	0.0045	0.125	0.341	180	270	360	540
Graphite	1/8	4	0.0012	0.094	0.024	48	72	96	144
	3/16	4	0.0016	0.141	0.046	64	96	128	192
	1/4	4	0.0023	0.188	0.064	92	138	184	276
	5/16	4	0.0028	0.234	0.080	112	168	224	336
	3/8	4	0.0034	0.281	0.092	136	204	272	408
	1/2	4	0.0045	0.375	0.114	180	270	360	540

15640

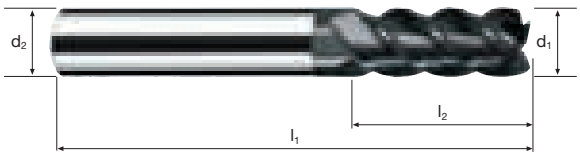
Slotting

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0008	0.024	0.125	32	48	64	96
	3/16	4	0.0012	0.046	0.188	48	72	96	144
	1/4	4	0.0017	0.064	0.250	68	102	136	204
	5/16	4	0.0020	0.080	0.313	80	120	160	240
	3/8	4	0.0025	0.092	0.375	100	150	200	300
	1/2	4	0.0033	0.114	0.500	132	198	264	396
Graphite	1/8	4	0.0008	0.049	0.125	32	48	64	96
	3/16	4	0.0012	0.091	0.188	48	72	96	144
	1/4	4	0.0015	0.128	0.250	60	90	120	180
	5/16	4	0.0019	0.160	0.313	76	114	152	228
	3/8	4	0.0022	0.185	0.375	88	132	176	264
	1/2	4	0.0030	0.227	0.500	120	180	240	360

Base-X Standard Length GX

HSS | Favora® | Base-X **B** | X-Generation

HM MG6	Helix 45° Rake 15°
90°	



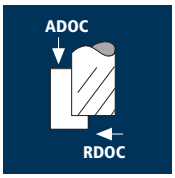
Machines the following materials: Best = Good =

Graphite

V

dimensions tolerances	d1 e8	d2 h6	l1	l2	fl	List Price
Order #	Coating: **DIAMOND** CVD					
B15640188	1/8	1/8	2 1/4	1/2	4	$66.00
B15640252	3/16	3/16	2 1/4	5/8	4	$66.00
B15640312	1/4	1/4	2 1/2	3/4	4	$66.00
B15640372	5/16	5/16	2 1/2	3/4	4	$89.00
B15640432	3/8	3/8	3	1	4	$125.00
B15640530	1/2	1/2	3 1/4	1 1/4	4	$155.00

15645



Side Milling

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0013	0.031	0.082	52	78	104	156
	3/16	4	0.0019	0.047	0.108	76	114	152	228
	1/4	4	0.0025	0.063	0.185	100	150	200	300
	5/16	4	0.0031	0.078	0.231	124	186	248	372
	3/8	4	0.0030	0.094	0.277	120	180	240	360
	1/2	4	0.0045	0.125	0.328	180	270	360	540
Graphite	1/8	4	0.0012	0.188	0.011	48	72	96	144
	3/16	4	0.0016	0.281	0.014	64	96	128	192
	1/4	4	0.0023	0.375	0.025	92	138	184	276
	5/16	4	0.0028	0.469	0.031	112	168	224	336
	3/8	4	0.0034	0.563	0.037	136	204	272	408
	1/2	4	0.0045	0.750	0.044	180	270	360	540

15645

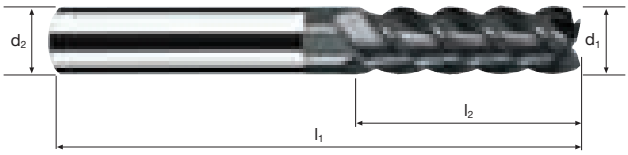
Slotting

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0008	0.027	0.125	32	48	64	96
	3/16	4	0.0012	0.036	0.188	48	72	96	144
	1/4	4	0.0017	0.062	0.250	68	102	136	204
	5/16	4	0.0020	0.077	0.313	80	120	160	240
	3/8	4	0.0025	0.092	0.375	100	150	200	300
	1/2	4	0.0033	0.109	0.500	132	198	264	396
Graphite	1/8	4	0.0008	0.055	0.125	32	48	64	96
	3/16	4	0.0012	0.072	0.188	48	72	96	144
	1/4	4	0.0015	0.123	0.250	60	90	120	180
	5/16	4	0.0019	0.154	0.313	76	114	152	228
	3/8	4	0.0022	0.185	0.375	88	132	176	264
	1/2	4	0.0030	0.219	0.500	120	180	240	360

Base-X Long Length GX

HSS | Favora® | Base-X **B** | X-Generation

HM MG6	Helix 45° Rake 15°
90°	



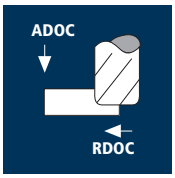
Machines the following materials: Best = Good =

Graphite

V

dimensions tolerances	d1 e8	d2 h6	l1	l2	fl	List Price
Order #	Coating: **DIAMOND** CVD					
B15645188	1/8	1/8	3	3/4	4	$79.20
B15645252	3/16	3/16	4	1	4	$79.20
B15645312	1/4	1/4	4	1 1/4	4	$79.20
B15645372	5/16	5/16	4	1 1/4	4	$106.80
B15645432	3/8	3/8	4	1 1/2	4	$150.00
B15645530	1/2	1/2	5	2	4	$186.00

15650



Semi Finishing

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0018	0.006	0.012	72	108	144	216
	3/16	4	0.0020	0.009	0.019	80	120	160	240
	1/4	4	0.0024	0.013	0.025	96	144	192	288
	3/8	4	0.0026	0.019	0.035	104	156	208	312
	1/2	4	0.0030	0.025	0.050	120	180	240	360

15650

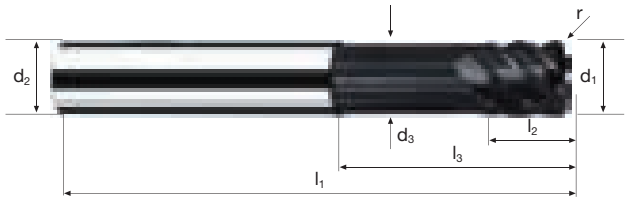
Profile Finishing

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0015	0.002	0.003	60	90	120	180
	3/16	4	0.0017	0.004	0.004	68	102	136	204
	1/4	4	0.0020	0.005	0.005	80	120	160	240
	3/8	4	0.0022	0.007	0.008	88	132	176	264
	1/2	4	0.0025	0.010	0.010	100	150	200	300

Base-X Standard Reach GSpeed

HSS | Favora® | Base-X **B** | X-Generation

HM XA	Helix 45° Rake 15°



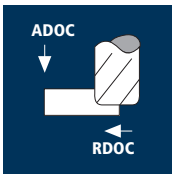
Machines the following materials: Best = Good =

Graphite

V

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius	draft ∡	fl	List Price
Order #	Coating: **Diamond** CVD									
B15650188	1/8	1/8	0.115	2 1/4	1/8	1/2	0.010	—	4	$77.90
B15650194	1/8	1/8	0.115	2 1/4	1/8	1/2	0.015	—	4	$77.90
B15650196	1/8	1/8	0.115	2 1/4	1/8	1/2	0.020	—	4	$77.90
B15650252	3/16	3/16	0.175	2 1/4	3/16	1/2	0.010	3°	4	$77.90
B15650254	3/16	3/16	0.175	2 1/4	3/16	1/2	0.020	3°	4	$77.90
B15650256	3/16	3/16	0.175	2 1/4	3/16	1/2	0.030	3°	4	$77.90
B15650312	1/4	1/4	0.230	2 1/2	1/4	3/4	0.010	—	6	$77.90
B15650314	1/4	1/4	0.230	2 1/2	1/4	3/4	0.020	—	6	$77.90
B15650316	1/4	1/4	0.230	2 1/2	1/4	3/4	0.030	—	6	$77.90
B15650432	3/8	3/8	0.345	3	3/8	1	0.010	—	6	$147.50
B15650434	3/8	3/8	0.345	3	3/8	1	0.020	—	6	$147.50
B15650436	3/8	3/8	0.345	3	3/8	1	0.030	—	6	$147.50
B15650530	1/2	1/2	0.460	3 1/4	1/2	1	0.015	—	6	$182.90
B15650532	1/2	1/2	0.460	3 1/4	1/2	1	0.030	—	6	$182.90
B15650536	1/2	1/2	0.460	3 1/4	1/2	1	0.060	—	6	$182.90

15652



Semi Finishing

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0018	0.006	0.012	72	108	144	216
	3/16	4	0.0020	0.009	0.019	80	120	160	240
	1/4	4	0.0024	0.013	0.025	96	144	192	288
	3/8	4	0.0026	0.019	0.035	104	156	208	312
	1/2	4	0.0030	0.025	0.050	120	180	240	360

15652

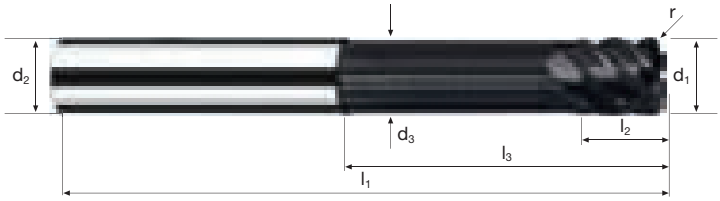
Profile Finishing

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0015	0.002	0.003	60	90	120	180
	3/16	4	0.0017	0.004	0.004	68	102	136	204
	1/4	4	0.0020	0.005	0.005	80	120	160	240
	3/8	4	0.0022	0.007	0.008	88	132	176	264
	1/2	4	0.0025	0.010	0.010	100	150	200	300

Base-X Long Reach GSpeed

HSS | Favora® | Base-X | B | X-Generation

HM XA	Helix 45° Rake 15°



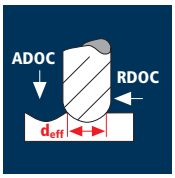
Machines the following materials: Best = Good =

Graphite

V

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius	draft ∡	fl	List Price
Order #	Coating: **Diamond** CVD									
B15652188	1/8	1/8	0.115	4	1/8	1 1/4	0.010	—	4	$93.50
B15652194	1/8	1/8	0.115	4	1/8	1 1/4	0.015	—	4	$93.50
B15652196	1/8	1/8	0.115	4	1/8	1 1/4	0.020	—	4	$93.50
B15652252	3/16	1/4	0.175	4	3/16	1 1/2	0.010	1.5°	4	$93.50
B15652254	3/16	1/4	0.175	4	3/16	1 1/2	0.020	1.5°	4	$93.50
B15652256	3/16	1/4	0.175	4	3/16	1 1/2	0.030	1.5°	4	$93.50
B15652312	1/4	1/4	0.230	6	1/4	2	0.010	—	6	$93.50
B15652314	1/4	1/4	0.230	6	1/4	2	0.020	—	6	$93.50
B15652316	1/4	1/4	0.230	6	1/4	2	0.030	—	6	$93.50
B15652432	3/8	3/8	0.345	6	3/8	2 1/4	0.010	—	6	$177.00
B15652434	3/8	3/8	0.345	6	3/8	2 1/4	0.020	—	6	$177.00
B15652436	3/8	3/8	0.345	6	3/8	2 1/4	0.030	—	6	$177.00
B15652530	1/2	1/2	0.460	6	1/2	2 1/2	0.015	—	6	$219.50
B15652532	1/2	1/2	0.460	6	1/2	2 1/2	0.030	—	6	$219.50
B15652536	1/2	1/2	0.460	6	1/2	2 1/2	0.060	—	6	$219.50

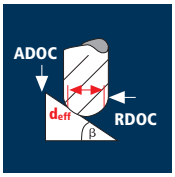
15680



Tip Milling

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0020	0.0250	0.0164	80	120	160	240
	3/16	4	0.0022	0.0375	0.0215	88	132	176	264
	1/4	4	0.0030	0.0500	0.0369	120	180	240	360
	5/16	4	0.0037	0.0625	0.0461	148	222	296	444
	3/8	4	0.0045	0.0750	0.0554	180	270	360	540
	1/2	4	0.0060	0.1000	0.0656	240	360	480	720
Graphite	1/8	4	0.0020	0.0563	0.0437	80	120	160	240
	3/16	4	0.0022	0.0844	0.0574	88	132	176	264
	1/4	4	0.0030	0.1125	0.0984	120	180	240	360
	5/16	4	0.0037	0.1406	0.1230	148	222	296	444
	3/8	4	0.0045	0.1688	0.1476	180	270	360	540
	1/2	4	0.0060	0.2250	0.1749	240	360	480	720

15680



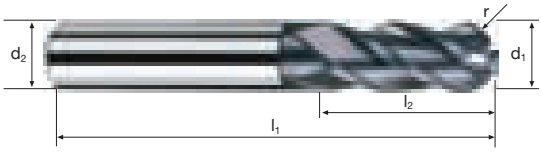
Profile Finishing

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0015	0.0018	0.0015	60	90	120	180
	3/16	4	0.0015	0.0026	0.0015	60	90	120	180
	1/4	4	0.0020	0.0035	0.0020	80	120	160	240
	5/16	4	0.0012	0.0044	0.0012	48	72	96	144
	3/8	4	0.0015	0.0052	0.0015	60	90	120	180
	1/2	4	0.0020	0.0070	0.0020	80	120	160	240

X-Generation Standard Length GX

HSS | Favora® | Base-X | B | X-Generation

HM XA	Helix 45° Rake 15°



Machines the following materials: Best = Good =

Graphite

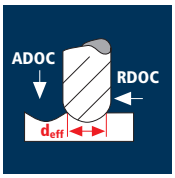
V

dimensions tolerances	d1	d2 h6	l1	l2	radius e8	fl	List Price
Order #	Coating: **Diamond** CVD						
B15680188	1/8	1/8	2 1/4	1/2	1/16	4	$85.80
B15680252	3/16	3/16	2 1/4	5/8	3/32	4	$85.80
B15680312	1/4	1/4	2 1/2	3/4	1/8	4	$85.80
B15680372	5/16	5/16	2 1/2	3/4	5/32	4	$115.70
B15680432	3/8	3/8	3	1	3/16	4	$162.50
B15680530	1/2	1/2	3 1/4	1 1/4	1/4	4	$201.50

CNC Radius R

d1	r	Tolerance e8		Radius Minimum	Radius Maximum	**R**
1/8	1/16	-0.0011	-0.0006	**0.06140**	**0.06190**	**0.06250**
3/16	3/32			**0.09265**	**0.09315**	**0.09375**
1/4	1/8	-0.0015	-0.0008	**0.12350**	**0.12420**	**0.12500**
5/16	5/32			**0.15475**	**0.15545**	**0.15625**
3/8	3/16			**0.18600**	**0.18670**	**0.18750**
1/2	1/4	-0.0019	-0.0010	**0.24810**	**0.24900**	**0.25000**

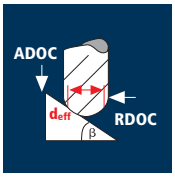
15685



Tip Milling

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0020	0.0250	0.0164	80	120	160	240
	3/16	4	0.0022	0.0375	0.0215	88	132	176	264
	1/4	4	0.0030	0.0500	0.0369	120	180	240	360
	5/16	4	0.0037	0.0625	0.0461	148	222	296	444
	3/8	4	0.0045	0.0750	0.0554	180	270	360	540
	1/2	4	0.0060	0.1000	0.0656	240	360	480	720
Graphite	1/8	4	0.0020	0.0563	0.0437	80	120	160	240
	3/16	4	0.0022	0.0844	0.0574	88	132	176	264
	1/4	4	0.0030	0.1125	0.0984	120	180	240	360
	5/16	4	0.0037	0.1406	0.1230	148	222	296	444
	3/8	4	0.0045	0.1688	0.1476	180	270	360	540
	1/2	4	0.0060	0.2250	0.1749	240	360	480	720

15685



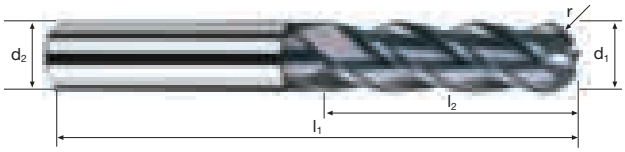
Profile Finishing

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0015	0.0018	0.0015	60	90	120	180
	3/16	4	0.0015	0.0026	0.0015	60	90	120	180
	1/4	4	0.0020	0.0035	0.0020	80	120	160	240
	5/16	4	0.0012	0.0044	0.0012	48	72	96	144
	3/8	4	0.0015	0.0052	0.0015	60	90	120	180
	1/2	4	0.0020	0.0070	0.0020	80	120	160	240

Base-X Long Length GX

HSS | Favora® | Base-X | B | X-Generation

HM XA	Helix 45° Rake 15°



Machines the following materials: Best = Good =

Graphite

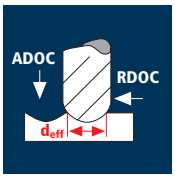
V

dimensions tolerances	d1	d2 h6	l1	l2	radius e8	fl	List Price
Order #	Coating: **Diamond** CVD						
B15685188	1/8	1/8	3	3/4	1/16	4	$95.10
B15685252	3/16	3/16	4	1	3/32	4	$95.10
B15685312	1/4	1/4	4	1 1/4	1/8	4	$95.10
B15685372	5/16	5/16	4	1 1/4	5/32	4	$128.20
B15685432	3/8	3/8	4	1 1/2	3/16	4	$180.00
B15685530	1/2	1/2	5	2	1/4	4	$223.20

CNC Radius R

d1	r	Tolerance e8		Radius Minimum	Radius Maximum	**R**
1/8	1/16	-0.0011	-0.0006	**0.06140**	**0.06190**	**0.06250**
3/16	3/32			**0.09265**	**0.09315**	**0.09375**
1/4	1/8	-0.0015	-0.0008	**0.12350**	**0.12420**	**0.12500**
5/16	5/32			**0.15475**	**0.15545**	**0.15625**
3/8	3/16			**0.18600**	**0.18670**	**0.18750**
1/2	1/4	-0.0019	-0.0010	**0.24810**	**0.24900**	**0.25000**

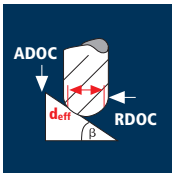
15690



Tip Milling

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0020	0.0250	0.0164	80	120	160	240
	3/16	4	0.0022	0.0375	0.0215	88	132	176	264
	1/4	4	0.0030	0.0500	0.0369	120	180	240	360
	5/16	4	0.0037	0.0625	0.0461	148	222	296	444
	3/8	4	0.0045	0.0750	0.0554	180	270	360	540
	1/2	4	0.0060	0.1000	0.0656	240	360	480	720
Graphite	1/8	4	0.0020	0.0563	0.0437	80	120	160	240
	3/16	4	0.0022	0.0844	0.0574	88	132	176	264
	1/4	4	0.0030	0.1125	0.0984	120	180	240	360
	5/16	4	0.0037	0.1406	0.1230	148	222	296	444
	3/8	4	0.0045	0.1688	0.1476	180	270	360	540
	1/2	4	0.0060	0.2250	0.1749	240	360	480	720

15690



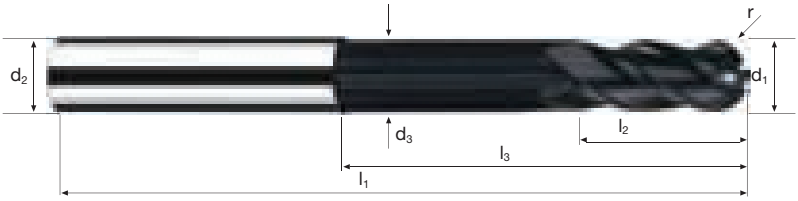
Profile Finishing

Application	d1 [in]	Flutes	FPT [in]	ADOC [in]	RDOC [in]	Feed Rate Based On RPM 10,000	15,000	20,000	30,000
Graphite	1/8	4	0.0015	0.0018	0.0015	60	90	120	180
	3/16	4	0.0015	0.0026	0.0015	60	90	120	180
	1/4	4	0.0020	0.0035	0.0020	80	120	160	240
	5/16	4	0.0012	0.0044	0.0012	48	72	96	144
	3/8	4	0.0015	0.0052	0.0015	60	90	120	180
	1/2	4	0.0020	0.0070	0.0020	80	120	160	240

X-Generation Long Reach GX

HSS | Favora® | Base-X | **B** | X-Generation

HM XA	Helix 45°
	Rake 15°



Machines the following materials: Best = Good =

Graphite

V

dimensions tolerances	d1 e8	d2 h6	d3	l1	l2	l3	radius e8	draft ∡	fl	List Price
Order #	Coating: **Diamond** CVD									
B15690188	1/8	1/8	0.115	4	1/2	1 1/4	1/16	—	4	$104.60
B15690252	3/16	1/4	0.175	4	5/8	1 1/2	3/32	—	4	$104.60
B15690312	1/4	1/4	0.230	6	3/4	2	1/8	—	4	$104.60
B15690432	3/8	3/8	0.345	6	1	2 1/2	5/32	1.5°	4	$141.00
B15690530	1/2	1/2	0.460	6	1 1/4	2 1/2	1/4	1.5°	4	$198.00

CNC Radius R

d1	r	Tolerance e8		Radius Minimum	Radius Maximum	**R**
1/8	1/16	-0.0011	-0.0006	**0.06140**	**0.06190**	**0.06250**
3/16	3/32			**0.09265**	**0.09315**	**0.09375**
1/4	1/8	-0.0015	-0.0008	**0.12350**	**0.12420**	**0.12500**
5/16	5/32			**0.15475**	**0.15545**	**0.15625**
3/8	3/16			**0.18600**	**0.18670**	**0.18750**
1/2	1/4	-0.0019	-0.0010	**0.24810**	**0.24900**	**0.25000**

passion
for precision

fraisa

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version

N° 8600	**NX-NVDS** **new!**	X-Generation **X**	Roughing / Finishing	d_1 4 – 20, r	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	247
N° 15322	**NX-NVD**	X-Generation **X**	Roughing / Finishing	d_1 4 – 20, 45°	**Rm** 850-1500	**HRC** 48-56	**Ti** Titanium	249
N° 8200	**NB-NVDS** **new!**	Base-X **B**	Roughing / Finishing	d_1 4 – 20, r	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	251
N° 8404	**NB-NVS** **new!**	Base-X **B**	Roughing / Finishing	d_1 2 – 20, r	**Rm** <850-1100	**Inox** Stainless		253
N° 15207 / 15307	**NB-NVD**	Base-X **B**	Roughing / Finishing	d_1 4 – 20, 45°	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	255
N° 5240 / 5340		Base-X **B**	Roughing / Finishing	d_1 2 – 20, 45°	**Rm** <850-1100			257
N° 45317	**NF-NV**	Favora® **F**	Roughing / Finishing	d_1 3 – 20, 45°	**Rm** <850-1100	**Inox** Stainless		259

VI

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, cylindrical

Normal version with neck

N° 5225 / 5325	NB-V	Base-X B	Roughing / Finishing	d_1 3 – 20	Rm <850-1300	Inox Stainless		261
N° 5248 / 5348	HX	X-Generation X	Roughing / Finishing	d_1 3 – 25	Rm 1300-1500	HRC 48-56		263

Medium length version

N° 15323	NX-NVD	X-Generation X	Roughing / Finishing	d_1 4 – 20	Rm 850-1500	HRC 48-56	Ti Titanium	265
N° 15308	NB-NVD	Base-X B	Roughing / Finishing	d_1 4 – 20	Rm <850-1300	Inox Stainless	Ti Titanium	267
N° 15243 / 15343		Base-X B	Roughing / Finishing	d_1 2 – 25	Rm <850-1100			269

Short version

N° 5249 / 5349	HX	X-Generation X	Roughing / Finishing	d_1 1 – 16	Rm 1300-1500	HRC 48-60		271

End milling tools for steel, stainless steel, titanium and nickel
Smooth-edged, with corner radius

Normal version

N° 5259

HX-RN

X-Generation **X**

Roughing
Finishing

r 0.2, 0.5

Rm 1300-1500

HRC 48-60

273

Normal version with shank

N° 5256 / 5356

HX-R

X-Generation **X**

Roughing
Finishing

r 1.5, 2.0, 2.5, 3.0, 3.5, 4.0

Rm 1300-1500

HRC 48-60

275

End milling tools for steel, stainless steel, titanium and nickel
Finishing, cylindrical

Normal version

N° 15250	**Multicut XF**	X-Generation **X**	Roughing / Finishing	d_1 3 – 20	45°	**Rm** 850-1500	**HRC** 48-60	**Inox** Stainless	277
N° 5266	**Multicut HX-H**	X-Generation **X**	Roughing / Finishing	d_1 3 – 20	45°	**HRC** 48- >60			279
N° 5260	**Multicut N**	Base-X **B**	Roughing / Finishing	d_1 6 – 20	45°	**Rm** 850-1300			281

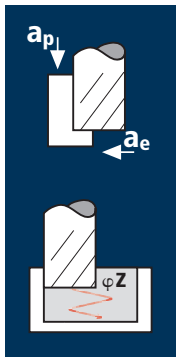
Medium length version

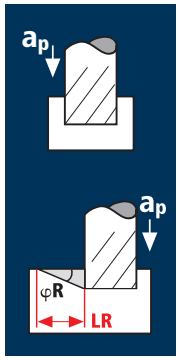
N° 15251	**Multicut XF**	X-Generation **X**	Roughing / Finishing	d_1 6 – 20	45°	**Rm** 850-1500	**HRC** 48-60	**Inox** Stainless	283
N° 15266	**Multicut HX-H**	X-Generation **X**	Roughing / Finishing	d_1 6 – 20	45°	**HRC** 48- >60			285

End milling tools for steel, stainless steel, titanium and nickel
Micro, cylindrical

Shank ø 3mm

N° 15711	Microcut-C1H	X-Generation	X	1xd	d_1 0.2 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	287
N° 5712	Microcut-C3	Base-X	B	3xd	d_1 0.2 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	289
N° 5722	Microcut-C3H	X-Generation	X	3xd	d_1 0.5 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	291
N° 5710 / 45710		Favora®	F	3xd	d_1 0.3 – 3.0 90°	Rm <850-1100			293
N° 45713	Micro C3	Favora®	F	3xd	d_1 0.4 – 2.9 90°	Rm <850	Inox Stainless	CuZn Gold Pl	297
N° 15752	Microcut-C3	Base-X	B	3xd	d_1 0.5 – 3.0 90°	Rm <850-1500	Inox Stainless	Ti Titanium	301
N° 5714	Microcut-C5	Base-X	B	5xd	d_1 0.5 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	303
N° 5724	Microcut-C5H	X-Generation	X	5xd	d_1 0.5 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	305
N° 15754	Microcut-C5	Base-X	B	5xd	d_1 0.5 – 3.0 90°	Rm <850-1500	Inox Stainless	Ti Titanium	307
N° 5716	Microcut-C8	Base-X	B	8xd	d_1 0.5 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	309
N° 5726	Microcut-C8H	X-Generation	X	8xd	d_1 0.5 – 3.0 45°	Rm 850-1500	HRC 48-60	Ti Titanium	311
N° 5717	Microcut-C10	Base-X	B	10xd	d_1 0.5 – 3.0 45°	Rm <850-1500	Inox Stainless	Ti Titanium	313
N° 5721	Microcut-C12	Base-X	B	12xd	d_1 1.0 – 3.0 45°	Rm <850-1300			315

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f / v_fZ [mm/min]	Q [cm³/min]	φZ [°]	φA [°]
	Steel 850 - 1100 N/mm²	4	4	150	0.030	6.0	1.6	11935	1430	13.5	20°	See page 536
		5	4	150	0.035	7.5	2.0	9550	1335	20.0	20°	
		6	4	150	0.040	9.0	2.4	7960	1275	27.5	20°	
		8	4	150	0.050	12.0	3.2	5970	1195	46.0	20°	
		10	4	150	0.065	15.0	4.0	4775	1240	74.5	20°	
		12	4	150	0.075	18.0	4.8	3980	1195	103.0	20°	
		16	4	150	0.085	24.0	6.4	2985	1015	156.0	20°	
		20	4	150	0.100	30.0	8.0	2385	955	229.0	20°	
	Steel 1100 - 1300 N/mm²	4	4	115	0.030	6.0	1.6	9150	1100	10.5	17.5°	See page 536
		5	4	115	0.035	7.5	2.0	7320	1025	15.5	17.5°	
		6	4	115	0.040	9.0	2.4	6100	975	21.0	17.5°	
		8	4	115	0.050	12.0	3.2	4575	915	35.0	17.5°	
		10	4	115	0.065	15.0	4.0	3660	950	57.0	17.5°	
		12	4	115	0.075	18.0	4.8	3050	915	79.0	17.5°	
		16	4	115	0.085	24.0	6.4	2290	780	120.0	17.5°	
		20	4	115	0.100	30.0	8.0	1830	730	175.0	17.5°	
	Hardened tool steel 52 - 56 HRC	4	4	50	0.015	6.0	1.6	3980	240	2.5	15°	See page 536
		5	4	50	0.020	7.5	2.0	3185	255	4.0	15°	
		6	4	50	0.025	9.0	2.4	2655	265	5.5	15°	
		8	4	50	0.030	12.0	3.2	1990	240	9.0	15°	
		10	4	50	0.035	15.0	4.0	1590	225	13.5	15°	
		12	4	50	0.045	18.0	4.8	1325	240	20.5	15°	
		16	4	50	0.055	24.0	6.4	995	220	34.0	15°	
		20	4	50	0.070	30.0	8.0	795	225	54.0	15°	
	Titanium alloys >300 HB [Ti6Al4V]	4	4	60	0.020	6.0	1.6	4775	380	3.5	12°	See page 536
		5	4	60	0.025	7.5	2.0	3820	380	5.5	12°	
		6	4	60	0.030	9.0	2.4	3185	380	8.0	12°	
		8	4	60	0.040	12.0	3.2	2385	380	14.5	12°	
		10	4	60	0.045	15.0	4.0	1910	345	20.5	12°	
		12	4	60	0.055	18.0	4.8	1590	350	30.0	12°	
		16	4	60	0.065	24.0	6.4	1195	310	47.5	12°	
		20	4	60	0.080	30.0	8.0	955	305	73.0	12°	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f / v_fR [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel 850 - 1100 N/mm²	4	4	120	0.025	5.0	4	9550	955	19.0	32°	8.0
		5	4	120	0.025	6.3	5	7640	765	24.0	32°	10.4
		6	4	120	0.030	7.5	6	6365	765	34.5	32°	12.0
		8	4	120	0.040	10.0	8	4775	765	61.0	32°	16.0
		10	4	120	0.050	12.5	10	3820	765	95.5	32°	20.0
		12	4	120	0.055	15.0	12	3185	700	126.0	32°	24.0
		16	4	120	0.065	20.0	16	2385	620	198.5	32°	32.0
		20	4	120	0.075	25.0	20	1910	575	287.5	32°	40.0
	Steel 1100 - 1300 N/mm²	4	4	90	0.025	5.0	4	7160	715	14.5	28°	9.4
		5	4	90	0.025	6.3	5	5730	575	18.0	28°	12.2
		6	4	90	0.030	7.5	6	4775	575	26.0	28°	14.1
		8	4	90	0.040	10.0	8	3580	575	46.0	28°	18.8
		10	4	90	0.050	12.5	10	2865	575	72.0	28°	23.5
		12	4	90	0.055	15.0	12	2385	525	94.5	28°	28.2
		16	4	90	0.065	20.0	16	1790	465	149.0	28°	37.6
		20	4	90	0.075	25.0	20	1430	430	215.0	28°	47.0
	Hardened tool steel 52 - 56 HRC	4	4	40	0.010	5.0	4	3185	125	2.5	24°	11.2
		5	4	40	0.015	6.3	5	2545	155	5.0	24°	14.6
		6	4	40	0.020	7.5	6	2120	170	7.5	24°	16.8
		8	4	40	0.025	10.0	8	1590	160	13.0	24°	22.5
		10	4	40	0.025	12.5	10	1275	130	16.5	24°	28.1
		12	4	40	0.035	15.0	12	1060	150	27.0	24°	33.7
		16	4	40	0.040	20.0	16	795	125	40.0	24°	44.9
		20	4	40	0.055	25.0	20	635	140	70.0	24°	56.2
	Titanium alloys >300 HB [Ti6Al4V]	4	4	50	0.015	5.0	4	3980	240	5.0	19°	14.5
		5	4	50	0.020	6.3	5	3185	255	8.0	19°	18.9
		6	4	50	0.025	7.5	6	2655	265	12.0	19°	21.8
		8	4	50	0.030	10.0	8	1990	240	19.0	19°	29.0
		10	4	50	0.035	12.5	10	1590	225	28.0	19°	36.3
		12	4	50	0.040	15.0	12	1325	210	38.0	19°	43.6
		16	4	50	0.050	20.0	16	995	200	64.0	19°	58.1
		20	4	50	0.060	25.0	20	795	190	95.0	19°	72.6

Cylindrical end mills NX-NVDS

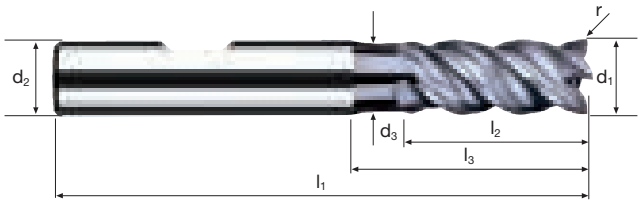
Smooth-edged, normal version with short neck
High-performance penetration edge

HSS | Favora® | Base-X | X-Generation

HM MG10 | λ 45° γ-10°

r

Vario



new!

Roughing

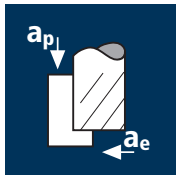
Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **8600** ø-Code **.220**

POLYCHROM **P8600**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r	α	z	$
.220	4	6	3.7	57	8	16	0.10	3.0°	4	72.00
.260	5	6	4.6	57	10	18	0.10	1.5°	4	72.00
.300	6	6	5.5	57	12	20	0.10	0.0°	4	72.00
.391	8	8	7.4	63	19	26	0.15	0.0°	4	91.00
.450	10	10	9.2	72	23	31	0.20	0.0°	4	123.00
.501	12	12	11.0	83	27	37	0.20	0.0°	4	152.00
.610	16	16	15.0	92	32	43	0.20	0.0°	4	238.00
.682	20	20	19.0	104	39	53	0.20	0.0°	4	347.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm² P P	4	4	150	0.030	6.0	1.6	11935	1430	13.5
		5	4	150	0.035	7.5	2.0	9550	1335	20.0
		6	4	150	0.040	9.0	2.4	7960	1275	27.5
		8	4	150	0.050	12.0	3.2	5970	1195	46.0
		10	4	150	0.065	15.0	4.0	4775	1240	74.5
		12	4	150	0.075	18.0	4.8	3980	1195	103.0
		16	4	150	0.085	24.0	6.4	2985	1015	156.0
		20	4	150	0.100	30.0	8.0	2385	955	229.0
	Steel 1100 - 1300 N/mm² P P	4	4	115	0.030	6.0	1.6	9150	1100	10.5
		5	4	115	0.035	7.5	2.0	7320	1025	15.5
		6	4	115	0.040	9.0	2.4	6100	975	21.0
		8	4	115	0.050	12.0	3.2	4575	915	35.0
		10	4	115	0.065	15.0	4.0	3660	950	57.0
		12	4	115	0.075	18.0	4.8	3050	915	79.0
		16	4	115	0.085	24.0	6.4	2290	780	120.0
		20	4	115	0.100	30.0	8.0	1830	730	175.0
	Hardened tool steel 52 - 56 HRC P	4	4	50	0.015	6.0	1.6	3980	240	2.5
		5	4	50	0.020	7.5	2.0	3185	255	4.0
		6	4	50	0.025	9.0	2.4	2655	265	5.5
		8	4	50	0.030	12.0	3.2	1990	240	9.0
		10	4	50	0.035	15.0	4.0	1590	225	13.5
		12	4	50	0.045	18.0	4.8	1325	240	20.5
		16	4	50	0.055	24.0	6.4	995	220	34.0
		20	4	50	0.070	30.0	8.0	795	225	54.0
	Titanium alloys >300 HB [Ti6Al4V] P	4	4	60	0.020	6.0	1.6	4775	380	3.5
		5	4	60	0.025	7.5	2.0	3820	380	5.5
		6	4	60	0.030	9.0	2.4	3185	380	8.0
		8	4	60	0.040	12.0	3.2	2385	380	14.5
		10	4	60	0.045	15.0	4.0	1910	345	20.5
		12	4	60	0.055	18.0	4.8	1590	350	30.0
		16	4	60	0.065	24.0	6.4	1195	310	47.5
		20	4	60	0.080	30.0	8.0	955	305	73.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel 850 - 1100 N/mm² P P	4	4	120	0.025	5.0	4	9550	955	19.0
		5	4	120	0.025	6.3	5	7640	765	24.0
		6	4	120	0.030	7.5	6	6365	765	34.5
		8	4	120	0.040	10.0	8	4775	765	61.0
		10	4	120	0.050	12.5	10	3820	765	95.5
		12	4	120	0.055	15.0	12	3185	700	126.0
		16	4	120	0.065	20.0	16	2385	620	198.5
		20	4	120	0.075	25.0	20	1910	575	287.5
	Steel 1100 - 1300 N/mm² P P	4	4	90	0.025	5.0	4	7160	715	14.5
		5	4	90	0.025	6.3	5	5730	575	18.0
		6	4	90	0.030	7.5	6	4775	575	26.0
		8	4	90	0.040	10.0	8	3580	575	46.0
		10	4	90	0.050	12.5	10	2865	575	72.0
		12	4	90	0.055	15.0	12	2385	525	94.5
		16	4	90	0.065	20.0	16	1790	465	149.0
		20	4	90	0.075	25.0	20	1430	430	215.0
	Hardened tool steel 52 - 56 HRC P	4	4	40	0.010	5.0	4	3185	125	2.5
		5	4	40	0.015	6.3	5	2545	155	5.0
		6	4	40	0.020	7.5	6	2120	170	7.5
		8	4	40	0.025	10.0	8	1590	160	13.0
		10	4	40	0.025	12.5	10	1275	130	16.5
		12	4	40	0.035	15.0	12	1060	150	27.0
		16	4	40	0.040	20.0	16	795	125	40.0
		20	4	40	0.055	25.0	20	635	140	70.0
	Titanium alloys >300 HB [Ti6Al4V] P	4	4	50	0.015	5.0	4	3980	240	5.0
		5	4	50	0.020	6.3	5	3185	255	8.0
		6	4	50	0.025	7.5	6	2655	265	12.0
		8	4	50	0.030	10.0	8	1990	240	19.0
		10	4	50	0.035	12.5	10	1590	225	28.0
		12	4	50	0.040	15.0	12	1325	210	38.0
		16	4	50	0.050	20.0	16	995	200	64.0
		20	4	50	0.060	25.0	20	795	190	95.0

Cylindrical end mills NX-NVD

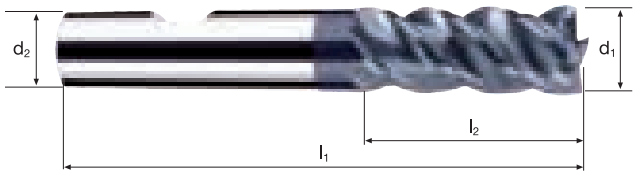
Smooth-edged, normal version

HSS | Favora® | Base-X | X-Generation X

HM MG10 | λ 45° γ-10°

45°

Vario



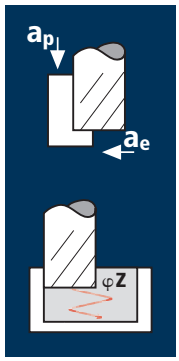
Roughing

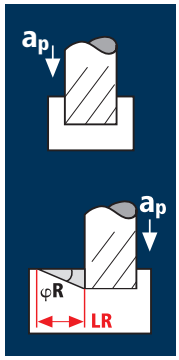
Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15322** ø-Code **.220**

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	POLYCHROM P15322 $
.220	4	6	57	8	0.10	4.5°	4	63.00
.260	5	6	57	10	0.15	2.5°	4	63.00
.300	6	6	57	12	0.15	0.0°	4	63.00
.391	8	8	63	19	0.15	0.0°	4	79.00
.450	10	10	72	23	0.20	0.0°	4	107.00
.501	12	12	83	27	0.20	0.0°	4	132.00
.610	16	16	92	32	0.20	0.0°	4	207.00
.682	20	20	104	39	0.20	0.0°	4	302.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f / v_fZ [mm/min]	Q [cm³/min]	φZ [°]	φA [°]
	Steel < 850 N/mm² P P	4	4	180	0.035	6.0	1.6	14325	2005	19.0	20°	See page 536
		5	4	180	0.040	7.5	2.0	11460	1835	27.5	20°	
		6	4	180	0.050	9.0	2.4	9550	1910	41.5	20°	
		8	4	180	0.060	12.0	3.2	7160	1720	66.0	20°	
		10	4	180	0.075	15.0	4.0	5730	1720	103.0	20°	
		12	4	180	0.085	18.0	4.8	4775	1625	140.5	20°	
		16	4	180	0.095	24.0	6.4	3580	1360	209.0	20°	
		20	4	180	0.110	30.0	8.0	2865	1260	302.5	20°	
	Steel 850 - 1100 N/mm² P P	4	4	150	0.030	6.0	1.6	11935	1430	13.5	18°	See page 536
		5	4	150	0.035	7.5	2.0	9550	1335	20.0	18°	
		6	4	150	0.040	9.0	2.4	7960	1275	27.5	18°	
		8	4	150	0.050	12.0	3.2	5970	1195	46.0	18°	
		10	4	150	0.065	15.0	4.0	4775	1240	74.5	18°	
		12	4	150	0.075	18.0	4.8	3980	1195	103.0	18°	
		16	4	150	0.085	24.0	6.4	2985	1015	156.0	18°	
		20	4	150	0.100	30.0	8.0	2385	955	229.0	18°	
	Cold work tool steel (12% Cr), high alloyed [1.2379] P P	4	4	70	0.030	6.0	1.6	5570	670	6.5	12°	See page 536
		5	4	70	0.035	7.5	2.0	4455	625	9.5	12°	
		6	4	70	0.040	9.0	2.4	3715	595	13.0	12°	
		8	4	70	0.050	12.0	3.2	2785	555	21.5	12°	
		10	4	70	0.060	15.0	4.0	2230	535	32.0	12°	
		12	4	70	0.075	18.0	4.8	1855	555	48.0	12°	
		16	4	70	0.085	24.0	6.4	1395	475	73.0	12°	
		20	4	70	0.095	30.0	8.0	1115	425	102.0	12°	
	Stainless steel [Cr-Ni/1.4301] P	4	4	90	0.020	6.0	1.6	7160	575	5.5	12°	See page 536
		5	4	90	0.025	7.5	2.0	5730	575	8.5	12°	
		6	4	90	0.030	9.0	2.4	4775	575	12.5	12°	
		8	4	90	0.035	12.0	3.2	3580	500	19.0	12°	
		10	4	90	0.045	15.0	4.0	2865	515	31.0	12°	
		12	4	90	0.055	18.0	4.8	2385	525	45.5	12°	
		16	4	90	0.065	24.0	6.4	1790	465	71.5	12°	
		20	4	90	0.080	30.0	8.0	1430	460	110.5	12°	

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f / v_fR [mm/min]	Q [cm³/min]	φR [°]	LR [mm]
	Steel < 850 N/mm² P P	4	4	145	0.025	5.0	4	11540	1155	23.0	32°	8.0
		5	4	145	0.030	6.3	5	9230	1110	34.5	32°	10.4
		6	4	145	0.040	7.5	6	7695	1230	55.5	32°	12.0
		8	4	145	0.045	10.0	8	5770	1040	83.0	32°	16.0
		10	4	145	0.055	12.5	10	4615	1015	127.0	32°	20.0
		12	4	145	0.065	15.0	12	3845	1000	180.0	32°	24.0
		16	4	145	0.070	20.0	16	2885	810	259.0	32°	32.0
		20	4	145	0.085	25.0	20	2310	785	392.5	32°	40.0
	Steel 850 - 1100 N/mm² P P	4	4	120	0.020	5.0	4	9550	765	15.5	29°	9.0
		5	4	120	0.025	6.3	5	7640	765	24.0	29°	11.7
		6	4	120	0.030	7.5	6	6365	765	34.5	29°	13.5
		8	4	120	0.040	10.0	8	4775	765	61.0	29°	18.0
		10	4	120	0.050	12.5	10	3820	765	95.5	29°	22.6
		12	4	120	0.055	15.0	12	3185	700	126.0	29°	27.1
		16	4	120	0.065	20.0	16	2385	620	198.5	29°	36.1
		20	4	120	0.075	25.0	20	1910	575	287.5	29°	45.1
	Cold work tool steel (12% Cr), high alloyed [1.2379] P P	4	4	55	0.025	5.0	4	4375	440	9.0	19°	14.5
		5	4	55	0.025	6.3	5	3500	350	11.0	19°	18.9
		6	4	55	0.030	7.5	6	2920	350	16.0	19°	21.8
		8	4	55	0.040	10.0	8	2190	350	28.0	19°	29.0
		10	4	55	0.045	12.5	10	1750	315	39.5	19°	36.3
		12	4	55	0.055	15.0	12	1460	320	57.5	19°	43.6
		16	4	55	0.065	20.0	16	1095	285	91.0	19°	58.1
		20	4	55	0.070	25.0	20	875	245	122.5	19°	72.6
	Stainless steel [Cr-Ni/1.4301] P	4	4	70	0.015	5.0	4	5570	335	6.5	14°	20.1
		5	4	70	0.020	6.3	5	4455	355	11.0	14°	26.1
		6	4	70	0.025	7.5	6	3715	370	16.5	14°	30.1
		8	4	70	0.025	10.0	8	2785	280	22.5	14°	40.1
		10	4	70	0.035	12.5	10	2230	310	39.0	14°	50.1
		12	4	70	0.040	15.0	12	1855	295	53.0	14°	60.2
		16	4	70	0.050	20.0	16	1395	280	89.5	14°	80.2
		20	4	70	0.060	25.0	20	1115	270	135.0	14°	100.3

Cylindrical end mills NB-NVDS

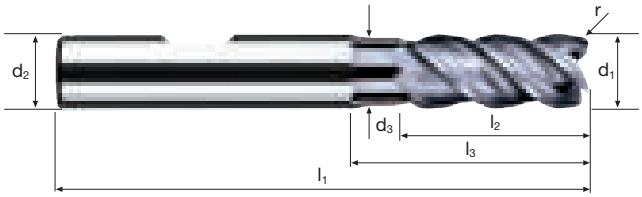
Smooth-edged, normal version with short neck
High-performance penetration edge

HSS | Favora® | Base-X | B | X-Generation

HM MG10 | λ 45° γ 5°

r

Vario



Roughing

Finishing

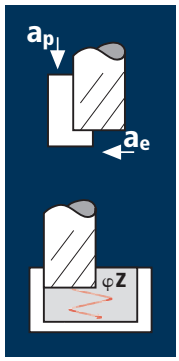
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel Alloys

Example: **Order-N°.** Coating **P** Article-N°. **8200** ø-Code **.220**

POLYCHROM **P8200**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r	α	z	$
.220	4	6	3.7	57	8	16	0.10	3.0°	4	57.70
.260	5	6	4.6	57	10	18	0.10	1.5°	4	57.70
.300	6	6	5.5	57	12	20	0.10	0.0°	4	57.70
.391	8	8	7.4	63	19	26	0.15	0.0°	4	72.00
.450	10	10	9.2	72	23	31	0.20	0.0°	4	98.00
.501	12	12	11.0	83	27	37	0.20	0.0°	4	121.00
.610	16	16	15.0	92	32	43	0.20	0.0°	4	189.00
.682	20	20	19.0	104	39	53	0.20	0.0°	4	276.00

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f/v_fZ [mm/min]	φZ [°]	φA [°]
Steel < 850 N/mm² P P	3	4	160	0.010	4.5	0.3	16975	680	16°	See page 536
	4	4	160	0.015	6.0	0.4	12735	765	16°	
	5	4	160	0.015	7.5	0.5	10185	610	16°	
	6	4	160	0.020	9.0	0.6	8490	680	16°	
	8	4	160	0.025	12.0	0.8	6365	635	16°	
	10	4	160	0.035	15.0	1.0	5095	715	16°	
	12	4	160	0.040	18.0	1.2	4245	680	16°	
	16	4	160	0.055	24.0	1.6	3185	700	16°	
	20	4	160	0.065	30.0	2.0	2545	660	16°	
Steel 850 - 1100 N/mm² P P	3	4	100	0.010	4.5	0.3	10610	425	15°	See page 536
	4	4	100	0.015	6.0	0.4	7960	480	15°	
	5	4	100	0.015	7.5	0.5	6365	380	15°	
	6	4	100	0.020	9.0	0.6	5305	425	15°	
	8	4	100	0.025	12.0	0.8	3980	400	15°	
	10	4	100	0.035	15.0	1.0	3185	445	15°	
	12	4	100	0.040	18.0	1.2	2655	425	15°	
	16	4	100	0.055	24.0	1.6	1990	440	15°	
	20	4	100	0.065	30.0	2.0	1590	415	15°	
Steel 1100 - 1300 N/mm² P P	3	4	75	0.010	4.5	0.3	7960	320	9°	See page 536
	4	4	75	0.015	6.0	0.4	5970	360	9°	
	5	4	75	0.015	7.5	0.5	4775	285	9°	
	6	4	75	0.020	9.0	0.6	3980	320	9°	
	8	4	75	0.025	12.0	0.8	2985	300	9°	
	10	4	75	0.035	15.0	1.0	2385	335	9°	
	12	4	75	0.040	18.0	1.2	1990	320	9°	
	16	4	75	0.055	24.0	1.6	1490	330	9°	
	20	4	75	0.065	30.0	2.0	1195	310	9°	
Stainless steel [Cr-Ni/1.4301] P	3	4	90	0.010	4.5	0.3	9550	380	9°	See page 536
	4	4	90	0.015	6.0	0.4	7160	430	9°	
	5	4	90	0.015	7.5	0.5	5730	345	9°	
	6	4	90	0.020	9.0	0.6	4775	380	9°	
	8	4	90	0.025	12.0	0.8	3580	360	9°	
	10	4	90	0.035	15.0	1.0	2865	400	9°	
	12	4	90	0.040	18.0	1.2	2385	380	9°	
	16	4	90	0.055	24.0	1.6	1790	395	9°	
	20	4	90	0.065	30.0	2.0	1430	370	9°	

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f/v_fZ [mm/min]	φZ [°]	φA [°]
Cast iron (lamellar / spheroidal) P P	3	4	120	0.010	4.5	0.3	12735	510	15°	See page 536
	4	4	120	0.015	6.0	0.4	9550	575	15°	
	5	4	120	0.015	7.5	0.5	7640	460	15°	
	6	4	120	0.020	9.0	0.6	6365	510	15°	
	8	4	120	0.025	12.0	0.8	4775	480	15°	
	10	4	120	0.035	15.0	1.0	3820	535	15°	
	12	4	120	0.040	18.0	1.2	3185	510	15°	
	16	4	120	0.055	24.0	1.6	2385	525	15°	
	20	4	120	0.065	30.0	2.0	1910	495	15°	
Unalloyed copper P	3	4	230	0.010	4.5	0.3	24405	975	16°	See page 536
	4	4	230	0.015	6.0	0.4	18305	1100	16°	
	5	4	230	0.015	7.5	0.5	14645	880	16°	
	6	4	230	0.020	9.0	0.6	12200	975	16°	
	8	4	230	0.025	12.0	0.8	9150	915	16°	
	10	4	230	0.035	15.0	1.0	7320	1025	16°	
	12	4	230	0.040	18.0	1.2	6100	975	16°	
	16	4	230	0.055	24.0	1.6	4575	1005	16°	
	20	4	230	0.065	30.0	2.0	3660	950	16°	
Titanium alloys up to 300 HB [Ti5Al2.5Sn] P	3	4	95	0.010	4.5	0.3	10080	405	9°	See page 536
	4	4	95	0.015	6.0	0.4	7560	455	9°	
	5	4	95	0.015	7.5	0.5	6050	365	9°	
	6	4	95	0.020	9.0	0.6	5040	405	9°	
	8	4	95	0.025	12.0	0.8	3780	380	9°	
	10	4	95	0.035	15.0	1.0	3025	425	9°	
	12	4	95	0.040	18.0	1.2	2520	405	9°	
	16	4	95	0.055	24.0	1.6	1890	415	9°	
	20	4	95	0.065	30.0	2.0	1510	395	9°	
Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	3	4	50	0.010	4.5	0.3	5305	210	7°	See page 536
	4	4	50	0.015	6.0	0.4	3980	240	7°	
	5	4	50	0.015	7.5	0.5	3185	190	7°	
	6	4	50	0.020	9.0	0.6	2655	210	7°	
	8	4	50	0.025	12.0	0.8	1990	200	7°	
	10	4	50	0.035	15.0	1.0	1590	225	7°	
	12	4	50	0.040	18.0	1.2	1325	210	7°	
	16	4	50	0.055	24.0	1.6	995	220	7°	
	20	4	50	0.065	30.0	2.0	795	205	7°	

Cylindrical end mills NB-NVS

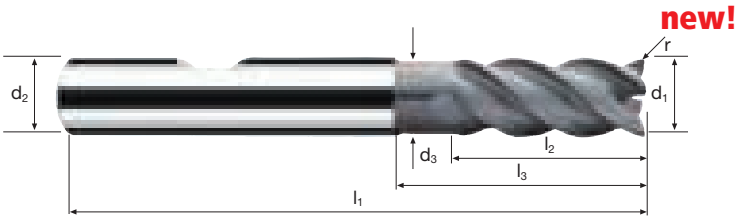
Smooth-edged, normal version with short neck
High-performance penetration edge

HSS | Favora® | Base-X **B** | X-Generation

HM MG10 | λ 45° γ 15°

r

Vario



Roughing

Finishing

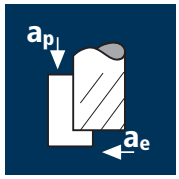
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Copper Tool Steel**

Example: **Order-N°.** Coating **P** Article-N°. **8404** ø-Code **.140**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r	α	z	POLYCHROM P8404 $
.140	2.0	6	1.9	57	7	10	0.05	7.0°	4	41.90
.160	2.5	6	2.3	57	8	10	0.05	6.5°	4	41.90
.178*	3.0	3	2.8	45	8	14	0.05	0.0°	4	41.90
.180	3.0	6	2.8	57	8	14	0.05	4.5°	4	41.90
.200	3.5	6	3.2	57	8	14	0.05	4.0°	4	41.90
.218*	4.0	4	3.7	50	11	16	0.10	0.0°	4	41.90
.220	4.0	6	3.7	57	11	16	0.10	3.0°	4	41.90
.240	4.5	6	4.1	57	12	16	0.10	2.5°	4	41.90
.258*	5.0	5	4.6	50	13	16	0.10	0.0°	4	41.90
.260	5.0	6	4.6	57	13	18	0.10	1.5°	4	41.90
.280	5.5	6	5.0	57	13	20	0.10	1.0°	4	41.90
.300	6.0	6	5.5	57	13	20	0.10	0.0°	4	41.90
.331	7.0	8	6.4	63	16	24	0.10	1.5°	4	52.40
.391	8.0	8	7.4	63	19	26	0.15	0.0°	4	52.40
.420	9.0	10	8.2	72	19	26	0.20	1.5°	4	71.00
.450	10.0	10	9.2	72	22	31	0.20	0.0°	4	71.00
.501	12.0	12	11.0	83	26	37	0.20	0.0°	4	88.00
.610	16.0	16	15.0	92	32	43	0.20	0.0°	4	138.00
.682	20.0	20	19.0	104	38	53	0.20	0.0°	4	201.00

* without clamping flat only

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm² P P	4	4	180	0.035	6.0	1.6	14325	2005	19.0
	5	4	180	0.040	7.5	2.0	11460	1835	27.5
	6	4	180	0.050	9.0	2.4	9550	1910	41.5
	8	4	180	0.060	12.0	3.2	7160	1720	66.0
	10	4	180	0.075	15.0	4.0	5730	1720	103.0
	12	4	180	0.085	18.0	4.8	4775	1625	140.5
	16	4	180	0.095	24.0	6.4	3580	1360	209.0
	20	4	180	0.110	30.0	8.0	2865	1260	302.5
Steel 850 - 1100 N/mm² P P	4	4	150	0.030	6.0	1.6	11935	1430	13.5
	5	4	150	0.035	7.5	2.0	9550	1335	20.0
	6	4	150	0.040	9.0	2.4	7960	1275	27.5
	8	4	150	0.050	12.0	3.2	5970	1195	46.0
	10	4	150	0.065	15.0	4.0	4775	1240	74.5
	12	4	150	0.075	18.0	4.8	3980	1195	103.0
	16	4	150	0.085	24.0	6.4	2985	1015	156.0
	20	4	150	0.100	30.0	8.0	2385	955	229.0
Cold work tool steel (12% Cr) high alloyed [1.2379] P P	4	4	70	0.030	6.0	1.6	5570	670	6.5
	5	4	70	0.035	7.5	2.0	4455	625	9.5
	6	4	70	0.040	9.0	2.4	3715	595	13.0
	8	4	70	0.050	12.0	3.2	2785	555	21.5
	10	4	70	0.060	15.0	4.0	2230	535	32.0
	12	4	70	0.075	18.0	4.8	1855	555	48.0
	16	4	70	0.085	24.0	6.4	1395	475	73.0
	20	4	70	0.095	30.0	8.0	1115	425	102.0
Stainless steel [Cr-Ni/1.4301] P	4	4	90	0.020	6.0	1.6	7160	575	5.5
	5	4	90	0.025	7.5	2.0	5730	575	8.5
	6	4	90	0.030	9.0	2.4	4775	575	12.5
	8	4	90	0.035	12.0	3.2	3580	500	19.0
	10	4	90	0.045	15.0	4.0	2865	515	31.0
	12	4	90	0.055	18.0	4.8	2385	525	45.5
	16	4	90	0.065	24.0	6.4	1790	465	71.5
	20	4	90	0.080	30.0	8.0	1430	460	110.5

Application

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel < 850 N/mm² P P	4	4	145	0.025	5.0	4	11540	1155	23.0
	5	4	145	0.030	6.3	5	9230	1110	34.5
	6	4	145	0.040	7.5	6	7695	1230	55.5
	8	4	145	0.045	10.0	8	5770	1040	83.0
	10	4	145	0.055	12.5	10	4615	1015	127.0
	12	4	145	0.065	15.0	12	3845	1000	180.0
	16	4	145	0.070	20.0	16	2885	810	259.0
	20	4	145	0.085	25.0	20	2310	785	392.5
Steel 850 - 1100 N/mm² P P	4	4	120	0.020	5.0	4	9550	765	15.5
	5	4	120	0.025	6.3	5	7640	765	24.0
	6	4	120	0.030	7.5	6	6365	765	34.5
	8	4	120	0.040	10.0	8	4775	765	61.0
	10	4	120	0.050	12.5	10	3820	765	95.5
	12	4	120	0.055	15.0	12	3185	700	126.0
	16	4	120	0.065	20.0	16	2385	620	198.5
	20	4	120	0.075	25.0	20	1910	575	287.5
Cold work tool steel (12% Cr) high alloyed [1.2379] P P	4	4	55	0.025	5.0	4	4375	440	9.0
	5	4	55	0.025	6.3	5	3500	350	11.0
	6	4	55	0.030	7.5	6	2920	350	16.0
	8	4	55	0.040	10.0	8	2190	350	28.0
	10	4	55	0.045	12.5	10	1750	315	39.5
	12	4	55	0.055	15.0	12	1460	320	57.5
	16	4	55	0.065	20.0	16	1095	285	91.0
	20	4	55	0.070	25.0	20	875	245	122.5
Stainless steel [Cr-Ni/1.4301] P	4	4	70	0.015	5.0	4	5570	335	6.5
	5	4	70	0.020	6.3	5	4455	355	11.0
	6	4	70	0.025	7.5	6	3715	370	16.5
	8	4	70	0.025	10.0	8	2785	280	22.5
	10	4	70	0.035	12.5	10	2230	310	39.0
	12	4	70	0.040	15.0	12	1855	295	53.0
	16	4	70	0.050	20.0	16	1395	280	89.5
	20	4	70	0.060	25.0	20	1115	270	135.0

Cylindrical end mills NB-NVD

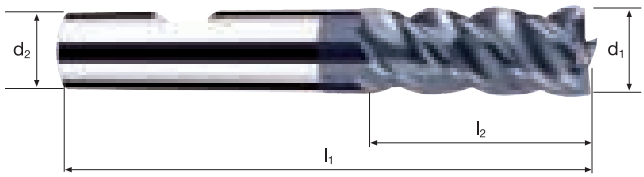
Smooth-edged, normal version

HSS | Favora® | Base-X | **B** | X-Generation

HM MG10 | λ 45° γ 5°

45°

Vario



Roughing

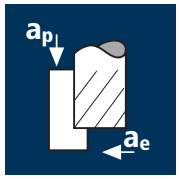
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel Alloys

Example: **Order-N°.** Coating **P** Article-N°. **15307** ø-Code **.220**

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	POLYCHROM P15307	POLYCHROM P15207 $
.220	4	6	57	8	0.10	4.5°	4		52.40
.260	5	6	57	10	0.15	2.5°	4		52.40
.300	6	6	57	12	0.15	0.0°	4		52.40
.391	8	8	63	19	0.15	0.0°	4		65.00
.450	10	10	72	23	0.20	0.0°	4		89.00
.501	12	12	83	27	0.20	0.0°	4		110.00
.610	16	16	92	32	0.20	0.0°	4		172.00
.682	20	20	104	39	0.20	0.0°	4		251.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Steel < 850 N/mm²	3	4	160	0.010	4.5	0.3	16975	680
	4	4	160	0.015	6.0	0.4	12735	765
	5	4	160	0.015	7.5	0.5	10185	610
	6	4	160	0.020	9.0	0.6	8490	680
	8	4	160	0.025	12.0	0.8	6365	635
	10	4	160	0.035	15.0	1.0	5095	715
	12	4	160	0.040	18.0	1.2	4245	680
	16	4	160	0.055	24.0	1.6	3185	700
	20	4	160	0.065	30.0	2.0	2545	660
Steel 850 - 1100 N/mm²	3	4	100	0.010	4.5	0.3	10610	425
	4	4	100	0.015	6.0	0.4	7960	480
	5	4	100	0.015	7.5	0.5	6365	380
	6	4	100	0.020	9.0	0.6	5305	425
	8	4	100	0.025	12.0	0.8	3980	400
	10	4	100	0.035	15.0	1.0	3185	445
	12	4	100	0.040	18.0	1.2	2655	425
	16	4	100	0.055	24.0	1.6	1990	440
	20	4	100	0.065	30.0	2.0	1590	415
Steel 1100 - 1300 N/mm²	3	4	75	0.010	4.5	0.3	7960	320
	4	4	75	0.015	6.0	0.4	5970	360
	5	4	75	0.015	7.5	0.5	4775	285
	6	4	75	0.020	9.0	0.6	3980	320
	8	4	75	0.025	12.0	0.8	2985	300
	10	4	75	0.035	15.0	1.0	2385	335
	12	4	75	0.040	18.0	1.2	1990	320
	16	4	75	0.055	24.0	1.6	1490	330
	20	4	75	0.065	30.0	2.0	1195	310
Stainless steel [Cr-Ni/1.4301]	3	4	90	0.010	4.5	0.3	9550	380
	4	4	90	0.015	6.0	0.4	7160	430
	5	4	90	0.015	7.5	0.5	5730	345
	6	4	90	0.020	9.0	0.6	4775	380
	8	4	90	0.025	12.0	0.8	3580	360
	10	4	90	0.035	15.0	1.0	2865	400
	12	4	90	0.040	18.0	1.2	2385	380
	16	4	90	0.055	24.0	1.6	1790	395
	20	4	90	0.065	30.0	2.0	1430	370

Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Cast iron (lamellar / spheroidal)	3	4	120	0.010	4.5	0.3	12735	510
	4	4	120	0.015	6.0	0.4	9550	575
	5	4	120	0.015	7.5	0.5	7640	460
	6	4	120	0.020	9.0	0.6	6365	510
	8	4	120	0.025	12.0	0.8	4775	480
	10	4	120	0.035	15.0	1.0	3820	535
	12	4	120	0.040	18.0	1.2	3185	510
	16	4	120	0.055	24.0	1.6	2385	525
	20	4	120	0.065	30.0	2.0	1910	495
Unalloyed copper	3	4	230	0.010	4.5	0.3	24405	975
	4	4	230	0.015	6.0	0.4	18305	1100
	5	4	230	0.015	7.5	0.5	14645	880
	6	4	230	0.020	9.0	0.6	12200	975
	8	4	230	0.025	12.0	0.8	9150	915
	10	4	230	0.035	15.0	1.0	7320	1025
	12	4	230	0.040	18.0	1.2	6100	975
	16	4	230	0.055	24.0	1.6	4575	1005
	20	4	230	0.065	30.0	2.0	3660	950
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	3	4	95	0.010	4.5	0.3	10080	405
	4	4	95	0.015	6.0	0.4	7560	455
	5	4	95	0.015	7.5	0.5	6050	365
	6	4	95	0.020	9.0	0.6	5040	405
	8	4	95	0.025	12.0	0.8	3780	380
	10	4	95	0.035	15.0	1.0	3025	425
	12	4	95	0.040	18.0	1.2	2520	405
	16	4	95	0.055	24.0	1.6	1890	415
	20	4	95	0.065	30.0	2.0	1510	395
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	3	4	50	0.010	4.5	0.3	5305	210
	4	4	50	0.015	6.0	0.4	3980	240
	5	4	50	0.015	7.5	0.5	3185	190
	6	4	50	0.020	9.0	0.6	2655	210
	8	4	50	0.025	12.0	0.8	1990	200
	10	4	50	0.035	15.0	1.0	1590	225
	12	4	50	0.040	18.0	1.2	1325	210
	16	4	50	0.055	24.0	1.6	995	220
	20	4	50	0.065	30.0	2.0	795	205

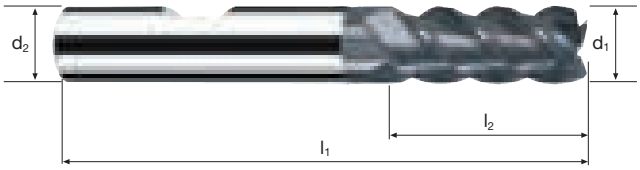
Cylindrical end mills

Smooth-edged, normal version

HSS | Favora® | Base-X **B** | X-Generation

HM MG10	λ 45° γ 15°

45°



Roughing

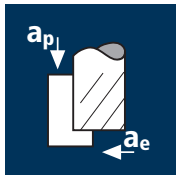
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5340** ø-Code **.140**

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	POLYCHROM P5340 / P5240 $
.140	2.0	6	54	7	0.10	7.5°	4	37.40
.160	2.5	6	54	8	0.10	6.5°	4	37.40
.178*	3.0	3	45	8	0.10	0.0°	4	37.40
.180	3.0	6	57	8	0.10	6.0°	4	37.40
.218*	4.0	4	50	11	0.10	0.0°	4	37.40
.220	4.0	6	57	11	0.10	3.5°	4	37.40
.258*	5.0	5	50	13	0.15	0.0°	4	37.40
.260	5.0	6	57	13	0.15	2.0°	4	37.40
.300	6.0	6	57	13	0.15	0.0°	4	37.40
.391	8.0	8	63	19	0.15	0.0°	4	46.80
.450	10.0	10	72	22	0.20	0.0°	4	64.00
.501	12.0	12	83	26	0.20	0.0°	4	79.00
.610	16.0	16	92	32	0.20	0.0°	4	123.00
.682	20.0	20	104	38	0.20	0.0°	4	180.00

* without clamping flat only

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm² P P	3	4	170	0.015	4.5	1.2	18040	1080	6.0
		4	4	170	0.020	6.0	1.6	13530	1080	10.5
		5	4	170	0.025	7.5	2.0	10825	1085	16.5
		6	4	170	0.030	9.0	2.4	9020	1080	23.5
		8	4	170	0.040	12.0	3.2	6765	1080	41.5
		10	4	170	0.050	15.0	4.0	5410	1080	65.0
		12	4	170	0.060	18.0	4.8	4510	1080	93.5
		16	4	170	0.075	24.0	6.4	3380	1015	156.0
		20	4	170	0.095	30.0	8.0	2705	1030	247.0
	Steel 850 - 1100 N/mm² P P	3	4	120	0.015	4.5	1.2	12735	765	4.0
		4	4	120	0.020	6.0	1.6	9550	765	7.5
		5	4	120	0.025	7.5	2.0	7640	765	11.5
		6	4	120	0.030	9.0	2.4	6365	765	16.5
		8	4	120	0.040	12.0	3.2	4775	765	29.5
		10	4	120	0.050	15.0	4.0	3820	765	46.0
		12	4	120	0.060	18.0	4.8	3185	765	66.0
		16	4	120	0.075	24.0	6.4	2385	715	110.0
		20	4	120	0.095	30.0	8.0	1910	725	174.0
	Stainless steel [Cr-Ni/1.4301] P	3	4	80	0.010	4.5	1.2	8490	340	2.0
		4	4	80	0.015	6.0	1.6	6365	380	3.5
		5	4	80	0.020	7.5	2.0	5095	410	6.0
		6	4	80	0.025	9.0	2.4	4245	425	9.0
		8	4	80	0.030	12.0	3.2	3185	380	14.5
		10	4	80	0.040	15.0	4.0	2545	405	24.5
		12	4	80	0.050	18.0	4.8	2120	425	36.5
		16	4	80	0.060	24.0	6.4	1590	380	58.5
		20	4	80	0.075	30.0	8.0	1275	385	92.5
	Cast iron (lamellar / spheroidal) P P	3	4	135	0.015	4.5	1.2	14325	860	4.5
		4	4	135	0.020	6.0	1.6	10745	860	8.5
		5	4	135	0.030	7.5	2.0	8595	1030	15.5
		6	4	135	0.035	9.0	2.4	7160	1000	21.5
		8	4	135	0.045	12.0	3.2	5370	965	37.0
		10	4	135	0.055	15.0	4.0	4295	945	56.5
		12	4	135	0.065	18.0	4.8	3580	930	80.5
		16	4	135	0.085	24.0	6.4	2685	915	140.5
		20	4	135	0.105	30.0	8.0	2150	905	217.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm² P P	3	4	135	0.010	3.0	3	14325	575	5.0
		4	4	135	0.015	4.0	4	10745	645	10.5
		5	4	135	0.020	5.0	5	8595	690	17.5
		6	4	135	0.025	6.0	6	7160	715	25.5
		8	4	135	0.030	8.0	8	5370	645	41.5
		10	4	135	0.040	10.0	10	4295	685	68.5
		12	4	135	0.045	12.0	12	3580	645	93.0
		16	4	135	0.055	8.0	16	2685	590	75.5
		20	4	135	0.070	10.0	20	2150	600	120.0
	Steel 850 - 1100 N/mm² P P	3	4	95	0.010	3.0	3	10080	405	3.5
		4	4	95	0.015	4.0	4	7560	455	7.5
		5	4	95	0.020	5.0	5	6050	485	12.0
		6	4	95	0.025	6.0	6	5040	505	18.0
		8	4	95	0.030	8.0	8	3780	455	29.0
		10	4	95	0.040	10.0	10	3025	485	48.5
		12	4	95	0.045	12.0	12	2520	455	65.5
		16	4	95	0.055	8.0	16	1890	415	53.0
		20	4	95	0.070	10.0	20	1510	425	85.0
	Stainless steel [Cr-Ni/1.4301] P	3	4	65	0.010	2.1	3	6895	275	1.5
		4	4	65	0.010	2.8	4	5175	205	2.5
		5	4	65	0.015	3.5	5	4140	250	4.5
		6	4	65	0.020	4.2	6	3450	275	7.0
		8	4	65	0.025	8.0	8	2585	260	16.5
		10	4	65	0.030	10.0	10	2070	250	25.0
		12	4	65	0.040	12.0	12	1725	275	39.5
		16	4	65	0.045	8.0	16	1295	235	30.0
		20	4	65	0.055	10.0	20	1035	230	46.0
	Cast iron (lamellar / spheroidal) P P	3	4	115	0.010	3.0	3	12200	490	4.5
		4	4	115	0.015	4.0	4	9150	550	9.0
		5	4	115	0.025	5.0	5	7320	730	18.5
		6	4	115	0.025	6.0	6	6100	610	22.0
		8	4	115	0.035	8.0	8	4575	640	41.0
		10	4	115	0.040	10.0	10	3660	585	58.5
		12	4	115	0.050	12.0	12	3050	610	88.0
		16	4	115	0.065	8.0	16	2290	595	76.0
		20	4	115	0.080	10.0	20	1830	585	117.0

Cylindrical end mills NF-NV

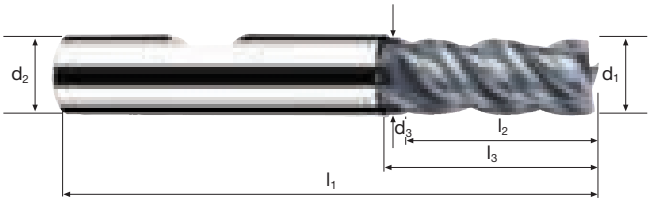
Smooth-edged, normal version with short neck

HSS | Favora® F | Base-X | X-Generation

HM | λ 40° γ 6°

45°

Vario



Roughing

Finishing

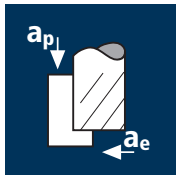
Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **45317** ø-Code **.178**

POLYCHROM **P45317**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	45°	α	z	$
.178*	3	3	-	45	8	-	0.10	0.0°	4	27.50
.180	3	6	2.8	57	8	14	0.10	4.5°	4	31.80
.218*	4	4	-	50	11	-	0.10	0.0°	4	27.50
.220	4	6	3.7	57	11	16	0.10	3.0°	4	31.80
.258*	5	5	-	50	13	-	0.15	0.0°	4	27.50
.260	5	6	4.6	57	13	18	0.15	1.5°	4	31.80
.300	6	6	5.5	57	13	20	0.15	0.0°	4	31.80
.391	8	8	7.4	63	19	26	0.15	0.0°	4	39.80
.450	10	10	9.2	72	22	31	0.20	0.0°	4	54.10
.501	12	12	11.0	83	26	37	0.20	0.0°	4	67.00
.610	16	16	15.0	92	32	43	0.20	0.0°	4	105.00
.682	20	20	19.0	104	38	53	0.20	0.0°	4	153.00

* without clamping flat only, without short neck

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm² P P	3	4	190	0.020	3	1.4	20160	1615	6.5
		4	4	190	0.030	4	1.8	15120	1815	13.0
		5	4	190	0.040	5	2.3	12095	1935	22.0
		6	4	190	0.050	6	2.7	10080	2015	32.5
		8	4	190	0.065	8	3.6	7560	1965	56.5
		10	4	190	0.080	10	4.5	6050	1935	87.0
		12	4	190	0.095	12	5.4	5040	1915	124.0
		16	4	190	0.125	16	7.2	3780	1890	217.5
		20	4	190	0.155	20	9.0	3025	1875	337.5
	Steel 850 - 1100 N/mm² P P	3	4	140	0.020	3	1.4	14855	1190	5.0
		4	4	140	0.030	4	1.8	11140	1335	9.5
		5	4	140	0.040	5	2.3	8915	1425	16.0
		6	4	140	0.050	6	2.7	7425	1485	24.0
		8	4	140	0.065	8	3.6	5570	1450	42.0
		10	4	140	0.080	10	4.5	4455	1425	64.0
		12	4	140	0.095	12	5.4	3715	1410	91.5
		16	4	140	0.125	16	7.2	2785	1395	160.5
		20	4	140	0.155	20	9.0	2230	1385	249.5
	Cold work tool steel (12% Cr), high alloyed [1.2379] P P	3	4	70	0.020	3	1.4	7425	595	2.5
		4	4	70	0.030	4	1.8	5570	670	5.0
		5	4	70	0.035	5	2.3	4455	625	7.0
		6	4	70	0.045	6	2.7	3715	670	11.0
		8	4	70	0.060	8	3.6	2785	670	19.5
		10	4	70	0.070	10	4.5	2230	625	28.0
		12	4	70	0.085	12	5.4	1855	630	41.0
		16	4	70	0.110	16	7.2	1395	615	71.0
		20	4	70	0.140	20	9.0	1115	625	112.5
	Stainless steel [Cr-Ni/1.4301] P	3	4	90	0.015	3	1.4	9550	575	2.5
		4	4	90	0.020	4	1.8	7160	575	4.0
		5	4	90	0.025	5	2.3	5730	575	6.5
		6	4	90	0.030	6	2.7	4775	575	9.5
		8	4	90	0.040	8	3.6	3580	575	16.5
		10	4	90	0.050	10	4.5	2865	575	26.0
		12	4	90	0.060	12	5.4	2385	570	37.0
		16	4	90	0.075	16	7.2	1790	535	61.5
		20	4	90	0.100	20	9.0	1430	570	102.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Steel < 850 N/mm² P P	3	4	155	0.015	2.4	3	16445	985	7.0
		4	4	155	0.020	3.2	4	12335	985	12.5
		5	4	155	0.030	4.0	5	9870	1185	23.5
		6	4	155	0.040	4.8	6	8225	1315	38.0
		8	4	155	0.050	6.4	8	6165	1235	63.0
		10	4	155	0.065	8.0	10	4935	1285	103.0
		12	4	155	0.075	9.6	12	4110	1235	142.5
		16	4	155	0.075	8.0	16	3085	925	118.5
		20	4	155	0.095	10.0	20	2465	935	187.0
	Steel 850 - 1100 N/mm² P P	3	4	105	0.015	2.4	3	11140	670	5.0
		4	4	105	0.020	3.2	4	8355	670	8.5
		5	4	105	0.030	4.0	5	6685	800	16.0
		6	4	105	0.040	4.8	6	5570	890	25.5
		8	4	105	0.050	6.4	8	4180	835	43.0
		10	4	105	0.065	8.0	10	3340	870	69.5
		12	4	105	0.075	9.6	12	2785	835	96.0
		16	4	105	0.075	8.0	16	2090	625	80.0
		20	4	105	0.095	10.0	20	1670	635	127.0
	Cold work tool steel (12% Cr), high alloyed [1.2379] P P	3	4	55	0.015	2.4	3	5835	350	2.5
		4	4	55	0.020	3.2	4	4375	350	4.5
		5	4	55	0.030	4.0	5	3500	420	8.5
		6	4	55	0.035	4.8	6	2920	410	12.0
		8	4	55	0.045	6.4	8	2190	395	20.0
		10	4	55	0.055	8.0	10	1750	385	31.0
		12	4	55	0.060	9.6	12	1460	350	40.5
		16	4	55	0.075	8.0	16	1095	330	42.0
		20	4	55	0.095	10.0	20	875	335	67.0
	Stainless steel [Cr-Ni/1.4301] P	3	4	75	0.015	2.4	3	7960	480	3.5
		4	4	75	0.020	3.2	4	5970	480	6.0
		5	4	75	0.025	4.0	5	4775	480	9.5
		6	4	75	0.030	4.8	6	3980	480	14.0
		8	4	75	0.040	6.4	8	2985	480	24.5
		10	4	75	0.050	8.0	10	2385	475	38.0
		12	4	75	0.055	9.6	12	1990	440	50.5
		16	4	75	0.070	8.0	16	1490	415	53.0
		20	4	75	0.085	10.0	20	1195	405	81.0

Cylindrical end mills NX-V

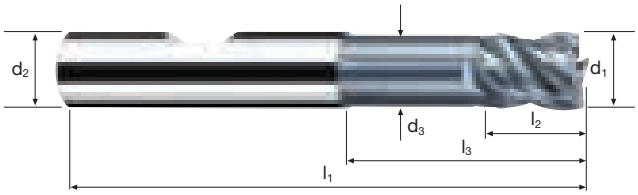
Smooth-edged, normal version with neck

HSS | Favora® | Base-X **B** | X-Generation

HM MG10 | λ 40° γ 0°

45°

Vario



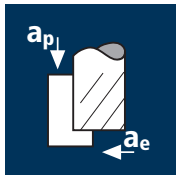
Roughing

Finishing

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **5325** ø-Code **.180**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	45°	α	z	POLYCHROM P5325 / P5225 $
.180	3	6	2.8	57	4	14	0.10	4.5°	4	61.00
.220	4	6	3.7	57	5	16	0.10	3.0°	4	61.00
.260	5	6	4.6	57	6	18	0.15	1.5°	4	61.00
.300	6	6	5.5	57	7	20	0.15	0.0°	4	61.00
.391	8	8	7.4	63	9	26	0.15	0.0°	4	77.00
.450	10	10	9.2	72	11	31	0.20	0.0°	4	104.00
.501	12	12	11.0	83	13	37	0.20	0.0°	4	129.00
.610	16	16	15.0	92	17	43	0.20	0.0°	4	201.00
.682	20	20	19.0	104	21	53	0.20	0.0°	4	294.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	3	4	110	0.020	3	1.8	11670	935	5.0
		4	4	110	0.025	4	2.4	8755	875	8.5
		5	4	110	0.030	5	3.0	7005	840	12.5
		6	4	110	0.040	6	3.6	5835	935	20.0
		8	4	110	0.050	8	4.8	4375	875	33.5
		10	4	110	0.065	10	6.0	3500	910	54.5
		12	4	110	0.075	12	7.2	2920	875	75.5
		16	4	110	0.100	16	4.0	2190	875	56.0
		20	4	110	0.125	20	5.0	1750	875	87.5
	Hardened tool steel 48 - 52 HRC	3	4	70	0.015	3	1.8	7425	445	2.5
		4	4	70	0.020	4	2.4	5570	445	4.5
		5	4	70	0.030	5	3.0	4455	535	8.0
		6	4	70	0.035	6	3.6	3715	520	11.0
		8	4	70	0.045	8	4.8	2785	500	19.0
		10	4	70	0.055	10	6.0	2230	490	29.5
		12	4	70	0.065	12	7.2	1855	480	41.5
		16	4	70	0.090	16	4.0	1395	500	32.0
		20	4	70	0.110	20	5.0	1115	490	49.0
	Hardened tool steel 52 - 56 HRC	3	4	50	0.015	3	1.8	5305	320	1.5
		4	4	50	0.020	4	2.4	3980	320	3.0
		5	4	50	0.025	5	3.0	3185	320	5.0
		6	4	50	0.025	6	3.6	2655	265	5.5
		8	4	50	0.035	8	4.8	1990	280	11.0
		10	4	50	0.045	10	6.0	1590	285	17.0
		12	4	50	0.055	12	3.0	1325	290	10.5
		16	4	50	0.075	16	4.0	995	300	19.0
		20	4	50	0.090	20	5.0	795	285	28.5
	Hardened tool steel 56 - 60 HRC	3	4	25	0.010	3	1.8	2655	106	0.5
		4	4	25	0.015	4	2.4	1990	119	1.0
		5	4	25	0.015	5	3.0	1590	95	1.5
		6	4	25	0.020	6	3.6	1325	106	2.5
		8	4	25	0.025	8	4.8	995	100	4.0
		10	4	25	0.035	10	6.0	795	111	6.5
		12	4	25	0.040	12	3.0	665	106	4.0
		16	4	25	0.055	16	4.0	495	109	7.0
		20	4	25	0.065	20	5.0	400	104	10.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	3	4	95	0.015	1.5	3	10080	605	2.5
		4	4	95	0.020	2.0	4	7560	605	5.0
		5	4	95	0.025	2.5	5	6050	605	7.5
		6	4	95	0.030	3.0	6	5040	605	11.0
		8	4	95	0.040	4.0	8	3780	605	19.5
		10	4	95	0.050	5.0	10	3025	605	30.5
		12	4	95	0.060	6.0	12	2520	605	43.5
		16	4	95	0.080	4.0	16	1890	605	38.5
		20	4	95	0.100	5.0	20	1510	605	60.5
	Hardened tool steel 48 - 52 HRC	3	4	60	0.015	1.5	3	6365	380	1.5
		4	4	60	0.020	2.0	4	4775	380	3.0
		5	4	60	0.025	2.5	5	3820	380	5.0
		6	4	60	0.025	3.0	6	3185	320	6.0
		8	4	60	0.035	4.0	8	2385	335	10.5
		10	4	60	0.045	5.0	10	1910	345	17.5
		12	4	60	0.055	6.0	12	1590	350	25.0
		16	4	60	0.075	4.0	16	1195	360	23.0
		20	4	60	0.090	5.0	20	955	345	34.5
	Hardened tool steel 52 - 56 HRC	3	4	40	0.010	1.5	3	4245	170	1.0
		4	4	40	0.015	2.0	4	3185	190	1.5
		5	4	40	0.020	2.5	5	2545	205	2.5
		6	4	40	0.025	3.0	6	2120	210	4.0
		8	4	40	0.030	4.0	8	1590	190	6.0
		10	4	40	0.040	5.0	10	1275	205	10.5
		12	4	40	0.050	6.0	12	1060	210	15.0
		16	4	40	0.065	4.0	16	795	205	13.0
		20	4	40	0.080	5.0	20	635	205	20.5
	Hardened tool steel 56 - 60 HRC	3	4	20	0.009	1.5	3	2120	76	0.3
		4	4	20	0.011	2.0	4	1590	70	0.5
		5	4	20	0.014	2.5	5	1275	71	1.0
		6	4	20	0.017	3.0	6	1060	72	1.5
		8	4	20	0.023	4.0	8	795	73	2.5
		10	4	20	0.029	5.0	10	635	74	3.5
		12	4	20	0.034	6.0	12	530	72	5.0
		16	4	20	0.046	4.0	16	400	74	4.5
		20	4	20	0.057	5.0	20	320	73	7.5

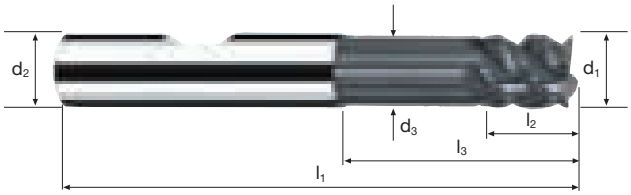
Cylindrical end mills HX

Smooth-edged, normal version with neck

HSS | Favora® | Base-X | X-Generation X

HM MG10 | λ 55° γ-10°

45°



Roughing

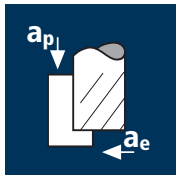
Finishing

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5348** ø-Code **.180**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	45°	α	z	DURO-S D5348	DURO-S D5248 $
.180	3	6	2.8	57	4	14	0.10	4.5°	4		65.00
.220	4	6	3.7	57	5	16	0.10	3.0°	4		65.00
.260	5	6	4.6	57	6	18	0.15	1.5°	4		65.00
.300	6	6	5.5	57	7	20	0.15	0.0°	4		65.00
.391	8	8	7.4	63	9	26	0.15	0.0°	4		81.00
.450	10	10	9.2	72	11	31	0.20	0.0°	4		110.00
.501	12	12	11.0	83	13	37	0.20	0.0°	4		136.00
.610	16	16	15.0	92	17	43	0.20	0.0°	4		212.00
.682	20	20	19.0	104	21	53	0.20	0.0°	4		310.00
.772	25	25	24.0	121	26	64	0.25	0.0°	4		587.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel 1100 - 1300 N/mm²	4	4	115	0.025	7.2	0.8	9150	915	5.5
	5	4	115	0.035	9.0	1.0	7320	1025	9.0
	6	4	115	0.040	10.8	1.2	6100	975	12.5
	8	4	115	0.055	14.4	1.6	4575	1005	23.0
	10	4	115	0.065	18.0	2.0	3660	950	34.0
	12	4	115	0.080	21.6	2.4	3050	975	50.5
	16	4	115	0.090	28.8	3.2	2290	825	76.0
	20	4	115	0.110	36.0	4.0	1830	805	116.0
Steel 1300 - 1500 N/mm²	4	4	80	0.025	7.2	0.8	6365	635	3.5
	5	4	80	0.030	9.0	1.0	5095	610	5.5
	6	4	80	0.035	10.8	1.2	4245	595	7.5
	8	4	80	0.045	14.4	1.6	3185	575	13.0
	10	4	80	0.060	18.0	2.0	2545	610	22.0
	12	4	80	0.070	21.6	2.4	2120	595	31.0
	16	4	80	0.080	28.8	3.2	1590	510	47.0
	20	4	80	0.100	36.0	4.0	1275	510	73.5
Hardened tool steel 52 - 56 HRC	4	4	50	0.015	7.2	0.8	3980	240	1.5
	5	4	50	0.020	9.0	1.0	3185	255	2.5
	6	4	50	0.020	10.8	1.2	2655	210	2.5
	8	4	50	0.025	14.4	1.6	1990	200	4.5
	10	4	50	0.035	18.0	2.0	1590	225	8.0
	12	4	50	0.040	21.6	2.4	1325	210	11.0
	16	4	50	0.050	28.8	3.2	995	200	18.5
	20	4	50	0.060	36.0	4.0	795	190	27.5
Titanium alloys >300 HB [Ti6Al4V]	4	4	60	0.015	7.2	0.8	4775	285	1.5
	5	4	60	0.025	9.0	1.0	3820	380	3.5
	6	4	60	0.025	10.8	1.2	3185	320	4.0
	8	4	60	0.030	14.4	1.6	2385	285	6.5
	10	4	60	0.040	18.0	2.0	1910	305	11.0
	12	4	60	0.045	21.6	2.4	1590	285	15.0
	16	4	60	0.060	28.8	3.2	1195	285	26.5
	20	4	60	0.070	36.0	4.0	955	265	38.0

Application

Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel 1100 - 1300 N/mm²	4	4	90	0.015	6.0	4	7160	430	10.5
	5	4	90	0.015	7.5	5	5730	345	13.0
	6	4	90	0.020	9.0	6	4775	380	20.5
	8	4	90	0.025	12.0	8	3580	360	34.5
	10	4	90	0.035	15.0	10	2865	400	60.0
	12	4	90	0.040	18.0	12	2385	380	82.0
	16	4	90	0.050	24.0	16	1790	360	138.0
	20	4	90	0.060	30.0	20	1430	345	207.0
Steel 1300 - 1500 N/mm²	4	4	65	0.010	6.0	4	5175	205	5.0
	5	4	65	0.015	7.5	5	4140	250	9.5
	6	4	65	0.020	9.0	6	3450	275	15.0
	8	4	65	0.025	12.0	8	2585	260	25.0
	10	4	65	0.030	15.0	10	2070	250	37.5
	12	4	65	0.035	18.0	12	1725	240	52.0
	16	4	65	0.045	24.0	16	1295	235	90.0
	20	4	65	0.055	30.0	20	1035	230	138.0
Hardened tool steel 52 - 56 HRC	4	4	40	0.010	4.0	4.0	3185	125	2.0
	5	4	40	0.010	5.0	5.0	2545	100	2.5
	6	4	40	0.015	6.0	6.0	2120	125	4.5
	8	4	40	0.020	8.0	8.0	1590	125	8.0
	10	4	40	0.025	10.0	10.0	1275	130	13.0
	12	4	40	0.025	12.0	12.0	1060	105	15.0
	16	4	40	0.030	16.0	16.0	795	95	24.5
	20	4	40	0.040	20.0	20.0	635	100	40.0
Titanium alloys >300 HB [Ti6Al4V]	4	4	50	0.010	6.0	4	3980	160	4.0
	5	4	50	0.015	7.5	5	3185	190	7.0
	6	4	50	0.020	9.0	6	2655	210	11.5
	8	4	50	0.025	12.0	8	1990	200	19.0
	10	4	50	0.030	15.0	10	1590	190	28.5
	12	4	50	0.035	18.0	12	1325	185	40.0
	16	4	50	0.045	24.0	16	995	180	69.0
	20	4	50	0.055	30.0	20	795	175	105.0

Cylindrical end mills NX-NVD

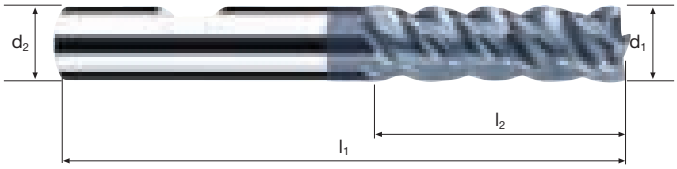
Smooth-edged, medium length version

HSS | Favora® | Base-X | X-Generation X

HM MG10 | λ 45° γ-10°

45°

Vario



Roughing

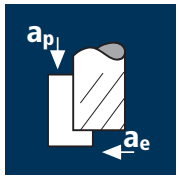
Finishing

	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60			Ti Titanium	GG(G) Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **15323** ø-Code **.220**

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	POLYCHROM P15323 $
.220	4	6	63	13	0.10	3.5°	4	70.00
.260	5	6	63	16	0.15	1.5°	4	70.00
.300	6	6	63	21	0.15	0.0°	4	70.00
.391	8	8	72	31	0.15	0.0°	4	88.00
.450	10	10	84	37	0.20	0.0°	4	119.00
.501	12	12	97	44	0.20	0.0°	4	148.00
.610	16	16	108	53	0.20	0.0°	4	231.00
.682	20	20	122	62	0.20	0.0°	4	337.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	4	4	180	0.025	7.2	0.8	14325	1435	8.5
	5	4	180	0.030	9.0	1.0	11460	1375	12.5
	6	4	180	0.040	10.8	1.2	9550	1530	20.0
	8	4	180	0.050	14.4	1.6	7160	1430	33.0
	10	4	180	0.065	18.0	2.0	5730	1490	53.5
	12	4	180	0.075	21.6	2.4	4775	1435	74.5
	16	4	180	0.085	28.8	3.2	3580	1215	112.0
	20	4	180	0.105	36.0	4.0	2865	1205	173.5
Steel 850 - 1100 N/mm²	4	4	150	0.025	7.2	0.8	11935	1195	7.0
	5	4	150	0.030	9.0	1.0	9550	1145	10.5
	6	4	150	0.040	10.8	1.2	7960	1275	16.5
	8	4	150	0.050	14.4	1.6	5970	1195	27.5
	10	4	150	0.065	18.0	2.0	4775	1240	44.5
	12	4	150	0.075	21.6	2.4	3980	1195	62.0
	16	4	150	0.085	28.8	3.2	2985	1015	93.5
	20	4	150	0.105	36.0	4.0	2385	1000	144.0
Cold work tool steel (12% Cr) high alloyed [1.2379]	4	4	70	0.025	7.2	0.8	5570	555	3.0
	5	4	70	0.030	9.0	1.0	4455	535	5.0
	6	4	70	0.035	10.8	1.2	3715	520	6.5
	8	4	70	0.045	14.4	1.6	2785	500	11.5
	10	4	70	0.060	18.0	2.0	2230	535	19.5
	12	4	70	0.070	21.6	2.4	1855	520	27.0
	16	4	70	0.080	28.8	3.2	1395	445	41.0
	20	4	70	0.100	36.0	4.0	1115	445	64.0
Stainless steel [Cr-Ni/1.4301]	4	4	85	0.020	7.2	0.8	6765	540	3.0
	5	4	85	0.020	9.0	1.0	5410	435	4.0
	6	4	85	0.025	10.8	1.2	4510	450	6.0
	8	4	85	0.030	14.4	1.6	3380	405	9.5
	10	4	85	0.040	18.0	2.0	2705	435	15.5
	12	4	85	0.050	21.6	2.4	2255	450	23.5
	16	4	85	0.055	28.8	3.2	1690	370	34.0
	20	4	85	0.070	36.0	4.0	1355	380	54.5

Application

Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel < 850 N/mm²	4	4	145	0.015	5.4	4	11540	690	15.0
	5	4	145	0.015	6.8	5	9230	555	18.5
	6	4	145	0.020	8.1	6	7695	615	30.0
	8	4	145	0.025	10.8	8	5770	575	49.5
	10	4	145	0.035	13.5	10	4615	645	87.0
	12	4	145	0.040	16.2	12	3845	615	119.5
	16	4	145	0.050	19.2	16	2885	575	176.5
	20	4	145	0.060	24.0	20	2310	555	266.5
Steel 850 - 1100 N/mm²	4	4	120	0.015	5.4	4	9550	575	12.5
	5	4	120	0.015	6.8	5	7640	460	15.5
	6	4	120	0.020	8.1	6	6365	510	25.0
	8	4	120	0.025	10.8	8	4775	480	41.5
	10	4	120	0.035	13.5	10	3820	535	72.0
	12	4	120	0.040	16.2	12	3185	510	99.0
	16	4	120	0.050	19.2	16	2385	475	146.0
	20	4	120	0.060	24.0	20	1910	460	221.0
Cold work tool steel (12% Cr) high alloyed [1.2379]	4	4	55	0.010	5.4	4	4375	175	4.0
	5	4	55	0.015	6.8	5	3500	210	7.0
	6	4	55	0.020	8.1	6	2920	235	11.5
	8	4	55	0.025	10.8	8	2190	220	19.0
	10	4	55	0.030	13.5	10	1750	210	28.5
	12	4	55	0.035	16.2	12	1460	205	40.0
	16	4	55	0.045	19.2	16	1095	195	60.0
	20	4	55	0.055	24.0	20	875	195	93.5
Stainless steel [Cr-Ni/1.4301]	4	4	65	0.010	5.4	4	5175	205	4.5
	5	4	65	0.010	6.8	5	4140	165	5.5
	6	4	65	0.015	8.1	6	3450	205	10.0
	8	4	65	0.020	10.8	8	2585	205	17.5
	10	4	65	0.025	13.5	10	2070	205	27.5
	12	4	65	0.030	16.2	12	1725	205	40.0
	16	4	65	0.035	19.2	16	1295	180	55.5
	20	4	65	0.045	24.0	20	1035	185	89.0

Cylindrical end mills NB-NVD

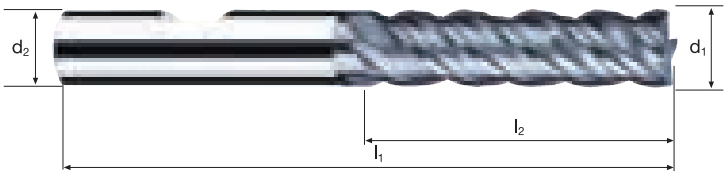
Smooth-edged, medium length version

HSS | Favora® | Base-X **B** | X-Generation

HM MG10 | λ 45° γ 5°

45°

Vario



Roughing

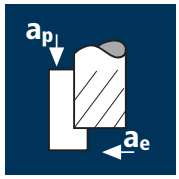
Finishing

Rm < 850 | **Rm** 850-1100 | **Rm** 1100-1300 | **Rm** 1300-1500 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **15308** ø-Code **.220**

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	POLYCHROM P15308 $
.220	4	6	63	13	0.10	3.5°	4	59.70
.260	5	6	63	16	0.15	1.5°	4	59.70
.300	6	6	63	21	0.15	0.0°	4	59.70
.391	8	8	72	31	0.15	0.0°	4	75.00
.450	10	10	84	37	0.20	0.0°	4	101.00
.501	12	12	97	44	0.20	0.0°	4	125.00
.610	16	16	108	53	0.20	0.0°	4	196.00
.682	20	20	122	62	0.20	0.0°	4	286.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Steel < 850 N/mm²	2	4	130	0.005	4	0.2	20690	415
	3	4	130	0.010	6	0.2	13795	550
	4	4	130	0.010	8	0.3	10345	415
	6	4	130	0.015	12	0.5	6895	415
	8	4	130	0.025	16	0.6	5175	520
	10	4	130	0.030	20	0.8	4140	495
	12	4	130	0.035	24	1.0	3450	485
	16	4	130	0.045	32	1.3	2585	465
	20	4	130	0.055	40	1.6	2070	455
Steel 850 - 1100 N/mm²	2	4	85	0.005	4	0.2	13530	270
	3	4	85	0.010	6	0.2	9020	360
	4	4	85	0.010	8	0.3	6765	270
	6	4	85	0.015	12	0.5	4510	270
	8	4	85	0.025	16	0.6	3380	340
	10	4	85	0.030	20	0.8	2705	325
	12	4	85	0.035	24	1.0	2255	315
	16	4	85	0.045	32	1.3	1690	305
	20	4	85	0.055	40	1.6	1355	300
Steel 1100 - 1300 N/mm²	2	4	60	0.005	4	0.2	9550	190
	3	4	60	0.010	6	0.2	6365	255
	4	4	60	0.010	8	0.3	4775	190
	6	4	60	0.015	12	0.5	3185	190
	8	4	60	0.025	16	0.6	2385	240
	10	4	60	0.030	20	0.8	1910	230
	12	4	60	0.035	24	1.0	1590	225
	16	4	60	0.045	32	1.3	1195	215
	20	4	60	0.055	40	1.6	955	210
Stainless steel [Cr-Ni/1.4301]	2	4	70	0.005	4	0.2	11140	225
	3	4	70	0.010	6	0.2	7425	295
	4	4	70	0.010	8	0.3	5570	225
	6	4	70	0.015	12	0.5	3715	225
	8	4	70	0.025	16	0.6	2785	280
	10	4	70	0.030	20	0.8	2230	270
	12	4	70	0.035	24	1.0	1855	260
	16	4	70	0.045	32	1.3	1395	250
	20	4	70	0.055	40	1.6	1115	245

Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Cast iron (lamellar / spheroidal)	2	4	95	0.005	4	0.2	15120	300
	3	4	95	0.010	6	0.2	10080	405
	4	4	95	0.010	8	0.3	7560	300
	6	4	95	0.015	12	0.5	5040	300
	8	4	95	0.025	16	0.6	3780	380
	10	4	95	0.030	20	0.8	3025	365
	12	4	95	0.035	24	1.0	2520	355
	16	4	95	0.045	32	1.3	1890	340
	20	4	95	0.055	40	1.6	1510	330
Unalloyed copper	2	4	180	0.005	4	0.2	28650	575
	3	4	180	0.010	6	0.2	19100	765
	4	4	180	0.010	8	0.3	14325	575
	6	4	180	0.015	12	0.5	9550	575
	8	4	180	0.025	16	0.6	7160	715
	10	4	180	0.030	20	0.8	5730	690
	12	4	180	0.035	24	1.0	4775	670
	16	4	180	0.045	32	1.3	3580	645
	20	4	180	0.055	40	1.6	2865	630
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2	4	80	0.005	4	0.2	12735	255
	3	4	80	0.010	6	0.2	8490	340
	4	4	80	0.010	8	0.3	6365	255
	6	4	80	0.015	12	0.5	4245	255
	8	4	80	0.025	16	0.6	3185	320
	10	4	80	0.030	20	0.8	2545	305
	12	4	80	0.035	24	1.0	2120	295
	16	4	80	0.045	32	1.3	1590	285
	20	4	80	0.055	40	1.6	1275	280
Heat resistant steel Duplex steel [1.4462] [17-4 PH]	2	4	30	0.005	4	0.2	4775	95
	3	4	30	0.010	6	0.2	3185	125
	4	4	30	0.010	8	0.3	2385	95
	6	4	30	0.015	12	0.5	1590	95
	8	4	30	0.025	16	0.6	1195	120
	10	4	30	0.030	20	0.8	955	115
	12	4	30	0.035	24	1.0	795	110
	16	4	30	0.045	32	1.3	595	105
	20	4	30	0.055	40	1.6	475	105

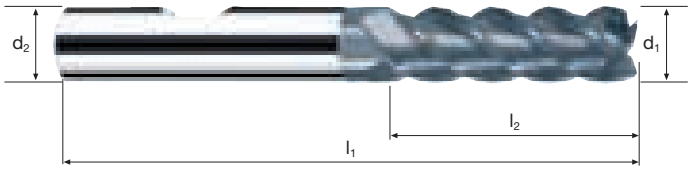
Cylindrical end mills

Smooth-edged, medium length version

HSS | Favora® | Base-X **B** | X-Generation

HM MG10	λ 45° γ 15°

45°



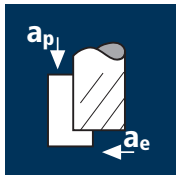
Roughing

Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **15343** ø-Code **.140**

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	POLYCHROM P15343	POLYCHROM P15243 $
.140	2.0	6	63	12	0.10	6.0°	4		48.10
.160	2.5	6	63	13	0.10	5.0°	4		48.10
.180	3.0	6	63	14	0.10	4.5°	4		48.10
.220	4.0	6	63	17	0.10	3.0°	4		48.10
.260	5.0	6	63	19	0.15	1.5°	4		48.10
.300	6.0	6	63	19	0.15	0.0°	4		48.10
.391	8.0	8	72	28	0.15	0.0°	4		60.00
.450	10.0	10	84	34	0.20	0.0°	4		82.00
.501	12.0	12	97	40	0.20	0.0°	4		101.00
.610	16.0	16	108	48	0.20	0.0°	4		158.00
.682	20.0	20	122	56	0.20	0.0°	4		230.00
.772	25.0	25	144	70	0.25	0.0°	4		436.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC P / P D	2	3	90	0.020	2	1.2	14325	860	2.0
		3	4	90	0.030	3	1.8	9550	1145	6.0
		4	4	90	0.035	4	2.4	7160	1000	9.5
		5	4	90	0.045	5	3.0	5730	1030	15.5
		6	4	90	0.055	6	1.5	4775	1050	9.5
		8	4	90	0.075	8	4.8	3580	1075	41.5
		10	4	90	0.090	10	6.0	2865	1030	62.0
		12	4	90	0.110	12	7.2	2385	1050	90.5
		16	4	90	0.145	16	4.0	1790	1040	66.5
	Hardened tool steel 48 - 52 HRC P / P D	2	3	70	0.010	2	1.2	11140	335	1.0
		3	4	70	0.020	3	1.8	7425	595	3.0
		4	4	70	0.025	4	2.4	5570	555	5.5
		5	4	70	0.030	5	3.0	4455	535	8.0
		6	4	70	0.035	6	1.5	3715	520	4.5
		8	4	70	0.050	8	4.8	2785	555	21.5
		10	4	70	0.060	10	6.0	2230	535	32.0
		12	4	70	0.075	12	7.2	1855	555	48.0
		16	4	70	0.100	16	4.0	1395	560	36.0
	Hardened tool steel 52 - 56 HRC D P	2	3	50	0.010	2	1.2	7960	240	.5
		3	4	50	0.015	3	1.8	5305	320	1.5
		4	4	50	0.020	4	2.4	3980	320	3.0
		5	4	50	0.025	5	3.0	3185	320	5.0
		6	4	50	0.030	6	1.5	2655	320	3.0
		8	4	50	0.040	8	4.8	1990	320	12.5
		10	4	50	0.050	10	6.0	1590	320	19.0
		12	4	50	0.060	12	7.2	1325	320	27.5
		16	4	50	0.080	16	4.0	995	320	20.5
	Hardened tool steel 56 - 60 HRC D	2	3	25	0.005	2	1.2	3980	60	0.1
		3	4	25	0.010	3	1.8	2655	105	0.5
		4	4	25	0.015	4	2.4	1990	120	1.0
		5	4	25	0.020	5	3.0	1590	125	2.0
		6	4	25	0.020	6	1.5	1325	105	1.0
		8	4	25	0.030	8	4.8	995	120	4.5
		10	4	25	0.035	10	6.0	795	110	6.5
		12	4	25	0.045	12	7.2	665	120	10.5
		16	4	25	0.060	16	4.0	495	120	7.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC P / P D	2	3	75	0.015	1.0	2	11935	535	1.0
		3	4	75	0.020	1.5	3	7960	635	3.0
		4	4	75	0.030	2.0	4	5970	715	5.5
		5	4	75	0.035	2.5	5	4775	670	8.5
		6	4	75	0.045	3.0	6	3980	715	13.0
		8	4	75	0.060	4.0	8	2985	715	23.0
		10	4	75	0.075	5.0	10	2385	715	36.0
		12	4	75	0.090	6.0	12	1990	715	51.5
		16	4	75	0.115	4.0	16	1490	685	44.0
	Hardened tool steel 48 - 52 HRC P / P D	2	3	60	0.010	1.0	2	9550	285	.5
		3	4	60	0.015	1.5	3	6365	380	1.5
		4	4	60	0.020	2.0	4	4775	380	3.0
		5	4	60	0.030	2.5	5	3820	460	6.0
		6	4	60	0.035	3.0	6	3185	445	8.0
		8	4	60	0.045	4.0	8	2385	430	14.0
		10	4	60	0.055	5.0	10	1910	420	21.0
		12	4	60	0.065	6.0	12	1590	415	30.0
		16	4	60	0.090	4.0	16	1195	430	27.5
	Hardened tool steel 52 - 56 HRC D P	2	3	40	0.010	1.0	2	6365	190	0.5
		3	4	40	0.015	1.5	3	4245	255	1.0
		4	4	40	0.020	2.0	4	3185	255	2.0
		5	4	40	0.020	2.5	5	2545	205	2.5
		6	4	40	0.025	3.0	6	2120	210	4.0
		8	4	40	0.035	4.0	8	1590	225	7.0
		10	4	40	0.045	5.0	10	1275	230	11.5
		12	4	40	0.055	6.0	12	1060	235	17.0
		16	4	40	0.070	4.0	16	795	225	14.5
	Hardened tool steel 56 - 60 HRC D	2	3	20	0.006	1.0	2	3185	55	0.1
		3	4	20	0.009	1.5	3	2120	75	0.5
		4	4	20	0.013	2.0	4	1590	85	0.5
		5	4	20	0.016	2.5	5	1275	80	1.0
		6	4	20	0.019	3.0	6	1060	80	1.5
		8	4	20	0.025	4.0	8	795	80	2.5
		10	4	20	0.031	5.0	10	635	80	4.0
		12	4	20	0.038	6.0	12	530	80	6.0
		16	4	20	0.050	4.0	16	400	80	5.0

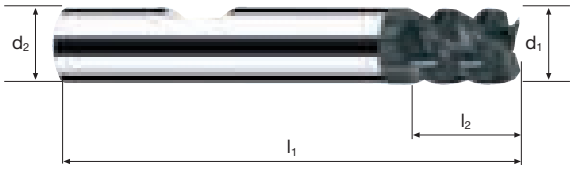
Cylindrical end mills HX

Smooth-edged, short version

HSS | Favora® | Base-X | X-Generation X

HM MG10 | **λ 55° γ-10°**

45°



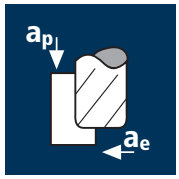
Roughing

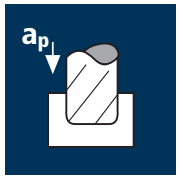
Finishing

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5349** ø-Code **.100**

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	DURO-S D5349 D5249 $
.100	1.0	6	50	1.0	0.07	13.0°	3	62.00
.108	1.2	6	50	1.2	0.07	12.5°	3	62.00
.120	1.5	6	50	1.5	0.07	12.0°	3	62.00
.140	2.0	6	50	2.0	0.10	11.0°	3	62.00
.148	2.2	6	50	2.2	0.10	10.0°	3	62.00
.160	2.5	6	50	2.5	0.10	9.5°	3	62.00
.180	3.0	6	50	3.0	0.10	8.5°	4	62.00
.220	4.0	6	54	4.0	0.10	6.5°	4	62.00
.260	5.0	6	54	5.0	0.15	3.5°	4	62.00
.300	6.0	6	54	7.0	0.15	0.0°	4	62.00
.391	8.0	8	58	9.0	0.15	0.0°	4	78.00
.450	10.0	10	66	11.0	0.20	0.0°	4	106.00
.501	12.0	12	73	13.0	0.20	0.0°	4	131.00
.610	16.0	16	82	17.0	0.20	0.0°	4	205.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC P / P D	3	4	110	0.025	4.5	0.45	11670	1165	2.5
		4	4	110	0.035	6.0	0.60	8755	1225	4.5
		5	4	110	0.040	7.5	0.75	7005	1120	6.5
		6	4	110	0.050	9.0	0.90	5835	1165	9.5
		8	4	110	0.065	12.0	1.20	4375	1140	16.5
		10	4	110	0.085	15.0	1.50	3500	1190	27.0
		12	4	110	0.100	18.0	1.80	2920	1170	38.0
		16	4	110	0.135	24.0	2.40	2190	1185	68.5
	Hardened tool steel 48 - 52 HRC P / P D	3	4	70	0.015	4.5	0.45	7425	445	1.0
		4	4	70	0.020	6.0	0.60	5570	445	1.5
		5	4	70	0.030	7.5	0.75	4455	535	3.0
		6	4	70	0.035	9.0	0.90	3715	520	4.0
		8	4	70	0.045	12.0	1.20	2785	500	7.0
		10	4	70	0.055	15.0	1.50	2230	490	11.0
		12	4	70	0.065	18.0	1.80	1855	480	15.5
		16	4	70	0.090	24.0	2.40	1395	500	29.0
	Hardened tool steel 52 - 56 HRC D P	3	4	50	0.015	4.5	0.45	5305	320	0.5
		4	4	50	0.020	6.0	0.60	3980	320	1.0
		5	4	50	0.025	7.5	0.75	3185	320	2.0
		6	4	50	0.025	9.0	0.90	2655	265	2.0
		8	4	50	0.035	12.0	1.20	1990	280	4.0
		10	4	50	0.045	15.0	1.50	1590	285	6.5
		12	4	50	0.055	18.0	1.80	1325	290	9.5
		16	4	50	0.075	24.0	2.40	995	300	17.5
	Hardened tool steel 56 - 60 HRC D	3	4	25	0.010	4.5	0.45	2655	106	0.2
		4	4	25	0.015	6.0	0.60	1990	119	0.4
		5	4	25	0.015	7.5	0.75	1590	95	0.5
		6	4	25	0.020	9.0	0.90	1325	106	1.0
		8	4	25	0.025	12.0	1.20	995	100	1.5
		10	4	25	0.035	15.0	1.50	795	111	2.5
		12	4	25	0.040	18.0	1.80	665	106	3.5
		16	4	25	0.055	24.0	2.40	495	109	6.5

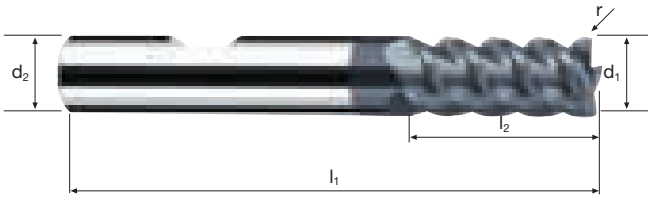
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC P / P D	3	4	95	0.020	1.5	3	10080	805	3.5
		4	4	95	0.025	2.0	4	7560	755	6.0
		5	4	95	0.035	2.5	5	6050	845	10.5
		6	4	95	0.040	3.0	6	5040	805	14.5
		8	4	95	0.055	4.0	8	3780	830	26.5
		10	4	95	0.065	5.0	10	3025	785	39.5
		12	4	95	0.080	6.0	12	2520	805	58.0
		16	4	95	0.105	4.0	16	1890	795	51.0
	Hardened tool steel 48 - 52 HRC P / P D	3	4	60	0.015	1.5	3	6365	380	1.5
		4	4	60	0.020	2.0	4	4775	380	3.0
		5	4	60	0.025	2.5	5	3820	380	5.0
		6	4	60	0.030	3.0	6	3185	380	7.0
		8	4	60	0.040	4.0	8	2385	380	12.0
		10	4	60	0.050	5.0	10	1910	380	19.0
		12	4	60	0.060	6.0	12	1590	380	27.5
		16	4	60	0.080	4.0	16	1195	380	24.5
	Hardened tool steel 52 - 56 HRC D P	3	4	40	0.010	1.5	3	4245	170	1.0
		4	4	40	0.015	2.0	4	3185	190	1.5
		5	4	40	0.020	2.5	5	2545	205	2.5
		6	4	40	0.025	3.0	6	2120	210	4.0
		8	4	40	0.030	4.0	8	1590	190	6.0
		10	4	40	0.040	5.0	10	1275	205	10.5
		12	4	40	0.050	6.0	12	1060	210	15.0
		16	4	40	0.065	4.0	16	795	205	13.0
	Hardened tool steel 56 - 60 HRC D	3	4	20	0.009	1.5	3	2120	76	0.3
		4	4	20	0.011	2.0	4	1590	70	0.5
		5	4	20	0.014	2.5	5	1275	71	1.0
		6	4	20	0.017	3.0	6	1060	72	1.5
		8	4	20	0.023	4.0	8	795	73	2.5
		10	4	20	0.029	5.0	10	635	74	3.5
		12	4	20	0.034	6.0	12	530	72	5.0
		16	4	20	0.046	4.0	16	400	74	4.5

Corner radius end mills HX-RN

Smooth-edged, normal version

HSS | Favora® | Base-X | X-Generation X

HM MG10 | λ 55° γ-10°



Roughing

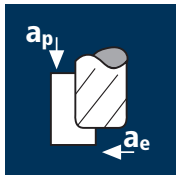
Finishing

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5259** ø-Code **.178**

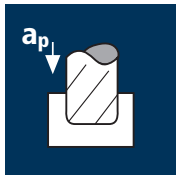
ø Code	d1 e8	d2 h6	l1	l2	r 0/+0.03	α	z	DURO-S D5259 $
.178	3	6	57	8	0.2	6.0°	4	71.00
.218	4	6	57	11	0.2	4.0°	4	71.00
.258	5	6	57	13	0.2	2.0°	4	71.00
.297	6	6	57	13	0.2	0.0°	4	71.00
.388	8	8	63	19	0.2	0.0°	4	88.00
.445	10	10	72	22	0.2	0.0°	4	120.00
.496	12	12	83	26	0.2	0.0°	4	148.00
.605	16	16	92	32	0.2	0.0°	4	232.00
.180	3	6	57	8	0.5	6.0°	4	71.00
.220	4	6	57	11	0.5	4.0°	4	71.00
.260	5	6	57	13	0.5	2.0°	4	71.00
.300	6	6	57	13	0.5	0.0°	4	71.00
.391	8	8	63	19	0.5	0.0°	4	88.00
.450	10	10	72	22	0.5	0.0°	4	120.00
.501	12	12	83	26	0.5	0.0°	4	148.00
.610	16	16	92	32	0.5	0.0°	4	232.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel 1100 - 1300 N/mm²	6	4	150	0.050	6	3.6	7960	1590	34.5
	8	4	150	0.065	8	4.8	5970	1550	59.5
	10	4	150	0.085	10	6.0	4775	1625	97.5
	12	4	150	0.100	12	7.2	3980	1590	137.5
	16	4	150	0.135	16	6.4	2985	1610	165.0
Hardened tool steel 42 - 48 HRC	6	4	120	0.035	6	3.6	6365	890	19.0
	8	4	120	0.045	8	4.8	4775	860	33.0
	10	4	120	0.055	10	6.0	3820	840	50.5
	12	4	120	0.065	12	7.2	3185	830	71.5
	16	4	120	0.090	16	6.4	2385	860	88.0
Hardened tool steel 48 - 52 HRC	6	4	80	0.025	6	3.6	4245	425	9.0
	8	4	80	0.035	8	4.8	3185	445	17.0
	10	4	80	0.045	10	6.0	2545	460	27.5
	12	4	80	0.055	12	7.2	2120	465	40.0
	16	4	80	0.075	16	6.4	1590	475	48.5
Hardened tool steel 52 - 56 HRC	6	4	60	0.020	6	3.6	3185	255	5.5
	8	4	60	0.025	8	4.8	2385	240	9.0
	10	4	60	0.035	10	6.0	1910	265	16.0
	12	4	60	0.040	12	7.2	1590	255	22.0
	16	4	60	0.055	16	6.4	1195	265	27.0

Application



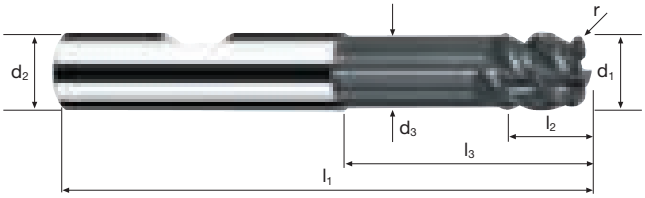
Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel 1100 - 1300 N/mm²	6	4	120	0.040	3.0	6	6365	1020	18.5
	8	4	120	0.050	4.0	8	4775	955	30.5
	10	4	120	0.070	5.0	10	3820	1070	53.5
	12	4	120	0.080	6.0	12	3185	1020	73.5
	16	4	120	0.110	4.0	16	2385	1050	67.0
Hardened tool steel 42 - 48 HRC	6	4	100	0.030	3.0	6	5305	635	11.5
	8	4	100	0.035	4.0	8	3980	555	18.0
	10	4	100	0.045	5.0	10	3185	575	29.0
	12	4	100	0.050	6.0	12	2655	530	38.0
	16	4	100	0.070	4.0	16	1990	555	35.5
Hardened tool steel 48 - 52 HRC	6	4	60	0.020	3.0	6	3185	255	4.5
	8	4	60	0.030	4.0	8	2385	285	9.0
	10	4	60	0.035	5.0	10	1910	265	13.5
	12	4	60	0.045	6.0	12	1590	285	20.5
	16	4	60	0.060	4.0	16	1195	285	18.0
Hardened tool steel 52 - 56 HRC	6	4	40	0.015	3.0	6	2120	125	2.5
	8	4	40	0.020	4.0	8	1590	125	4.0
	10	4	40	0.030	5.0	10	1275	155	8.0
	12	4	40	0.030	6.0	12	1060	125	9.0
	16	4	40	0.045	4.0	16	795	145	9.5

Corner radius end mills HX-R

Smooth-edged, normal version with neck

HSS | Favora® | Base-X | X-Generation X

HM MG10	λ 55° γ-10°



Roughing

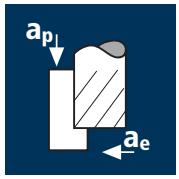
Finishing

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **D** Article-N°. **5356** ø-Code **.300**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	z	DURO-S D5356	DURO-S D5256 $
.300	6	6	5.5	57	7	20	1.5	4		70.00
.391	8	8	7.4	63	9	26	2.0	4		87.00
.450	10	10	9.2	72	11	31	2.5	4		118.00
.501	12	12	11.0	83	13	37	3.0	4		146.00
.605	16	16	15.0	92	17	43	2.5	4		229.00
.610	16	16	15.0	92	17	43	3.5	4		229.00
.615	16	16	15.0	92	17	43	4.0	4		229.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Steel 850 - 1100 N/mm²	3	5	180	0.010	5	0.05	19100	955
	4	5	180	0.010	6	0.05	14325	715
	5	5	180	0.015	8	0.05	11460	860
	6	5	180	0.015	9	0.10	9550	715
	8	7	180	0.025	12	0.10	7160	1255
	10	7	180	0.030	15	0.10	5730	1205
	12	7	180	0.035	18	0.10	4775	1170
	16	7	180	0.045	24	0.20	3580	1130
	20	7	180	0.055	30	0.20	2865	1105
Steel 1100 - 1300 N/mm²	3	5	150	0.010	5	0.05	15915	795
	4	5	150	0.010	6	0.05	11935	595
	5	5	150	0.015	8	0.05	9550	715
	6	5	150	0.015	9	0.10	7960	595
	8	7	150	0.025	12	0.10	5970	1045
	10	7	150	0.030	15	0.10	4775	1005
	12	7	150	0.035	18	0.10	3980	975
	16	7	150	0.045	24	0.20	2985	940
	20	7	150	0.055	30	0.20	2385	920
Hardened tool steel 52 - 56 HRC	3	5	120	0.008	5	0.05	12735	510
	4	5	120	0.010	6	0.05	9550	480
	5	5	120	0.012	8	0.05	7640	460
	6	5	120	0.016	9	0.10	6365	510
	8	7	120	0.020	12	0.10	4775	670
	10	7	120	0.026	15	0.10	3820	695
	12	7	120	0.030	18	0.10	3185	670
	16	7	120	0.040	24	0.20	2385	670
	20	7	120	0.050	30	0.20	1910	670
Hardened tool steel 56 - 60 HRC	3	5	100	0.008	5	0.05	10610	425
	4	5	100	0.010	6	0.05	7960	400
	5	5	100	0.012	8	0.05	6365	380
	6	5	100	0.016	9	0.10	5305	425
	8	7	100	0.020	12	0.10	3980	555
	10	7	100	0.026	15	0.10	3185	580
	12	7	100	0.030	18	0.10	2655	560
	16	7	100	0.040	24	0.20	1990	555
	20	7	100	0.050	30	0.20	1590	555

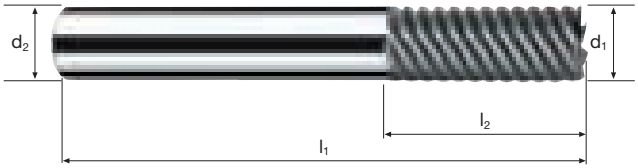
Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Wrought aluminium Si < 6%	3	5	450	0.010	5	0.05	47750	2390
	4	5	450	0.010	6	0.05	35810	1790
	5	5	450	0.015	8	0.05	28650	2150
	6	5	450	0.015	9	0.10	23875	1790
	8	7	450	0.025	12	0.10	17905	3135
	10	7	450	0.030	15	0.10	14325	3010
	12	7	450	0.035	18	0.10	11935	2925
	16	7	450	0.045	24	0.20	8955	2820
	20	7	450	0.055	30	0.20	7160	2755
Cast iron (lamellar / spheroidal)	3	5	180	0.010	5	0.05	19100	955
	4	5	180	0.010	6	0.05	14325	715
	5	5	180	0.015	8	0.05	11460	860
	6	5	180	0.015	9	0.10	9550	715
	8	7	180	0.025	12	0.10	7160	1255
	10	7	180	0.030	15	0.10	5730	1205
	12	7	180	0.035	18	0.10	4775	1170
	16	7	180	0.045	24	0.20	3580	1130
	20	7	180	0.055	30	0.20	2865	1105
Titanium alloys >300 HB [Ti6Al4V]	3	5	70	0.010	5	0.05	7425	370
	4	5	70	0.010	6	0.05	5570	280
	5	5	70	0.015	8	0.05	4455	335
	6	5	70	0.015	9	0.10	3715	280
	8	7	70	0.025	12	0.10	2785	485
	10	7	70	0.030	15	0.10	2230	470
	12	7	70	0.035	18	0.10	1855	455
	16	7	70	0.045	24	0.20	1395	440
	20	7	70	0.055	30	0.20	1115	430
Stainless steel [Cr-Ni/1.4301]	3	5	80	0.010	5	0.05	8490	425
	4	5	80	0.010	6	0.05	6365	320
	5	5	80	0.015	8	0.05	5095	380
	6	5	80	0.015	9	0.10	4245	320
	8	7	80	0.025	12	0.10	3185	555
	10	7	80	0.030	15	0.10	2545	535
	12	7	80	0.035	18	0.10	2120	520
	16	7	80	0.045	24	0.20	1590	500
	20	7	80	0.055	30	0.20	1275	490

Cylindrical end mills Multicut XF

Finishing, normal version

HSS | Favora® | Base-X | X-Generation X

HM XA	λ 65° γ 8°
45°	h5



Roughing

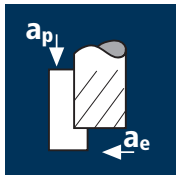
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** Coating **P** Article-N°. **15250** ø-Code **.180**

ø Code	d1 e8	d2 h5	l1	l2	45°	α	z	POLYCHROM P15250 $
.180	3	6	57	8	-	6.0°	5	77.00
.220	4	6	57	11	-	4.0°	5	77.00
.260	5	6	57	13	-	2.0°	5	77.00
.300	6	6	57	13	0.15	0.0°	5	77.00
.391	8	8	63	19	0.15	0.0°	7	97.00
.450	10	10	72	22	0.20	0.0°	7	131.00
.501	12	12	83	26	0.20	0.0°	7	162.00
.610	16	16	92	32	0.20	0.0°	7	254.00
.682	20	20	104	38	0.20	0.0°	7	370.00

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
Hardened tool steel 48 - 52 HRC	3	4	150	0.008	4.5	0.1	15915	510
	4	4	150	0.010	6.0	0.1	11935	475
	5	5	150	0.014	7.5	0.1	9550	670
	6	6	150	0.016	9.0	0.1	7960	765
	8	6	150	0.022	12.0	0.1	5970	790
	10	6	150	0.028	15.0	0.1	4775	800
	12	6	150	0.032	18.0	0.1	3980	765
	16	6	150	0.044	24.0	0.2	2985	790
	20	8	150	0.054	30.0	0.2	2385	1030
Hardened tool steel 52 - 56 HRC	3	4	120	0.008	4.5	0.1	12735	410
	4	4	120	0.010	6.0	0.1	9550	380
	5	5	120	0.014	7.5	0.1	7640	535
	6	6	120	0.016	9.0	0.1	6365	610
	8	6	120	0.022	12.0	0.1	4775	630
	10	6	120	0.028	15.0	0.1	3820	640
	12	6	120	0.032	18.0	0.1	3185	610
	16	6	120	0.044	24.0	0.2	2385	630
	20	8	120	0.054	30.0	0.2	1910	825
Hardened tool steel 56 - 60 HRC	3	4	100	0.008	4.5	0.1	10610	340
	4	4	100	0.010	6.0	0.1	7960	320
	5	5	100	0.014	7.5	0.1	6365	445
	6	6	100	0.016	9.0	0.1	5305	510
	8	6	100	0.022	12.0	0.1	3980	525
	10	6	100	0.028	15.0	0.1	3185	535
	12	6	100	0.032	18.0	0.1	2655	510
	16	6	100	0.044	24.0	0.2	1990	525
	20	8	100	0.054	30.0	0.2	1590	685
Hardened tool steel > 60 HRC	3	4	80	0.008	4.5	0.1	8490	270
	4	4	80	0.010	6.0	0.1	6365	255
	5	5	80	0.012	7.5	0.1	5095	305
	6	6	80	0.016	9.0	0.1	4245	410
	8	6	80	0.020	12.0	0.1	3185	380
	10	6	80	0.026	15.0	0.1	2545	395
	12	6	80	0.030	18.0	0.1	2120	380
	16	6	80	0.040	24.0	0.2	1590	380
	20	8	80	0.050	30.0	0.2	1275	510

Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]
High speed steel, hardened	3	4	50	0.008	4.5	0.1	5305	170
	4	4	50	0.010	6.0	0.1	3980	160
	5	5	50	0.012	7.5	0.1	3185	190
	6	6	50	0.016	9.0	0.1	2655	255
	8	6	50	0.020	12.0	0.1	1990	240
	10	6	50	0.026	15.0	0.1	1590	250
	12	6	50	0.030	18.0	0.1	1325	240
	16	6	50	0.040	24.0	0.2	995	240
	20	8	50	0.050	30.0	0.2	795	320
Cast iron (lamellar / spheroidal)	3	4	220	0.008	4.5	0.1	23345	745
	4	4	220	0.010	6.0	0.1	17510	700
	5	5	220	0.014	7.5	0.1	14005	980
	6	6	220	0.016	9.0	0.1	11670	1120
	8	6	220	0.022	12.0	0.1	8755	1155
	10	6	220	0.028	15.0	0.1	7005	1175
	12	6	220	0.032	18.0	0.1	5835	1120
	16	6	220	0.044	24.0	0.2	4375	1155
	20	8	220	0.054	30.0	0.2	3500	1510

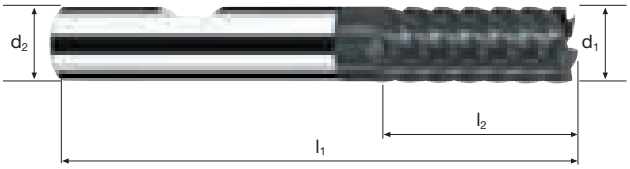
Cylindrical end mills Multicut HX-H

Finishing, normal version

HSS | Favora® | Base-X | X-Generation X

HM XA	λ 55° γ-10°

45°



Roughing

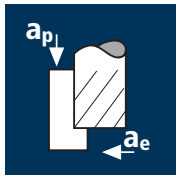
Finishing

HRC 48-56	HRC 56-60	HRC > 60	HSS GG(G)

Example: **Order-N°.** D (Coating) 5266 (Article-N°.) .180 (ø-Code)

ø Code	d1 e8	d2 h6	l1	l2	45°	α	z	DURO-S D5266 $
.180	3	6	57	8	0.10	6.0°	4	74.00
.220	4	6	57	11	0.10	4.0°	4	74.00
.260	5	6	57	13	0.15	2.0°	5	74.00
.300	6	6	57	13	0.15	0.0°	6	74.00
.391	8	8	63	19	0.15	0.0°	6	92.00
.450	10	10	72	22	0.20	0.0°	6	126.00
.501	12	12	83	26	0.20	0.0°	6	155.00
.610	16	16	92	32	0.20	0.0°	6	243.00
.682	20	20	104	38	0.20	0.0°	8	354.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min-1]	vf [mm/min]
Steel 850 - 1100 N/mm²	6	6	140	0.015	9	0.1	7425	670
	8	6	140	0.025	12	0.1	5570	835
	10	6	140	0.030	15	0.1	4455	800
	12	6	140	0.035	18	0.1	3715	780
	16	8	140	0.045	24	0.2	2785	1005
	20	10	140	0.055	30	0.2	2230	1225
Steel 1100 - 1300 N/mm²	6	6	120	0.015	9	0.1	6365	575
	8	6	120	0.025	12	0.1	4775	715
	10	6	120	0.030	15	0.1	3820	690
	12	6	120	0.035	18	0.1	3185	670
	16	8	120	0.045	24	0.2	2385	860
	20	10	120	0.055	30	0.2	1910	1050
Steel 1300 - 1500 N/mm²	6	6	80	0.016	9	0.1	4245	410
	8	6	80	0.020	12	0.1	3185	380
	10	6	80	0.026	15	0.1	2545	395
	12	6	80	0.030	18	0.1	2120	380
	16	8	80	0.040	24	0.2	1590	510
	20	10	80	0.050	30	0.2	1275	640
Cast iron (lamellar / spheroidal)	6	6	140	0.015	9	0.1	7425	670
	8	6	140	0.025	12	0.1	5570	835
	10	6	140	0.030	15	0.1	4455	800
	12	6	140	0.035	18	0.1	3715	780
	16	8	140	0.045	24	0.2	2785	1005
	20	10	140	0.055	30	0.2	2230	1225

Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min-1]	vf [mm/min]
Titanium alloys >300 HB [Ti6Al4V]	6	6	60	0.015	9	0.1	3185	285
	8	6	60	0.025	12	0.1	2385	360
	10	6	60	0.030	15	0.1	1910	345
	12	6	60	0.035	18	0.1	1590	335
	16	8	60	0.045	24	0.2	1195	430
	20	10	60	0.055	30	0.2	955	525
Unalloyed copper	6	6	200	0.015	9	0.1	10610	955
	8	6	200	0.025	12	0.1	7960	1195
	10	6	200	0.030	15	0.1	6365	1145
	12	6	200	0.035	18	0.1	5305	1115
	16	8	200	0.045	24	0.2	3980	1435
	20	10	200	0.055	30	0.2	3185	1750

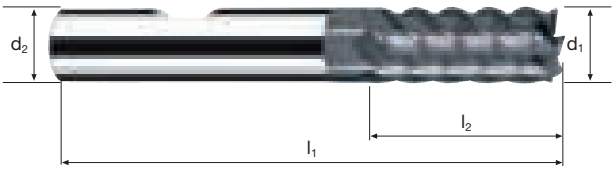
Cylindrical end mills Multicut N

Finishing, normal version

HSS | Favora® | Base-X **B** | X-Generation

HM MG10	λ 45° γ 8°

45°



Roughing

Finishing

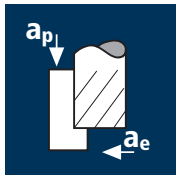
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500					Ti Titanium	GG(G) Copper

Example: **Order-N°.** Coating **P** Article-N°. **5260** ø-Code **.300**

ø Code	d1 e8	d2 h6	l1	l2	45°	z		POLYCHROM P5260 $
.300	6	6	57	13	0.15	6		47.40
.391	8	8	63	19	0.15	6		59.20
.450	10	10	72	22	0.20	6		81.00
.501	12	12	83	26	0.20	6		100.00
.610	16	16	92	32	0.20	8		156.00
.682	20	20	104	38	0.20	10		227.00

VI

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Steel 850 - 1100 N/mm²	6	5	150	0.015	15	0.15	7960	595
	8	7	150	0.025	20	0.15	5970	1045
	10	7	150	0.030	25	0.15	4775	1005
	12	7	150	0.035	30	0.15	3980	975
	16	7	150	0.045	40	0.25	2985	940
	20	7	150	0.055	50	0.25	2385	920
Steel 1100 - 1300 N/mm²	6	5	120	0.015	15	0.15	6365	475
	8	7	120	0.025	20	0.15	4775	835
	10	7	120	0.030	25	0.15	3820	800
	12	7	120	0.035	30	0.15	3185	780
	16	7	120	0.045	40	0.25	2385	750
	20	7	120	0.055	50	0.25	1910	735
Hardened tool steel 52 - 56 HRC	6	5	100	0.016	15	0.15	5305	425
	8	7	100	0.020	20	0.15	3980	555
	10	7	100	0.026	25	0.15	3185	580
	12	7	100	0.030	30	0.15	2655	560
	16	7	100	0.040	40	0.25	1990	555
	20	7	100	0.050	50	0.25	1590	555
Hardened tool steel 56 - 60 HRC	6	5	80	0.016	15	0.15	4245	340
	8	7	80	0.020	20	0.15	3185	445
	10	7	80	0.026	25	0.15	2545	465
	12	7	80	0.030	30	0.15	2120	445
	16	7	80	0.040	40	0.25	1590	445
	20	7	80	0.050	50	0.25	1275	445

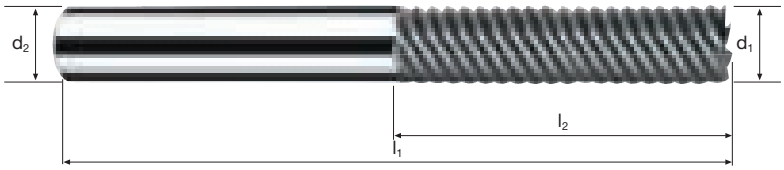
Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]
Wrought aluminium Si < 6%	6	5	360	0.015	15	0.15	19100	1435
	8	7	360	0.025	20	0.15	14325	2505
	10	7	360	0.030	25	0.15	11460	2405
	12	7	360	0.035	30	0.15	9550	2340
	16	7	360	0.045	40	0.25	7160	2255
	20	7	360	0.055	50	0.25	5730	2205
Cast iron (lamellar / spheroidal)	6	5	150	0.015	15	0.15	7960	595
	8	7	150	0.025	20	0.15	5970	1045
	10	7	150	0.030	25	0.15	4775	1005
	12	7	150	0.035	30	0.15	3980	975
	16	7	150	0.045	40	0.25	2985	940
	20	7	150	0.055	50	0.25	2385	920
Titanium alloys >300 HB [Ti6Al4V]	6	5	60	0.015	15	0.15	3185	240
	8	7	60	0.025	20	0.15	2385	415
	10	7	60	0.030	25	0.15	1910	400
	12	7	60	0.035	30	0.15	1590	390
	16	7	60	0.045	40	0.25	1195	375
	20	7	60	0.055	50	0.25	955	370
Stainless steel [Cr-Ni/1.4301]	6	5	70	0.015	15	0.15	3715	280
	8	7	70	0.025	20	0.15	2785	485
	10	7	70	0.030	25	0.15	2230	470
	12	7	70	0.035	30	0.15	1855	455
	16	7	70	0.045	40	0.25	1395	440
	20	7	70	0.055	50	0.25	1115	430

Cylindrical end mills Multicut XF

Finishing, medium length version

HSS | Favora® | Base-X | X-Generation X

HM XA	λ 65° γ 8°
45°	h5



Roughing

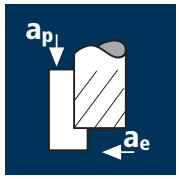
Finishing

Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	GG(G) Tool Steel Aluminium

Example: **Order-N°.** P (Coating) 15251 (Article-N°.) .300 (ø-Code)

ø Code	d1 e8	d2 h5	l1	l2	45°	z		POLYCHROM P15251 $
.300	6	6	63	19	0.15	5		85.00
.391	8	8	72	28	0.15	7		106.00
.450	10	10	84	34	0.20	7		144.00
.501	12	12	97	40	0.20	7		177.00
.610	16	16	108	48	0.20	7		278.00
.682	20	20	122	56	0.20	7		405.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min-1]	vf [mm/min]
Hardened tool steel 48 -52 HRC	6	6	120	0.016	15	0.15	6365	610
	8	6	120	0.022	20	0.15	4775	630
	10	6	120	0.028	25	0.15	3820	640
	12	6	120	0.032	30	0.15	3185	610
	16	6	120	0.044	40	0.25	2385	630
	20	8	120	0.054	50	0.25	1910	825
Hardened tool steel 52 - 56 HRC	6	6	100	0.016	15	0.15	5305	510
	8	6	100	0.022	20	0.15	3980	525
	10	6	100	0.028	25	0.15	3185	535
	12	6	100	0.032	30	0.15	2655	510
	16	6	100	0.044	40	0.25	1990	525
	20	8	100	0.054	50	0.25	1590	685
Hardened tool steel 56 - 60 HRC	6	6	80	0.016	15	0.15	4245	410
	8	6	80	0.022	20	0.15	3185	420
	10	6	80	0.028	25	0.15	2545	430
	12	6	80	0.032	30	0.15	2120	405
	16	6	80	0.044	40	0.25	1590	420
	20	8	80	0.054	50	0.25	1275	550
Hardened tool steel > 60 HRC	6	6	50	0.016	15	0.15	2655	255
	8	6	50	0.020	20	0.15	1990	240
	10	6	50	0.026	25	0.15	1590	250
	12	6	50	0.030	30	0.15	1325	240
	16	6	50	0.040	40	0.25	995	240
	20	8	50	0.050	50	0.25	795	320

Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min-1]	vf [mm/min]
High speed steel, hardened	6	6	40	0.016	15	0.15	2120	205
	8	6	40	0.020	20	0.15	1590	190
	10	6	40	0.026	25	0.15	1275	200
	12	6	40	0.030	30	0.15	1060	190
	16	6	40	0.040	40	0.25	795	190
	20	8	40	0.050	50	0.25	635	255
Cast iron (lamellar / spheroidal)	6	6	180	0.016	15	0.15	9550	915
	8	6	180	0.022	20	0.15	7160	945
	10	6	180	0.028	25	0.15	5730	965
	12	6	180	0.032	30	0.15	4775	915
	16	6	180	0.044	40	0.25	3580	945
	20	8	180	0.054	50	0.25	2865	1240

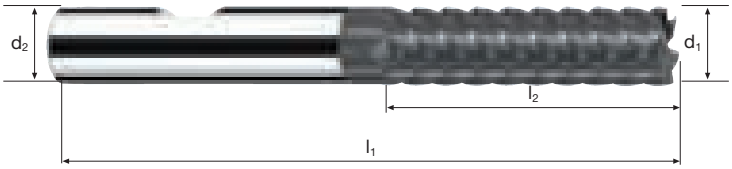
Cylindrical end mills Multicut HX-H

Finishing, medium length version

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 55° γ-10°

45°



Roughing

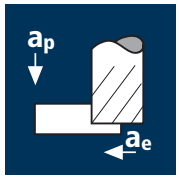
Finishing

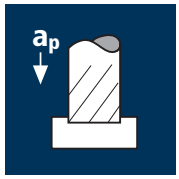
HRC 48-56 | **HRC** 56-60 | **HRC** > 60 | **HSS GG(G)**

Example: **Order-N°.** Coating **D** Article-N°. **15266** ø-Code **.300**

ø Code	d1 e8	d2 h6	l1	l2	45°	z	DURO-S D15266 $
.300	6	6	63	19	0.15	6	81.00
.391	8	8	72	28	0.15	6	101.00
.450	10	10	84	34	0.20	6	138.00
.501	12	12	97	40	0.20	6	171.00
.610	16	16	108	48	0.20	6	267.00
.682	20	20	122	56	0.20	8	389.00

VI

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC D	0.2	2	140	0.005	0.01	0.04	60000	600	0.0
		0.5	2	140	0.015	0.03	0.10	60000	1800	5.5
		0.8	2	140	0.020	0.05	0.16	55705	2230	18.0
		1.0	2	140	0.025	0.06	0.20	44565	2230	27.0
		1.2	2	140	0.030	0.07	0.24	37135	2230	37.5
		1.5	2	140	0.040	0.09	0.30	29710	2375	64.0
		2.0	2	140	0.050	0.12	0.40	22280	2230	107.0
		2.5	2	140	0.065	0.15	0.50	17825	2315	173.5
		3.0	2	140	0.075	0.18	0.60	14855	2230	241.0
	Hardened tool steel 48 - 52 HRC D	0.2	2	120	0.004	0.01	0.04	60000	480	0.0
		0.5	2	120	0.014	0.03	0.10	60000	1680	5.0
		0.8	2	120	0.020	0.05	0.16	47750	1910	15.5
		1.0	2	120	0.024	0.06	0.20	38200	1835	22.0
		1.2	2	120	0.028	0.07	0.24	31830	1780	30.0
		1.5	2	120	0.038	0.09	0.30	25465	1935	52.0
		2.0	2	120	0.048	0.12	0.40	19100	1835	88.0
		2.5	2	120	0.062	0.15	0.50	15280	1895	142.0
		3.0	2	120	0.072	0.18	0.60	12735	1835	198.0
	Hardened tool steel 52 - 56 HRC D	0.2	2	100	0.004	0.01	0.04	60000	480	0.0
		0.5	2	100	0.014	0.03	0.10	60000	1680	5.0
		0.8	2	100	0.018	0.05	0.16	39790	1430	11.5
		1.0	2	100	0.022	0.06	0.20	31830	1400	17.0
		1.2	2	100	0.026	0.07	0.24	26525	1380	23.0
		1.5	2	100	0.036	0.09	0.30	21220	1530	41.5
		2.0	2	100	0.044	0.12	0.40	15915	1400	67.0
		2.5	2	100	0.058	0.15	0.50	12735	1475	110.5
		3.0	2	100	0.066	0.18	0.60	10610	1400	151.0
	Hardened tool steel 56 - 60 HRC D	0.2	2	60	0.004	0.01	0.04	60000	480	0.0
		0.5	2	60	0.012	0.03	0.10	38200	915	2.5
		0.8	2	60	0.016	0.05	0.16	23875	765	6.0
		1.0	2	60	0.020	0.06	0.20	19100	765	9.0
		1.2	2	60	0.024	0.07	0.24	15915	765	13.0
		1.5	2	60	0.032	0.09	0.30	12735	815	22.0
		2.0	2	60	0.040	0.12	0.40	9550	765	36.5
		2.5	2	60	0.052	0.15	0.50	7640	795	59.5
		3.0	2	60	0.060	0.18	0.60	6365	765	82.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC D	0.2	2	120	0.005	0.02	0.2	60000	600	2.5
		0.5	2	120	0.010	0.06	0.5	60000	1200	36.0
		0.8	2	120	0.020	0.09	0.8	47750	1910	137.5
		1.0	2	120	0.020	0.11	1.0	38200	1530	168.5
		1.2	2	120	0.025	0.13	1.2	31830	1590	248.0
		1.5	2	120	0.035	0.17	1.5	25465	1785	455.0
		2.0	2	120	0.045	0.22	2.0	19100	1720	757.0
		2.5	2	120	0.055	0.28	2.5	15280	1680	1176.0
		3.0	2	120	0.065	0.33	3.0	12735	1655	1638.5
	Hardened tool steel 48 - 52 HRC D	0.2	2	100	0.004	0.02	0.2	60000	480	2.0
		0.5	2	100	0.010	0.06	0.5	60000	1200	36.0
		0.8	2	100	0.020	0.09	0.8	39790	1590	114.5
		1.0	2	100	0.020	0.11	1.0	31830	1275	140.5
		1.2	2	100	0.024	0.13	1.2	26525	1275	199.0
		1.5	2	100	0.034	0.17	1.5	21220	1445	368.5
		2.0	2	100	0.042	0.22	2.0	15915	1335	587.5
		2.5	2	100	0.052	0.28	2.5	12735	1325	927.5
		3.0	2	100	0.062	0.33	3.0	10610	1315	1302.0
	Hardened tool steel 52 - 56 HRC D	0.2	2	80	0.004	0.02	0.2	60000	480	2.0
		0.5	2	80	0.008	0.06	0.5	50930	815	24.5
		0.8	2	80	0.018	0.09	0.8	31830	1145	82.5
		1.0	2	80	0.018	0.11	1.0	25465	915	100.5
		1.2	2	80	0.022	0.13	1.2	21220	935	146.0
		1.5	2	80	0.030	0.17	1.5	16975	1020	260.0
		2.0	2	80	0.040	0.22	2.0	12735	1020	449.0
		2.5	2	80	0.048	0.28	2.5	10185	980	686.0
		3.0	2	80	0.058	0.33	3.0	8490	985	975.0
	Hardened tool steel 56 - 60 HRC D	0.2	2	40	0.004	0.02	0.2	60000	480	2.0
		0.5	2	40	0.008	0.06	0.5	25465	405	12.0
		0.8	2	40	0.016	0.09	0.8	15915	510	36.5
		1.0	2	40	0.016	0.11	1.0	12735	410	45.0
		1.2	2	40	0.020	0.13	1.2	10610	425	66.5
		1.5	2	40	0.028	0.17	1.5	8490	475	121.0
		2.0	2	40	0.036	0.22	2.0	6365	460	202.5
		2.5	2	40	0.044	0.28	2.5	5095	450	315.0
		3.0	2	40	0.052	0.33	3.0	4245	440	435.5

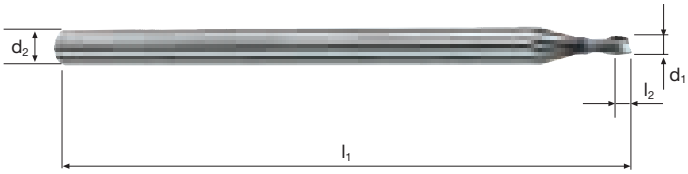
Cylindrical end mills Microcut-C1H

Shank Ø 3mm, 1xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 25° γ-10°

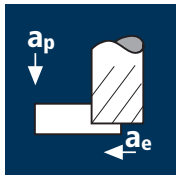
45°

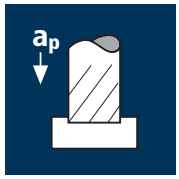


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium

Example: **Order-N°.** Coating **D** Article-N°. **15711** ø-Code **.020**

ø Code	d1 ±0.01	d2 h6	l1	l2	45°	α	z	DURO-S D15711 $
.020	0.2	3	40	0.24	-	14.5°	2	65.00
.030	0.3	3	40	0.36	-	14.0°	2	59.50
.040	0.4	3	40	0.48	-	14.0°	2	56.80
.050	0.5	3	40	0.60	-	13.5°	2	56.80
.060	0.6	3	40	0.72	-	13.0°	2	54.10
.080	0.8	3	40	0.96	-	12.5°	2	54.10
.100	1.0	3	50	1.20	0.07	11.5°	2	54.10
.108	1.2	3	50	1.40	0.07	10.5°	2	54.10
.120	1.5	3	50	1.80	0.07	9.5°	2	54.10
.140	2.0	3	50	2.40	0.10	7.0°	2	54.10
.160	2.5	3	50	3.00	0.10	4.0°	2	54.10
.180	3.0	3	50	3.60	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.2	2	180	0.004	0.16	0.03	60000	480	2.5
		0.5	2	180	0.012	0.40	0.08	60000	1440	46.0
		0.8	2	180	0.018	0.64	0.12	60000	2160	166.0
		1.0	2	180	0.022	0.80	0.15	57295	2520	302.5
		1.2	2	180	0.026	0.96	0.18	47750	2485	429.5
		1.5	2	180	0.034	1.20	0.23	38200	2600	717.5
		2.0	2	180	0.044	1.60	0.30	28650	2520	1209.5
		2.5	2	180	0.056	2.00	0.38	22920	2565	1949.5
		3.0	2	180	0.066	2.40	0.45	19100	2520	2721.5
	Steel 1100 - 1300 N/mm²	0.2	2	160	0.004	0.16	0.03	60000	480	2.5
		0.5	2	160	0.010	0.40	0.08	60000	1200	38.5
		0.8	2	160	0.016	0.64	0.12	60000	1920	147.5
		1.0	2	160	0.020	0.80	0.15	50930	2035	244.0
		1.2	2	160	0.024	0.96	0.18	42445	2035	351.5
		1.5	2	160	0.030	1.20	0.23	33955	2035	561.5
		2.0	2	160	0.040	1.60	0.30	25465	2035	977.0
		2.5	2	160	0.050	2.00	0.38	20370	2035	1546.5
		3.0	2	160	0.060	2.40	0.45	16975	2035	2198.0
	Stainless steel [Cr-Ni/1.4301]	0.2	2	80	0.004	0.16	0.03	60000	480	2.5
		0.5	2	80	0.010	0.40	0.08	50930	1020	32.5
		0.8	2	80	0.014	0.64	0.12	31830	890	68.5
		1.0	2	80	0.018	0.80	0.15	25465	915	110.0
		1.2	2	80	0.020	0.96	0.18	21220	850	147.0
		1.5	2	80	0.028	1.20	0.23	16975	950	262.0
		2.0	2	80	0.036	1.60	0.30	12735	915	439.0
		2.5	2	80	0.044	2.00	0.38	10185	895	680.0
		3.0	2	80	0.052	2.40	0.45	8490	885	956.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.2	2	60	0.002	0.16	0.03	60000	240	1.0
		0.5	2	60	0.008	0.40	0.08	38200	610	19.5
		0.8	2	60	0.012	0.64	0.12	23875	575	44.0
		1.0	2	60	0.016	0.80	0.15	19100	610	73.0
		1.2	2	60	0.018	0.96	0.18	15915	575	99.5
		1.5	2	60	0.024	1.20	0.23	12735	610	168.5
		2.0	2	60	0.030	1.60	0.30	9550	575	276.0
		2.5	2	60	0.040	2.00	0.38	7640	610	463.5
		3.0	2	60	0.046	2.40	0.45	6365	585	632.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.2	2	160	0.004	0.02	0.2	60000	480	2.0
		0.5	2	160	0.010	0.06	0.5	60000	1200	36.0
		0.8	2	160	0.014	0.10	0.8	60000	1680	134.5
		1.0	2	160	0.018	0.12	1.0	50930	1835	220.0
		1.2	2	160	0.022	0.14	1.2	42445	1870	314.0
		1.5	2	160	0.028	0.18	1.5	33955	1900	513.0
		2.0	2	160	0.036	0.24	2.0	25465	1835	881.0
		2.5	2	160	0.046	0.30	2.5	20370	1875	1406.5
		3.0	2	160	0.054	0.36	3.0	16975	1835	1982.0
	Steel 1100 - 1300 N/mm²	0.2	2	140	0.004	0.02	0.2	60000	480	2.0
		0.5	2	140	0.010	0.06	0.5	60000	1200	36.0
		0.8	2	140	0.014	0.10	0.8	55705	1560	125.0
		1.0	2	140	0.018	0.12	1.0	44565	1605	192.5
		1.2	2	140	0.020	0.14	1.2	37135	1485	249.5
		1.5	2	140	0.026	0.18	1.5	29710	1545	417.0
		2.0	2	140	0.034	0.24	2.0	22280	1515	727.0
		2.5	2	140	0.044	0.30	2.5	17825	1570	1177.5
		3.0	2	140	0.052	0.36	3.0	14855	1545	1668.5
	Stainless steel [Cr-Ni/1.4301]	0.2	2	70	0.004	0.02	0.2	60000	480	2.0
		0.5	2	70	0.008	0.06	0.5	44565	715	21.5
		0.8	2	70	0.012	0.10	0.8	27855	670	53.5
		1.0	2	70	0.016	0.12	1.0	22280	715	86.0
		1.2	2	70	0.020	0.14	1.2	18570	745	125.0
		1.5	2	70	0.024	0.18	1.5	14855	715	193.0
		2.0	2	70	0.032	0.24	2.0	11140	715	343.0
		2.5	2	70	0.040	0.30	2.5	8915	715	536.5
		3.0	2	70	0.048	0.36	3.0	7425	715	772.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.2	2	50	0.004	0.02	0.2	60000	480	2.0
		0.5	2	50	0.008	0.06	0.5	31830	510	15.5
		0.8	2	50	0.012	0.10	0.8	19895	475	38.0
		1.0	2	50	0.014	0.12	1.0	15915	445	53.5
		1.2	2	50	0.018	0.14	1.2	13265	480	80.5
		1.5	2	50	0.022	0.18	1.5	10610	465	125.5
		2.0	2	50	0.028	0.24	2.0	7960	445	213.5
		2.5	2	50	0.036	0.30	2.5	6365	460	345.0
		3.0	2	50	0.044	0.36	3.0	5305	465	502.0

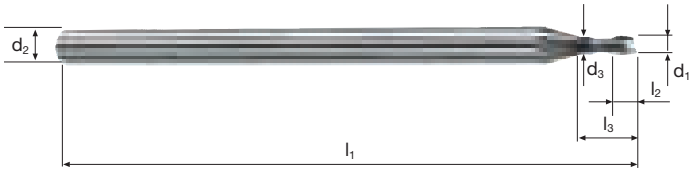
Cylindrical end mills Microcut-C3

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro | λ 25° γ 6°

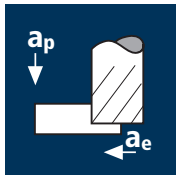
45°

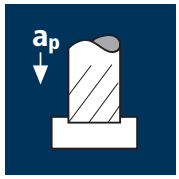


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5712** ø-Code **.020**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	MICRO M5712 $
.020	0.2	3	0.18	40	0.24	0.6	-	9.5°	2	65.00
.030	0.3	3	0.25	40	0.36	0.9	-	9.0°	2	59.50
.040	0.4	3	0.35	40	0.48	1.2	-	9.0°	2	56.80
.050	0.5	3	0.45	40	0.60	1.5	-	11.5°	2	56.80
.060	0.6	3	0.55	40	0.72	1.8	-	11.0°	2	54.10
.080	0.8	3	0.75	40	0.96	2.4	-	10.0°	2	54.10
.100	1.0	3	0.95	50	1.20	3.0	0.07	8.5°	2	54.10
.108	1.2	3	1.10	50	1.44	3.6	0.07	7.5°	2	54.10
.120	1.5	3	1.40	50	1.80	4.5	0.07	6.0°	2	54.10
.140	2.0	3	1.90	50	2.40	6.0	0.10	4.0°	2	54.10
.160	2.5	3	2.30	50	3.00	7.5	0.10	2.0°	2	54.10
.180	3.0	3	2.80	50	3.60	9.0	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.015	0.03	0.10	60000	1800	5.5
		0.6	2	140	0.015	0.03	0.12	60000	1800	6.5
		0.8	2	140	0.020	0.04	0.16	55705	2230	14.5
		1.0	2	140	0.025	0.06	0.20	44565	2230	27.0
		1.2	2	140	0.030	0.07	0.24	37135	2230	37.5
		1.5	2	140	0.040	0.08	0.30	29710	2375	57.0
		2.0	2	140	0.050	0.11	0.40	22280	2230	98.0
		2.5	2	140	0.065	0.14	0.50	17825	2315	162.0
		3.0	2	140	0.075	0.17	0.60	14855	2230	227.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.014	0.03	0.10	60000	1680	5.0
		0.6	2	120	0.014	0.03	0.12	60000	1680	6.0
		0.8	2	120	0.020	0.04	0.16	47750	1910	12.0
		1.0	2	120	0.024	0.06	0.20	38200	1835	22.0
		1.2	2	120	0.028	0.07	0.24	31830	1780	30.0
		1.5	2	120	0.038	0.08	0.30	25465	1935	46.5
		2.0	2	120	0.048	0.11	0.40	19100	1835	80.5
		2.5	2	120	0.062	0.14	0.50	15280	1895	132.5
		3.0	2	120	0.072	0.17	0.60	12735	1835	187.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.03	0.10	60000	1680	5.0
		0.6	2	100	0.014	0.03	0.12	53055	1485	5.5
		0.8	2	100	0.018	0.04	0.16	39790	1430	9.0
		1.0	2	100	0.022	0.06	0.20	31830	1400	17.0
		1.2	2	100	0.026	0.07	0.24	26525	1380	23.0
		1.5	2	100	0.036	0.08	0.30	21220	1530	36.5
		2.0	2	100	0.044	0.11	0.40	15915	1400	61.5
		2.5	2	100	0.058	0.14	0.50	12735	1475	103.5
		3.0	2	100	0.066	0.17	0.60	10610	1400	143.0
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.03	0.10	38200	915	2.5
		0.6	2	60	0.012	0.03	0.12	31830	765	3.0
		0.8	2	60	0.016	0.04	0.16	23875	765	5.0
		1.0	2	60	0.020	0.06	0.20	19100	765	9.0
		1.2	2	60	0.024	0.07	0.24	15915	765	13.0
		1.5	2	60	0.032	0.08	0.30	12735	815	19.5
		2.0	2	60	0.040	0.11	0.40	9550	765	33.5
		2.5	2	60	0.052	0.14	0.50	7640	795	55.5
		3.0	2	60	0.060	0.17	0.60	6365	765	78.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	120	0.010	0.05	0.5	60000	1200	30.0
		0.6	2	120	0.015	0.05	0.6	60000	1800	54.0
		0.8	2	120	0.020	0.07	0.8	47750	1910	107.0
		1.0	2	120	0.020	0.09	1.0	38200	1530	137.5
		1.2	2	120	0.025	0.11	1.2	31830	1590	210.0
		1.5	2	120	0.035	0.14	1.5	25465	1785	375.0
		2.0	2	120	0.045	0.18	2.0	19100	1720	619.0
		2.5	2	120	0.055	0.23	2.5	15280	1680	966.0
		3.0	2	120	0.065	0.27	3.0	12735	1655	1340.5
	Hardened tool steel 48 - 52 HRC	0.5	2	100	0.010	0.05	0.5	60000	1200	30.0
		0.6	2	100	0.014	0.05	0.6	53055	1485	44.5
		0.8	2	100	0.020	0.07	0.8	39790	1590	89.0
		1.0	2	100	0.020	0.09	1.0	31830	1275	115.0
		1.2	2	100	0.024	0.11	1.2	26525	1275	168.5
		1.5	2	100	0.034	0.14	1.5	21220	1445	303.5
		2.0	2	100	0.042	0.18	2.0	15915	1335	480.5
		2.5	2	100	0.052	0.23	2.5	12735	1325	762.0
		3.0	2	100	0.062	0.27	3.0	10610	1315	1065.0
	Hardened tool steel 52 - 56 HRC	0.5	2	80	0.008	0.05	0.5	50930	815	20.5
		0.6	2	80	0.014	0.05	0.6	42445	1190	35.5
		0.8	2	80	0.018	0.07	0.8	31830	1145	64.0
		1.0	2	80	0.018	0.09	1.0	25465	915	82.5
		1.2	2	80	0.022	0.11	1.2	21220	935	123.5
		1.5	2	80	0.030	0.14	1.5	16975	1020	214.0
		2.0	2	80	0.040	0.18	2.0	12735	1020	367.0
		2.5	2	80	0.048	0.23	2.5	10185	980	563.5
		3.0	2	80	0.058	0.27	3.0	8490	985	798.0
	Hardened tool steel 56 - 60 HRC	0.5	2	40	0.008	0.05	0.5	25465	405	10.0
		0.6	2	40	0.012	0.05	0.6	21220	510	15.5
		0.8	2	40	0.016	0.07	0.8	15915	510	28.5
		1.0	2	40	0.016	0.09	1.0	12735	410	37.0
		1.2	2	40	0.020	0.11	1.2	10610	425	56.0
		1.5	2	40	0.028	0.14	1.5	8490	475	100.0
		2.0	2	40	0.036	0.18	2.0	6365	460	165.5
		2.5	2	40	0.044	0.23	2.5	5095	450	259.0
		3.0	2	40	0.052	0.27	3.0	4245	440	356.5

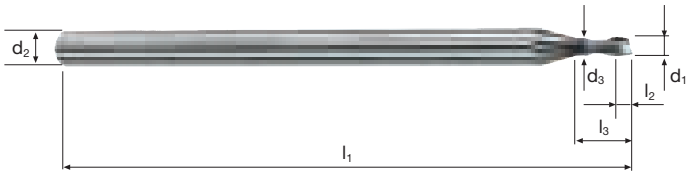
Cylindrical end mills Microcut-C3H

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | X-Generation X

HM XA	λ 25° γ-10°

45°



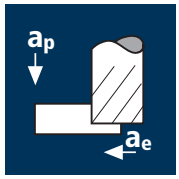
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium

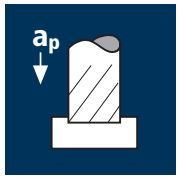
Example: **Order-N°.** D (Coating) 5722 (Article-N°.) .050 (ø-Code)

DURO-S

D5722

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	$
.050	0.5	3	0.45	40	0.60	1.5	-	11.5°	2	56.80
.060	0.6	3	0.55	40	0.72	1.8	-	11.0°	2	54.10
.080	0.8	3	0.75	40	0.96	2.4	-	10.0°	2	54.10
.100	1.0	3	0.95	50	1.20	3.0	0.07	8.5°	2	54.10
.108	1.2	3	1.10	50	1.44	3.6	0.07	7.5°	2	54.10
.120	1.5	3	1.40	50	1.80	4.5	0.07	6.0°	2	54.10
.140	2.0	3	1.90	50	2.40	6.0	0.10	4.0°	2	54.10
.160	2.5	3	2.30	50	3.00	7.5	0.10	2.0°	2	54.10
.180	3.0	3	2.80	50	3.60	9.0	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm² M	0.3	2	180	0.006	0.24	0.05	60000	720	8.5
		0.5	2	180	0.010	0.40	0.08	60000	1200	38.5
		0.6	2	180	0.010	0.48	0.09	60000	1200	52.0
		0.8	2	180	0.014	0.64	0.12	60000	1680	129.0
		1.0	2	180	0.018	0.80	0.15	57295	2065	248.0
		1.2	2	180	0.022	0.96	0.18	47750	2100	363.0
		1.5	2	180	0.028	1.20	0.23	38200	2140	590.5
		1.8	2	180	0.032	1.44	0.27	31830	2035	791.0
		2.0	2	180	0.036	1.60	0.30	28650	2065	991.0
	Steel 850 - 1100 N/mm² M M	0.3	2	160	0.006	0.24	0.05	60000	720	8.5
		0.5	2	160	0.010	0.40	0.08	60000	1200	38.5
		0.6	2	160	0.010	0.48	0.09	60000	1200	52.0
		0.8	2	160	0.012	0.64	0.12	60000	1440	110.5
		1.0	2	160	0.016	0.80	0.15	50930	1630	195.5
		1.2	2	160	0.020	0.96	0.18	42445	1700	294.0
		1.5	2	160	0.026	1.20	0.23	33955	1765	487.0
		1.8	2	160	0.028	1.44	0.27	28295	1585	616.0
		2.0	2	160	0.032	1.60	0.30	25465	1630	782.5
	Stainless steel [Cr-Ni/1.4301] M	0.3	2	70	0.004	0.24	0.05	60000	480	6.0
		0.5	2	70	0.008	0.40	0.08	44565	715	23.0
		0.6	2	70	0.008	0.48	0.09	37135	595	25.5
		0.8	2	70	0.012	0.64	0.12	27855	670	51.5
		1.0	2	70	0.014	0.80	0.15	22280	625	75.0
		1.2	2	70	0.018	0.96	0.18	18570	670	116.0
		1.5	2	70	0.022	1.20	0.23	14855	655	181.0
		1.8	2	70	0.026	1.44	0.27	12380	645	251.0
		2.0	2	70	0.028	1.60	0.30	11140	625	300.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.3	2	50	0.004	0.24	0.05	53055	425	5.0
		0.5	2	50	0.008	0.40	0.08	31830	510	16.5
		0.6	2	50	0.008	0.48	0.09	26525	425	18.5
		0.8	2	50	0.010	0.64	0.12	19895	400	30.5
		1.0	2	50	0.012	0.80	0.15	15915	380	45.5
		1.2	2	50	0.016	0.96	0.18	13265	425	73.5
		1.5	2	50	0.020	1.20	0.23	10610	425	117.5
		1.8	2	50	0.022	1.44	0.27	8840	390	151.5
		2.0	2	50	0.026	1.60	0.30	7960	415	199.0

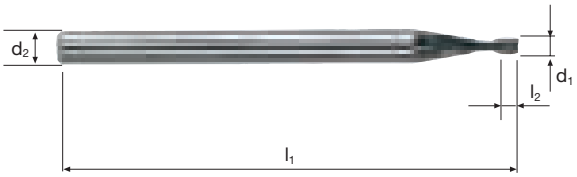
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm² M	0.3	2	160	0.006	0.04	0.3	60000	720	8.5
		0.5	2	160	0.008	0.06	0.5	60000	960	29.0
		0.6	2	160	0.010	0.07	0.6	60000	1200	50.5
		0.8	2	160	0.014	0.10	0.8	60000	1680	134.5
		1.0	2	160	0.016	0.12	1.0	50930	1630	195.5
		1.2	2	160	0.020	0.14	1.2	42445	1700	285.5
		1.5	2	160	0.026	0.18	1.5	33955	1765	476.5
		1.8	2	160	0.030	0.22	1.8	28295	1700	673.0
		2.0	2	160	0.034	0.24	2.0	25465	1730	830.5
	Steel 850 - 1100 N/mm² M M	0.3	2	140	0.006	0.04	0.3	60000	720	8.5
		0.5	2	140	0.008	0.06	0.5	60000	960	29.0
		0.6	2	140	0.010	0.07	0.6	60000	1200	50.5
		0.8	2	140	0.014	0.10	0.8	55705	1560	125.0
		1.0	2	140	0.016	0.12	1.0	44565	1425	171.0
		1.2	2	140	0.020	0.14	1.2	37135	1485	249.5
		1.5	2	140	0.024	0.18	1.5	29710	1425	385.0
		1.8	2	140	0.028	0.22	1.8	24760	1385	548.5
		2.0	2	140	0.032	0.24	2.0	22280	1425	684.0
	Stainless steel [Cr-Ni/1.4301] M	0.3	2	60	0.006	0.04	0.3	60000	720	8.5
		0.5	2	60	0.008	0.06	0.5	38200	610	18.5
		0.6	2	60	0.008	0.07	0.6	31830	510	21.5
		0.8	2	60	0.012	0.10	0.8	23875	575	46.0
		1.0	2	60	0.014	0.12	1.0	19100	535	64.0
		1.2	2	60	0.018	0.14	1.2	15915	575	96.5
		1.5	2	60	0.022	0.18	1.5	12735	560	151.0
		1.8	2	60	0.026	0.22	1.8	10610	550	218.0
		2.0	2	60	0.030	0.24	2.0	9550	575	276.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.3	2	40	0.004	0.04	0.3	42445	340	4.0
		0.5	2	40	0.006	0.06	0.5	25465	305	9.0
		0.6	2	40	0.008	0.07	0.6	21220	340	14.5
		0.8	2	40	0.012	0.10	0.8	15915	380	30.5
		1.0	2	40	0.012	0.12	1.0	12735	305	36.5
		1.2	2	40	0.016	0.14	1.2	10610	340	57.0
		1.5	2	40	0.020	0.18	1.5	8490	340	92.0
		1.8	2	40	0.024	0.22	1.8	7075	340	134.5
		2.0	2	40	0.028	0.24	2.0	6365	355	170.5

Cylindrical end mills

Shank Ø 3mm, 3xd

HSS | Favora® F | Base-X | X-Generation

HM	λ 30° γ 12°
90°	

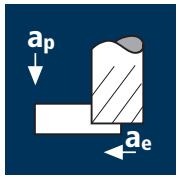


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45710** ø-Code **.030**

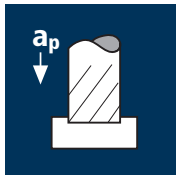
ø Code	d1 ±0.01	d2 h6	l1	l2	α	z	5710 $	MICRO M45710 $
.030	0.3	3	40	1.0	9.0°	2	27.20	31.10
.040	0.4	3	40	1.0	9.0°	2	26.00	29.70
.050	0.5	3	40	1.5	8.5°	2	26.00	29.70
.060	0.6	3	40	1.5	8.5°	2	24.70	28.30
.070	0.7	3	40	2.0	8.0°	2	24.70	28.30
.080	0.8	3	40	2.0	8.0°	2	24.70	28.30
.090	0.9	3	40	2.5	7.5°	2	24.70	28.30
.100	1.0	3	40	3.0	7.0°	2	24.70	28.30
.104	1.1	3	40	3.0	6.5°	2	24.70	28.30
.108	1.2	3	40	4.0	6.0°	2	24.70	28.30
.112	1.3	3	40	4.0	5.5°	2	24.70	28.30
.116	1.4	3	40	4.0	5.5°	2	24.70	28.30
.120	1.5	3	40	4.0	5.5°	2	24.70	28.30
.123	1.6	3	40	5.0	4.5°	2	24.70	28.30
.126	1.7	3	40	5.0	5.5°	2	24.70	28.30
.130	1.8	3	40	5.0	5.5°	2	24.70	28.30
.135	1.9	3	40	5.0	5.0°	2	24.70	28.30
.140	2.0	3	40	5.0	4.5°	2	24.70	28.30

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Steel < 850 N/mm² M	2.1	2	180	0.038	1.68	0.32	27285	2075	1115.5
	2.2	2	180	0.040	1.76	0.33	26045	2085	1211.0
	2.3	2	180	0.042	1.84	0.35	24910	2090	1346.0
	2.4	2	180	0.044	1.92	0.36	23875	2100	1451.5
	2.5	2	180	0.046	2.00	0.38	22920	2110	1603.5
	3.0	2	180	0.054	2.40	0.45	19100	2065	2230.0
Steel 850 - 1100 N/mm² M M	2.1	2	160	0.034	1.68	0.32	24255	1650	887.0
	2.2	2	160	0.036	1.76	0.33	23150	1665	967.0
	2.3	2	160	0.038	1.84	0.35	22145	1685	1085.0
	2.4	2	160	0.040	1.92	0.36	21220	1700	1175.0
	2.5	2	160	0.042	2.00	0.38	20370	1710	1299.5
	3.0	2	160	0.048	2.40	0.45	16975	1630	1760.5
Stainless steel [Cr-Ni/1.4301] M	2.1	2	70	0.030	1.68	0.32	10610	635	341.5
	2.2	2	70	0.032	1.76	0.33	10130	650	377.5
	2.3	2	70	0.034	1.84	0.35	9690	660	425.0
	2.4	2	70	0.036	1.92	0.36	9285	670	463.0
	2.5	2	70	0.036	2.00	0.38	8915	640	486.5
	3.0	2	70	0.044	2.40	0.45	7425	655	707.5
Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	2.1	2	50	0.026	1.68	0.32	7580	395	212.5
	2.2	2	50	0.028	1.76	0.33	7235	405	235.0
	2.3	2	50	0.030	1.84	0.35	6920	415	267.5
	2.4	2	50	0.030	1.92	0.36	6630	400	276.5
	2.5	2	50	0.032	2.00	0.38	6365	405	308.0
	3.0	2	50	0.038	2.40	0.45	5305	405	437.5

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
Steel < 850 N/mm² M	2.1	2	160	0.036	0.25	2.1	24255	1745	916.0
	2.2	2	160	0.036	0.26	2.2	23150	1665	952.5
	2.3	2	160	0.038	0.28	2.3	22145	1685	1085.0
	2.4	2	160	0.040	0.29	2.4	21220	1700	1183.0
	2.5	2	160	0.042	0.30	2.5	20370	1710	1282.5
	3.0	2	160	0.050	0.36	3.0	16975	1700	1836.0
Steel 850 - 1100 N/mm² M M	2.1	2	140	0.034	0.25	2.1	21220	1445	758.5
	2.2	2	140	0.034	0.26	2.2	20255	1375	786.5
	2.3	2	140	0.036	0.28	2.3	19375	1395	898.5
	2.4	2	140	0.038	0.29	2.4	18570	1410	981.5
	2.5	2	140	0.040	0.30	2.5	17825	1425	1069.0
	3.0	2	140	0.048	0.36	3.0	14855	1425	1539.0
Stainless steel [Cr-Ni/1.4301] M	2.1	2	60	0.032	0.25	2.1	9095	580	304.5
	2.2	2	60	0.032	0.26	2.2	8680	555	317.5
	2.3	2	60	0.034	0.28	2.3	8305	565	364.0
	2.4	2	60	0.036	0.29	2.4	7960	575	400.0
	2.5	2	60	0.036	0.30	2.5	7640	550	412.5
	3.0	2	60	0.044	0.36	3.0	6365	560	605.0
Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	2.1	2	40	0.028	0.25	2.1	6065	340	178.5
	2.2	2	40	0.028	0.26	2.2	5790	325	186.0
	2.3	2	40	0.030	0.28	2.3	5535	330	212.5
	2.4	2	40	0.032	0.29	2.4	5305	340	236.5
	2.5	2	40	0.034	0.30	2.5	5095	345	259.0
	3.0	2	40	0.040	0.36	3.0	4245	340	367.0

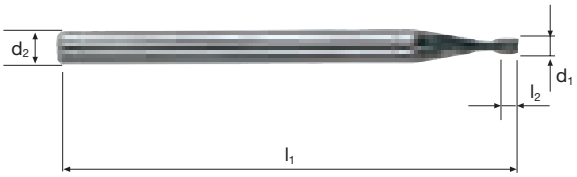
Cylindrical end mills

Shank Ø 3mm, 3xd

HSS | Favora® F | Base-X | X-Generation

HM | λ **30°** γ **12°**

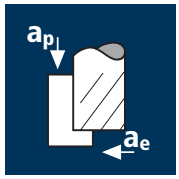
90°

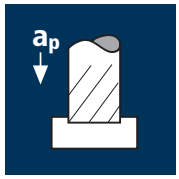


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45710** ø-Code **.143**

ø Code	d1 ±0.01	d2 h6	l1	l2	α	z	5710 $	MICRO M45710 $
.143	2.1	3	40	6.0	4.0°	2	24.70	28.30
.146	2.2	3	40	6.0	3.5°	2	24.70	28.30
.150	2.3	3	40	6.0	3.0°	2	24.70	28.30
.155	2.4	3	40	6.0	2.5°	2	24.70	28.30
.160	2.5	3	40	7.0	2.0°	2	24.70	28.30
.180	3.0	4	44	10.0	2.5°	2	24.70	28.30

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	0.4	3	180	0.004	0.48	0.04	60000	720	14.0
		0.6	3	180	0.008	0.72	0.06	60000	1440	62.0
		0.8	3	180	0.010	0.96	0.08	60000	1800	138.0
		1.0	3	180	0.012	1.20	0.10	57295	2065	248.0
		1.2	3	180	0.014	1.44	0.12	47750	2005	346.5
		1.4	3	180	0.016	1.68	0.14	40925	1965	462.0
		1.6	3	180	0.018	1.92	0.16	35810	1935	594.5
		1.8	3	180	0.022	2.16	0.18	31830	2100	816.5
		2.0	3	180	0.024	2.40	0.20	28650	2065	991.0
	Short-chipping brass CuZn	0.4	3	190	0.004	0.48	0.04	60000	720	14.0
		0.6	3	190	0.008	0.72	0.06	60000	1440	62.0
		0.8	3	190	0.012	0.96	0.08	60000	2160	166.0
		1.0	3	190	0.014	1.20	0.10	60000	2520	302.5
		1.2	3	190	0.016	1.44	0.12	50400	2420	418.0
		1.4	3	190	0.018	1.68	0.14	43200	2335	549.0
		1.6	3	190	0.020	1.92	0.16	37800	2270	697.5
		1.8	3	190	0.024	2.16	0.18	33600	2420	941.0
		2.0	3	190	0.026	2.40	0.20	30240	2360	1133.0
	Stainless steel [Cr-Ni/1.4301]	0.4	3	70	0.004	0.48	0.04	55705	670	13.0
		0.6	3	70	0.006	0.72	0.06	37135	670	29.0
		0.8	3	70	0.008	0.96	0.08	27855	670	51.5
		1.0	3	70	0.010	1.20	0.10	22280	670	80.5
		1.2	3	70	0.012	1.44	0.12	18570	670	116.0
		1.4	3	70	0.012	1.68	0.14	15915	575	135.0
		1.6	3	70	0.014	1.92	0.16	13925	585	179.5
		1.8	3	70	0.018	2.16	0.18	12380	670	260.5
		2.0	3	70	0.020	2.40	0.20	11140	670	321.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.4	3	50	0.002	0.48	0.04	39790	240	4.5
		0.6	3	50	0.006	0.72	0.06	26525	475	20.5
		0.8	3	50	0.008	0.96	0.08	19895	475	36.5
		1.0	3	50	0.008	1.20	0.10	15915	380	45.5
		1.2	3	50	0.010	1.44	0.12	13265	400	69.0
		1.4	3	50	0.012	1.68	0.14	11370	410	96.5
		1.6	3	50	0.012	1.92	0.16	9945	360	110.5
		1.8	3	50	0.016	2.16	0.18	8840	425	165.0
		2.0	3	50	0.016	2.40	0.20	7960	380	182.5

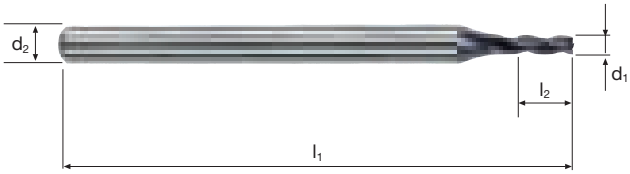
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	0.4	3	160	0.004	0.05	0.4	60000	720	14.5
		0.6	3	160	0.006	0.07	0.6	60000	1080	45.5
		0.8	3	160	0.008	0.10	0.8	60000	1440	115.0
		1.0	3	160	0.012	0.12	1.0	50930	1835	220.0
		1.2	3	160	0.014	0.14	1.2	42445	1785	300.0
		1.4	3	160	0.016	0.17	1.4	36380	1745	415.5
		1.6	3	160	0.018	0.19	1.6	31830	1720	523.0
		1.8	3	160	0.020	0.22	1.8	28295	1700	673.0
		2.0	3	160	0.022	0.24	2.0	25465	1680	806.5
	Short-chipping brass CuZn	0.4	3	170	0.004	0.05	0.4	60000	720	14.5
		0.6	3	170	0.006	0.07	0.6	60000	1080	45.5
		0.8	3	170	0.008	0.10	0.8	60000	1440	115.0
		1.0	3	170	0.012	0.12	1.0	54115	1950	234.0
		1.2	3	170	0.014	0.14	1.2	45095	1895	318.5
		1.4	3	170	0.016	0.17	1.4	38655	1855	441.5
		1.6	3	170	0.018	0.19	1.6	33820	1825	555.0
		1.8	3	170	0.022	0.22	1.8	30065	1985	786.0
		2.0	3	170	0.024	0.24	2.0	27055	1950	936.0
	Stainless steel [Cr-Ni/1.4301]	0.4	3	60	0.004	0.05	0.4	47750	575	11.5
		0.6	3	60	0.006	0.07	0.6	31830	575	24.0
		0.8	3	60	0.008	0.10	0.8	23875	575	46.0
		1.0	3	60	0.010	0.12	1.0	19100	575	69.0
		1.2	3	60	0.012	0.14	1.2	15915	575	96.5
		1.4	3	60	0.014	0.17	1.4	13640	575	137.0
		1.6	3	60	0.016	0.19	1.6	11935	575	175.0
		1.8	3	60	0.018	0.22	1.8	10610	575	227.5
		2.0	3	60	0.020	0.24	2.0	9550	575	276.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.4	3	40	0.004	0.05	0.4	31830	380	7.5
		0.6	3	40	0.004	0.07	0.6	21220	255	10.5
		0.8	3	40	0.006	0.10	0.8	15915	285	23.0
		1.0	3	40	0.010	0.12	1.0	12735	380	45.5
		1.2	3	40	0.012	0.14	1.2	10610	380	64.0
		1.4	3	40	0.012	0.17	1.4	9095	325	77.5
		1.6	3	40	0.014	0.19	1.6	7960	335	102.0
		1.8	3	40	0.016	0.22	1.8	7075	340	134.5
		2.0	3	40	0.018	0.24	2.0	6365	345	165.5

Cylindrical end mills Micro C3

Shank Ø 3mm, 3xd

HSS | Favora® F | Base-X | X-Generation

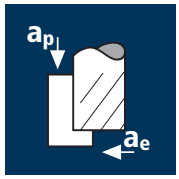
HM	λ 30° γ 8°
90°	

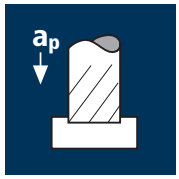


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45713** ø-Code **.040**

ø Code	d1 ±0.01	d2 h6	l1	l2	α	z	45713 $	MICRO M45713 $
.040	0.40	3	40	1.2	12.5°	3	25.20	29.00
.050	0.50	3	40	1.5	11.5°	3	25.20	29.00
.060	0.60	3	40	1.8	11.0°	3	24.00	27.60
.070	0.70	3	40	2.1	10.5°	3	24.00	27.60
.080	0.80	3	40	2.4	10.0°	3	24.00	27.60
.090	0.90	3	40	2.7	9.0°	3	24.00	27.60
.100	1.00	3	40	3.0	8.5°	3	24.00	27.60
.104	1.10	3	40	3.3	8.0°	3	24.00	27.60
.108	1.20	3	40	3.6	7.5°	3	24.00	27.60
.112	1.30	3	40	3.9	7.0°	3	24.00	27.60
.116	1.40	3	40	4.2	6.5°	3	24.00	27.60
.120	1.50	3	40	4.5	6.0°	3	24.00	27.60
.123	1.60	3	40	4.8	5.5°	3	24.00	27.60
.126	1.70	3	40	5.1	5.0°	3	24.00	27.60
.130	1.80	3	40	5.4	4.5°	3	24.00	27.60
.135	1.90	3	40	5.7	4.5°	3	24.00	27.60
.140	2.00	3	40	6.0	4.0°	3	24.00	27.60

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	2.1	3	180	0.024	2.52	0.21	27285	1965	1040.0
		2.2	3	180	0.026	2.64	0.22	26045	2030	1179.0
		2.3	3	180	0.028	2.76	0.23	24910	2090	1326.5
		2.4	3	180	0.028	2.88	0.24	23875	2005	1386.0
		2.5	3	180	0.030	3.00	0.25	22920	2065	1549.0
		3.0	3	180	0.036	3.60	0.30	19100	2065	2230.0
	Short-chipping brass CuZn	2.1	3	190	0.026	2.52	0.21	28800	2245	1188.0
		2.2	3	190	0.028	2.64	0.22	27490	2310	1341.5
		2.3	3	190	0.030	2.76	0.23	26295	2365	1501.5
		2.4	3	190	0.030	2.88	0.24	25200	2270	1569.0
		2.5	3	190	0.034	3.00	0.25	24190	2465	1849.0
		3.0	3	190	0.040	3.60	0.30	20160	2420	2613.5
	Stainless steel [Cr-Ni/1.4301]	2.1	3	70	0.020	2.52	0.21	10610	635	336.0
		2.2	3	70	0.020	2.64	0.22	10130	610	354.5
		2.3	3	70	0.022	2.76	0.23	9690	640	406.5
		2.4	3	70	0.022	2.88	0.24	9285	615	425.0
		2.5	3	70	0.024	3.00	0.25	8915	640	480.0
		3.0	3	70	0.028	3.60	0.30	7425	625	675.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.1	3	50	0.016	2.52	0.21	7580	365	193.0
		2.2	3	50	0.018	2.64	0.22	7235	390	226.5
		2.3	3	50	0.020	2.76	0.23	6920	415	263.5
		2.4	3	50	0.020	2.88	0.24	6630	400	276.5
		2.5	3	50	0.022	3.00	0.25	6365	420	315.0
		3.0	3	50	0.026	3.60	0.30	5305	415	448.0

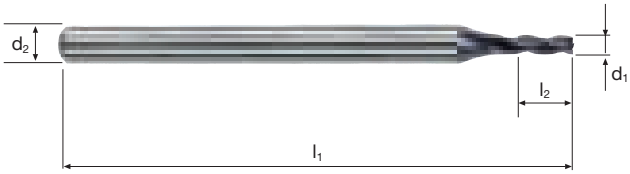
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	2.1	3	160	0.024	0.25	2.1	24255	1745	916.0
		2.2	3	160	0.024	0.26	2.2	23150	1665	952.5
		2.3	3	160	0.026	0.28	2.3	22145	1725	1111.0
		2.4	3	160	0.026	0.29	2.4	21220	1655	1152.0
		2.5	3	160	0.028	0.30	2.5	20370	1710	1282.5
		3.0	3	160	0.034	0.36	3.0	16975	1730	1868.5
	Short-chipping brass CuZn	2.1	3	170	0.026	0.25	2.1	25770	2010	1055.5
		2.2	3	170	0.026	0.26	2.2	24595	1920	1098.0
		2.3	3	170	0.028	0.28	2.3	23530	1975	1272.0
		2.4	3	170	0.028	0.29	2.4	22550	1895	1319.0
		2.5	3	170	0.030	0.30	2.5	21645	1950	1462.5
		3.0	3	170	0.036	0.36	3.0	18040	1950	2106.0
	Stainless steel [Cr-Ni/1.4301]	2.1	3	60	0.022	0.25	2.1	9095	600	315.0
		2.2	3	60	0.022	0.26	2.2	8680	575	329.0
		2.3	3	60	0.022	0.28	2.3	8305	550	354.0
		2.4	3	60	0.022	0.29	2.4	7960	525	365.5
		2.5	3	60	0.024	0.30	2.5	7640	550	412.5
		3.0	3	60	0.030	0.36	3.0	6365	575	621.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	2.1	3	40	0.020	0.25	2.1	6065	365	191.5
		2.2	3	40	0.020	0.26	2.2	5790	345	197.5
		2.3	3	40	0.020	0.28	2.3	5535	330	212.5
		2.4	3	40	0.020	0.29	2.4	5305	320	222.5
		2.5	3	40	0.022	0.30	2.5	5095	335	251.5
		3.0	3	40	0.028	0.36	3.0	4245	355	383.5

Cylindrical end mills Micro C3

Shank Ø 3mm, 3xd

HSS | Favora® F | Base-X | X-Generation

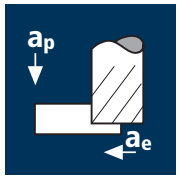
HM	λ 30° γ 8°
90°	

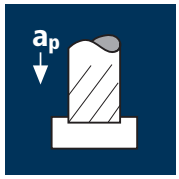


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	CuZn Brass Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **45713** ø-Code **.143**

ø Code	d1 ±0.01	d2 h6	l1	l2	α	z	45713 $	MICRO M45713 $
.143	2.10	3	40	6.3	3.5°	3	24.00	27.60
.146	2.20	3	40	6.6	3.0°	3	24.00	27.60
.150	2.30	3	40	6.9	2.5°	3	24.00	27.60
.155	2.40	3	40	7.2	2.5°	3	24.00	27.60
.160	2.50	3	40	7.5	2.0°	3	24.00	27.60
.165	2.60	3	45	7.8	1.5°	3	24.00	27.60
.170	2.70	3	45	8.1	1.0°	3	24.00	27.60
.172	2.80	3	45	8.4	1.0°	3	24.00	27.60
.176	2.90	3	45	8.7	0.5°	3	24.00	27.60

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Stainless steel [Cr-Ni/1.4301] M	0.5	3	80	0.010	0.40	0.08	50930	1530	49.0
		0.6	3	80	0.012	0.48	0.09	42445	1530	66.0
		0.8	3	80	0.016	0.64	0.12	31830	1530	117.5
		1.0	3	80	0.020	0.80	0.15	25465	1530	183.5
		1.2	3	80	0.024	0.96	0.18	21220	1530	264.5
		1.5	3	80	0.030	1.20	0.23	16975	1530	422.5
		2.0	3	80	0.040	1.60	0.30	12735	1530	734.5
		2.5	3	80	0.050	2.00	0.38	10185	1530	1163.0
		3.0	3	80	0.060	2.40	0.45	8490	1530	1652.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.5	3	50	0.008	0.40	0.08	31830	765	24.5
		0.6	3	50	0.010	0.48	0.09	26525	795	34.5
		0.8	3	50	0.012	0.64	0.12	19895	715	55.0
		1.0	3	50	0.016	0.80	0.15	15915	765	92.0
		1.2	3	50	0.020	0.96	0.18	13265	795	137.5
		1.5	3	50	0.024	1.20	0.23	10610	765	211.0
		2.0	3	50	0.032	1.60	0.30	7960	765	367.0
		2.5	3	50	0.040	2.00	0.38	6365	765	581.5
		3.0	3	50	0.048	2.40	0.45	5305	765	826.0
	Gold M M	0.5	3	180	0.012	0.40	0.08	60000	2160	69.0
		0.6	3	180	0.014	0.48	0.09	60000	2520	109.0
		0.8	3	180	0.020	0.64	0.12	60000	3600	276.5
		1.0	3	180	0.024	0.80	0.15	57295	4125	495.0
		1.2	3	180	0.028	0.96	0.18	47750	4010	693.0
		1.5	3	180	0.036	1.20	0.23	38200	4125	1138.5
		2.0	3	180	0.048	1.60	0.30	28650	4125	1980.0
		2.5	3	180	0.060	2.00	0.38	22920	4125	3135.0
		3.0	3	180	0.072	2.40	0.45	19100	4125	4455.0
	Steel 850 - 1300 N/mm² M M	0.5	3	120	0.010	0.40	0.08	60000	1800	57.5
		0.6	3	120	0.012	0.48	0.09	60000	2160	93.5
		0.8	3	120	0.016	0.64	0.12	47750	2290	176.0
		1.0	3	120	0.020	0.80	0.15	38200	2290	275.0
		1.2	3	120	0.024	0.96	0.18	31830	2290	395.5
		1.5	3	120	0.030	1.20	0.23	25465	2290	632.0
		2.0	3	120	0.040	1.60	0.30	19100	2290	1099.0
		2.5	3	120	0.050	2.00	0.38	15280	2290	1740.5
		3.0	3	120	0.060	2.40	0.45	12735	2290	2473.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Stainless steel [Cr-Ni/1.4301] M	0.5	3	60	0.008	0.06	0.5	38200	915	27.5
		0.6	3	60	0.008	0.07	0.6	31830	765	32.0
		0.8	3	60	0.012	0.10	0.8	23875	860	69.0
		1.0	3	60	0.014	0.12	1.0	19100	800	96.0
		1.2	3	60	0.018	0.14	1.2	15915	860	144.5
		1.5	3	60	0.022	0.18	1.5	12735	840	227.0
		2.0	3	60	0.028	0.24	2.0	9550	800	384.0
		2.5	3	60	0.036	0.30	2.5	7640	825	619.0
		3.0	3	60	0.042	0.36	3.0	6365	800	864.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.5	3	40	0.006	0.06	0.5	25465	460	14.0
		0.6	3	40	0.006	0.07	0.6	21220	380	16.0
		0.8	3	40	0.010	0.10	0.8	15915	475	38.0
		1.0	3	40	0.012	0.12	1.0	12735	460	55.0
		1.2	3	40	0.014	0.14	1.2	10610	445	75.0
		1.5	3	40	0.018	0.18	1.5	8490	460	124.0
		2.0	3	40	0.022	0.24	2.0	6365	420	201.5
		2.5	3	40	0.028	0.30	2.5	5095	430	322.5
		3.0	3	40	0.034	0.36	3.0	4245	435	470.0
	Gold M M	0.5	3	160	0.010	0.06	0.5	60000	1800	54.0
		0.6	3	160	0.010	0.07	0.6	60000	1800	75.5
		0.8	3	160	0.014	0.10	0.8	60000	2520	201.5
		1.0	3	160	0.016	0.12	1.0	50930	2445	293.5
		1.2	3	160	0.022	0.14	1.2	42445	2800	470.5
		1.5	3	160	0.026	0.18	1.5	33955	2650	715.5
		2.0	3	160	0.034	0.24	2.0	25465	2595	1245.5
		2.5	3	160	0.044	0.30	2.5	20370	2690	2017.5
		3.0	3	160	0.050	0.36	3.0	16975	2545	2748.5
	Steel 850 - 1300 N/mm² M M	0.5	3	100	0.008	0.06	0.5	60000	1440	43.0
		0.6	3	100	0.008	0.07	0.6	53055	1275	53.5
		0.8	3	100	0.012	0.10	0.8	39790	1430	114.5
		1.0	3	100	0.014	0.12	1.0	31830	1335	160.0
		1.2	3	100	0.018	0.14	1.2	26525	1430	240.0
		1.5	3	100	0.022	0.18	1.5	21220	1400	378.0
		2.0	3	100	0.028	0.24	2.0	15915	1335	641.0
		2.5	3	100	0.036	0.30	2.5	12735	1375	1031.5
		3.0	3	100	0.042	0.36	3.0	10610	1335	1442.0

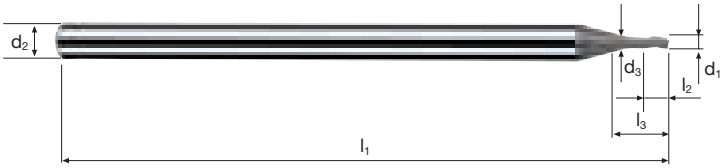
Cylindrical end mills Microcut-C3

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | B | X-Generation

HM XA | λ 25° γ-10°

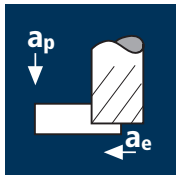
90°

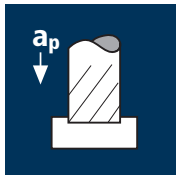


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15752** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	α	z	MICRO M15752 $
.050	0.5	3	0.45	40	0.60	1.5	11.5°	3	58.60
.060	0.6	3	0.55	40	0.72	1.8	11.0°	3	55.90
.080	0.8	3	0.75	40	0.96	2.4	10.0°	3	55.90
.100	1.0	3	0.95	50	1.20	3.0	8.5°	3	55.90
.108	1.2	3	1.10	50	1.44	3.6	7.5°	3	55.90
.120	1.5	3	1.40	60	1.80	4.5	6.0°	3	55.90
.140	2.0	3	1.90	60	2.40	6.0	4.0°	3	55.90
.160	2.5	3	2.30	60	3.00	7.5	2.0°	3	55.90
.180	3.0	3	2.80	60	3.60	9.0	0.0°	3	55.90

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	180	0.012	0.40	0.07	60000	1440	40.5
		0.6	2	180	0.014	0.48	0.08	60000	1680	64.5
		0.8	2	180	0.018	0.64	0.10	60000	2160	138.0
		1.0	2	180	0.022	0.80	0.13	57295	2520	262.0
		1.2	2	180	0.026	0.96	0.16	47750	2485	381.5
		1.5	2	180	0.034	1.20	0.20	38200	2600	624.0
		2.0	2	180	0.044	1.60	0.26	28650	2520	1048.5
		2.5	2	180	0.056	2.00	0.33	22920	2565	1693.0
		3.0	2	180	0.066	2.40	0.39	19100	2520	2358.5
	Steel 1100 - 1300 N/mm²	0.5	2	160	0.010	0.40	0.07	60000	1200	33.5
		0.6	2	160	0.012	0.48	0.08	60000	1440	55.5
		0.8	2	160	0.016	0.64	0.10	60000	1920	123.0
		1.0	2	160	0.020	0.80	0.13	50930	2035	211.5
		1.2	2	160	0.024	0.96	0.16	42445	2035	312.5
		1.5	2	160	0.030	1.20	0.20	33955	2035	488.5
		2.0	2	160	0.040	1.60	0.26	25465	2035	846.5
		2.5	2	160	0.050	2.00	0.33	20370	2035	1343.0
		3.0	2	160	0.060	2.40	0.39	16975	2035	1905.0
	Stainless steel [Cr-Ni/1.4301]	0.5	2	80	0.010	0.40	0.07	50930	1020	28.5
		0.6	2	80	0.012	0.48	0.08	42445	1020	39.0
		0.8	2	80	0.014	0.64	0.10	31830	890	57.0
		1.0	2	80	0.018	0.80	0.13	25465	915	95.0
		1.2	2	80	0.020	0.96	0.16	21220	850	130.5
		1.5	2	80	0.028	1.20	0.20	16975	950	228.0
		2.0	2	80	0.036	1.60	0.26	12735	915	380.5
		2.5	2	80	0.044	2.00	0.33	10185	895	590.5
		3.0	2	80	0.052	2.40	0.39	8490	885	828.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	60	0.008	0.40	0.07	38200	610	17.0
		0.6	2	60	0.010	0.48	0.08	31830	635	24.5
		0.8	2	60	0.012	0.64	0.10	23875	575	37.0
		1.0	2	60	0.016	0.80	0.13	19100	610	63.5
		1.2	2	60	0.018	0.96	0.16	15915	575	88.5
		1.5	2	60	0.024	1.20	0.20	12735	610	146.5
		2.0	2	60	0.030	1.60	0.26	9550	575	239.0
		2.5	2	60	0.040	2.00	0.33	7640	610	402.5
		3.0	2	60	0.046	2.40	0.39	6365	585	547.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	160	0.010	0.06	0.5	60000	1200	36.0
		0.6	2	160	0.010	0.07	0.6	60000	1200	50.5
		0.8	2	160	0.014	0.09	0.8	60000	1680	121.0
		1.0	2	160	0.018	0.11	1.0	50930	1835	202.0
		1.2	2	160	0.022	0.13	1.2	42445	1870	291.5
		1.5	2	160	0.028	0.17	1.5	33955	1900	484.5
		2.0	2	160	0.036	0.22	2.0	25465	1835	807.5
		2.5	2	160	0.046	0.28	2.5	20370	1875	1312.5
		3.0	2	160	0.054	0.33	3.0	16975	1835	1816.5
	Steel 1100 - 1300 N/mm²	0.5	2	140	0.010	0.06	0.5	60000	1200	36.0
		0.6	2	140	0.010	0.07	0.6	60000	1200	50.5
		0.8	2	140	0.014	0.09	0.8	55705	1560	112.5
		1.0	2	140	0.018	0.11	1.0	44565	1605	176.5
		1.2	2	140	0.020	0.13	1.2	37135	1485	231.5
		1.5	2	140	0.026	0.17	1.5	29710	1545	394.0
		2.0	2	140	0.034	0.22	2.0	22280	1515	666.5
		2.5	2	140	0.044	0.28	2.5	17825	1570	1099.0
		3.0	2	140	0.052	0.33	3.0	14855	1545	1529.5
	Stainless steel [Cr-Ni/1.4301]	0.5	2	70	0.008	0.06	0.5	44565	715	21.5
		0.6	2	70	0.008	0.07	0.6	37135	595	25.0
		0.8	2	70	0.012	0.09	0.8	27855	670	48.0
		1.0	2	70	0.016	0.11	1.0	22280	715	78.5
		1.2	2	70	0.020	0.13	1.2	18570	745	116.0
		1.5	2	70	0.024	0.17	1.5	14855	715	182.5
		2.0	2	70	0.032	0.22	2.0	11140	715	314.5
		2.5	2	70	0.040	0.28	2.5	8915	715	500.5
		3.0	2	70	0.048	0.33	3.0	7425	715	708.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	50	0.008	0.06	0.5	31830	510	15.5
		0.6	2	50	0.008	0.07	0.6	26525	425	18.0
		0.8	2	50	0.012	0.09	0.8	19895	475	34.0
		1.0	2	50	0.014	0.11	1.0	15915	445	49.0
		1.2	2	50	0.018	0.13	1.2	13265	480	75.0
		1.5	2	50	0.022	0.17	1.5	10610	465	118.5
		2.0	2	50	0.028	0.22	2.0	7960	445	196.0
		2.5	2	50	0.036	0.28	2.5	6365	460	322.0
		3.0	2	50	0.044	0.33	3.0	5305	465	460.5

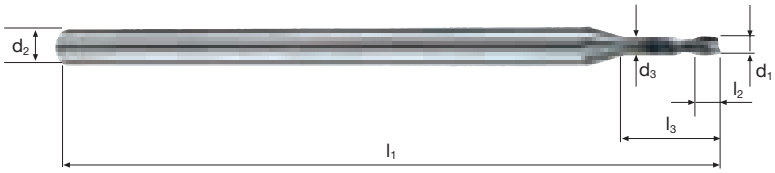
Cylindrical end mills Microcut-C5

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro | λ 25° γ 6°

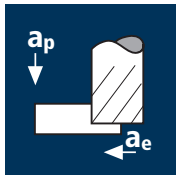
45°

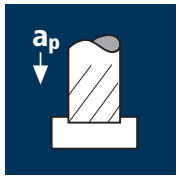


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5714** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	MICRO M5714 $
.050	0.5	3	0.45	40	0.60	2.5	-	10.0°	2	56.80
.060	0.6	3	0.55	40	0.72	3.0	-	9.5°	2	54.10
.070	0.7	3	0.65	40	0.84	3.5	-	8.5°	2	54.10
.080	0.8	3	0.75	40	0.96	4.0	-	8.0°	2	54.10
.090	0.9	3	0.85	40	1.08	4.5	-	7.5°	2	54.10
.100	1.0	3	0.95	50	1.20	5.0	0.07	7.0°	2	54.10
.108	1.2	3	1.10	50	1.44	6.0	0.07	5.5°	2	54.10
.120	1.5	3	1.40	50	1.80	7.5	0.07	4.5°	2	54.10
.132	1.8	3	1.70	50	2.16	9.0	0.07	3.5°	2	54.10
.140	2.0	3	1.90	50	2.40	10.0	0.10	2.5°	2	54.10
.152	2.3	3	2.10	50	2.76	11.5	0.10	2.0°	2	54.10
.160	2.5	3	2.30	50	3.00	12.5	0.10	1.5°	2	54.10
.172	2.8	3	2.60	50	3.36	14.0	0.10	0.5°	2	54.10
.180	3.0	3	2.80	50	3.60	15.0	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.015	0.03	0.10	60000	1800	5.5
		0.6	2	140	0.015	0.03	0.12	60000	1800	6.5
		0.8	2	140	0.020	0.04	0.16	55705	2230	14.5
		1.0	2	140	0.025	0.05	0.20	44565	2230	22.5
		1.2	2	140	0.030	0.06	0.24	37135	2230	32.0
		1.5	2	140	0.040	0.08	0.30	29710	2375	57.0
		2.0	2	140	0.050	0.10	0.40	22280	2230	89.0
		2.5	2	140	0.065	0.13	0.50	17825	2315	150.5
		3.0	2	140	0.075	0.15	0.60	14855	2230	200.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.014	0.03	0.10	60000	1680	5.0
		0.6	2	120	0.014	0.03	0.12	60000	1680	6.0
		0.8	2	120	0.020	0.04	0.16	47750	1910	12.0
		1.0	2	120	0.024	0.05	0.20	38200	1835	18.5
		1.2	2	120	0.028	0.06	0.24	31830	1780	25.5
		1.5	2	120	0.038	0.08	0.30	25465	1935	46.5
		2.0	2	120	0.048	0.10	0.40	19100	1835	73.5
		2.5	2	120	0.062	0.13	0.50	15280	1895	123.0
		3.0	2	120	0.072	0.15	0.60	12735	1835	165.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.03	0.10	60000	1680	5.0
		0.6	2	100	0.014	0.03	0.12	53055	1485	5.5
		0.8	2	100	0.018	0.04	0.16	39790	1430	9.0
		1.0	2	100	0.022	0.05	0.20	31830	1400	14.0
		1.2	2	100	0.026	0.06	0.24	26525	1380	20.0
		1.5	2	100	0.036	0.08	0.30	21220	1530	36.5
		2.0	2	100	0.044	0.10	0.40	15915	1400	56.0
		2.5	2	100	0.058	0.13	0.50	12735	1475	96.0
		3.0	2	100	0.066	0.15	0.60	10610	1400	126.0
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.03	0.10	38200	915	2.5
		0.6	2	60	0.012	0.03	0.12	31830	765	3.0
		0.8	2	60	0.016	0.04	0.16	23875	765	5.0
		1.0	2	60	0.020	0.05	0.20	19100	765	7.5
		1.2	2	60	0.024	0.06	0.24	15915	765	11.0
		1.5	2	60	0.032	0.08	0.30	12735	815	19.5
		2.0	2	60	0.040	0.10	0.40	9550	765	30.5
		2.5	2	60	0.052	0.13	0.50	7640	795	51.5
		3.0	2	60	0.060	0.15	0.60	6365	765	69.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	120	0.010	0.04	0.5	60000	1200	24.0
		0.6	2	120	0.015	0.04	0.6	60000	1800	43.0
		0.8	2	120	0.020	0.06	0.8	47750	1910	91.5
		1.0	2	120	0.020	0.07	1.0	38200	1530	107.0
		1.2	2	120	0.025	0.08	1.2	31830	1590	152.5
		1.5	2	120	0.035	0.11	1.5	25465	1785	294.5
		2.0	2	120	0.045	0.14	2.0	19100	1720	481.5
		2.5	2	120	0.055	0.18	2.5	15280	1680	756.0
		3.0	2	120	0.065	0.21	3.0	12735	1655	1042.5
	Hardened tool steel 48 - 52 HRC	0.5	2	100	0.010	0.04	0.5	60000	1200	24.0
		0.6	2	100	0.014	0.04	0.6	53055	1485	35.5
		0.8	2	100	0.020	0.06	0.8	39790	1590	76.5
		1.0	2	100	0.020	0.07	1.0	31830	1275	89.5
		1.2	2	100	0.024	0.08	1.2	26525	1275	122.5
		1.5	2	100	0.034	0.11	1.5	21220	1445	238.5
		2.0	2	100	0.042	0.14	2.0	15915	1335	374.0
		2.5	2	100	0.052	0.18	2.5	12735	1325	596.0
		3.0	2	100	0.062	0.21	3.0	10610	1315	828.5
	Hardened tool steel 52 - 56 HRC	0.5	2	80	0.008	0.04	0.5	50930	815	16.5
		0.6	2	80	0.014	0.04	0.6	42445	1190	28.5
		0.8	2	80	0.018	0.06	0.8	31830	1145	55.0
		1.0	2	80	0.018	0.07	1.0	25465	915	64.0
		1.2	2	80	0.022	0.08	1.2	21220	935	90.0
		1.5	2	80	0.030	0.11	1.5	16975	1020	168.5
		2.0	2	80	0.040	0.14	2.0	12735	1020	285.5
		2.5	2	80	0.048	0.18	2.5	10185	980	441.0
		3.0	2	80	0.058	0.21	3.0	8490	985	620.5
	Hardened tool steel 56 - 60 HRC	0.5	2	40	0.008	0.04	0.5	25465	405	8.0
		0.6	2	40	0.012	0.04	0.6	21220	510	12.0
		0.8	2	40	0.016	0.06	0.8	15915	510	24.5
		1.0	2	40	0.016	0.07	1.0	12735	410	28.5
		1.2	2	40	0.020	0.08	1.2	10610	425	41.0
		1.5	2	40	0.028	0.11	1.5	8490	475	78.5
		2.0	2	40	0.036	0.14	2.0	6365	460	129.0
		2.5	2	40	0.044	0.18	2.5	5095	450	202.5
		3.0	2	40	0.052	0.21	3.0	4245	440	277.0

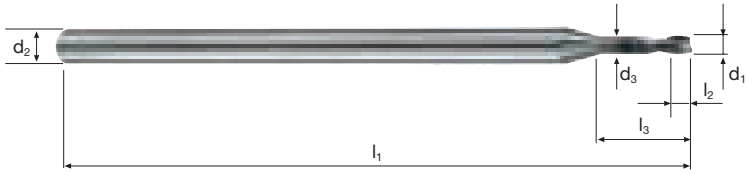
Cylindrical end mills Microcut-C5H

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 25° γ-10°

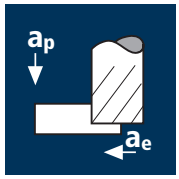
45°

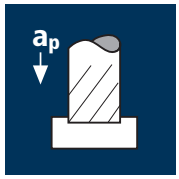


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium

Example: **Order-N°.** Coating **D** Article-N°. **5724** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	DURO-S D5724 $
.050	0.5	3	0.45	40	0.60	2.5	-	10.0°	2	56.80
.060	0.6	3	0.55	40	0.72	3.0	-	9.5°	2	54.10
.070	0.7	3	0.65	40	0.84	3.5	-	8.5°	2	54.10
.080	0.8	3	0.75	40	0.96	4.0	-	8.0°	2	54.10
.090	0.9	3	0.85	40	1.08	4.5	-	7.5°	2	54.10
.100	1.0	3	0.95	50	1.20	5.0	0.07	7.0°	2	54.10
.108	1.2	3	1.10	50	1.44	6.0	0.07	5.5°	2	54.10
.120	1.5	3	1.40	50	1.80	7.5	0.07	4.5°	2	54.10
.132	1.8	3	1.70	50	2.16	9.0	0.07	3.5°	2	54.10
.140	2.0	3	1.90	50	2.40	10.0	0.10	2.5°	2	54.10
.152	2.3	3	2.10	50	2.76	11.5	0.10	2.0°	2	54.10
.160	2.5	3	2.30	50	3.00	12.5	0.10	1.5°	2	54.10
.172	2.8	3	2.60	50	3.36	14.0	0.10	0.5°	2	54.10
.180	3.0	3	2.80	50	3.60	15.0	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Stainless steel [Cr-Ni/1.4301] M	0.5	3	80	0.010	0.40	0.07	50930	1530	43.0
		0.6	3	80	0.010	0.48	0.08	42445	1275	49.0
		0.8	3	80	0.014	0.64	0.10	31830	1335	85.5
		1.0	3	80	0.018	0.80	0.13	25465	1375	143.0
		1.2	3	80	0.022	0.96	0.16	21220	1400	215.0
		1.5	3	80	0.028	1.20	0.20	16975	1425	342.0
		2.0	3	80	0.036	1.60	0.26	12735	1375	572.0
		2.5	3	80	0.046	2.00	0.33	10185	1405	927.5
		3.0	3	80	0.054	2.40	0.39	8490	1375	1287.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.5	3	50	0.008	0.40	0.07	31830	765	21.5
		0.6	3	50	0.008	0.48	0.08	26525	635	24.5
		0.8	3	50	0.012	0.64	0.10	19895	715	46.0
		1.0	3	50	0.014	0.80	0.13	15915	670	69.5
		1.2	3	50	0.018	0.96	0.16	13265	715	110.0
		1.5	3	50	0.022	1.20	0.20	10610	700	168.0
		2.0	3	50	0.028	1.60	0.26	7960	670	278.5
		2.5	3	50	0.036	2.00	0.33	6365	685	452.0
		3.0	3	50	0.044	2.40	0.39	5305	700	655.0
	Gold M M	0.5	3	180	0.012	0.40	0.07	60000	2160	60.5
		0.6	3	180	0.012	0.48	0.08	60000	2160	83.0
		0.8	3	180	0.016	0.64	0.10	60000	2880	184.5
		1.0	3	180	0.022	0.80	0.13	57295	3780	393.0
		1.2	3	180	0.026	0.96	0.16	47750	3725	572.0
		1.5	3	180	0.034	1.20	0.20	38200	3895	935.0
		2.0	3	180	0.044	1.60	0.26	28650	3780	1572.5
		2.5	3	180	0.056	2.00	0.33	22920	3850	2541.0
		3.0	3	180	0.064	2.40	0.39	19100	3665	3430.5
	Steel 850 - 1300 N/mm² M M	0.5	3	120	0.010	0.40	0.07	60000	1800	50.5
		0.6	3	120	0.010	0.48	0.08	60000	1800	69.0
		0.8	3	120	0.014	0.64	0.10	47750	2005	128.5
		1.0	3	120	0.018	0.80	0.13	38200	2065	215.0
		1.2	3	120	0.022	0.96	0.16	31830	2100	322.5
		1.5	3	120	0.028	1.20	0.20	25465	2140	513.5
		2.0	3	120	0.036	1.60	0.26	19100	2065	859.0
		2.5	3	120	0.046	2.00	0.33	15280	2110	1392.5
		3.0	3	120	0.054	2.40	0.39	12735	2065	1933.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Stainless steel [Cr-Ni/1.4301] M	0.5	3	60	0.006	0.05	0.5	38200	690	17.5
		0.6	3	60	0.008	0.06	0.6	31830	765	27.5
		0.8	3	60	0.010	0.08	0.8	23875	715	46.0
		1.0	3	60	0.014	0.10	1.0	19100	800	80.0
		1.2	3	60	0.016	0.12	1.2	15915	765	110.0
		1.5	3	60	0.020	0.15	1.5	12735	765	172.0
		2.0	3	60	0.026	0.20	2.0	9550	745	298.0
		2.5	3	60	0.034	0.25	2.5	7640	780	487.5
		3.0	3	60	0.040	0.30	3.0	6365	765	688.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	0.5	3	40	0.004	0.05	0.5	25465	305	7.5
		0.6	3	40	0.006	0.06	0.6	21220	380	13.5
		0.8	3	40	0.008	0.08	0.8	15915	380	24.5
		1.0	3	40	0.012	0.10	1.0	12735	460	46.0
		1.2	3	40	0.012	0.12	1.2	10610	380	54.5
		1.5	3	40	0.016	0.15	1.5	8490	410	92.0
		2.0	3	40	0.020	0.20	2.0	6365	380	152.0
		2.5	3	40	0.028	0.25	2.5	5095	430	269.0
		3.0	3	40	0.032	0.30	3.0	4245	410	369.0
	Gold M M	0.5	3	160	0.008	0.05	0.5	60000	1440	36.0
		0.6	3	160	0.010	0.06	0.6	60000	1800	65.0
		0.8	3	160	0.012	0.08	0.8	60000	2160	138.0
		1.0	3	160	0.016	0.10	1.0	50930	2445	244.5
		1.2	3	160	0.020	0.12	1.2	42445	2545	366.5
		1.5	3	160	0.024	0.15	1.5	33955	2445	550.0
		2.0	3	160	0.032	0.20	2.0	25465	2445	978.0
		2.5	3	160	0.040	0.25	2.5	20370	2445	1528.0
		3.0	3	160	0.048	0.30	3.0	16975	2445	2200.5
	Steel 850 - 1300 N/mm² M M	0.5	3	100	0.006	0.05	0.5	60000	1080	27.0
		0.6	3	100	0.008	0.06	0.6	53055	1275	46.0
		0.8	3	100	0.010	0.08	0.8	39790	1195	76.5
		1.0	3	100	0.014	0.10	1.0	31830	1335	133.5
		1.2	3	100	0.016	0.12	1.2	26525	1275	183.5
		1.5	3	100	0.020	0.15	1.5	21220	1275	287.0
		2.0	3	100	0.026	0.20	2.0	15915	1240	496.0
		2.5	3	100	0.034	0.25	2.5	12735	1300	812.5
		3.0	3	100	0.040	0.30	3.0	10610	1275	1147.5

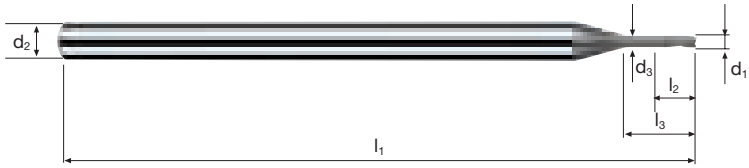
Cylindrical end mills Microcut-C5

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | B | X-Generation

HM XA | λ 25° γ-10°

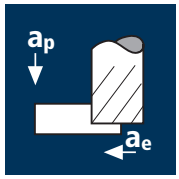
90°

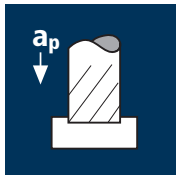


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **15754** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	α	z	MICRO M15754 $
.050	0.5	3	0.45	40	0.60	2.5	10.0°	3	58.60
.060	0.6	3	0.55	40	0.72	3.0	9.5°	3	55.90
.080	0.8	3	0.75	40	0.96	4.0	8.0°	3	55.90
.100	1.0	3	0.95	50	1.20	5.0	7.0°	3	55.90
.108	1.2	3	1.10	50	1.44	6.0	5.5°	3	55.90
.120	1.5	3	1.40	60	1.80	7.5	4.5°	3	55.90
.140	2.0	3	1.90	60	2.40	10.0	2.5°	3	55.90
.160	2.5	3	2.30	60	3.00	12.5	1.5°	3	55.90
.180	3.0	3	2.80	60	3.60	15.0	0.0°	3	55.90

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	180	0.012	0.30	0.06	60000	1440	26.0
		0.6	2	180	0.014	0.36	0.07	60000	1680	42.5
		0.8	2	180	0.018	0.48	0.09	60000	2160	93.5
		1.0	2	180	0.022	0.60	0.11	57295	2520	166.5
		1.2	2	180	0.026	0.72	0.13	47750	2485	232.5
		1.5	2	180	0.034	0.90	0.17	38200	2600	398.0
		2.0	2	180	0.044	1.20	0.22	28650	2520	665.5
		2.5	2	180	0.056	1.50	0.28	22920	2565	1077.5
		3.0	2	180	0.066	1.80	0.33	19100	2520	1497.0
	Steel 1100 - 1300 N/mm²	0.5	2	160	0.010	0.30	0.06	60000	1200	21.5
		0.6	2	160	0.012	0.36	0.07	60000	1440	36.5
		0.8	2	160	0.016	0.48	0.09	60000	1920	83.0
		1.0	2	160	0.020	0.60	0.11	50930	2035	134.5
		1.2	2	160	0.024	0.72	0.13	42445	2035	190.5
		1.5	2	160	0.030	0.90	0.17	33955	2035	311.5
		2.0	2	160	0.040	1.20	0.22	25465	2035	537.0
		2.5	2	160	0.050	1.50	0.28	20370	2035	854.5
		3.0	2	160	0.060	1.80	0.33	16975	2035	1209.0
	Stainless steel [Cr-Ni/1.4301]	0.5	2	80	0.010	0.30	0.06	50930	1020	18.5
		0.6	2	80	0.012	0.36	0.07	42445	1020	25.5
		0.8	2	80	0.014	0.48	0.09	31830	890	38.5
		1.0	2	80	0.018	0.60	0.11	25465	915	60.5
		1.2	2	80	0.020	0.72	0.13	21220	850	79.5
		1.5	2	80	0.028	0.90	0.17	16975	950	145.5
		2.0	2	80	0.036	1.20	0.22	12735	915	241.5
		2.5	2	80	0.044	1.50	0.28	10185	895	376.0
		3.0	2	80	0.052	1.80	0.33	8490	885	525.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	60	0.008	0.30	0.06	38200	610	11.0
		0.6	2	60	0.010	0.36	0.07	31830	635	16.0
		0.8	2	60	0.012	0.48	0.09	23875	575	25.0
		1.0	2	60	0.016	0.60	0.11	19100	610	40.5
		1.2	2	60	0.018	0.72	0.13	15915	575	54.0
		1.5	2	60	0.024	0.90	0.17	12735	610	93.5
		2.0	2	60	0.030	1.20	0.22	9550	575	152.0
		2.5	2	60	0.040	1.50	0.28	7640	610	256.0
		3.0	2	60	0.046	1.80	0.33	6365	585	347.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	160	0.010	0.05	0.5	60000	1200	30.0
		0.6	2	160	0.010	0.06	0.6	60000	1200	43.0
		0.8	2	160	0.014	0.08	0.8	60000	1680	107.5
		1.0	2	160	0.018	0.10	1.0	50930	1835	183.5
		1.2	2	160	0.022	0.12	1.2	42445	1870	269.5
		1.5	2	160	0.028	0.15	1.5	33955	1900	427.5
		2.0	2	160	0.036	0.20	2.0	25465	1835	734.0
		2.5	2	160	0.046	0.25	2.5	20370	1875	1172.0
		3.0	2	160	0.054	0.30	3.0	16975	1835	1651.5
	Steel 1100 - 1300 N/mm²	0.5	2	140	0.010	0.05	0.5	60000	1200	30.0
		0.6	2	140	0.010	0.06	0.6	60000	1200	43.0
		0.8	2	140	0.014	0.08	0.8	55705	1560	100.0
		1.0	2	140	0.018	0.10	1.0	44565	1605	160.5
		1.2	2	140	0.020	0.12	1.2	37135	1485	214.0
		1.5	2	140	0.026	0.15	1.5	29710	1545	347.5
		2.0	2	140	0.034	0.20	2.0	22280	1515	606.0
		2.5	2	140	0.044	0.25	2.5	17825	1570	981.5
		3.0	2	140	0.052	0.30	3.0	14855	1545	1390.5
	Stainless steel [Cr-Ni/1.4301]	0.5	2	70	0.008	0.05	0.5	44565	715	18.0
		0.6	2	70	0.008	0.06	0.6	37135	595	21.5
		0.8	2	70	0.012	0.08	0.8	27855	670	43.0
		1.0	2	70	0.016	0.10	1.0	22280	715	71.5
		1.2	2	70	0.020	0.12	1.2	18570	745	107.5
		1.5	2	70	0.024	0.15	1.5	14855	715	161.0
		2.0	2	70	0.032	0.20	2.0	11140	715	286.0
		2.5	2	70	0.040	0.25	2.5	8915	715	447.0
		3.0	2	70	0.048	0.30	3.0	7425	715	643.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	50	0.008	0.05	0.5	31830	510	13.0
		0.6	2	50	0.008	0.06	0.6	26525	425	15.5
		0.8	2	50	0.012	0.08	0.8	19895	475	30.5
		1.0	2	50	0.014	0.10	1.0	15915	445	44.5
		1.2	2	50	0.018	0.12	1.2	13265	480	69.0
		1.5	2	50	0.022	0.15	1.5	10610	465	104.5
		2.0	2	50	0.028	0.20	2.0	7960	445	178.0
		2.5	2	50	0.036	0.25	2.5	6365	460	287.5
		3.0	2	50	0.044	0.30	3.0	5305	465	418.5

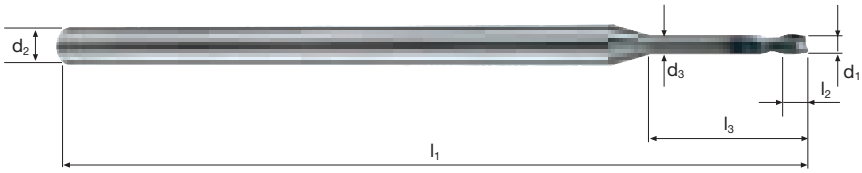
Cylindrical end mills Microcut-C8

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro | λ 25° γ 6°

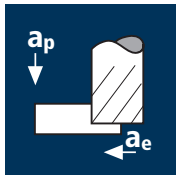
45°

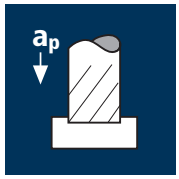


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5716** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	MICRO M5716 $
.050	0.5	3	0.45	40	0.60	4.0	-	8.5°	2	56.80
.060	0.6	3	0.55	40	0.72	4.8	-	7.5°	2	54.10
.080	0.8	3	0.75	40	0.96	6.4	-	6.0°	2	54.10
.100	1.0	3	0.95	50	1.20	8.0	0.07	5.0°	2	54.10
.108	1.2	3	1.10	50	1.44	9.6	0.07	4.0°	2	54.10
.120	1.5	3	1.40	60	1.80	12.0	0.07	3.0°	2	54.10
.140	2.0	3	1.90	60	2.40	16.0	0.10	2.0°	2	54.10
.160	2.5	3	2.30	60	3.00	20.0	0.10	1.0°	2	54.10
.180	3.0	3	2.80	60	3.60	24.0	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.015	0.02	0.09	60000	1800	3.0
		0.6	2	140	0.015	0.02	0.11	60000	1800	4.0
		0.8	2	140	0.020	0.03	0.14	55705	2230	9.5
		1.0	2	140	0.025	0.04	0.18	44565	2230	16.0
		1.2	2	140	0.030	0.05	0.22	37135	2230	24.5
		1.5	2	140	0.040	0.06	0.27	29710	2375	38.5
		2.0	2	140	0.050	0.08	0.36	22280	2230	64.0
		2.5	2	140	0.065	0.10	0.45	17825	2315	104.0
		3.0	2	140	0.075	0.12	0.54	14855	2230	144.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.014	0.02	0.09	60000	1680	3.0
		0.6	2	120	0.014	0.02	0.11	60000	1680	3.5
		0.8	2	120	0.020	0.03	0.14	47750	1910	8.0
		1.0	2	120	0.024	0.04	0.18	38200	1835	13.0
		1.2	2	120	0.028	0.05	0.22	31830	1780	19.5
		1.5	2	120	0.038	0.06	0.27	25465	1935	31.5
		2.0	2	120	0.048	0.08	0.36	19100	1835	53.0
		2.5	2	120	0.062	0.10	0.45	15280	1895	85.5
		3.0	2	120	0.072	0.12	0.54	12735	1835	119.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.02	0.09	60000	1680	3.0
		0.6	2	100	0.014	0.02	0.11	53055	1485	3.5
		0.8	2	100	0.018	0.03	0.14	39790	1430	6.0
		1.0	2	100	0.022	0.04	0.18	31830	1400	10.0
		1.2	2	100	0.026	0.05	0.22	26525	1380	15.0
		1.5	2	100	0.036	0.06	0.27	21220	1530	25.0
		2.0	2	100	0.044	0.08	0.36	15915	1400	40.5
		2.5	2	100	0.058	0.10	0.45	12735	1475	66.5
		3.0	2	100	0.066	0.12	0.54	10610	1400	90.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.02	0.09	38200	915	1.5
		0.6	2	60	0.012	0.02	0.11	31830	765	1.5
		0.8	2	60	0.016	0.03	0.14	23875	765	3.0
		1.0	2	60	0.020	0.04	0.18	19100	765	5.5
		1.2	2	60	0.024	0.05	0.22	15915	765	8.5
		1.5	2	60	0.032	0.06	0.27	12735	815	13.0
		2.0	2	60	0.040	0.08	0.36	9550	765	22.0
		2.5	2	60	0.052	0.10	0.45	7640	795	36.0
		3.0	2	60	0.060	0.12	0.54	6365	765	49.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	120	0.010	0.02	0.5	60000	1200	12.0
		0.6	2	120	0.015	0.02	0.6	60000	1800	21.5
		0.8	2	120	0.020	0.03	0.8	47750	1910	46.0
		1.0	2	120	0.020	0.04	1.0	38200	1530	61.0
		1.2	2	120	0.025	0.05	1.2	31830	1590	95.5
		1.5	2	120	0.035	0.06	1.5	25465	1785	160.5
		2.0	2	120	0.045	0.08	2.0	19100	1720	275.0
		2.5	2	120	0.055	0.10	2.5	15280	1680	420.0
		3.0	2	120	0.065	0.12	3.0	12735	1655	596.0
	Hardened tool steel 48 - 52 HRC	0.5	2	100	0.010	0.02	0.5	60000	1200	12.0
		0.6	2	100	0.014	0.02	0.6	53055	1485	18.0
		0.8	2	100	0.020	0.03	0.8	39790	1590	38.0
		1.0	2	100	0.020	0.04	1.0	31830	1275	51.0
		1.2	2	100	0.024	0.05	1.2	26525	1275	76.5
		1.5	2	100	0.034	0.06	1.5	21220	1445	130.0
		2.0	2	100	0.042	0.08	2.0	15915	1335	213.5
		2.5	2	100	0.052	0.10	2.5	12735	1325	331.5
		3.0	2	100	0.062	0.12	3.0	10610	1315	473.5
	Hardened tool steel 52 - 56 HRC	0.5	2	80	0.008	0.02	0.5	50930	815	8.0
		0.6	2	80	0.014	0.02	0.6	42445	1190	14.5
		0.8	2	80	0.018	0.03	0.8	31830	1145	27.5
		1.0	2	80	0.018	0.04	1.0	25465	915	36.5
		1.2	2	80	0.022	0.05	1.2	21220	935	56.0
		1.5	2	80	0.030	0.06	1.5	16975	1020	92.0
		2.0	2	80	0.040	0.08	2.0	12735	1020	163.0
		2.5	2	80	0.048	0.10	2.5	10185	980	245.0
		3.0	2	80	0.058	0.12	3.0	8490	985	354.5
	Hardened tool steel 56 - 60 HRC	0.5	2	40	0.008	0.02	0.5	25465	405	4.0
		0.6	2	40	0.012	0.02	0.6	21220	510	6.0
		0.8	2	40	0.016	0.03	0.8	15915	510	12.0
		1.0	2	40	0.016	0.04	1.0	12735	410	16.5
		1.2	2	40	0.020	0.05	1.2	10610	425	25.5
		1.5	2	40	0.028	0.06	1.5	8490	475	43.0
		2.0	2	40	0.036	0.08	2.0	6365	460	73.5
		2.5	2	40	0.044	0.10	2.5	5095	450	112.5
		3.0	2	40	0.052	0.12	3.0	4245	440	158.5

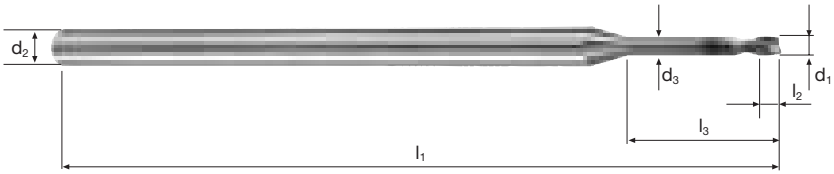
Cylindrical end mills Microcut-C8H

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 25° γ-10°

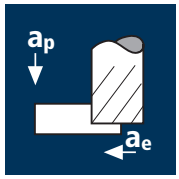
45°

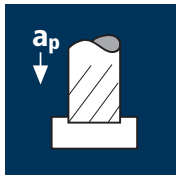


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium

Example: **Order-N°.** Coating **D** Article-N°. **5726** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	DURO-S D5726 $
.050	0.5	3	0.45	40	0.60	4.0	-	8.5°	2	56.80
.060	0.6	3	0.55	40	0.72	4.8	-	7.5°	2	54.10
.080	0.8	3	0.75	40	0.96	6.4	-	6.0°	2	54.10
.100	1.0	3	0.95	50	1.20	8.0	0.07	5.0°	2	54.10
.108	1.2	3	1.10	50	1.44	9.6	0.07	4.0°	2	54.10
.120	1.5	3	1.40	60	1.80	12.0	0.07	3.0°	2	54.10
.140	2.0	3	1.90	60	2.40	16.0	0.10	2.0°	2	54.10
.160	2.5	3	2.30	60	3.00	20.0	0.10	1.0°	2	54.10
.180	3.0	3	2.80	60	3.60	24.0	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	180	0.012	0.25	0.06	60000	1440	21.5
		0.6	2	180	0.014	0.30	0.07	60000	1680	35.5
		0.8	2	180	0.018	0.40	0.09	60000	2160	78.0
		1.0	2	180	0.022	0.50	0.11	57295	2520	138.5
		1.2	2	180	0.026	0.60	0.13	47750	2485	194.0
		1.5	2	180	0.034	0.75	0.17	38200	2600	331.5
		2.0	2	180	0.044	1.00	0.22	28650	2520	554.5
		2.5	2	180	0.056	1.25	0.28	22920	2565	898.0
		3.0	2	180	0.066	1.50	0.33	19100	2520	1247.5
	Steel 1100 - 1300 N/mm²	0.5	2	160	0.010	0.25	0.06	60000	1200	18.0
		0.6	2	160	0.012	0.30	0.07	60000	1440	30.0
		0.8	2	160	0.016	0.40	0.09	60000	1920	69.0
		1.0	2	160	0.020	0.50	0.11	50930	2035	112.0
		1.2	2	160	0.024	0.60	0.13	42445	2035	158.5
		1.5	2	160	0.030	0.75	0.17	33955	2035	259.5
		2.0	2	160	0.040	1.00	0.22	25465	2035	447.5
		2.5	2	160	0.050	1.25	0.28	20370	2035	712.5
		3.0	2	160	0.060	1.50	0.33	16975	2035	1007.5
	Stainless steel [Cr-Ni/1.4301]	0.5	2	80	0.010	0.25	0.06	50930	1020	15.5
		0.6	2	80	0.012	0.30	0.07	42445	1020	21.5
		0.8	2	80	0.014	0.40	0.09	31830	890	32.0
		1.0	2	80	0.018	0.50	0.11	25465	915	50.5
		1.2	2	80	0.020	0.60	0.13	21220	850	66.5
		1.5	2	80	0.028	0.75	0.17	16975	950	121.0
		2.0	2	80	0.036	1.00	0.22	12735	915	201.5
		2.5	2	80	0.044	1.25	0.28	10185	895	313.5
		3.0	2	80	0.052	1.50	0.33	8490	885	438.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	60	0.008	0.25	0.06	38200	610	9.0
		0.6	2	60	0.010	0.30	0.07	31830	635	13.5
		0.8	2	60	0.012	0.40	0.09	23875	575	20.5
		1.0	2	60	0.016	0.50	0.11	19100	610	33.5
		1.2	2	60	0.018	0.60	0.13	15915	575	45.0
		1.5	2	60	0.024	0.75	0.17	12735	610	78.0
		2.0	2	60	0.030	1.00	0.22	9550	575	126.5
		2.5	2	60	0.040	1.25	0.28	7640	610	213.5
		3.0	2	60	0.046	1.50	0.33	6365	585	289.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	160	0.010	0.04	0.5	60000	1200	24.0
		0.6	2	160	0.010	0.05	0.6	60000	1200	36.0
		0.8	2	160	0.014	0.06	0.8	60000	1680	80.5
		1.0	2	160	0.018	0.08	1.0	50930	1835	147.0
		1.2	2	160	0.022	0.10	1.2	42445	1870	224.5
		1.5	2	160	0.028	0.12	1.5	33955	1900	342.0
		2.0	2	160	0.036	0.16	2.0	25465	1835	587.0
		2.5	2	160	0.046	0.20	2.5	20370	1875	937.5
		3.0	2	160	0.054	0.24	3.0	16975	1835	1321.0
	Steel 1100 - 1300 N/mm²	0.5	2	140	0.010	0.04	0.5	60000	1200	24.0
		0.6	2	140	0.010	0.05	0.6	60000	1200	36.0
		0.8	2	140	0.014	0.06	0.8	55705	1560	75.0
		1.0	2	140	0.018	0.08	1.0	44565	1605	128.5
		1.2	2	140	0.020	0.10	1.2	37135	1485	178.0
		1.5	2	140	0.026	0.12	1.5	29710	1545	278.0
		2.0	2	140	0.034	0.16	2.0	22280	1515	485.0
		2.5	2	140	0.044	0.20	2.5	17825	1570	785.0
		3.0	2	140	0.052	0.24	3.0	14855	1545	1112.5
	Stainless steel [Cr-Ni/1.4301]	0.5	2	70	0.008	0.04	0.5	44565	715	14.5
		0.6	2	70	0.008	0.05	0.6	37135	595	18.0
		0.8	2	70	0.012	0.06	0.8	27855	670	32.0
		1.0	2	70	0.016	0.08	1.0	22280	715	57.0
		1.2	2	70	0.020	0.10	1.2	18570	745	89.5
		1.5	2	70	0.024	0.12	1.5	14855	715	128.5
		2.0	2	70	0.032	0.16	2.0	11140	715	229.0
		2.5	2	70	0.040	0.20	2.5	8915	715	357.5
		3.0	2	70	0.048	0.24	3.0	7425	715	515.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	50	0.008	0.04	0.5	31830	510	10.0
		0.6	2	50	0.008	0.05	0.6	26525	425	13.0
		0.8	2	50	0.012	0.06	0.8	19895	475	23.0
		1.0	2	50	0.014	0.08	1.0	15915	445	35.5
		1.2	2	50	0.018	0.10	1.2	13265	480	57.5
		1.5	2	50	0.022	0.12	1.5	10610	465	83.5
		2.0	2	50	0.028	0.16	2.0	7960	445	142.5
		2.5	2	50	0.036	0.20	2.5	6365	460	230.0
		3.0	2	50	0.044	0.24	3.0	5305	465	335.0

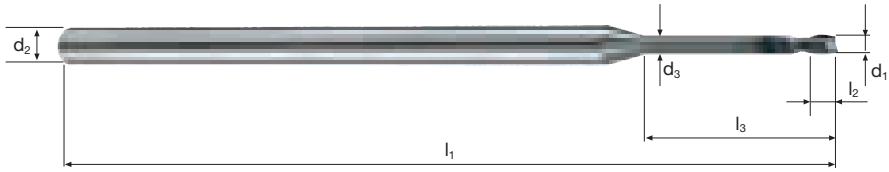
Cylindrical end mills Microcut-C10

Shank Ø 3mm, cylindrical neck, 10xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro | λ 25° γ 6°

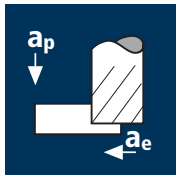
45°

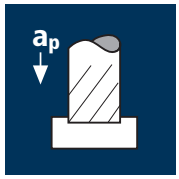


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5717** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	MICRO M5717 $
.050	0.5	3	0.45	40	0.60	5.0	-	7.5°	2	56.80
.060	0.6	3	0.55	40	0.72	6.0	-	7.0°	2	54.10
.080	0.8	3	0.75	40	0.96	8.0	-	5.5°	2	54.10
.100	1.0	3	0.95	50	1.20	10.0	0.07	4.5°	2	54.10
.108	1.2	3	1.10	50	1.44	12.0	0.07	3.5°	2	54.10
.120	1.5	3	1.40	60	1.80	15.0	0.07	2.5°	2	54.10
.140	2.0	3	1.90	60	2.40	20.0	0.10	1.5°	2	54.10
.160	2.5	3	2.30	60	3.00	25.0	0.10	1.0°	2	54.10
.180	3.0	3	2.80	60	3.60	30.0	0.10	0.0°	2	54.10

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	1.0	2	180	0.022	0.40	0.09	57295	2520	90.5
		1.2	2	180	0.026	0.48	0.11	47750	2485	131.0
		1.5	2	180	0.034	0.60	0.14	38200	2600	218.5
		2.0	2	180	0.044	0.80	0.18	28650	2520	363.0
		2.5	2	180	0.056	1.00	0.23	22920	2565	590.0
		3.0	2	180	0.066	1.20	0.27	19100	2520	816.5
	Steel 1100 - 1300 N/mm²	1.0	2	160	0.020	0.40	0.09	50930	2035	73.5
		1.2	2	160	0.024	0.48	0.11	42445	2035	107.5
		1.5	2	160	0.030	0.60	0.14	33955	2035	171.0
		2.0	2	160	0.040	0.80	0.18	25465	2035	293.0
		2.5	2	160	0.050	1.00	0.23	20370	2035	468.0
		3.0	2	160	0.060	1.20	0.27	16975	2035	659.5
	Stainless steel [Cr-Ni/1.4301]	1.0	2	80	0.018	0.40	0.09	25465	915	33.0
		1.2	2	80	0.020	0.48	0.11	21220	850	45.0
		1.5	2	80	0.028	0.60	0.14	16975	950	80.0
		2.0	2	80	0.036	0.80	0.18	12735	915	132.0
		2.5	2	80	0.044	1.00	0.23	10185	895	206.0
		3.0	2	80	0.052	1.20	0.27	8490	885	286.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.0	2	60	0.016	0.40	0.09	19100	610	22.0
		1.2	2	60	0.018	0.48	0.11	15915	575	30.5
		1.5	2	60	0.024	0.60	0.14	12735	610	51.0
		2.0	2	60	0.030	0.80	0.18	9550	575	83.0
		2.5	2	60	0.040	1.00	0.23	7640	610	140.5
		3.0	2	60	0.046	1.20	0.27	6365	585	189.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	1.0	2	160	0.018	0.06	1.0	50930	1835	110.0
		1.2	2	160	0.022	0.07	1.2	42445	1870	157.0
		1.5	2	160	0.028	0.09	1.5	33955	1900	256.5
		2.0	2	160	0.036	0.12	2.0	25465	1835	440.5
		2.5	2	160	0.046	0.15	2.5	20370	1875	703.0
		3.0	2	160	0.054	0.18	3.0	16975	1835	991.0
	Steel 1100 - 1300 N/mm²	1.0	2	140	0.018	0.06	1.0	44565	1605	96.5
		1.2	2	140	0.020	0.07	1.2	37135	1485	124.5
		1.5	2	140	0.026	0.09	1.5	29710	1545	208.5
		2.0	2	140	0.034	0.12	2.0	22280	1515	363.5
		2.5	2	140	0.044	0.15	2.5	17825	1570	589.0
		3.0	2	140	0.052	0.18	3.0	14855	1545	834.5
	Stainless steel [Cr-Ni/1.4301]	1.0	2	70	0.016	0.06	1.0	22280	715	43.0
		1.2	2	70	0.020	0.07	1.2	18570	745	62.5
		1.5	2	70	0.024	0.09	1.5	14855	715	96.5
		2.0	2	70	0.032	0.12	2.0	11140	715	171.5
		2.5	2	70	0.040	0.15	2.5	8915	715	268.0
		3.0	2	70	0.048	0.18	3.0	7425	715	386.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.0	2	50	0.014	0.06	1.0	15915	445	26.5
		1.2	2	50	0.018	0.07	1.2	13265	480	40.5
		1.5	2	50	0.022	0.09	1.5	10610	465	63.0
		2.0	2	50	0.028	0.12	2.0	7960	445	107.0
		2.5	2	50	0.036	0.15	2.5	6365	460	172.5
		3.0	2	50	0.044	0.18	3.0	5305	465	251.0

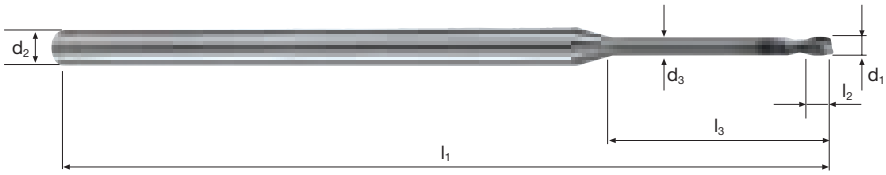
Cylindrical end mills Microcut-C12

Shank Ø 3mm, cylindrical neck, 12xd

HSS | Favora® | Base-X | **B** | X-Generation

HM Micro | λ **25°** γ **6°**

45°



Rm < 850	**Rm** 850-1100	**Rm** 1100-1300	**Rm** 1300-1500				**Inox** Stainless	**Ti** Titanium	**Gold / Platinum Copper**

Example: **Order-N°.** Coating **M** Article-N°. **5721** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	MICRO M5721 $
.100	1.0	3	0.95	50	1.20	12.0	0.07	4.0°	2	54.10
.108	1.2	3	1.10	60	1.44	14.4	0.07	3.0°	2	54.10
.120	1.5	3	1.40	60	1.80	18.0	0.07	2.5°	2	54.10
.140	2.0	3	1.90	60	2.40	24.0	0.10	1.5°	2	54.10
.160	2.5	3	2.30	70	3.00	30.0	0.10	0.5°	2	54.10
.180	3.0	3	2.80	70	3.60	36.0	0.10	0.0°	2	54.10

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End milling tools for 3D machining
Ball nose

Tolerance r ±0.005

N° 7470		Sphero-X new!	X-Generation X	3xd R F	d_1 1 – 16	Rm 1300-1500	HRC 48- >60	327
N° 7420		Sphero-XR	X-Generation X	3xd R PF	d_1 1 – 12	Rm 1100-1500	HRC 48-60	329
N° 7400		Sphero-XF	X-Generation X	3xd F SF	d_1 1 – 12	Rm 1100-1500	HRC 48- >60	331
N° 7460		Sphero-XF Multi	X-Generation X	3xd F SF	d_1 6 – 12	Rm 1100-1500	HRC 48- >60	333
N° 7474		Sphero-X new!	X-Generation X	6xd R F	d_1 1 – 16	Rm 1300-1500	HRC 48- >60	335
N° 7424		Sphero-XR	X-Generation X	6xd R PF	d_1 1 – 12	Rm 1100-1500	HRC 48-60	337
N° 7404		Sphero-XF	X-Generation X	6xd F SF	d_1 1 – 12	Rm 1100-1500	HRC 48- >60	339
N° 7464		Sphero-XF Multi	X-Generation X	6xd F SF	d_1 6 – 12	Rm 1100-1500	HRC 48- >60	341

Tolerance r ±0.01

N° 7454		Sphero-XR4	X-Generation X	6xd R PF	d_1 3 – 12	Rm 1300-1500	HRC 48-60	343

VII

End milling tools for 3D machining
Ball nose

Tolerance r f8 (-/-)

N° 5220		Base-X B	3xd PF F	d_1 4 – 16	Rm 850-1500			345
N° 7540	Sphero-SB	Base-X B	3xd PF F	d_1 1 – 12	Inox Stainless			347
N° 5290	Sphericut-Alu	Base-X B	3xd PF F	d_1 2 – 20	Al Aluminium Alloy	Cu Copper	Plastic Thermoplast	349
N° 45298		Favora® F	3xd PF F	d_1 3 – 12	Rm 850-1300			351
N° 5288	Sphericut	Base-X B	3xd PF F	d_1 1 – 16	Rm 1100-1500	HRC 48-56		353
N° 5222		Base-X B	3xd PF F	d_1 4 – 12	Rm 850-1500			355
N° 5292	Sphericut-Alu	Base-X B	3xd PF F	d_1 3 – 16	Al Aluminium Alloy	Cu Copper	Plastic Thermoplast	357

End milling tools for 3D machining
Corner radius

Tolerance r 0/+0.015

N° 7100	Toro-X	X-Generation X	3xd R PF	r 0.2, 0.5, 1.0, 2.0	Rm 1300-1500	HRC 48-60		359
N° 7200	XSpeed	X-Generation X	3xd PF F	r 0.5, 1.0	Rm 1100-1500	HRC 48- >60		363
N° 7104	Toro-X	X-Generation X	6xd R PF	r 0.2, 0.5, 1.0, 2.0	Rm 1300-1500	HRC 48-60		367
N° 7204	XSpeed	X-Generation X	6xd PF F	r 0.5, 1.0	Rm 1100-1500	HRC 48- >60		371

Tolerance r 0/+0.03

N° 5250	Multispeed	X-Generation X	3xd PF F	r 0.5, 0.8, 1.0, 1.5	Rm <850-1300	Inox Stainless		375
N° 7340	Toro-SB	Base-X B	3xd R PF	r 0.2, 0.5, 1.0, 1.5, 2.0	Rm <850	Inox Stainless		377
N° 5252	Multispeed	X-Generation X	5xd PF F	r 0.8, 1.0, 1.5	Rm <850-1300	Inox Stainless		381

VII

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End milling tools for 3D machining
HFC

Cylindrical neck

N° 7600	XFeed	X-Generation X	3xd R	d_1 3 – 16	Rm 850-1500	HRC 48- >60		383
N° 7620	XFeed-R	X-Generation X	3xd R	d_1 6 – 16	Rm 1100-1500	HRC 48-56		385
N° 7604	XFeed	X-Generation X	6xd R	d_1 3 – 16	Rm 850-1500	HRC 48- >60		387
N° 7624	XFeed-R	X-Generation X	6xd R	d_1 6 – 16	Rm 1100-1500	HRC 48-56		389

End milling tools for 3D machining
Micro with ball nose

Shank Ø 6mm

N° 6562	MicroX	X-Generation X	3xd	d_1 0.2 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	391
N° 6564	MicroX	X-Generation X	5xd	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	393
N° 6566	MicroX	X-Generation X	8xd	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	395
N° 6568	MicroX	X-Generation X	10xd	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	397
N° 6766	MicroX	X-Generation X	8xd	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	399
N° 6768	MicroX	X-Generation X	10xd	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	401
N° 6770	MicroX	X-Generation X	12xd	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	403
N° 6772	MicroX	X-Generation X	15xd	d_1 0.5 – 3.0	Rm 850-1500	HRC 48-60	Inox / Ti	405

End milling tools for 3D machining
Micro with ball nose

Shank Ø 3mm

N° 15781	**Microcut-B1H**	X-Generation X	1xd	d_1 0.2 – 3.0	**Rm** 1100-1500	**HRC** 48-60		407
N° 5782	**Microcut-B3**	Base-X B	3xd	d_1 0.2 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	409
N° 5792	**Microcut-B3H**	X-Generation X	3xd	d_1 0.5 – 3.0	**Rm** 1100-1500	**HRC** 48-60		411
N° 45785		Favora® F	3xd	d_1 0.3 – 3.0	**Rm** <850-1100			413
N° 5784	**Microcut-B5**	Base-X B	5xd	d_1 0.5 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	415
N° 5794	**Microcut-B5H**	X-Generation X	5xd	d_1 0.5 – 3.0	**Rm** 1100-1500	**HRC** 48-60		417
N° 5786	**Microcut-B8**	Base-X B	8xd	d_1 0.5 – 3.0	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	419
N° 5796	**Microcut-B8H**	X-Generation X	8xd	d_1 0.5 – 3.0	**Rm** 1100-1500	**HRC** 48-60		421
N° 5787	**Microcut-B10**	Base-X B	10xd	d_1 0.5 – 3.0	**Rm** <850-1300			423
N° 5791	**Microcut-B12**	Base-X B	12xd	d_1 1.0 – 3.0	**Rm** <850-1300			425

End milling tools for 3D machining
Micro with corner radius

Shank Ø 6mm

N° 6532	MicroX	X-Generation X	3xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	427
N° 6534	MicroX	X-Generation X	5xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	429
N° 6536	MicroX	X-Generation X	8xd	r 0.1, 0.2, 0.5	Rm 850-1500	HRC 48-60	Inox / Ti	431

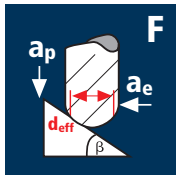
Shank Ø 6mm, Z4

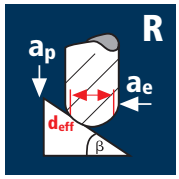
N° 6632	MicroX new!	X-Generation X	3xd	r 0.1, 0.2, 0.5	Rm 1100-1500	HRC 48-60		433
N° 6634	MicroX new!	X-Generation X	5xd	r 0.1, 0.2, 0.5	Rm 1100-1500	HRC 48-60		435

End milling tools for 3D machining
Micro with corner radius

Shank Ø 3mm

N° 5752	**Microcut-T3**	Base-X B	3xd	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	437
N° 5762	**Microcut-T3H**	X-Generation X	3xd	r 0.2	**Rm** 1100-1500	**HRC** 48-60		439
N° 5754	**Microcut-T5**	Base-X B	5xd	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	441
N° 5764	**Microcut-T5H**	X-Generation X	5xd	r 0.2	**Rm** 1100-1500	**HRC** 48-60		443
N° 5756	**Microcut-T8**	Base-X B	8xd	r 0.2	**Rm** <850-1300	**Inox** Stainless	**Ti** Titanium	445
N° 5766	**Microcut-T8H**	X-Generation X	8xd	r 0.2	**Rm** 1100-1500	**HRC** 48-60		447

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC V	1	2	200	0.025	0.05	0.05	0.94	60000	3000	45°
		2	2	200	0.030	0.07	0.07	1.84	34600	2075	45°
		3	2	200	0.035	0.10	0.10	2.74	23235	1625	45°
		4	2	200	0.065	0.12	0.12	3.62	17585	2285	45°
		5	2	200	0.070	0.15	0.15	4.53	14055	1970	45°
		6	2	200	0.075	0.15	0.15	5.36	11880	1780	45°
		8	2	200	0.085	0.17	0.17	7.05	9030	1535	45°
		10	2	200	0.090	0.20	0.20	8.77	7260	1305	45°
		12	2	200	0.095	0.25	0.25	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC V	1	2	150	0.025	0.05	0.05	0.94	50795	2540	45°
		2	2	150	0.030	0.07	0.07	1.84	25950	1555	45°
		3	2	150	0.035	0.10	0.10	2.74	17425	1220	45°
		4	2	150	0.060	0.12	0.12	3.62	13190	1585	45°
		5	2	150	0.065	0.15	0.15	4.53	10540	1370	45°
		6	2	150	0.070	0.15	0.15	5.36	8910	1245	45°
		8	2	150	0.080	0.17	0.17	7.05	6775	1085	45°
		10	2	150	0.085	0.20	0.20	8.77	5445	925	45°
		12	2	150	0.090	0.25	0.25	10.56	4520	815	45°
	Hardened tool steel 60 - 64 HRC V	1	2	90	0.020	0.04	0.04	0.93	30805	1230	45°
		2	2	90	0.025	0.06	0.06	1.80	15915	795	45°
		3	2	90	0.030	0.08	0.08	2.68	10690	640	45°
		4	2	90	0.050	0.09	0.09	3.54	8095	810	45°
		5	2	90	0.055	0.12	0.12	4.43	6465	710	45°
		6	2	90	0.060	0.12	0.12	5.24	5465	655	45°
		8	2	90	0.070	0.13	0.13	6.90	4150	580	45°
		10	2	90	0.070	0.15	0.15	8.58	3340	470	45°
		12	2	90	0.075	0.19	0.19	10.34	2770	415	45°
	Hardened tool steel 64 - 70 HRC V	1	2	60	0.015	0.03	0.03	0.89	21460	645	45°
		2	2	60	0.020	0.04	0.04	1.74	10975	440	45°
		3	2	60	0.020	0.05	0.05	2.59	7375	295	45°
		4	2	60	0.035	0.06	0.06	3.43	5570	390	45°
		5	2	60	0.040	0.08	0.08	4.29	4450	355	45°
		6	2	60	0.040	0.08	0.08	5.08	3760	300	45°
		8	2	60	0.050	0.09	0.09	6.70	2850	285	45°
		10	2	60	0.050	0.10	0.10	8.34	2290	230	45°
		12	2	60	0.055	0.13	0.13	10.03	1905	210	45°

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC V	1	2	130	0.045	0.12	0.12	0.94	44025	3960	30°
		2	2	130	0.070	0.24	0.24	1.89	21895	3065	30°
		3	2	130	0.075	0.36	0.36	2.83	14620	2195	30°
		4	2	130	0.090	0.48	0.48	3.77	10975	1975	30°
		5	2	130	0.100	0.60	0.60	4.71	8785	1755	30°
		6	2	130	0.110	0.72	0.72	5.66	7310	1610	30°
		8	2	130	0.125	0.96	0.96	7.54	5490	1375	30°
		10	2	130	0.145	1.10	1.10	9.32	4440	1290	30°
		12	2	130	0.155	1.20	1.20	11.04	3750	1165	30°
	Hardened tool steel 56 - 60 HRC V	1	2	80	0.025	0.10	0.10	0.92	27680	1385	30°
		2	2	80	0.040	0.19	0.19	1.83	13915	1115	30°
		3	2	80	0.045	0.29	0.29	2.75	9260	835	30°
		4	2	80	0.055	0.38	0.38	3.65	6975	765	30°
		5	2	80	0.060	0.48	0.48	4.57	5570	670	30°
		6	2	80	0.065	0.58	0.58	5.49	4640	605	30°
		8	2	80	0.075	0.77	0.77	7.32	3480	520	30°
		10	2	80	0.085	0.88	0.88	9.03	2820	480	30°
		12	2	80	0.095	0.96	0.96	10.68	2385	455	30°
	Hardened tool steel 60 - 64 HRC V	1	2	60	0.020	0.08	0.08	0.89	21460	860	30°
		2	2	60	0.030	0.14	0.14	1.74	10975	660	30°
		3	2	60	0.035	0.22	0.22	2.63	7260	510	30°
		4	2	60	0.040	0.29	0.29	3.51	5440	435	30°
		5	2	60	0.045	0.36	0.36	4.38	4360	390	30°
		6	2	60	0.050	0.43	0.43	5.25	3640	365	30°
		8	2	60	0.055	0.58	0.58	7.01	2725	300	30°
		10	2	60	0.065	0.66	0.66	8.64	2210	285	30°
		12	2	60	0.070	0.72	0.72	10.22	1870	260	30°
	Hardened tool steel 64 - 70 HRC V	1	2	40	0.020	0.08	0.08	0.89	14305	570	30°
		2	2	40	0.030	0.14	0.14	1.74	7320	440	30°
		3	2	40	0.035	0.22	0.22	2.63	4840	340	30°
		4	2	40	0.040	0.29	0.29	3.51	3630	290	30°
		5	2	40	0.045	0.36	0.36	4.38	2905	260	30°
		6	2	40	0.050	0.43	0.43	5.25	2425	245	30°
		8	2	40	0.055	0.58	0.58	7.01	1815	200	30°
		10	2	40	0.065	0.66	0.66	8.64	1475	190	30°
		12	2	40	0.070	0.72	0.72	10.22	1245	175	30°

Ball nose end mills Sphero-X

Tolerance r ±0.005, 3xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

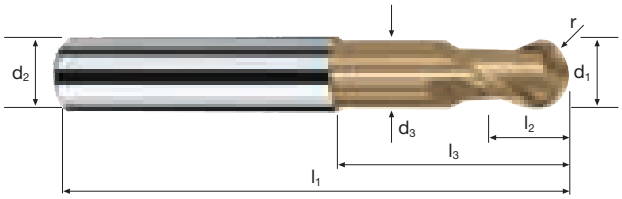
h5

d1

r

R

F

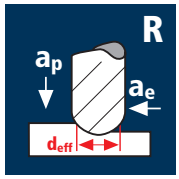


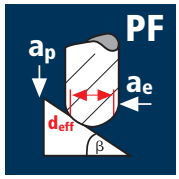
new!

		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **V** Article-N°. **7470** ø-Code **.100**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z		DURO-V V7470 $
.100	1	6	0.95	57	1.5	3	0.5	11.8°	2		77.00
.140	2	6	1.90	57	3.0	6	1.0	9.0°	2		77.00
.180	3	6	2.80	57	4.0	9	1.5	6.4°	2		77.00
.220	4	6	3.70	57	5.0	12	2.0	4.0°	2		77.00
.260	5	6	4.60	57	6.0	15	2.5	2.0°	2		77.00
.300	6	6	5.50	57	7.0	20	3.0	0.0°	2		77.00
.391	8	8	7.40	63	9.0	26	4.0	0.0°	2		97.00
.450	10	10	9.20	72	11.0	31	5.0	0.0°	2		131.00
.501	12	12	11.00	83	13.0	37	6.0	0.0°	2		162.00
.610	16	16	15.00	92	17.0	43	8.0	0.0°	2		254.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	1	2	160	0.040	0.18	0.40	0.77	60000	4800	0.35
		2	2	160	0.065	0.35	0.80	1.52	33505	4355	1.20
		3	2	160	0.075	0.53	1.20	2.29	22240	3335	2.10
		4	2	160	0.090	0.70	1.60	3.04	16755	3015	3.40
		5	2	160	0.100	0.88	2.00	3.81	13370	2675	4.70
		6	2	160	0.110	1.26	2.40	4.89	10415	2290	6.90
		8	2	160	0.125	1.68	3.20	6.52	7810	1955	10.50
		10	2	160	0.145	2.10	4.00	8.15	6250	1810	15.20
		12	2	160	0.150	2.52	4.80	9.78	5210	1565	18.95
	Hardened tool steel 48 - 52 HRC	1	2	130	0.035	0.18	0.40	0.77	53740	3760	0.25
		2	2	130	0.060	0.35	0.80	1.52	27225	3265	0.90
		3	2	130	0.070	0.53	1.20	2.29	18070	2530	1.60
		4	2	130	0.085	0.70	1.60	3.04	13610	2315	2.60
		5	2	130	0.090	0.88	2.00	3.81	10860	1955	3.45
		6	2	130	0.100	1.26	2.40	4.89	8460	1690	5.10
		8	2	130	0.115	1.68	3.20	6.52	6345	1460	7.85
		10	2	130	0.135	2.10	4.00	8.15	5075	1370	11.50
		12	2	130	0.140	2.52	4.80	9.78	4230	1185	14.35
	Hardened tool steel 52 - 56 HRC	1	2	110	0.035	0.18	0.40	0.77	45475	3185	0.25
		2	2	110	0.055	0.35	0.80	1.52	23035	2535	0.70
		3	2	110	0.065	0.53	1.20	2.29	15290	1990	1.25
		4	2	110	0.075	0.70	1.60	3.04	11520	1730	1.95
		5	2	110	0.085	0.88	2.00	3.81	9190	1560	2.75
		6	2	110	0.095	1.26	2.40	4.89	7160	1360	4.10
		8	2	110	0.105	1.68	3.20	6.52	5370	1130	6.05
		10	2	110	0.125	2.10	4.00	8.15	4295	1075	9.05
		12	2	110	0.130	2.52	4.80	9.78	3580	930	11.25
	Hardened tool steel 56 - 60 HRC	1	2	50	0.015	0.14	0.30	0.69	23065	690	0.05
		2	2	50	0.025	0.27	0.60	1.37	11615	580	0.10
		3	2	50	0.030	0.41	0.90	2.06	7725	465	0.15
		4	2	50	0.035	0.42	0.96	2.45	6495	455	0.20
		5	2	50	0.040	0.53	0.90	3.08	5170	415	0.20
		6	2	50	0.045	0.76	0.72	3.99	3990	360	0.20
		8	2	50	0.050	1.01	0.96	5.31	2995	300	0.30
		10	2	50	0.060	1.26	1.20	6.64	2395	285	0.45
		12	2	50	0.060	1.51	1.44	7.96	2000	240	0.50

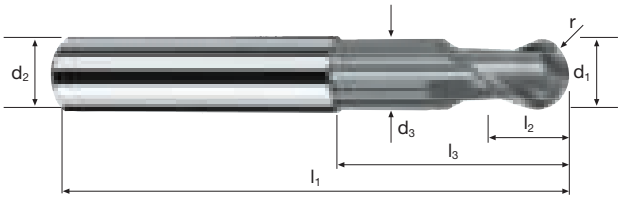
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1	2	200	0.055	0.12	0.12	1.00	60000	6600	45°
		2	2	200	0.095	0.24	0.24	1.99	31990	6080	45°
		3	2	200	0.105	0.36	0.36	2.99	21290	4470	45°
		4	2	200	0.125	0.48	0.48	3.99	15955	3990	45°
		5	2	200	0.140	0.60	0.60	4.98	12785	3580	45°
		6	2	200	0.155	0.72	0.72	5.98	10645	3300	45°
		8	2	200	0.170	0.96	0.96	7.98	7980	2715	45°
		10	2	200	0.200	1.20	1.20	9.97	6385	2555	45°
		12	2	200	0.210	1.44	1.44	11.96	5325	2235	45°
	Hardened tool steel 48 - 52 HRC	1	2	160	0.050	0.12	0.12	1.00	50930	5095	45°
		2	2	160	0.085	0.15	0.15	1.95	26120	4440	45°
		3	2	160	0.095	0.18	0.18	2.87	17745	3370	45°
		4	2	160	0.115	0.20	0.20	3.78	13475	3100	45°
		5	2	160	0.130	0.25	0.25	4.72	10790	2805	45°
		6	2	160	0.145	0.30	0.30	5.67	8985	2605	45°
		8	2	160	0.155	0.40	0.40	7.56	6735	2090	45°
		10	2	160	0.185	0.50	0.50	9.45	5390	1995	45°
		12	2	160	0.195	0.60	0.60	11.34	4490	1750	45°
	Hardened tool steel 52 - 56 HRC	1	2	120	0.045	0.12	0.12	1.00	38200	3440	45°
		2	2	120	0.080	0.15	0.15	1.95	19590	3135	45°
		3	2	120	0.090	0.18	0.18	2.87	13310	2395	45°
		4	2	120	0.105	0.20	0.20	3.78	10105	2120	45°
		5	2	120	0.120	0.25	0.25	4.72	8095	1945	45°
		6	2	120	0.130	0.30	0.30	5.67	6735	1750	45°
		8	2	120	0.145	0.40	0.40	7.56	5055	1465	45°
		10	2	120	0.170	0.50	0.50	9.45	4040	1375	45°
		12	2	120	0.180	0.60	0.60	11.34	3370	1215	45°
	Hardened tool steel 56 - 60 HRC	1	2	90	0.040	0.10	0.10	0.99	28940	2315	45°
		2	2	90	0.070	0.12	0.12	1.92	14920	2090	45°
		3	2	90	0.080	0.14	0.14	2.82	10160	1625	45°
		4	2	90	0.095	0.16	0.16	3.71	7720	1465	45°
		5	2	90	0.105	0.20	0.20	4.64	6175	1295	45°
		6	2	90	0.115	0.24	0.24	5.57	5145	1185	45°
		8	2	90	0.130	0.32	0.32	7.42	3860	1005	45°
		10	2	90	0.150	0.40	0.40	9.28	3085	925	45°
		12	2	90	0.160	0.48	0.48	11.13	2575	825	45°

Ball nose end mills Sphero-XR

Tolerance r ±0.005, 3xd

HSS | Favora® | Base-X | X-Generation X

HM XT	λ 30° γ-10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60

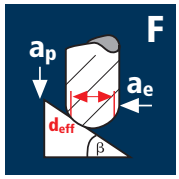
Example: **Order-N°.** Coating **X** Article-N°. **7420** ø-Code **.100**

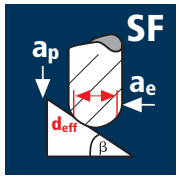
ø Code	d1 *	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL X7420 $
.100	1	6	0.95	57	1.5	3	0.5	11.8°	2	77.00
.140	2	6	1.90	57	3.0	6	1.0	9.0°	2	77.00
.180	3	6	2.80	57	4.0	9	1.5	6.4°	2	77.00
.220	4	6	3.70	57	5.0	12	2.0	4.0°	2	77.00
.260	5	6	4.60	57	6.0	15	2.5	2.0°	2	77.00
.300	6	6	5.50	57	7.0	20	3.0	0.0°	2	77.00
.391	8	8	7.40	63	9.0	26	4.0	0.0°	2	97.00
.450	10	10	9.20	72	11.0	31	5.0	0.0°	2	131.00
.501	12	12	11.00	83	13.0	37	6.0	0.0°	2	162.00

*** Tolerance of the cutting diameter**

d1	Tolerance
< 6	0/-0.010
≥ 6	0/-0.015

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1	2	300	0.030	0.05	0.05	0.94	60000	3600	45°
		2	2	300	0.035	0.07	0.07	1.84	51900	3635	45°
		3	2	300	0.040	0.10	0.10	2.74	34850	2790	45°
		4	2	300	0.070	0.12	0.12	3.62	26380	3695	45°
		5	2	300	0.080	0.15	0.15	4.53	21080	3375	45°
		6	2	300	0.085	0.15	0.15	5.36	17815	3030	45°
		8	2	300	0.095	0.17	0.17	7.05	13545	2575	45°
		10	2	300	0.100	0.20	0.20	8.77	10890	2180	45°
		12	2	300	0.105	0.25	0.25	10.56	9045	1900	45°
	Hardened tool steel 48 - 52 HRC	1	2	250	0.030	0.05	0.05	0.94	60000	3600	45°
		2	2	250	0.035	0.07	0.07	1.84	43250	3030	45°
		3	2	250	0.040	0.10	0.10	2.74	29045	2325	45°
		4	2	250	0.065	0.12	0.12	3.62	21985	2860	45°
		5	2	250	0.075	0.15	0.15	4.53	17565	2635	45°
		6	2	250	0.080	0.15	0.15	5.36	14845	2375	45°
		8	2	250	0.090	0.17	0.17	7.05	11290	2030	45°
		10	2	250	0.095	0.20	0.20	8.77	9075	1725	45°
		12	2	250	0.100	0.25	0.25	10.56	7535	1505	45°
	Hardened tool steel 52 - 56 HRC	1	2	200	0.025	0.05	0.05	0.94	60000	3000	45°
		2	2	200	0.030	0.07	0.07	1.84	34600	2075	45°
		3	2	200	0.035	0.10	0.10	2.74	23235	1625	45°
		4	2	200	0.065	0.12	0.12	3.62	17585	2285	45°
		5	2	200	0.070	0.15	0.15	4.53	14055	1970	45°
		6	2	200	0.075	0.15	0.15	5.36	11880	1780	45°
		8	2	200	0.085	0.17	0.17	7.05	9030	1535	45°
		10	2	200	0.090	0.20	0.20	8.77	7260	1305	45°
		12	2	200	0.095	0.25	0.25	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1	2	150	0.025	0.05	0.05	0.94	50795	2540	45°
		2	2	150	0.030	0.07	0.07	1.84	25950	1555	45°
		3	2	150	0.035	0.10	0.10	2.74	17425	1220	45°
		4	2	150	0.060	0.12	0.12	3.62	13190	1585	45°
		5	2	150	0.070	0.15	0.15	4.53	10540	1475	45°
		6	2	150	0.070	0.15	0.15	5.36	8910	1245	45°
		8	2	150	0.080	0.17	0.17	7.05	6775	1085	45°
		10	2	150	0.085	0.20	0.20	8.77	5445	925	45°
		12	2	150	0.090	0.25	0.25	10.56	4520	815	45°

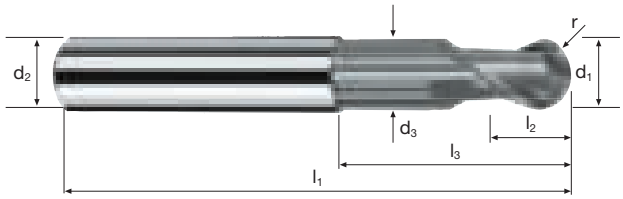
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1	2	400	0.025	0.02	0.02	0.88	60000	3000	45°
		2	2	400	0.030	0.02	0.02	1.67	60000	3600	45°
		3	2	400	0.035	0.03	0.03	2.50	50930	3565	45°
		4	2	400	0.050	0.03	0.03	3.27	38940	3895	45°
		5	2	400	0.055	0.03	0.03	4.04	31515	3465	45°
		6	2	400	0.060	0.03	0.03	4.80	26525	3185	45°
		8	2	400	0.065	0.03	0.03	6.31	20180	2625	45°
		10	2	400	0.070	0.04	0.04	7.91	16095	2255	45°
		12	2	400	0.075	0.04	0.04	9.41	13530	2030	45°
	Hardened tool steel 48 - 52 HRC	1	2	350	0.025	0.02	0.02	0.88	60000	3000	45°
		2	2	350	0.030	0.02	0.02	1.67	60000	3600	45°
		3	2	350	0.035	0.03	0.03	2.50	44565	3120	45°
		4	2	350	0.050	0.03	0.03	3.27	34070	3405	45°
		5	2	350	0.050	0.03	0.03	4.04	27575	2760	45°
		6	2	350	0.055	0.03	0.03	4.80	23210	2555	45°
		8	2	350	0.060	0.03	0.03	6.31	17655	2120	45°
		10	2	350	0.065	0.04	0.04	7.91	14085	1830	45°
		12	2	350	0.070	0.04	0.04	9.41	11840	1660	45°
	Hardened tool steel 52 - 56 HRC	1	2	280	0.025	0.02	0.02	0.88	60000	3000	45°
		2	2	280	0.025	0.02	0.02	1.67	53370	2670	45°
		3	2	280	0.030	0.03	0.03	2.50	35650	2140	45°
		4	2	280	0.045	0.03	0.03	3.27	27255	2455	45°
		5	2	280	0.050	0.03	0.03	4.04	22060	2205	45°
		6	2	280	0.055	0.03	0.03	4.80	18570	2045	45°
		8	2	280	0.060	0.03	0.03	6.31	14125	1695	45°
		10	2	280	0.065	0.04	0.04	7.91	11270	1465	45°
		12	2	280	0.070	0.04	0.04	9.41	9470	1325	45°
	Hardened tool steel 56 - 60 HRC	1	2	180	0.020	0.02	0.02	0.88	60000	2400	45°
		2	2	180	0.025	0.02	0.02	1.67	34310	1715	45°
		3	2	180	0.030	0.03	0.03	2.50	22920	1375	45°
		4	2	180	0.045	0.03	0.03	3.27	17520	1575	45°
		5	2	180	0.045	0.03	0.03	4.04	14185	1275	45°
		6	2	180	0.050	0.03	0.03	4.80	11935	1195	45°
		8	2	180	0.055	0.03	0.03	6.31	9080	1000	45°
		10	2	180	0.060	0.04	0.04	7.91	7245	870	45°
		12	2	180	0.065	0.04	0.04	9.41	6090	790	45°

Ball nose end mills Sphero-XF

Tolerance r ±0.005, 3xd

HSS | Favora® | Base-X | X-Generation X

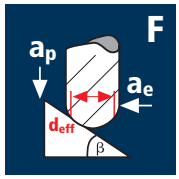
HM XA	λ 30° γ-10°

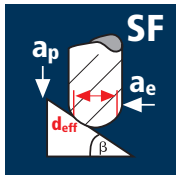


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Copper

Example: **Order-N°.** Coating **X** Article-N°. **7400** ø-Code **.100**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL X7400 $
.100	1	6	0.95	57	1.5	3	0.5	11.8°	2	77.00
.140	2	6	1.90	57	3.0	6	1.0	9.0°	2	77.00
.180	3	6	2.80	57	4.0	9	1.5	6.4°	2	77.00
.220	4	6	3.70	57	5.0	12	2.0	4.0°	2	77.00
.260	5	6	4.60	57	6.0	15	2.5	2.0°	2	77.00
.300	6	6	5.50	57	7.0	20	3.0	0.0°	2	77.00
.391	8	8	7.40	63	9.0	26	4.0	0.0°	2	97.00
.450	10	10	9.20	72	11.0	31	5.0	0.0°	2	131.00
.501	12	12	11.00	83	13.0	37	6.0	0.0°	2	162.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	6	8	300	0.055	0.12	0.12	5.26	18155	7990	45°
		8	10	300	0.060	0.14	0.14	6.94	13760	8255	45°
		10	12	300	0.065	0.16	0.16	8.62	11080	8640	45°
		12	16	300	0.070	0.18	0.18	10.29	9280	10395	45°
	Hardened tool steel 48 - 52 HRC	6	8	250	0.050	0.12	0.12	5.26	15130	6050	45°
		8	10	250	0.055	0.14	0.14	6.94	11465	6305	45°
		10	12	250	0.060	0.16	0.16	8.62	9230	6645	45°
		12	16	250	0.065	0.18	0.18	10.29	7735	8045	45°
	Hardened tool steel 52 - 56 HRC	6	8	200	0.050	0.12	0.12	5.26	12105	4840	45°
		8	10	200	0.055	0.14	0.14	6.94	9175	5045	45°
		10	12	200	0.060	0.16	0.16	8.62	7385	5315	45°
		12	16	200	0.065	0.18	0.18	10.29	6185	6430	45°
	Hardened tool steel 56 - 60 HRC	6	8	150	0.045	0.12	0.12	5.26	9080	3270	45°
		8	10	150	0.050	0.14	0.14	6.94	6880	3440	45°
		10	12	150	0.055	0.16	0.16	8.62	5540	3655	45°
		12	16	150	0.060	0.18	0.18	10.29	4640	4455	45°

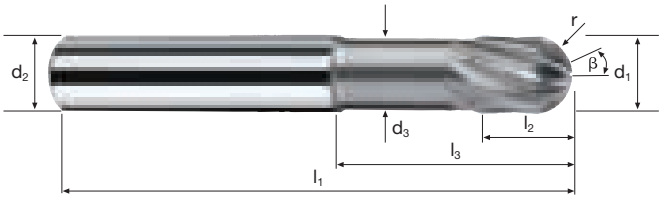
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	6	8	400	0.030	0.03	0.03	4.80	26525	6365	45°
		8	10	400	0.035	0.03	0.03	6.31	20180	7065	45°
		10	12	400	0.035	0.04	0.04	7.91	16095	6760	45°
		12	16	400	0.040	0.04	0.04	9.41	13530	8660	45°
	Hardened tool steel 48 - 52 HRC	6	8	350	0.030	0.03	0.03	4.80	23210	5570	45°
		8	10	350	0.035	0.03	0.03	6.31	17655	6180	45°
		10	12	350	0.035	0.04	0.04	7.91	14085	5915	45°
		12	16	350	0.040	0.04	0.04	9.41	11840	7580	45°
	Hardened tool steel 52 - 56 HRC	6	8	280	0.025	0.03	0.03	4.80	18570	3715	45°
		8	10	280	0.030	0.03	0.03	6.31	14125	4240	45°
		10	12	280	0.030	0.04	0.04	7.91	11270	4055	45°
		12	16	280	0.035	0.04	0.04	9.41	9470	5305	45°
	Hardened tool steel 56 - 60 HRC	6	8	180	0.025	0.03	0.03	4.80	11935	2385	45°
		8	10	180	0.030	0.03	0.03	6.31	9080	2725	45°
		10	12	180	0.030	0.04	0.04	7.91	7245	2610	45°
		12	16	180	0.035	0.04	0.04	9.41	6090	3410	45°

Ball nose end mills Sphero-XF Multi

Tolerance r ±0.005, 3xd

HSS | Favora® | Base-X | X-Generation **X**

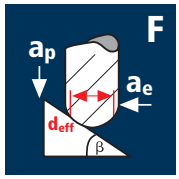
HM XA	λ 30° γ-10°
h5	
d1	r
	F

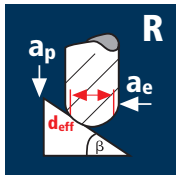


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Copper

Example: **Order-N°.** Coating **X** Article-N°. **7460** ø-Code **.300**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	β	z	X-AL X7460 $
.300	6	6	5.5	57	7	20	3.0	25°	8	87.00
.391	8	8	7.4	63	9	26	4.0	25°	10	109.00
.450	10	10	9.2	72	11	31	5.0	25°	12	148.00
.501	12	12	11.0	83	13	37	6.0	25°	16	183.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC V	1	2	200	0.025	0.05	0.05	0.94	60000	3000	45°
		2	2	200	0.030	0.07	0.07	1.84	34600	2075	45°
		3	2	200	0.035	0.10	0.10	2.74	23235	1625	45°
		4	2	200	0.065	0.12	0.12	3.62	17585	2285	45°
		5	2	200	0.070	0.15	0.15	4.53	14055	1970	45°
		6	2	200	0.075	0.15	0.15	5.36	11880	1780	45°
		8	2	200	0.085	0.17	0.17	7.05	9030	1535	45°
		10	2	200	0.090	0.20	0.20	8.77	7260	1305	45°
		12	2	200	0.095	0.25	0.25	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC V	1	2	150	0.025	0.05	0.05	0.94	50795	2540	45°
		2	2	150	0.030	0.07	0.07	1.84	25950	1555	45°
		3	2	150	0.035	0.10	0.10	2.74	17425	1220	45°
		4	2	150	0.060	0.12	0.12	3.62	13190	1585	45°
		5	2	150	0.065	0.15	0.15	4.53	10540	1370	45°
		6	2	150	0.070	0.15	0.15	5.36	8910	1245	45°
		8	2	150	0.080	0.17	0.17	7.05	6775	1085	45°
		10	2	150	0.085	0.20	0.20	8.77	5445	925	45°
		12	2	150	0.090	0.25	0.25	10.56	4520	815	45°
	Hardened tool steel 60 - 64 HRC V	1	2	90	0.020	0.04	0.04	0.93	30805	1230	45°
		2	2	90	0.025	0.06	0.06	1.80	15915	795	45°
		3	2	90	0.030	0.08	0.08	2.68	10690	640	45°
		4	2	90	0.050	0.09	0.09	3.54	8095	810	45°
		5	2	90	0.055	0.12	0.12	4.43	6465	710	45°
		6	2	90	0.060	0.12	0.12	5.24	5465	655	45°
		8	2	90	0.070	0.13	0.13	6.90	4150	580	45°
		10	2	90	0.070	0.15	0.15	8.58	3340	470	45°
		12	2	90	0.075	0.19	0.19	10.34	2770	415	45°
	Hardened tool steel 64 - 70 HRC V	1	2	60	0.015	0.03	0.03	0.89	21460	645	45°
		2	2	60	0.020	0.04	0.04	1.74	10975	440	45°
		3	2	60	0.020	0.05	0.05	2.59	7375	295	45°
		4	2	60	0.035	0.06	0.06	3.43	5570	390	45°
		5	2	60	0.040	0.08	0.08	4.29	4450	355	45°
		6	2	60	0.040	0.08	0.08	5.08	3760	300	45°
		8	2	60	0.050	0.09	0.09	6.70	2850	285	45°
		10	2	60	0.050	0.10	0.10	8.34	2290	230	45°
		12	2	60	0.055	0.13	0.13	10.03	1905	210	45°

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 52 - 56 HRC V	1	2	130	0.045	0.10	0.10	0.92	44980	4050	30°
		2	2	130	0.070	0.20	0.20	1.84	22490	3150	30°
		3	2	130	0.075	0.30	0.30	2.76	14995	2250	30°
		4	2	130	0.090	0.40	0.40	3.68	11245	2025	30°
		5	2	130	0.100	0.50	0.50	4.60	8995	1800	30°
		6	2	130	0.110	0.60	0.60	5.52	7495	1650	30°
		8	2	130	0.125	0.80	0.80	7.36	5620	1405	30°
		10	2	130	0.145	0.90	0.90	9.06	4565	1325	30°
		12	2	130	0.155	0.96	0.96	10.68	3875	1200	30°
	Hardened tool steel 56 - 60 HRC V	1	2	80	0.025	0.08	0.08	0.89	28615	1430	30°
		2	2	80	0.040	0.16	0.16	1.78	14305	1145	30°
		3	2	80	0.045	0.24	0.24	2.67	9540	860	30°
		4	2	80	0.055	0.32	0.32	3.56	7155	785	30°
		5	2	80	0.060	0.40	0.40	4.45	5725	685	30°
		6	2	80	0.065	0.48	0.48	5.34	4770	620	30°
		8	2	80	0.075	0.64	0.64	7.12	3575	535	30°
		10	2	80	0.085	0.72	0.72	8.76	2905	495	30°
		12	2	80	0.095	0.77	0.77	10.32	2470	470	30°
	Hardened tool steel 60 - 64 HRC V	1	2	60	0.020	0.06	0.06	0.85	22470	900	30°
		2	2	60	0.030	0.12	0.12	1.70	11235	675	30°
		3	2	60	0.035	0.18	0.18	2.55	7490	525	30°
		4	2	60	0.040	0.24	0.24	3.41	5600	450	30°
		5	2	60	0.045	0.30	0.30	4.26	4485	405	30°
		6	2	60	0.050	0.36	0.36	5.11	3740	375	30°
		8	2	60	0.055	0.48	0.48	6.81	2805	310	30°
		10	2	60	0.065	0.54	0.54	8.37	2280	295	30°
		12	2	60	0.070	0.58	0.58	9.88	1935	270	30°
	Hardened tool steel 64 - 70 HRC V	1	2	40	0.020	0.06	0.06	0.85	14980	600	30°
		2	2	40	0.030	0.12	0.12	1.70	7490	450	30°
		3	2	40	0.035	0.18	0.18	2.55	4995	350	30°
		4	2	40	0.040	0.24	0.24	3.41	3735	300	30°
		5	2	40	0.045	0.30	0.30	4.26	2990	270	30°
		6	2	40	0.050	0.36	0.36	5.11	2490	250	30°
		8	2	40	0.055	0.48	0.48	6.81	1870	205	30°
		10	2	40	0.065	0.54	0.54	8.37	1520	200	30°
		12	2	40	0.070	0.58	0.58	9.88	1290	180	30°

Ball nose end mills Sphero-X

Tolerance r ±0.005, 6xd

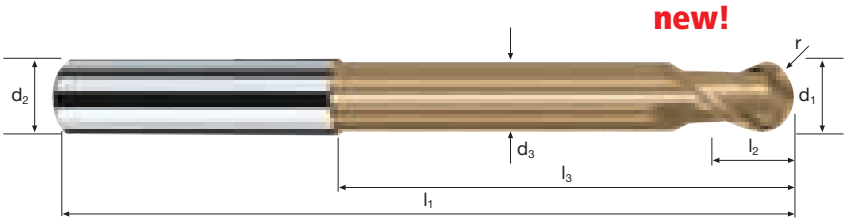
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

d1 | r

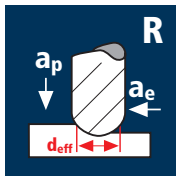
R | F

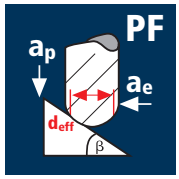


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **V** Article-N°. **7474** ø-Code **.100**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z		DURO-V V7474 $
.100	1	6	0.95	66	1.5	6	0.5	9.5°	2		89.00
.140	2	6	1.90	66	3.0	12	1.0	6.1°	2		89.00
.180	3	6	2.80	66	4.0	18	1.5	3.9°	2		89.00
.220	4	6	3.70	69	5.0	24	2.0	2.2°	2		89.00
.260	5	6	4.60	75	6.0	30	2.5	1.0°	2		89.00
.300	6	6	5.50	80	7.0	43	3.0	0.0°	2		89.00
.391	8	8	7.40	90	9.0	53	4.0	0.0°	2		111.00
.450	10	10	9.20	105	11.0	64	5.0	0.0°	2		151.00
.501	12	12	11.00	120	13.0	74	6.0	0.0°	2		187.00
.610	16	16	15.00	135	17.0	86	8.0	0.0°	2		292.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	1	2	160	0.040	0.13	0.30	0.67	60000	4800	0.20
		2	2	160	0.065	0.26	0.60	1.35	37725	4905	0.75
		3	2	160	0.075	0.39	0.90	2.02	25215	3780	1.35
		4	2	160	0.090	0.52	1.20	2.69	18935	3410	2.15
		5	2	160	0.100	0.65	1.50	3.36	15160	3030	2.95
		6	2	160	0.110	1.02	1.80	4.51	11295	2485	4.55
		8	2	160	0.125	1.36	2.40	6.01	8475	2120	6.90
		10	2	160	0.145	1.70	3.00	7.51	6780	1965	10.00
		12	2	160	0.150	2.04	3.60	9.02	5645	1695	12.45
	Hardened tool steel 48 - 52 HRC	1	2	130	0.035	0.13	0.30	0.67	60000	4200	0.15
		2	2	130	0.060	0.26	0.60	1.35	30655	3680	0.55
		3	2	130	0.070	0.39	0.90	2.02	20485	2870	1.00
		4	2	130	0.085	0.52	1.20	2.69	15385	2615	1.65
		5	2	130	0.090	0.65	1.50	3.36	12315	2215	2.15
		6	2	130	0.100	1.02	1.80	4.51	9175	1835	3.35
		8	2	130	0.115	1.36	2.40	6.01	6885	1585	5.15
		10	2	130	0.135	1.70	3.00	7.51	5510	1490	7.60
		12	2	130	0.140	2.04	3.60	9.02	4590	1285	9.45
	Hardened tool steel 52 - 56 HRC	1	2	110	0.035	0.13	0.30	0.67	52260	3660	0.15
		2	2	110	0.055	0.26	0.60	1.35	25935	2855	0.45
		3	2	110	0.065	0.39	0.90	2.02	17335	2255	0.80
		4	2	110	0.075	0.52	1.20	2.69	13015	1950	1.20
		5	2	110	0.085	0.65	1.50	3.36	10420	1770	1.75
		6	2	110	0.095	1.02	1.80	4.51	7765	1475	2.70
		8	2	110	0.105	1.36	2.40	6.01	5825	1225	4.00
		10	2	110	0.125	1.70	3.00	7.51	4660	1165	5.95
		12	2	110	0.130	2.04	3.60	9.02	3880	1010	7.40
	Hardened tool steel 56 - 60 HRC	1	2	50	0.015	0.10	0.23	0.60	26525	795	0.00
		2	2	50	0.025	0.20	0.45	1.20	13265	665	0.05
		3	2	50	0.030	0.30	0.68	1.80	8840	530	0.10
		4	2	50	0.035	0.31	0.72	2.14	7435	520	0.10
		5	2	50	0.040	0.39	0.67	2.68	5940	475	0.10
		6	2	50	0.045	0.61	0.54	3.63	4385	395	0.15
		8	2	50	0.050	0.82	0.72	4.85	3280	330	0.20
		10	2	50	0.060	1.02	0.90	6.05	2630	315	0.30
		12	2	50	0.060	1.22	1.08	7.25	2195	265	0.35

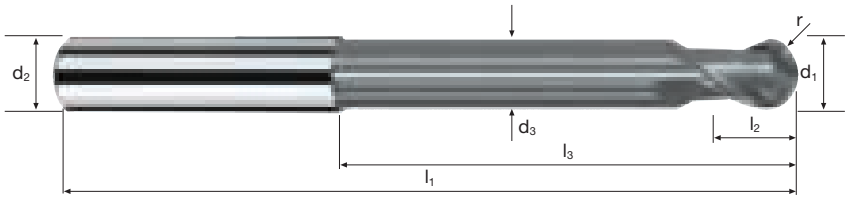
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1	2	200	0.055	0.12	0.12	1.00	60000	6600	45°
		2	2	200	0.095	0.20	0.20	1.98	32155	6110	45°
		3	2	200	0.105	0.30	0.30	2.97	21435	4500	45°
		4	2	200	0.125	0.40	0.40	3.96	16075	4020	45°
		5	2	200	0.140	0.50	0.50	4.95	12860	3600	45°
		6	2	200	0.155	0.60	0.60	5.94	10720	3325	45°
		8	2	200	0.170	0.80	0.80	7.92	8040	2735	45°
		10	2	200	0.200	1.00	1.00	9.90	6430	2570	45°
		12	2	200	0.210	1.20	1.20	11.88	5360	2250	45°
	Hardened tool steel 48 - 52 HRC	1	2	160	0.050	0.12	0.12	1.00	50930	5095	45°
		2	2	160	0.085	0.15	0.15	1.95	26120	4440	45°
		3	2	160	0.095	0.18	0.18	2.87	17745	3370	45°
		4	2	160	0.115	0.20	0.20	3.78	13475	3100	45°
		5	2	160	0.130	0.25	0.25	4.72	10790	2805	45°
		6	2	160	0.145	0.30	0.30	5.67	8985	2605	45°
		8	2	160	0.155	0.40	0.40	7.56	6735	2090	45°
		10	2	160	0.185	0.50	0.50	9.45	5390	1995	45°
		12	2	160	0.195	0.60	0.60	11.34	4490	1750	45°
	Hardened tool steel 52 - 56 HRC	1	2	120	0.045	0.12	0.12	1.00	38200	3440	45°
		2	2	120	0.080	0.15	0.15	1.95	19590	3135	45°
		3	2	120	0.090	0.18	0.18	2.87	13310	2395	45°
		4	2	120	0.105	0.20	0.20	3.78	10105	2120	45°
		5	2	120	0.120	0.25	0.25	4.72	8095	1945	45°
		6	2	120	0.130	0.30	0.30	5.67	6735	1750	45°
		8	2	120	0.145	0.40	0.40	7.56	5055	1465	45°
		10	2	120	0.170	0.50	0.50	9.45	4040	1375	45°
		12	2	120	0.180	0.60	0.60	11.34	3370	1215	45°
	Hardened tool steel 56 - 60 HRC	1	2	90	0.040	0.10	0.10	0.99	28940	2315	45°
		2	2	90	0.070	0.12	0.12	1.92	14920	2090	45°
		3	2	90	0.080	0.14	0.14	2.82	10160	1625	45°
		4	2	90	0.095	0.16	0.16	3.71	7720	1465	45°
		5	2	90	0.105	0.20	0.20	4.64	6175	1295	45°
		6	2	90	0.115	0.24	0.24	5.57	5145	1185	45°
		8	2	90	0.130	0.32	0.32	7.42	3860	1005	45°
		10	2	90	0.150	0.40	0.40	9.28	3085	925	45°
		12	2	90	0.160	0.48	0.48	11.13	2575	825	45°

Ball nose end mills Sphero-XR

Tolerance r ±0.005, 6xd

HSS | Favora® | Base-X | X-Generation **X**

HM XT	λ 30° γ-10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60

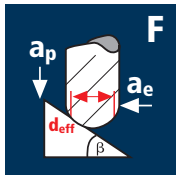
Example: **Order-N°.** Coating **X** Article-N°. **7424** ø-Code **.100**

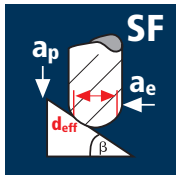
ø Code	d1 *	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL X7424 $
.100	1	6	0.95	66	1.5	6	0.5	9.5°	2	89.00
.140	2	6	1.90	66	3.0	12	1.0	6.1°	2	89.00
.180	3	6	2.80	66	4.0	18	1.5	3.9°	2	89.00
.220	4	6	3.70	69	5.0	24	2.0	2.2°	2	89.00
.260	5	6	4.60	75	6.0	30	2.5	1.0°	2	89.00
.300	6	6	5.50	80	7.0	43	3.0	0.0°	2	89.00
.391	8	8	7.40	90	9.0	53	4.0	0.0°	2	111.00
.450	10	10	9.20	105	11.0	64	5.0	0.0°	2	151.00
.501	12	12	11.00	120	13.0	74	6.0	0.0°	2	187.00

*** Tolerance of the cutting diameter**

d1	Tolerance
< 6	0/-0.010
≥ 6	0/-0.015

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1	2	300	0.030	0.05	0.05	0.94	60000	3600	45°
		2	2	300	0.035	0.07	0.07	1.84	51900	3635	45°
		3	2	300	0.040	0.10	0.10	2.74	34850	2790	45°
		4	2	300	0.070	0.12	0.12	3.62	26380	3695	45°
		5	2	300	0.080	0.15	0.15	4.53	21080	3375	45°
		6	2	300	0.085	0.15	0.15	5.36	17815	3030	45°
		8	2	300	0.095	0.17	0.17	7.05	13545	2575	45°
		10	2	300	0.100	0.20	0.20	8.77	10890	2180	45°
		12	2	300	0.105	0.25	0.25	10.56	9045	1900	45°
	Hardened tool steel 48 - 52 HRC	1	2	250	0.030	0.05	0.05	0.94	60000	3600	45°
		2	2	250	0.035	0.07	0.07	1.84	43250	3030	45°
		3	2	250	0.040	0.10	0.10	2.74	29045	2325	45°
		4	2	250	0.065	0.12	0.12	3.62	21985	2860	45°
		5	2	250	0.075	0.15	0.15	4.53	17565	2635	45°
		6	2	250	0.080	0.15	0.15	5.36	14845	2375	45°
		8	2	250	0.090	0.17	0.17	7.05	11290	2030	45°
		10	2	250	0.095	0.20	0.20	8.77	9075	1725	45°
		12	2	250	0.100	0.25	0.25	10.56	7535	1505	45°
	Hardened tool steel 52 - 56 HRC	1	2	200	0.025	0.05	0.05	0.94	60000	3000	45°
		2	2	200	0.030	0.07	0.07	1.84	34600	2075	45°
		3	2	200	0.035	0.10	0.10	2.74	23235	1625	45°
		4	2	200	0.065	0.12	0.12	3.62	17585	2285	45°
		5	2	200	0.070	0.15	0.15	4.53	14055	1970	45°
		6	2	200	0.075	0.15	0.15	5.36	11880	1780	45°
		8	2	200	0.085	0.17	0.17	7.05	9030	1535	45°
		10	2	200	0.090	0.20	0.20	8.77	7260	1305	45°
		12	2	200	0.095	0.25	0.25	10.56	6030	1145	45°
	Hardened tool steel 56 - 60 HRC	1	2	150	0.025	0.05	0.05	0.94	50795	2540	45°
		2	2	150	0.030	0.07	0.07	1.84	25950	1555	45°
		3	2	150	0.035	0.10	0.10	2.74	17425	1220	45°
		4	2	150	0.060	0.12	0.12	3.62	13190	1585	45°
		5	2	150	0.070	0.15	0.15	4.53	10540	1475	45°
		6	2	150	0.070	0.15	0.15	5.36	8910	1245	45°
		8	2	150	0.080	0.17	0.17	7.05	6775	1085	45°
		10	2	150	0.085	0.20	0.20	8.77	5445	925	45°
		12	2	150	0.090	0.25	0.25	10.56	4520	815	45°

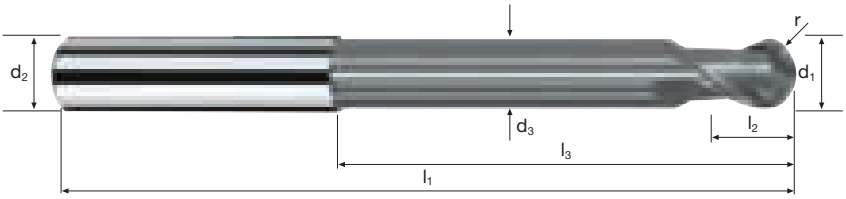
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1	2	400	0.025	0.02	0.02	0.88	60000	3000	45°
		2	2	400	0.030	0.02	0.02	1.67	60000	3600	45°
		3	2	400	0.035	0.03	0.03	2.50	50930	3565	45°
		4	2	400	0.050	0.03	0.03	3.27	38940	3895	45°
		5	2	400	0.055	0.03	0.03	4.04	31515	3465	45°
		6	2	400	0.060	0.03	0.03	4.80	26525	3185	45°
		8	2	400	0.065	0.03	0.03	6.31	20180	2625	45°
		10	2	400	0.070	0.04	0.04	7.91	16095	2255	45°
		12	2	400	0.075	0.04	0.04	9.41	13530	2030	45°
	Hardened tool steel 48 - 52 HRC	1	2	350	0.025	0.02	0.02	0.88	60000	3000	45°
		2	2	350	0.030	0.02	0.02	1.67	60000	3600	45°
		3	2	350	0.035	0.03	0.03	2.50	44565	3120	45°
		4	2	350	0.050	0.03	0.03	3.27	34070	3405	45°
		5	2	350	0.050	0.03	0.03	4.04	27575	2760	45°
		6	2	350	0.055	0.03	0.03	4.80	23210	2555	45°
		8	2	350	0.060	0.03	0.03	6.31	17655	2120	45°
		10	2	350	0.065	0.04	0.04	7.91	14085	1830	45°
		12	2	350	0.070	0.04	0.04	9.41	11840	1660	45°
	Hardened tool steel 52 - 56 HRC	1	2	280	0.025	0.02	0.02	0.88	60000	3000	45°
		2	2	280	0.025	0.02	0.02	1.67	53370	2670	45°
		3	2	280	0.030	0.03	0.03	2.50	35650	2140	45°
		4	2	280	0.045	0.03	0.03	3.27	27255	2455	45°
		5	2	280	0.050	0.03	0.03	4.04	22060	2205	45°
		6	2	280	0.055	0.03	0.03	4.80	18570	2045	45°
		8	2	280	0.060	0.03	0.03	6.31	14125	1695	45°
		10	2	280	0.065	0.04	0.04	7.91	11270	1465	45°
		12	2	280	0.070	0.04	0.04	9.41	9470	1325	45°
	Hardened tool steel 56 - 60 HRC	1	2	180	0.020	0.02	0.02	0.88	60000	2400	45°
		2	2	180	0.025	0.02	0.02	1.67	34310	1715	45°
		3	2	180	0.030	0.03	0.03	2.50	22920	1375	45°
		4	2	180	0.045	0.03	0.03	3.27	17520	1575	45°
		5	2	180	0.045	0.03	0.03	4.04	14185	1275	45°
		6	2	180	0.050	0.03	0.03	4.80	11935	1195	45°
		8	2	180	0.055	0.03	0.03	6.31	9080	1000	45°
		10	2	180	0.060	0.04	0.04	7.91	7245	870	45°
		12	2	180	0.065	0.04	0.04	9.41	6090	790	45°

Ball nose end mills Sphero-XF

Tolerance r ±0.005, 6xd

HSS | Favora® | Base-X | X-Generation **X**

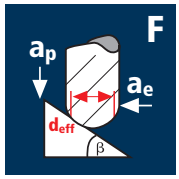
HM XA	λ 30° γ-10°
h5	
d1	r
	F

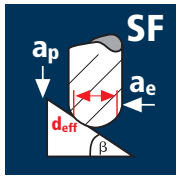


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Copper

Example: **Order-N°.** Coating **X** Article-N°. **7404** ø-Code **.100**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL X7404 $
.100	1	6	0.95	66	1.5	6	0.5	9.5°	2	89.00
.140	2	6	1.90	66	3.0	12	1.0	6.1°	2	89.00
.180	3	6	2.80	66	4.0	18	1.5	3.9°	2	89.00
.220	4	6	3.70	69	5.0	24	2.0	2.2°	2	89.00
.260	5	6	4.60	75	6.0	30	2.5	1.0°	2	89.00
.300	6	6	5.50	80	7.0	43	3.0	0.0°	2	89.00
.391	8	8	7.40	90	9.0	53	4.0	0.0°	2	111.00
.450	10	10	9.20	105	11.0	64	5.0	0.0°	2	151.00
.501	12	12	11.00	120	13.0	74	6.0	0.0°	2	187.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	6	8	300	0.055	0.12	0.12	5.26	18155	7990	45°
		8	10	300	0.060	0.14	0.14	6.94	13760	8255	45°
		10	12	300	0.065	0.16	0.16	8.62	11080	8640	45°
		12	16	300	0.070	0.18	0.18	10.29	9280	10395	45°
	Hardened tool steel 48 - 52 HRC	6	8	250	0.050	0.12	0.12	5.26	15130	6050	45°
		8	10	250	0.055	0.14	0.14	6.94	11465	6305	45°
		10	12	250	0.060	0.16	0.16	8.62	9230	6645	45°
		12	16	250	0.065	0.18	0.18	10.29	7735	8045	45°
	Hardened tool steel 52 - 56 HRC	6	8	200	0.050	0.12	0.12	5.26	12105	4840	45°
		8	10	200	0.055	0.14	0.14	6.94	9175	5045	45°
		10	12	200	0.060	0.16	0.16	8.62	7385	5315	45°
		12	16	200	0.065	0.18	0.18	10.29	6185	6430	45°
	Hardened tool steel 56 - 60 HRC	6	8	150	0.045	0.12	0.12	5.26	9080	3270	45°
		8	10	150	0.050	0.14	0.14	6.94	6880	3440	45°
		10	12	150	0.055	0.16	0.16	8.62	5540	3655	45°
		12	16	150	0.060	0.18	0.18	10.29	4640	4455	45°

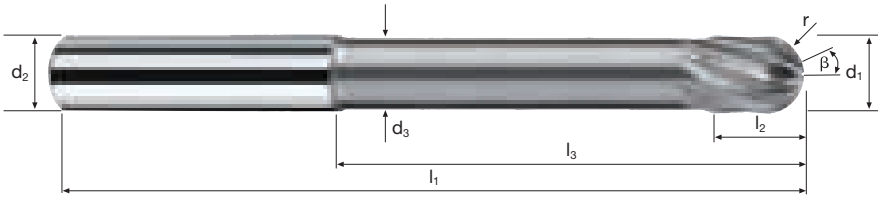
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	6	8	400	0.030	0.03	0.03	4.80	26525	6365	45°
		8	10	400	0.035	0.03	0.03	6.31	20180	7065	45°
		10	12	400	0.035	0.04	0.04	7.91	16095	6760	45°
		12	16	400	0.040	0.04	0.04	9.41	13530	8660	45°
	Hardened tool steel 48 - 52 HRC	6	8	350	0.030	0.03	0.03	4.80	23210	5570	45°
		8	10	350	0.035	0.03	0.03	6.31	17655	6180	45°
		10	12	350	0.035	0.04	0.04	7.91	14085	5915	45°
		12	16	350	0.040	0.04	0.04	9.41	11840	7580	45°
	Hardened tool steel 52 - 56 HRC	6	8	280	0.025	0.03	0.03	4.80	18570	3715	45°
		8	10	280	0.030	0.03	0.03	6.31	14125	4240	45°
		10	12	280	0.030	0.04	0.04	7.91	11270	4055	45°
		12	16	280	0.035	0.04	0.04	9.41	9470	5305	45°
	Hardened tool steel 56 - 60 HRC	6	8	180	0.025	0.03	0.03	4.80	11935	2385	45°
		8	10	180	0.030	0.03	0.03	6.31	9080	2725	45°
		10	12	180	0.030	0.04	0.04	7.91	7245	2610	45°
		12	16	180	0.035	0.04	0.04	9.41	6090	3410	45°

Ball nose end mills Sphero-XF Multi

Tolerance r ±0.005, 6xd

HSS | Favora® | Base-X | X-Generation X

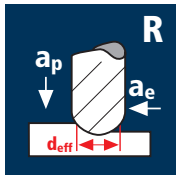
HM XA	λ 30° γ-10°
h5	
d1	r
	F

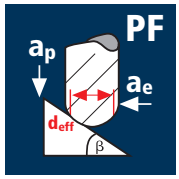


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	Copper

Example: **Order-N°.** Coating **X** Article-N°. **7464** ø-Code **.300**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	β	z	X-AL X7464 $
.300	6	6	5.5	80	7	43	3.0	25°	8	99.00
.391	8	8	7.4	90	9	53	4.0	25°	10	123.00
.450	10	10	9.2	105	11	64	5.0	25°	12	168.00
.501	12	12	11.0	120	13	74	6.0	25°	16	207.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Hardened tool steel 42 - 48 HRC	3	4	160	0.050	0.39	0.90	2.02	25215	5045	1.75
		4	4	160	0.060	0.52	1.20	2.69	18935	4545	2.85
		5	4	160	0.065	0.65	1.50	3.36	15160	3940	3.85
		6	4	160	0.070	1.02	1.80	4.51	11295	3165	5.80
		8	4	160	0.080	1.36	2.40	6.01	8475	2710	8.85
		10	4	160	0.095	1.70	3.00	7.51	6780	2575	13.15
		12	4	160	0.100	2.04	3.60	9.02	5645	2260	16.60
	Hardened tool steel 48 - 52 HRC	3	4	130	0.045	0.39	0.90	2.02	20485	3685	1.30
		4	4	130	0.055	0.52	1.20	2.69	15385	3385	2.10
		5	4	130	0.060	0.65	1.50	3.36	12315	2955	2.90
		6	4	130	0.065	0.78	1.80	4.04	10245	2665	3.75
		8	4	130	0.075	1.04	2.40	5.38	7690	2305	5.75
		10	4	130	0.085	1.70	3.00	7.51	5510	1875	9.55
		12	4	130	0.090	2.04	3.60	9.02	4590	1650	12.10
	Hardened tool steel 52 - 56 HRC	3	4	110	0.045	0.39	0.90	2.02	17335	3120	1.10
		4	4	110	0.050	0.52	1.20	2.69	13015	2605	1.65
		5	4	110	0.055	0.65	1.50	3.36	10420	2290	2.25
		6	4	110	0.060	0.78	1.80	4.04	8665	2080	2.90
		8	4	110	0.070	1.04	2.40	5.38	6510	1825	4.55
		10	4	110	0.080	1.70	3.00	7.51	4660	1490	7.60
		12	4	110	0.085	2.04	3.60	9.02	3880	1320	9.70
	Hardened tool steel 56 - 60 HRC	3	4	50	0.020	0.30	0.68	1.80	8840	705	0.15
		4	4	50	0.025	0.41	0.90	2.43	6550	655	0.25
		5	4	50	0.025	0.51	1.13	3.03	5255	525	0.30
		6	4	50	0.030	0.61	1.08	3.63	4385	525	0.35
		8	4	50	0.030	0.82	1.08	4.85	3280	395	0.35
		10	4	50	0.040	1.02	0.90	6.05	2630	420	0.40
		12	4	50	0.040	1.22	1.08	7.25	2195	350	0.45

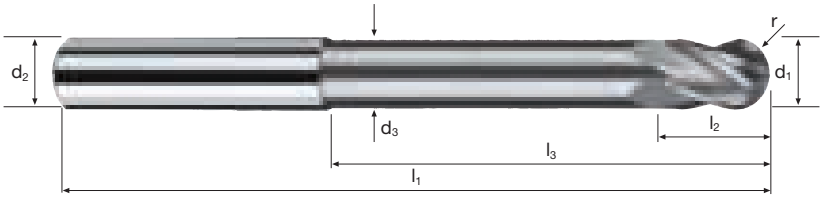
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	3	4	200	0.070	0.27	0.27	2.95	21580	6040	45°
		4	4	200	0.080	0.36	0.36	3.94	16160	5170	45°
		5	4	200	0.090	0.45	0.45	4.92	12940	4660	45°
		6	4	200	0.100	0.54	0.54	5.91	10770	4310	45°
		8	4	200	0.110	0.72	0.72	7.88	8080	3555	45°
		10	4	200	0.130	0.90	0.90	9.85	6465	3360	45°
		12	4	200	0.135	1.08	1.08	11.81	5390	2910	45°
	Hardened tool steel 48 - 52 HRC	3	4	160	0.065	0.15	0.15	2.83	17995	4680	45°
		4	4	160	0.075	0.20	0.20	3.78	13475	4045	45°
		5	4	160	0.085	0.25	0.25	4.72	10790	3670	45°
		6	4	160	0.090	0.30	0.30	5.67	8985	3235	45°
		8	4	160	0.100	0.40	0.40	7.56	6735	2695	45°
		10	4	160	0.120	0.50	0.50	9.45	5390	2585	45°
		12	4	160	0.125	0.60	0.60	11.34	4490	2245	45°
	Hardened tool steel 52 - 56 HRC	3	4	120	0.060	0.15	0.15	2.83	13500	3240	45°
		4	4	120	0.070	0.20	0.20	3.78	10105	2830	45°
		5	4	120	0.075	0.25	0.25	4.72	8095	2430	45°
		6	4	120	0.085	0.30	0.30	5.67	6735	2290	45°
		8	4	120	0.095	0.40	0.40	7.56	5055	1920	45°
		10	4	120	0.110	0.50	0.50	9.45	4040	1780	45°
		12	4	120	0.115	0.60	0.60	11.34	3370	1550	45°
	Hardened tool steel 56 - 60 HRC	3	4	90	0.055	0.12	0.12	2.78	10305	2265	45°
		4	4	90	0.060	0.16	0.16	3.71	7720	1855	45°
		5	4	90	0.070	0.20	0.20	4.64	6175	1730	45°
		6	4	90	0.075	0.24	0.24	5.57	5145	1545	45°
		8	4	90	0.085	0.32	0.32	7.42	3860	1310	45°
		10	4	90	0.100	0.40	0.40	9.28	3085	1235	45°
		12	4	90	0.100	0.48	0.48	11.13	2575	1030	45°

Ball nose end mills Sphero-XR4

Tolerance r ±0.01, 6xd

HSS | Favora® | Base-X | X-Generation X

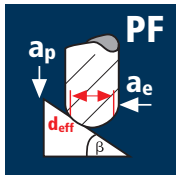
HM XT	λ 30° γ-10°
h5	
R	

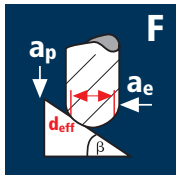


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			

Example: **Order-N°.** Coating **X** Article-N°. **7454** ø-Code **.180**

ø Code	d1 0/-0.02	d2 h5	d3	l1	l2	l3	r ±0.01	α	z	X-AL X7454 $
.180	3	6	2.8	66	4	18	1.5	3.9°	4	94.00
.220	4	6	3.7	69	5	24	2.0	2.2°	4	94.00
.260	5	6	4.6	75	6	30	2.5	1.0°	4	94.00
.300	6	6	5.5	80	7	43	3.0	0.0°	4	94.00
.391	8	8	7.4	90	9	53	4.0	0.0°	4	117.00
.450	10	10	9.2	105	11	64	5.0	0.0°	4	159.00
.501	12	12	11.0	120	13	74	6.0	0.0°	4	197.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² P P	4	2	220	0.090	0.40	0.40	3.96	17685	3185	45°
		5	2	220	0.100	0.50	0.50	4.95	14150	2830	45°
		6	2	220	0.110	0.60	0.60	5.94	11790	2595	45°
		8	2	220	0.125	0.80	0.80	7.92	8840	2210	45°
		10	2	220	0.145	1.00	1.00	9.90	7075	2050	45°
		12	2	220	0.150	1.20	1.20	11.88	5895	1770	45°
		16	2	220	0.180	1.60	1.60	15.84	4420	1590	45°
	Steel 1100 - 1300 N/mm² P	4	2	180	0.085	0.40	0.40	3.96	14470	2460	45°
		5	2	180	0.090	0.50	0.50	4.95	11575	2085	45°
		6	2	180	0.100	0.60	0.60	5.94	9645	1930	45°
		8	2	180	0.115	0.80	0.80	7.92	7235	1665	45°
		10	2	180	0.135	1.00	1.00	9.90	5790	1565	45°
		12	2	180	0.140	1.20	1.20	11.88	4825	1350	45°
		16	2	180	0.165	1.60	1.60	15.84	3615	1195	45°
	Steel 1300 - 1500 N/mm² P	4	2	160	0.075	0.40	0.40	3.96	12860	1930	45°
		5	2	160	0.085	0.50	0.50	4.95	10290	1750	45°
		6	2	160	0.095	0.60	0.60	5.94	8575	1630	45°
		8	2	160	0.105	0.80	0.80	7.92	6430	1350	45°
		10	2	160	0.125	1.00	1.00	9.90	5145	1285	45°
		12	2	160	0.130	1.20	1.20	11.88	4285	1115	45°
		16	2	160	0.155	1.60	1.60	15.84	3215	995	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	4	2	90	0.070	0.32	0.32	3.91	7325	1025	45°
		5	2	90	0.080	0.40	0.40	4.89	5860	940	45°
		6	2	90	0.090	0.48	0.48	5.87	4880	880	45°
		8	2	90	0.100	0.64	0.64	7.82	3665	735	45°
		10	2	90	0.115	0.80	0.80	9.78	2930	675	45°
		12	2	90	0.120	0.96	0.96	11.73	2440	585	45°
		16	2	90	0.145	1.28	1.28	15.64	1830	530	45°

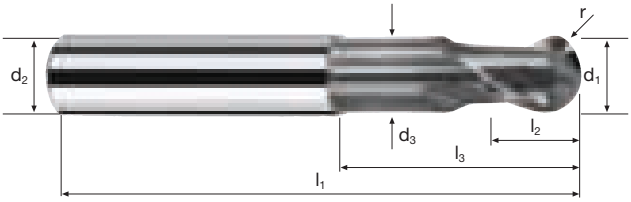
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² P P	4	2	320	0.055	0.12	0.12	3.62	28140	3095	45°
		5	2	320	0.060	0.13	0.13	4.48	22735	2730	45°
		6	2	320	0.065	0.15	0.15	5.36	19005	2470	45°
		8	2	320	0.075	0.17	0.17	7.05	14450	2170	45°
		10	2	320	0.080	0.20	0.20	8.77	11615	1860	45°
		12	2	320	0.085	0.25	0.25	10.56	9645	1640	45°
		16	2	320	0.100	0.28	0.28	13.88	7340	1470	45°
	Steel 1100 - 1300 N/mm² P	4	2	280	0.050	0.12	0.12	3.62	24620	2460	45°
		5	2	280	0.055	0.13	0.13	4.48	19895	2190	45°
		6	2	280	0.060	0.15	0.15	5.36	16630	1995	45°
		8	2	280	0.070	0.17	0.17	7.05	12640	1770	45°
		10	2	280	0.075	0.20	0.20	8.77	10165	1525	45°
		12	2	280	0.080	0.25	0.25	10.56	8440	1350	45°
		16	2	280	0.095	0.28	0.28	13.88	6420	1220	45°
	Steel 1300 - 1500 N/mm² P	4	2	250	0.050	0.12	0.12	3.62	21985	2200	45°
		5	2	250	0.055	0.13	0.13	4.48	17765	1955	45°
		6	2	250	0.060	0.15	0.15	5.36	14845	1780	45°
		8	2	250	0.070	0.17	0.17	7.05	11290	1580	45°
		10	2	250	0.070	0.20	0.20	8.77	9075	1270	45°
		12	2	250	0.075	0.25	0.25	10.56	7535	1130	45°
		16	2	250	0.090	0.28	0.28	13.88	5735	1030	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	4	2	110	0.045	0.10	0.10	3.57	9810	885	45°
		5	2	110	0.050	0.11	0.11	4.42	7920	790	45°
		6	2	110	0.055	0.13	0.13	5.29	6620	730	45°
		8	2	110	0.065	0.15	0.15	6.98	5015	650	45°
		10	2	110	0.070	0.18	0.18	8.70	4025	565	45°
		12	2	110	0.070	0.22	0.22	10.45	3350	470	45°
		16	2	110	0.085	0.25	0.25	13.77	2545	435	45°

Ball nose end mills

Tolerance r f8 (-/-), 3xd

HSS | Favora® | Base-X **B** | X-Generation

HM MG10	λ 30° γ 5°



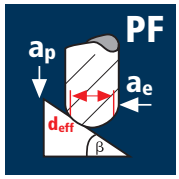
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G)

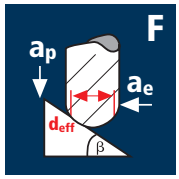
Example: **Order-N°.** Coating **P** Article-N°. **5220** ø-Code **.220**

ø Code	d1 -/-	d2 h6	d3	l1	l2	l3	r f8	α	z	POLYCHROM P5220 $
.220	4	6	3.7	57	5	12	2.0	4.0°	2	59.70
.260	5	6	4.6	57	6	15	2.5	2.0°	2	59.70
.300	6	6	5.5	57	7	20	3.0	0.0°	2	59.70
.391	8	8	7.4	63	9	26	4.0	0.0°	2	75.00
.450	10	10	9.2	72	11	31	5.0	0.0°	2	101.00
.501	12	12	11.0	83	13	37	6.0	0.0°	2	125.00
.610	16	16	15.0	92	17	43	8.0	0.0°	2	196.00

CNC Radius R

d1	r	Tolerance f8		Radius Minimum	Radius Maximum	R
4	2.0	-0.006	-0.020	**1.980**	**1.994**	**1.987**
5	2.5			**2.480**	**2.494**	**2.487**
6	3.0			**2.980**	**2.994**	**2.987**
8	4.0	-0.010	-0.028	**3.972**	**3.990**	**3.981**
10	5.0			**4.972**	**4.990**	**4.981**
12	6.0			**5.972**	**5.990**	**5.981**
16	8.0	-0.013	-0.035	**7.965**	**7.987**	**7.976**

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Stainless steel [Cr-Ni/1.4301] P	1	2	100	0.030	0.11	0.11	0.99	32155	1930	45°
		2	2	100	0.055	0.22	0.22	1.99	15995	1760	45°
		3	2	100	0.060	0.33	0.33	2.98	10680	1280	45°
		4	2	100	0.070	0.44	0.44	3.98	8000	1120	45°
		5	2	100	0.080	0.55	0.55	4.97	6405	1025	45°
		6	2	100	0.085	0.66	0.66	5.96	5340	910	45°
		8	2	100	0.100	0.88	0.88	7.95	4005	800	45°
		10	2	100	0.115	1.10	1.10	9.94	3200	735	45°
		12	2	100	0.120	1.32	1.32	11.93	2670	640	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	1	2	90	0.030	0.11	0.11	0.99	28940	1735	45°
		2	2	90	0.055	0.22	0.22	1.99	14395	1585	45°
		3	2	90	0.060	0.33	0.33	2.98	9615	1155	45°
		4	2	90	0.070	0.44	0.44	3.98	7200	1010	45°
		5	2	90	0.080	0.55	0.55	4.97	5765	920	45°
		6	2	90	0.085	0.66	0.66	5.96	4805	815	45°
		8	2	90	0.100	0.88	0.88	7.95	3605	720	45°
		10	2	90	0.115	1.10	1.10	9.94	2880	660	45°
		12	2	90	0.120	1.32	1.32	11.93	2400	575	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	1	2	60	0.025	0.11	0.11	0.99	19290	965	45°
		2	2	60	0.045	0.22	0.22	1.99	9600	865	45°
		3	2	60	0.050	0.33	0.33	2.98	6410	640	45°
		4	2	60	0.060	0.44	0.44	3.98	4800	575	45°
		5	2	60	0.070	0.55	0.55	4.97	3845	540	45°
		6	2	60	0.070	0.66	0.66	5.96	3205	450	45°
		8	2	60	0.085	0.88	0.88	7.95	2400	410	45°
		10	2	60	0.100	1.10	1.10	9.94	1920	385	45°
		12	2	60	0.100	1.32	1.32	11.93	1600	320	45°
	Steel < 850 N/mm² P P	1	2	220	0.040	0.12	0.12	1.00	60000	4800	45°
		2	2	220	0.070	0.24	0.24	1.99	35190	4925	45°
		3	2	220	0.075	0.36	0.36	2.99	23420	3515	45°
		4	2	220	0.090	0.48	0.48	3.99	17550	3160	45°
		5	2	220	0.100	0.60	0.60	4.98	14060	2810	45°
		6	2	220	0.105	0.72	0.72	5.98	11710	2460	45°
		8	2	220	0.125	0.96	0.96	7.98	8775	2195	45°
		10	2	220	0.145	1.20	1.20	9.97	7025	2035	45°
		12	2	220	0.150	1.44	1.44	11.96	5855	1755	45°

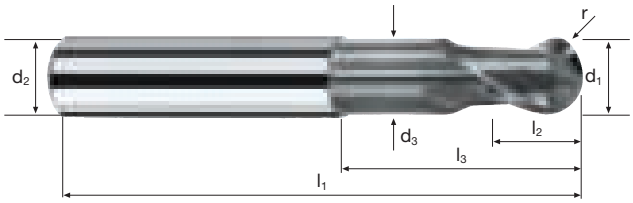
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Stainless steel [Cr-Ni/1.4301] P	1	2	140	0.025	0.05	0.05	0.94	47410	2370	45°
		2	2	140	0.030	0.07	0.07	1.84	24220	1455	45°
		3	2	140	0.035	0.09	0.09	2.72	16385	1145	45°
		4	2	140	0.055	0.11	0.11	3.60	12380	1360	45°
		5	2	140	0.060	0.13	0.13	4.48	9945	1195	45°
		6	2	140	0.065	0.15	0.15	5.36	8315	1080	45°
		8	2	140	0.075	0.17	0.17	7.05	6320	950	45°
		10	2	140	0.080	0.20	0.20	8.77	5080	815	45°
		12	2	140	0.085	0.25	0.25	10.56	4220	715	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	1	2	125	0.025	0.05	0.05	0.94	42330	2115	45°
		2	2	125	0.030	0.07	0.07	1.84	21625	1300	45°
		3	2	125	0.035	0.09	0.09	2.72	14630	1025	45°
		4	2	125	0.055	0.11	0.11	3.60	11055	1215	45°
		5	2	125	0.060	0.13	0.13	4.48	8880	1065	45°
		6	2	125	0.065	0.15	0.15	5.36	7425	965	45°
		8	2	125	0.075	0.17	0.17	7.05	5645	845	45°
		10	2	125	0.080	0.20	0.20	8.77	4535	725	45°
		12	2	125	0.085	0.25	0.25	10.56	3770	640	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	1	2	70	0.025	0.05	0.05	0.94	23705	1185	45°
		2	2	70	0.025	0.07	0.07	1.84	12110	605	45°
		3	2	70	0.030	0.09	0.09	2.72	8190	490	45°
		4	2	70	0.050	0.11	0.11	3.60	6190	620	45°
		5	2	70	0.055	0.13	0.13	4.48	4975	545	45°
		6	2	70	0.060	0.15	0.15	5.36	4155	500	45°
		8	2	70	0.070	0.17	0.17	7.05	3160	440	45°
		10	2	70	0.070	0.20	0.20	8.77	2540	355	45°
		12	2	70	0.075	0.25	0.25	10.56	2110	315	45°
	Steel < 850 N/mm² P P	1	2	320	0.030	0.05	0.05	0.94	60000	3600	45°
		2	2	320	0.035	0.07	0.07	1.84	55360	3875	45°
		3	2	320	0.040	0.09	0.09	2.72	37450	2995	45°
		4	2	320	0.065	0.11	0.11	3.60	28295	3680	45°
		5	2	320	0.070	0.13	0.13	4.48	22735	3185	45°
		6	2	320	0.080	0.15	0.15	5.36	19005	3040	45°
		8	2	320	0.090	0.17	0.17	7.05	14450	2600	45°
		10	2	320	0.095	0.20	0.20	8.77	11615	2205	45°
		12	2	320	0.100	0.25	0.25	10.56	9645	1930	45°

Ball nose end mills Sphero-SB

Tolerance r f8 (-/-), 3xd

HSS | Favora® | Base-X | **B** | X-Generation

HM MG10	λ 30° γ 0°



Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	Tool Steel

Example: **Order-N°.** Coating **P** Article-N°. **7540** ø-Code **.100**

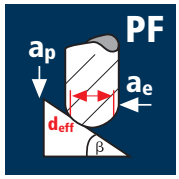
ø Code	d1 -/-	d2 h6	d3	l1	l2	l3	r f8	α	z	POLYCHROM P7540 $
.100	1	6	0.95	57	1.5	3	0.5	11.8°	2	61.00
.140	2	6	1.90	57	3.0	6	1.0	9.0°	2	61.00
.180	3	6	2.80	57	4.0	9	1.5	6.4°	2	61.00
.220	4	6	3.70	57	5.0	12	2.0	4.0°	2	61.00
.260	5	6	4.60	57	6.0	15	2.5	2.0°	2	61.00
.300	6	6	5.50	57	7.0	20	3.0	0.0°	2	61.00
.391	8	8	7.40	63	9.0	26	4.0	0.0°	2	77.00
.450	10	10	9.20	72	11.0	31	5.0	0.0°	2	104.00
.501	12	12	11.00	83	13.0	37	6.0	0.0°	2	129.00

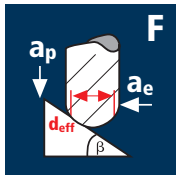
CNC Radius R

d1	r	Radius f8 Minimum	Radius f8 Maximum	R
1	0.5	**0.480**	**0.494**	**0.487**
2	1.0	**0.980**	**0.994**	**0.987**
3	1.5	**1.480**	**1.494**	**1.487**
4	2.0	**1.980**	**1.994**	**1.987**
5	2.5	**2.480**	**2.494**	**2.487**
6	3.0	**2.980**	**2.994**	**2.987**

CNC Radius R

d1	r	Radius f8 Minimum	Radius f8 Maximum	R
8	4.0	**3.972**	**3.990**	**3.981**
10	5.0	**4.972**	**4.990**	**4.981**
12	6.0	**5.972**	**5.990**	**5.981**

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Wrought aluminium alloys Si < 6% C	2	2	650	0.065	0.30	0.30	2.00	60000	7800	45°
		3	2	650	0.075	0.45	0.45	3.00	60000	9000	45°
		4	2	650	0.090	0.60	0.60	4.00	51725	9310	45°
		5	2	650	0.090	0.75	0.75	5.00	41380	7450	45°
		6	2	650	0.090	0.90	0.90	6.00	34485	6205	45°
		8	2	650	0.115	1.20	1.20	8.00	25865	5950	45°
		10	2	650	0.125	1.50	1.50	10.00	20690	5175	45°
		12	2	650	0.135	1.80	1.80	12.00	17240	4655	45°
		16	2	650	0.160	2.40	2.40	16.00	12930	4140	45°
	Unalloyed copper C	2	2	500	0.060	0.30	0.30	2.00	60000	7200	45°
		3	2	500	0.070	0.45	0.45	3.00	53055	7430	45°
		4	2	500	0.080	0.60	0.60	4.00	39790	6365	45°
		5	2	500	0.080	0.75	0.75	5.00	31830	5095	45°
		6	2	500	0.080	0.90	0.90	6.00	26525	4245	45°
		8	2	500	0.105	1.20	1.20	8.00	19895	4180	45°
		10	2	500	0.115	1.50	1.50	10.00	15915	3660	45°
		12	2	500	0.120	1.80	1.80	12.00	13265	3185	45°
		16	2	500	0.145	2.40	2.40	16.00	9945	2885	45°
	Thermoplastics	2	2	1000	0.065	0.30	0.30	2.00	60000	7800	45°
		3	2	1000	0.075	0.45	0.45	3.00	60000	9000	45°
		4	2	1000	0.090	0.60	0.60	4.00	60000	10800	45°
		5	2	1000	0.090	0.75	0.75	5.00	60000	10800	45°
		6	2	1000	0.090	0.90	0.90	6.00	53055	9550	45°
		8	2	1000	0.115	1.20	1.20	8.00	39790	9150	45°
		10	2	1000	0.125	1.50	1.50	10.00	31830	7960	45°
		12	2	1000	0.135	1.80	1.80	12.00	26525	7160	45°
		16	2	1000	0.160	2.40	2.40	16.00	19895	6365	45°
	Cast aluminium Si 6%-15% C	2	2	450	0.045	0.30	0.30	2.00	60000	5400	45°
		3	2	450	0.055	0.45	0.45	3.00	47750	5255	45°
		4	2	450	0.065	0.60	0.60	4.00	35810	4655	45°
		5	2	450	0.065	0.75	0.75	5.00	28650	3725	45°
		6	2	450	0.065	0.90	0.90	6.00	23875	3105	45°
		8	2	450	0.080	1.20	1.20	8.00	17905	2865	45°
		10	2	450	0.090	1.50	1.50	10.00	14325	2580	45°
		12	2	450	0.095	1.80	1.80	12.00	11935	2270	45°
		16	2	450	0.110	2.40	2.40	16.00	8955	1970	45°

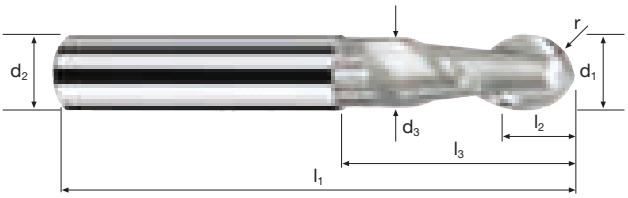
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Wrought aluminium alloys Si < 6% C	2	2	900	0.035	0.12	0.12	1.92	60000	4200	45°
		3	2	900	0.040	0.15	0.15	2.83	60000	4800	45°
		4	2	900	0.055	0.17	0.17	3.73	60000	6600	45°
		5	2	900	0.055	0.20	0.20	4.64	60000	6600	45°
		6	2	900	0.055	0.22	0.22	5.53	51805	5700	45°
		8	2	900	0.065	0.24	0.24	7.25	39515	5135	45°
		10	2	900	0.070	0.27	0.27	8.98	31905	4465	45°
		12	2	900	0.075	0.30	0.30	10.71	26750	4015	45°
		16	2	900	0.090	0.34	0.34	14.10	20320	3660	45°
	Unalloyed copper C	2	2	650	0.030	0.12	0.12	1.92	60000	3600	45°
		3	2	650	0.035	0.15	0.15	2.83	60000	4200	45°
		4	2	650	0.050	0.17	0.17	3.73	55470	5545	45°
		5	2	650	0.050	0.20	0.20	4.64	44590	4460	45°
		6	2	650	0.050	0.22	0.22	5.53	37415	3740	45°
		8	2	650	0.060	0.24	0.24	7.25	28540	3425	45°
		10	2	650	0.065	0.27	0.27	8.98	23040	2995	45°
		12	2	650	0.070	0.30	0.30	10.71	19320	2705	45°
		16	2	650	0.080	0.34	0.34	14.10	14675	2350	45°
	Thermoplastics	2	2	1200	0.035	0.12	0.12	1.92	60000	4200	45°
		3	2	1200	0.040	0.15	0.15	2.83	60000	4800	45°
		4	2	1200	0.055	0.17	0.17	3.73	60000	6600	45°
		5	2	1200	0.055	0.20	0.20	4.64	60000	6600	45°
		6	2	1200	0.055	0.22	0.22	5.53	60000	6600	45°
		8	2	1200	0.065	0.24	0.24	7.25	52685	6850	45°
		10	2	1200	0.070	0.27	0.27	8.98	42535	5955	45°
		12	2	1200	0.075	0.30	0.30	10.71	35665	5350	45°
		16	2	1200	0.090	0.34	0.34	14.10	27090	4875	45°
	Cast aluminium Si 6%-15% C	2	2	550	0.025	0.12	0.12	1.92	60000	3000	45°
		3	2	550	0.030	0.15	0.15	2.83	60000	3600	45°
		4	2	550	0.040	0.17	0.17	3.73	46935	3755	45°
		5	2	550	0.040	0.20	0.20	4.64	37730	3020	45°
		6	2	550	0.040	0.22	0.22	5.53	31660	2535	45°
		8	2	550	0.045	0.24	0.24	7.25	24150	2175	45°
		10	2	550	0.050	0.27	0.27	8.98	19495	1950	45°
		12	2	550	0.055	0.30	0.30	10.71	16345	1800	45°
		16	2	550	0.065	0.34	0.34	14.10	12415	1615	45°

Ball nose end mills Sphericut-Alu

Tolerance r f8 (-/-), 3xd

HSS | Favora® | Base-X | **B** | X-Generation

HM MG10	λ 40° γ 20°



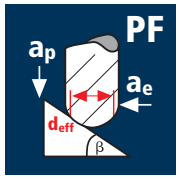
Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

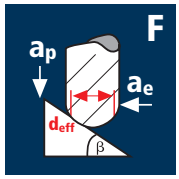
Example: **Order-N°.** Coating **C** Article-N°. **5290** ø-Code **.140**

ø Code	d1 -/-	d2 h6	d3	l1	l2	l3	r f8	α	z	5290 $	CELERO C5290 $
.140	2	6	1.9	57	4	6	1.0	9.0°	2	56.30	61.00
.180	3	6	2.8	57	6	9	1.5	6.4°	2	56.30	61.00
.220	4	6	3.7	57	8	12	2.0	4.0°	2	56.30	61.00
.260	5	6	4.6	57	10	15	2.5	1.9°	2	56.30	61.00
.300	6	6	5.5	57	12	20	3.0	0.0°	2	56.30	61.00
.391	8	8	7.4	63	16	26	4.0	0.0°	2	70.00	77.00
.450	10	10	9.2	72	20	31	5.0	0.0°	2	96.00	104.00
.501	12	12	11.0	83	24	37	6.0	0.0°	2	118.00	129.00
.610	16	16	15.0	92	32	43	8.0	0.0°	2	185.00	201.00
.682	20	20	19.0	104	40	53	10.0	0.0°	2	270.00	294.00

CNC Radius R

d1	r	Tolerance f8		Radius Minimum	Radius Maximum	R
2	1.0	-0.006	-0.020	**0.980**	**0.994**	**0.987**
3	1.5			**1.480**	**1.494**	**1.487**
4	2.0			**1.980**	**1.994**	**1.987**
5	2.5			**2.480**	**2.494**	**2.487**
6	3.0			**2.980**	**2.994**	**2.987**
8	4.0	-0.010	-0.028	**3.972**	**3.990**	**3.981**
10	5.0			**4.972**	**4.990**	**4.981**
12	6.0			**5.972**	**5.990**	**5.981**
16	8.0	-0.013	-0.035	**7.965**	**7.987**	**7.976**
20	10.0			**9.965**	**9.987**	**9.976**

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² U U	3	2	200	0.070	0.24	0.24	2.93	21730	3040	45°
		4	2	200	0.080	0.32	0.32	3.91	16280	2605	45°
		5	2	200	0.090	0.40	0.40	4.89	13020	2345	45°
		6	2	200	0.100	0.48	0.48	5.87	10845	2170	45°
		8	2	200	0.110	0.64	0.64	7.82	8140	1790	45°
		10	2	200	0.130	0.80	0.80	9.78	6510	1695	45°
		12	2	200	0.135	0.96	0.96	11.73	5425	1465	45°
	Steel 1100 - 1300 N/mm² U U	3	2	160	0.065	0.24	0.24	2.93	17385	2260	45°
		4	2	160	0.075	0.32	0.32	3.91	13025	1955	45°
		5	2	160	0.085	0.40	0.40	4.89	10415	1770	45°
		6	2	160	0.090	0.48	0.48	5.87	8675	1560	45°
		8	2	160	0.100	0.64	0.64	7.82	6515	1305	45°
		10	2	160	0.120	0.80	0.80	9.78	5210	1250	45°
		12	2	160	0.125	0.96	0.96	11.73	4340	1085	45°
	Steel 1300 - 1500 N/mm² U U	3	2	140	0.060	0.24	0.24	2.93	15210	1825	45°
		4	2	140	0.070	0.32	0.32	3.91	11400	1595	45°
		5	2	140	0.075	0.40	0.40	4.89	9115	1365	45°
		6	2	140	0.085	0.48	0.48	5.87	7590	1290	45°
		8	2	140	0.095	0.64	0.64	7.82	5700	1085	45°
		10	2	140	0.110	0.80	0.80	9.78	4555	1000	45°
		12	2	140	0.115	0.96	0.96	11.73	3800	875	45°
	Steel 1500 - 1800 N/mm² U	3	2	80	0.055	0.19	0.19	2.89	8810	970	45°
		4	2	80	0.065	0.26	0.26	3.86	6595	855	45°
		5	2	80	0.070	0.32	0.32	4.81	5295	740	45°
		6	2	80	0.080	0.38	0.38	5.77	4415	705	45°
		8	2	80	0.090	0.51	0.51	7.70	3305	595	45°
		10	2	80	0.105	0.64	0.64	9.63	2645	555	45°
		12	2	80	0.110	0.77	0.77	11.55	2205	485	45°

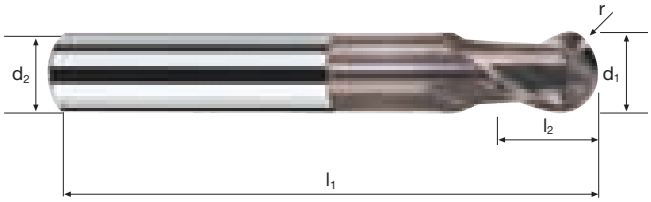
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² U U	3	2	300	0.025	0.10	0.10	2.74	34850	1745	45°
		4	2	300	0.050	0.12	0.12	3.62	26380	2640	45°
		5	2	300	0.055	0.13	0.13	4.48	21315	2345	45°
		6	2	300	0.060	0.15	0.15	5.36	17815	2140	45°
		8	2	300	0.065	0.17	0.17	7.05	13545	1760	45°
		10	2	300	0.070	0.20	0.20	8.77	10890	1525	45°
		12	2	300	0.075	0.25	0.25	10.56	9045	1355	45°
	Steel 1100 - 1300 N/mm² U U	3	2	260	0.025	0.10	0.10	2.74	30205	1510	45°
		4	2	260	0.050	0.12	0.12	3.62	22865	2285	45°
		5	2	260	0.050	0.13	0.13	4.48	18475	1850	45°
		6	2	260	0.055	0.15	0.15	5.36	15440	1700	45°
		8	2	260	0.060	0.17	0.17	7.05	11740	1410	45°
		10	2	260	0.065	0.20	0.20	8.77	9435	1225	45°
		12	2	260	0.070	0.25	0.25	10.56	7835	1095	45°
	Steel 1300 - 1500 N/mm² U U	3	2	200	0.025	0.10	0.10	2.74	23235	1160	45°
		4	2	200	0.045	0.12	0.12	3.62	17585	1585	45°
		5	2	200	0.050	0.13	0.13	4.48	14210	1420	45°
		6	2	200	0.055	0.15	0.15	5.36	11880	1305	45°
		8	2	200	0.060	0.17	0.17	7.05	9030	1085	45°
		10	2	200	0.065	0.20	0.20	8.77	7260	945	45°
		12	2	200	0.070	0.25	0.25	10.56	6030	845	45°
	Steel 1500 - 1800 N/mm² U	3	2	100	0.020	0.08	0.08	2.69	11835	475	45°
		4	2	100	0.045	0.10	0.10	3.57	8915	800	45°
		5	2	100	0.045	0.11	0.11	4.42	7200	650	45°
		6	2	100	0.050	0.13	0.13	5.29	6015	600	45°
		8	2	100	0.055	0.15	0.15	6.98	4560	500	45°
		10	2	100	0.060	0.18	0.18	8.70	3660	440	45°
		12	2	100	0.065	0.22	0.22	10.45	3045	395	45°

Ball nose end mills

Tolerance r f8 (-/-), 3xd

HSS | Favora® F | Base-X | X-Generation

HM	λ 30° γ-10°



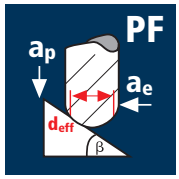
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500						GG(G)

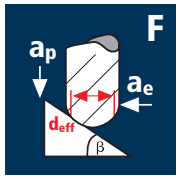
Example: **Order-N°.** Coating **U** Article-N°. **45298** ø-Code **.180**

ø Code	d1 e8	d2 h6	l1	l2	r f8	α	z	UNICUT-4X U45298 $
.180	3	6	57	4	1.5	10.4°	2	28.20
.220	4	6	57	5	2.0	8.3°	2	28.20
.260	5	6	57	6	2.5	5.3°	2	28.20
.300	6	6	57	7	3.0	0.0°	2	28.20
.391	8	8	63	9	4.0	0.0°	2	35.20
.450	10	10	72	11	5.0	0.0°	2	47.90
.501	12	12	83	12	6.0	0.0°	2	59.20

CNC Radius R

d1	r	Tolerance f8		Radius Minimum	Radius Maximum	R
3	1.5	-0.006	-0.020	**1.480**	**1.494**	**1.487**
4	2.0			**1.980**	**1.994**	**1.987**
5	2.5			**2.480**	**2.494**	**2.487**
6	3.0			**2.980**	**2.994**	**2.987**
8	4.0	-0.010	-0.028	**3.972**	**3.990**	**3.981**
10	5.0			**4.972**	**4.990**	**4.981**
12	6.0			**5.972**	**5.990**	**5.981**

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 1100 - 1300 N/mm² P P	1	2	180	0.035	0.08	0.08	0.98	58465	4095	45°
		2	2	180	0.060	0.16	0.16	1.96	29235	3510	45°
		3	2	180	0.070	0.24	0.24	2.93	19555	2740	45°
		4	2	180	0.080	0.32	0.32	3.91	14655	2345	45°
		6	2	180	0.100	0.48	0.48	5.87	9760	1950	45°
		8	2	180	0.110	0.64	0.64	7.82	7325	1610	45°
		10	2	180	0.130	0.80	0.80	9.78	5860	1525	45°
		12	2	180	0.135	0.96	0.96	11.73	4885	1320	45°
		16	2	180	0.160	1.28	1.28	15.64	3665	1175	45°
	Hardened tool steel 42 - 48 HRC P	1	2	160	0.030	0.08	0.08	0.98	51970	3120	45°
		2	2	160	0.055	0.16	0.16	1.96	25985	2860	45°
		3	2	160	0.065	0.24	0.24	2.93	17385	2260	45°
		4	2	160	0.075	0.32	0.32	3.91	13025	1955	45°
		6	2	160	0.090	0.48	0.48	5.87	8675	1560	45°
		8	2	160	0.100	0.64	0.64	7.82	6515	1305	45°
		10	2	160	0.120	0.80	0.80	9.78	5210	1250	45°
		12	2	160	0.125	0.96	0.96	11.73	4340	1085	45°
		16	2	160	0.145	1.28	1.28	15.64	3255	945	45°
	Hardened tool steel 48 - 52 HRC P	1	2	140	0.030	0.08	0.08	0.98	45475	2730	45°
		2	2	140	0.050	0.12	0.12	1.92	23210	2320	45°
		3	2	140	0.060	0.16	0.16	2.85	15635	1875	45°
		4	2	140	0.070	0.20	0.20	3.78	11790	1650	45°
		6	2	140	0.085	0.30	0.30	5.67	7860	1335	45°
		8	2	140	0.095	0.40	0.40	7.56	5895	1120	45°
		10	2	140	0.110	0.50	0.50	9.45	4715	1035	45°
		12	2	140	0.115	0.60	0.60	11.34	3930	905	45°
		16	2	140	0.135	0.80	0.80	15.11	2950	795	45°
	Hardened tool steel 52 - 56 HRC P	1	2	100	0.030	0.08	0.08	0.98	32480	1950	45°
		2	2	100	0.050	0.12	0.12	1.92	16580	1660	45°
		3	2	100	0.055	0.16	0.16	2.85	11170	1230	45°
		4	2	100	0.065	0.20	0.20	3.78	8420	1095	45°
		6	2	100	0.080	0.30	0.30	5.67	5615	900	45°
		8	2	100	0.090	0.40	0.40	7.56	4210	760	45°
		10	2	100	0.105	0.50	0.50	9.45	3370	710	45°
		12	2	100	0.110	0.60	0.60	11.34	2805	615	45°
		16	2	100	0.130	0.80	0.80	15.11	2105	545	45°

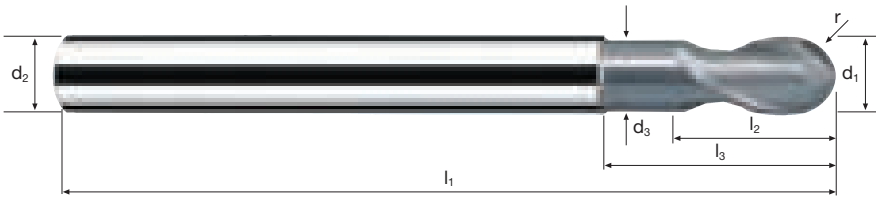
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 1100 - 1300 N/mm² P P	1	2	280	0.025	0.04	0.04	0.93	60000	3000	45°
		2	2	280	0.030	0.06	0.06	1.81	49245	2955	45°
		3	2	280	0.030	0.09	0.09	2.72	32770	1965	45°
		4	2	280	0.050	0.11	0.11	3.60	24760	2475	45°
		6	2	280	0.060	0.13	0.13	5.29	16850	2020	45°
		8	2	280	0.065	0.15	0.15	6.98	12770	1660	45°
		10	2	280	0.070	0.18	0.18	8.70	10245	1435	45°
		12	2	280	0.075	0.22	0.22	10.45	8530	1280	45°
		16	2	280	0.090	0.25	0.25	13.77	6475	1165	45°
	Hardened tool steel 42 - 48 HRC P	1	2	250	0.025	0.04	0.04	0.93	60000	3000	45°
		2	2	250	0.030	0.06	0.06	1.81	43965	2640	45°
		3	2	250	0.030	0.09	0.09	2.72	29255	1755	45°
		4	2	250	0.050	0.11	0.11	3.60	22105	2210	45°
		6	2	250	0.055	0.13	0.13	5.29	15045	1655	45°
		8	2	250	0.060	0.15	0.15	6.98	11400	1370	45°
		10	2	250	0.065	0.18	0.18	8.70	9145	1190	45°
		12	2	250	0.070	0.22	0.22	10.45	7615	1065	45°
		16	2	250	0.085	0.25	0.25	13.77	5780	985	45°
	Hardened tool steel 48 - 52 HRC P	1	2	200	0.025	0.04	0.04	0.93	60000	3000	45°
		2	2	200	0.025	0.06	0.06	1.81	35175	1760	45°
		3	2	200	0.025	0.09	0.09	2.72	23405	1170	45°
		4	2	200	0.045	0.11	0.11	3.60	17685	1590	45°
		6	2	200	0.055	0.13	0.13	5.29	12035	1325	45°
		8	2	200	0.060	0.15	0.15	6.98	9120	1095	45°
		10	2	200	0.065	0.18	0.18	8.70	7320	950	45°
		12	2	200	0.070	0.22	0.22	10.45	6090	855	45°
		16	2	200	0.080	0.25	0.25	13.77	4625	740	45°
	Hardened tool steel 52 - 56 HRC P	1	2	150	0.020	0.04	0.04	0.93	51340	2055	45°
		2	2	150	0.025	0.06	0.06	1.81	26380	1320	45°
		3	2	150	0.025	0.09	0.09	2.72	17555	880	45°
		4	2	150	0.045	0.11	0.11	3.60	13265	1195	45°
		6	2	150	0.050	0.13	0.13	5.29	9025	905	45°
		8	2	150	0.055	0.15	0.15	6.98	6840	750	45°
		10	2	150	0.060	0.18	0.18	8.70	5490	660	45°
		12	2	150	0.065	0.22	0.22	10.45	4570	595	45°
		16	2	150	0.075	0.25	0.25	13.77	3470	520	45°

Ball nose end mills Sphericut

Tolerance r f8 (-/-), 3xd

HSS | Favora® | Base-X | B | X-Generation

HM Plus	λ 30° γ-10°



Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5288** ø-Code **.100**

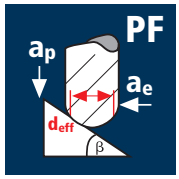
ø Code	d1 -/-	d2 h6	d3	l1	l2	l3	r f8	α	z	POLYCHROM P5288 $
.100	1	3	-	60	1.0	-	0.5	13.2°	2	75.00
.138	2	3	-	60	2.5	-	1.0	8.3°	2	75.00
.140	2	6	1.9	75	3.0	6	1.0	9.0°	2	75.00
.178	3	3	-	60	4.0	-	1.5	0.0°	2	75.00
.180	3	6	2.8	75	4.0	9	1.5	6.4°	2	75.00
.220	4	6	3.7	75	5.0	12	2.0	4.0°	2	75.00
.260	5	6	4.6	80	6.0	15	2.5	2.0°	2	75.00
.300	6	6	5.5	80	7.0	20	3.0	0.0°	2	75.00
.391	8	8	7.4	90	9.0	26	4.0	0.0°	2	93.00
.450	10	10	9.2	100	11.0	31	5.0	0.0°	2	127.00
.501	12	12	11.0	120	13.0	37	6.0	0.0°	2	157.00
.610	16	16	15.0	140	17.0	43	8.0	0.0°	2	245.00

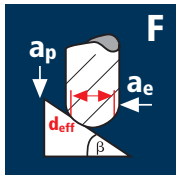
CNC Radius R

d1	r	Radius f8 Minimum	Radius f8 Maximum	R
1	0.5	**0.480**	**0.494**	**0.487**
2	1.0	**0.980**	**0.994**	**0.987**
3	1.5	**1.480**	**1.494**	**1.487**
4	2.0	**1.980**	**1.994**	**1.987**
5	2.5	**2.480**	**2.494**	**2.487**
6	3.0	**2.980**	**2.994**	**2.987**

CNC Radius R

d1	r	Radius f8 Minimum	Radius f8 Maximum	R
8	4.0	**3.972**	**3.990**	**3.981**
10	5.0	**4.972**	**4.990**	**4.981**
12	6.0	**5.972**	**5.990**	**5.981**
16	8.0	**7.965**	**7.987**	**7.976**

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² P P	4	2	220	0.080	0.32	0.32	3.91	17910	2865	45°
		5	2	220	0.090	0.40	0.40	4.89	14320	2580	45°
		6	2	220	0.100	0.48	0.48	5.87	11930	2385	45°
		8	2	220	0.110	0.64	0.64	7.82	8955	1970	45°
		10	2	220	0.130	0.80	0.80	9.78	7160	1860	45°
		12	2	220	0.135	0.96	0.96	11.73	5970	1610	45°
	Steel 1100 - 1300 N/mm² P	4	2	180	0.075	0.32	0.32	3.91	14655	2200	45°
		5	2	180	0.085	0.40	0.40	4.89	11715	1990	45°
		6	2	180	0.090	0.48	0.48	5.87	9760	1755	45°
		8	2	180	0.100	0.64	0.64	7.82	7325	1465	45°
		10	2	180	0.120	0.80	0.80	9.78	5860	1405	45°
		12	2	180	0.125	0.96	0.96	11.73	4885	1220	45°
	Steel 1300 - 1500 N/mm² P	4	2	160	0.070	0.32	0.32	3.91	13025	1825	45°
		5	2	160	0.075	0.40	0.40	4.89	10415	1560	45°
		6	2	160	0.085	0.48	0.48	5.87	8675	1475	45°
		8	2	160	0.095	0.64	0.64	7.82	6515	1240	45°
		10	2	160	0.110	0.80	0.80	9.78	5210	1145	45°
		12	2	160	0.115	0.96	0.96	11.73	4340	1000	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	4	2	90	0.065	0.26	0.26	3.86	7420	965	45°
		5	2	90	0.070	0.32	0.32	4.81	5955	835	45°
		6	2	90	0.080	0.38	0.38	5.77	4965	795	45°
		8	2	90	0.090	0.51	0.51	7.70	3720	670	45°
		10	2	90	0.105	0.64	0.64	9.63	2975	625	45°
		12	2	90	0.110	0.77	0.77	11.55	2480	545	45°

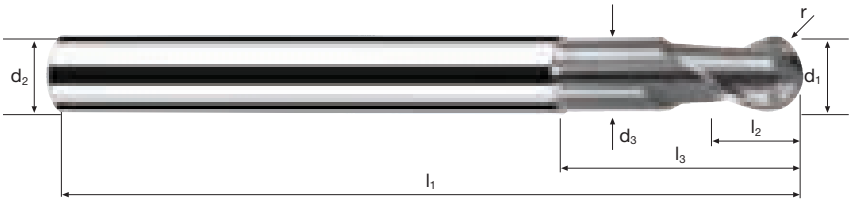
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² P P	4	2	320	0.050	0.10	0.10	3.57	28535	2855	45°
		5	2	320	0.055	0.11	0.11	4.42	23045	2535	45°
		6	2	320	0.060	0.13	0.13	5.29	19255	2310	45°
		8	2	320	0.065	0.15	0.15	6.98	14595	1895	45°
		10	2	320	0.070	0.18	0.18	8.70	11710	1640	45°
		12	2	320	0.075	0.22	0.22	10.45	9750	1465	45°
	Steel 1100 - 1300 N/mm² P	4	2	280	0.050	0.10	0.10	3.57	24965	2495	45°
		5	2	280	0.050	0.11	0.11	4.42	20165	2015	45°
		6	2	280	0.055	0.13	0.13	5.29	16850	1855	45°
		8	2	280	0.060	0.15	0.15	6.98	12770	1530	45°
		10	2	280	0.065	0.18	0.18	8.70	10245	1330	45°
		12	2	280	0.070	0.22	0.22	10.45	8530	1195	45°
	Steel 1300 - 1500 N/mm² P	4	2	250	0.045	0.10	0.10	3.57	22290	2005	45°
		5	2	250	0.050	0.11	0.11	4.42	18005	1800	45°
		6	2	250	0.055	0.13	0.13	5.29	15045	1655	45°
		8	2	250	0.060	0.15	0.15	6.98	11400	1370	45°
		10	2	250	0.065	0.18	0.18	8.70	9145	1190	45°
		12	2	250	0.070	0.22	0.22	10.45	7615	1065	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	4	2	110	0.045	0.10	0.10	3.57	9810	885	45°
		5	2	110	0.045	0.11	0.11	4.42	7920	715	45°
		6	2	110	0.050	0.13	0.13	5.29	6620	660	45°
		8	2	110	0.055	0.15	0.15	6.98	5015	550	45°
		10	2	110	0.060	0.18	0.18	8.70	4025	485	45°
		12	2	110	0.065	0.22	0.22	10.45	3350	435	45°

Ball nose end mills

Tolerance r f8 (-/-), 3xd

HSS | Favora® | Base-X | **B** | X-Generation

HM MG10	λ 30° γ 5°



Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless		GG(G)

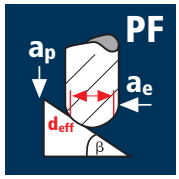
Example: **Order-N°.** Coating **P** Article-N°. **5222** ø-Code **.220**

ø Code	d1 -/-	d2 h6	d3	l1	l2	l3	r f8	α	z	POLYCHROM P5222 $
.220	4	6	3.7	75	5	12	2.0	4.0°	2	71.00
.260	5	6	4.6	80	6	15	2.5	2.0°	2	71.00
.300	6	6	5.5	80	7	20	3.0	0.0°	2	71.00
.391	8	8	7.4	90	9	26	4.0	0.0°	2	89.00
.450	10	10	9.2	100	11	31	5.0	0.0°	2	121.00
.501	12	12	11.0	120	13	37	6.0	0.0°	2	150.00

CNC Radius R

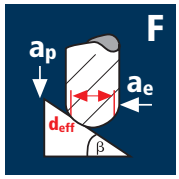
d1	r	Tolerance f8		Radius Minimum	Radius Maximum	R
4	2.0	-0.006	-0.020	**1.980**	**1.994**	**1.987**
5	2.5			**2.480**	**2.494**	**2.487**
6	3.0			**2.980**	**2.994**	**2.987**
8	4.0	-0.010	-0.028	**3.972**	**3.990**	**3.981**
10	5.0			**4.972**	**4.990**	**4.981**
12	6.0			**5.972**	**5.990**	**5.981**

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	deff [mm]	n [min⁻¹]	vf [mm/min]	β [°]
Wrought aluminium alloys Si < 6%	3	2	500	0.090	0.36	0.36	2.99	53230	9580	45°
	4	2	500	0.090	0.48	0.48	3.99	39890	7180	45°
	5	2	500	0.100	0.60	0.60	4.98	31960	6390	45°
	6	2	500	0.100	0.72	0.72	5.98	26615	5325	45°
	8	2	500	0.110	0.96	0.96	7.98	19945	4390	45°
	10	2	500	0.130	1.20	1.20	9.97	15965	4150	45°
	12	2	500	0.135	1.44	1.44	11.96	13310	3595	45°
	16	2	500	0.160	1.92	1.92	15.95	9980	3195	45°
Unalloyed copper	3	2	350	0.080	0.36	0.36	2.99	37260	5960	45°
	4	2	350	0.080	0.48	0.48	3.99	27925	4470	45°
	5	2	350	0.090	0.60	0.60	4.98	22370	4025	45°
	6	2	350	0.090	0.72	0.72	5.98	18630	3355	45°
	8	2	350	0.100	0.96	0.96	7.98	13960	2790	45°
	10	2	350	0.115	1.20	1.20	9.97	11175	2570	45°
	12	2	350	0.120	1.44	1.44	11.96	9315	2235	45°
	16	2	350	0.145	1.92	1.92	15.95	6985	2025	45°
Thermoplastics	3	2	800	0.090	0.36	0.36	2.99	60000	10800	45°
	4	2	800	0.090	0.48	0.48	3.99	60000	10800	45°
	5	2	800	0.100	0.60	0.60	4.98	51135	10225	45°
	6	2	800	0.100	0.72	0.72	5.98	42585	8515	45°
	8	2	800	0.110	0.96	0.96	7.98	31910	7020	45°
	10	2	800	0.130	1.20	1.20	9.97	25540	6640	45°
	12	2	800	0.135	1.44	1.44	11.96	21290	5750	45°
	16	2	800	0.160	1.92	1.92	15.95	15965	5110	45°
Cast aluminium Si 6%-15%	3	2	300	0.065	0.36	0.36	2.99	31940	4150	45°
	4	2	300	0.065	0.48	0.48	3.99	23935	3110	45°
	5	2	300	0.070	0.60	0.60	4.98	19175	2685	45°
	6	2	300	0.070	0.72	0.72	5.98	15970	2235	45°
	8	2	300	0.075	0.96	0.96	7.98	11965	1795	45°
	10	2	300	0.090	1.20	1.20	9.97	9580	1725	45°
	12	2	300	0.095	1.44	1.44	11.96	7985	1515	45°
	16	2	300	0.110	1.92	1.92	15.95	5985	1315	45°

Application



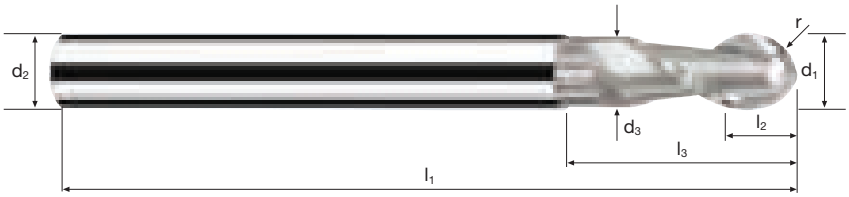
Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	deff [mm]	n [min⁻¹]	vf [mm/min]	β [°]
Wrought aluminium alloys Si < 6%	3	2	700	0.050	0.12	0.12	2.78	60000	6000	45°
	4	2	700	0.045	0.15	0.15	3.69	60000	5400	45°
	5	2	700	0.070	0.17	0.17	4.58	48650	6810	45°
	6	2	700	0.065	0.20	0.20	5.48	40660	5285	45°
	8	2	700	0.075	0.22	0.22	7.20	30950	4645	45°
	10	2	700	0.080	0.24	0.24	8.90	25035	4005	45°
	12	2	700	0.085	0.27	0.27	10.62	20980	3565	45°
	16	2	700	0.100	0.30	0.30	13.96	15960	3190	45°
Unalloyed copper	3	2	500	0.045	0.12	0.12	2.78	57250	5155	45°
	4	2	500	0.040	0.15	0.15	3.69	43135	3450	45°
	5	2	500	0.065	0.17	0.17	4.58	34750	4520	45°
	6	2	500	0.060	0.20	0.20	5.48	29045	3485	45°
	8	2	500	0.070	0.22	0.22	7.20	22105	3095	45°
	10	2	500	0.070	0.24	0.24	8.90	17885	2505	45°
	12	2	500	0.075	0.27	0.27	10.62	14985	2250	45°
	16	2	500	0.090	0.30	0.30	13.96	11400	2050	45°
Thermoplastics	3	2	900	0.050	0.12	0.12	2.78	60000	6000	45°
	4	2	900	0.045	0.15	0.15	3.69	60000	5400	45°
	5	2	900	0.070	0.17	0.17	4.58	60000	8400	45°
	6	2	900	0.065	0.20	0.20	5.48	52280	6795	45°
	8	2	900	0.075	0.22	0.22	7.20	39790	5970	45°
	10	2	900	0.080	0.24	0.24	8.90	32190	5150	45°
	12	2	900	0.085	0.27	0.27	10.62	26975	4585	45°
	16	2	900	0.100	0.30	0.30	13.96	20520	4105	45°
Cast aluminium Si 6%-15%	3	2	400	0.035	0.12	0.12	2.78	45800	3205	45°
	4	2	400	0.030	0.15	0.15	3.69	34505	2070	45°
	5	2	400	0.050	0.17	0.17	4.58	27800	2780	45°
	6	2	400	0.045	0.20	0.20	5.48	23235	2090	45°
	8	2	400	0.055	0.22	0.22	7.20	17685	1945	45°
	10	2	400	0.055	0.24	0.24	8.90	14305	1575	45°
	12	2	400	0.060	0.27	0.27	10.62	11990	1440	45°
	16	2	400	0.070	0.30	0.30	13.96	9120	1275	45°

Ball nose end mills Sphericut-Alu

Tolerance r f8 (-/-), 3xd

HSS | Favora® | Base-X **B** | X-Generation

HM MG10	λ 40° γ 20°



Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

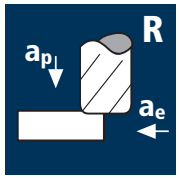
Example: **Order-N°.** Coating **C** Article-N°. **5292** ø-Code **.180**

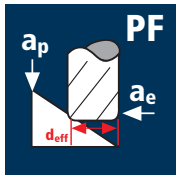
CELERO **C5292**

ø Code	d1 -/-	d2 h6	d3	l1	l2	l3	r f8	α	z	$
.180	3	6	2.8	75	6	9	1.5	6.4°	2	73.00
.220	4	6	3.7	75	8	12	2.0	4.0°	2	73.00
.260	5	6	4.6	80	10	15	2.5	1.9°	2	73.00
.300	6	6	5.5	80	12	20	3.0	0.0°	2	73.00
.391	8	8	7.4	90	16	26	4.0	0.0°	2	91.00
.450	10	10	9.2	100	20	31	5.0	0.0°	2	124.00
.501	12	12	11.0	120	24	37	6.0	0.0°	2	153.00
.610	16	16	15.0	140	32	43	8.0	0.0°	2	240.00

CNC Radius R

d1	r	Tolerance f8		Radius Minimum	Radius Maximum	R
3	1.5	-0.006	-0.020	**1.480**	**1.494**	**1.487**
4	2.0			**1.980**	**1.994**	**1.987**
5	2.5			**2.480**	**2.494**	**2.487**
6	3.0			**2.980**	**2.994**	**2.987**
8	4.0	-0.010	-0.028	**3.972**	**3.990**	**3.981**
10	5.0			**4.972**	**4.990**	**4.981**
12	6.0			**5.972**	**5.990**	**5.981**
16	8.0	-0.013	-0.035	**7.965**	**7.987**	**7.976**

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	2	4	180	0.030	0.60	1.20	28650	3440	r=0.5
		3	4	180	0.045	0.60	1.80	19100	3440	r=0.5
		4	4	180	0.050	0.60	2.40	14325	2865	r=0.5
		5	4	180	0.055	0.60	3.00	11460	2520	r=0.5
		6	4	180	0.060	0.60	3.60	9550	2290	r=0.5
		8	4	180	0.075	0.60	4.80	7160	2150	r=0.5
		10	4	180	0.095	0.60	6.00	5730	2175	r=0.5
		12	4	180	0.115	0.60	7.20	4775	2195	r=0.5
	Hardened tool steel 48 - 52 HRC	2	4	140	0.025	0.60	1.20	22280	2230	r=0.5
		3	4	140	0.040	0.60	1.80	14855	2375	r=0.5
		4	4	140	0.045	0.60	2.40	11140	2005	r=0.5
		5	4	140	0.050	0.60	3.00	8915	1785	r=0.5
		6	4	140	0.055	0.60	3.60	7425	1635	r=0.5
		8	4	140	0.070	0.60	4.80	5570	1560	r=0.5
		10	4	140	0.085	0.60	6.00	4455	1515	r=0.5
		12	4	140	0.105	0.60	7.20	3715	1560	r=0.5
	Hardened tool steel 52 - 56 HRC	2	4	100	0.025	0.60	1.20	15915	1590	r=0.5
		3	4	100	0.035	0.60	1.80	10610	1485	r=0.5
		4	4	100	0.040	0.60	2.40	7960	1275	r=0.5
		5	4	100	0.045	0.60	3.00	6365	1145	r=0.5
		6	4	100	0.050	0.60	3.60	5305	1060	r=0.5
		8	4	100	0.060	0.60	4.80	3980	955	r=0.5
		10	4	100	0.080	0.60	6.00	3185	1020	r=0.5
		12	4	100	0.095	0.60	7.20	2655	1010	r=0.5
	Hardened tool steel 56 - 60 HRC	2	4	70	0.015	0.60	0.80	11140	670	r=0.5
		3	4	70	0.025	0.60	1.20	7425	745	r=0.5
		4	4	70	0.030	0.60	1.60	5570	670	r=0.5
		5	4	70	0.030	0.60	2.00	4455	535	r=0.5
		6	4	70	0.035	0.60	2.40	3715	520	r=0.5
		8	4	70	0.045	0.60	3.20	2785	500	r=0.5
		10	4	70	0.055	0.60	4.00	2230	490	r=0.5
		12	4	70	0.065	0.60	4.80	1855	480	r=0.5

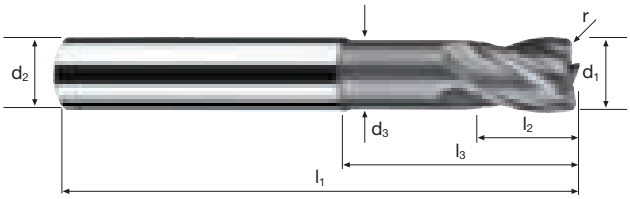
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	2	4	360	0.045	0.10	0.10	1.99	57585	10365	45°
		3	4	360	0.065	0.12	0.12	3.00	38200	9930	45°
		4	4	360	0.085	0.12	0.12	4.00	28650	9740	45°
		5	4	360	0.100	0.16	0.16	5.00	22920	9170	45°
		6	4	360	0.135	0.18	0.18	6.00	19100	10315	45°
		8	4	360	0.150	0.20	0.20	7.99	14340	8605	45°
		10	4	360	0.200	0.24	0.24	9.97	11495	9195	45°
		12	4	360	0.170	0.26	0.26	11.96	9580	6515	45°
	Hardened tool steel 48 - 52 HRC	2	4	250	0.045	0.10	0.10	1.99	39990	7200	45°
		3	4	250	0.060	0.12	0.12	3.00	26525	6365	45°
		4	4	250	0.080	0.12	0.12	4.00	19895	6365	45°
		5	4	250	0.095	0.16	0.16	5.00	15915	6050	45°
		6	4	250	0.130	0.18	0.18	6.00	13265	6900	45°
		8	4	250	0.145	0.20	0.20	7.99	9960	5775	45°
		10	4	250	0.190	0.24	0.24	9.97	7980	6065	45°
		12	4	250	0.160	0.26	0.26	11.96	6655	4260	45°
	Hardened tool steel 52 - 56 HRC	2	4	180	0.040	0.10	0.10	1.99	28795	4605	45°
		3	4	180	0.055	0.12	0.12	3.00	19100	4200	45°
		4	4	180	0.075	0.12	0.12	4.00	14325	4300	45°
		5	4	180	0.085	0.16	0.16	5.00	11460	3895	45°
		6	4	180	0.115	0.18	0.18	6.00	9550	4395	45°
		8	4	180	0.130	0.20	0.20	7.99	7170	3730	45°
		10	4	180	0.170	0.24	0.24	9.97	5745	3905	45°
		12	4	180	0.145	0.26	0.26	11.96	4790	2780	45°
	Hardened tool steel 56 - 60 HRC	2	4	100	0.025	0.10	0.10	1.99	15995	1600	45°
		3	4	100	0.035	0.12	0.12	3.00	10610	1485	45°
		4	4	100	0.045	0.12	0.12	4.00	7960	1435	45°
		5	4	100	0.050	0.16	0.16	5.00	6365	1275	45°
		6	4	100	0.070	0.18	0.18	6.00	5305	1485	45°
		8	4	100	0.075	0.20	0.20	7.99	3985	1195	45°
		10	4	100	0.100	0.24	0.24	9.97	3195	1280	45°
		12	4	100	0.085	0.26	0.26	11.96	2660	905	45°

Corner radius end mills Toro-X

Tolerance r 0/+0.015, 3xd

HSS | Favora® | Base-X | X-Generation X

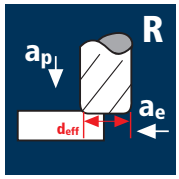
HM XT	λ 30° γ -5°

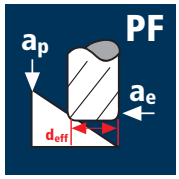


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7100** ø-Code **.138**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z	X-AL X7100 $
.138	2	6	1.9	57	3	6	0.2	8.5°	4	71.00
.178	3	6	2.8	57	4	9	0.2	5.8°	4	71.00
.218	4	6	3.7	57	5	12	0.2	3.6°	4	71.00
.258	5	6	4.6	57	6	15	0.2	1.7°	4	71.00
.297	6	6	5.5	57	7	20	0.2	0.0°	4	71.00
.385	8	8	7.4	63	9	26	0.2	0.0°	4	88.00
.445	10	10	9.2	72	11	31	0.2	0.0°	4	120.00
.496	12	12	11.0	83	13	37	0.2	0.0°	4	148.00
.140	2	6	1.9	57	3	6	0.5	8.7°	4	71.00
.180	3	6	2.8	57	4	9	0.5	6.0°	4	71.00
.220	4	6	3.7	57	5	12	0.5	3.7°	4	71.00
.260	5	6	4.6	57	6	15	0.5	1.7°	4	71.00
.300	6	6	5.5	57	7	20	0.5	0.0°	4	71.00
.388	8	8	7.4	63	9	26	0.5	0.0°	4	88.00
.448	10	10	9.2	72	11	31	0.5	0.0°	4	120.00
.498	12	12	11.0	83	13	37	0.5	0.0°	4	148.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	4	4	200	0.055	0.60	2.40	3.83	16620	3655	r=1.0
		5	4	200	0.060	0.60	3.00	4.83	13180	3165	r=1.0
		6	4	200	0.065	0.60	3.60	5.83	10920	2840	r=1.0
		8	4	200	0.080	0.60	4.80	7.83	8130	2600	r=1.0
		10	4	200	0.105	0.60	6.00	9.83	6475	2720	r=1.0
		12	4	200	0.125	0.60	7.20	11.83	5380	2690	r=1.0
	Hardened tool steel 48 - 52 HRC	4	4	160	0.050	0.60	2.40	3.83	13300	2660	r=1.0
		5	4	160	0.055	0.60	3.00	4.83	10545	2320	r=1.0
		6	4	160	0.060	0.60	3.60	5.83	8735	2095	r=1.0
		8	4	160	0.070	0.60	4.80	7.83	6505	1820	r=1.0
		10	4	160	0.095	0.60	6.00	9.83	5180	1970	r=1.0
		12	4	160	0.115	0.60	7.20	11.83	4305	1980	r=1.0
	Hardened tool steel 52 - 56 HRC	4	4	150	0.045	0.60	2.40	3.83	12465	2245	r=1.0
		5	4	150	0.050	0.60	3.00	4.83	9885	1975	r=1.0
		6	4	150	0.055	0.60	3.60	5.83	8190	1800	r=1.0
		8	4	150	0.065	0.60	4.80	7.83	6100	1585	r=1.0
		10	4	150	0.085	0.60	6.00	9.83	4855	1650	r=1.0
		12	4	150	0.105	0.60	7.20	11.83	4035	1695	r=1.0
	Hardened tool steel 56 - 60 HRC	4	4	70	0.030	0.60	1.60	3.83	5820	700	r=1.0
		5	4	70	0.035	0.60	2.00	4.83	4615	645	r=1.0
		6	4	70	0.040	0.60	2.40	5.83	3820	610	r=1.0
		8	4	70	0.045	0.60	3.20	7.83	2845	510	r=1.0
		10	4	70	0.060	0.60	4.00	9.83	2265	545	r=1.0
		12	4	70	0.075	0.60	4.80	11.83	1885	565	r=1.0

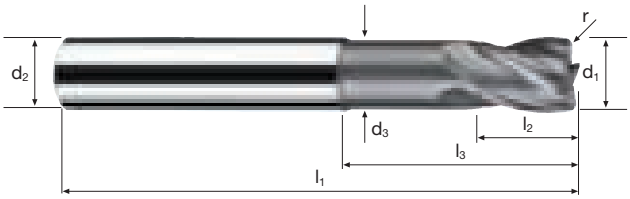
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	4	4	300	0.065	0.18	0.18	3.97	24055	6255	45°
		5	4	300	0.075	0.24	0.24	4.99	19135	5740	45°
		6	4	300	0.090	0.27	0.27	6.00	15915	5730	45°
		8	4	300	0.125	0.30	0.30	8.00	11935	5970	45°
		10	4	300	0.145	0.36	0.36	9.99	9560	5545	45°
		12	4	300	0.170	0.39	0.39	11.98	7970	5420	45°
	Hardened tool steel 48 - 52 HRC	4	4	220	0.060	0.18	0.18	3.97	17640	4235	45°
		5	4	220	0.070	0.24	0.24	4.99	14035	3930	45°
		6	4	220	0.085	0.27	0.27	6.00	11670	3970	45°
		8	4	220	0.120	0.30	0.30	8.00	8755	4200	45°
		10	4	220	0.140	0.36	0.36	9.99	7010	3925	45°
		12	4	220	0.160	0.39	0.39	11.98	5845	3740	45°
	Hardened tool steel 52 - 56 HRC	4	4	160	0.055	0.18	0.18	3.97	12830	2825	45°
		5	4	160	0.065	0.24	0.24	4.99	10205	2655	45°
		6	4	160	0.075	0.27	0.27	6.00	8490	2545	45°
		8	4	160	0.110	0.30	0.30	8.00	6365	2800	45°
		10	4	160	0.125	0.36	0.36	9.99	5100	2550	45°
		12	4	160	0.145	0.39	0.39	11.98	4250	2465	45°
	Hardened tool steel 56 - 60 HRC	4	4	80	0.035	0.18	0.18	3.97	6415	900	45°
		5	4	80	0.040	0.24	0.24	4.99	5105	815	45°
		6	4	80	0.045	0.27	0.27	6.00	4245	765	45°
		8	4	80	0.065	0.30	0.30	8.00	3185	830	45°
		10	4	80	0.075	0.36	0.36	9.99	2550	765	45°
		12	4	80	0.085	0.39	0.39	11.98	2125	725	45°

Corner radius end mills Toro-X

Tolerance r 0/+0.015, 3xd

HSS | Favora® | Base-X | X-Generation X

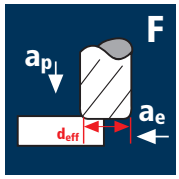
HM XT	λ 30° γ -5°

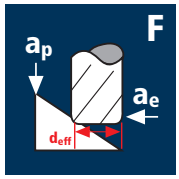


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7100** ø-Code **.222**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z	X-AL X7100 $
.222	4	6	3.7	57	5	12	1.0	3.8°	4	71.00
.262	5	6	4.6	57	6	15	1.0	1.8°	4	71.00
.302	6	6	5.5	57	7	20	1.0	0.0°	4	71.00
.391	8	8	7.4	63	9	26	1.0	0.0°	4	88.00
.450	10	10	9.2	72	11	31	1.0	0.0°	4	120.00
.501	12	12	11.0	83	13	37	1.0	0.0°	4	148.00
.395	8	8	7.4	63	9	26	2.0	0.0°	4	88.00
.455	10	10	9.2	72	11	31	2.0	0.0°	4	120.00
.505	12	12	11.0	83	13	37	2.0	0.0°	4	148.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 48 - 52 HRC	2	4	150	0.020	0.05	0.70	1.44	33160	2655	r=0.5
		3	4	150	0.025	0.05	1.05	2.44	19570	1955	r=0.5
		4	4	150	0.030	0.06	1.40	3.47	13760	1650	r=0.5
		5	4	150	0.035	0.06	1.75	4.47	10680	1495	r=0.5
		6	6	150	0.040	0.08	2.10	5.54	8620	2070	r=0.5
		8	6	150	0.045	0.08	2.80	7.54	6335	1710	r=0.5
		10	6	150	0.050	0.10	3.50	9.60	4975	1495	r=0.5
		12	6	150	0.055	0.10	4.20	11.60	4115	1360	r=0.5
		16	6	150	0.065	0.12	5.60	15.65	3050	1190	r=0.5
	Hardened tool steel 52 - 56 HRC	2	4	120	0.020	0.05	0.70	1.44	26525	2120	r=0.5
		3	4	120	0.025	0.05	1.05	2.44	15655	1565	r=0.5
		4	4	120	0.030	0.06	1.40	3.47	11010	1320	r=0.5
		5	4	120	0.035	0.06	1.75	4.47	8545	1195	r=0.5
		6	6	120	0.040	0.08	2.10	5.54	6895	1655	r=0.5
		8	6	120	0.045	0.08	2.80	7.54	5065	1370	r=0.5
		10	6	120	0.050	0.10	3.50	9.60	3980	1195	r=0.5
		12	6	120	0.055	0.10	4.20	11.60	3295	1085	r=0.5
		16	6	120	0.065	0.12	5.60	15.65	2440	950	r=0.5
	Hardened tool steel 56 - 60 HRC	2	4	80	0.015	0.05	0.70	1.44	17685	1060	r=0.5
		3	4	80	0.020	0.05	1.05	2.44	10435	835	r=0.5
		4	4	80	0.025	0.06	1.40	3.47	7340	735	r=0.5
		5	4	80	0.030	0.06	1.75	4.47	5695	685	r=0.5
		6	6	80	0.030	0.08	2.10	5.54	4595	825	r=0.5
		8	6	80	0.035	0.08	2.80	7.54	3375	710	r=0.5
		10	6	80	0.040	0.10	3.50	9.60	2655	635	r=0.5
		12	6	80	0.045	0.10	4.20	11.60	2195	595	r=0.5
		16	6	80	0.050	0.12	5.60	15.65	1625	490	r=0.5
	Hardened tool steel > 60 HRC	2	4	40	0.015	0.05	0.70	1.44	8840	530	r=0.5
		3	4	40	0.020	0.05	1.05	2.44	5220	420	r=0.5
		4	4	40	0.025	0.06	1.40	3.47	3670	365	r=0.5
		5	4	40	0.030	0.06	1.75	4.47	2850	340	r=0.5
		6	6	40	0.030	0.08	2.10	5.54	2300	415	r=0.5
		8	6	40	0.035	0.08	2.80	7.54	1690	355	r=0.5
		10	6	40	0.040	0.10	3.50	9.60	1325	320	r=0.5
		12	6	40	0.045	0.10	4.20	11.60	1100	295	r=0.5
		16	6	40	0.050	0.12	5.60	15.65	815	245	r=0.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 48 - 52 HRC	2	4	300	0.020	0.05	0.05	1.94	49225	3940	45°
		3	4	300	0.025	0.05	0.05	2.94	32480	3250	45°
		4	4	300	0.030	0.06	0.06	3.96	24115	2895	45°
		5	4	300	0.035	0.06	0.06	4.96	19255	2695	45°
		6	6	300	0.040	0.08	0.08	5.98	15970	3835	45°
		8	6	300	0.045	0.08	0.08	7.98	11965	3230	45°
		10	6	300	0.050	0.10	0.10	9.99	9560	2870	45°
		12	6	300	0.055	0.10	0.10	11.99	7965	2630	45°
		16	6	300	0.065	0.12	0.12	16.00	5970	2330	45°
	Hardened tool steel 52 - 56 HRC	2	4	250	0.020	0.05	0.05	1.94	41020	3280	45°
		3	4	250	0.025	0.05	0.05	2.94	27070	2705	45°
		4	4	250	0.030	0.06	0.06	3.96	20095	2410	45°
		5	4	250	0.035	0.06	0.06	4.96	16045	2245	45°
		6	6	250	0.040	0.08	0.08	5.98	13310	3195	45°
		8	6	250	0.045	0.08	0.08	7.98	9970	2690	45°
		10	6	250	0.050	0.10	0.10	9.99	7965	2390	45°
		12	6	250	0.050	0.10	0.10	11.99	6635	1990	45°
		16	6	250	0.060	0.12	0.12	16.00	4975	1790	45°
	Hardened tool steel 56 - 60 HRC	2	4	180	0.015	0.05	0.05	1.94	29535	1770	45°
		3	4	180	0.020	0.05	0.05	2.94	19490	1560	45°
		4	4	180	0.025	0.06	0.06	3.96	14470	1445	45°
		5	4	180	0.030	0.06	0.06	4.96	11550	1385	45°
		6	6	180	0.035	0.08	0.08	5.98	9580	2010	45°
		8	6	180	0.040	0.08	0.08	7.98	7180	1725	45°
		10	6	180	0.045	0.10	0.10	9.99	5735	1550	45°
		12	6	180	0.045	0.10	0.10	11.99	4780	1290	45°
		16	6	180	0.055	0.12	0.12	16.00	3580	1180	45°
	Hardened tool steel > 60 HRC	2	4	100	0.010	0.05	0.05	1.94	16410	655	45°
		3	4	100	0.015	0.05	0.05	2.94	10825	650	45°
		4	4	100	0.015	0.06	0.06	3.96	8040	480	45°
		5	4	100	0.020	0.06	0.06	4.96	6420	515	45°
		6	6	100	0.020	0.08	0.08	5.98	5325	640	45°
		8	6	100	0.025	0.08	0.08	7.98	3990	600	45°
		10	6	100	0.025	0.10	0.10	9.99	3185	480	45°
		12	6	100	0.030	0.10	0.10	11.99	2655	480	45°
		16	6	100	0.035	0.12	0.12	16.00	1990	420	45°

Corner radius end mills XSpeed

Tolerance r 0/+0.015, 3xd

HSS | Favora® | Base-X | X-Generation X

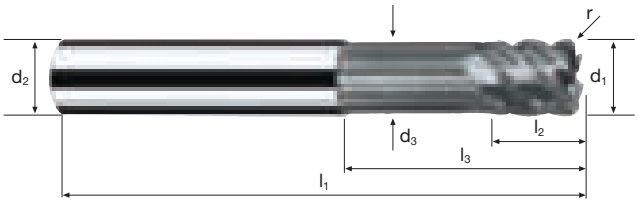
HM XT | λ 55° γ-10°

h5

d1

r

F

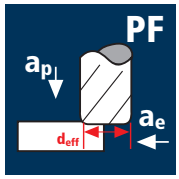


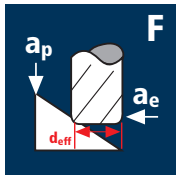
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **X** Article-N°. **7200** ø-Code **.140**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z	X-AL X7200 $
.140	2	6	1.9	57	3	6	0.5	8.7°	4	74.00
.180	3	6	2.8	57	4	9	0.5	6.0°	4	74.00
.220	4	6	3.7	57	5	12	0.5	3.7°	4	74.00
.260	5	6	4.6	57	6	15	0.5	1.7°	4	74.00
.295	6	6	5.5	57	7	20	0.5	0.0°	4	74.00
.300	6	6	5.5	57	7	20	0.5	0.0°	6	74.00
.386	8	8	7.4	63	9	26	0.5	0.0°	4	92.00
.391	8	8	7.4	63	9	26	0.5	0.0°	6	92.00
.440	10	10	9.2	72	11	31	0.5	0.0°	4	126.00
.450	10	10	9.2	72	11	31	0.5	0.0°	6	126.00
.491	12	12	11.0	83	13	37	0.5	0.0°	4	155.00
.501	12	12	11.0	83	13	37	0.5	0.0°	6	155.00
new! .606	16	16	15.0	92	17	43	0.5	0.0°	6	243.00

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 48 - 52 HRC	4	4	150	0.045	0.34	1.40	3.50	13640	2455	r=1.0
		5	4	150	0.050	0.38	1.75	4.57	10450	2090	r=1.0
		6	6	150	0.055	0.40	2.10	5.60	8525	2815	r=1.0
		8	6	150	0.070	0.44	2.80	7.66	6235	2620	r=1.0
		10	6	150	0.085	0.48	3.50	9.71	4915	2505	r=1.0
		12	6	150	0.105	0.50	4.20	11.73	4070	2565	r=1.0
		16	6	150	0.130	0.56	5.60	15.80	3020	2355	r=1.0
	Hardened tool steel 52 - 56 HRC	4	4	120	0.040	0.34	1.40	3.50	10915	1745	r=1.0
		5	4	120	0.045	0.38	1.75	4.57	8360	1505	r=1.0
		6	6	120	0.050	0.40	2.10	5.60	6820	2045	r=1.0
		8	6	120	0.065	0.44	2.80	7.66	4985	1945	r=1.0
		10	6	120	0.075	0.48	3.50	9.71	3935	1770	r=1.0
		12	6	120	0.095	0.50	4.20	11.73	3255	1855	r=1.0
		16	6	120	0.115	0.56	5.60	15.80	2420	1670	r=1.0
	Hardened tool steel 56 - 60 HRC	4	4	80	0.035	0.34	1.40	3.50	7275	1020	r=1.0
		5	4	80	0.040	0.38	1.75	4.57	5570	890	r=1.0
		6	6	80	0.045	0.40	2.10	5.60	4545	1225	r=1.0
		8	6	80	0.055	0.44	2.80	7.66	3325	1095	r=1.0
		10	6	80	0.070	0.48	3.50	9.71	2625	1105	r=1.0
		12	6	80	0.085	0.50	4.20	11.73	2170	1105	r=1.0
		16	6	80	0.105	0.56	5.60	15.80	1610	1015	r=1.0
	Hardened tool steel > 60 HRC	4	4	40	0.025	0.34	1.40	3.50	3640	365	r=1.0
		5	4	40	0.030	0.38	1.75	4.57	2785	335	r=1.0
		6	6	40	0.030	0.40	2.10	5.60	2275	410	r=1.0
		8	6	40	0.040	0.44	2.80	7.66	1660	400	r=1.0
		10	6	40	0.050	0.48	3.50	9.71	1310	395	r=1.0
		12	6	40	0.060	0.50	4.20	11.73	1085	390	r=1.0
		16	6	40	0.075	0.56	5.60	15.80	805	360	r=1.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 48 - 52 HRC	4	4	300	0.030	0.08	0.08	3.86	24740	2970	45°
		5	4	300	0.035	0.08	0.08	4.86	19650	2750	45°
		6	6	300	0.040	0.11	0.11	5.90	16185	3885	45°
		8	6	300	0.045	0.11	0.11	7.90	12090	3265	45°
		10	6	300	0.050	0.14	0.14	9.94	9605	2880	45°
		12	6	300	0.055	0.14	0.14	11.94	8000	2640	45°
		16	6	300	0.065	0.16	0.16	15.96	5985	2335	45°
	Hardened tool steel 52 - 56 HRC	4	4	250	0.030	0.08	0.08	3.86	20615	2475	45°
		5	4	250	0.035	0.08	0.08	4.86	16375	2295	45°
		6	6	250	0.040	0.11	0.11	5.90	13490	3240	45°
		8	6	250	0.045	0.11	0.11	7.90	10075	2720	45°
		10	6	250	0.050	0.14	0.14	9.94	8005	2400	45°
		12	6	250	0.050	0.14	0.14	11.94	6665	2000	45°
		16	6	250	0.060	0.16	0.16	15.96	4985	1795	45°
	Hardened tool steel 56 - 60 HRC	4	4	180	0.025	0.08	0.08	3.86	14845	1485	45°
		5	4	180	0.030	0.08	0.08	4.86	11790	1415	45°
		6	6	180	0.035	0.11	0.11	5.90	9710	2040	45°
		8	6	180	0.040	0.11	0.11	7.90	7255	1740	45°
		10	6	180	0.045	0.14	0.14	9.94	5765	1555	45°
		12	6	180	0.045	0.14	0.14	11.94	4800	1295	45°
		16	6	180	0.055	0.16	0.16	15.96	3590	1185	45°
	Hardened tool steel > 60 HRC	4	4	100	0.015	0.08	0.08	3.86	8245	495	45°
		5	4	100	0.020	0.08	0.08	4.86	6550	525	45°
		6	6	100	0.020	0.11	0.11	5.90	5395	645	45°
		8	6	100	0.025	0.11	0.11	7.90	4030	605	45°
		10	6	100	0.025	0.14	0.14	9.94	3200	480	45°
		12	6	100	0.030	0.14	0.14	11.94	2665	480	45°
		16	6	100	0.035	0.16	0.16	15.96	1995	420	45°

Corner radius end mills XSpeed

Tolerance r 0/+0.015, 3xd

HSS | Favora® | Base-X | X-Generation X

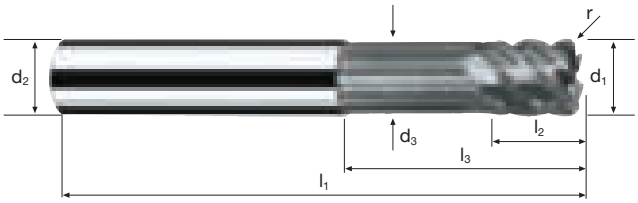
HM XT | λ 55° γ-10°

h5

d1

r

F

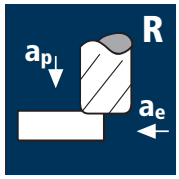


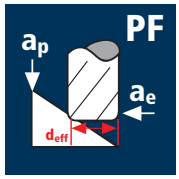
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **X** Article-N°. **7200** ø-Code **.218**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z	X-AL X7200 $
.218	4	6	3.7	57	5	12	1.0	3.8°	4	74.00
.258	5	6	4.6	57	6	15	1.0	1.8°	4	74.00
.293	6	6	5.5	57	7	20	1.0	0.0°	4	74.00
.297	6	6	5.5	57	7	20	1.0	0.0°	6	74.00
.384	8	8	7.4	63	9	26	1.0	0.0°	4	92.00
.388	8	8	7.4	63	9	26	1.0	0.0°	6	92.00
.435	10	10	9.2	72	11	31	1.0	0.0°	4	126.00
.445	10	10	9.2	72	11	31	1.0	0.0°	6	126.00
.486	12	12	11.0	83	13	37	1.0	0.0°	4	155.00
.496	12	12	11.0	83	13	37	1.0	0.0°	6	155.00
new! .608	16	16	15.0	92	17	43	1.0	0.0°	6	243.00

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	2	4	180	0.025	0.60	0.80	28650	2865	r=0.5
		3	4	180	0.035	0.60	1.20	19100	2675	r=0.5
		4	4	180	0.045	0.60	1.60	14325	2580	r=0.5
		5	4	180	0.045	0.60	2.00	11460	2065	r=0.5
		6	4	180	0.050	0.60	2.40	9550	1910	r=0.5
		8	4	180	0.060	0.60	3.20	7160	1720	r=0.5
		10	4	180	0.080	0.60	4.00	5730	1835	r=0.5
		12	4	180	0.095	0.60	4.80	4775	1815	r=0.5
	Hardened tool steel 48 - 52 HRC	2	4	140	0.025	0.60	0.80	22280	2230	r=0.5
		3	4	140	0.030	0.60	1.20	14855	1785	r=0.5
		4	4	140	0.040	0.60	1.60	11140	1780	r=0.5
		5	4	140	0.040	0.60	2.00	8915	1425	r=0.5
		6	4	140	0.045	0.60	2.40	7425	1335	r=0.5
		8	4	140	0.055	0.60	3.20	5570	1225	r=0.5
		10	4	140	0.070	0.60	4.00	4455	1245	r=0.5
		12	4	140	0.085	0.60	4.80	3715	1265	r=0.5
	Hardened tool steel 52 - 56 HRC	2	4	100	0.020	0.60	0.80	15915	1275	r=0.5
		3	4	100	0.030	0.60	1.20	10610	1275	r=0.5
		4	4	100	0.035	0.60	1.60	7960	1115	r=0.5
		5	4	100	0.035	0.60	2.00	6365	890	r=0.5
		6	4	100	0.040	0.60	2.40	5305	850	r=0.5
		8	4	100	0.050	0.60	3.20	3980	795	r=0.5
		10	4	100	0.065	0.60	4.00	3185	830	r=0.5
		12	4	100	0.080	0.60	4.80	2655	850	r=0.5
	Hardened tool steel 56 - 60 HRC	2	4	70	0.015	0.60	0.80	11140	670	r=0.5
		3	4	70	0.020	0.60	1.20	7425	595	r=0.5
		4	4	70	0.025	0.60	1.60	5570	555	r=0.5
		5	4	70	0.025	0.60	2.00	4455	445	r=0.5
		6	4	70	0.030	0.60	2.40	3715	445	r=0.5
		8	4	70	0.035	0.60	3.20	2785	390	r=0.5
		10	4	70	0.045	0.60	4.00	2230	400	r=0.5
		12	4	70	0.055	0.60	4.80	1855	410	r=0.5

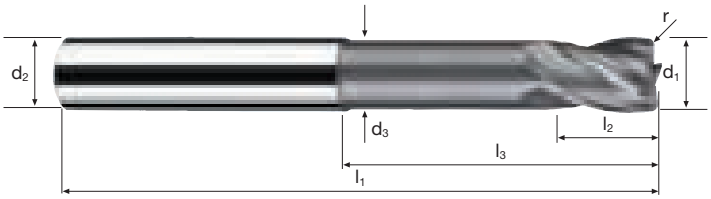
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	2	4	360	0.045	0.10	0.10	1.99	57585	10365	45°
		3	4	360	0.065	0.12	0.12	3.00	38200	9930	45°
		4	4	360	0.085	0.12	0.12	4.00	28650	9740	45°
		5	4	360	0.100	0.16	0.16	5.00	22920	9170	45°
		6	4	360	0.135	0.18	0.18	6.00	19100	10315	45°
		8	4	360	0.150	0.20	0.20	7.99	14340	8605	45°
		10	4	360	0.200	0.24	0.24	9.97	11495	9195	45°
		12	4	360	0.170	0.26	0.26	11.96	9580	6515	45°
	Hardened tool steel 48 - 52 HRC	2	4	250	0.045	0.10	0.10	1.99	39990	7200	45°
		3	4	250	0.060	0.12	0.12	3.00	26525	6365	45°
		4	4	250	0.080	0.12	0.12	4.00	19895	6365	45°
		5	4	250	0.095	0.16	0.16	5.00	15915	6050	45°
		6	4	250	0.130	0.18	0.18	6.00	13265	6900	45°
		8	4	250	0.145	0.20	0.20	7.99	9960	5775	45°
		10	4	250	0.190	0.24	0.24	9.97	7980	6065	45°
		12	4	250	0.160	0.26	0.26	11.96	6655	4260	45°
	Hardened tool steel 52 - 56 HRC	2	4	180	0.040	0.10	0.10	1.99	28795	4605	45°
		3	4	180	0.055	0.12	0.12	3.00	19100	4200	45°
		4	4	180	0.075	0.12	0.12	4.00	14325	4300	45°
		5	4	180	0.085	0.16	0.16	5.00	11460	3895	45°
		6	4	180	0.115	0.18	0.18	6.00	9550	4395	45°
		8	4	180	0.130	0.20	0.20	7.99	7170	3730	45°
		10	4	180	0.170	0.24	0.24	9.97	5745	3905	45°
		12	4	180	0.145	0.26	0.26	11.96	4790	2780	45°
	Hardened tool steel 56 - 60 HRC	2	4	100	0.025	0.10	0.10	1.99	15995	1600	45°
		3	4	100	0.035	0.12	0.12	3.00	10610	1485	45°
		4	4	100	0.045	0.12	0.12	4.00	7960	1435	45°
		5	4	100	0.050	0.16	0.16	5.00	6365	1275	45°
		6	4	100	0.070	0.18	0.18	6.00	5305	1485	45°
		8	4	100	0.075	0.20	0.20	7.99	3985	1195	45°
		10	4	100	0.100	0.24	0.24	9.97	3195	1280	45°
		12	4	100	0.085	0.26	0.26	11.96	2660	905	45°

Corner radius end mills Toro-X

Tolerance r 0/+0.015, 6xd

HSS | Favora® | Base-X | X-Generation X

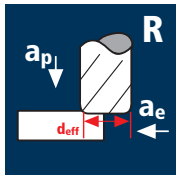
HM XT	λ 30° γ -5°

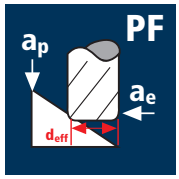


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7104** ø-Code **.138**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z		X-AL X7104 $
.138	2	6	1.9	66	3	12	0.2	5.9°	4		82.00
.178	3	6	2.8	66	4	18	0.2	3.7°	4		82.00
.218	4	6	3.7	69	5	24	0.2	2.1°	4		82.00
.258	5	6	4.6	75	6	30	0.2	0.9°	4		82.00
.297	6	6	5.5	80	7	43	0.2	0.0°	4		82.00
.385	8	8	7.4	90	9	53	0.2	0.0°	4		103.00
.445	10	10	9.2	105	11	64	0.2	0.0°	4		140.00
.496	12	12	11.0	120	13	74	0.2	0.0°	4		173.00
.140	2	6	1.9	66	3	12	0.5	6.0°	4		82.00
.180	3	6	2.8	66	4	18	0.5	3.7°	4		82.00
.220	4	6	3.7	69	5	24	0.5	2.1°	4		82.00
.260	5	6	4.6	75	6	30	0.5	0.9°	4		82.00
.300	6	6	5.5	80	7	43	0.5	0.0°	4		82.00
.388	8	8	7.4	90	9	53	0.5	0.0°	4		103.00
.448	10	10	9.2	105	11	64	0.5	0.0°	4		140.00
.498	12	12	11.0	120	13	74	0.5	0.0°	4		173.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	4	4	200	0.045	0.60	2.40	3.83	16620	2990	r=1.0
		5	4	200	0.050	0.60	3.00	4.83	13180	2635	r=1.0
		6	4	200	0.055	0.60	3.60	5.83	10920	2400	r=1.0
		8	4	200	0.070	0.60	4.80	7.83	8130	2275	r=1.0
		10	4	200	0.090	0.60	6.00	9.83	6475	2330	r=1.0
		12	4	200	0.105	0.60	7.20	11.83	5380	2260	r=1.0
	Hardened tool steel 48 - 52 HRC	4	4	160	0.040	0.60	2.40	3.83	13300	2130	r=1.0
		5	4	160	0.045	0.60	3.00	4.83	10545	1900	r=1.0
		6	4	160	0.050	0.60	3.60	5.83	8735	1745	r=1.0
		8	4	160	0.065	0.60	4.80	7.83	6505	1690	r=1.0
		10	4	160	0.080	0.60	6.00	9.83	5180	1660	r=1.0
		12	4	160	0.095	0.60	7.20	11.83	4305	1635	r=1.0
	Hardened tool steel 52 - 56 HRC	4	4	150	0.035	0.60	2.40	3.83	12465	1745	r=1.0
		5	4	150	0.040	0.60	3.00	4.83	9885	1580	r=1.0
		6	4	150	0.045	0.60	3.60	5.83	8190	1475	r=1.0
		8	4	150	0.055	0.60	4.80	7.83	6100	1340	r=1.0
		10	4	150	0.075	0.60	6.00	9.83	4855	1455	r=1.0
		12	4	150	0.085	0.60	7.20	11.83	4035	1370	r=1.0
	Hardened tool steel 56 - 60 HRC	4	4	70	0.025	0.60	1.60	3.83	5820	580	r=1.0
		5	4	70	0.030	0.60	2.00	4.83	4615	555	r=1.0
		6	4	70	0.030	0.60	2.40	5.83	3820	460	r=1.0
		8	4	70	0.040	0.60	3.20	7.83	2845	455	r=1.0
		10	4	70	0.050	0.60	4.00	9.83	2265	455	r=1.0
		12	4	70	0.060	0.60	4.80	11.83	1885	450	r=1.0

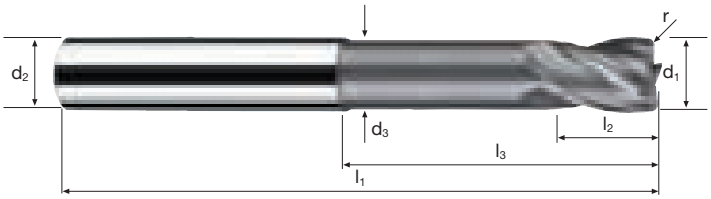
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	4	4	300	0.065	0.18	0.18	3.97	24055	6255	45°
		5	4	300	0.075	0.24	0.24	4.99	19135	5740	45°
		6	4	300	0.090	0.27	0.27	6.00	15915	5730	45°
		8	4	300	0.125	0.30	0.30	8.00	11935	5970	45°
		10	4	300	0.145	0.36	0.36	9.99	9560	5545	45°
		12	4	300	0.170	0.39	0.39	11.98	7970	5420	45°
	Hardened tool steel 48 - 52 HRC	4	4	220	0.060	0.18	0.18	3.97	17640	4235	45°
		5	4	220	0.070	0.24	0.24	4.99	14035	3930	45°
		6	4	220	0.085	0.27	0.27	6.00	11670	3970	45°
		8	4	220	0.120	0.30	0.30	8.00	8755	4200	45°
		10	4	220	0.140	0.36	0.36	9.99	7010	3925	45°
		12	4	220	0.160	0.39	0.39	11.98	5845	3740	45°
	Hardened tool steel 52 - 56 HRC	4	4	160	0.055	0.18	0.18	3.97	12830	2825	45°
		5	4	160	0.065	0.24	0.24	4.99	10205	2655	45°
		6	4	160	0.075	0.27	0.27	6.00	8490	2545	45°
		8	4	160	0.110	0.30	0.30	8.00	6365	2800	45°
		10	4	160	0.125	0.36	0.36	9.99	5100	2550	45°
		12	4	160	0.145	0.39	0.39	11.98	4250	2465	45°
	Hardened tool steel 56 - 60 HRC	4	4	80	0.035	0.18	0.18	3.97	6415	900	45°
		5	4	80	0.040	0.24	0.24	4.99	5105	815	45°
		6	4	80	0.045	0.27	0.27	6.00	4245	765	45°
		8	4	80	0.065	0.30	0.30	8.00	3185	830	45°
		10	4	80	0.075	0.36	0.36	9.99	2550	765	45°
		12	4	80	0.085	0.39	0.39	11.98	2125	725	45°

Corner radius end mills Toro-X

Tolerance r 0/+0.015, 6xd

HSS | Favora® | Base-X | X-Generation X

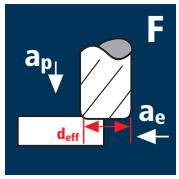
HM XT	λ 30° γ -5°

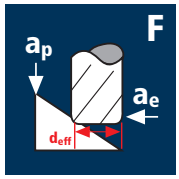


		Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7104** ø-Code **.222**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z	X-AL X7104 $
.222	4	6	3.7	69	5	24	1.0	2.1°	4	82.00
.262	5	6	4.6	75	6	30	1.0	1.0°	4	82.00
.302	6	6	5.5	80	7	43	1.0	0.0°	4	82.00
.391	8	8	7.4	90	9	53	1.0	0.0°	4	103.00
.450	10	10	9.2	105	11	64	1.0	0.0°	4	140.00
.501	12	12	11.0	120	13	74	1.0	0.0°	4	173.00
.395	8	8	7.4	90	9	53	2.0	0.0°	4	103.00
.455	10	10	9.2	105	11	64	2.0	0.0°	4	140.00
.505	12	12	11.0	120	13	74	2.0	0.0°	4	173.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 48 - 52 HRC	2	4	150	0.020	0.05	0.44	1.44	33160	2655	r=0.5
		3	4	150	0.025	0.05	0.66	2.44	19570	1955	r=0.5
		4	4	150	0.030	0.06	0.88	3.47	13760	1650	r=0.5
		5	4	150	0.030	0.06	1.10	4.47	10680	1280	r=0.5
		6	6	150	0.035	0.08	1.32	5.54	8620	1810	r=0.5
		8	6	150	0.040	0.08	1.76	7.54	6335	1520	r=0.5
		10	6	150	0.045	0.10	2.20	9.60	4975	1345	r=0.5
		12	6	150	0.050	0.10	2.64	11.60	4115	1235	r=0.5
		16	6	150	0.060	0.12	3.52	15.65	3050	1100	r=0.5
	Hardened tool steel 52 - 56 HRC	2	4	120	0.020	0.05	0.44	1.44	26525	2120	r=0.5
		3	4	120	0.025	0.05	0.66	2.44	15655	1565	r=0.5
		4	4	120	0.030	0.06	0.88	3.47	11010	1320	r=0.5
		5	4	120	0.030	0.06	1.10	4.47	8545	1025	r=0.5
		6	6	120	0.035	0.08	1.32	5.54	6895	1450	r=0.5
		8	6	120	0.040	0.08	1.76	7.54	5065	1215	r=0.5
		10	6	120	0.045	0.10	2.20	9.60	3980	1075	r=0.5
		12	6	120	0.050	0.10	2.64	11.60	3295	990	r=0.5
		16	6	120	0.060	0.12	3.52	15.65	2440	880	r=0.5
	Hardened tool steel 56 - 60 HRC	2	4	80	0.015	0.05	0.44	1.44	17685	1060	r=0.5
		3	4	80	0.020	0.05	0.66	2.44	10435	835	r=0.5
		4	4	80	0.025	0.06	0.88	3.47	7340	735	r=0.5
		5	4	80	0.025	0.06	1.10	4.47	5695	570	r=0.5
		6	6	80	0.030	0.08	1.32	5.54	4595	825	r=0.5
		8	6	80	0.030	0.08	1.76	7.54	3375	610	r=0.5
		10	6	80	0.035	0.10	2.20	9.60	2655	560	r=0.5
		12	6	80	0.040	0.10	2.64	11.60	2195	525	r=0.5
		16	6	80	0.050	0.12	3.52	15.65	1625	490	r=0.5
	Hardened tool steel > 60 HRC	2	4	40	0.015	0.05	0.44	1.44	8840	530	r=0.5
		3	4	40	0.020	0.05	0.66	2.44	5220	420	r=0.5
		4	4	40	0.025	0.06	0.88	3.47	3670	365	r=0.5
		5	4	40	0.025	0.06	1.10	4.47	2850	285	r=0.5
		6	6	40	0.030	0.08	1.32	5.54	2300	415	r=0.5
		8	6	40	0.030	0.08	1.76	7.54	1690	305	r=0.5
		10	6	40	0.035	0.10	2.20	9.60	1325	280	r=0.5
		12	6	40	0.040	0.10	2.64	11.60	1100	265	r=0.5
		16	6	40	0.050	0.12	3.52	15.65	815	245	r=0.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 48 - 52 HRC	2	4	300	0.020	0.05	0.05	1.94	49225	3940	45°
		3	4	300	0.025	0.05	0.05	2.94	32480	3250	45°
		4	4	300	0.030	0.06	0.06	3.96	24115	2895	45°
		5	4	300	0.035	0.06	0.06	4.96	19255	2695	45°
		6	6	300	0.040	0.08	0.08	5.98	15970	3835	45°
		8	6	300	0.045	0.08	0.08	7.98	11965	3230	45°
		10	6	300	0.050	0.10	0.10	9.99	9560	2870	45°
		12	6	300	0.055	0.10	0.10	11.99	7965	2630	45°
		16	6	300	0.065	0.12	0.12	16.00	5970	2330	45°
	Hardened tool steel 52 - 56 HRC	2	4	250	0.020	0.05	0.05	1.94	41020	3280	45°
		3	4	250	0.025	0.05	0.05	2.94	27070	2705	45°
		4	4	250	0.030	0.06	0.06	3.96	20095	2410	45°
		5	4	250	0.035	0.06	0.06	4.96	16045	2245	45°
		6	6	250	0.040	0.08	0.08	5.98	13310	3195	45°
		8	6	250	0.045	0.08	0.08	7.98	9970	2690	45°
		10	6	250	0.050	0.10	0.10	9.99	7965	2390	45°
		12	6	250	0.050	0.10	0.10	11.99	6635	1990	45°
		16	6	250	0.060	0.12	0.12	16.00	4975	1790	45°
	Hardened tool steel 56 - 60 HRC	2	4	180	0.015	0.05	0.05	1.94	29535	1770	45°
		3	4	180	0.020	0.05	0.05	2.94	19490	1560	45°
		4	4	180	0.025	0.06	0.06	3.96	14470	1445	45°
		5	4	180	0.030	0.06	0.06	4.96	11550	1385	45°
		6	6	180	0.035	0.08	0.08	5.98	9580	2010	45°
		8	6	180	0.040	0.08	0.08	7.98	7180	1725	45°
		10	6	180	0.045	0.10	0.10	9.99	5735	1550	45°
		12	6	180	0.045	0.10	0.10	11.99	4780	1290	45°
		16	6	180	0.055	0.12	0.12	16.00	3580	1180	45°
	Hardened tool steel > 60 HRC	2	4	100	0.010	0.05	0.05	1.94	16410	655	45°
		3	4	100	0.015	0.05	0.05	2.94	10825	650	45°
		4	4	100	0.015	0.06	0.06	3.96	8040	480	45°
		5	4	100	0.020	0.06	0.06	4.96	6420	515	45°
		6	6	100	0.020	0.08	0.08	5.98	5325	640	45°
		8	6	100	0.025	0.08	0.08	7.98	3990	600	45°
		10	6	100	0.025	0.10	0.10	9.99	3185	480	45°
		12	6	100	0.030	0.10	0.10	11.99	2655	480	45°
		16	6	100	0.035	0.12	0.12	16.00	1990	420	45°

Corner radius end mills XSpeed

Tolerance r 0/+0.015, 6xd

HSS | Favora® | Base-X | X-Generation X

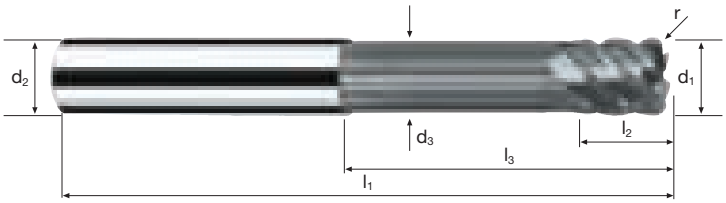
HM XT | λ 55° γ-10°

h5

d1

r

F

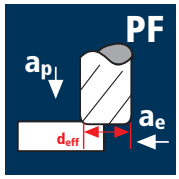


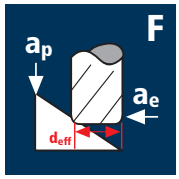
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: Order-N°. Coating: X | Article-N°.: 7204 | ø-Code: .140

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z	X-AL X7204 $
.140	2	6	1.9	66	3	12	0.5	6.0°	4	86.00
.180	3	6	2.8	66	4	18	0.5	3.7°	4	86.00
.220	4	6	3.7	69	5	24	0.5	2.1°	4	86.00
.260	5	6	4.6	75	6	30	0.5	0.9°	4	86.00
.295	6	6	5.5	80	7	43	0.5	0.0°	4	86.00
.300	6	6	5.5	80	7	43	0.5	0.0°	6	86.00
.386	8	8	7.4	90	9	53	0.5	0.0°	4	107.00
.391	8	8	7.4	90	9	53	0.5	0.0°	6	107.00
.440	10	10	9.2	105	11	64	0.5	0.0°	4	145.00
.450	10	10	9.2	105	11	64	0.5	0.0°	6	145.00
.491	12	12	11.0	120	13	74	0.5	0.0°	4	180.00
.501	12	12	11.0	120	13	74	0.5	0.0°	6	180.00
new! .606	16	16	15.0	135	17	86	0.5	0.0°	6	281.00

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 48 - 52 HRC	4	4	150	0.040	0.18	0.88	3.14	15205	2435	r=1.0
		5	4	150	0.045	0.22	1.10	4.25	11235	2020	r=1.0
		6	6	150	0.050	0.26	1.32	5.35	8925	2680	r=1.0
		8	6	150	0.060	0.32	1.76	7.47	6390	2300	r=1.0
		10	6	150	0.080	0.38	2.20	9.57	4990	2395	r=1.0
		12	6	150	0.095	0.45	2.64	11.67	4090	2330	r=1.0
		16	6	150	0.105	0.50	3.52	15.73	3035	1910	r=1.0
	Hardened tool steel 52 - 56 HRC	4	4	120	0.035	0.18	0.88	3.14	12165	1705	r=1.0
		5	4	120	0.040	0.22	1.10	4.25	8990	1440	r=1.0
		6	6	120	0.045	0.26	1.32	5.35	7140	1930	r=1.0
		8	6	120	0.055	0.32	1.76	7.47	5115	1690	r=1.0
		10	6	120	0.070	0.38	2.20	9.57	3990	1675	r=1.0
		12	6	120	0.085	0.45	2.64	11.67	3275	1670	r=1.0
		16	6	120	0.095	0.50	3.52	15.73	2430	1385	r=1.0
	Hardened tool steel 56 - 60 HRC	4	4	80	0.035	0.18	0.88	3.14	8110	1135	r=1.0
		5	4	80	0.035	0.22	1.10	4.25	5990	840	r=1.0
		6	6	80	0.040	0.26	1.32	5.35	4760	1140	r=1.0
		8	6	80	0.050	0.32	1.76	7.47	3410	1025	r=1.0
		10	6	80	0.065	0.38	2.20	9.57	2660	1035	r=1.0
		12	6	80	0.080	0.45	2.64	11.67	2180	1045	r=1.0
		16	6	80	0.085	0.50	3.52	15.73	1620	825	r=1.0
	Hardened tool steel > 60 HRC	4	4	40	0.025	0.18	0.88	3.14	4055	405	r=1.0
		5	4	40	0.025	0.22	1.10	4.25	2995	300	r=1.0
		6	6	40	0.030	0.26	1.32	5.35	2380	430	r=1.0
		8	6	40	0.035	0.32	1.76	7.47	1705	360	r=1.0
		10	6	40	0.045	0.38	2.20	9.57	1330	360	r=1.0
		12	6	40	0.055	0.45	2.64	11.67	1090	360	r=1.0
		16	6	40	0.060	0.50	3.52	15.73	810	290	r=1.0

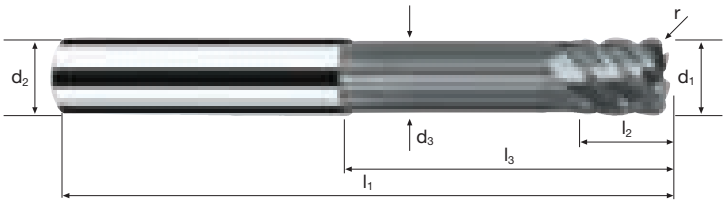
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 48 - 52 HRC	4	4	300	0.030	0.08	0.08	3.86	24740	2970	45°
		5	4	300	0.035	0.08	0.08	4.86	19650	2750	45°
		6	6	300	0.040	0.11	0.11	5.90	16185	3885	45°
		8	6	300	0.045	0.11	0.11	7.90	12090	3265	45°
		10	6	300	0.050	0.14	0.14	9.94	9605	2880	45°
		12	6	300	0.055	0.14	0.14	11.94	8000	2640	45°
		16	6	300	0.065	0.16	0.16	15.96	5985	2335	45°
	Hardened tool steel 52 - 56 HRC	4	4	250	0.030	0.08	0.08	3.86	20615	2475	45°
		5	4	250	0.035	0.08	0.08	4.86	16375	2295	45°
		6	6	250	0.040	0.11	0.11	5.90	13490	3240	45°
		8	6	250	0.045	0.11	0.11	7.90	10075	2720	45°
		10	6	250	0.050	0.14	0.14	9.94	8005	2400	45°
		12	6	250	0.050	0.14	0.14	11.94	6665	2000	45°
		16	6	250	0.060	0.16	0.16	15.96	4985	1795	45°
	Hardened tool steel 56 - 60 HRC	4	4	180	0.025	0.08	0.08	3.86	14845	1485	45°
		5	4	180	0.030	0.08	0.08	4.86	11790	1415	45°
		6	6	180	0.035	0.11	0.11	5.90	9710	2040	45°
		8	6	180	0.040	0.11	0.11	7.90	7255	1740	45°
		10	6	180	0.045	0.14	0.14	9.94	5765	1555	45°
		12	6	180	0.045	0.14	0.14	11.94	4800	1295	45°
		16	6	180	0.055	0.16	0.16	15.96	3590	1185	45°
	Hardened tool steel > 60 HRC	4	4	100	0.015	0.08	0.08	3.86	8245	495	45°
		5	4	100	0.020	0.08	0.08	4.86	6550	525	45°
		6	6	100	0.020	0.11	0.11	5.90	5395	645	45°
		8	6	100	0.025	0.11	0.11	7.90	4030	605	45°
		10	6	100	0.025	0.14	0.14	9.94	3200	480	45°
		12	6	100	0.030	0.14	0.14	11.94	2665	480	45°
		16	6	100	0.035	0.16	0.16	15.96	1995	420	45°

Corner radius end mills XSpeed

Tolerance r 0/+0.015, 6xd

HSS | Favora® | Base-X | X-Generation X

HM XT	λ 55° γ-10°

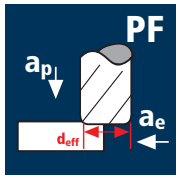


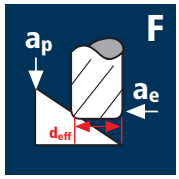
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS

Example: **Order-N°.** Coating **X** Article-N°. **7204** ø-Code **.218**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.015	α	z	X-AL X7204 $
.218	4	6	3.7	69	5	24	1.0	2.1°	4	86.00
.258	5	6	4.6	75	6	30	1.0	1.0°	4	86.00
.293	6	6	5.5	80	7	43	1.0	0.0°	4	86.00
.297	6	6	5.5	80	7	43	1.0	0.0°	6	86.00
.384	8	8	7.4	90	9	53	1.0	0.0°	4	107.00
.388	8	8	7.4	90	9	53	1.0	0.0°	6	107.00
.435	10	10	9.2	105	11	64	1.0	0.0°	4	145.00
.445	10	10	9.2	105	11	64	1.0	0.0°	6	145.00
.486	12	12	11.0	120	13	74	1.0	0.0°	4	180.00
.496	12	12	11.0	120	13	74	1.0	0.0°	6	180.00
new! .608	16	16	15.0	135	17	86	1.0	0.0°	6	281.00

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Steel < 850 N/mm² P P	3	4	200	0.040	0.15	0.90	2.71	23490	3760	r=0.5
		4	4	200	0.050	0.18	1.20	3.77	16885	3375	r=0.5
		5	4	200	0.055	0.20	1.50	4.80	13265	2920	r=0.5
		6	6	200	0.060	0.22	1.80	5.83	10920	3930	r=0.5
		8	6	200	0.075	0.25	2.40	7.87	8090	3640	r=0.5
		10	6	200	0.090	0.28	3.00	9.90	6430	3470	r=0.5
		12	6	200	0.110	0.30	3.60	11.92	5340	3525	r=0.5
		16	6	200	0.120	0.65	4.80	15.47	4115	2965	r=1.5
	Steel 850 - 1100 N/mm² P P	3	4	180	0.040	0.15	0.90	2.71	21145	3385	r=0.5
		4	4	180	0.050	0.18	1.20	3.77	15200	3040	r=0.5
		5	4	180	0.050	0.20	1.50	4.80	11935	2385	r=0.5
		6	6	180	0.055	0.22	1.80	5.83	9830	3245	r=0.5
		8	6	180	0.070	0.25	2.40	7.87	7280	3060	r=0.5
		10	6	180	0.085	0.28	3.00	9.90	5790	2955	r=0.5
		12	6	180	0.105	0.30	3.60	11.92	4805	3025	r=0.5
		16	6	180	0.115	0.65	4.80	15.47	3705	2555	r=1.5
	Steel 1100 - 1300 N/mm² P P	3	4	150	0.035	0.15	0.90	2.71	17620	2465	r=0.5
		4	4	150	0.045	0.18	1.20	3.77	12665	2280	r=0.5
		5	4	150	0.050	0.20	1.50	4.80	9945	1990	r=0.5
		6	6	150	0.055	0.22	1.80	5.83	8190	2705	r=0.5
		8	6	150	0.065	0.25	2.40	7.87	6065	2365	r=0.5
		10	6	150	0.080	0.28	3.00	9.90	4825	2315	r=0.5
		12	6	150	0.095	0.30	3.60	11.92	4005	2285	r=0.5
		16	6	150	0.105	0.65	4.80	15.47	3085	1945	r=1.5
	Stainless steel [Cr-Ni/1.4301] P	3	4	60	0.025	0.15	0.70	2.71	7050	705	r=0.5
		4	4	60	0.030	0.18	1.00	3.77	5065	610	r=0.5
		5	4	60	0.030	0.20	1.20	4.80	3980	480	r=0.5
		6	6	60	0.035	0.22	1.40	5.83	3275	690	r=0.5
		8	6	60	0.040	0.25	1.90	7.87	2425	580	r=0.5
		10	6	60	0.050	0.28	2.40	9.90	1930	580	r=0.5
		12	6	60	0.060	0.30	2.90	11.92	1600	575	r=0.5
		16	6	60	0.070	0.65	3.80	15.47	1235	520	r=1.5

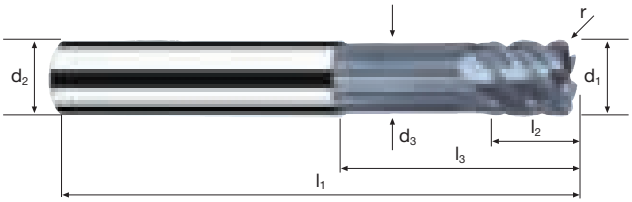
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel < 850 N/mm² P P	3	4	420	0.025	0.05	0.05	2.94	45475	4550	45°
		4	4	420	0.030	0.06	0.06	3.96	33760	4050	45°
		5	4	420	0.035	0.06	0.06	4.96	26955	3775	45°
		6	6	420	0.040	0.08	0.08	5.98	22355	5365	45°
		8	6	420	0.045	0.08	0.08	7.98	16755	4525	45°
		10	6	420	0.050	0.10	0.10	9.99	13385	4015	45°
		12	6	420	0.055	0.10	0.10	11.99	11150	3680	45°
		16	6	420	0.065	0.18	0.18	15.87	8425	3285	45°
	Steel 850 - 1100 N/mm² P P	3	4	360	0.025	0.05	0.05	2.94	38980	3900	45°
		4	4	360	0.030	0.06	0.06	3.96	28940	3475	45°
		5	4	360	0.035	0.06	0.06	4.96	23105	3235	45°
		6	6	360	0.040	0.08	0.08	5.98	19165	4600	45°
		8	6	360	0.045	0.08	0.08	7.98	14360	3875	45°
		10	6	360	0.050	0.10	0.10	9.99	11470	3440	45°
		12	6	360	0.050	0.10	0.10	11.99	9560	2870	45°
		16	6	360	0.060	0.18	0.18	15.87	7220	2600	45°
	Steel 1100 - 1300 N/mm² P P	3	4	320	0.020	0.05	0.05	2.94	34645	2770	45°
		4	4	320	0.025	0.06	0.06	3.96	25725	2575	45°
		5	4	320	0.030	0.06	0.06	4.96	20535	2465	45°
		6	6	320	0.035	0.08	0.08	5.98	17035	3575	45°
		8	6	320	0.040	0.08	0.08	7.98	12765	3065	45°
		10	6	320	0.045	0.10	0.10	9.99	10195	2755	45°
		12	6	320	0.050	0.10	0.10	11.99	8495	2550	45°
		16	6	320	0.055	0.18	0.18	15.87	6420	2120	45°
	Stainless steel [Cr-Ni/1.4301] P	3	4	145	0.020	0.05	0.05	2.94	15700	1255	45°
		4	4	145	0.025	0.06	0.06	3.96	11655	1165	45°
		5	4	145	0.030	0.06	0.06	4.96	9305	1115	45°
		6	6	145	0.030	0.08	0.08	5.98	7720	1390	45°
		8	6	145	0.035	0.08	0.08	7.98	5785	1215	45°
		10	6	145	0.040	0.10	0.10	9.99	4620	1110	45°
		12	6	145	0.045	0.10	0.10	11.99	3850	1040	45°
		16	6	145	0.050	0.18	0.18	15.87	2910	875	45°

Corner radius end mills Multispeed

Tolerance r 0/+0.03, 3xd

HSS | Favora® | Base-X | X-Generation X

HM MG10	λ 45° γ 5°

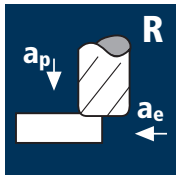


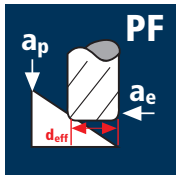
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5250** ø-Code **.180**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	POLYCHROM P5250 $
.180	3	6	2.8	57	4	14	0.5	4.4°	4	71.00
.220	4	6	3.7	57	5	16	0.5	2.9°	4	71.00
.260	5	6	4.6	57	6	18	0.5	1.5°	4	71.00
.297	6	6	5.5	57	7	20	0.5	0.0°	6	71.00
.388	8	8	7.4	63	9	26	0.5	0.0°	6	89.00
.445	10	10	9.2	72	11	31	0.5	0.0°	6	121.00
.496	12	12	11.0	83	13	37	0.5	0.0°	6	150.00
.300	6	6	5.5	57	7	20	0.8	0.0°	6	71.00
.391	8	8	7.4	63	9	26	1.0	0.0°	6	89.00
.450	10	10	9.2	72	11	31	1.0	0.0°	6	121.00
.501	12	12	11.0	83	13	37	1.5	0.0°	6	150.00
.610	16	16	15.0	92	17	43	1.5	0.0°	6	234.00

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Stainless steel [Cr-Ni/1.4301] P	2	4	80	0.015	0.60	1.20	12730	765	r=0.5
		3	4	80	0.025	0.60	1.80	8490	850	r=0.5
		4	4	80	0.035	0.60	2.40	6365	890	r=0.5
		5	4	80	0.040	0.60	3.00	5095	815	r=0.5
		6	4	80	0.050	0.60	3.60	4245	850	r=0.5
		8	4	80	0.065	0.60	4.80	3185	830	r=0.5
		10	4	80	0.085	0.60	6.00	2545	865	r=0.5
		12	4	80	0.100	0.60	7.20	2120	850	r=0.5
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	2	4	70	0.015	0.60	1.20	11140	670	r=0.5
		3	4	70	0.025	0.60	1.80	7425	745	r=0.5
		4	4	70	0.035	0.60	2.40	5570	780	r=0.5
		5	4	70	0.040	0.60	3.00	4455	715	r=0.5
		6	4	70	0.050	0.60	3.60	3715	745	r=0.5
		8	4	70	0.065	0.60	4.80	2785	725	r=0.5
		10	4	70	0.085	0.60	6.00	2230	760	r=0.5
		12	4	70	0.100	0.60	7.20	1855	740	r=0.5
	Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	2	4	50	0.010	0.60	1.20	7960	320	r=0.5
		3	4	50	0.020	0.60	1.80	5305	425	r=0.5
		4	4	50	0.025	0.60	2.40	3980	400	r=0.5
		5	4	50	0.030	0.60	3.00	3185	380	r=0.5
		6	4	50	0.035	0.60	3.60	2655	370	r=0.5
		8	4	50	0.045	0.60	4.80	1990	360	r=0.5
		10	4	50	0.060	0.60	6.00	1590	380	r=0.5
		12	4	50	0.070	0.60	7.20	1325	370	r=0.5
	Steel < 850 N/mm² P P	2	4	180	0.020	0.60	1.20	28650	2290	r=0.5
		3	4	180	0.035	0.60	1.80	19100	2675	r=0.5
		4	4	180	0.045	0.60	2.40	14325	2580	r=0.5
		5	4	180	0.050	0.60	3.00	11460	2290	r=0.5
		6	4	180	0.065	0.60	3.60	9550	2485	r=0.5
		8	4	180	0.085	0.60	4.80	7160	2435	r=0.5
		10	4	180	0.110	0.60	6.00	5730	2520	r=0.5
		12	4	180	0.130	0.60	7.20	4775	2485	r=0.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Stainless steel [Cr-Ni/1.4301] P	2	4	160	0.030	0.10	0.10	1.99	25595	3070	45°
		3	4	160	0.050	0.12	0.12	3.00	16975	3395	45°
		4	4	160	0.070	0.12	0.12	4.00	12735	3565	45°
		5	4	160	0.080	0.16	0.16	5.00	10185	3260	45°
		6	4	160	0.100	0.18	0.18	6.00	8490	3395	45°
		8	4	160	0.130	0.20	0.20	7.99	6375	3315	45°
		10	4	160	0.170	0.24	0.24	9.97	5110	3475	45°
		12	4	160	0.200	0.26	0.26	11.96	4260	3410	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	2	4	145	0.030	0.10	0.10	1.99	23195	2785	45°
		3	4	145	0.050	0.12	0.12	3.00	15385	3075	45°
		4	4	145	0.070	0.12	0.12	4.00	11540	3230	45°
		5	4	145	0.080	0.16	0.16	5.00	9230	2955	45°
		6	4	145	0.100	0.18	0.18	6.00	7695	3080	45°
		8	4	145	0.130	0.20	0.20	7.99	5775	3005	45°
		10	4	145	0.170	0.24	0.24	9.97	4630	3150	45°
		12	4	145	0.200	0.26	0.26	11.96	3860	3090	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	2	4	110	0.020	0.10	0.10	1.99	17595	1410	45°
		3	4	110	0.040	0.12	0.12	3.00	11670	1865	45°
		4	4	110	0.050	0.12	0.12	4.00	8755	1750	45°
		5	4	110	0.060	0.16	0.16	5.00	7005	1680	45°
		6	4	110	0.070	0.18	0.18	6.00	5835	1635	45°
		8	4	110	0.090	0.20	0.20	7.99	4380	1575	45°
		10	4	110	0.120	0.24	0.24	9.97	3510	1685	45°
		12	4	110	0.140	0.26	0.26	11.96	2930	1640	45°
	Steel < 850 N/mm² P P	2	4	400	0.040	0.10	0.10	1.99	60000	9600	45°
		3	4	400	0.070	0.12	0.12	3.00	42445	11885	45°
		4	4	400	0.090	0.12	0.12	4.00	31830	11460	45°
		5	4	400	0.100	0.16	0.16	5.00	25465	10185	45°
		6	4	400	0.130	0.18	0.18	6.00	21220	11035	45°
		8	4	400	0.170	0.20	0.20	7.99	15935	10835	45°
		10	4	400	0.220	0.24	0.24	9.97	12770	11240	45°
		12	4	400	0.260	0.26	0.26	11.96	10645	11070	45°

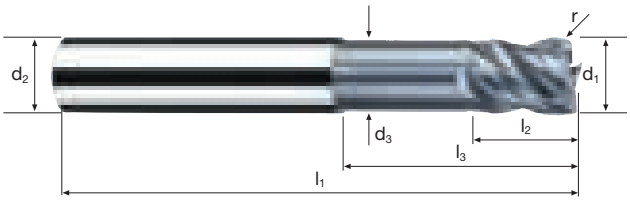
Corner radius end mills Toro-SB

Tolerance r 0/+0.03, 3xd

HSS | Favora® | Base-X **B** | X-Generation

HM MG10 | λ 40° γ 5°

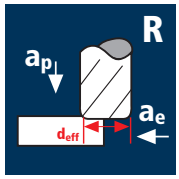
Vario

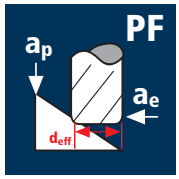


Rm < 850 | **Rm** 850-1100 | **Inox** Stainless | **Ti** Titanium | **GG(G) Tool Steel Nickel-Alloys**

Example: **Order-N°.** Coating **P** Article-N°. **7340** ø-Code **.138**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	POLYCHROM P7340 $
.138	2	6	1.9	57	3	6	0.2	8.5°	4	59.70
.178	3	6	2.8	57	4	9	0.2	5.8°	4	59.70
.218	4	6	3.7	57	5	12	0.2	3.6°	4	59.70
.258	5	6	4.6	57	6	15	0.2	1.7°	4	59.70
.297	6	6	5.5	57	7	20	0.2	0.0°	4	59.70
.385	8	8	7.4	63	9	26	0.2	0.0°	4	75.00
.445	10	10	9.2	72	11	31	0.2	0.0°	4	101.00
.496	12	12	11.0	83	13	37	0.2	0.0°	4	125.00
.140	2	6	1.9	57	3	6	0.5	8.7°	4	59.70
.180	3	6	2.8	57	4	9	0.5	6.0°	4	59.70
.220	4	6	3.7	57	5	12	0.5	3.7°	4	59.70
.260	5	6	4.6	57	6	15	0.5	1.7°	4	59.70
.300	6	6	5.5	57	7	20	0.5	0.0°	4	59.70
.388	8	8	7.4	63	9	26	0.5	0.0°	4	75.00
.448	10	10	9.2	72	11	31	0.5	0.0°	4	101.00
.498	12	12	11.0	83	13	37	0.5	0.0°	4	125.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Stainless steel [Cr-Ni/1.4301] P	4	4	100	0.035	0.60	2.40	3.83	8310	1165	r=1.0
		5	4	100	0.045	0.60	3.00	4.83	6590	1185	r=1.0
		6	4	100	0.055	0.60	3.60	5.83	5460	1200	r=1.0
		8	4	100	0.075	0.60	4.80	7.83	4065	1220	r=1.0
		10	4	100	0.090	0.60	6.00	9.83	3240	1165	r=1.0
		12	4	100	0.110	0.60	7.20	11.83	2690	1185	r=1.0
		10	4	100	0.070	0.90	6.00	9.75	3265	915	r=1.5
		12	4	100	0.080	0.90	7.20	11.75	2710	865	r=1.5
		16	4	100	0.090	1.20	9.60	15.67	2030	730	r=2.0
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	4	4	90	0.035	0.60	2.40	3.83	7480	1045	r=1.0
		5	4	90	0.045	0.60	3.00	4.83	5930	1065	r=1.0
		6	4	90	0.055	0.60	3.60	5.83	4915	1080	r=1.0
		8	4	90	0.075	0.60	4.80	7.83	3660	1100	r=1.0
		10	4	90	0.090	0.60	6.00	9.83	2915	1050	r=1.0
		12	4	90	0.110	0.60	7.20	11.83	2420	1065	r=1.0
		10	4	90	0.070	0.90	6.00	9.75	2940	825	r=1.5
		12	4	90	0.080	0.90	7.20	11.75	2440	780	r=1.5
		16	4	90	0.090	1.20	9.60	15.67	1830	660	r=2.0
	Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	4	4	55	0.025	0.60	2.40	3.83	4570	455	r=1.0
		5	4	55	0.030	0.60	3.00	4.83	3625	435	r=1.0
		6	4	55	0.040	0.60	3.60	5.83	3005	480	r=1.0
		8	4	55	0.055	0.60	4.80	7.83	2235	490	r=1.0
		10	4	55	0.065	0.60	6.00	9.83	1780	465	r=1.0
		12	4	55	0.075	0.60	7.20	11.83	1480	445	r=1.0
		10	4	55	0.050	0.90	6.00	9.75	1795	360	r=1.5
		12	4	55	0.055	0.90	7.20	11.75	1490	330	r=1.5
		16	4	55	0.065	1.20	9.60	15.67	1115	290	r=2.0
	Steel < 850 N/mm² P P	4	4	200	0.045	0.60	2.40	3.83	16620	2990	r=1.0
		5	4	200	0.060	0.60	3.00	4.83	13180	3165	r=1.0
		6	4	200	0.070	0.60	3.60	5.83	10920	3060	r=1.0
		8	4	200	0.100	0.60	4.80	7.83	8130	3250	r=1.0
		10	4	200	0.115	0.60	6.00	9.83	6475	2980	r=1.0
		12	4	200	0.145	0.60	7.20	11.83	5380	3120	r=1.0
		10	4	200	0.090	0.90	6.00	9.75	6530	2350	r=1.5
		12	4	200	0.105	0.90	7.20	11.75	5420	2275	r=1.5
		16	4	200	0.115	1.20	9.60	15.67	4065	1870	r=2.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Stainless steel [Cr-Ni/1.4301] P	4	4	160	0.070	0.18	0.18	3.97	12830	3590	45°
		5	4	160	0.090	0.24	0.24	4.99	10205	3675	45°
		6	4	160	0.110	0.27	0.27	6.00	8490	3735	45°
		8	4	160	0.150	0.30	0.30	8.00	6365	3820	45°
		10	4	160	0.180	0.36	0.36	9.99	5100	3670	45°
		12	4	160	0.220	0.39	0.39	11.98	4250	3740	45°
		10	4	160	0.180	0.36	0.36	9.99	5100	3670	45°
		12	4	160	0.220	0.39	0.39	12.00	4245	3735	45°
		16	4	160	0.250	0.45	0.45	15.98	3185	3185	45°
	Stainless steel [Cr-Ni-Mo-.../1.4571] P	4	4	145	0.070	0.18	0.18	3.97	11625	3255	45°
		5	4	145	0.090	0.24	0.24	4.99	9250	3330	45°
		6	4	145	0.110	0.27	0.27	6.00	7695	3385	45°
		8	4	145	0.150	0.30	0.30	8.00	5770	3460	45°
		10	4	145	0.180	0.36	0.36	9.99	4620	3325	45°
		12	4	145	0.220	0.39	0.39	11.98	3855	3390	45°
		10	4	145	0.180	0.36	0.36	9.99	4620	3325	45°
		12	4	145	0.220	0.39	0.39	12.00	3845	3385	45°
		16	4	145	0.250	0.45	0.45	15.98	2890	2890	45°
	Heat resistant steel Duplex steel [1.4462] [17-4 PH] P	4	4	110	0.050	0.18	0.18	3.97	8820	1765	45°
		5	4	110	0.060	0.24	0.24	4.99	7015	1685	45°
		6	4	110	0.080	0.27	0.27	6.00	5835	1865	45°
		8	4	110	0.110	0.30	0.30	8.00	4375	1925	45°
		10	4	110	0.130	0.36	0.36	9.99	3505	1825	45°
		12	4	110	0.150	0.39	0.39	11.98	2925	1755	45°
		10	4	110	0.130	0.36	0.36	9.99	3505	1825	45°
		12	4	110	0.150	0.39	0.39	12.00	2920	1750	45°
		16	4	110	0.180	0.45	0.45	15.98	2190	1575	45°
	Steel < 850 N/mm² P P	4	4	400	0.090	0.18	0.18	3.97	32070	11545	45°
		5	4	400	0.120	0.24	0.24	4.99	25515	12245	45°
		6	4	400	0.140	0.27	0.27	6.00	21220	11885	45°
		8	4	400	0.200	0.30	0.30	8.00	15915	12730	45°
		10	4	400	0.230	0.36	0.36	9.99	12745	11725	45°
		12	4	400	0.290	0.39	0.39	11.98	10630	12330	45°
		10	4	400	0.230	0.36	0.36	9.99	12745	11725	45°
		12	4	400	0.290	0.39	0.39	12.00	10610	12310	45°
		16	4	400	0.320	0.45	0.45	15.98	7970	10200	45°

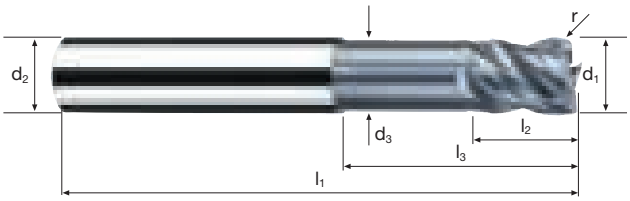
Corner radius end mills Toro-SB

Tolerance r 0/+0.03, 3xd

HSS | Favora® | Base-X | B | X-Generation

HM MG10	λ 40° γ 5°

Vario



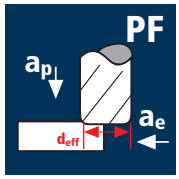
Rm < 850	Rm 850-1100						Inox Stainless	Ti Titanium	GG(G) Tool Steel Nickel-Alloys

Example: **Order-N°.** Coating **P** Article-N°. **7340** ø-Code **.222**

	ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	POLYCHROM P7340 $
	.222	4	6	3.7	57	5	12	1.0	3.8°	4	59.70
	.262	5	6	4.6	57	6	15	1.0	1.8°	4	59.70
	.302	6	6	5.5	57	7	20	1.0	0.0°	4	59.70
	.391	8	8	7.4	63	9	26	1.0	0.0°	4	75.00
	.450	10	10	9.2	72	11	31	1.0	0.0°	4	101.00
	.501	12	12	11.0	83	13	37	1.0	0.0°	4	125.00
new!	.453	10	10	9.2	72	11	31	1.5	0.0°	4	101.00
new!	.503	12	12	11.0	83	13	37	1.5	0.0°	4	125.00
new!	.611	16	16	15.0	92	17	43	2.0	0.0°	4	196.00

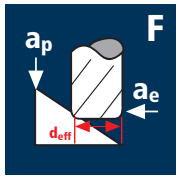
VII

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
Steel < 850 N/mm²	6	6	200	0.050	0.15	1.32	5.33	11945	3585	r=0.8
	8	6	200	0.065	0.18	1.76	7.14	8915	3475	r=1.0
	10	6	200	0.080	0.20	2.20	9.20	6920	3320	r=1.0
	12	6	200	0.090	0.22	2.64	10.56	6030	3255	r=1.5
	16	6	200	0.115	0.25	3.52	14.66	4345	3000	r=1.5
Steel 850 - 1100 N/mm²	6	6	180	0.050	0.15	1.32	5.33	10750	3225	r=0.8
	8	6	180	0.060	0.18	1.76	7.14	8025	2890	r=1.0
	10	6	180	0.075	0.20	2.20	9.20	6230	2805	r=1.0
	12	6	180	0.085	0.22	2.64	10.56	5425	2765	r=1.5
	16	6	180	0.110	0.25	3.52	14.66	3910	2580	r=1.5
Steel 1100 - 1300 N/mm²	6	6	150	0.045	0.15	1.32	5.33	8960	2420	r=0.8
	8	6	150	0.055	0.18	1.76	7.14	6685	2205	r=1.0
	10	6	150	0.070	0.20	2.20	9.20	5190	2180	r=1.0
	12	6	150	0.080	0.22	2.64	10.56	4520	2170	r=1.5
	16	6	150	0.100	0.25	3.52	14.66	3255	1955	r=1.5
Stainless steel [Cr-Ni/1.4301]	6	6	60	0.040	0.12	1.06	5.24	3645	875	r=0.8
	8	6	60	0.050	0.14	1.41	7.02	2720	815	r=1.0
	10	6	60	0.065	0.16	1.76	9.09	2100	820	r=1.0
	12	6	60	0.070	0.18	2.11	10.42	1835	770	r=1.5
	16	6	60	0.090	0.20	2.82	14.50	1315	710	r=1.5

Application



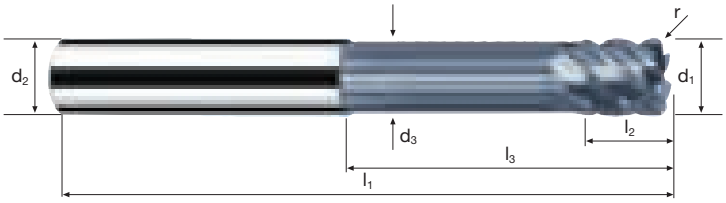
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Steel < 850 N/mm²	6	6	420	0.040	0.10	0.10	5.94	22505	5400	45°
	8	6	420	0.045	0.11	0.11	7.90	16925	4570	45°
	10	6	420	0.050	0.14	0.14	9.94	13450	4035	45°
	12	6	420	0.055	0.17	0.17	11.86	11275	3720	45°
	16	6	420	0.065	0.18	0.18	15.87	8425	3285	45°
Steel 850 - 1100 N/mm²	6	6	360	0.040	0.10	0.10	5.94	19290	4630	45°
	8	6	360	0.045	0.11	0.11	7.90	14505	3915	45°
	10	6	360	0.050	0.14	0.14	9.94	11530	3460	45°
	12	6	360	0.050	0.17	0.17	11.86	9660	2900	45°
	16	6	360	0.060	0.18	0.18	15.87	7220	2600	45°
Steel 1100 - 1300 N/mm²	6	6	320	0.035	0.10	0.10	5.94	17150	3600	45°
	8	6	320	0.040	0.11	0.11	7.90	12895	3095	45°
	10	6	320	0.045	0.14	0.14	9.94	10250	2770	45°
	12	6	320	0.050	0.17	0.17	11.86	8590	2575	45°
	16	6	320	0.055	0.18	0.18	15.87	6420	2120	45°
Stainless steel [Cr-Ni/1.4301]	6	6	145	0.030	0.10	0.10	5.94	7770	1400	45°
	8	6	145	0.035	0.11	0.11	7.90	5845	1225	45°
	10	6	145	0.040	0.14	0.14	9.94	4645	1115	45°
	12	6	145	0.045	0.17	0.17	11.86	3890	1050	45°
	16	6	145	0.050	0.18	0.18	15.87	2910	875	45°

Corner radius end mills Multispeed

Tolerance r 0/+0.03, 5xd

HSS | Favora® | Base-X | X-Generation X

HM MG10	λ 45° γ 5°



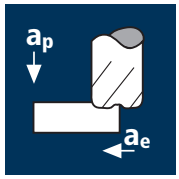
Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	GG(G)

Example: **Order-N°.** Coating **P** Article-N°. **5252** ø-Code **.300**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	z	POLYCHROM P5252 $
.300	6	6	5.5	70	7	33	0.8	4	79.00
.391	8	8	7.4	80	9	43	1.0	4	98.00
.450	10	10	9.2	84	11	43	1.0	4	134.00
.501	12	12	11.0	97	13	51	1.5	6	165.00
.610	16	16	15.0	115	17	66	1.5	6	258.00

VII

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel 850 - 1100 N/mm² (X, X)	3	4	250	0.200	0.08	1.80	26525	21220	3.05
	4	4	250	0.265	0.12	2.40	19895	21090	6.05
	5	4	250	0.335	0.16	3.00	15915	21325	10.25
	6	4	250	0.400	0.20	3.60	13265	21225	15.30
	8	4	250	0.535	0.25	4.80	9945	21280	25.55
	10	4	250	0.665	0.32	6.00	7960	21175	40.65
	12	4	250	0.800	0.40	7.20	6630	21215	61.10
	16	4	250	1.065	0.48	9.60	4975	21195	97.65
Steel 1100 - 1300 N/mm² (X, X)	3	4	220	0.170	0.08	1.80	23345	15875	2.30
	4	4	220	0.225	0.12	2.40	17510	15760	4.55
	5	4	220	0.285	0.16	3.00	14005	15965	7.65
	6	4	220	0.340	0.20	3.60	11670	15870	11.45
	8	4	220	0.455	0.25	4.80	8755	15935	19.10
	10	4	220	0.565	0.32	6.00	7005	15830	30.40
	12	4	220	0.680	0.40	7.20	5835	15870	45.70
	16	4	220	0.905	0.48	9.60	4375	15840	73.00
Steel 1300 - 1500 N/mm² (X, X)	3	4	200	0.155	0.07	1.80	21220	13155	1.65
	4	4	200	0.205	0.11	2.40	15915	13050	3.45
	5	4	200	0.260	0.14	3.00	12735	13245	5.55
	6	4	200	0.310	0.18	3.60	10610	13155	8.50
	8	4	200	0.415	0.23	4.80	7960	13215	14.60
	10	4	200	0.520	0.29	6.00	6365	13240	23.05
	12	4	200	0.625	0.36	7.20	5305	13265	34.40
	16	4	200	0.830	0.43	9.60	3980	13215	54.55
Hardened tool steel 48 - 52 HRC (X)	3	4	180	0.120	0.06	1.80	19100	9170	1.00
	4	4	180	0.160	0.10	2.40	14325	9170	2.20
	5	4	180	0.200	0.13	3.00	11460	9170	3.60
	6	4	180	0.240	0.16	3.60	9550	9170	5.30
	8	4	180	0.320	0.20	4.80	7160	9165	8.80
	10	4	180	0.400	0.26	6.00	5730	9170	14.30
	12	4	180	0.480	0.32	7.20	4775	9170	21.15
	16	4	180	0.640	0.38	9.60	3580	9165	33.45

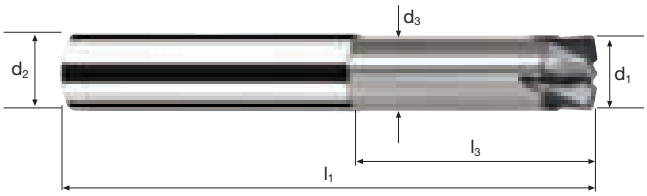
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 52 - 56 HRC (X)	3	4	160	0.090	0.06	1.80	16975	6110	0.65
	4	4	160	0.120	0.08	2.40	12735	6115	1.15
	5	4	160	0.150	0.11	3.00	10185	6110	2.00
	6	4	160	0.180	0.14	3.60	8490	6115	3.10
	8	4	160	0.240	0.18	4.80	6365	6110	5.30
	10	4	160	0.300	0.22	6.00	5095	6115	8.05
	12	4	160	0.360	0.28	7.20	4245	6115	12.35
	16	4	160	0.480	0.34	9.60	3185	6115	19.95
Hardened tool steel 56 - 60 HRC (X)	3	4	140	0.055	0.05	1.80	14855	3270	0.30
	4	4	140	0.075	0.08	2.40	11140	3340	0.65
	5	4	140	0.095	0.10	3.00	8915	3390	1.00
	6	4	140	0.110	0.13	3.60	7425	3265	1.55
	8	4	140	0.150	0.16	4.80	5570	3340	2.55
	10	4	140	0.185	0.21	6.00	4455	3295	4.15
	12	4	140	0.225	0.26	7.20	3715	3345	6.25
	16	4	140	0.300	0.31	9.60	2785	3340	9.95
Hardened tool steel > 60 HRC (X)	3	4	80	0.045	0.05	1.80	8490	1530	0.15
	4	4	80	0.060	0.07	2.40	6365	1530	0.25
	5	4	80	0.075	0.10	3.00	5095	1530	0.45
	6	4	80	0.090	0.12	3.60	4245	1530	0.65
	8	4	80	0.120	0.15	4.80	3185	1530	1.10
	10	4	80	0.145	0.19	6.00	2545	1475	1.70
	12	4	80	0.175	0.24	7.20	2120	1485	2.55
	16	4	80	0.235	0.29	9.60	1590	1495	4.15
Cast iron (lamellar / spheroidal) (X, X)	3	4	250	0.200	0.08	1.80	26525	21220	3.05
	4	4	250	0.265	0.12	2.40	19895	21090	6.05
	5	4	250	0.335	0.16	3.00	15915	21325	10.25
	6	4	250	0.400	0.20	3.60	13265	21225	15.30
	8	4	250	0.535	0.25	4.80	9945	21280	25.55
	10	4	250	0.665	0.32	6.00	7960	21175	40.65
	12	4	250	0.800	0.40	7.20	6630	21215	61.10
	16	4	250	1.065	0.48	9.60	4975	21195	97.65

High feed end mills XFeed

Cylindrical neck, 3xd

HSS | Favora® | Base-X | X-Generation X

HM XT	λ 0° γ 0°
	HFC

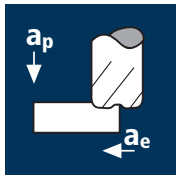


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7600** ø-Code **.180**

ø Code	d1 e8	d2 h6	d3	l1	l3	ap max.	R theo.	α	z	X-AL X7600 $
.180	3	6	2.8	57	9	0.12	0.27	6.0°	4	64.00
.220	4	6	3.7	57	12	0.16	0.36	3.8°	4	64.00
.260	5	6	4.6	57	15	0.20	0.45	1.8°	4	64.00
.300	6	6	5.5	57	20	0.25	0.54	0.0°	4	64.00
.391	8	8	7.4	63	26	0.33	0.72	0.0°	4	80.00
.450	10	10	9.2	72	31	0.41	0.90	0.0°	4	109.00
.501	12	12	11.0	83	37	0.50	1.08	0.0°	4	134.00
.610	16	16	15.0	92	43	0.69	1.44	0.0°	4	210.00

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Steel 850 - 1100 N/mm² (X, X)	6	4	250	0.315	0.24	3.60	13265	16715	14.45
	8	4	250	0.420	0.32	4.80	9945	16710	25.65
	10	4	250	0.525	0.40	6.00	7960	16715	40.10
	12	4	250	0.630	0.48	7.20	6630	16710	57.75
	16	4	250	0.695	0.56	9.60	4975	13830	74.35
Steel 1100 - 1300 N/mm² (X, X)	6	4	220	0.270	0.24	3.60	11670	12605	10.90
	8	4	220	0.355	0.32	4.80	8755	12430	19.10
	10	4	220	0.445	0.40	6.00	7005	12470	29.95
	12	4	220	0.535	0.48	7.20	5835	12485	43.15
	16	4	220	0.590	0.56	9.60	4375	10325	55.50
Steel 1300 - 1500 N/mm² (X, X)	6	4	200	0.245	0.22	3.60	10610	10400	8.25
	8	4	200	0.330	0.29	4.80	7960	10505	14.60
	10	4	200	0.410	0.36	6.00	6365	10440	22.55
	12	4	200	0.490	0.43	7.20	5305	10400	32.20
	16	4	200	0.540	0.50	9.60	3980	8595	41.25
Hardened tool steel 48 - 52 HRC (X)	6	4	180	0.190	0.19	3.60	9550	7260	4.95
	8	4	180	0.250	0.26	4.80	7160	7160	8.95
	10	4	180	0.315	0.32	6.00	5730	7220	13.85
	12	4	180	0.380	0.38	7.20	4775	7260	19.85
	16	4	180	0.415	0.45	9.60	3580	5945	25.70

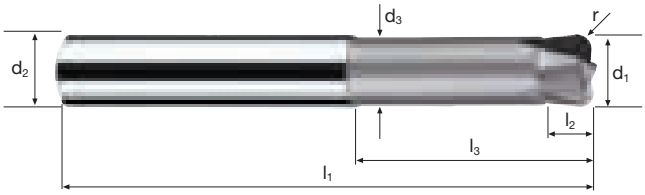
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Hardened tool steel 52 - 56 HRC (X)	6	4	160	0.140	0.17	3.60	8490	4755	2.90
	8	4	160	0.190	0.22	4.80	6365	4835	5.10
	10	4	160	0.235	0.28	6.00	5095	4790	8.05
	12	4	160	0.285	0.34	7.20	4245	4840	11.85
	16	4	160	0.315	0.39	9.60	3185	4015	15.05
Hardened tool steel 56 - 60 HRC (X)	6	4	140	0.090	0.16	3.60	7425	2675	1.55
	8	4	140	0.120	0.21	4.80	5570	2675	2.70
	10	4	140	0.145	0.26	6.00	4455	2585	4.05
	12	4	140	0.175	0.31	7.20	3715	2600	5.80
	16	4	140	0.195	0.36	9.60	2785	2170	7.50

High feed end mills XFeed-R

Cylindrical neck, 3xd

HSS | Favora® | Base-X | X-Generation X

HM XT	λ 0° γ-10°
	HFC



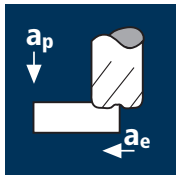
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7620** ø-Code **.300**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r	z	X-AL X7620 $
.300	6	6	5.5	57	3	20	1.0	4	64.00
.391	8	8	7.4	63	4	26	1.5	4	80.00
.450	10	10	9.2	72	5	31	2.0	4	109.00
.501	12	12	11.0	83	6	37	2.5	4	134.00
new! .610	16	16	15.0	92	8	43	3.0	4	210.00

VII

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel 850 - 1100 N/mm²	3	4	250	0.165	0.08	1.20	26525	17505	1.70
	4	4	250	0.220	0.12	1.60	19895	17510	3.35
	5	4	250	0.280	0.16	2.00	15915	17825	5.70
	6	4	250	0.335	0.20	2.40	13265	17775	8.55
	8	4	250	0.445	0.25	3.20	9945	17700	14.15
	10	4	250	0.555	0.32	4.00	7960	17670	22.60
	12	4	250	0.665	0.40	4.80	6630	17635	33.85
	16	4	250	0.890	0.48	6.40	4975	17710	54.40
Steel 1100 - 1300 N/mm²	3	4	220	0.140	0.08	1.20	23345	13075	1.25
	4	4	220	0.185	0.12	1.60	17510	12955	2.50
	5	4	220	0.240	0.16	2.00	14005	13445	4.30
	6	4	220	0.285	0.20	2.40	11670	13305	6.40
	8	4	220	0.380	0.25	3.20	8755	13310	10.65
	10	4	220	0.470	0.32	4.00	7005	13170	16.85
	12	4	220	0.565	0.40	4.80	5835	13185	25.30
	16	4	220	0.755	0.48	6.40	4375	13215	40.60
Steel 1300 - 1500 N/mm²	3	4	200	0.130	0.07	1.20	21220	11035	0.95
	4	4	200	0.170	0.11	1.60	15915	10820	1.90
	5	4	200	0.220	0.14	2.00	12735	11205	3.15
	6	4	200	0.260	0.18	2.40	10610	11035	4.75
	8	4	200	0.345	0.23	3.20	7960	10985	8.10
	10	4	200	0.435	0.29	4.00	6365	11075	12.85
	12	4	200	0.520	0.36	4.80	5305	11035	19.05
	16	4	200	0.695	0.43	6.40	3980	11065	30.45
Hardened tool steel 48 - 52 HRC	3	4	180	0.100	0.06	1.20	19100	7640	0.55
	4	4	180	0.130	0.10	1.60	14325	7450	1.20
	5	4	180	0.170	0.13	2.00	11460	7795	2.05
	6	4	180	0.200	0.16	2.40	9550	7640	2.95
	8	4	180	0.265	0.20	3.20	7160	7590	4.85
	10	4	180	0.335	0.26	4.00	5730	7680	8.00
	12	4	180	0.400	0.32	4.80	4775	7640	11.75
	16	4	180	0.535	0.38	6.40	3580	7660	18.65

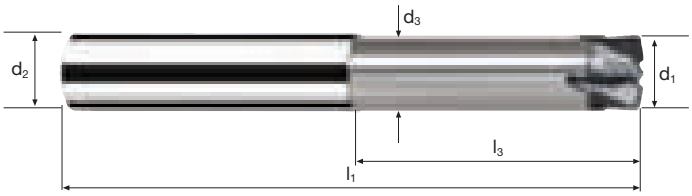
Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Hardened tool steel 52 - 56 HRC	3	4	160	0.075	0.06	1.20	16975	5095	0.35
	4	4	160	0.100	0.08	1.60	12735	5095	0.65
	5	4	160	0.125	0.11	2.00	10185	5095	1.10
	6	4	160	0.150	0.14	2.40	8490	5095	1.70
	8	4	160	0.200	0.18	3.20	6365	5090	2.95
	10	4	160	0.250	0.22	4.00	5095	5095	4.50
	12	4	160	0.300	0.28	4.80	4245	5095	6.85
	16	4	160	0.400	0.34	6.40	3185	5095	11.10
Hardened tool steel 56 - 60 HRC	3	4	140	0.045	0.05	1.20	14855	2675	0.15
	4	4	140	0.060	0.08	1.60	11140	2675	0.35
	5	4	140	0.080	0.10	2.00	8915	2855	0.55
	6	4	140	0.095	0.13	2.40	7425	2820	0.90
	8	4	140	0.125	0.16	3.20	5570	2785	1.45
	10	4	140	0.155	0.21	4.00	4455	2760	2.30
	12	4	140	0.185	0.26	4.80	3715	2750	3.45
	16	4	140	0.250	0.31	6.40	2785	2785	5.55
Hardened tool steel > 60 HRC	3	4	80	0.035	0.05	1.20	8490	1190	0.05
	4	4	80	0.050	0.07	1.60	6365	1275	0.15
	5	4	80	0.060	0.10	2.00	5095	1225	0.25
	6	4	80	0.075	0.12	2.40	4245	1275	0.35
	8	4	80	0.100	0.15	3.20	3185	1275	0.60
	10	4	80	0.120	0.19	4.00	2545	1220	0.95
	12	4	80	0.145	0.24	4.80	2120	1230	1.40
	16	4	80	0.195	0.29	6.40	1590	1240	2.30
Cast iron (lamellar / spheroidal)	3	4	250	0.165	0.08	1.20	26525	17505	1.70
	4	4	250	0.220	0.12	1.60	19895	17510	3.35
	5	4	250	0.280	0.16	2.00	15915	17825	5.70
	6	4	250	0.335	0.20	2.40	13265	17775	8.55
	8	4	250	0.445	0.25	3.20	9945	17700	14.15
	10	4	250	0.555	0.32	4.00	7960	17670	22.60
	12	4	250	0.665	0.40	4.80	6630	17635	33.85
	16	4	250	0.890	0.48	6.40	4975	17710	54.40

High feed end mills XFeed

Cylindrical neck, 6xd

HSS | Favora® | Base-X | X-Generation X

HM XT	λ 0° γ 0°
	HFC

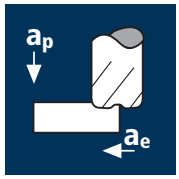


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7604** ø-Code **.180**

ø Code	d1 e8	d2 h6	d3	l1	l3	$ap_{max.}$	$R_{theo.}$	α	z	X-AL X7604 $
.180	3	6	2.8	66	18	0.12	0.27	3.7°	4	76.00
.220	4	6	3.7	69	24	0.16	0.36	2.1°	4	76.00
.260	5	6	4.6	75	30	0.20	0.45	1.0°	4	76.00
.300	6	6	5.5	80	43	0.25	0.54	0.0°	4	76.00
.391	8	8	7.4	90	53	0.33	0.72	0.0°	4	94.00
.450	10	10	9.2	105	64	0.41	0.90	0.0°	4	128.00
.501	12	12	11.0	120	74	0.50	1.08	0.0°	4	159.00
.610	16	16	15.0	135	86	0.69	1.44	0.0°	4	248.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Steel 850 - 1100 N/mm² (X, X)	6	4	250	0.260	0.24	2.40	13265	13795	7.95
	8	4	250	0.350	0.32	3.20	9945	13925	14.25
	10	4	250	0.435	0.40	4.00	7960	13850	22.15
	12	4	250	0.520	0.48	4.80	6630	13790	31.75
	16	4	250	0.595	0.56	6.40	4975	11840	42.45
Steel 1100 - 1300 N/mm² (X, X)	6	4	220	0.220	0.24	2.40	11670	10270	5.90
	8	4	220	0.300	0.32	3.20	8755	10505	10.75
	10	4	220	0.370	0.40	4.00	7005	10365	16.60
	12	4	220	0.440	0.48	4.80	5835	10270	23.65
	16	4	220	0.505	0.56	6.40	4375	8840	31.70
Steel 1300 - 1500 N/mm² (X, X)	6	4	200	0.205	0.22	2.40	10610	8700	4.60
	8	4	200	0.275	0.29	3.20	7960	8755	8.10
	10	4	200	0.340	0.36	4.00	6365	8655	12.45
	12	4	200	0.405	0.43	4.80	5305	8595	17.75
	16	4	200	0.465	0.50	6.40	3980	7405	23.70
Hardened tool steel 48 - 52 HRC (X)	6	4	180	0.155	0.19	2.40	9550	5920	2.70
	8	4	180	0.210	0.26	3.20	7160	6015	5.00
	10	4	180	0.260	0.32	4.00	5730	5960	7.65
	12	4	180	0.310	0.38	4.80	4775	5920	10.80
	16	4	180	0.355	0.45	6.40	3580	5085	14.65

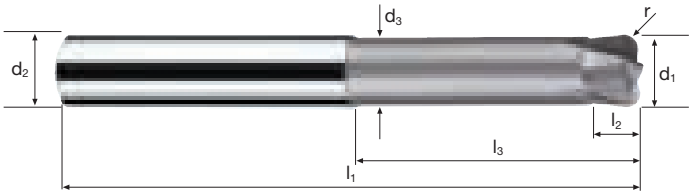
Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	n [min⁻¹]	vf [mm/min]	Q [cm³/min]
Hardened tool steel 52 - 56 HRC (X)	6	4	160	0.115	0.17	2.40	8490	3905	1.60
	8	4	160	0.160	0.22	3.20	6365	4075	2.85
	10	4	160	0.195	0.28	4.00	5095	3975	4.45
	12	4	160	0.235	0.34	4.80	4245	3990	6.50
	16	4	160	0.270	0.39	6.40	3185	3440	8.60
Hardened tool steel 56 - 60 HRC (X)	6	4	140	0.075	0.16	2.40	7425	2230	0.85
	8	4	140	0.100	0.21	3.20	5570	2230	1.50
	10	4	140	0.120	0.26	4.00	4455	2140	2.25
	12	4	140	0.145	0.31	4.80	3715	2155	3.20
	16	4	140	0.165	0.36	6.40	2785	1840	4.25

High feed end mills XFeed-R

Cylindrical neck, 6xd

HSS | Favora® | Base-X | X-Generation X

HM XT	λ 0° γ -10°
	HFC

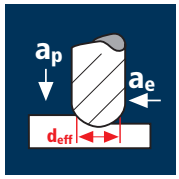


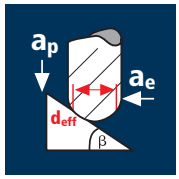
	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60			HSS GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **7624** ø-Code **.300**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r	z	X-AL X7624 $
.300	6	6	5.5	80	3	43	1.0	4	76.00
.391	8	8	7.4	90	4	53	1.5	4	94.00
.450	10	10	9.2	105	5	64	2.0	4	128.00
.501	12	12	11.0	120	6	74	2.5	4	159.00
new! .610	16	16	15.0	135	8	86	3.0	4	248.00

VII

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.8	2	140	0.026	0.05	0.16	0.39	60000	3120	25.0
		1.0	2	140	0.034	0.06	0.20	0.47	60000	4080	49.0
		1.2	2	140	0.040	0.07	0.24	0.56	60000	4800	80.5
		1.5	2	140	0.050	0.09	0.30	0.71	60000	6000	162.0
		2.0	2	140	0.066	0.12	0.40	0.95	46910	6190	297.0
		2.5	2	140	0.084	0.15	0.50	1.19	37450	6290	472.0
		2.8	2	140	0.094	0.17	0.56	1.34	33255	6250	595.0
		3.0	2	140	0.100	0.18	0.60	1.42	31385	6275	677.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.8	2	120	0.024	0.05	0.16	0.39	60000	2880	23.0
		1.0	2	120	0.032	0.06	0.20	0.47	60000	3840	46.0
		1.2	2	120	0.038	0.07	0.24	0.56	60000	4560	76.5
		1.5	2	120	0.048	0.09	0.30	0.71	53800	5165	139.5
		2.0	2	120	0.062	0.12	0.40	0.95	40210	4985	239.5
		2.5	2	120	0.080	0.15	0.50	1.19	32100	5135	385.0
		2.8	2	120	0.090	0.17	0.56	1.34	28505	5130	488.5
		3.0	2	120	0.096	0.18	0.60	1.42	26900	5165	558.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.03	0.10	0.24	60000	1680	5.0
		0.8	2	100	0.022	0.05	0.16	0.39	60000	2640	21.0
		1.0	2	100	0.030	0.06	0.20	0.47	60000	3600	43.0
		1.2	2	100	0.036	0.07	0.24	0.56	56845	4095	69.0
		1.5	2	100	0.044	0.09	0.30	0.71	44835	3945	106.5
		2.0	2	100	0.058	0.12	0.40	0.95	33505	3885	186.5
		2.5	2	100	0.074	0.15	0.50	1.19	26750	3960	297.0
		2.8	2	100	0.082	0.17	0.56	1.34	23755	3895	371.0
		3.0	2	100	0.088	0.18	0.60	1.42	22415	3945	426.0
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.8	2	60	0.020	0.05	0.16	0.39	48970	1960	15.5
		1.0	2	60	0.028	0.06	0.20	0.47	40635	2275	27.5
		1.2	2	60	0.032	0.07	0.24	0.56	34105	2185	36.5
		1.5	2	60	0.040	0.09	0.30	0.71	26900	2150	58.0
		2.0	2	60	0.052	0.12	0.40	0.95	20105	2090	100.5
		2.5	2	60	0.068	0.15	0.50	1.19	16050	2185	164.0
		2.8	2	60	0.076	0.17	0.56	1.34	14255	2165	206.0
		3.0	2	60	0.080	0.18	0.60	1.42	13450	2150	232.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.020	0.022	0.022	0.47	60000	2400	45°
		0.8	2	300	0.022	0.034	0.034	0.75	60000	2640	45°
		1.0	2	300	0.028	0.042	0.042	0.93	60000	3360	45°
		1.2	2	300	0.030	0.050	0.050	1.12	60000	3600	45°
		1.5	2	300	0.034	0.064	0.064	1.40	60000	4080	45°
		2.0	2	300	0.038	0.084	0.084	1.86	51340	3900	45°
		2.5	2	300	0.040	0.106	0.106	2.33	40985	3280	45°
		2.8	2	300	0.044	0.118	0.118	2.61	36590	3220	45°
		3.0	2	300	0.046	0.126	0.126	2.79	34230	3150	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.020	0.022	0.022	0.47	60000	2400	45°
		0.8	2	250	0.020	0.034	0.034	0.75	60000	2400	45°
		1.0	2	250	0.026	0.042	0.042	0.93	60000	3120	45°
		1.2	2	250	0.028	0.050	0.050	1.12	60000	3360	45°
		1.5	2	250	0.032	0.064	0.064	1.40	56845	3640	45°
		2.0	2	250	0.036	0.084	0.084	1.86	42785	3080	45°
		2.5	2	250	0.038	0.106	0.106	2.33	34155	2595	45°
		2.8	2	250	0.042	0.118	0.118	2.61	30490	2560	45°
		3.0	2	250	0.044	0.126	0.126	2.79	28525	2510	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.018	0.022	0.022	0.47	60000	2160	45°
		0.8	2	200	0.020	0.034	0.034	0.75	60000	2400	45°
		1.0	2	200	0.026	0.042	0.042	0.93	60000	3120	45°
		1.2	2	200	0.028	0.050	0.050	1.12	56845	3185	45°
		1.5	2	200	0.030	0.064	0.064	1.40	45475	2730	45°
		2.0	2	200	0.034	0.084	0.084	1.86	34230	2330	45°
		2.5	2	200	0.036	0.106	0.106	2.33	27325	1965	45°
		2.8	2	200	0.040	0.118	0.118	2.61	24390	1950	45°
		3.0	2	200	0.042	0.126	0.126	2.79	22820	1915	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.016	0.022	0.022	0.47	60000	1920	45°
		0.8	2	150	0.018	0.034	0.034	0.75	60000	2160	45°
		1.0	2	150	0.022	0.042	0.042	0.93	51340	2260	45°
		1.2	2	150	0.024	0.050	0.050	1.12	42630	2045	45°
		1.5	2	150	0.028	0.064	0.064	1.40	34105	1910	45°
		2.0	2	150	0.030	0.084	0.084	1.86	25670	1540	45°
		2.5	2	150	0.032	0.106	0.106	2.33	20495	1310	45°
		2.8	2	150	0.036	0.118	0.118	2.61	18295	1315	45°
		3.0	2	150	0.036	0.126	0.126	2.79	17115	1230	45°

Ball nose end mills MicroX

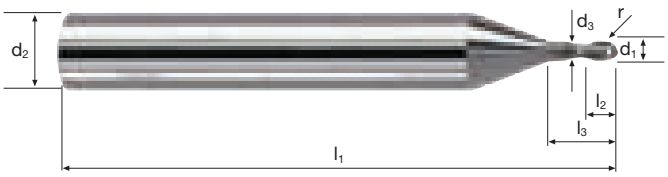
Shank Ø 6mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

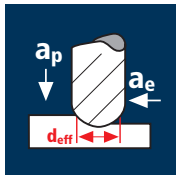
d1 | r

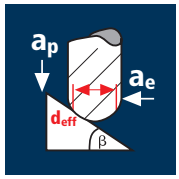


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6562** ø-Code **.020**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL X6562 $
.020	0.2	6	0.18	57	0.2	0.6	0.10	9.7°	2	72.00
.030	0.3	6	0.25	57	0.3	0.9	0.15	9.5°	2	65.00
.040	0.4	6	0.35	57	0.4	1.2	0.20	9.4°	2	65.00
.050	0.5	6	0.45	57	0.5	1.5	0.25	13.3°	2	65.00
.060	0.6	6	0.55	57	0.6	1.8	0.30	13.0°	2	65.00
.080	0.8	6	0.75	57	0.8	2.4	0.40	12.4°	2	65.00
.100	1.0	6	0.95	57	1.0	3.0	0.50	11.8°	2	65.00
.108	1.2	6	1.10	57	1.2	3.6	0.60	11.2°	2	65.00
.120	1.5	6	1.40	57	1.5	4.5	0.75	10.3°	2	65.00
.140	2.0	6	1.90	57	2.0	6.0	1.00	9.0°	2	65.00
.152	2.3	6	2.10	57	2.3	6.9	1.15	8.1°	2	65.00
.160	2.5	6	2.30	57	2.5	7.5	1.25	7.6°	2	65.00
.172	2.8	6	2.60	57	2.8	8.4	1.40	6.8°	2	65.00
.180	3.0	6	2.80	57	3.0	9.0	1.50	6.4°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.8	2	140	0.026	0.04	0.16	0.35	60000	3120	20.0
		1.0	2	140	0.034	0.05	0.20	0.44	60000	4080	41.0
		1.2	2	140	0.040	0.06	0.24	0.52	60000	4800	69.0
		1.5	2	140	0.050	0.08	0.30	0.67	60000	6000	144.0
		2.0	2	140	0.066	0.10	0.40	0.87	51225	6760	270.5
		2.5	2	140	0.084	0.13	0.50	1.11	40150	6745	438.5
		2.8	2	140	0.094	0.14	0.56	1.22	36530	6870	538.5
		3.0	2	140	0.100	0.15	0.60	1.31	34020	6805	612.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.8	2	120	0.024	0.04	0.16	0.35	60000	2880	18.5
		1.0	2	120	0.032	0.05	0.20	0.44	60000	3840	38.5
		1.2	2	120	0.038	0.06	0.24	0.52	60000	4560	65.5
		1.5	2	120	0.048	0.08	0.30	0.67	57010	5475	131.5
		2.0	2	120	0.062	0.10	0.40	0.87	43905	5445	218.0
		2.5	2	120	0.080	0.13	0.50	1.11	34415	5505	358.0
		2.8	2	120	0.090	0.14	0.56	1.22	31310	5635	442.0
		3.0	2	120	0.096	0.15	0.60	1.31	29160	5600	504.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.03	0.10	0.24	60000	1680	5.0
		0.8	2	100	0.022	0.04	0.16	0.35	60000	2640	17.0
		1.0	2	100	0.030	0.05	0.20	0.44	60000	3600	36.0
		1.2	2	100	0.036	0.06	0.24	0.52	60000	4320	62.0
		1.5	2	100	0.044	0.08	0.30	0.67	47510	4180	100.5
		2.0	2	100	0.058	0.10	0.40	0.87	36590	4245	170.0
		2.5	2	100	0.074	0.13	0.50	1.11	28675	4245	276.0
		2.8	2	100	0.082	0.14	0.56	1.22	26090	4280	335.5
		3.0	2	100	0.088	0.15	0.60	1.31	24300	4275	385.0
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.8	2	60	0.020	0.04	0.16	0.35	54570	2185	14.0
		1.0	2	60	0.028	0.05	0.20	0.44	43405	2430	24.5
		1.2	2	60	0.032	0.06	0.24	0.52	36730	2350	34.0
		1.5	2	60	0.040	0.08	0.30	0.67	28505	2280	54.5
		2.0	2	60	0.052	0.10	0.40	0.87	21955	2285	91.5
		2.5	2	60	0.068	0.13	0.50	1.11	17205	2340	152.0
		2.8	2	60	0.076	0.14	0.56	1.22	15655	2380	186.5
		3.0	2	60	0.080	0.15	0.60	1.31	14580	2335	210.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.020	0.020	0.020	0.46	60000	2400	45°
		0.8	2	300	0.022	0.032	0.032	0.74	60000	2640	45°
		1.0	2	300	0.028	0.042	0.042	0.93	60000	3360	45°
		1.2	2	300	0.030	0.050	0.050	1.12	60000	3600	45°
		1.5	2	300	0.034	0.062	0.062	1.40	60000	4080	45°
		2.0	2	300	0.038	0.082	0.082	1.86	51340	3900	45°
		2.5	2	300	0.040	0.102	0.102	2.32	41160	3295	45°
		2.8	2	300	0.044	0.114	0.114	2.60	36730	3230	45°
		3.0	2	300	0.046	0.122	0.122	2.79	34230	3150	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.020	0.020	0.020	0.46	60000	2400	45°
		0.8	2	250	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	250	0.026	0.042	0.042	0.93	60000	3120	45°
		1.2	2	250	0.028	0.050	0.050	1.12	60000	3360	45°
		1.5	2	250	0.032	0.062	0.062	1.40	56845	3640	45°
		2.0	2	250	0.036	0.082	0.082	1.86	42785	3080	45°
		2.5	2	250	0.038	0.102	0.102	2.32	34300	2605	45°
		2.8	2	250	0.042	0.114	0.114	2.60	30610	2570	45°
		3.0	2	250	0.044	0.122	0.122	2.79	28525	2510	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.018	0.020	0.020	0.46	60000	2160	45°
		0.8	2	200	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	200	0.026	0.042	0.042	0.93	60000	3120	45°
		1.2	2	200	0.028	0.050	0.050	1.12	56845	3185	45°
		1.5	2	200	0.030	0.062	0.062	1.40	45475	2730	45°
		2.0	2	200	0.034	0.082	0.082	1.86	34230	2330	45°
		2.5	2	200	0.036	0.102	0.102	2.32	27440	1975	45°
		2.8	2	200	0.040	0.114	0.114	2.60	24485	1960	45°
		3.0	2	200	0.042	0.122	0.122	2.79	22820	1915	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.016	0.020	0.020	0.46	60000	1920	45°
		0.8	2	150	0.018	0.032	0.032	0.74	60000	2160	45°
		1.0	2	150	0.022	0.042	0.042	0.93	51340	2260	45°
		1.2	2	150	0.024	0.050	0.050	1.12	42630	2045	45°
		1.5	2	150	0.028	0.062	0.062	1.40	34105	1910	45°
		2.0	2	150	0.030	0.082	0.082	1.86	25670	1540	45°
		2.5	2	150	0.032	0.102	0.102	2.32	20580	1315	45°
		2.8	2	150	0.036	0.114	0.114	2.60	18365	1320	45°
		3.0	2	150	0.036	0.122	0.122	2.79	17115	1230	45°

Ball nose end mills MicroX

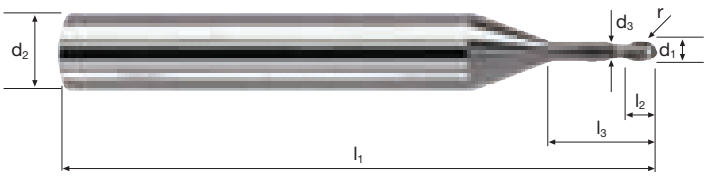
Shank Ø 6mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

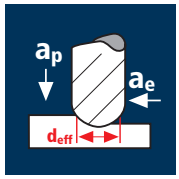
d1 | r

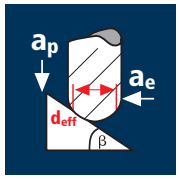


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6564** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL X6564 $
.050	0.5	6	0.45	57	0.5	2.5	0.25	12.3°	2	65.00
.060	0.6	6	0.55	57	0.6	3.0	0.30	11.9°	2	65.00
.080	0.8	6	0.75	57	0.8	4.0	0.40	11.0°	2	65.00
.100	1.0	6	0.95	57	1.0	5.0	0.50	10.2°	2	65.00
.108	1.2	6	1.10	57	1.2	6.0	0.60	9.4°	2	65.00
.120	1.5	6	1.40	61	1.5	7.5	0.75	8.4°	2	65.00
.140	2.0	6	1.90	61	2.0	10.0	1.00	6.9°	2	65.00
.152	2.3	6	2.10	61	2.3	11.5	1.15	6.0°	2	65.00
.160	2.5	6	2.30	61	2.5	12.5	1.25	5.5°	2	65.00
.172	2.8	6	2.60	61	2.8	14.0	1.40	4.9°	2	65.00
.180	3.0	6	2.80	66	3.0	15.0	1.50	4.4°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.016	0.02	0.09	0.20	60000	1920	3.5
		0.6	2	140	0.020	0.02	0.11	0.22	60000	2400	5.5
		0.8	2	140	0.026	0.03	0.14	0.30	60000	3120	13.0
		1.0	2	140	0.034	0.04	0.18	0.39	60000	4080	29.5
		1.2	2	140	0.040	0.05	0.22	0.48	60000	4800	53.0
		1.5	2	140	0.050	0.06	0.27	0.59	60000	6000	97.0
		2.0	2	140	0.066	0.08	0.36	0.78	57135	7540	217.0
		2.5	2	140	0.084	0.10	0.45	0.98	45475	7640	344.0
		3.0	2	140	0.100	0.12	0.54	1.18	37765	7555	489.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.016	0.02	0.09	0.20	60000	1920	3.5
		0.6	2	120	0.020	0.02	0.11	0.22	60000	2400	5.5
		0.8	2	120	0.024	0.03	0.14	0.30	60000	2880	12.0
		1.0	2	120	0.032	0.04	0.18	0.39	60000	3840	27.5
		1.2	2	120	0.038	0.05	0.22	0.48	60000	4560	50.0
		1.5	2	120	0.048	0.06	0.27	0.59	60000	5760	93.5
		2.0	2	120	0.062	0.08	0.36	0.78	48970	6070	175.0
		2.5	2	120	0.080	0.10	0.45	0.98	38980	6235	280.5
		3.0	2	120	0.096	0.12	0.54	1.18	32370	6215	402.5
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.02	0.09	0.20	60000	1680	3.0
		0.6	2	100	0.018	0.02	0.11	0.22	60000	2160	5.0
		0.8	2	100	0.022	0.03	0.14	0.30	60000	2640	11.0
		1.0	2	100	0.030	0.04	0.18	0.39	60000	3600	26.0
		1.2	2	100	0.036	0.05	0.22	0.48	60000	4320	47.5
		1.5	2	100	0.044	0.06	0.27	0.59	53950	4750	77.0
		2.0	2	100	0.058	0.08	0.36	0.78	40810	4735	136.5
		2.5	2	100	0.074	0.10	0.45	0.98	32480	4805	216.0
		3.0	2	100	0.088	0.12	0.54	1.18	26975	4750	308.0
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.02	0.09	0.20	60000	1440	2.5
		0.6	2	60	0.016	0.02	0.11	0.22	60000	1920	4.0
		0.8	2	60	0.020	0.03	0.14	0.30	60000	2400	10.0
		1.0	2	60	0.028	0.04	0.18	0.39	48970	2740	19.5
		1.2	2	60	0.032	0.05	0.22	0.48	39790	2545	28.0
		1.5	2	60	0.040	0.06	0.27	0.59	32370	2590	42.0
		2.0	2	60	0.052	0.08	0.36	0.78	24485	2545	73.5
		2.5	2	60	0.068	0.10	0.45	0.98	19490	2650	119.5
		3.0	2	60	0.080	0.12	0.54	1.18	16185	2590	168.0

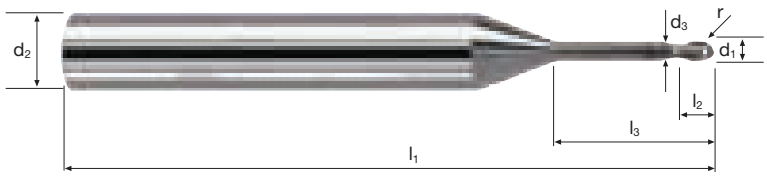
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.020	0.020	0.020	0.46	60000	2400	45°
		0.6	2	300	0.022	0.024	0.024	0.56	60000	2640	45°
		0.8	2	300	0.024	0.032	0.032	0.74	60000	2880	45°
		1.0	2	300	0.028	0.040	0.040	0.93	60000	3360	45°
		1.2	2	300	0.030	0.048	0.048	1.11	60000	3600	45°
		1.5	2	300	0.034	0.060	0.060	1.39	60000	4080	45°
		2.0	2	300	0.038	0.080	0.080	1.86	51340	3900	45°
		2.5	2	300	0.040	0.100	0.100	2.32	41160	3295	45°
		3.0	2	300	0.046	0.120	0.120	2.78	34350	3160	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.020	0.020	0.020	0.46	60000	2400	45°
		0.6	2	250	0.020	0.024	0.024	0.56	60000	2400	45°
		0.8	2	250	0.022	0.032	0.032	0.74	60000	2640	45°
		1.0	2	250	0.026	0.040	0.040	0.93	60000	3120	45°
		1.2	2	250	0.028	0.048	0.048	1.11	60000	3360	45°
		1.5	2	250	0.032	0.060	0.060	1.39	57250	3665	45°
		2.0	2	250	0.036	0.080	0.080	1.86	42785	3080	45°
		2.5	2	250	0.038	0.100	0.100	2.32	34300	2605	45°
		3.0	2	250	0.044	0.120	0.120	2.78	28625	2520	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.018	0.020	0.020	0.46	60000	2160	45°
		0.6	2	200	0.020	0.024	0.024	0.56	60000	2400	45°
		0.8	2	200	0.022	0.032	0.032	0.74	60000	2640	45°
		1.0	2	200	0.026	0.040	0.040	0.93	60000	3120	45°
		1.2	2	200	0.028	0.048	0.048	1.11	57355	3210	45°
		1.5	2	200	0.030	0.060	0.060	1.39	45800	2750	45°
		2.0	2	200	0.034	0.080	0.080	1.86	34230	2330	45°
		2.5	2	200	0.036	0.100	0.100	2.32	27440	1975	45°
		3.0	2	200	0.042	0.120	0.120	2.78	22900	1925	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	150	0.018	0.024	0.024	0.56	60000	2160	45°
		0.8	2	150	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	150	0.022	0.040	0.040	0.93	51340	2260	45°
		1.2	2	150	0.024	0.048	0.048	1.11	43015	2065	45°
		1.5	2	150	0.028	0.060	0.060	1.39	34350	1925	45°
		2.0	2	150	0.030	0.080	0.080	1.86	25670	1540	45°
		2.5	2	150	0.032	0.100	0.100	2.32	20580	1315	45°
		3.0	2	150	0.036	0.120	0.120	2.78	17175	1235	45°

Ball nose end mills MicroX

Shank Ø 6mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | X-Generation X

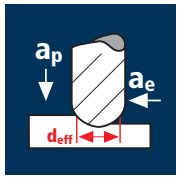
HM XA	λ 30° γ-10°

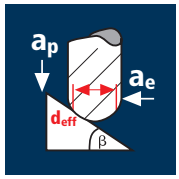


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6566** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL $
										X6566
.050	0.5	6	0.45	57	0.5	4.0	0.25	11.1°	2	65.00
.060	0.6	6	0.55	57	0.6	4.8	0.30	10.5°	2	65.00
.080	0.8	6	0.75	57	0.8	6.4	0.40	9.4°	2	65.00
.100	1.0	6	0.95	61	1.0	8.0	0.50	8.4°	2	65.00
.108	1.2	6	1.10	61	1.2	9.6	0.60	7.6°	2	65.00
.120	1.5	6	1.40	61	1.5	12.0	0.75	6.5°	2	65.00
.140	2.0	6	1.90	66	2.0	16.0	1.00	5.1°	2	65.00
.160	2.5	6	2.30	69	2.5	20.0	1.25	3.9°	2	65.00
.180	3.0	6	2.80	75	3.0	24.0	1.50	3.1°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.016	0.02	0.08	0.20	60000	1920	3.0
		0.6	2	140	0.020	0.02	0.10	0.22	60000	2400	5.0
		0.8	2	140	0.026	0.03	0.13	0.30	60000	3120	12.0
		1.0	2	140	0.034	0.04	0.16	0.39	60000	4080	26.0
		1.2	2	140	0.040	0.05	0.19	0.48	60000	4800	45.5
		1.5	2	140	0.050	0.06	0.24	0.59	60000	6000	86.5
		2.0	2	140	0.066	0.08	0.32	0.78	57135	7540	193.0
		2.5	2	140	0.084	0.10	0.40	0.98	45475	7640	305.5
		3.0	2	140	0.100	0.12	0.48	1.18	37765	7555	435.0
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.016	0.02	0.08	0.20	60000	1920	3.0
		0.6	2	120	0.020	0.02	0.10	0.22	60000	2400	5.0
		0.8	2	120	0.024	0.03	0.13	0.30	60000	2880	11.0
		1.0	2	120	0.032	0.04	0.16	0.39	60000	3840	24.5
		1.2	2	120	0.038	0.05	0.19	0.48	60000	4560	43.5
		1.5	2	120	0.048	0.06	0.24	0.59	60000	5760	83.0
		2.0	2	120	0.062	0.08	0.32	0.78	48970	6070	155.5
		2.5	2	120	0.080	0.10	0.40	0.98	38980	6235	249.5
		3.0	2	120	0.096	0.12	0.48	1.18	32370	6215	358.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.02	0.08	0.20	60000	1680	2.5
		0.6	2	100	0.018	0.02	0.10	0.22	60000	2160	4.5
		0.8	2	100	0.022	0.03	0.13	0.30	60000	2640	10.5
		1.0	2	100	0.030	0.04	0.16	0.39	60000	3600	23.0
		1.2	2	100	0.036	0.05	0.19	0.48	60000	4320	41.0
		1.5	2	100	0.044	0.06	0.24	0.59	53950	4750	68.5
		2.0	2	100	0.058	0.08	0.32	0.78	40810	4735	121.0
		2.5	2	100	0.074	0.10	0.40	0.98	32480	4805	192.0
		3.0	2	100	0.088	0.12	0.48	1.18	26975	4750	273.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.02	0.08	0.20	60000	1440	2.5
		0.6	2	60	0.016	0.02	0.10	0.22	60000	1920	4.0
		0.8	2	60	0.020	0.03	0.13	0.30	60000	2400	9.5
		1.0	2	60	0.028	0.04	0.16	0.39	48970	2740	17.5
		1.2	2	60	0.032	0.05	0.19	0.48	39790	2545	24.0
		1.5	2	60	0.040	0.06	0.24	0.59	32370	2590	37.5
		2.0	2	60	0.052	0.08	0.32	0.78	24485	2545	65.0
		2.5	2	60	0.068	0.10	0.40	0.98	19490	2650	106.0
		3.0	2	60	0.080	0.12	0.48	1.18	16185	2590	149.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.018	0.018	0.018	0.46	60000	2160	45°
		0.6	2	300	0.020	0.022	0.022	0.55	60000	2400	45°
		0.8	2	300	0.022	0.028	0.028	0.73	60000	2640	45°
		1.0	2	300	0.026	0.036	0.036	0.92	60000	3120	45°
		1.2	2	300	0.028	0.042	0.042	1.10	60000	3360	45°
		1.5	2	300	0.030	0.052	0.052	1.38	60000	3600	45°
		2.0	2	300	0.034	0.070	0.070	1.84	51900	3530	45°
		2.5	2	300	0.036	0.088	0.088	2.29	41700	3000	45°
		3.0	2	300	0.042	0.106	0.106	2.75	34725	2915	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.018	0.018	0.018	0.46	60000	2160	45°
		0.6	2	250	0.020	0.022	0.022	0.55	60000	2400	45°
		0.8	2	250	0.020	0.028	0.028	0.73	60000	2400	45°
		1.0	2	250	0.024	0.036	0.036	0.92	60000	2880	45°
		1.2	2	250	0.026	0.042	0.042	1.10	60000	3120	45°
		1.5	2	250	0.028	0.052	0.052	1.38	57665	3230	45°
		2.0	2	250	0.032	0.070	0.070	1.84	43250	2770	45°
		2.5	2	250	0.034	0.088	0.088	2.29	34750	2365	45°
		3.0	2	250	0.040	0.106	0.106	2.75	28940	2315	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.016	0.018	0.018	0.46	60000	1920	45°
		0.6	2	200	0.018	0.022	0.022	0.55	60000	2160	45°
		0.8	2	200	0.020	0.028	0.028	0.73	60000	2400	45°
		1.0	2	200	0.024	0.036	0.036	0.92	60000	2880	45°
		1.2	2	200	0.026	0.042	0.042	1.10	57875	3010	45°
		1.5	2	200	0.028	0.052	0.052	1.38	46135	2585	45°
		2.0	2	200	0.030	0.070	0.070	1.84	34600	2075	45°
		2.5	2	200	0.032	0.088	0.088	2.29	27800	1780	45°
		3.0	2	200	0.038	0.106	0.106	2.75	23150	1760	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.014	0.018	0.018	0.46	60000	1680	45°
		0.6	2	150	0.016	0.022	0.022	0.55	60000	1920	45°
		0.8	2	150	0.018	0.028	0.028	0.73	60000	2160	45°
		1.0	2	150	0.020	0.036	0.036	0.92	51900	2075	45°
		1.2	2	150	0.022	0.042	0.042	1.10	43405	1910	45°
		1.5	2	150	0.024	0.052	0.052	1.38	34600	1660	45°
		2.0	2	150	0.028	0.070	0.070	1.84	25950	1455	45°
		2.5	2	150	0.028	0.088	0.088	2.29	20850	1170	45°
		3.0	2	150	0.034	0.106	0.106	2.75	17365	1180	45°

Ball nose end mills MicroX

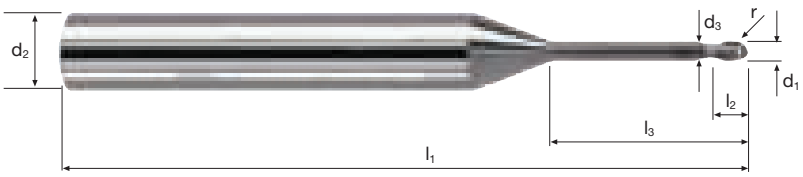
Shank Ø 6mm, cylindrical neck, 10xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

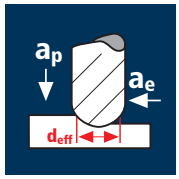
d1 | r

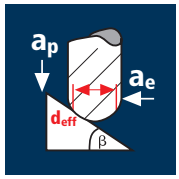


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6568** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	X-AL X6568 $
.050	0.5	6	0.45	57	0.5	5.0	0.25	10.3°	2	65.00
.060	0.6	6	0.55	57	0.6	6.0	0.30	9.7°	2	65.00
.080	0.8	6	0.75	61	0.8	8.0	0.40	8.5°	2	65.00
.100	1.0	6	0.95	61	1.0	10.0	0.50	7.6°	2	65.00
.108	1.2	6	1.10	66	1.2	12.0	0.60	6.7°	2	65.00
.120	1.5	6	1.40	66	1.5	15.0	0.75	5.7°	2	65.00
.140	2.0	6	1.90	69	2.0	20.0	1.00	4.3°	2	65.00
.160	2.5	6	2.30	75	2.5	25.0	1.25	3.3°	2	65.00
.180	3.0	6	2.80	80	3.0	30.0	1.50	2.5°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.020	0.02	0.09	0.20	60000	2400	4.5
		0.6	2	140	0.024	0.02	0.11	0.22	60000	2880	6.5
		0.8	2	140	0.032	0.03	0.14	0.30	60000	3840	16.0
		1.0	2	140	0.040	0.04	0.18	0.39	60000	4800	34.5
		1.2	2	140	0.048	0.05	0.22	0.48	60000	5760	63.5
		1.5	2	140	0.060	0.06	0.27	0.59	60000	7200	116.5
		2.0	2	140	0.080	0.08	0.36	0.78	57135	9140	263.0
		2.5	2	140	0.100	0.10	0.45	0.98	45475	9095	409.5
		3.0	2	140	0.120	0.12	0.54	1.18	37765	9065	587.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.020	0.02	0.09	0.20	60000	2400	4.5
		0.6	2	120	0.022	0.02	0.11	0.22	60000	2640	6.0
		0.8	2	120	0.030	0.03	0.14	0.30	60000	3600	15.0
		1.0	2	120	0.038	0.04	0.18	0.39	60000	4560	33.0
		1.2	2	120	0.046	0.05	0.22	0.48	60000	5520	60.5
		1.5	2	120	0.058	0.06	0.27	0.59	60000	6960	113.0
		2.0	2	120	0.076	0.08	0.36	0.78	48970	7445	214.5
		2.5	2	120	0.096	0.10	0.45	0.98	38980	7485	337.0
		3.0	2	120	0.114	0.12	0.54	1.18	32370	7380	478.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.018	0.02	0.09	0.20	60000	2160	4.0
		0.6	2	100	0.022	0.02	0.11	0.22	60000	2640	6.0
		0.8	2	100	0.028	0.03	0.14	0.30	60000	3360	14.0
		1.0	2	100	0.036	0.04	0.18	0.39	60000	4320	31.0
		1.2	2	100	0.042	0.05	0.22	0.48	60000	5040	55.5
		1.5	2	100	0.052	0.06	0.27	0.59	53950	5610	91.0
		2.0	2	100	0.070	0.08	0.36	0.78	40810	5715	164.5
		2.5	2	100	0.088	0.10	0.45	0.98	32480	5715	257.0
		3.0	2	100	0.106	0.12	0.54	1.18	26975	5720	370.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.016	0.02	0.09	0.20	60000	1920	3.5
		0.6	2	60	0.020	0.02	0.11	0.22	60000	2400	5.5
		0.8	2	60	0.026	0.03	0.14	0.30	60000	3120	13.0
		1.0	2	60	0.032	0.04	0.18	0.39	48970	3135	22.5
		1.2	2	60	0.038	0.05	0.22	0.48	39790	3025	33.5
		1.5	2	60	0.048	0.06	0.27	0.59	32370	3110	50.5
		2.0	2	60	0.064	0.08	0.36	0.78	24485	3135	90.5
		2.5	2	60	0.080	0.10	0.45	0.98	19490	3120	140.5
		3.0	2	60	0.096	0.12	0.54	1.18	16185	3110	201.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.024	0.020	0.020	0.46	60000	2880	45°
		0.6	2	300	0.026	0.024	0.024	0.56	60000	3120	45°
		0.8	2	300	0.030	0.032	0.032	0.74	60000	3600	45°
		1.0	2	300	0.034	0.040	0.040	0.93	60000	4080	45°
		1.2	2	300	0.036	0.048	0.048	1.11	60000	4320	45°
		1.5	2	300	0.040	0.060	0.060	1.39	60000	4800	45°
		2.0	2	300	0.046	0.080	0.080	1.86	51340	4725	45°
		2.5	2	300	0.048	0.100	0.100	2.32	41160	3950	45°
		3.0	2	300	0.056	0.120	0.120	2.78	34350	3845	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.022	0.020	0.020	0.46	60000	2640	45°
		0.6	2	250	0.024	0.024	0.024	0.56	60000	2880	45°
		0.8	2	250	0.028	0.032	0.032	0.74	60000	3360	45°
		1.0	2	250	0.032	0.040	0.040	0.93	60000	3840	45°
		1.2	2	250	0.034	0.048	0.048	1.11	60000	4080	45°
		1.5	2	250	0.038	0.060	0.060	1.39	57250	4350	45°
		2.0	2	250	0.044	0.080	0.080	1.86	42785	3765	45°
		2.5	2	250	0.046	0.100	0.100	2.32	34300	3155	45°
		3.0	2	250	0.054	0.120	0.120	2.78	28625	3090	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.022	0.020	0.020	0.46	60000	2640	45°
		0.6	2	200	0.024	0.024	0.024	0.56	60000	2880	45°
		0.8	2	200	0.028	0.032	0.032	0.74	60000	3360	45°
		1.0	2	200	0.030	0.040	0.040	0.93	60000	3600	45°
		1.2	2	200	0.032	0.048	0.048	1.11	57355	3670	45°
		1.5	2	200	0.036	0.060	0.060	1.39	45800	3300	45°
		2.0	2	200	0.042	0.080	0.080	1.86	34230	2875	45°
		2.5	2	200	0.044	0.100	0.100	2.32	27440	2415	45°
		3.0	2	200	0.050	0.120	0.120	2.78	22900	2290	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.020	0.020	0.020	0.46	60000	2400	45°
		0.6	2	150	0.020	0.024	0.024	0.56	60000	2400	45°
		0.8	2	150	0.024	0.032	0.032	0.74	60000	2880	45°
		1.0	2	150	0.028	0.040	0.040	0.93	51340	2875	45°
		1.2	2	150	0.028	0.048	0.048	1.11	43015	2410	45°
		1.5	2	150	0.032	0.060	0.060	1.39	34350	2200	45°
		2.0	2	150	0.036	0.080	0.080	1.86	25670	1850	45°
		2.5	2	150	0.038	0.100	0.100	2.32	20580	1565	45°
		3.0	2	150	0.044	0.120	0.120	2.78	17175	1510	45°

Ball nose end mills MicroX

Shank Ø 6mm, conical neck 0.9°, 8xd

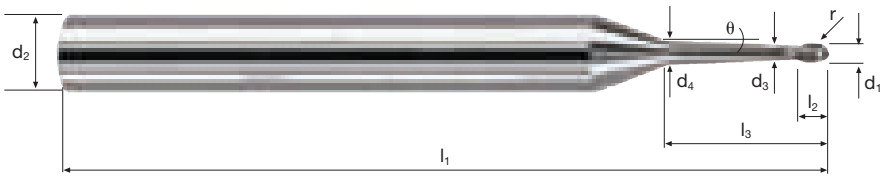
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

d1

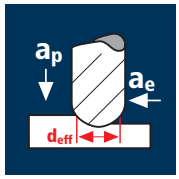
r

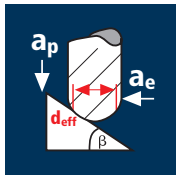


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6766** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	d4	l1	l2	l3	θ	r ±0.005	α	z	X-AL X6766 $
.050	0.5	6	0.45	0.56	57	0.40	4.0	0.9°	0.25	11.1°	2	69.00
.060	0.6	6	0.55	0.68	57	0.50	4.8	0.9°	0.30	10.5°	2	69.00
.080	0.8	6	0.75	0.93	57	0.65	6.4	0.9°	0.40	9.4°	2	69.00
.100	1.0	6	0.95	1.18	61	0.80	8.0	0.9°	0.50	8.4°	2	69.00
.108	1.2	6	1.10	1.42	61	1.00	9.6	0.9°	0.60	7.6°	2	69.00
.120	1.5	6	1.40	1.79	61	1.20	12.0	0.9°	0.75	6.5°	2	69.00
.140	2.0	6	1.90	2.41	66	1.60	16.0	0.9°	1.00	5.1°	2	69.00
.160	2.5	6	2.30	3.03	69	2.00	20.0	0.9°	1.25	3.9°	2	69.00
.180	3.0	6	2.80	3.64	75	2.40	24.0	0.9°	1.50	3.1°	2	69.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.020	0.02	0.08	0.20	60000	2400	4.0
		0.6	2	140	0.024	0.02	0.10	0.22	60000	2880	6.0
		0.8	2	140	0.032	0.03	0.13	0.30	60000	3840	15.0
		1.0	2	140	0.040	0.04	0.16	0.39	60000	4800	30.5
		1.2	2	140	0.048	0.05	0.19	0.48	60000	5760	54.5
		1.5	2	140	0.060	0.06	0.24	0.59	60000	7200	103.5
		2.0	2	140	0.080	0.08	0.32	0.78	57135	9140	234.0
		2.5	2	140	0.100	0.10	0.40	0.98	45475	9095	364.0
		3.0	2	140	0.120	0.12	0.48	1.18	37765	9065	522.0
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.020	0.02	0.08	0.20	60000	2400	4.0
		0.6	2	120	0.022	0.02	0.10	0.22	60000	2640	5.5
		0.8	2	120	0.030	0.03	0.13	0.30	60000	3600	14.0
		1.0	2	120	0.038	0.04	0.16	0.39	60000	4560	29.0
		1.2	2	120	0.046	0.05	0.19	0.48	60000	5520	52.5
		1.5	2	120	0.058	0.06	0.24	0.59	60000	6960	100.0
		2.0	2	120	0.076	0.08	0.32	0.78	48970	7445	190.5
		2.5	2	120	0.096	0.10	0.40	0.98	38980	7485	299.5
		3.0	2	120	0.114	0.12	0.48	1.18	32370	7380	425.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.018	0.02	0.08	0.20	60000	2160	3.5
		0.6	2	100	0.022	0.02	0.10	0.22	60000	2640	5.5
		0.8	2	100	0.028	0.03	0.13	0.30	60000	3360	13.0
		1.0	2	100	0.036	0.04	0.16	0.39	60000	4320	27.5
		1.2	2	100	0.042	0.05	0.19	0.48	60000	5040	48.0
		1.5	2	100	0.052	0.06	0.24	0.59	53950	5610	81.0
		2.0	2	100	0.070	0.08	0.32	0.78	40810	5715	146.5
		2.5	2	100	0.088	0.10	0.40	0.98	32480	5715	228.5
		3.0	2	100	0.106	0.12	0.48	1.18	26975	5720	329.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.016	0.02	0.08	0.20	60000	1920	3.0
		0.6	2	60	0.020	0.02	0.10	0.22	60000	2400	5.0
		0.8	2	60	0.026	0.03	0.13	0.30	60000	3120	12.0
		1.0	2	60	0.032	0.04	0.16	0.39	48970	3135	20.0
		1.2	2	60	0.038	0.05	0.19	0.48	39790	3025	28.5
		1.5	2	60	0.048	0.06	0.24	0.59	32370	3110	45.0
		2.0	2	60	0.064	0.08	0.32	0.78	24485	3135	80.5
		2.5	2	60	0.080	0.10	0.40	0.98	19490	3120	125.0
		3.0	2	60	0.096	0.12	0.48	1.18	16185	3110	179.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.022	0.018	0.018	0.46	60000	2640	45°
		0.6	2	300	0.024	0.022	0.022	0.55	60000	2880	45°
		0.8	2	300	0.026	0.028	0.028	0.73	60000	3120	45°
		1.0	2	300	0.032	0.036	0.036	0.92	60000	3840	45°
		1.2	2	300	0.034	0.042	0.042	1.10	60000	4080	45°
		1.5	2	300	0.038	0.052	0.052	1.38	60000	4560	45°
		2.0	2	300	0.042	0.070	0.070	1.84	51900	4360	45°
		2.5	2	300	0.044	0.088	0.088	2.29	41700	3670	45°
		3.0	2	300	0.050	0.106	0.106	2.75	34725	3475	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.020	0.018	0.018	0.46	60000	2400	45°
		0.6	2	250	0.022	0.022	0.022	0.55	60000	2640	45°
		0.8	2	250	0.024	0.028	0.028	0.73	60000	2880	45°
		1.0	2	250	0.030	0.036	0.036	0.92	60000	3600	45°
		1.2	2	250	0.032	0.042	0.042	1.10	60000	3840	45°
		1.5	2	250	0.036	0.052	0.052	1.38	57665	4150	45°
		2.0	2	250	0.040	0.070	0.070	1.84	43250	3460	45°
		2.5	2	250	0.042	0.088	0.088	2.29	34750	2920	45°
		3.0	2	250	0.048	0.106	0.106	2.75	28940	2780	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.020	0.018	0.018	0.46	60000	2400	45°
		0.6	2	200	0.022	0.022	0.022	0.55	60000	2640	45°
		0.8	2	200	0.024	0.028	0.028	0.73	60000	2880	45°
		1.0	2	200	0.028	0.036	0.036	0.92	60000	3360	45°
		1.2	2	200	0.030	0.042	0.042	1.10	57875	3475	45°
		1.5	2	200	0.034	0.052	0.052	1.38	46135	3135	45°
		2.0	2	200	0.038	0.070	0.070	1.84	34600	2630	45°
		2.5	2	200	0.040	0.088	0.088	2.29	27800	2225	45°
		3.0	2	200	0.046	0.106	0.106	2.75	23150	2130	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.018	0.018	0.018	0.46	60000	2160	45°
		0.6	2	150	0.020	0.022	0.022	0.55	60000	2400	45°
		0.8	2	150	0.020	0.028	0.028	0.73	60000	2400	45°
		1.0	2	150	0.026	0.036	0.036	0.92	51900	2700	45°
		1.2	2	150	0.028	0.042	0.042	1.10	43405	2430	45°
		1.5	2	150	0.030	0.052	0.052	1.38	34600	2075	45°
		2.0	2	150	0.034	0.070	0.070	1.84	25950	1765	45°
		2.5	2	150	0.036	0.088	0.088	2.29	20850	1500	45°
		3.0	2	150	0.040	0.106	0.106	2.75	17365	1390	45°

Ball nose end mills MicroX

Shank Ø 6mm, conical neck 0.9°, 10xd

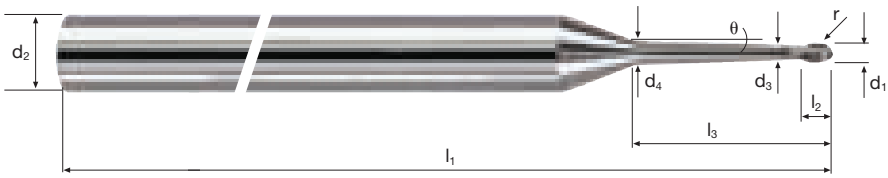
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

d1

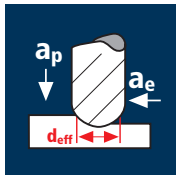
r

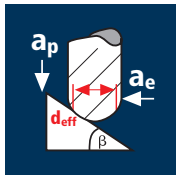


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6768** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	d4	l1	l2	l3	θ	r ±0.005	α	z	X-AL X6768 $
.050	0.5	6	0.45	0.60	57	0.40	5.0	0.9°	0.25	10.3°	2	69.00
.060	0.6	6	0.55	0.73	57	0.50	6.0	0.9°	0.30	9.7°	2	69.00
.080	0.8	6	0.75	0.99	61	0.65	8.0	0.9°	0.40	8.5°	2	69.00
.100	1.0	6	0.95	1.25	61	0.80	10.0	0.9°	0.50	7.6°	2	69.00
.108	1.2	6	1.10	1.51	66	1.00	12.0	0.9°	0.60	6.7°	2	69.00
.120	1.5	6	1.40	1.90	66	1.20	15.0	0.9°	0.75	5.7°	2	69.00
.140	2.0	6	1.90	2.55	69	1.60	20.0	0.9°	1.00	4.3°	2	69.00
.160	2.5	6	2.30	3.19	75	2.00	25.0	0.9°	1.25	3.3°	2	69.00
.180	3.0	6	2.80	3.84	75	2.40	30.0	0.9°	1.50	2.5°	2	69.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.015	0.02	0.07	0.20	60000	1800	2.5
		0.8	2	140	0.025	0.02	0.11	0.25	60000	3000	6.5
		1.0	2	140	0.030	0.03	0.14	0.34	60000	3600	15.0
		1.2	2	140	0.035	0.04	0.17	0.43	60000	4200	28.5
		1.5	2	140	0.045	0.05	0.21	0.54	60000	5400	56.5
		2.0	2	140	0.055	0.06	0.28	0.68	60000	6600	111.0
		2.5	2	140	0.070	0.08	0.35	0.88	50640	7090	198.5
		3.0	2	140	0.085	0.09	0.42	1.02	43690	7425	280.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.014	0.02	0.07	0.20	60000	1680	2.5
		0.8	2	120	0.024	0.02	0.11	0.25	60000	2880	6.5
		1.0	2	120	0.028	0.03	0.14	0.34	60000	3360	14.0
		1.2	2	120	0.034	0.04	0.17	0.43	60000	4080	27.5
		1.5	2	120	0.042	0.05	0.21	0.54	60000	5040	53.0
		2.0	2	120	0.052	0.06	0.28	0.68	56175	5840	98.0
		2.5	2	120	0.066	0.08	0.35	0.88	43405	5730	160.5
		3.0	2	120	0.080	0.09	0.42	1.02	37450	5990	226.5
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.02	0.07	0.20	60000	1680	2.5
		0.8	2	100	0.022	0.02	0.11	0.25	60000	2640	6.0
		1.0	2	100	0.026	0.03	0.14	0.34	60000	3120	13.0
		1.2	2	100	0.030	0.04	0.17	0.43	60000	3600	24.5
		1.5	2	100	0.040	0.05	0.21	0.54	58950	4715	49.5
		2.0	2	100	0.048	0.06	0.28	0.68	46810	4495	75.5
		2.5	2	100	0.062	0.08	0.35	0.88	36175	4485	125.5
		3.0	2	100	0.074	0.09	0.42	1.02	31210	4620	174.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.02	0.07	0.20	60000	1440	2.0
		0.8	2	60	0.020	0.02	0.11	0.25	60000	2400	5.5
		1.0	2	60	0.024	0.03	0.14	0.34	56175	2695	11.5
		1.2	2	60	0.028	0.04	0.17	0.43	44415	2485	17.0
		1.5	2	60	0.036	0.05	0.21	0.54	35370	2545	26.5
		2.0	2	60	0.044	0.06	0.28	0.68	28085	2470	41.5
		2.5	2	60	0.056	0.08	0.35	0.88	21705	2430	68.0
		3.0	2	60	0.068	0.09	0.42	1.02	18725	2545	96.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.018	0.016	0.016	0.46	60000	2160	45°
		0.8	2	300	0.020	0.024	0.024	0.72	60000	2400	45°
		1.0	2	300	0.026	0.030	0.030	0.91	60000	3120	45°
		1.2	2	300	0.028	0.036	0.036	1.09	60000	3360	45°
		1.5	2	300	0.030	0.046	0.046	1.36	60000	3600	45°
		2.0	2	300	0.034	0.060	0.060	1.81	52760	3590	45°
		2.5	2	300	0.036	0.076	0.076	2.27	42070	3030	45°
		3.0	2	300	0.042	0.090	0.090	2.72	35110	2950	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.018	0.016	0.016	0.46	60000	2160	45°
		0.8	2	250	0.020	0.024	0.024	0.72	60000	2400	45°
		1.0	2	250	0.024	0.030	0.030	0.91	60000	2880	45°
		1.2	2	250	0.026	0.036	0.036	1.09	60000	3120	45°
		1.5	2	250	0.028	0.046	0.046	1.36	58515	3275	45°
		2.0	2	250	0.032	0.060	0.060	1.81	43965	2815	45°
		2.5	2	250	0.034	0.076	0.076	2.27	35055	2385	45°
		3.0	2	250	0.040	0.090	0.090	2.72	29255	2340	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.016	0.016	0.016	0.46	60000	1920	45°
		0.8	2	200	0.018	0.024	0.024	0.72	60000	2160	45°
		1.0	2	200	0.024	0.030	0.030	0.91	60000	2880	45°
		1.2	2	200	0.026	0.036	0.036	1.09	58405	3035	45°
		1.5	2	200	0.028	0.046	0.046	1.36	46810	2620	45°
		2.0	2	200	0.030	0.060	0.060	1.81	35175	2110	45°
		2.5	2	200	0.032	0.076	0.076	2.27	28045	1795	45°
		3.0	2	200	0.038	0.090	0.090	2.72	23405	1780	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.014	0.016	0.016	0.46	60000	1680	45°
		0.8	2	150	0.016	0.024	0.024	0.72	60000	1920	45°
		1.0	2	150	0.020	0.030	0.030	0.91	52470	2100	45°
		1.2	2	150	0.022	0.036	0.036	1.09	43805	1925	45°
		1.5	2	150	0.024	0.046	0.046	1.36	35110	1685	45°
		2.0	2	150	0.028	0.060	0.060	1.81	26380	1475	45°
		2.5	2	150	0.028	0.076	0.076	2.27	21035	1180	45°
		3.0	2	150	0.034	0.090	0.090	2.72	17555	1195	45°

Ball nose end mills MicroX

Shank Ø 6mm, conical neck 0.9°, 12xd

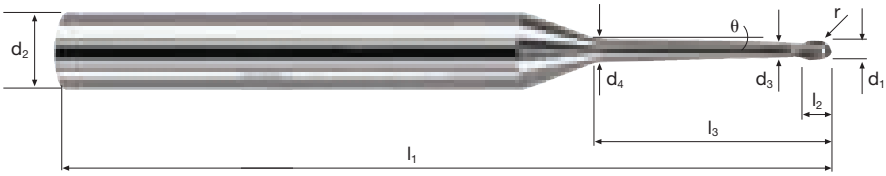
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

d1

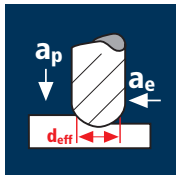
r

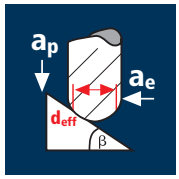


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6770** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	d4	l1	l2	l3	θ	r ±0.005	α	z	X-AL X6770 $
.050	0.5	6	0.45	0.62	57	0.40	6.0	0.9°	0.25	9.9°	2	69.00
.080	0.8	6	0.75	1.03	61	0.65	9.6	0.9°	0.40	8.0°	2	69.00
.100	1.0	6	0.95	1.30	66	0.80	12.0	0.9°	0.50	7.0°	2	69.00
.108	1.2	6	1.10	1.57	66	1.00	14.4	0.9°	0.60	6.1°	2	69.00
.120	1.5	6	1.40	1.98	69	1.20	18.0	0.9°	0.75	5.1°	2	69.00
.140	2.0	6	1.90	2.66	75	1.60	24.0	0.9°	1.00	3.9°	2	69.00
.160	2.5	6	2.30	3.34	80	2.00	30.0	0.9°	1.25	2.9°	2	69.00
.180	3.0	6	2.80	4.02	87	2.40	36.0	0.9°	1.50	2.2°	2	69.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.015	0.02	0.06	0.20	60000	1800	2.0
		0.8	2	140	0.025	0.02	0.10	0.25	60000	3000	6.0
		1.0	2	140	0.030	0.03	0.12	0.34	60000	3600	13.0
		1.2	2	140	0.035	0.04	0.14	0.43	60000	4200	23.5
		1.5	2	140	0.045	0.05	0.18	0.54	60000	5400	48.5
		2.0	2	140	0.055	0.06	0.24	0.68	60000	6600	95.0
		2.5	2	140	0.070	0.08	0.30	0.88	50640	7090	170.0
		3.0	2	140	0.085	0.09	0.36	1.02	43690	7425	240.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.014	0.02	0.06	0.20	60000	1680	2.0
		0.8	2	120	0.024	0.02	0.10	0.25	60000	2880	6.0
		1.0	2	120	0.028	0.03	0.12	0.34	60000	3360	12.0
		1.2	2	120	0.034	0.04	0.14	0.43	60000	4080	23.0
		1.5	2	120	0.042	0.05	0.18	0.54	60000	5040	45.5
		2.0	2	120	0.052	0.06	0.24	0.68	56175	5840	84.0
		2.5	2	120	0.066	0.08	0.30	0.88	43405	5730	137.5
		3.0	2	120	0.080	0.09	0.36	1.02	37450	5990	194.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.02	0.06	0.20	60000	1680	2.0
		0.8	2	100	0.022	0.02	0.10	0.25	60000	2640	5.5
		1.0	2	100	0.026	0.03	0.12	0.34	60000	3120	11.0
		1.2	2	100	0.030	0.04	0.14	0.43	60000	3600	20.0
		1.5	2	100	0.040	0.05	0.18	0.54	58950	4715	42.5
		2.0	2	100	0.048	0.06	0.24	0.68	46810	4495	64.5
		2.5	2	100	0.062	0.08	0.30	0.88	36175	4485	107.5
		3.0	2	100	0.074	0.09	0.36	1.02	31210	4620	149.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.02	0.06	0.20	60000	1440	1.5
		0.8	2	60	0.020	0.02	0.10	0.25	60000	2400	5.0
		1.0	2	60	0.024	0.03	0.12	0.34	56175	2695	9.5
		1.2	2	60	0.028	0.04	0.14	0.43	44415	2485	14.0
		1.5	2	60	0.036	0.05	0.18	0.54	35370	2545	23.0
		2.0	2	60	0.044	0.06	0.24	0.68	28085	2470	35.5
		2.5	2	60	0.056	0.08	0.30	0.88	21705	2430	58.5
		3.0	2	60	0.068	0.09	0.36	1.02	18725	2545	82.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.018	0.012	0.012	0.44	60000	2160	45°
		0.8	2	300	0.020	0.020	0.020	0.71	60000	2400	45°
		1.0	2	300	0.026	0.026	0.026	0.90	60000	3120	45°
		1.2	2	300	0.028	0.030	0.030	1.07	60000	3360	45°
		1.5	2	300	0.030	0.038	0.038	1.34	60000	3600	45°
		2.0	2	300	0.034	0.050	0.050	1.79	53350	3630	45°
		2.5	2	300	0.036	0.062	0.062	2.23	42825	3085	45°
		3.0	2	300	0.042	0.076	0.076	2.68	35635	2995	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.018	0.012	0.012	0.44	60000	2160	45°
		0.8	2	250	0.020	0.020	0.020	0.71	60000	2400	45°
		1.0	2	250	0.024	0.026	0.026	0.90	60000	2880	45°
		1.2	2	250	0.026	0.030	0.030	1.07	60000	3120	45°
		1.5	2	250	0.028	0.038	0.038	1.34	59390	3325	45°
		2.0	2	250	0.032	0.050	0.050	1.79	44460	2845	45°
		2.5	2	250	0.034	0.062	0.062	2.23	35685	2425	45°
		3.0	2	250	0.040	0.076	0.076	2.68	29695	2375	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.016	0.012	0.012	0.44	60000	1920	45°
		0.8	2	200	0.018	0.020	0.020	0.71	60000	2160	45°
		1.0	2	200	0.024	0.026	0.026	0.90	60000	2880	45°
		1.2	2	200	0.026	0.030	0.030	1.07	59500	3095	45°
		1.5	2	200	0.028	0.038	0.038	1.34	47510	2660	45°
		2.0	2	200	0.030	0.050	0.050	1.79	35565	2135	45°
		2.5	2	200	0.032	0.062	0.062	2.23	28550	1825	45°
		3.0	2	200	0.038	0.076	0.076	2.68	23755	1805	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.014	0.012	0.012	0.44	60000	1680	45°
		0.8	2	150	0.016	0.020	0.020	0.71	60000	1920	45°
		1.0	2	150	0.020	0.026	0.026	0.90	53055	2120	45°
		1.2	2	150	0.022	0.030	0.030	1.07	44625	1965	45°
		1.5	2	150	0.024	0.038	0.038	1.34	35635	1710	45°
		2.0	2	150	0.028	0.050	0.050	1.79	26675	1495	45°
		2.5	2	150	0.028	0.062	0.062	2.23	21410	1200	45°
		3.0	2	150	0.034	0.076	0.076	2.68	17815	1210	45°

Ball nose end mills MicroX

Shank Ø 6mm, conical neck 0.9°, 15xd

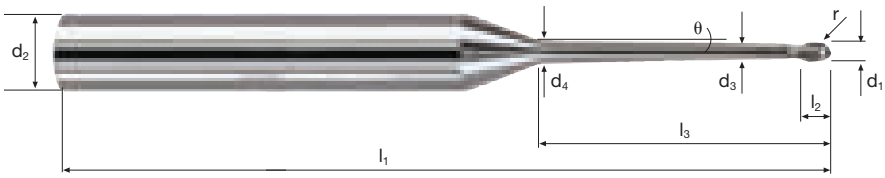
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

d1

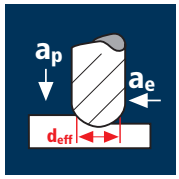
r

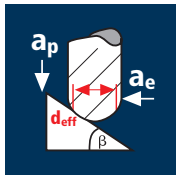


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6772** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	d4	l1	l2	l3	θ	r ±0.005	α	z	X-AL X6772 $
.050	0.5	6	0.45	0.67	61	0.40	7.5	0.9°	0.25	9.1°	2	69.00
.080	0.8	6	0.75	1.11	66	0.65	12.0	0.9°	0.40	7.1°	2	69.00
.100	1.0	6	0.95	1.40	66	0.80	15.0	0.9°	0.50	6.1°	2	69.00
.108	1.2	6	1.10	1.69	69	1.00	18.0	0.9°	0.60	5.3°	2	69.00
.120	1.5	6	1.40	2.12	75	1.20	22.5	0.9°	0.75	4.5°	2	69.00
.140	2.0	6	1.90	2.85	80	1.60	30.0	0.9°	1.00	3.3°	2	69.00
.160	2.5	6	2.30	3.58	87	2.00	37.5	0.9°	1.25	2.4°	2	69.00
.180	3.0	6	2.80	4.30	100	2.40	45.0	0.9°	1.50	1.8°	2	69.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.2	2	140	0.006	0.01	0.04	0.09	60000	720	0.5
		0.5	2	140	0.012	0.04	0.10	0.27	60000	1440	6.0
		0.8	2	140	0.020	0.06	0.16	0.42	60000	2400	23.0
		1.0	2	140	0.026	0.07	0.20	0.51	60000	3120	43.5
		1.2	2	140	0.030	0.08	0.24	0.60	60000	3600	69.0
		1.5	2	140	0.038	0.11	0.30	0.78	57135	4340	143.0
		2.0	2	140	0.050	0.14	0.40	1.02	43690	4370	244.5
		2.5	2	140	0.062	0.18	0.50	1.29	34545	4285	385.5
		3.0	2	140	0.076	0.21	0.60	1.53	29125	4425	557.5
	Hardened tool steel 48 - 52 HRC	0.2	2	120	0.006	0.01	0.04	0.09	60000	720	0.5
		0.5	2	120	0.012	0.04	0.10	0.27	60000	1440	6.0
		0.8	2	120	0.020	0.06	0.16	0.42	60000	2400	23.0
		1.0	2	120	0.024	0.07	0.20	0.51	60000	2880	40.5
		1.2	2	120	0.028	0.08	0.24	0.60	60000	3360	64.5
		1.5	2	120	0.036	0.11	0.30	0.78	48970	3525	116.5
		2.0	2	120	0.048	0.14	0.40	1.02	37450	3595	201.5
		2.5	2	120	0.058	0.18	0.50	1.29	29610	3435	309.0
		3.0	2	120	0.072	0.21	0.60	1.53	24965	3595	453.0
	Hardened tool steel 52 - 56 HRC	0.2	2	100	0.006	0.01	0.04	0.09	60000	720	0.5
		0.5	2	100	0.010	0.04	0.10	0.27	60000	1200	5.0
		0.8	2	100	0.018	0.06	0.16	0.42	60000	2160	20.5
		1.0	2	100	0.022	0.07	0.20	0.51	60000	2640	37.0
		1.2	2	100	0.026	0.08	0.24	0.60	53055	2760	53.0
		1.5	2	100	0.034	0.11	0.30	0.78	40810	2775	91.5
		2.0	2	100	0.044	0.14	0.40	1.02	31210	2745	153.5
		2.5	2	100	0.054	0.18	0.50	1.29	24675	2665	240.0
		3.0	2	100	0.066	0.21	0.60	1.53	20805	2745	346.0
	Hardened tool steel 56 - 60 HRC	0.2	2	60	0.004	0.01	0.04	0.09	60000	480	0.0
		0.5	2	60	0.010	0.04	0.10	0.27	60000	1200	5.0
		0.8	2	60	0.016	0.06	0.16	0.42	45475	1455	14.0
		1.0	2	60	0.020	0.07	0.20	0.51	37450	1500	21.0
		1.2	2	60	0.024	0.08	0.24	0.60	31830	1530	29.5
		1.5	2	60	0.030	0.11	0.30	0.78	24485	1470	48.5
		2.0	2	60	0.040	0.14	0.40	1.02	18725	1500	84.0
		2.5	2	60	0.050	0.18	0.50	1.29	14805	1480	133.0
		3.0	2	60	0.060	0.21	0.60	1.53	12485	1500	189.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.2	2	300	0.008	0.008	0.008	0.19	60000	960	45°
		0.5	2	300	0.016	0.022	0.022	0.47	60000	1920	45°
		0.8	2	300	0.018	0.034	0.034	0.75	60000	2160	45°
		1.0	2	300	0.022	0.044	0.044	0.93	60000	2640	45°
		1.2	2	300	0.024	0.052	0.052	1.12	60000	2880	45°
		1.5	2	300	0.028	0.064	0.064	1.40	60000	3360	45°
		2.0	2	300	0.030	0.086	0.086	1.87	51065	3065	45°
		2.5	2	300	0.032	0.108	0.108	2.33	40985	2625	45°
		3.0	2	300	0.036	0.128	0.128	2.80	34105	2455	45°
	Hardened tool steel 48 - 52 HRC	0.2	2	250	0.008	0.008	0.008	0.19	60000	960	45°
		0.5	2	250	0.016	0.022	0.022	0.47	60000	1920	45°
		0.8	2	250	0.018	0.034	0.034	0.75	60000	2160	45°
		1.0	2	250	0.020	0.044	0.044	0.93	60000	2400	45°
		1.2	2	250	0.022	0.052	0.052	1.12	60000	2640	45°
		1.5	2	250	0.026	0.064	0.064	1.40	56845	2955	45°
		2.0	2	250	0.028	0.086	0.086	1.87	42555	2385	45°
		2.5	2	250	0.030	0.108	0.108	2.33	34155	2050	45°
		3.0	2	250	0.034	0.128	0.128	2.80	28420	1935	45°
	Hardened tool steel 52 - 56 HRC	0.2	2	200	0.008	0.008	0.008	0.19	60000	960	45°
		0.5	2	200	0.014	0.022	0.022	0.47	60000	1680	45°
		0.8	2	200	0.016	0.034	0.034	0.75	60000	1920	45°
		1.0	2	200	0.020	0.044	0.044	0.93	60000	2400	45°
		1.2	2	200	0.022	0.052	0.052	1.12	56845	2500	45°
		1.5	2	200	0.026	0.064	0.064	1.40	45475	2365	45°
		2.0	2	200	0.028	0.086	0.086	1.87	34045	1905	45°
		2.5	2	200	0.028	0.108	0.108	2.33	27325	1530	45°
		3.0	2	200	0.032	0.128	0.128	2.80	22735	1455	45°
	Hardened tool steel 56 - 60 HRC	0.2	2	150	0.006	0.008	0.008	0.19	60000	720	45°
		0.5	2	150	0.012	0.022	0.022	0.47	60000	1440	45°
		0.8	2	150	0.014	0.034	0.034	0.75	60000	1680	45°
		1.0	2	150	0.018	0.044	0.044	0.93	51340	1850	45°
		1.2	2	150	0.020	0.052	0.052	1.12	42630	1705	45°
		1.5	2	150	0.022	0.064	0.064	1.40	34105	1500	45°
		2.0	2	150	0.024	0.086	0.086	1.87	25535	1225	45°
		2.5	2	150	0.026	0.108	0.108	2.33	20495	1065	45°
		3.0	2	150	0.028	0.128	0.128	2.80	17055	955	45°

Ball nose end mills Microcut-B1H

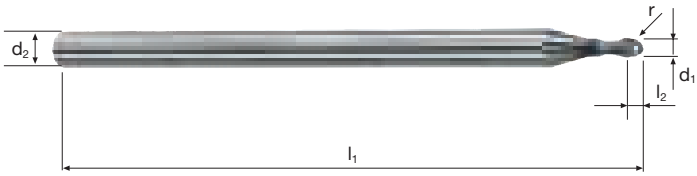
Shank Ø 3mm, 1xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

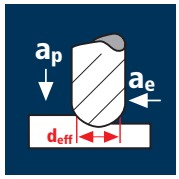
d1 | r

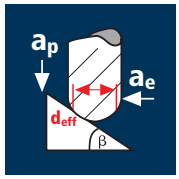


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** D (Coating) 15781 (Article-N°.) .020 (ø-Code)

ø Code	d1 0/-0.01	d2 h5	l1	l2	r ±0.005	α	z	DURO-S D15781 $
.020	0.2	3	40	0.24	0.10	14.7°	2	78.00
.030	0.3	3	40	0.36	0.15	14.3°	2	71.00
.040	0.4	3	40	0.48	0.20	14.1°	2	68.00
.050	0.5	3	40	0.60	0.25	14.0°	2	68.00
.060	0.6	3	40	0.72	0.30	13.8°	2	65.00
.080	0.8	3	40	0.96	0.40	13.1°	2	65.00
.100	1.0	3	50	1.20	0.50	12.6°	2	65.00
.108	1.2	3	50	1.40	0.60	12.1°	2	65.00
.120	1.5	3	50	1.80	0.75	10.9°	2	65.00
.140	2.0	3	50	2.40	1.00	8.6°	2	65.00
.160	2.5	3	50	3.00	1.25	5.3°	2	65.00
.180	3.0	3	50	3.60	1.50	0.0°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.2	2	180	0.008	0.02	0.04	0.12	60000	960	1.0
		0.5	2	180	0.018	0.04	0.10	0.27	60000	2160	8.5
		0.8	2	180	0.028	0.06	0.16	0.42	60000	3360	32.5
		1.0	2	180	0.036	0.08	0.20	0.54	60000	4320	69.0
		1.2	2	180	0.042	0.10	0.24	0.66	60000	5040	121.0
		1.5	2	180	0.054	0.12	0.30	0.81	60000	6480	233.5
		2.0	2	180	0.072	0.16	0.40	1.09	52565	7570	484.5
		2.5	2	180	0.090	0.20	0.50	1.36	42130	7585	758.5
		3.0	2	180	0.108	0.24	0.60	1.63	35150	7590	1093.0
	Steel 1100 - 1300 N/mm²	0.2	2	160	0.008	0.02	0.04	0.12	60000	960	1.0
		0.5	2	160	0.016	0.04	0.10	0.27	60000	1920	7.5
		0.8	2	160	0.026	0.06	0.16	0.42	60000	3120	30.0
		1.0	2	160	0.032	0.08	0.20	0.54	60000	3840	61.5
		1.2	2	160	0.038	0.10	0.24	0.66	60000	4560	109.5
		1.5	2	160	0.048	0.12	0.30	0.81	60000	5760	207.5
		2.0	2	160	0.064	0.16	0.40	1.09	46725	5980	382.5
		2.5	2	160	0.082	0.20	0.50	1.36	37450	6140	614.0
		3.0	2	160	0.098	0.24	0.60	1.63	31245	6125	882.0
	Stainless steel [Cr-Ni/1.4301]	0.2	2	80	0.008	0.02	0.04	0.12	60000	960	1.0
		0.5	2	80	0.016	0.04	0.10	0.27	60000	1920	7.5
		0.8	2	80	0.026	0.06	0.16	0.42	60000	3120	30.0
		1.0	2	80	0.032	0.08	0.20	0.54	47160	3020	48.5
		1.2	2	80	0.038	0.10	0.24	0.66	38585	2930	70.5
		1.5	2	80	0.048	0.12	0.30	0.81	31440	3020	108.5
		2.0	2	80	0.064	0.16	0.40	1.09	23365	2990	191.5
		2.5	2	80	0.082	0.20	0.50	1.36	18725	3070	307.0
		3.0	2	80	0.098	0.24	0.60	1.63	15625	3065	441.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.2	2	60	0.006	0.02	0.04	0.12	60000	720	0.5
		0.5	2	60	0.012	0.04	0.10	0.27	60000	1440	6.0
		0.8	2	60	0.020	0.06	0.16	0.42	45475	1820	17.5
		1.0	2	60	0.026	0.08	0.20	0.54	35370	1840	29.5
		1.2	2	60	0.030	0.10	0.24	0.66	28940	1735	41.5
		1.5	2	60	0.038	0.12	0.30	0.81	23580	1790	64.5
		2.0	2	60	0.050	0.16	0.40	1.09	17520	1750	112.0
		2.5	2	60	0.064	0.20	0.50	1.36	14045	1800	180.0
		3.0	2	60	0.076	0.24	0.60	1.63	11715	1780	256.5

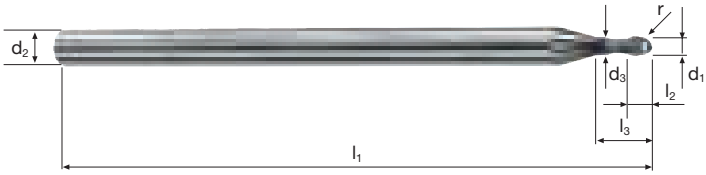
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	0.2	2	300	0.010	0.008	0.008	0.19	60000	1200	45°
		0.5	2	300	0.020	0.022	0.022	0.47	60000	2400	45°
		0.8	2	300	0.022	0.034	0.034	0.75	60000	2640	45°
		1.0	2	300	0.028	0.042	0.042	0.93	60000	3360	45°
		1.2	2	300	0.030	0.050	0.050	1.12	60000	3600	45°
		1.5	2	300	0.034	0.064	0.064	1.40	60000	4080	45°
		2.0	2	300	0.038	0.084	0.084	1.86	51340	3900	45°
		2.5	2	300	0.040	0.106	0.106	2.33	40985	3280	45°
		3.0	2	300	0.046	0.126	0.126	2.79	34230	3150	45°
	Steel 1100 - 1300 N/mm²	0.2	2	250	0.010	0.008	0.008	0.19	60000	1200	45°
		0.5	2	250	0.018	0.022	0.022	0.47	60000	2160	45°
		0.8	2	250	0.020	0.034	0.034	0.75	60000	2400	45°
		1.0	2	250	0.026	0.042	0.042	0.93	60000	3120	45°
		1.2	2	250	0.028	0.050	0.050	1.12	60000	3360	45°
		1.5	2	250	0.030	0.064	0.064	1.40	56845	3410	45°
		2.0	2	250	0.034	0.084	0.084	1.86	42785	2910	45°
		2.5	2	250	0.036	0.106	0.106	2.33	34155	2460	45°
		3.0	2	250	0.042	0.126	0.126	2.79	28525	2395	45°
	Stainless steel [Cr-Ni/1.4301]	0.2	2	120	0.008	0.008	0.008	0.19	60000	960	45°
		0.5	2	120	0.016	0.022	0.022	0.47	60000	1920	45°
		0.8	2	120	0.018	0.034	0.034	0.75	50930	1835	45°
		1.0	2	120	0.022	0.042	0.042	0.93	41075	1805	45°
		1.2	2	120	0.024	0.050	0.050	1.12	34105	1635	45°
		1.5	2	120	0.028	0.064	0.064	1.40	27285	1530	45°
		2.0	2	120	0.030	0.084	0.084	1.86	20535	1230	45°
		2.5	2	120	0.032	0.106	0.106	2.33	16395	1050	45°
		3.0	2	120	0.036	0.126	0.126	2.79	13690	985	45°
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.2	2	100	0.008	0.008	0.008	0.19	60000	960	45°
		0.5	2	100	0.014	0.022	0.022	0.47	60000	1680	45°
		0.8	2	100	0.016	0.034	0.034	0.75	42445	1360	45°
		1.0	2	100	0.020	0.042	0.042	0.93	34230	1370	45°
		1.2	2	100	0.022	0.050	0.050	1.12	28420	1250	45°
		1.5	2	100	0.024	0.064	0.064	1.40	22735	1090	45°
		2.0	2	100	0.026	0.084	0.084	1.86	17115	890	45°
		2.5	2	100	0.028	0.106	0.106	2.33	13660	765	45°
		3.0	2	100	0.032	0.126	0.126	2.79	11410	730	45°

Ball nose end mills Microcut-B3

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | B | X-Generation

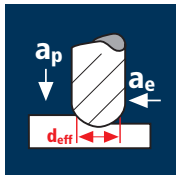
HM Micro	λ 30° γ 5°

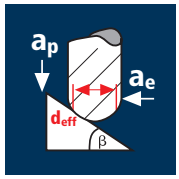


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5782** ø-Code **.020**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	MICRO M5782 $
.020	0.2	3	0.18	40	0.24	0.6	0.10	9.4°	2	76.00
.030	0.3	3	0.25	40	0.36	0.9	0.15	9.0°	2	70.00
.040	0.4	3	0.35	40	0.48	1.2	0.20	8.7°	2	67.00
.050	0.5	3	0.45	40	0.60	1.5	0.25	11.8°	2	67.00
.060	0.6	3	0.55	40	0.72	1.8	0.30	11.2°	2	64.00
.080	0.8	3	0.75	40	0.96	2.4	0.40	10.1°	2	64.00
.100	1.0	3	0.95	50	1.20	3.0	0.50	9.0°	2	64.00
.108	1.2	3	1.10	50	1.44	3.6	0.60	7.9°	2	64.00
.120	1.5	3	1.40	50	1.80	4.5	0.75	6.5°	2	64.00
.140	2.0	3	1.90	50	2.40	6.0	1.00	4.1°	2	64.00
.160	2.5	3	2.30	50	3.00	7.5	1.25	2.0°	2	64.00
.180	3.0	3	2.80	50	3.60	9.0	1.50	0.0°	2	64.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.6	2	140	0.016	0.04	0.12	0.30	60000	1920	9.0
		0.8	2	140	0.020	0.05	0.16	0.39	60000	2400	19.0
		1.0	2	140	0.026	0.06	0.20	0.47	60000	3120	37.5
		1.2	2	140	0.030	0.07	0.24	0.56	60000	3600	60.5
		1.5	2	140	0.038	0.09	0.30	0.71	60000	4560	123.0
		2.0	2	140	0.050	0.12	0.40	0.95	46910	4690	225.0
		2.5	2	140	0.062	0.15	0.50	1.19	37450	4645	348.5
		3.0	2	140	0.076	0.18	0.60	1.42	31385	4770	515.0
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.6	2	120	0.016	0.04	0.12	0.30	60000	1920	9.0
		0.8	2	120	0.020	0.05	0.16	0.39	60000	2400	19.0
		1.0	2	120	0.024	0.06	0.20	0.47	60000	2880	34.5
		1.2	2	120	0.028	0.07	0.24	0.56	60000	3360	56.5
		1.5	2	120	0.036	0.09	0.30	0.71	53800	3875	104.5
		2.0	2	120	0.048	0.12	0.40	0.95	40210	3860	185.5
		2.5	2	120	0.058	0.15	0.50	1.19	32100	3725	279.5
		3.0	2	120	0.072	0.18	0.60	1.42	26900	3875	418.5
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.010	0.03	0.10	0.24	60000	1200	3.5
		0.6	2	100	0.014	0.04	0.12	0.30	60000	1680	8.0
		0.8	2	100	0.018	0.05	0.16	0.39	60000	2160	17.5
		1.0	2	100	0.022	0.06	0.20	0.47	60000	2640	31.5
		1.2	2	100	0.026	0.07	0.24	0.56	56845	2955	49.5
		1.5	2	100	0.034	0.09	0.30	0.71	44835	3050	82.5
		2.0	2	100	0.044	0.12	0.40	0.95	33505	2950	141.5
		2.5	2	100	0.054	0.15	0.50	1.19	26750	2890	217.0
		3.0	2	100	0.066	0.18	0.60	1.42	22415	2960	319.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.010	0.03	0.10	0.24	60000	1200	3.5
		0.6	2	60	0.012	0.04	0.12	0.30	60000	1440	7.0
		0.8	2	60	0.016	0.05	0.16	0.39	48970	1565	12.5
		1.0	2	60	0.020	0.06	0.20	0.47	40635	1625	19.5
		1.2	2	60	0.024	0.07	0.24	0.56	34105	1635	27.5
		1.5	2	60	0.030	0.09	0.30	0.71	26900	1615	43.5
		2.0	2	60	0.040	0.12	0.40	0.95	20105	1610	77.5
		2.5	2	60	0.050	0.15	0.50	1.19	16050	1605	120.5
		3.0	2	60	0.060	0.18	0.60	1.42	13450	1615	174.5

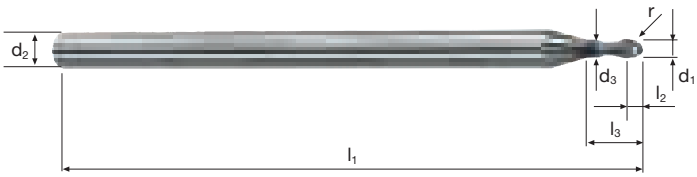
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	300	0.018	0.024	0.024	0.56	60000	2160	45°
		0.8	2	300	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	300	0.022	0.042	0.042	0.93	60000	2640	45°
		1.2	2	300	0.024	0.050	0.050	1.12	60000	2880	45°
		1.5	2	300	0.028	0.062	0.062	1.40	60000	3360	45°
		2.0	2	300	0.030	0.082	0.082	1.86	51340	3080	45°
		2.5	2	300	0.032	0.102	0.102	2.32	41160	2635	45°
		3.0	2	300	0.036	0.122	0.122	2.79	34230	2465	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	250	0.018	0.024	0.024	0.56	60000	2160	45°
		0.8	2	250	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	250	0.020	0.042	0.042	0.93	60000	2400	45°
		1.2	2	250	0.022	0.050	0.050	1.12	60000	2640	45°
		1.5	2	250	0.026	0.062	0.062	1.40	56845	2955	45°
		2.0	2	250	0.028	0.082	0.082	1.86	42785	2395	45°
		2.5	2	250	0.030	0.102	0.102	2.32	34300	2060	45°
		3.0	2	250	0.034	0.122	0.122	2.79	28525	1940	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.014	0.020	0.020	0.46	60000	1680	45°
		0.6	2	200	0.016	0.024	0.024	0.56	60000	1920	45°
		0.8	2	200	0.018	0.032	0.032	0.74	60000	2160	45°
		1.0	2	200	0.020	0.042	0.042	0.93	60000	2400	45°
		1.2	2	200	0.022	0.050	0.050	1.12	56845	2500	45°
		1.5	2	200	0.026	0.062	0.062	1.40	45475	2365	45°
		2.0	2	200	0.028	0.082	0.082	1.86	34230	1915	45°
		2.5	2	200	0.028	0.102	0.102	2.32	27440	1535	45°
		3.0	2	200	0.032	0.122	0.122	2.79	22820	1460	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.012	0.020	0.020	0.46	60000	1440	45°
		0.6	2	150	0.014	0.024	0.024	0.56	60000	1680	45°
		0.8	2	150	0.016	0.032	0.032	0.74	60000	1920	45°
		1.0	2	150	0.018	0.042	0.042	0.93	51340	1850	45°
		1.2	2	150	0.020	0.050	0.050	1.12	42630	1705	45°
		1.5	2	150	0.022	0.062	0.062	1.40	34105	1500	45°
		2.0	2	150	0.024	0.082	0.082	1.86	25670	1230	45°
		2.5	2	150	0.026	0.102	0.102	2.32	20580	1070	45°
		3.0	2	150	0.028	0.122	0.122	2.79	17115	960	45°

Ball nose end mills Microcut-B3H

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | X-Generation X

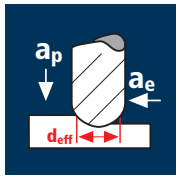
HM XA	λ 30° γ-10°
h5	
d1	r

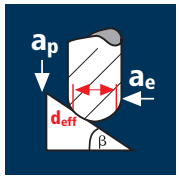


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** D (Coating) 5792 (Article-N°.) .050 (ø-Code)

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DURO-S D5792 $
.050	0.5	3	0.45	40	0.60	1.5	0.25	11.8°	2	68.00
.060	0.6	3	0.55	40	0.72	1.8	0.30	11.2°	2	65.00
.080	0.8	3	0.75	40	0.96	2.4	0.40	10.1°	2	65.00
.100	1.0	3	0.95	50	1.20	3.0	0.50	9.0°	2	65.00
.108	1.2	3	1.10	50	1.44	3.6	0.60	7.9°	2	65.00
.120	1.5	3	1.40	50	1.80	4.5	0.75	6.5°	2	65.00
.140	2.0	3	1.90	50	2.40	6.0	1.00	4.1°	2	65.00
.160	2.5	3	2.30	50	3.00	7.5	1.25	2.0°	2	65.00
.180	3.0	3	2.80	50	3.60	9.0	1.50	0.0°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel < 850 N/mm²	0.5	2	120	0.014	0.03	0.10	0.24	60000	1680	5.0
		0.6	2	120	0.018	0.04	0.12	0.30	60000	2160	10.5
		0.8	2	120	0.022	0.05	0.16	0.39	60000	2640	21.0
		1.0	2	120	0.028	0.06	0.20	0.47	60000	3360	40.5
		1.2	2	120	0.034	0.07	0.24	0.56	60000	4080	68.5
		1.5	2	120	0.042	0.09	0.30	0.71	53800	4520	122.0
		2.0	2	120	0.058	0.12	0.40	0.95	40210	4665	224.0
		2.5	2	120	0.072	0.15	0.50	1.19	32100	4620	346.5
		3.0	2	120	0.086	0.18	0.60	1.42	26900	4625	499.5
	Steel 850 - 1100 N/mm²	0.5	2	80	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.6	2	80	0.016	0.04	0.12	0.30	60000	1920	9.0
		0.8	2	80	0.020	0.05	0.16	0.39	60000	2400	19.0
		1.0	2	80	0.026	0.06	0.20	0.47	54180	2815	34.0
		1.2	2	80	0.030	0.07	0.24	0.56	45475	2730	46.0
		1.5	2	80	0.038	0.09	0.30	0.71	35865	2725	73.5
		2.0	2	80	0.052	0.12	0.40	0.95	26805	2790	134.0
		2.5	2	80	0.064	0.15	0.50	1.19	21400	2740	205.5
		3.0	2	80	0.078	0.18	0.60	1.42	17935	2800	302.5
	Unalloyed copper	0.5	2	230	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.6	2	230	0.020	0.04	0.12	0.30	60000	2400	11.5
		0.8	2	230	0.024	0.05	0.16	0.39	60000	2880	23.0
		1.0	2	230	0.030	0.06	0.20	0.47	60000	3600	43.0
		1.2	2	230	0.038	0.07	0.24	0.56	60000	4560	76.5
		1.5	2	230	0.046	0.09	0.30	0.71	60000	5520	149.0
		2.0	2	230	0.064	0.12	0.40	0.95	60000	7680	368.5
		2.5	2	230	0.080	0.15	0.50	1.19	60000	9600	720.0
		3.0	2	230	0.094	0.18	0.60	1.42	51560	9695	1047.0
	Wrought aluminium alloys Si < 6%	0.5	2	480	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.6	2	480	0.020	0.04	0.12	0.30	60000	2400	11.5
		0.8	2	480	0.024	0.05	0.16	0.39	60000	2880	23.0
		1.0	2	480	0.030	0.06	0.20	0.47	60000	3600	43.0
		1.2	2	480	0.038	0.07	0.24	0.56	60000	4560	76.5
		1.5	2	480	0.046	0.09	0.30	0.71	60000	5520	149.0
		2.0	2	480	0.064	0.12	0.40	0.95	60000	7680	368.5
		2.5	2	480	0.080	0.15	0.50	1.19	60000	9600	720.0
		3.0	2	480	0.094	0.18	0.60	1.42	60000	11280	1218.0

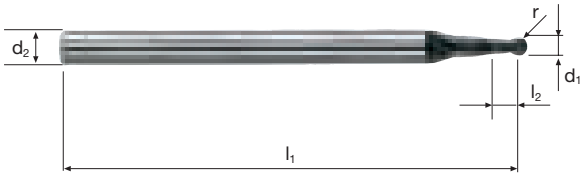
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel < 850 N/mm²	0.5	2	220	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	220	0.018	0.024	0.024	0.56	60000	2160	45°
		0.8	2	220	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	220	0.022	0.040	0.040	0.93	60000	2640	45°
		1.2	2	220	0.024	0.048	0.048	1.11	60000	2880	45°
		1.5	2	220	0.028	0.060	0.060	1.39	50380	2820	45°
		2.0	2	220	0.030	0.080	0.080	1.86	37650	2260	45°
		2.5	2	220	0.032	0.100	0.100	2.32	30185	1930	45°
		3.0	2	220	0.036	0.120	0.120	2.78	25190	1815	45°
	Steel 850 - 1100 N/mm²	0.5	2	150	0.014	0.020	0.020	0.46	60000	1680	45°
		0.6	2	150	0.016	0.024	0.024	0.56	60000	1920	45°
		0.8	2	150	0.018	0.032	0.032	0.74	60000	2160	45°
		1.0	2	150	0.020	0.040	0.040	0.93	51340	2055	45°
		1.2	2	150	0.022	0.048	0.048	1.11	43015	1895	45°
		1.5	2	150	0.026	0.060	0.060	1.39	34350	1785	45°
		2.0	2	150	0.028	0.080	0.080	1.86	25670	1440	45°
		2.5	2	150	0.028	0.100	0.100	2.32	20580	1150	45°
		3.0	2	150	0.032	0.120	0.120	2.78	17175	1100	45°
	Unalloyed copper	0.5	2	400	0.018	0.020	0.020	0.46	60000	2160	45°
		0.6	2	400	0.020	0.024	0.024	0.56	60000	2400	45°
		0.8	2	400	0.022	0.032	0.032	0.74	60000	2640	45°
		1.0	2	400	0.024	0.040	0.040	0.93	60000	2880	45°
		1.2	2	400	0.026	0.048	0.048	1.11	60000	3120	45°
		1.5	2	400	0.030	0.060	0.060	1.39	60000	3600	45°
		2.0	2	400	0.034	0.080	0.080	1.86	60000	4080	45°
		2.5	2	400	0.036	0.100	0.100	2.32	54885	3950	45°
		3.0	2	400	0.040	0.120	0.120	2.78	45800	3665	45°
	Wrought aluminium alloys Si < 6%	0.5	2	650	0.018	0.020	0.020	0.46	60000	2160	45°
		0.6	2	650	0.020	0.024	0.024	0.56	60000	2400	45°
		0.8	2	650	0.022	0.032	0.032	0.74	60000	2640	45°
		1.0	2	650	0.024	0.040	0.040	0.93	60000	2880	45°
		1.2	2	650	0.026	0.048	0.048	1.11	60000	3120	45°
		1.5	2	650	0.030	0.060	0.060	1.39	60000	3600	45°
		2.0	2	650	0.034	0.080	0.080	1.86	60000	4080	45°
		2.5	2	650	0.036	0.100	0.100	2.32	60000	4320	45°
		3.0	2	650	0.040	0.120	0.120	2.78	60000	4800	45°

Ball nose end mills

Shank Ø 3mm, 3xd

HSS | Favora® F | Base-X | X-Generation

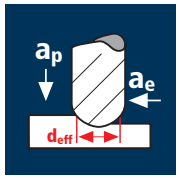
HM	λ 30° γ 10°

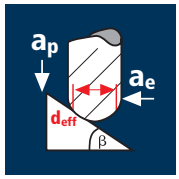


Rm < 850	Rm 850-1100	Rm 1100-1300					Inox Stainless	Ti Titanium	Copper Aluminium

Example: **Order-N°.** Coating **M** Article-N°. **45785** ø-Code **.030**

ø Code	d1 ±0.01	d2 h6	l1	l2	r ±0.01	α	z	5785 $	MICRO M45785 $
.030	0.3	3	40	1.0	0.15	9.0°	2	33.10	38.90
.040	0.4	3	40	1.0	0.20	8.9°	2	31.60	37.10
.050	0.5	3	40	1.5	0.25	8.4°	2	31.60	37.10
.060	0.6	3	40	1.5	0.30	8.3°	2	30.00	35.40
.070	0.7	3	40	2.0	0.35	7.8°	2	30.00	35.40
.080	0.8	3	40	2.0	0.40	7.7°	2	30.00	35.40
.090	0.9	3	40	2.5	0.45	7.2°	2	30.00	35.40
.100	1.0	3	40	3.0	0.50	6.7°	2	30.00	35.40
.108	1.2	3	40	4.0	0.60	5.7°	2	30.00	35.40
.120	1.5	3	40	4.0	0.75	5.3°	2	30.00	35.40
.130	1.8	3	40	5.0	0.90	5.2°	2	30.00	35.40
.140	2.0	3	40	5.0	1.00	4.6°	2	30.00	35.40
.160	2.5	3	40	7.0	1.25	2.0°	2	30.00	35.40
.180	3.0	4	44	10.0	1.50	2.6°	2	30.00	35.40

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	180	0.018	0.04	0.10	0.27	60000	2160	8.5
		0.6	2	180	0.022	0.04	0.12	0.30	60000	2640	12.5
		0.8	2	180	0.028	0.06	0.16	0.42	60000	3360	32.5
		1.0	2	180	0.036	0.07	0.20	0.51	60000	4320	60.5
		1.2	2	180	0.042	0.08	0.24	0.60	60000	5040	97.0
		1.5	2	180	0.054	0.11	0.30	0.78	60000	6480	214.0
		2.0	2	180	0.072	0.14	0.40	1.02	56175	8090	453.0
		2.5	2	180	0.090	0.18	0.50	1.29	44415	7995	719.5
		3.0	2	180	0.108	0.21	0.60	1.53	37450	8090	1019.5
	Steel 1100 - 1300 N/mm²	0.5	2	160	0.016	0.04	0.10	0.27	60000	1920	7.5
		0.6	2	160	0.020	0.04	0.12	0.30	60000	2400	11.5
		0.8	2	160	0.026	0.06	0.16	0.42	60000	3120	30.0
		1.0	2	160	0.032	0.07	0.20	0.51	60000	3840	54.0
		1.2	2	160	0.038	0.08	0.24	0.60	60000	4560	87.5
		1.5	2	160	0.048	0.11	0.30	0.78	60000	5760	190.0
		2.0	2	160	0.064	0.14	0.40	1.02	49930	6390	358.0
		2.5	2	160	0.082	0.18	0.50	1.29	39480	6475	583.0
		3.0	2	160	0.098	0.21	0.60	1.53	33290	6525	822.0
	Stainless steel [Cr-Ni/1.4301]	0.5	2	80	0.016	0.04	0.10	0.27	60000	1920	7.5
		0.6	2	80	0.020	0.04	0.12	0.30	60000	2400	11.5
		0.8	2	80	0.026	0.06	0.16	0.42	60000	3120	30.0
		1.0	2	80	0.032	0.07	0.20	0.51	49930	3195	44.5
		1.2	2	80	0.038	0.08	0.24	0.60	42445	3225	62.0
		1.5	2	80	0.048	0.11	0.30	0.78	32650	3135	103.5
		2.0	2	80	0.064	0.14	0.40	1.02	24965	3195	179.0
		2.5	2	80	0.082	0.18	0.50	1.29	19740	3235	291.0
		3.0	2	80	0.098	0.21	0.60	1.53	16645	3260	411.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	60	0.012	0.04	0.10	0.27	60000	1440	6.0
		0.6	2	60	0.016	0.04	0.12	0.30	60000	1920	9.0
		0.8	2	60	0.020	0.06	0.16	0.42	45475	1820	17.5
		1.0	2	60	0.026	0.07	0.20	0.51	37450	1945	27.0
		1.2	2	60	0.030	0.08	0.24	0.60	31830	1910	36.5
		1.5	2	60	0.038	0.11	0.30	0.78	24485	1860	61.5
		2.0	2	60	0.050	0.14	0.40	1.02	18725	1875	105.0
		2.5	2	60	0.064	0.18	0.50	1.29	14805	1895	170.5
		3.0	2	60	0.076	0.21	0.60	1.53	12485	1900	239.5

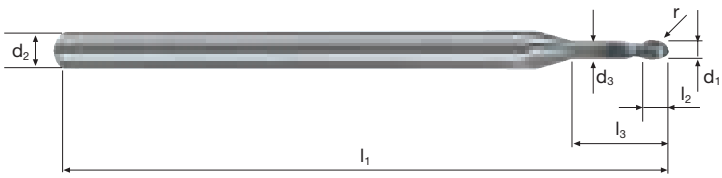
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	0.5	2	300	0.014	0.020	0.020	0.46	60000	1680	45°
		0.6	2	300	0.016	0.024	0.024	0.56	60000	1920	45°
		0.8	2	300	0.018	0.032	0.032	0.74	60000	2160	45°
		1.0	2	300	0.022	0.040	0.040	0.93	60000	2640	45°
		1.2	2	300	0.024	0.048	0.048	1.11	60000	2880	45°
		1.5	2	300	0.028	0.060	0.060	1.39	60000	3360	45°
		2.0	2	300	0.030	0.080	0.080	1.86	51340	3080	45°
		2.5	2	300	0.032	0.100	0.100	2.32	41160	2635	45°
		3.0	2	300	0.036	0.120	0.120	2.78	34350	2475	45°
	Steel 1100 - 1300 N/mm²	0.2	2	250	0.012	0.008	0.008	0.19	60000	1440	45°
		0.5	2	250	0.014	0.020	0.020	0.46	60000	1680	45°
		0.8	2	250	0.016	0.032	0.032	0.74	60000	1920	45°
		1.0	2	250	0.020	0.040	0.040	0.93	60000	2400	45°
		1.2	2	250	0.022	0.048	0.048	1.11	60000	2640	45°
		1.5	2	250	0.026	0.060	0.060	1.39	57250	2975	45°
		2.0	2	250	0.028	0.080	0.080	1.86	42785	2395	45°
		2.5	2	250	0.028	0.100	0.100	2.32	34300	1920	45°
		3.0	2	250	0.032	0.120	0.120	2.78	28625	1830	45°
	Stainless steel [Cr-Ni/1.4301]	0.2	2	120	0.012	0.008	0.008	0.19	60000	1440	45°
		0.5	2	120	0.012	0.020	0.020	0.46	60000	1440	45°
		0.8	2	120	0.014	0.032	0.032	0.74	51620	1445	45°
		1.0	2	120	0.018	0.040	0.040	0.93	41075	1480	45°
		1.2	2	120	0.020	0.048	0.048	1.11	34415	1375	45°
		1.5	2	120	0.022	0.060	0.060	1.39	27480	1210	45°
		2.0	2	120	0.024	0.080	0.080	1.86	20535	985	45°
		2.5	2	120	0.026	0.100	0.100	2.32	16465	855	45°
		3.0	2	120	0.028	0.120	0.120	2.78	13740	770	45°
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.2	2	100	0.010	0.008	0.008	0.19	60000	1200	45°
		0.5	2	100	0.012	0.020	0.020	0.46	60000	1440	45°
		0.8	2	100	0.012	0.032	0.032	0.74	43015	1030	45°
		1.0	2	100	0.016	0.040	0.040	0.93	34230	1095	45°
		1.2	2	100	0.016	0.048	0.048	1.11	28675	920	45°
		1.5	2	100	0.020	0.060	0.060	1.39	22900	915	45°
		2.0	2	100	0.022	0.080	0.080	1.86	17115	755	45°
		2.5	2	100	0.022	0.100	0.100	2.32	13720	605	45°
		3.0	2	100	0.026	0.120	0.120	2.78	11450	595	45°

Ball nose end mills Microcut-B5

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | B | X-Generation

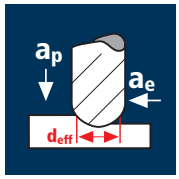
HM Micro	λ 30° γ 5°

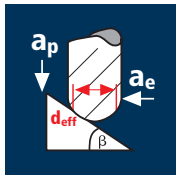


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5784** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	MICRO M5784 $
.050	0.5	3	0.45	40	0.60	2.5	0.25	10.1°	2	67.00
.060	0.6	3	0.55	40	0.72	3.0	0.30	9.4°	2	64.00
.070	0.7	3	0.65	40	0.84	3.5	0.35	8.7°	2	64.00
.080	0.8	3	0.75	40	0.96	4.0	0.40	8.0°	2	64.00
.090	0.9	3	0.85	40	1.08	4.5	0.45	7.4°	2	64.00
.100	1.0	3	0.95	50	1.20	5.0	0.50	6.9°	2	64.00
.108	1.2	3	1.10	50	1.44	6.0	0.60	5.8°	2	64.00
.120	1.5	3	1.40	50	1.80	7.5	0.75	4.4°	2	64.00
.132	1.8	3	1.70	50	2.16	9.0	0.90	3.3°	2	64.00
.140	2.0	3	1.90	50	2.40	10.0	1.00	2.6°	2	64.00
.152	2.3	3	2.10	50	2.76	11.5	1.15	1.7°	2	64.00
.160	2.5	3	2.30	50	3.00	12.5	1.25	1.2°	2	64.00
.172	2.8	3	2.60	50	3.36	14.0	1.40	0.5°	2	64.00
.180	3.0	3	2.80	50	3.60	15.0	1.50	0.0°	2	64.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.6	2	140	0.016	0.03	0.12	0.26	60000	1920	7.0
		0.8	2	140	0.020	0.04	0.16	0.35	60000	2400	15.5
		1.0	2	140	0.026	0.05	0.20	0.44	60000	3120	31.0
		1.2	2	140	0.030	0.06	0.24	0.52	60000	3600	52.0
		1.5	2	140	0.038	0.08	0.30	0.67	60000	4560	109.5
		2.0	2	140	0.050	0.10	0.40	0.87	51225	5125	205.0
		2.5	2	140	0.062	0.13	0.50	1.11	40150	4980	323.5
		3.0	2	140	0.076	0.15	0.60	1.31	34020	5170	465.5
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.6	2	120	0.016	0.03	0.12	0.26	60000	1920	7.0
		0.8	2	120	0.020	0.04	0.16	0.35	60000	2400	15.5
		1.0	2	120	0.024	0.05	0.20	0.44	60000	2880	29.0
		1.2	2	120	0.028	0.06	0.24	0.52	60000	3360	48.5
		1.5	2	120	0.036	0.08	0.30	0.67	57010	4105	98.5
		2.0	2	120	0.048	0.10	0.40	0.87	43905	4215	168.5
		2.5	2	120	0.058	0.13	0.50	1.11	34415	3990	259.5
		3.0	2	120	0.072	0.15	0.60	1.31	29160	4200	378.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.010	0.03	0.10	0.24	60000	1200	3.5
		0.6	2	100	0.014	0.03	0.12	0.26	60000	1680	6.0
		0.8	2	100	0.018	0.04	0.16	0.35	60000	2160	14.0
		1.0	2	100	0.022	0.05	0.20	0.44	60000	2640	26.5
		1.2	2	100	0.026	0.06	0.24	0.52	60000	3120	45.0
		1.5	2	100	0.034	0.08	0.30	0.67	47510	3230	77.5
		2.0	2	100	0.044	0.10	0.40	0.87	36590	3220	129.0
		2.5	2	100	0.054	0.13	0.50	1.11	28675	3095	201.0
		3.0	2	100	0.066	0.15	0.60	1.31	24300	3210	289.0
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.010	0.03	0.10	0.24	60000	1200	3.5
		0.6	2	60	0.012	0.03	0.12	0.26	60000	1440	5.0
		0.8	2	60	0.016	0.04	0.16	0.35	54570	1745	11.0
		1.0	2	60	0.020	0.05	0.20	0.44	43405	1735	17.5
		1.2	2	60	0.024	0.06	0.24	0.52	36730	1765	25.5
		1.5	2	60	0.030	0.08	0.30	0.67	28505	1710	41.0
		2.0	2	60	0.040	0.10	0.40	0.87	21955	1755	70.0
		2.5	2	60	0.050	0.13	0.50	1.11	17205	1720	112.0
		3.0	2	60	0.060	0.15	0.60	1.31	14580	1750	157.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	300	0.018	0.024	0.024	0.56	60000	2160	45°
		0.8	2	300	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	300	0.022	0.040	0.040	0.93	60000	2640	45°
		1.2	2	300	0.024	0.048	0.048	1.11	60000	2880	45°
		1.5	2	300	0.028	0.060	0.060	1.39	60000	3360	45°
		2.0	2	300	0.030	0.080	0.080	1.86	51340	3080	45°
		2.5	2	300	0.032	0.100	0.100	2.32	41160	2635	45°
		3.0	2	300	0.036	0.120	0.120	2.78	34350	2475	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	250	0.018	0.024	0.024	0.56	60000	2160	45°
		0.8	2	250	0.020	0.032	0.032	0.74	60000	2400	45°
		1.0	2	250	0.020	0.040	0.040	0.93	60000	2400	45°
		1.2	2	250	0.022	0.048	0.048	1.11	60000	2640	45°
		1.5	2	250	0.026	0.060	0.060	1.39	57250	2975	45°
		2.0	2	250	0.028	0.080	0.080	1.86	42785	2395	45°
		2.5	2	250	0.030	0.100	0.100	2.32	34300	2060	45°
		3.0	2	250	0.034	0.120	0.120	2.78	28625	1945	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.014	0.020	0.020	0.46	60000	1680	45°
		0.6	2	200	0.016	0.024	0.024	0.56	60000	1920	45°
		0.8	2	200	0.018	0.032	0.032	0.74	60000	2160	45°
		1.0	2	200	0.020	0.040	0.040	0.93	60000	2400	45°
		1.2	2	200	0.022	0.048	0.048	1.11	57355	2525	45°
		1.5	2	200	0.026	0.060	0.060	1.39	45800	2380	45°
		2.0	2	200	0.028	0.080	0.080	1.86	34230	1915	45°
		2.5	2	200	0.028	0.100	0.100	2.32	27440	1535	45°
		3.0	2	200	0.032	0.120	0.120	2.78	22900	1465	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.012	0.020	0.020	0.46	60000	1440	45°
		0.6	2	150	0.014	0.024	0.024	0.56	60000	1680	45°
		0.8	2	150	0.016	0.032	0.032	0.74	60000	1920	45°
		1.0	2	150	0.018	0.040	0.040	0.93	51340	1850	45°
		1.2	2	150	0.020	0.048	0.048	1.11	43015	1720	45°
		1.5	2	150	0.022	0.060	0.060	1.39	34350	1510	45°
		2.0	2	150	0.024	0.080	0.080	1.86	25670	1230	45°
		2.5	2	150	0.026	0.100	0.100	2.32	20580	1070	45°
		3.0	2	150	0.028	0.120	0.120	2.78	17175	960	45°

Ball nose end mills Microcut-B5H

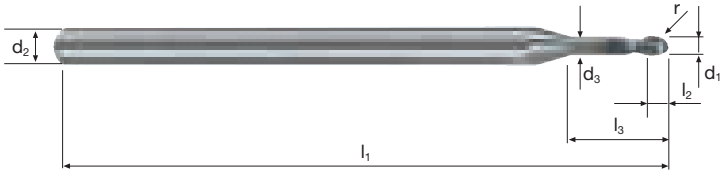
Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ-10°

h5

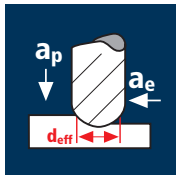
d1 | r

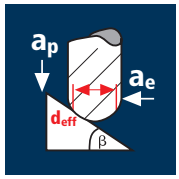


Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** Coating **D** Article-N°. **5794** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DURO-S D5794 $
.050	0.5	3	0.45	40	0.60	2.5	0.25	10.1°	2	68.00
.060	0.6	3	0.55	40	0.72	3.0	0.30	9.4°	2	65.00
.070	0.7	3	0.65	40	0.84	3.5	0.35	8.7°	2	65.00
.080	0.8	3	0.75	40	0.96	4.0	0.40	8.0°	2	65.00
.090	0.9	3	0.85	40	1.08	4.5	0.45	7.4°	2	65.00
.100	1.0	3	0.95	50	1.20	5.0	0.50	6.9°	2	65.00
.108	1.2	3	1.10	50	1.44	6.0	0.60	5.8°	2	65.00
.120	1.5	3	1.40	50	1.80	7.5	0.75	4.4°	2	65.00
.132	1.8	3	1.70	50	2.16	9.0	0.90	3.3°	2	65.00
.140	2.0	3	1.90	50	2.40	10.0	1.00	2.6°	2	65.00
.152	2.3	3	2.10	50	2.76	11.5	1.15	1.7°	2	65.00
.160	2.5	3	2.30	50	3.00	12.5	1.25	1.2°	2	65.00
.172	2.8	3	2.60	50	3.36	14.0	1.40	0.5°	2	65.00
.180	3.0	3	2.80	50	3.60	15.0	1.50	0.0°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	180	0.018	0.03	0.10	0.24	60000	2160	6.5
		0.6	2	180	0.022	0.03	0.12	0.26	60000	2640	9.5
		0.8	2	180	0.028	0.04	0.16	0.35	60000	3360	21.5
		1.0	2	180	0.036	0.05	0.20	0.44	60000	4320	43.0
		1.2	2	180	0.042	0.06	0.24	0.52	60000	5040	72.5
		1.5	2	180	0.054	0.08	0.30	0.67	60000	6480	155.5
		2.0	2	180	0.072	0.10	0.40	0.87	60000	8640	345.5
		2.5	2	180	0.090	0.13	0.50	1.11	51620	9290	604.0
		3.0	2	180	0.108	0.15	0.60	1.31	43740	9450	850.5
	Steel 1100 - 1300 N/mm²	0.5	2	160	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.6	2	160	0.020	0.03	0.12	0.26	60000	2400	8.5
		0.8	2	160	0.026	0.04	0.16	0.35	60000	3120	20.0
		1.0	2	160	0.032	0.05	0.20	0.44	60000	3840	38.5
		1.2	2	160	0.038	0.06	0.24	0.52	60000	4560	65.5
		1.5	2	160	0.048	0.08	0.30	0.67	60000	5760	138.0
		2.0	2	160	0.064	0.10	0.40	0.87	58540	7495	300.0
		2.5	2	160	0.082	0.13	0.50	1.11	45885	7525	489.0
		3.0	2	160	0.098	0.15	0.60	1.31	38880	7620	686.0
	Stainless steel [Cr-Ni/1.4301]	0.5	2	80	0.016	0.03	0.10	0.24	60000	1920	6.0
		0.6	2	80	0.020	0.03	0.12	0.26	60000	2400	8.5
		0.8	2	80	0.026	0.04	0.16	0.35	60000	3120	20.0
		1.0	2	80	0.032	0.05	0.20	0.44	57875	3705	37.0
		1.2	2	80	0.038	0.06	0.24	0.52	48970	3720	53.5
		1.5	2	80	0.048	0.08	0.30	0.67	38010	3650	87.5
		2.0	2	80	0.064	0.10	0.40	0.87	29270	3745	150.0
		2.5	2	80	0.082	0.13	0.50	1.11	22940	3760	244.5
		3.0	2	80	0.098	0.15	0.60	1.31	19440	3810	343.0
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	60	0.012	0.03	0.10	0.24	60000	1440	4.5
		0.6	2	60	0.016	0.03	0.12	0.26	60000	1920	7.0
		0.8	2	60	0.020	0.04	0.16	0.35	54570	2185	14.0
		1.0	2	60	0.026	0.05	0.20	0.44	43405	2255	22.5
		1.2	2	60	0.030	0.06	0.24	0.52	36730	2205	32.0
		1.5	2	60	0.038	0.08	0.30	0.67	28505	2165	52.0
		2.0	2	60	0.050	0.10	0.40	0.87	21955	2195	88.0
		2.5	2	60	0.064	0.13	0.50	1.11	17205	2200	143.0
		3.0	2	60	0.076	0.15	0.60	1.31	14580	2215	199.5

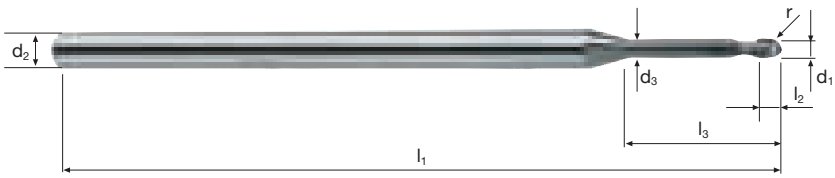
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	0.5	2	300	0.014	0.020	0.020	0.46	60000	1680	45°
		0.6	2	300	0.016	0.022	0.022	0.55	60000	1920	45°
		0.8	2	300	0.018	0.030	0.030	0.74	60000	2160	45°
		1.0	2	300	0.022	0.038	0.038	0.92	60000	2640	45°
		1.2	2	300	0.024	0.046	0.046	1.11	60000	2880	45°
		1.5	2	300	0.028	0.058	0.058	1.39	60000	3360	45°
		2.0	2	300	0.030	0.076	0.076	1.85	51620	3095	45°
		2.5	2	300	0.032	0.096	0.096	2.31	41340	2645	45°
		3.0	2	300	0.036	0.114	0.114	2.77	34475	2480	45°
	Steel 1100 - 1300 N/mm²	0.5	2	250	0.012	0.020	0.020	0.46	60000	1440	45°
		0.6	2	250	0.014	0.022	0.022	0.55	60000	1680	45°
		0.8	2	250	0.016	0.030	0.030	0.74	60000	1920	45°
		1.0	2	250	0.020	0.038	0.038	0.92	60000	2400	45°
		1.2	2	250	0.022	0.046	0.046	1.11	60000	2640	45°
		1.5	2	250	0.026	0.058	0.058	1.39	57250	2975	45°
		2.0	2	250	0.028	0.076	0.076	1.85	43015	2410	45°
		2.5	2	250	0.028	0.096	0.096	2.31	34450	1930	45°
		3.0	2	250	0.032	0.114	0.114	2.77	28730	1840	45°
	Stainless steel [Cr-Ni/1.4301]	0.5	2	120	0.012	0.020	0.020	0.46	60000	1440	45°
		0.6	2	120	0.012	0.022	0.022	0.55	60000	1440	45°
		0.8	2	120	0.014	0.030	0.030	0.74	51620	1445	45°
		1.0	2	120	0.018	0.038	0.038	0.92	41520	1495	45°
		1.2	2	120	0.020	0.046	0.046	1.11	34415	1375	45°
		1.5	2	120	0.022	0.058	0.058	1.39	27480	1210	45°
		2.0	2	120	0.024	0.076	0.076	1.85	20650	990	45°
		2.5	2	120	0.026	0.096	0.096	2.31	16535	860	45°
		3.0	2	120	0.028	0.114	0.114	2.77	13790	770	45°
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	100	0.010	0.020	0.020	0.46	60000	1200	45°
		0.6	2	100	0.012	0.022	0.022	0.55	57875	1390	45°
		0.8	2	100	0.012	0.030	0.030	0.74	43015	1030	45°
		1.0	2	100	0.016	0.038	0.038	0.92	34600	1105	45°
		1.2	2	100	0.016	0.046	0.046	1.11	28675	920	45°
		1.5	2	100	0.020	0.058	0.058	1.39	22900	915	45°
		2.0	2	100	0.022	0.076	0.076	1.85	17205	755	45°
		2.5	2	100	0.022	0.096	0.096	2.31	13780	605	45°
		3.0	2	100	0.026	0.114	0.114	2.77	11490	595	45°

Ball nose end mills Microcut-B8

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | B | X-Generation

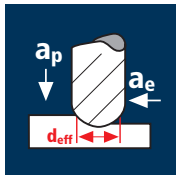
HM Micro	λ 30° γ 5°

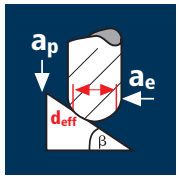


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5786** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	MICRO M5786 $
.050	0.5	3	0.45	40	0.60	4.0	0.25	8.4°	2	67.00
.060	0.6	3	0.55	40	0.72	4.8	0.30	7.6°	2	64.00
.080	0.8	3	0.75	40	0.96	6.4	0.40	6.2°	2	64.00
.100	1.0	3	0.95	50	1.20	8.0	0.50	5.1°	2	64.00
.108	1.2	3	1.10	50	1.44	9.6	0.60	4.2°	2	64.00
.120	1.5	3	1.40	60	1.80	12.0	0.75	3.1°	2	64.00
.140	2.0	3	1.90	60	2.40	16.0	1.00	1.7°	2	64.00
.160	2.5	3	2.30	60	3.00	20.0	1.25	0.8°	2	64.00
.180	3.0	3	2.80	60	3.60	24.0	1.50	0.0°	2	64.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.012	0.02	0.09	0.20	60000	1440	2.5
		0.6	2	140	0.016	0.02	0.11	0.22	60000	1920	4.0
		0.8	2	140	0.020	0.03	0.14	0.30	60000	2400	10.0
		1.0	2	140	0.026	0.04	0.18	0.39	60000	3120	22.5
		1.2	2	140	0.030	0.05	0.22	0.48	60000	3600	39.5
		1.5	2	140	0.038	0.06	0.27	0.59	60000	4560	74.0
		2.0	2	140	0.050	0.08	0.36	0.78	57135	5715	164.5
		2.5	2	140	0.062	0.10	0.45	0.98	45475	5640	254.0
		3.0	2	140	0.076	0.12	0.54	1.18	37765	5740	372.0
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.012	0.02	0.09	0.20	60000	1440	2.5
		0.6	2	120	0.016	0.02	0.11	0.22	60000	1920	4.0
		0.8	2	120	0.020	0.03	0.14	0.30	60000	2400	10.0
		1.0	2	120	0.024	0.04	0.18	0.39	60000	2880	20.5
		1.2	2	120	0.028	0.05	0.22	0.48	60000	3360	37.0
		1.5	2	120	0.036	0.06	0.27	0.59	60000	4320	70.0
		2.0	2	120	0.048	0.08	0.36	0.78	48970	4700	135.5
		2.5	2	120	0.058	0.10	0.45	0.98	38980	4520	203.5
		3.0	2	120	0.072	0.12	0.54	1.18	32370	4660	302.0
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.010	0.02	0.09	0.20	60000	1200	2.0
		0.6	2	100	0.014	0.02	0.11	0.22	60000	1680	3.5
		0.8	2	100	0.018	0.03	0.14	0.30	60000	2160	9.0
		1.0	2	100	0.022	0.04	0.18	0.39	60000	2640	19.0
		1.2	2	100	0.026	0.05	0.22	0.48	60000	3120	34.5
		1.5	2	100	0.034	0.06	0.27	0.59	53950	3670	59.5
		2.0	2	100	0.044	0.08	0.36	0.78	40810	3590	103.5
		2.5	2	100	0.054	0.10	0.45	0.98	32480	3510	158.0
		3.0	2	100	0.066	0.12	0.54	1.18	26975	3560	230.5
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.010	0.02	0.09	0.20	60000	1200	2.0
		0.6	2	60	0.012	0.02	0.11	0.22	60000	1440	3.0
		0.8	2	60	0.016	0.03	0.14	0.30	60000	1920	8.0
		1.0	2	60	0.020	0.04	0.18	0.39	48970	1960	14.0
		1.2	2	60	0.024	0.05	0.22	0.48	39790	1910	21.0
		1.5	2	60	0.030	0.06	0.27	0.59	32370	1940	31.5
		2.0	2	60	0.040	0.08	0.36	0.78	24485	1960	56.5
		2.5	2	60	0.050	0.10	0.45	0.98	19490	1950	88.0
		3.0	2	60	0.060	0.12	0.54	1.18	16185	1940	125.5

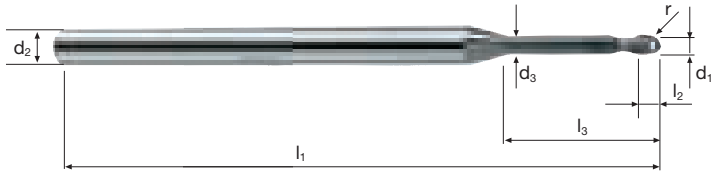
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	300	0.018	0.022	0.022	0.55	60000	2160	45°
		0.8	2	300	0.020	0.030	0.030	0.74	60000	2400	45°
		1.0	2	300	0.022	0.038	0.038	0.92	60000	2640	45°
		1.2	2	300	0.024	0.046	0.046	1.11	60000	2880	45°
		1.5	2	300	0.028	0.058	0.058	1.39	60000	3360	45°
		2.0	2	300	0.030	0.076	0.076	1.85	51620	3095	45°
		2.5	2	300	0.032	0.096	0.096	2.31	41340	2645	45°
		3.0	2	300	0.036	0.114	0.114	2.77	34475	2480	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.016	0.020	0.020	0.46	60000	1920	45°
		0.6	2	250	0.018	0.022	0.022	0.55	60000	2160	45°
		0.8	2	250	0.020	0.030	0.030	0.74	60000	2400	45°
		1.0	2	250	0.020	0.038	0.038	0.92	60000	2400	45°
		1.2	2	250	0.022	0.046	0.046	1.11	60000	2640	45°
		1.5	2	250	0.026	0.058	0.058	1.39	57250	2975	45°
		2.0	2	250	0.028	0.076	0.076	1.85	43015	2410	45°
		2.5	2	250	0.030	0.096	0.096	2.31	34450	2065	45°
		3.0	2	250	0.034	0.114	0.114	2.77	28730	1955	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.014	0.020	0.020	0.46	60000	1680	45°
		0.6	2	200	0.016	0.022	0.022	0.55	60000	1920	45°
		0.8	2	200	0.018	0.030	0.030	0.74	60000	2160	45°
		1.0	2	200	0.020	0.038	0.038	0.92	60000	2400	45°
		1.2	2	200	0.022	0.046	0.046	1.11	57355	2525	45°
		1.5	2	200	0.026	0.058	0.058	1.39	45800	2380	45°
		2.0	2	200	0.028	0.076	0.076	1.85	34415	1925	45°
		2.5	2	200	0.028	0.096	0.096	2.31	27560	1545	45°
		3.0	2	200	0.032	0.114	0.114	2.77	22985	1470	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.012	0.020	0.020	0.46	60000	1440	45°
		0.6	2	150	0.014	0.022	0.022	0.55	60000	1680	45°
		0.8	2	150	0.016	0.030	0.030	0.74	60000	1920	45°
		1.0	2	150	0.018	0.038	0.038	0.92	51900	1870	45°
		1.2	2	150	0.020	0.046	0.046	1.11	43015	1720	45°
		1.5	2	150	0.022	0.058	0.058	1.39	34350	1510	45°
		2.0	2	150	0.024	0.076	0.076	1.85	25810	1240	45°
		2.5	2	150	0.026	0.096	0.096	2.31	20670	1075	45°
		3.0	2	150	0.028	0.114	0.114	2.77	17240	965	45°

Ball nose end mills Microcut-B8H

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | X-Generation X

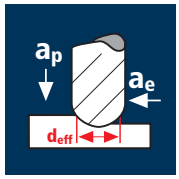
HM XA	λ 30° γ-10°

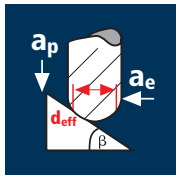


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** Coating **D** Article-N°. **5796** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DURO-S D5796 $
.050	0.5	3	0.45	40	0.60	4.0	0.25	8.4°	2	68.00
.060	0.6	3	0.55	40	0.72	4.8	0.30	7.6°	2	65.00
.080	0.8	3	0.75	40	0.96	6.4	0.40	6.2°	2	65.00
.100	1.0	3	0.95	50	1.20	8.0	0.50	5.1°	2	65.00
.108	1.2	3	1.10	50	1.44	9.6	0.60	4.2°	2	65.00
.120	1.5	3	1.40	60	1.80	12.0	0.75	3.1°	2	65.00
.140	2.0	3	1.90	60	2.40	16.0	1.00	1.7°	2	65.00
.160	2.5	3	2.30	60	3.00	20.0	1.25	0.8°	2	65.00
.180	3.0	3	2.80	60	3.60	24.0	1.50	0.0°	2	65.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	Q [mm³/min]
	Steel 850 - 1100 N/mm²	0.5	2	180	0.018	0.02	0.08	0.20	60000	2160	3.5
		0.6	2	180	0.022	0.02	0.09	0.22	60000	2640	5.0
		0.8	2	180	0.028	0.03	0.12	0.30	60000	3360	12.0
		1.0	2	180	0.036	0.04	0.15	0.39	60000	4320	26.0
		1.2	2	180	0.042	0.05	0.18	0.48	60000	5040	45.5
		1.5	2	180	0.054	0.06	0.23	0.59	60000	6480	89.5
		2.0	2	180	0.072	0.08	0.30	0.78	60000	8640	207.5
		2.5	2	180	0.090	0.10	0.38	0.98	58465	10525	400.0
		3.0	2	180	0.108	0.12	0.45	1.18	48555	10490	566.5
	Steel 1100 - 1300 N/mm²	0.5	2	160	0.016	0.02	0.08	0.20	60000	1920	3.0
		0.6	2	160	0.020	0.02	0.09	0.22	60000	2400	4.5
		0.8	2	160	0.026	0.03	0.12	0.30	60000	3120	11.0
		1.0	2	160	0.032	0.04	0.15	0.39	60000	3840	23.0
		1.2	2	160	0.038	0.05	0.18	0.48	60000	4560	41.0
		1.5	2	160	0.048	0.06	0.23	0.59	60000	5760	79.5
		2.0	2	160	0.064	0.08	0.30	0.78	60000	7680	184.5
		2.5	2	160	0.082	0.10	0.38	0.98	51970	8525	324.0
		3.0	2	160	0.098	0.12	0.45	1.18	43160	8460	457.0
	Stainless steel [Cr-Ni/1.4301]	0.5	2	80	0.016	0.02	0.08	0.20	60000	1920	3.0
		0.6	2	80	0.020	0.02	0.09	0.22	60000	2400	4.5
		0.8	2	80	0.026	0.03	0.12	0.30	60000	3120	11.0
		1.0	2	80	0.032	0.04	0.15	0.39	60000	3840	23.0
		1.2	2	80	0.038	0.05	0.18	0.48	53055	4030	36.5
		1.5	2	80	0.048	0.06	0.23	0.59	43160	4145	57.0
		2.0	2	80	0.064	0.08	0.30	0.78	32650	4180	100.5
		2.5	2	80	0.082	0.10	0.38	0.98	25985	4260	162.0
		3.0	2	80	0.098	0.12	0.45	1.18	21580	4230	228.5
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.5	2	60	0.012	0.02	0.08	0.20	60000	1440	2.5
		0.6	2	60	0.016	0.02	0.09	0.22	60000	1920	3.5
		0.8	2	60	0.020	0.03	0.12	0.30	60000	2400	8.5
		1.0	2	60	0.026	0.04	0.15	0.39	48970	2545	15.5
		1.2	2	60	0.030	0.05	0.18	0.48	39790	2385	21.5
		1.5	2	60	0.038	0.06	0.23	0.59	32370	2460	34.0
		2.0	2	60	0.050	0.08	0.30	0.78	24485	2450	59.0
		2.5	2	60	0.064	0.10	0.38	0.98	19490	2495	95.0
		3.0	2	60	0.076	0.12	0.45	1.18	16185	2460	133.0

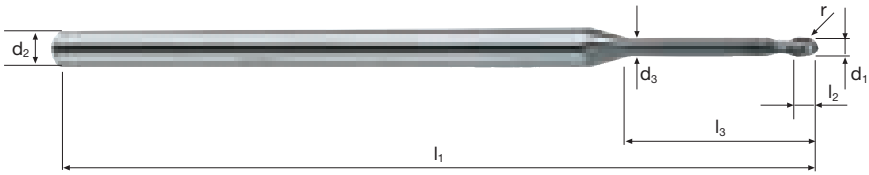
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	0.5	2	300	0.012	0.018	0.018	0.46	60000	1440	45°
		0.6	2	300	0.014	0.022	0.022	0.55	60000	1680	45°
		0.8	2	300	0.016	0.028	0.028	0.73	60000	1920	45°
		1.0	2	300	0.020	0.036	0.036	0.92	60000	2400	45°
		1.2	2	300	0.022	0.042	0.042	1.10	60000	2640	45°
		1.5	2	300	0.024	0.052	0.052	1.38	60000	2880	45°
		2.0	2	300	0.026	0.070	0.070	1.84	51900	2700	45°
		2.5	2	300	0.028	0.088	0.088	2.29	41700	2335	45°
		3.0	2	300	0.032	0.106	0.106	2.75	34725	2220	45°
	Steel 1100 - 1300 N/mm²	0.2	2	250	0.010	0.008	0.008	0.19	60000	1200	45°
		0.5	2	250	0.012	0.018	0.018	0.46	60000	1440	45°
		0.8	2	250	0.014	0.028	0.028	0.73	60000	1680	45°
		1.0	2	250	0.018	0.036	0.036	0.92	60000	2160	45°
		1.2	2	250	0.020	0.042	0.042	1.10	60000	2400	45°
		1.5	2	250	0.022	0.052	0.052	1.38	57665	2535	45°
		2.0	2	250	0.024	0.070	0.070	1.84	43250	2075	45°
		2.5	2	250	0.026	0.088	0.088	2.29	34750	1805	45°
		3.0	2	250	0.028	0.106	0.106	2.75	28940	1620	45°
	Stainless steel [Cr-Ni/1.4301]	0.2	2	120	0.010	0.008	0.008	0.19	60000	1200	45°
		0.5	2	120	0.012	0.018	0.018	0.46	60000	1440	45°
		0.8	2	120	0.012	0.028	0.028	0.73	52325	1255	45°
		1.0	2	120	0.016	0.036	0.036	0.92	41520	1330	45°
		1.2	2	120	0.018	0.042	0.042	1.10	34725	1250	45°
		1.5	2	120	0.020	0.052	0.052	1.38	27680	1105	45°
		2.0	2	120	0.020	0.070	0.070	1.84	20760	830	45°
		2.5	2	120	0.022	0.088	0.088	2.29	16680	735	45°
		3.0	2	120	0.026	0.106	0.106	2.75	13890	720	45°
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	0.2	2	100	0.008	0.008	0.008	0.19	60000	960	45°
		0.5	2	100	0.010	0.018	0.018	0.46	60000	1200	45°
		0.8	2	100	0.012	0.028	0.028	0.73	43605	1045	45°
		1.0	2	100	0.014	0.036	0.036	0.92	34600	970	45°
		1.2	2	100	0.016	0.042	0.042	1.10	28940	925	45°
		1.5	2	100	0.016	0.052	0.052	1.38	23065	740	45°
		2.0	2	100	0.018	0.070	0.070	1.84	17300	625	45°
		2.5	2	100	0.020	0.088	0.088	2.29	13900	555	45°
		3.0	2	100	0.022	0.106	0.106	2.75	11575	510	45°

Ball nose end mills Microcut-B10

Shank Ø 3mm, cylindrical neck, 10xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro	λ 30° γ 5°

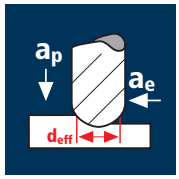


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5787** ø-Code **.050**

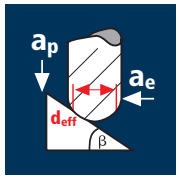
ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	MICRO M5787 $
.050	0.5	3	0.45	40	0.60	5.0	0.25	7.5°	2	67.00
.060	0.6	3	0.55	40	0.72	6.0	0.30	6.7°	2	64.00
.080	0.8	3	0.75	40	0.96	8.0	0.40	5.4°	2	64.00
.100	1.0	3	0.95	50	1.20	10.0	0.50	4.3°	2	64.00
.108	1.2	3	1.10	50	1.44	12.0	0.60	3.5°	2	64.00
.120	1.5	3	1.40	60	1.80	15.0	0.75	2.6°	2	64.00
.140	2.0	3	1.90	60	2.40	20.0	1.00	1.4°	2	64.00
.160	2.5	3	2.30	60	3.00	25.0	1.25	0.6°	2	64.00
.180	3.0	3	2.80	60	3.60	30.0	1.50	0.0°	2	64.00

Application



Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	deff [mm]	n [min⁻¹]	vf [mm/min]	Q [mm³/min]
Steel 850 - 1100 N/mm²	1.0	2	180	0.028	0.03	0.12	0.34	60000	3360	12.0
	1.2	2	180	0.034	0.04	0.14	0.43	60000	4080	23.0
	1.5	2	180	0.042	0.05	0.18	0.54	60000	5040	45.5
	2.0	2	180	0.058	0.06	0.24	0.68	60000	6960	100.0
	2.5	2	180	0.072	0.08	0.30	0.88	60000	8640	207.5
	3.0	2	180	0.086	0.09	0.36	1.02	56175	9660	313.0
Steel 1100 - 1300 N/mm²	1.0	2	160	0.026	0.03	0.12	0.34	60000	3120	11.0
	1.2	2	160	0.030	0.04	0.14	0.43	60000	3600	20.0
	1.5	2	160	0.038	0.05	0.18	0.54	60000	4560	41.0
	2.0	2	160	0.052	0.06	0.24	0.68	60000	6240	90.0
	2.5	2	160	0.064	0.08	0.30	0.88	57875	7410	178.0
	3.0	2	160	0.078	0.09	0.36	1.02	49930	7790	252.5
Stainless steel [Cr-Ni/1.4301]	1.0	2	80	0.022	0.03	0.12	0.34	60000	2640	9.5
	1.2	2	80	0.028	0.04	0.14	0.43	59220	3315	18.5
	1.5	2	80	0.034	0.05	0.18	0.54	47160	3205	29.0
	2.0	2	80	0.046	0.06	0.24	0.68	37450	3445	49.5
	2.5	2	80	0.058	0.08	0.30	0.88	28940	3355	80.5
	3.0	2	80	0.068	0.09	0.36	1.02	24965	3395	110.0
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.0	2	60	0.020	0.03	0.12	0.34	56175	2245	8.0
	1.2	2	60	0.024	0.04	0.14	0.43	44415	2130	12.0
	1.5	2	60	0.030	0.05	0.18	0.54	35370	2120	19.0
	2.0	2	60	0.040	0.06	0.24	0.68	28085	2245	32.5
	2.5	2	60	0.050	0.08	0.30	0.88	21705	2170	52.0
	3.0	2	60	0.060	0.09	0.36	1.02	18725	2245	72.5

Application



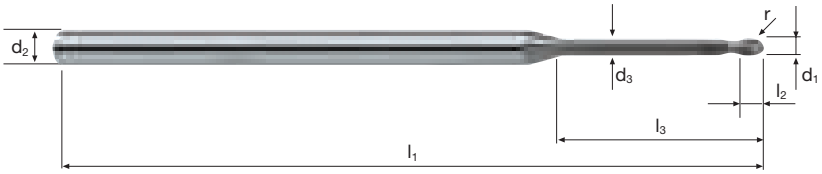
Material	d1 [mm]	z	vc [m/min]	fz [mm]	ap [mm]	ae [mm]	deff [mm]	n [min⁻¹]	vf [mm/min]	β [°]
Steel 850 - 1100 N/mm²	1.0	2	300	0.020	0.028	0.028	0.90	60000	2400	45°
	1.2	2	300	0.022	0.034	0.034	1.08	60000	2640	45°
	1.5	2	300	0.024	0.042	0.042	1.35	60000	2880	45°
	2.0	2	300	0.026	0.056	0.056	1.80	53055	2760	45°
	2.5	2	300	0.028	0.070	0.070	2.25	42445	2375	45°
	3.0	2	300	0.032	0.084	0.084	2.70	35370	2265	45°
Steel 1100 - 1300 N/mm²	1.0	2	250	0.018	0.028	0.028	0.90	60000	2160	45°
	1.2	2	250	0.020	0.034	0.034	1.08	60000	2400	45°
	1.5	2	250	0.022	0.042	0.042	1.35	58950	2595	45°
	2.0	2	250	0.024	0.056	0.056	1.80	44210	2120	45°
	2.5	2	250	0.026	0.070	0.070	2.25	35370	1840	45°
	3.0	2	250	0.028	0.084	0.084	2.70	29475	1650	45°
Stainless steel [Cr-Ni/1.4301]	1.0	2	120	0.016	0.028	0.028	0.90	42445	1360	45°
	1.2	2	120	0.018	0.034	0.034	1.08	35370	1275	45°
	1.5	2	120	0.020	0.042	0.042	1.35	28295	1130	45°
	2.0	2	120	0.020	0.056	0.056	1.80	21220	850	45°
	2.5	2	120	0.022	0.070	0.070	2.25	16975	745	45°
	3.0	2	120	0.026	0.084	0.084	2.70	14150	735	45°
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.0	2	100	0.014	0.028	0.028	0.90	35370	990	45°
	1.2	2	100	0.016	0.034	0.034	1.08	29475	945	45°
	1.5	2	100	0.016	0.042	0.042	1.35	23580	755	45°
	2.0	2	100	0.018	0.056	0.056	1.80	17685	635	45°
	2.5	2	100	0.020	0.070	0.070	2.25	14150	565	45°
	3.0	2	100	0.022	0.084	0.084	2.70	11790	520	45°

Ball nose end mills Microcut-B12

Shank Ø 3mm, cylindrical neck, 12xd

HSS | Favora® | Base-X | **B** | X-Generation

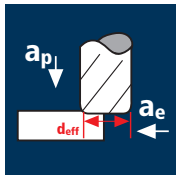
HM Micro	λ 30° γ 5°

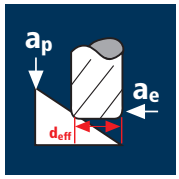


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5791** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	MICRO M5791 $
.100	1.0	3	0.95	50	1.20	12.0	0.50	3.8°	2	64.00
.108	1.2	3	1.10	60	1.44	14.4	0.60	3.0°	2	64.00
.120	1.5	3	1.40	60	1.80	18.0	0.75	2.2°	2	64.00
.140	2.0	3	1.90	60	2.40	24.0	1.00	1.2°	2	64.00
.160	2.5	3	2.30	70	3.00	30.0	1.25	0.5°	2	64.00
.180	3.0	3	2.80	70	3.60	36.0	1.50	0.0°	2	64.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.016	0.03	0.10	0.44	60000	1920	r=0.1
		0.8	2	140	0.026	0.05	0.16	0.77	57875	3010	r=0.1
		1.0	2	140	0.034	0.06	0.20	0.89	50075	3405	r=0.2
		1.2	2	140	0.040	0.07	0.24	1.10	40515	3240	r=0.2
		1.5	2	140	0.050	0.09	0.30	1.43	31165	3115	r=0.2
		2.0	2	140	0.066	0.12	0.40	1.97	22620	2985	r=0.2
		2.5	2	140	0.084	0.15	0.50	2.49	17895	3005	r=0.2
		3.0	2	140	0.100	0.18	0.60	3.00	14855	2970	r=0.2
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.016	0.03	0.10	0.44	60000	1920	r=0.1
		0.8	2	120	0.024	0.05	0.16	0.77	49610	2380	r=0.1
		1.0	2	120	0.032	0.06	0.20	0.89	42920	2745	r=0.2
		1.2	2	120	0.038	0.07	0.24	1.10	34725	2640	r=0.2
		1.5	2	120	0.048	0.09	0.30	1.43	26710	2565	r=0.2
		2.0	2	120	0.062	0.12	0.40	1.97	19390	2405	r=0.2
		2.5	2	120	0.080	0.15	0.50	2.49	15340	2455	r=0.2
		3.0	2	120	0.096	0.18	0.60	3.00	12735	2445	r=0.2
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.03	0.10	0.44	60000	1680	r=0.1
		0.8	2	100	0.022	0.05	0.16	0.77	41340	1820	r=0.1
		1.0	2	100	0.030	0.06	0.20	0.89	35765	2145	r=0.2
		1.2	2	100	0.036	0.07	0.24	1.10	28940	2085	r=0.2
		1.5	2	100	0.044	0.09	0.30	1.43	22260	1960	r=0.2
		2.0	2	100	0.058	0.12	0.40	1.97	16160	1875	r=0.2
		2.5	2	100	0.074	0.15	0.50	2.49	12785	1890	r=0.2
		3.0	2	100	0.088	0.18	0.60	3.00	10610	1865	r=0.2
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.03	0.10	0.44	43405	1040	r=0.1
		0.8	2	60	0.020	0.05	0.16	0.77	24805	990	r=0.1
		1.0	2	60	0.028	0.06	0.20	0.89	21460	1200	r=0.2
		1.2	2	60	0.032	0.07	0.24	1.10	17365	1110	r=0.2
		1.5	2	60	0.040	0.09	0.30	1.43	13355	1070	r=0.2
		2.0	2	60	0.052	0.12	0.40	1.97	9695	1010	r=0.2
		2.5	2	60	0.068	0.15	0.50	2.49	7670	1045	r=0.2
		3.0	2	60	0.080	0.18	0.60	3.00	6365	1020	r=0.2

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.020	0.022	0.022	0.50	60000	2400	45°
		0.8	2	300	0.022	0.034	0.034	0.80	60000	2640	45°
		1.0	2	300	0.028	0.042	0.042	1.00	60000	3360	45°
		1.2	2	300	0.030	0.050	0.050	1.20	60000	3600	45°
		1.5	2	300	0.034	0.064	0.064	1.50	60000	4080	45°
		2.0	2	300	0.038	0.084	0.084	1.99	47990	3645	45°
		2.5	2	300	0.040	0.106	0.106	2.48	38505	3080	45°
		3.0	2	300	0.046	0.126	0.126	2.97	32155	2960	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.020	0.022	0.022	0.50	60000	2400	45°
		0.8	2	250	0.020	0.034	0.034	0.80	60000	2400	45°
		1.0	2	250	0.026	0.042	0.042	1.00	60000	3120	45°
		1.2	2	250	0.028	0.050	0.050	1.20	60000	3360	45°
		1.5	2	250	0.032	0.064	0.064	1.50	53055	3395	45°
		2.0	2	250	0.036	0.084	0.084	1.99	39990	2880	45°
		2.5	2	250	0.038	0.106	0.106	2.48	32090	2440	45°
		3.0	2	250	0.044	0.126	0.126	2.97	26795	2360	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.018	0.022	0.022	0.50	60000	2160	45°
		0.8	2	200	0.020	0.034	0.034	0.80	60000	2400	45°
		1.0	2	200	0.026	0.042	0.042	1.00	60000	3120	45°
		1.2	2	200	0.028	0.050	0.050	1.20	53055	2970	45°
		1.5	2	200	0.030	0.064	0.064	1.50	42445	2545	45°
		2.0	2	200	0.034	0.084	0.084	1.99	31990	2175	45°
		2.5	2	200	0.036	0.106	0.106	2.48	25670	1850	45°
		3.0	2	200	0.042	0.126	0.126	2.97	21435	1800	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.016	0.022	0.022	0.50	60000	1920	45°
		0.8	2	150	0.018	0.034	0.034	0.80	59685	2150	45°
		1.0	2	150	0.022	0.042	0.042	1.00	47750	2100	45°
		1.2	2	150	0.024	0.050	0.050	1.20	39790	1910	45°
		1.5	2	150	0.028	0.064	0.064	1.50	31830	1780	45°
		2.0	2	150	0.030	0.084	0.084	1.99	23995	1440	45°
		2.5	2	150	0.032	0.106	0.106	2.48	19255	1230	45°
		3.0	2	150	0.036	0.126	0.126	2.97	16075	1155	45°

Corner radius end mills MicroX

Shank Ø 6mm, cylindrical neck, 3xd

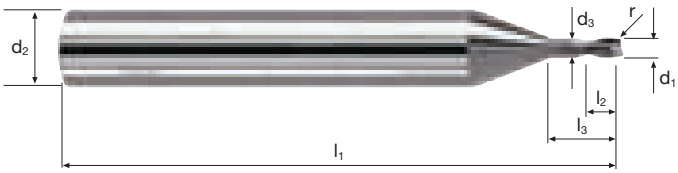
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 25° γ-10°

h5

d1

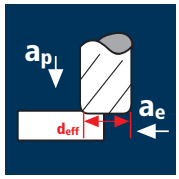
r

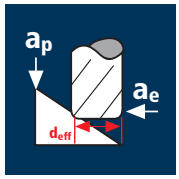


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6532** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.01	α	z	X-AL X6532 $
.050	0.5	6	0.45	57	0.5	1.5	0.10	13.2°	2	62.00
.080	0.8	6	0.75	57	0.8	2.4	0.10	12.2°	2	62.00
.100	1.0	6	0.95	57	1.0	3.0	0.20	11.6°	2	62.00
.108	1.2	6	1.10	57	1.2	3.6	0.20	10.9°	2	62.00
.120	1.5	6	1.40	57	1.5	4.5	0.20	10.0°	2	62.00
.140	2.0	6	1.90	57	2.0	6.0	0.20	8.6°	2	62.00
.160	2.5	6	2.30	57	2.5	7.5	0.20	7.2°	2	62.00
.180	3.0	6	2.80	57	3.0	9.0	0.20	6.0°	2	62.00
.145	2.0	6	1.90	57	2.0	6.0	0.50	8.7°	2	62.00
.165	2.5	6	2.30	57	2.5	7.5	0.50	7.3°	2	62.00
.185	3.0	6	2.80	57	3.0	9.0	0.50	6.1°	2	62.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.016	0.03	0.10	0.44	60000	1920	r=0.1
		0.8	2	140	0.026	0.04	0.16	0.76	58640	3050	r=0.1
		1.0	2	140	0.034	0.05	0.20	0.86	51820	3525	r=0.2
		1.2	2	140	0.040	0.06	0.24	1.09	40885	3270	r=0.2
		1.5	2	140	0.050	0.08	0.30	1.42	31385	3140	r=0.2
		2.0	2	140	0.066	0.10	0.40	1.95	22855	3015	r=0.2
		2.5	2	140	0.084	0.13	0.50	2.47	18040	3030	r=0.2
		3.0	2	140	0.100	0.15	0.60	2.99	14905	2980	r=0.2
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.016	0.03	0.10	0.44	60000	1920	r=0.1
		0.8	2	120	0.024	0.04	0.16	0.76	50260	2410	r=0.1
		1.0	2	120	0.032	0.05	0.20	0.86	44415	2845	r=0.2
		1.2	2	120	0.038	0.06	0.24	1.09	35045	2665	r=0.2
		1.5	2	120	0.048	0.08	0.30	1.42	26900	2580	r=0.2
		2.0	2	120	0.062	0.10	0.40	1.95	19590	2430	r=0.2
		2.5	2	120	0.080	0.13	0.50	2.47	15465	2475	r=0.2
		3.0	2	120	0.096	0.15	0.60	2.99	12775	2455	r=0.2
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.03	0.10	0.44	60000	1680	r=0.1
		0.8	2	100	0.022	0.04	0.16	0.76	41885	1845	r=0.1
		1.0	2	100	0.030	0.05	0.20	0.86	37015	2220	r=0.2
		1.2	2	100	0.036	0.06	0.24	1.09	29205	2105	r=0.2
		1.5	2	100	0.044	0.08	0.30	1.42	22415	1975	r=0.2
		2.0	2	100	0.058	0.10	0.40	1.95	16325	1895	r=0.2
		2.5	2	100	0.074	0.13	0.50	2.47	12885	1905	r=0.2
		3.0	2	100	0.088	0.15	0.60	2.99	10645	1875	r=0.2
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.03	0.10	0.44	43405	1040	r=0.1
		0.8	2	60	0.020	0.04	0.16	0.76	25130	1005	r=0.1
		1.0	2	60	0.028	0.05	0.20	0.86	22210	1245	r=0.2
		1.2	2	60	0.032	0.06	0.24	1.09	17520	1120	r=0.2
		1.5	2	60	0.040	0.08	0.30	1.42	13450	1075	r=0.2
		2.0	2	60	0.052	0.10	0.40	1.95	9795	1020	r=0.2
		2.5	2	60	0.068	0.13	0.50	2.47	7730	1050	r=0.2
		3.0	2	60	0.080	0.15	0.60	2.99	6390	1020	r=0.2

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.020	0.020	0.020	0.50	60000	2400	45°
		0.8	2	300	0.022	0.032	0.032	0.80	60000	2640	45°
		1.0	2	300	0.028	0.042	0.042	1.00	60000	3360	45°
		1.2	2	300	0.030	0.050	0.050	1.20	60000	3600	45°
		1.5	2	300	0.034	0.062	0.062	1.50	60000	4080	45°
		2.0	2	300	0.038	0.082	0.082	2.00	47750	3630	45°
		2.5	2	300	0.040	0.102	0.102	2.49	38350	3070	45°
		3.0	2	300	0.046	0.122	0.122	2.97	32155	2960	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.020	0.020	0.020	0.50	60000	2400	45°
		0.8	2	250	0.020	0.032	0.032	0.80	60000	2400	45°
		1.0	2	250	0.026	0.042	0.042	1.00	60000	3120	45°
		1.2	2	250	0.028	0.050	0.050	1.20	60000	3360	45°
		1.5	2	250	0.032	0.062	0.062	1.50	53055	3395	45°
		2.0	2	250	0.036	0.082	0.082	2.00	39790	2865	45°
		2.5	2	250	0.038	0.102	0.102	2.49	31960	2430	45°
		3.0	2	250	0.044	0.122	0.122	2.97	26795	2360	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.018	0.020	0.020	0.50	60000	2160	45°
		0.8	2	200	0.020	0.032	0.032	0.80	60000	2400	45°
		1.0	2	200	0.026	0.042	0.042	1.00	60000	3120	45°
		1.2	2	200	0.028	0.050	0.050	1.20	53055	2970	45°
		1.5	2	200	0.030	0.062	0.062	1.50	42445	2545	45°
		2.0	2	200	0.034	0.082	0.082	2.00	31830	2165	45°
		2.5	2	200	0.036	0.102	0.102	2.49	25570	1840	45°
		3.0	2	200	0.042	0.122	0.122	2.97	21435	1800	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.016	0.020	0.020	0.50	60000	1920	45°
		0.8	2	150	0.018	0.032	0.032	0.80	59685	2150	45°
		1.0	2	150	0.022	0.042	0.042	1.00	47750	2100	45°
		1.2	2	150	0.024	0.050	0.050	1.20	39790	1910	45°
		1.5	2	150	0.028	0.062	0.062	1.50	31830	1780	45°
		2.0	2	150	0.030	0.082	0.082	2.00	23875	1435	45°
		2.5	2	150	0.032	0.102	0.102	2.49	19175	1225	45°
		3.0	2	150	0.036	0.122	0.122	2.97	16075	1155	45°

Corner radius end mills MicroX

Shank Ø 6mm, cylindrical neck, 5xd

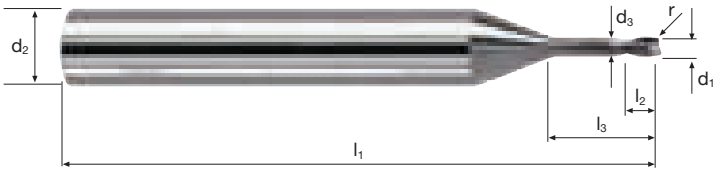
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 25° γ-10°

h5

d1

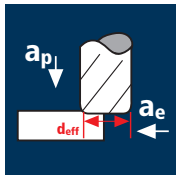
r

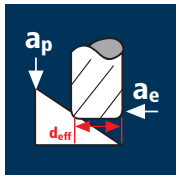


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6534** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.01	α	z	X-AL X6534 $
.050	0.5	6	0.45	57	0.5	2.5	0.10	12.2°	2	62.00
.080	0.8	6	0.75	57	0.8	4.0	0.10	10.8°	2	62.00
.100	1.0	6	0.95	57	1.0	5.0	0.20	9.9°	2	62.00
.108	1.2	6	1.10	57	1.2	6.0	0.20	9.2°	2	62.00
.120	1.5	6	1.40	61	1.5	7.5	0.20	8.1°	2	62.00
.140	2.0	6	1.90	61	2.0	10.0	0.20	6.6°	2	62.00
.160	2.5	6	2.30	61	2.5	12.5	0.20	5.3°	2	62.00
.180	3.0	6	2.80	66	3.0	15.0	0.20	4.2°	2	62.00
.145	2.0	6	1.90	61	2.0	10.0	0.50	6.7°	2	62.00
.165	2.5	6	2.30	61	2.5	12.5	0.50	5.4°	2	62.00
.185	3.0	6	2.80	66	3.0	15.0	0.50	4.3°	2	62.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	0.5	2	140	0.016	0.02	0.09	0.42	60000	1920	r=0.1
		0.8	2	140	0.026	0.03	0.14	0.74	60000	3120	r=0.1
		1.0	2	140	0.034	0.04	0.18	0.84	53055	3610	r=0.2
		1.2	2	140	0.040	0.05	0.22	1.06	42040	3365	r=0.2
		1.5	2	140	0.050	0.06	0.27	1.39	32060	3205	r=0.2
		2.0	2	140	0.066	0.08	0.36	1.92	23210	3065	r=0.2
		2.5	2	140	0.084	0.10	0.45	2.45	18190	3055	r=0.2
		3.0	2	140	0.100	0.12	0.54	2.97	15005	3000	r=0.2
	Hardened tool steel 48 - 52 HRC	0.5	2	120	0.016	0.02	0.09	0.42	60000	1920	r=0.1
		0.8	2	120	0.024	0.03	0.14	0.74	51620	2480	r=0.1
		1.0	2	120	0.032	0.04	0.18	0.84	45475	2910	r=0.2
		1.2	2	120	0.038	0.05	0.22	1.06	36035	2740	r=0.2
		1.5	2	120	0.048	0.06	0.27	1.39	27480	2640	r=0.2
		2.0	2	120	0.062	0.08	0.36	1.92	19895	2465	r=0.2
		2.5	2	120	0.080	0.10	0.45	2.45	15590	2495	r=0.2
		3.0	2	120	0.096	0.12	0.54	2.97	12860	2470	r=0.2
	Hardened tool steel 52 - 56 HRC	0.5	2	100	0.014	0.02	0.09	0.42	60000	1680	r=0.1
		0.8	2	100	0.022	0.03	0.14	0.74	43015	1895	r=0.1
		1.0	2	100	0.030	0.04	0.18	0.84	37895	2275	r=0.2
		1.2	2	100	0.036	0.05	0.22	1.06	30030	2160	r=0.2
		1.5	2	100	0.044	0.06	0.27	1.39	22900	2015	r=0.2
		2.0	2	100	0.058	0.08	0.36	1.92	16580	1925	r=0.2
		2.5	2	100	0.074	0.10	0.45	2.45	12995	1925	r=0.2
		3.0	2	100	0.088	0.12	0.54	2.97	10720	1885	r=0.2
	Hardened tool steel 56 - 60 HRC	0.5	2	60	0.012	0.02	0.09	0.42	45475	1090	r=0.1
		0.8	2	60	0.020	0.03	0.14	0.74	25810	1030	r=0.1
		1.0	2	60	0.028	0.04	0.18	0.84	22735	1275	r=0.2
		1.2	2	60	0.032	0.05	0.22	1.06	18020	1155	r=0.2
		1.5	2	60	0.040	0.06	0.27	1.39	13740	1100	r=0.2
		2.0	2	60	0.052	0.08	0.36	1.92	9945	1035	r=0.2
		2.5	2	60	0.068	0.10	0.45	2.45	7795	1060	r=0.2
		3.0	2	60	0.080	0.12	0.54	2.97	6430	1030	r=0.2

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	2	300	0.020	0.020	0.020	0.50	60000	2400	45°
		0.8	2	300	0.022	0.032	0.032	0.80	60000	2640	45°
		1.0	2	300	0.028	0.040	0.040	1.00	60000	3360	45°
		1.2	2	300	0.030	0.048	0.048	1.20	60000	3600	45°
		1.5	2	300	0.034	0.060	0.060	1.50	60000	4080	45°
		2.0	2	300	0.038	0.080	0.080	2.00	47750	3630	45°
		2.5	2	300	0.040	0.100	0.100	2.49	38350	3070	45°
		3.0	2	300	0.046	0.120	0.120	2.97	32155	2960	45°
	Hardened tool steel 48 - 52 HRC	0.5	2	250	0.020	0.020	0.020	0.50	60000	2400	45°
		0.8	2	250	0.020	0.032	0.032	0.80	60000	2400	45°
		1.0	2	250	0.026	0.040	0.040	1.00	60000	3120	45°
		1.2	2	250	0.028	0.048	0.048	1.20	60000	3360	45°
		1.5	2	250	0.032	0.060	0.060	1.50	53055	3395	45°
		2.0	2	250	0.036	0.080	0.080	2.00	39790	2865	45°
		2.5	2	250	0.038	0.100	0.100	2.49	31960	2430	45°
		3.0	2	250	0.044	0.120	0.120	2.97	26795	2360	45°
	Hardened tool steel 52 - 56 HRC	0.5	2	200	0.018	0.020	0.020	0.50	60000	2160	45°
		0.8	2	200	0.020	0.032	0.032	0.80	60000	2400	45°
		1.0	2	200	0.026	0.040	0.040	1.00	60000	3120	45°
		1.2	2	200	0.028	0.048	0.048	1.20	53055	2970	45°
		1.5	2	200	0.030	0.060	0.060	1.50	42445	2545	45°
		2.0	2	200	0.034	0.080	0.080	2.00	31830	2165	45°
		2.5	2	200	0.036	0.100	0.100	2.49	25570	1840	45°
		3.0	2	200	0.042	0.120	0.120	2.97	21435	1800	45°
	Hardened tool steel 56 - 60 HRC	0.5	2	150	0.016	0.020	0.020	0.50	60000	1920	45°
		0.8	2	150	0.018	0.032	0.032	0.80	59685	2150	45°
		1.0	2	150	0.022	0.040	0.040	1.00	47750	2100	45°
		1.2	2	150	0.024	0.048	0.048	1.20	39790	1910	45°
		1.5	2	150	0.028	0.060	0.060	1.50	31830	1780	45°
		2.0	2	150	0.030	0.080	0.080	2.00	23875	1435	45°
		2.5	2	150	0.032	0.100	0.100	2.49	19175	1225	45°
		3.0	2	150	0.036	0.120	0.120	2.97	16075	1155	45°

Corner radius end mills MicroX

Shank Ø 6mm, cylindrical neck, 8xd

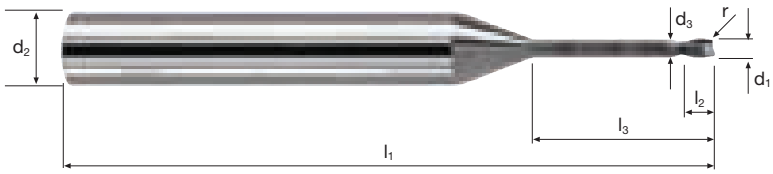
HSS | Favora® | Base-X | X-Generation X

HM XA | λ 25° γ-10°

h5

d1

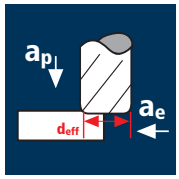
r

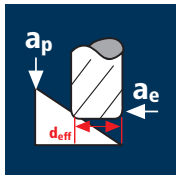


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium	Cobalt-Chrome Copper

Example: **Order-N°.** Coating **X** Article-N°. **6536** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.01	α	z	X-AL X6536 $
.050	0.5	6	0.45	57	0.5	4.0	0.10	11.1°	2	62.00
.080	0.8	6	0.75	57	0.8	6.4	0.10	9.2°	2	62.00
.100	1.0	6	0.95	61	1.0	8.0	0.20	8.3°	2	62.00
.108	1.2	6	1.10	61	1.2	9.6	0.20	7.3°	2	62.00
.120	1.5	6	1.40	61	1.5	12.0	0.20	6.4°	2	62.00
.140	2.0	6	1.90	66	2.0	16.0	0.20	4.9°	2	62.00
.160	2.5	6	2.30	69	2.5	20.0	0.20	3.8°	2	62.00
.180	3.0	6	2.80	75	3.0	24.0	0.20	2.9°	2	62.00
.145	2.0	6	1.90	66	2.0	16.0	0.50	5.0°	2	62.00
.165	2.5	6	2.30	69	2.5	20.0	0.50	3.9°	2	62.00
.185	3.0	6	2.80	75	3.0	24.0	0.50	3.0°	2	62.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	0.5	4	140	0.016	0.03	0.10	0.44	60000	3840	r=0.1
		0.8	4	140	0.026	0.05	0.16	0.77	57875	6020	r=0.1
		1.0	4	140	0.034	0.06	0.20	0.89	50075	6810	r=0.2
		1.2	4	140	0.040	0.07	0.24	1.10	40515	6480	r=0.2
		1.5	4	140	0.050	0.09	0.30	1.43	31165	6235	r=0.2
		2.0	4	140	0.066	0.12	0.40	1.97	22620	5970	r=0.2
		2.5	4	140	0.084	0.15	0.50	2.49	17895	6015	r=0.2
		3.0	4	140	0.100	0.18	0.60	3.00	14855	5940	r=0.2
		3.0	4	140	0.086	0.22	0.60	2.83	15745	5415	r=0.5
	Hardened tool steel 48 - 52 HRC	0.5	4	120	0.016	0.03	0.10	0.44	60000	3840	r=0.1
		0.8	4	120	0.024	0.05	0.16	0.77	49610	4765	r=0.1
		1.0	4	120	0.032	0.06	0.20	0.89	42920	5495	r=0.2
		1.2	4	120	0.038	0.07	0.24	1.10	34725	5280	r=0.2
		1.5	4	120	0.048	0.09	0.30	1.43	26710	5130	r=0.2
		2.0	4	120	0.062	0.12	0.40	1.97	19390	4810	r=0.2
		2.5	4	120	0.080	0.15	0.50	2.49	15340	4910	r=0.2
		3.0	4	120	0.096	0.18	0.60	3.00	12735	4890	r=0.2
		3.0	4	120	0.082	0.22	0.60	2.83	13500	4430	r=0.5
	Hardened tool steel 52 - 56 HRC	0.5	4	100	0.014	0.03	0.10	0.44	60000	3360	r=0.1
		0.8	4	100	0.022	0.05	0.16	0.77	41340	3640	r=0.1
		1.0	4	100	0.030	0.06	0.20	0.89	35765	4290	r=0.2
		1.2	4	100	0.036	0.07	0.24	1.10	28940	4165	r=0.2
		1.5	4	100	0.044	0.09	0.30	1.43	22260	3920	r=0.2
		2.0	4	100	0.058	0.12	0.40	1.97	16160	3750	r=0.2
		2.5	4	100	0.074	0.15	0.50	2.49	12785	3785	r=0.2
		3.0	4	100	0.088	0.18	0.60	3.00	10610	3735	r=0.2
		3.0	4	100	0.076	0.22	0.60	2.83	11250	3420	r=0.5
	Hardened tool steel 56 - 60 HRC	0.5	4	60	0.012	0.03	0.10	0.44	43405	2085	r=0.1
		0.8	4	60	0.020	0.05	0.16	0.77	24805	1985	r=0.1
		1.0	4	60	0.028	0.06	0.20	0.89	21460	2405	r=0.2
		1.2	4	60	0.032	0.07	0.24	1.10	17365	2225	r=0.2
		1.5	4	60	0.040	0.09	0.30	1.43	13355	2135	r=0.2
		2.0	4	60	0.052	0.12	0.40	1.97	9695	2015	r=0.2
		2.5	4	60	0.068	0.15	0.50	2.49	7670	2085	r=0.2
		3.0	4	60	0.080	0.18	0.60	3.00	6365	2035	r=0.2
		3.0	4	60	0.068	0.22	0.60	2.83	6750	1835	r=0.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	4	300	0.020	0.022	0.022	0.50	60000	4800	45°
		0.8	4	300	0.022	0.034	0.034	0.80	60000	5280	45°
		1.0	4	300	0.028	0.042	0.042	1.00	60000	6720	45°
		1.2	4	300	0.030	0.050	0.050	1.20	60000	7200	45°
		1.5	4	300	0.034	0.064	0.064	1.50	60000	8160	45°
		2.0	4	300	0.038	0.084	0.084	1.99	47990	7295	45°
		2.5	4	300	0.040	0.106	0.106	2.48	38505	6160	45°
		3.0	4	300	0.046	0.126	0.126	2.97	32155	5915	45°
	Hardened tool steel 48 - 52 HRC	0.5	4	250	0.020	0.022	0.022	0.50	60000	4800	45°
		0.8	4	250	0.020	0.034	0.034	0.80	60000	4800	45°
		1.0	4	250	0.026	0.042	0.042	1.00	60000	6240	45°
		1.2	4	250	0.028	0.050	0.050	1.20	60000	6720	45°
		1.5	4	250	0.032	0.064	0.064	1.50	53055	6790	45°
		2.0	4	250	0.036	0.084	0.084	1.99	39990	5760	45°
		2.5	4	250	0.038	0.106	0.106	2.48	32090	4880	45°
		3.0	4	250	0.044	0.126	0.126	2.97	26795	4715	45°
	Hardened tool steel 52 - 56 HRC	0.5	4	200	0.018	0.022	0.022	0.50	60000	4320	45°
		0.8	4	200	0.020	0.034	0.034	0.80	60000	4800	45°
		1.0	4	200	0.026	0.042	0.042	1.00	60000	6240	45°
		1.2	4	200	0.028	0.050	0.050	1.20	53055	5940	45°
		1.5	4	200	0.030	0.064	0.064	1.50	42445	5095	45°
		2.0	4	200	0.034	0.084	0.084	1.99	31990	4350	45°
		2.5	4	200	0.036	0.106	0.106	2.48	25670	3695	45°
		3.0	4	200	0.042	0.126	0.126	2.97	21435	3600	45°
	Hardened tool steel 56 - 60 HRC	0.5	4	150	0.016	0.022	0.022	0.50	60000	3840	45°
		0.8	4	150	0.018	0.034	0.034	0.80	59685	4295	45°
		1.0	4	150	0.022	0.042	0.042	1.00	47750	4200	45°
		1.2	4	150	0.024	0.050	0.050	1.20	39790	3820	45°
		1.5	4	150	0.028	0.064	0.064	1.50	31830	3565	45°
		2.0	4	150	0.030	0.084	0.084	1.99	23995	2880	45°
		2.5	4	150	0.032	0.106	0.106	2.48	19255	2465	45°
		3.0	4	150	0.036	0.126	0.126	2.97	16075	2315	45°

Corner radius end mills MicroX

Shank Ø 6mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | X-Generation X

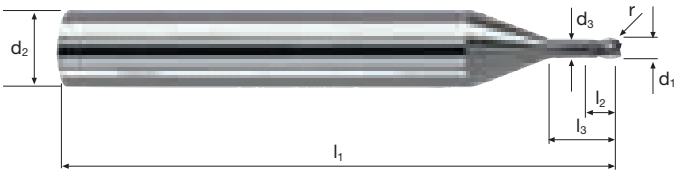
HM XA | λ 30° γ -5°

h5

d1

r

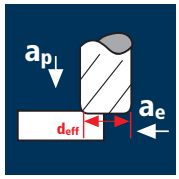
new!

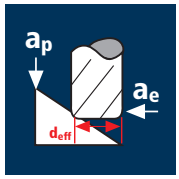


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **6632** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.01	α	z	X-AL X6632 $
.050	0.5	6	0.45	57	0.5	1.5	0.10	13.2°	4	62.00
.080	0.8	6	0.75	57	0.8	2.4	0.10	12.2°	4	62.00
.100	1.0	6	0.95	57	1.0	3.0	0.20	11.6°	4	62.00
.108	1.2	6	1.10	57	1.2	3.6	0.20	10.9°	4	62.00
.120	1.5	6	1.40	57	1.5	4.5	0.20	10.0°	4	62.00
.140	2.0	6	1.90	57	2.0	6.0	0.20	8.6°	4	62.00
.160	2.5	6	2.30	57	2.5	7.5	0.20	7.2°	4	62.00
.180	3.0	6	2.80	57	3.0	9.0	0.20	6.0°	4	62.00
.145	2.0	6	1.90	57	2.0	6.0	0.50	8.7°	4	62.00
.165	2.5	6	2.30	57	2.5	7.5	0.50	7.3°	4	62.00
.185	3.0	6	2.80	57	3.0	9.0	0.50	6.1°	4	62.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	0.5	4	140	0.016	0.03	0.10	0.44	60000	3840	r=0.1
		0.8	4	140	0.026	0.04	0.16	0.76	58640	6100	r=0.1
		1.0	4	140	0.034	0.05	0.20	0.86	51820	7050	r=0.2
		1.2	4	140	0.040	0.06	0.24	1.09	40885	6540	r=0.2
		1.5	4	140	0.050	0.08	0.30	1.42	31385	6275	r=0.2
		2.0	4	140	0.066	0.10	0.40	1.95	22855	6035	r=0.2
		2.5	4	140	0.084	0.13	0.50	2.47	18040	6060	r=0.2
		3.0	4	140	0.100	0.15	0.60	2.99	14905	5960	r=0.2
		3.0	4	140	0.086	0.18	0.60	2.77	16090	5535	r=0.5
	Hardened tool steel 48 - 52 HRC	0.5	4	120	0.016	0.03	0.10	0.44	60000	3840	r=0.1
		0.8	4	120	0.024	0.04	0.16	0.76	50260	4825	r=0.1
		1.0	4	120	0.032	0.05	0.20	0.86	44415	5685	r=0.2
		1.2	4	120	0.038	0.06	0.24	1.09	35045	5325	r=0.2
		1.5	4	120	0.048	0.08	0.30	1.42	26900	5165	r=0.2
		2.0	4	120	0.062	0.10	0.40	1.95	19590	4860	r=0.2
		2.5	4	120	0.080	0.13	0.50	2.47	15465	4950	r=0.2
		3.0	4	120	0.096	0.15	0.60	2.99	12775	4905	r=0.2
		3.0	4	120	0.082	0.18	0.60	2.77	13790	4525	r=0.5
	Hardened tool steel 52 - 56 HRC	0.5	4	100	0.014	0.03	0.10	0.44	60000	3360	r=0.1
		0.8	4	100	0.022	0.04	0.16	0.76	41885	3685	r=0.1
		1.0	4	100	0.030	0.05	0.20	0.86	37015	4440	r=0.2
		1.2	4	100	0.036	0.06	0.24	1.09	29205	4205	r=0.2
		1.5	4	100	0.044	0.08	0.30	1.42	22415	3945	r=0.2
		2.0	4	100	0.058	0.10	0.40	1.95	16325	3785	r=0.2
		2.5	4	100	0.074	0.13	0.50	2.47	12885	3815	r=0.2
		3.0	4	100	0.088	0.15	0.60	2.99	10645	3745	r=0.2
		3.0	4	100	0.076	0.18	0.60	2.77	11490	3495	r=0.5
	Hardened tool steel 56 - 60 HRC	0.5	4	60	0.012	0.03	0.10	0.44	43405	2085	r=0.1
		0.8	4	60	0.020	0.04	0.16	0.76	25130	2010	r=0.1
		1.0	4	60	0.028	0.05	0.20	0.86	22210	2490	r=0.2
		1.2	4	60	0.032	0.06	0.24	1.09	17520	2245	r=0.2
		1.5	4	60	0.040	0.08	0.30	1.42	13450	2150	r=0.2
		2.0	4	60	0.052	0.10	0.40	1.95	9795	2035	r=0.2
		2.5	4	60	0.068	0.13	0.50	2.47	7730	2105	r=0.2
		3.0	4	60	0.080	0.15	0.60	2.99	6390	2045	r=0.2
		3.0	4	60	0.068	0.18	0.60	2.77	6895	1875	r=0.5

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	0.5	4	300	0.020	0.020	0.020	0.50	60000	4800	45°
		0.8	4	300	0.022	0.032	0.032	0.80	60000	5280	45°
		1.0	4	300	0.028	0.042	0.042	1.00	60000	6720	45°
		1.2	4	300	0.030	0.050	0.050	1.20	60000	7200	45°
		1.5	4	300	0.034	0.062	0.062	1.50	60000	8160	45°
		2.0	4	300	0.038	0.082	0.082	2.00	47750	7260	45°
		2.5	4	300	0.040	0.102	0.102	2.49	38350	6135	45°
		3.0	4	300	0.046	0.122	0.122	2.97	32155	5915	45°
	Hardened tool steel 48 - 52 HRC	0.5	4	250	0.020	0.020	0.020	0.50	60000	4800	45°
		0.8	4	250	0.020	0.032	0.032	0.80	60000	4800	45°
		1.0	4	250	0.026	0.042	0.042	1.00	60000	6240	45°
		1.2	4	250	0.028	0.050	0.050	1.20	60000	6720	45°
		1.5	4	250	0.032	0.062	0.062	1.50	53055	6790	45°
		2.0	4	250	0.036	0.082	0.082	2.00	39790	5730	45°
		2.5	4	250	0.038	0.102	0.102	2.49	31960	4860	45°
		3.0	4	250	0.044	0.122	0.122	2.97	26795	4715	45°
	Hardened tool steel 52 - 56 HRC	0.5	4	200	0.018	0.020	0.020	0.50	60000	4320	45°
		0.8	4	200	0.020	0.032	0.032	0.80	60000	4800	45°
		1.0	4	200	0.026	0.042	0.042	1.00	60000	6240	45°
		1.2	4	200	0.028	0.050	0.050	1.20	53055	5940	45°
		1.5	4	200	0.030	0.062	0.062	1.50	42445	5095	45°
		2.0	4	200	0.034	0.082	0.082	2.00	31830	4330	45°
		2.5	4	200	0.036	0.102	0.102	2.49	25570	3680	45°
		3.0	4	200	0.042	0.122	0.122	2.97	21435	3600	45°
	Hardened tool steel 56 - 60 HRC	0.5	4	150	0.016	0.020	0.020	0.50	60000	3840	45°
		0.8	4	150	0.018	0.032	0.032	0.80	59685	4295	45°
		1.0	4	150	0.022	0.042	0.042	1.00	47750	4200	45°
		1.2	4	150	0.024	0.050	0.050	1.20	39790	3820	45°
		1.5	4	150	0.028	0.062	0.062	1.50	31830	3565	45°
		2.0	4	150	0.030	0.082	0.082	2.00	23875	2865	45°
		2.5	4	150	0.032	0.102	0.102	2.49	19175	2455	45°
		3.0	4	150	0.036	0.122	0.122	2.97	16075	2315	45°

Corner radius end mills MicroX

Shank Ø 6mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | X-Generation X

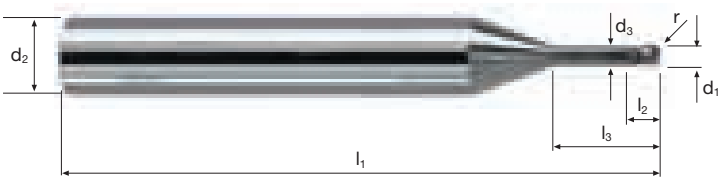
HM XA | λ 30° γ -5°

h5

d1

r

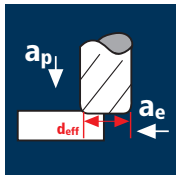
new!

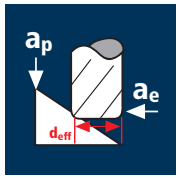


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60		Ti Titanium	GG(G)

Example: **Order-N°.** Coating **X** Article-N°. **6634** ø-Code **.050**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r 0/+0.01	α	z	X-AL X6634 $
.050	0.5	6	0.45	57	0.5	2.5	0.10	12.2°	4	62.00
.080	0.8	6	0.75	57	0.8	4.0	0.10	10.8°	4	62.00
.100	1.0	6	0.95	57	1.0	5.0	0.20	9.9°	4	62.00
.108	1.2	6	1.10	57	1.2	6.0	0.20	9.2°	4	62.00
.120	1.5	6	1.40	61	1.5	7.5	0.20	8.1°	4	62.00
.140	2.0	6	1.90	61	2.0	10.0	0.20	6.6°	4	62.00
.160	2.5	6	2.30	61	2.5	12.5	0.20	5.3°	4	62.00
.180	3.0	6	2.80	66	3.0	15.0	0.20	4.2°	4	62.00
.145	2.0	6	1.90	61	2.0	10.0	0.50	6.7°	4	62.00
.165	2.5	6	2.30	61	2.5	12.5	0.50	5.4°	4	62.00
.185	3.0	6	2.80	66	3.0	15.0	0.50	4.3°	4	62.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Steel 850 - 1100 N/mm² M M	1.0	2	180	0.036	0.08	0.20	0.92	60000	4320	r=0.2
		1.2	2	180	0.042	0.10	0.24	1.15	49825	4185	r=0.2
		1.5	2	180	0.054	0.12	0.30	1.47	38980	4210	r=0.2
		2.0	2	180	0.072	0.16	0.40	1.99	28795	4145	r=0.2
		2.5	2	180	0.090	0.20	0.50	2.50	22920	4125	r=0.2
		3.0	2	180	0.108	0.24	0.60	2.99	19165	4140	r=0.2
	Steel 1100 - 1300 N/mm² M M	1.0	2	160	0.032	0.08	0.20	0.92	55360	3545	r=0.2
		1.2	2	160	0.038	0.10	0.24	1.15	44290	3365	r=0.2
		1.5	2	160	0.048	0.12	0.30	1.47	34645	3325	r=0.2
		2.0	2	160	0.064	0.16	0.40	1.99	25595	3275	r=0.2
		2.5	2	160	0.082	0.20	0.50	2.50	20370	3340	r=0.2
		3.0	2	160	0.098	0.24	0.60	2.99	17035	3340	r=0.2
	Stainless steel [Cr-Ni/1.4301] M	1.0	2	80	0.032	0.08	0.20	0.92	27680	1770	r=0.2
		1.2	2	80	0.038	0.10	0.24	1.15	22145	1685	r=0.2
		1.5	2	80	0.048	0.12	0.30	1.47	17325	1665	r=0.2
		2.0	2	80	0.064	0.16	0.40	1.99	12795	1640	r=0.2
		2.5	2	80	0.082	0.20	0.50	2.50	10185	1670	r=0.2
		3.0	2	80	0.098	0.24	0.60	2.99	8515	1670	r=0.2
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	1.0	2	60	0.026	0.08	0.20	0.92	20760	1080	r=0.2
		1.2	2	60	0.030	0.10	0.24	1.15	16610	995	r=0.2
		1.5	2	60	0.038	0.12	0.30	1.47	12995	990	r=0.2
		2.0	2	60	0.050	0.16	0.40	1.99	9600	960	r=0.2
		2.5	2	60	0.064	0.20	0.50	2.50	7640	980	r=0.2
		3.0	2	60	0.076	0.24	0.60	2.99	6390	970	r=0.2

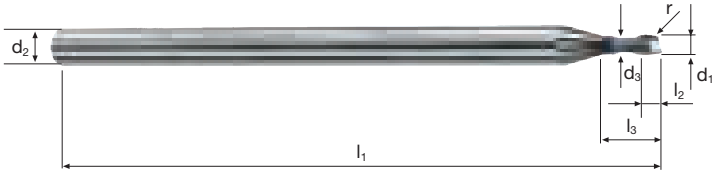
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² M M	1.0	2	300	0.028	0.042	0.042	1.00	60000	3360	45°
		1.2	2	300	0.030	0.050	0.050	1.20	60000	3600	45°
		1.5	2	300	0.034	0.064	0.064	1.50	60000	4080	45°
		2.0	2	300	0.038	0.084	0.084	1.99	47990	3645	45°
		2.5	2	300	0.040	0.106	0.106	2.48	38505	3080	45°
		3.0	2	300	0.046	0.126	0.126	2.97	32155	2960	45°
	Steel 1100 - 1300 N/mm² M M	1.0	2	250	0.026	0.042	0.042	1.00	60000	3120	45°
		1.2	2	250	0.028	0.050	0.050	1.20	60000	3360	45°
		1.5	2	250	0.030	0.064	0.064	1.50	53055	3185	45°
		2.0	2	250	0.034	0.084	0.084	1.99	39990	2720	45°
		2.5	2	250	0.036	0.106	0.106	2.48	32090	2310	45°
		3.0	2	250	0.042	0.126	0.126	2.97	26795	2250	45°
	Stainless steel [Cr-Ni/1.4301] M	1.0	2	120	0.022	0.042	0.042	1.00	38200	1680	45°
		1.2	2	120	0.024	0.050	0.050	1.20	31830	1530	45°
		1.5	2	120	0.028	0.064	0.064	1.50	25465	1425	45°
		2.0	2	120	0.030	0.084	0.084	1.99	19195	1150	45°
		2.5	2	120	0.032	0.106	0.106	2.48	15405	985	45°
		3.0	2	120	0.036	0.126	0.126	2.97	12860	925	45°
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	1.0	2	100	0.020	0.042	0.042	1.00	31830	1275	45°
		1.2	2	100	0.022	0.050	0.050	1.20	26525	1165	45°
		1.5	2	100	0.024	0.064	0.064	1.50	21220	1020	45°
		2.0	2	100	0.026	0.084	0.084	1.99	15995	830	45°
		2.5	2	100	0.028	0.106	0.106	2.48	12835	720	45°
		3.0	2	100	0.032	0.126	0.126	2.97	10720	685	45°

Corner radius end mills Microcut-T3

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | **B** | X-Generation

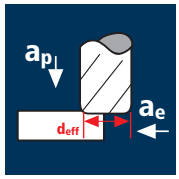
HM Micro | λ **25°** γ **6°**

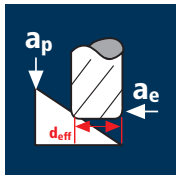


Rm < 850	Rm 850-1100	Rm 1100-1300	Rm 1300-1500				Inox Stainless	Ti Titanium	Cobalt-Chrome Gold / Platinum Copper

Example: **Order-N°.** Coating **M** Article-N°. **5752** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	MICRO M5752 $
.100	1.0	3	0.95	50	1.20	3.0	0.20	8.5°	2	60.00
.108	1.2	3	1.10	50	1.44	3.6	0.20	7.4°	2	60.00
.120	1.5	3	1.40	50	1.80	4.5	0.20	5.9°	2	60.00
.140	2.0	3	1.90	50	2.40	6.0	0.20	3.7°	2	60.00
.160	2.5	3	2.30	50	3.00	7.5	0.20	1.7°	2	60.00
.180	3.0	3	2.80	50	3.60	9.0	0.20	0.0°	2	60.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	1.0	2	140	0.026	0.06	0.20	0.89	50075	2605	r=0.2
		1.2	2	140	0.030	0.07	0.24	1.10	40515	2430	r=0.2
		1.5	2	140	0.038	0.09	0.30	1.43	31165	2370	r=0.2
		2.0	2	140	0.050	0.12	0.40	1.97	22620	2260	r=0.2
		2.5	2	140	0.062	0.15	0.50	2.49	17895	2220	r=0.2
		3.0	2	140	0.076	0.18	0.60	3.00	14855	2260	r=0.2
	Hardened tool steel 48 - 52 HRC	1.0	2	120	0.024	0.06	0.20	0.89	42920	2060	r=0.2
		1.2	2	120	0.028	0.07	0.24	1.10	34725	1945	r=0.2
		1.5	2	120	0.036	0.09	0.30	1.43	26710	1925	r=0.2
		2.0	2	120	0.048	0.12	0.40	1.97	19390	1860	r=0.2
		2.5	2	120	0.058	0.15	0.50	2.49	15340	1780	r=0.2
		3.0	2	120	0.072	0.18	0.60	3.00	12735	1835	r=0.2
	Hardened tool steel 52 - 56 HRC	1.0	2	100	0.022	0.06	0.20	0.89	35765	1575	r=0.2
		1.2	2	100	0.026	0.07	0.24	1.10	28940	1505	r=0.2
		1.5	2	100	0.034	0.09	0.30	1.43	22260	1515	r=0.2
		2.0	2	100	0.044	0.12	0.40	1.97	16160	1420	r=0.2
		2.5	2	100	0.054	0.15	0.50	2.49	12785	1380	r=0.2
		3.0	2	100	0.066	0.18	0.60	3.00	10610	1400	r=0.2
	Hardened tool steel 56 - 60 HRC	1.0	2	60	0.020	0.06	0.20	0.89	21460	860	r=0.2
		1.2	2	60	0.024	0.07	0.24	1.10	17365	835	r=0.2
		1.5	2	60	0.030	0.09	0.30	1.43	13355	800	r=0.2
		2.0	2	60	0.040	0.12	0.40	1.97	9695	775	r=0.2
		2.5	2	60	0.050	0.15	0.50	2.49	7670	765	r=0.2
		3.0	2	60	0.060	0.18	0.60	3.00	6365	765	r=0.2

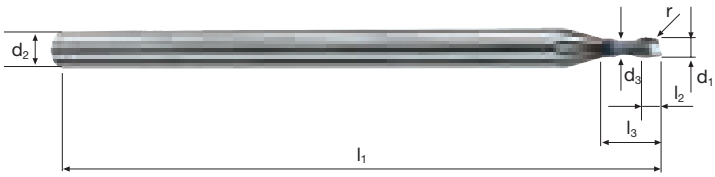
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.0	2	300	0.022	0.042	0.042	1.00	60000	2640	45°
		1.2	2	300	0.024	0.050	0.050	1.20	60000	2880	45°
		1.5	2	300	0.028	0.062	0.062	1.50	60000	3360	45°
		2.0	2	300	0.030	0.082	0.082	2.00	47750	2865	45°
		2.5	2	300	0.032	0.102	0.102	2.49	38350	2455	45°
		3.0	2	300	0.036	0.122	0.122	2.97	32155	2315	45°
	Hardened tool steel 48 - 52 HRC	1.0	2	250	0.020	0.042	0.042	1.00	60000	2400	45°
		1.2	2	250	0.022	0.050	0.050	1.20	60000	2640	45°
		1.5	2	250	0.026	0.062	0.062	1.50	53055	2760	45°
		2.0	2	250	0.028	0.082	0.082	2.00	39790	2230	45°
		2.5	2	250	0.030	0.102	0.102	2.49	31960	1920	45°
		3.0	2	250	0.034	0.122	0.122	2.97	26795	1820	45°
	Hardened tool steel 52 - 56 HRC	1.0	2	200	0.020	0.042	0.042	1.00	60000	2400	45°
		1.2	2	200	0.022	0.050	0.050	1.20	53055	2335	45°
		1.5	2	200	0.026	0.062	0.062	1.50	42445	2205	45°
		2.0	2	200	0.028	0.082	0.082	2.00	31830	1780	45°
		2.5	2	200	0.028	0.102	0.102	2.49	25570	1430	45°
		3.0	2	200	0.032	0.122	0.122	2.97	21435	1370	45°
	Hardened tool steel 56 - 60 HRC	1.0	2	150	0.018	0.042	0.042	1.00	47750	1720	45°
		1.2	2	150	0.020	0.050	0.050	1.20	39790	1590	45°
		1.5	2	150	0.022	0.062	0.062	1.50	31830	1400	45°
		2.0	2	150	0.024	0.082	0.082	2.00	23875	1145	45°
		2.5	2	150	0.026	0.102	0.102	2.49	19175	995	45°
		3.0	2	150	0.028	0.122	0.122	2.97	16075	900	45°

Corner radius end mills Microcut-T3H

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X | X-Generation X

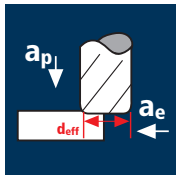
HM XA	λ 25° γ-10°

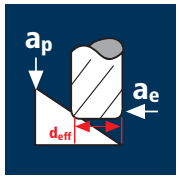


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** Coating **D** Article-N°. **5762** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	DURO-S D5762 $
.100	1.0	3	0.95	50	1.20	3.0	0.20	8.5°	2	58.30
.108	1.2	3	1.10	50	1.44	3.6	0.20	7.4°	2	58.30
.120	1.5	3	1.40	50	1.80	4.5	0.20	5.9°	2	58.30
.140	2.0	3	1.90	50	2.40	6.0	0.20	3.7°	2	58.30
.160	2.5	3	2.30	50	3.00	7.5	0.20	1.7°	2	58.30
.180	3.0	3	2.80	50	3.60	9.0	0.20	0.0°	2	58.30

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Steel 850 - 1100 N/mm²	1.0	2	180	0.036	0.07	0.20	0.90	60000	4320	r=0.2
		1.2	2	180	0.042	0.08	0.24	1.12	51160	4295	r=0.2
		1.5	2	180	0.054	0.11	0.30	1.46	39245	4240	r=0.2
		2.0	2	180	0.072	0.14	0.40	1.98	28940	4165	r=0.2
		2.5	2	180	0.090	0.18	0.50	2.50	22920	4125	r=0.2
		3.0	2	180	0.108	0.21	0.60	3.00	19100	4125	r=0.2
	Steel 1100 - 1300 N/mm²	1.0	2	160	0.032	0.07	0.20	0.90	56590	3620	r=0.2
		1.2	2	160	0.038	0.08	0.24	1.12	45475	3455	r=0.2
		1.5	2	160	0.048	0.11	0.30	1.46	34885	3350	r=0.2
		2.0	2	160	0.064	0.14	0.40	1.98	25725	3295	r=0.2
		2.5	2	160	0.082	0.18	0.50	2.50	20370	3340	r=0.2
		3.0	2	160	0.098	0.21	0.60	3.00	16975	3325	r=0.2
	Stainless steel [Cr-Ni/1.4301]	1.0	2	80	0.032	0.07	0.20	0.90	28295	1810	r=0.2
		1.2	2	80	0.038	0.08	0.24	1.12	22735	1730	r=0.2
		1.5	2	80	0.048	0.11	0.30	1.46	17440	1675	r=0.2
		2.0	2	80	0.064	0.14	0.40	1.98	12860	1645	r=0.2
		2.5	2	80	0.082	0.18	0.50	2.50	10185	1670	r=0.2
		3.0	2	80	0.098	0.21	0.60	3.00	8490	1665	r=0.2
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.0	2	60	0.026	0.07	0.20	0.90	21220	1105	r=0.2
		1.2	2	60	0.030	0.08	0.24	1.12	17055	1025	r=0.2
		1.5	2	60	0.038	0.11	0.30	1.46	13080	995	r=0.2
		2.0	2	60	0.050	0.14	0.40	1.98	9645	965	r=0.2
		2.5	2	60	0.064	0.18	0.50	2.50	7640	980	r=0.2
		3.0	2	60	0.076	0.21	0.60	3.00	6365	965	r=0.2

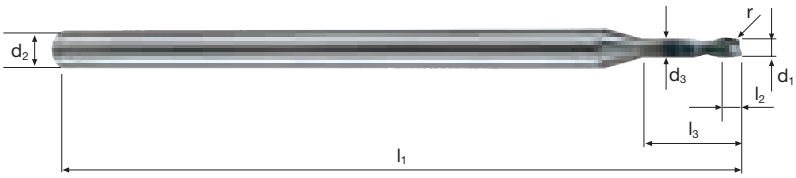
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm²	1.0	2	300	0.022	0.040	0.040	1.00	60000	2640	45°
		1.2	2	300	0.024	0.048	0.048	1.20	60000	2880	45°
		1.5	2	300	0.028	0.060	0.060	1.50	60000	3360	45°
		2.0	2	300	0.030	0.080	0.080	2.00	47750	2865	45°
		2.5	2	300	0.032	0.100	0.100	2.49	38350	2455	45°
		3.0	2	300	0.036	0.120	0.120	2.97	32155	2315	45°
	Steel 1100 - 1300 N/mm²	1.0	2	250	0.020	0.040	0.040	1.00	60000	2400	45°
		1.2	2	250	0.022	0.048	0.048	1.20	60000	2640	45°
		1.5	2	250	0.026	0.060	0.060	1.50	53055	2760	45°
		2.0	2	250	0.028	0.080	0.080	2.00	39790	2230	45°
		2.5	2	250	0.028	0.100	0.100	2.49	31960	1790	45°
		3.0	2	250	0.032	0.120	0.120	2.97	26795	1715	45°
	Stainless steel [Cr-Ni/1.4301]	1.0	2	120	0.018	0.040	0.040	1.00	38200	1375	45°
		1.2	2	120	0.020	0.048	0.048	1.20	31830	1275	45°
		1.5	2	120	0.022	0.060	0.060	1.50	25465	1120	45°
		2.0	2	120	0.024	0.080	0.080	2.00	19100	915	45°
		2.5	2	120	0.026	0.100	0.100	2.49	15340	800	45°
		3.0	2	120	0.028	0.120	0.120	2.97	12860	720	45°
	Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1.0	2	100	0.016	0.040	0.040	1.00	31830	1020	45°
		1.2	2	100	0.016	0.048	0.048	1.20	26525	850	45°
		1.5	2	100	0.020	0.060	0.060	1.50	21220	850	45°
		2.0	2	100	0.022	0.080	0.080	2.00	15915	700	45°
		2.5	2	100	0.022	0.100	0.100	2.49	12785	565	45°
		3.0	2	100	0.026	0.120	0.120	2.97	10720	555	45°

Corner radius end mills Microcut-T5

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | **B** | X-Generation

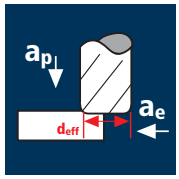
HM Micro | λ **25°** γ **6°**

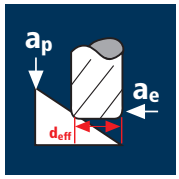


Rm < 850	**Rm** 850-1100	**Rm** 1100-1300	**Rm** 1300-1500				**Inox** Stainless	**Ti** Titanium	**Cobalt-Chrome Gold / Platinum Copper**

Example: **Order-N°.** Coating **M** Article-N°. **5754** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	MICRO M5754 $
.100	1.0	3	0.95	50	1.20	5.0	0.20	6.6°	2	60.00
.108	1.2	3	1.10	50	1.44	6.0	0.20	5.5°	2	60.00
.120	1.5	3	1.40	50	1.80	7.5	0.20	4.2°	2	60.00
.140	2.0	3	1.90	50	2.40	10.0	0.20	2.5°	2	60.00
.160	2.5	3	2.30	50	3.00	12.5	0.20	1.1°	2	60.00
.180	3.0	3	2.80	50	3.60	15.0	0.20	0.0°	2	60.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	1.0	2	140	0.026	0.05	0.20	0.86	51820	2695	r=0.2
		1.2	2	140	0.030	0.06	0.24	1.09	40885	2455	r=0.2
		1.5	2	140	0.038	0.08	0.30	1.42	31385	2385	r=0.2
		2.0	2	140	0.050	0.10	0.40	1.95	22855	2285	r=0.2
		2.5	2	140	0.062	0.13	0.50	2.47	18040	2235	r=0.2
		3.0	2	140	0.076	0.15	0.60	2.99	14905	2265	r=0.2
	Hardened tool steel 48 - 52 HRC	1.0	2	120	0.024	0.05	0.20	0.86	44415	2130	r=0.2
		1.2	2	120	0.028	0.06	0.24	1.09	35045	1965	r=0.2
		1.5	2	120	0.036	0.08	0.30	1.42	26900	1935	r=0.2
		2.0	2	120	0.048	0.10	0.40	1.95	19590	1880	r=0.2
		2.5	2	120	0.058	0.13	0.50	2.47	15465	1795	r=0.2
		3.0	2	120	0.072	0.15	0.60	2.99	12775	1840	r=0.2
	Hardened tool steel 52 - 56 HRC	1.0	2	100	0.022	0.05	0.20	0.86	37015	1630	r=0.2
		1.2	2	100	0.026	0.06	0.24	1.09	29205	1520	r=0.2
		1.5	2	100	0.034	0.08	0.30	1.42	22415	1525	r=0.2
		2.0	2	100	0.044	0.10	0.40	1.95	16325	1435	r=0.2
		2.5	2	100	0.054	0.13	0.50	2.47	12885	1390	r=0.2
		3.0	2	100	0.066	0.15	0.60	2.99	10645	1405	r=0.2
	Hardened tool steel 56 - 60 HRC	1.0	2	60	0.020	0.05	0.20	0.86	22210	890	r=0.2
		1.2	2	60	0.024	0.06	0.24	1.09	17520	840	r=0.2
		1.5	2	60	0.030	0.08	0.30	1.42	13450	805	r=0.2
		2.0	2	60	0.040	0.10	0.40	1.95	9795	785	r=0.2
		2.5	2	60	0.050	0.13	0.50	2.47	7730	775	r=0.2
		3.0	2	60	0.060	0.15	0.60	2.99	6390	765	r=0.2

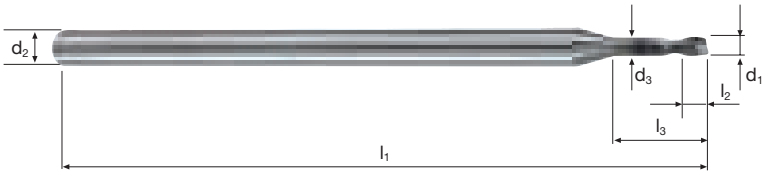
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.0	2	300	0.022	0.040	0.040	1.00	60000	2640	45°
		1.2	2	300	0.024	0.048	0.048	1.20	60000	2880	45°
		1.5	2	300	0.028	0.060	0.060	1.50	60000	3360	45°
		2.0	2	300	0.030	0.080	0.080	2.00	47750	2865	45°
		2.5	2	300	0.032	0.100	0.100	2.49	38350	2455	45°
		3.0	2	300	0.036	0.120	0.120	2.97	32155	2315	45°
	Hardened tool steel 48 - 52 HRC	1.0	2	250	0.020	0.040	0.040	1.00	60000	2400	45°
		1.2	2	250	0.022	0.048	0.048	1.20	60000	2640	45°
		1.5	2	250	0.026	0.060	0.060	1.50	53055	2760	45°
		2.0	2	250	0.028	0.080	0.080	2.00	39790	2230	45°
		2.5	2	250	0.030	0.100	0.100	2.49	31960	1920	45°
		3.0	2	250	0.034	0.120	0.120	2.97	26795	1820	45°
	Hardened tool steel 52 - 56 HRC	1.0	2	200	0.020	0.040	0.040	1.00	60000	2400	45°
		1.2	2	200	0.022	0.048	0.048	1.20	53055	2335	45°
		1.5	2	200	0.026	0.060	0.060	1.50	42445	2205	45°
		2.0	2	200	0.028	0.080	0.080	2.00	31830	1780	45°
		2.5	2	200	0.028	0.100	0.100	2.49	25570	1430	45°
		3.0	2	200	0.032	0.120	0.120	2.97	21435	1370	45°
	Hardened tool steel 56 - 60 HRC	1.0	2	150	0.018	0.040	0.040	1.00	47750	1720	45°
		1.2	2	150	0.020	0.048	0.048	1.20	39790	1590	45°
		1.5	2	150	0.022	0.060	0.060	1.50	31830	1400	45°
		2.0	2	150	0.024	0.080	0.080	2.00	23875	1145	45°
		2.5	2	150	0.026	0.100	0.100	2.49	19175	995	45°
		3.0	2	150	0.028	0.120	0.120	2.97	16075	900	45°

Corner radius end mills Microcut-T5H

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | X-Generation X

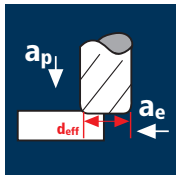
HM XA	λ 25° γ-10°

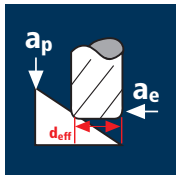


	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** D (Coating) 5764 (Article-N°.) .100 (ø-Code)

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	DURO-S D5764 $
.100	1.0	3	0.95	50	1.20	5.0	0.20	6.6°	2	58.30
.108	1.2	3	1.10	50	1.44	6.0	0.20	5.5°	2	58.30
.120	1.5	3	1.40	50	1.80	7.5	0.20	4.2°	2	58.30
.140	2.0	3	1.90	50	2.40	10.0	0.20	2.5°	2	58.30
.160	2.5	3	2.30	50	3.00	12.5	0.20	1.1°	2	58.30
.180	3.0	3	2.80	50	3.60	15.0	0.20	0.0°	2	58.30

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Steel 850 - 1100 N/mm² M M	1.0	2	180	0.036	0.05	0.20	0.86	60000	4320	r=0.2
		1.2	2	180	0.042	0.06	0.24	1.09	52565	4415	r=0.2
		1.5	2	180	0.054	0.08	0.30	1.42	40350	4360	r=0.2
		2.0	2	180	0.072	0.10	0.40	1.95	29385	4230	r=0.2
		2.5	2	180	0.090	0.13	0.50	2.47	23195	4175	r=0.2
		3.0	2	180	0.108	0.15	0.60	2.99	19165	4140	r=0.2
	Steel 1100 - 1300 N/mm² M M	1.0	2	160	0.032	0.05	0.20	0.86	59220	3790	r=0.2
		1.2	2	160	0.038	0.06	0.24	1.09	46725	3550	r=0.2
		1.5	2	160	0.048	0.08	0.30	1.42	35865	3445	r=0.2
		2.0	2	160	0.064	0.10	0.40	1.95	26120	3345	r=0.2
		2.5	2	160	0.082	0.13	0.50	2.47	20620	3380	r=0.2
		3.0	2	160	0.098	0.15	0.60	2.99	17035	3340	r=0.2
	Stainless steel [Cr-Ni/1.4301] M	1.0	2	80	0.032	0.05	0.20	0.86	29610	1895	r=0.2
		1.2	2	80	0.038	0.06	0.24	1.09	23365	1775	r=0.2
		1.5	2	80	0.048	0.08	0.30	1.42	17935	1720	r=0.2
		2.0	2	80	0.064	0.10	0.40	1.95	13060	1670	r=0.2
		2.5	2	80	0.082	0.13	0.50	2.47	10310	1690	r=0.2
		3.0	2	80	0.098	0.15	0.60	2.99	8515	1670	r=0.2
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	1.0	2	60	0.026	0.05	0.20	0.86	22210	1155	r=0.2
		1.2	2	60	0.030	0.06	0.24	1.09	17520	1050	r=0.2
		1.5	2	60	0.038	0.08	0.30	1.42	13450	1020	r=0.2
		2.0	2	60	0.050	0.10	0.40	1.95	9795	980	r=0.2
		2.5	2	60	0.064	0.13	0.50	2.47	7730	990	r=0.2
		3.0	2	60	0.076	0.15	0.60	2.99	6390	970	r=0.2

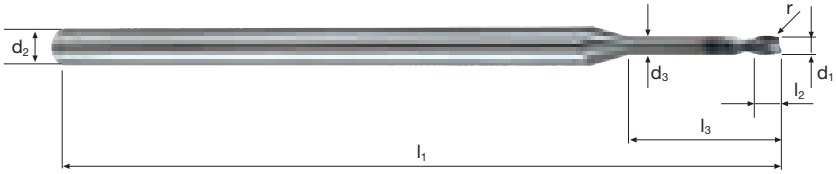
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Steel 850 - 1100 N/mm² M M	1.0	2	300	0.022	0.038	0.038	0.99	60000	2640	45°
		1.2	2	300	0.024	0.046	0.046	1.20	60000	2880	45°
		1.5	2	300	0.028	0.058	0.058	1.50	60000	3360	45°
		2.0	2	300	0.030	0.076	0.076	2.00	47750	2865	45°
		2.5	2	300	0.032	0.096	0.096	2.49	38350	2455	45°
		3.0	2	300	0.036	0.114	0.114	2.98	32045	2305	45°
	Steel 1100 - 1300 N/mm² M M	1.0	2	250	0.020	0.038	0.038	0.99	60000	2400	45°
		1.2	2	250	0.022	0.046	0.046	1.20	60000	2640	45°
		1.5	2	250	0.026	0.058	0.058	1.50	53055	2760	45°
		2.0	2	250	0.028	0.076	0.076	2.00	39790	2230	45°
		2.5	2	250	0.028	0.096	0.096	2.49	31960	1790	45°
		3.0	2	250	0.032	0.114	0.114	2.98	26705	1710	45°
	Stainless steel [Cr-Ni/1.4301] M	1.0	2	120	0.018	0.038	0.038	0.99	38585	1390	45°
		1.2	2	120	0.020	0.046	0.046	1.20	31830	1275	45°
		1.5	2	120	0.022	0.058	0.058	1.50	25465	1120	45°
		2.0	2	120	0.024	0.076	0.076	2.00	19100	915	45°
		2.5	2	120	0.026	0.096	0.096	2.49	15340	800	45°
		3.0	2	120	0.028	0.114	0.114	2.98	12820	720	45°
	Titanium alloys up to 300 HB [Ti5Al2.5Sn] M	1.0	2	100	0.016	0.038	0.038	0.99	32155	1030	45°
		1.2	2	100	0.016	0.046	0.046	1.20	26525	850	45°
		1.5	2	100	0.020	0.058	0.058	1.50	21220	850	45°
		2.0	2	100	0.022	0.076	0.076	2.00	15915	700	45°
		2.5	2	100	0.022	0.096	0.096	2.49	12785	565	45°
		3.0	2	100	0.026	0.114	0.114	2.98	10680	555	45°

Corner radius end mills Microcut-T8

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | **B** | X-Generation

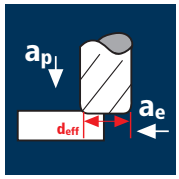
HM Micro | λ **25°** γ **6°**

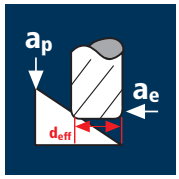


Rm < 850	**Rm** 850-1100	**Rm** 1100-1300	**Rm** 1300-1500				**Inox** Stainless	**Ti** Titanium	**Cobalt-Chrome Gold / Platinum Copper**

Example: **Order-N°.** Coating **M** Article-N°. **5756** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	MICRO M5756 $
.100	1.0	3	0.95	50	1.20	8.0	0.20	4.9°	2	60.00
.108	1.2	3	1.10	50	1.44	9.6	0.20	4.0°	2	60.00
.120	1.5	3	1.40	60	1.80	12.0	0.20	3.0°	2	60.00
.140	2.0	3	1.90	60	2.40	16.0	0.20	1.7°	2	60.00
.160	2.5	3	2.30	60	3.00	20.0	0.20	0.7°	2	60.00
.180	3.0	3	2.80	60	3.60	24.0	0.20	0.0°	2	60.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	r [mm]
	Hardened tool steel 42 - 48 HRC	1.0	2	140	0.026	0.04	0.18	0.84	53055	2760	r=0.2
		1.2	2	140	0.030	0.05	0.22	1.06	42040	2520	r=0.2
		1.5	2	140	0.038	0.06	0.27	1.39	32060	2435	r=0.2
		2.0	2	140	0.050	0.08	0.36	1.92	23210	2320	r=0.2
		2.5	2	140	0.062	0.10	0.45	2.45	18190	2255	r=0.2
		3.0	2	140	0.076	0.12	0.54	2.97	15005	2280	r=0.2
	Hardened tool steel 48 - 52 HRC	1.0	2	120	0.024	0.04	0.18	0.84	45475	2185	r=0.2
		1.2	2	120	0.028	0.05	0.22	1.06	36035	2020	r=0.2
		1.5	2	120	0.036	0.06	0.27	1.39	27480	1980	r=0.2
		2.0	2	120	0.048	0.08	0.36	1.92	19895	1910	r=0.2
		2.5	2	120	0.058	0.10	0.45	2.45	15590	1810	r=0.2
		3.0	2	120	0.072	0.12	0.54	2.97	12860	1850	r=0.2
	Hardened tool steel 52 - 56 HRC	1.0	2	100	0.022	0.04	0.18	0.84	37895	1665	r=0.2
		1.2	2	100	0.026	0.05	0.22	1.06	30030	1560	r=0.2
		1.5	2	100	0.034	0.06	0.27	1.39	22900	1555	r=0.2
		2.0	2	100	0.044	0.08	0.36	1.92	16580	1460	r=0.2
		2.5	2	100	0.054	0.10	0.45	2.45	12995	1405	r=0.2
		3.0	2	100	0.066	0.12	0.54	2.97	10720	1415	r=0.2
	Hardened tool steel 56 - 60 HRC	1.0	2	60	0.020	0.04	0.18	0.84	22735	910	r=0.2
		1.2	2	60	0.024	0.05	0.22	1.06	18020	865	r=0.2
		1.5	2	60	0.030	0.06	0.27	1.39	13740	825	r=0.2
		2.0	2	60	0.040	0.08	0.36	1.92	9945	795	r=0.2
		2.5	2	60	0.050	0.10	0.45	2.45	7795	780	r=0.2
		3.0	2	60	0.060	0.12	0.54	2.97	6430	770	r=0.2

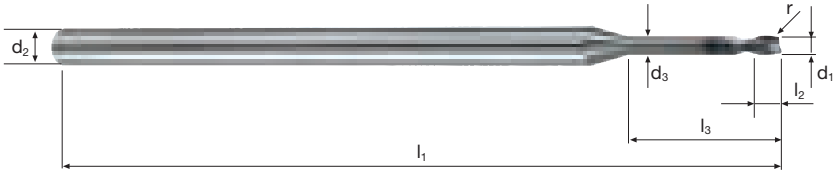
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Hardened tool steel 42 - 48 HRC	1.0	2	300	0.022	0.038	0.038	0.99	60000	2640	45°
		1.2	2	300	0.024	0.046	0.046	1.20	60000	2880	45°
		1.5	2	300	0.028	0.058	0.058	1.50	60000	3360	45°
		2.0	2	300	0.030	0.076	0.076	2.00	47750	2865	45°
		2.5	2	300	0.032	0.096	0.096	2.49	38350	2455	45°
		3.0	2	300	0.036	0.114	0.114	2.98	32045	2305	45°
	Hardened tool steel 48 - 52 HRC	1.0	2	250	0.020	0.038	0.038	0.99	60000	2400	45°
		1.2	2	250	0.022	0.046	0.046	1.20	60000	2640	45°
		1.5	2	250	0.026	0.058	0.058	1.50	53055	2760	45°
		2.0	2	250	0.028	0.076	0.076	2.00	39790	2230	45°
		2.5	2	250	0.030	0.096	0.096	2.49	31960	1920	45°
		3.0	2	250	0.034	0.114	0.114	2.98	26705	1815	45°
	Hardened tool steel 52 - 56 HRC	1.0	2	200	0.020	0.038	0.038	0.99	60000	2400	45°
		1.2	2	200	0.022	0.046	0.046	1.20	53055	2335	45°
		1.5	2	200	0.026	0.058	0.058	1.50	42445	2205	45°
		2.0	2	200	0.028	0.076	0.076	2.00	31830	1780	45°
		2.5	2	200	0.028	0.096	0.096	2.49	25570	1430	45°
		3.0	2	200	0.032	0.114	0.114	2.98	21365	1365	45°
	Hardened tool steel 56 - 60 HRC	1.0	2	150	0.018	0.038	0.038	0.99	48230	1735	45°
		1.2	2	150	0.020	0.046	0.046	1.20	39790	1590	45°
		1.5	2	150	0.022	0.058	0.058	1.50	31830	1400	45°
		2.0	2	150	0.024	0.076	0.076	2.00	23875	1145	45°
		2.5	2	150	0.026	0.096	0.096	2.49	19175	995	45°
		3.0	2	150	0.028	0.114	0.114	2.98	16025	895	45°

Corner radius end mills Microcut-T8H

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | X-Generation X

HM XA	λ 25° γ-10°



	Rm 850-1100	Rm 1100-1300	Rm 1300-1500	HRC 48-56	HRC 56-60	HRC > 60	Inox Stainless	Ti Titanium

Example: **Order-N°.** D (Coating) 5766 (Article-N°.) .100 (ø-Code)

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	DURO-S D5766 $
.100	1.0	3	0.95	50	1.20	8.0	0.20	4.9°	2	58.30
.108	1.2	3	1.10	50	1.44	9.6	0.20	4.0°	2	58.30
.120	1.5	3	1.40	60	1.80	12.0	0.20	3.0°	2	58.30
.140	2.0	3	1.90	60	2.40	16.0	0.20	1.7°	2	58.30
.160	2.5	3	2.30	60	3.00	20.0	0.20	0.7°	2	58.30
.180	3.0	3	2.80	60	3.60	24.0	0.20	0.0°	2	58.30

passion
for precision

fraisa

End milling tools for aluminium and copper
Smooth-edged, cylindrical

Normal version

N° 15520

AX-NV2

X-Generation **X**

Roughing

Finishing

d_1 2 – 20

90°

Al Aluminium Alloy

Cu Copper

Plastic Thermoplast

453

N° 15530

AX-NV3

X-Generation **X**

Roughing

Finishing

d_1 3 – 20

90°

Al Aluminium Alloy

Cu Copper

Plastic Thermoplast

455

passion
for precision

fraisa

End milling tools for aluminium and copper
Smooth-edged, with corner radius

Normal version

N° 5275

AluSpeed

Base-X **B**

Roughing

Finishing

r 0.5, 1.0, 1.5, 2.0, 2.5

Al Aluminium Alloy

Cu Copper

Plastic Thermoplast

457

Medium length version

N° 5277

AluSpeed

Base-X **B**

Roughing

Finishing

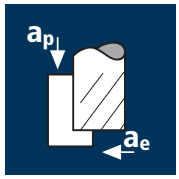
r 1.0, 1.5, 2.0

Al Aluminium Alloy

Cu Copper

Plastic Thermoplast

459

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium alloys Si < 6%	3	2	550	0.055	4.5	1.8	58360	6420	52.0
		4	2	550	0.075	6.0	2.4	43770	6565	94.5
		5	2	550	0.090	7.5	3.0	35015	6305	142.0
		6	2	550	0.120	9.0	3.6	29180	7005	227.0
		8	2	550	0.160	12.0	4.8	21885	7005	403.5
		10	2	550	0.200	15.0	6.0	17510	7005	630.5
		12	2	550	0.220	18.0	7.2	14590	6420	832.0
		16	2	550	0.245	24.0	9.6	10940	5360	1235.0
		20	2	550	0.285	30.0	12.0	8755	4990	1796.5
	Unalloyed copper	3	2	400	0.045	4.5	1.8	42445	3820	31.0
		4	2	400	0.060	6.0	2.4	31830	3820	55.0
		5	2	400	0.070	7.5	3.0	25465	3565	80.0
		6	2	400	0.095	9.0	3.6	21220	4030	130.5
		8	2	400	0.130	12.0	4.8	15915	4140	238.5
		10	2	400	0.160	15.0	6.0	12735	4075	367.0
		12	2	400	0.175	18.0	7.2	10610	3715	481.5
		16	2	400	0.195	24.0	9.6	7960	3105	715.5
		20	2	400	0.230	30.0	12.0	6365	2930	1055.0
	Thermoplastics	3	2	1000	0.055	4.5	1.8	60000	6600	53.5
		4	2	1000	0.075	6.0	2.4	60000	9000	129.5
		5	2	1000	0.090	7.5	3.0	60000	10800	243.0
		6	2	1000	0.120	9.0	3.6	53055	12735	412.5
		8	2	1000	0.160	12.0	4.8	39790	12735	733.5
		10	2	1000	0.200	15.0	6.0	31830	12730	1145.5
		12	2	1000	0.220	18.0	7.2	26525	11670	1512.5
		16	2	1000	0.245	24.0	9.6	19895	9750	2246.5
		20	2	1000	0.285	30.0	12.0	15915	9070	3265.0
	Cast aluminium Si 6% - 15%	3	2	350	0.040	4.5	1.8	37135	2970	24.0
		4	2	350	0.055	6.0	2.4	27855	3065	44.0
		5	2	350	0.065	7.5	3.0	22280	2895	65.0
		6	2	350	0.085	9.0	3.6	18570	3155	102.0
		8	2	350	0.110	12.0	4.8	13925	3065	176.5
		10	2	350	0.140	15.0	6.0	11140	3120	281.0
		12	2	350	0.155	18.0	7.2	9285	2880	373.0
		16	2	350	0.170	24.0	9.6	6965	2370	546.0
		20	2	350	0.200	30.0	12.0	5570	2230	803.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium alloys Si < 6%	3	2	450	0.040	3.0	3	47750	3820	34.5
		4	2	450	0.055	4.0	4	35810	3940	63.0
		5	2	450	0.065	5.0	5	28650	3725	93.0
		6	2	450	0.085	6.0	6	23875	4060	146.0
		8	2	450	0.110	8.0	8	17905	3940	252.0
		10	2	450	0.140	10.0	10	14325	4010	401.0
		12	2	450	0.155	12.0	12	11935	3700	533.0
		16	2	450	0.170	16.0	16	8955	3045	779.5
		20	2	450	0.200	20.0	20	7160	2865	1146.0
	Unalloyed copper	3	2	350	0.030	3.0	3	37135	2230	20.0
		4	2	350	0.045	4.0	4	27855	2505	40.0
		5	2	350	0.050	5.0	5	22280	2230	56.0
		6	2	350	0.070	6.0	6	18570	2600	93.5
		8	2	350	0.090	8.0	8	13925	2505	160.5
		10	2	350	0.110	10.0	10	11140	2450	245.0
		12	2	350	0.125	12.0	12	9285	2320	334.0
		16	2	350	0.135	16.0	16	6965	1880	481.5
		20	2	350	0.160	20.0	20	5570	1780	712.0
	Thermoplastics	3	2	800	0.040	3.0	3	60000	4800	43.0
		4	2	800	0.055	4.0	4	60000	6600	105.5
		5	2	800	0.065	5.0	5	50930	6620	165.5
		6	2	800	0.085	6.0	6	42445	7215	259.5
		8	2	800	0.110	8.0	8	31830	7005	448.5
		10	2	800	0.140	10.0	10	25465	7130	713.0
		12	2	800	0.155	12.0	12	21220	6580	947.5
		16	2	800	0.170	16.0	16	15915	5410	1385.0
		20	2	800	0.200	20.0	20	12735	5095	2038.0
	Cast aluminium Si 6% - 15%	3	2	300	0.030	3.0	3	31830	1910	17.0
		4	2	300	0.040	4.0	4	23875	1910	30.5
		5	2	300	0.045	5.0	5	19100	1720	43.0
		6	2	300	0.060	6.0	6	15915	1910	69.0
		8	2	300	0.075	8.0	8	11935	1790	114.5
		10	2	300	0.100	10.0	10	9550	1910	191.0
		12	2	300	0.110	12.0	12	7960	1750	252.0
		16	2	300	0.120	16.0	16	5970	1435	367.5
		20	2	300	0.140	20.0	20	4775	1335	534.0

Cylindrical end mills AX-NV2

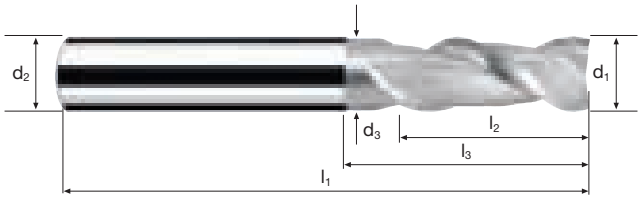
Smooth-edged, normal version with short neck

HSS | Favora® | Base-X | X-Generation X

HM MG10 | λ 40° γ 20°

90°

Vario



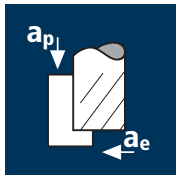
Roughing

Finishing

Rm < 850 | **Al** Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15520** ø-Code **.140**

ø Code	d1 h6	d2 h6	d3	l1	l2	l3	α	z	CELERO C15520 $
.140	2	6	1.9	57	7	10	7.0°	2	49.70
.180	3	6	2.8	57	8	14	4.5°	2	49.70
.220	4	6	3.7	57	11	16	3.0°	2	49.70
.260	5	6	4.6	57	13	18	1.5°	2	49.70
.300	6	6	5.5	57	13	20	0.0°	2	49.70
.391	8	8	7.4	63	19	26	0.0°	2	62.00
.450	10	10	9.2	72	22	31	0.0°	2	85.00
.501	12	12	11.0	83	26	37	0.0°	2	104.00
.610	16	16	15.0	92	32	43	0.0°	2	163.00
.682	20	20	19.0	104	38	53	0.0°	2	238.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium alloys Si < 6%	3	3	550	0.050	4.5	1.4	58360	8755	55.0
		4	3	550	0.065	6.0	1.8	43770	8535	92.0
		5	3	550	0.085	7.5	2.3	35015	8930	154.0
		6	3	550	0.110	9.0	2.7	29180	9630	234.0
		8	3	550	0.135	12.0	3.6	21885	8865	383.0
		10	3	550	0.165	15.0	4.5	17510	8665	585.0
		12	3	550	0.200	18.0	5.4	14590	8755	851.0
		16	3	550	0.215	24.0	7.2	10940	7055	1219.0
		20	3	550	0.250	30.0	9.0	8755	6565	1772.5
	Unalloyed copper	3	3	400	0.040	4.5	1.4	42445	5095	31.0
		4	3	400	0.050	6.0	1.8	31830	4775	51.5
		5	3	400	0.070	7.5	2.3	25465	5350	90.5
		6	3	400	0.090	9.0	2.7	21220	5730	139.0
		8	3	400	0.110	12.0	3.6	15915	5250	227.0
		10	3	400	0.130	15.0	4.5	12735	4965	335.0
		12	3	400	0.160	18.0	5.4	10610	5095	495.0
		16	3	400	0.170	24.0	7.2	7960	4060	701.5
		20	3	400	0.200	30.0	9.0	6365	3820	1031.5
	Thermoplastics	3	3	1000	0.050	4.5	1.4	60000	9000	54.5
		4	3	1000	0.065	6.0	1.8	60000	11700	126.5
		5	3	1000	0.085	7.5	2.3	60000	15300	258.0
		6	3	1000	0.110	9.0	2.7	53055	17510	425.5
		8	3	1000	0.135	12.0	3.6	39790	16115	696.0
		10	3	1000	0.165	15.0	4.5	31830	15755	1063.5
		12	3	1000	0.200	18.0	5.4	26525	15915	1547.0
		16	3	1000	0.215	24.0	7.2	19895	12830	2217.0
		20	3	1000	0.250	30.0	9.0	15915	11935	3222.5
	Cast aluminium Si 6% - 15%	3	3	350	0.035	4.5	1.4	37135	3900	23.5
		4	3	350	0.045	6.0	1.8	27855	3760	40.5
		5	3	350	0.060	7.5	2.3	22280	4010	67.5
		6	3	350	0.075	9.0	2.7	18570	4180	101.5
		8	3	350	0.095	12.0	3.6	13925	3970	171.5
		10	3	350	0.115	15.0	4.5	11140	3845	259.5
		12	3	350	0.140	18.0	5.4	9285	3900	379.0
		16	3	350	0.150	24.0	7.2	6965	3135	541.5
		20	3	350	0.175	30.0	9.0	5570	2925	790.0

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium alloys Si < 6%	3	3	450	0.035	1.8	3	47750	5015	27.0
		4	3	450	0.045	2.4	4	35810	4835	46.5
		5	3	450	0.060	3.0	5	28650	5155	77.5
		6	3	450	0.075	3.6	6	23875	5370	116.0
		8	3	450	0.095	4.8	8	17905	5105	196.0
		10	3	450	0.115	6.0	10	14325	4940	296.5
		12	3	450	0.140	7.2	12	11935	5015	433.5
		16	3	450	0.150	9.6	16	8955	4030	619.0
		20	3	450	0.175	12.0	20	7160	3760	902.5
	Unalloyed copper	3	3	350	0.030	1.8	3	37135	3340	18.0
		4	3	350	0.035	2.4	4	27855	2925	28.0
		5	3	350	0.050	3.0	5	22280	3340	50.0
		6	3	350	0.060	3.6	6	18570	3345	72.5
		8	3	350	0.075	4.8	8	13925	3135	120.5
		10	3	350	0.090	6.0	10	11140	3010	180.5
		12	3	350	0.110	7.2	12	9285	3065	265.0
		16	3	350	0.120	9.6	16	6965	2505	385.0
		20	3	350	0.140	12.0	20	5570	2340	561.5
	Thermoplastics	3	3	800	0.035	1.8	3	60000	6300	34.0
		4	3	800	0.045	2.4	4	60000	8100	78.0
		5	3	800	0.060	3.0	5	50930	9165	137.5
		6	3	800	0.075	3.6	6	42445	9550	206.5
		8	3	800	0.095	4.8	8	31830	9070	348.5
		10	3	800	0.115	6.0	10	25465	8785	527.0
		12	3	800	0.140	7.2	12	21220	8910	770.0
		16	3	800	0.150	9.6	16	15915	7160	1100.0
		20	3	800	0.175	12.0	20	12735	6685	1604.5
	Cast aluminium Si 6% - 15%	3	3	300	0.025	1.8	3	31830	2385	13.0
		4	3	300	0.030	2.4	4	23875	2150	20.5
		5	3	300	0.040	3.0	5	19100	2290	34.5
		6	3	300	0.055	3.6	6	15915	2625	56.5
		8	3	300	0.065	4.8	8	11935	2325	89.5
		10	3	300	0.080	6.0	10	9550	2290	137.5
		12	3	300	0.100	7.2	12	7960	2390	206.5
		16	3	300	0.105	9.6	16	5970	1880	289.0
		20	3	300	0.125	12.0	20	4775	1790	429.5

Cylindrical end mills AX-NV3

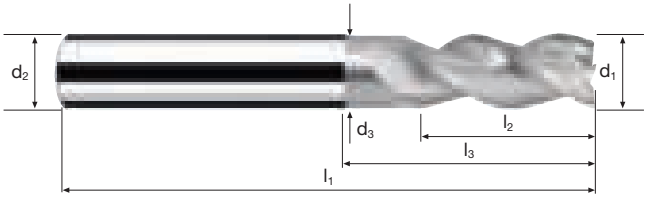
Smooth-edged, normal version with short neck

HSS | Favora® | Base-X | X-Generation X

HM MG10 | λ 40° γ 20°

90°

Vario



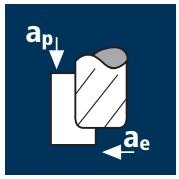
Roughing

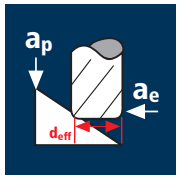
Finishing

Rm < 850 | **Al** Aluminium > 99% | **Al** Aluminium Alloy | **Al** Aluminium Cast | **Cu** Copper | **Plastic** Thermoplast

Example: **Order-N°.** Coating **C** Article-N°. **15530** ø-Code **.180**

ø Code	d1 h6	d2 h6	d3	l1	l2	l3	α	z	CELERO C15530 $
.180	3	6	2.8	57	8	14	4.5°	3	49.70
.220	4	6	3.7	57	11	16	3.0°	3	49.70
.260	5	6	4.6	57	13	18	1.5°	3	49.70
.300	6	6	5.5	57	13	20	0.0°	3	49.70
.391	8	8	7.4	63	19	26	0.0°	3	62.00
.450	10	10	9.2	72	22	31	0.0°	3	85.00
.501	12	12	11.0	83	26	37	0.0°	3	104.00
.610	16	16	15.0	92	32	43	0.0°	3	163.00
.682	20	20	19.0	104	38	53	0.0°	3	238.00

Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
	Wrought aluminium alloys Si < 6%	3	2	450	0.045	2.4	1.4	47745	4295	14.5
		4	2	450	0.060	3.2	1.8	35810	4295	24.5
		5	2	450	0.075	4.0	2.3	28650	4300	39.5
		6	2	450	0.095	4.8	2.7	23875	4535	59.0
		8	2	450	0.130	6.4	3.6	17905	4655	107.5
		10	2	450	0.160	8.0	4.5	14325	4585	165.0
		12	2	450	0.175	9.6	5.4	11935	4175	216.5
		16	2	450	0.195	12.8	7.2	8950	3490	321.5
		20	2	450	0.230	16.0	9.0	7160	3295	474.5
	Unalloyed copper	3	2	350	0.035	2.4	1.4	37135	2600	8.5
		4	2	350	0.050	3.2	1.8	27850	2785	16.0
		5	2	350	0.060	4.0	2.3	22280	2675	24.0
		6	2	350	0.075	4.8	2.7	18570	2785	36.0
		8	2	350	0.105	6.4	3.6	13925	2925	67.5
		10	2	350	0.130	8.0	4.5	11140	2895	104.0
		12	2	350	0.140	9.6	5.4	9285	2600	135.0
		16	2	350	0.155	12.8	7.2	6965	2160	199.0
		20	2	350	0.185	16.0	9.0	5570	2060	296.5
	Thermoplastics	3	2	800	0.045	2.4	1.4	60000	5400	17.5
		4	2	800	0.060	3.2	1.8	60000	7200	41.5
		5	2	800	0.075	4.0	2.3	50930	7640	69.0
		6	2	800	0.095	4.8	2.7	42440	8065	104.5
		8	2	800	0.130	6.4	3.6	31830	8275	190.5
		10	2	800	0.160	8.0	4.5	25465	8150	293.5
		12	2	800	0.175	9.6	5.4	21220	7425	385.0
		16	2	800	0.195	12.8	7.2	15915	6205	572.0
		20	2	800	0.230	16.0	9.0	12730	5855	843.0
	Cast aluminium Si 6% - 15%	3	2	300	0.030	2.4	1.4	31830	1910	6.0
		4	2	300	0.040	3.2	1.8	23875	1910	11.0
		5	2	300	0.055	4.0	2.3	19100	2100	19.0
		6	2	300	0.065	4.8	2.7	15915	2070	27.0
		8	2	300	0.090	6.4	3.6	11935	2150	49.5
		10	2	300	0.110	8.0	4.5	9550	2100	75.5
		12	2	300	0.125	9.6	5.4	7960	1990	103.0
		16	2	300	0.135	12.8	7.2	5970	1610	148.5
		20	2	300	0.160	16.0	9.0	4775	1530	220.5

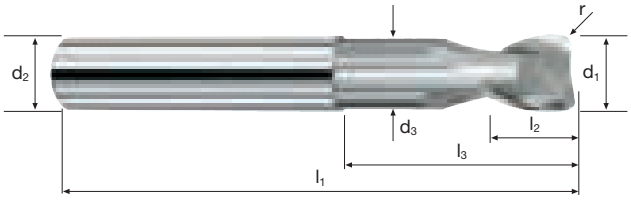
Application	Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
	Wrought aluminium alloys Si < 6%	3	2	600	0.055	0.25	0.25	2.97	60000	6600	45°
		4	2	600	0.075	0.30	0.30	3.93	48600	7290	45°
		5	2	600	0.090	0.35	0.35	4.89	39060	7030	45°
		6	2	600	0.120	0.40	0.40	5.98	31940	7665	45°
		8	2	600	0.160	0.45	0.45	7.96	23995	7680	45°
		10	2	600	0.200	0.50	0.50	10.00	19100	7640	45°
		12	2	600	0.220	0.60	0.60	11.97	15955	7020	45°
		16	2	600	0.245	0.75	0.75	15.98	11950	5855	45°
		20	2	600	0.285	1.00	1.00	19.86	9615	5480	45°
	Unalloyed copper	3	2	450	0.045	0.25	0.25	2.97	48230	4340	45°
		4	2	450	0.060	0.30	0.30	3.93	36450	4375	45°
		5	2	450	0.070	0.35	0.35	4.89	29295	4100	45°
		6	2	450	0.095	0.40	0.40	5.98	23955	4550	45°
		8	2	450	0.130	0.45	0.45	7.96	17995	4680	45°
		10	2	450	0.160	0.50	0.50	10.00	14325	4585	45°
		12	2	450	0.175	0.60	0.60	11.97	11965	4190	45°
		16	2	450	0.195	0.75	0.75	15.98	8965	3495	45°
		20	2	450	0.230	1.00	1.00	19.86	7215	3320	45°
	Thermoplastics	3	2	1000	0.055	0.25	0.25	2.97	60000	6600	45°
		4	2	1000	0.075	0.30	0.30	3.93	60000	9000	45°
		5	2	1000	0.090	0.35	0.35	4.89	60000	10800	45°
		6	2	1000	0.120	0.40	0.40	5.98	53230	12775	45°
		8	2	1000	0.160	0.45	0.45	7.96	39990	12795	45°
		10	2	1000	0.200	0.50	0.50	10.00	31830	12730	45°
		12	2	1000	0.220	0.60	0.60	11.97	26595	11700	45°
		16	2	1000	0.245	0.75	0.75	15.98	19920	9760	45°
		20	2	1000	0.285	1.00	1.00	19.86	16030	9135	45°
	Cast aluminium Si 6% - 15%	3	2	400	0.040	0.25	0.25	2.97	42870	3430	45°
		4	2	400	0.055	0.30	0.30	3.93	32400	3565	45°
		5	2	400	0.065	0.35	0.35	4.89	26040	3385	45°
		6	2	400	0.085	0.40	0.40	5.98	21290	3620	45°
		8	2	400	0.110	0.45	0.45	7.96	15995	3520	45°
		10	2	400	0.140	0.50	0.50	10.00	12735	3565	45°
		12	2	400	0.155	0.60	0.60	11.97	10635	3295	45°
		16	2	400	0.170	0.75	0.75	15.98	7970	2710	45°
		20	2	400	0.200	1.00	1.00	19.86	6410	2565	45°

Corner radius end mills AluSpeed

Smooth-edged, normal version

HSS | Favora® | Base-X | B | X-Generation

HM MG10	λ 30° γ 15°



Roughing

Finishing

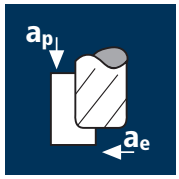
ToolSchool

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** C (Coating) 5275 (Article-N°.) .180 (ø-Code)

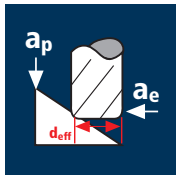
ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	5275 $	CELERO C5275 $
.180	3	6	2.8	57	4	9	0.5	5.9°	2	51.40	58.00
.220	4	6	3.7	57	5	12	0.5	3,7°	2	51.40	58.00
.260	5	6	4.6	57	6	15	0.5	1.7°	2	51.40	58.00
.300	6	6	5.5	57	7	20	1.0	0.0°	2	51.40	58.00
.391	8	8	7.4	63	9	26	1.0	0.0°	2	64.00	72.00
.450	10	10	9.2	72	11	31	1.5	0.0°	2	87.00	99.00
.501	12	12	11.0	83	13	37	1.5	0.0°	2	108.00	122.00
.610	16	16	15.0	92	17	43	2.0	0.0°	2	169.00	191.00
.682	20	20	19.0	104	21	53	2.0	0.0°	2	246.00	278.00
.772	25	25	24.0	121	26	64	2.5	0.0°	2	466.00	527.00

Application



Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	n [min⁻¹]	v_f [mm/min]	Q [cm³/min]
Wrought aluminium alloys Si < 6%	6	2	400	0.095	3.6	1.5	21220	4030	22.0
	8	2	400	0.130	4.8	2.0	15915	4140	39.5
	10	2	400	0.160	6.0	2.5	12730	4075	61.0
	12	2	400	0.175	7.2	3.0	10610	3715	80.0
	16	2	400	0.195	9.6	4.0	7960	3105	119.0
	20	2	400	0.230	12.0	5.0	6365	2930	176.0
Unalloyed copper	6	2	300	0.075	3.6	1.5	15915	2385	13.0
	8	2	300	0.105	4.8	2.0	11935	2505	24.0
	10	2	300	0.130	6.0	2.5	9550	2485	37.5
	12	2	300	0.140	7.2	3.0	7960	2230	48.0
	16	2	300	0.155	9.6	4.0	5970	1850	71.0
	20	2	300	0.185	12.0	5.0	4775	1765	106.0
Thermoplastics	6	2	700	0.095	3.6	1.5	37135	7055	38.0
	8	2	700	0.130	4.8	2.0	27850	7240	69.5
	10	2	700	0.160	6.0	2.5	22280	7130	107.0
	12	2	700	0.175	7.2	3.0	18570	6500	140.5
	16	2	700	0.195	9.6	4.0	13925	5430	208.5
	20	2	700	0.230	12.0	5.0	11140	5125	307.5
Cast aluminium Si 6% - 15%	6	2	250	0.065	3.6	1.5	13265	1725	9.5
	8	2	250	0.090	4.8	2.0	9945	1790	17.0
	10	2	250	0.110	6.0	2.5	7960	1750	26.5
	12	2	250	0.125	7.2	3.0	6630	1660	36.0
	16	2	250	0.135	9.6	4.0	4975	1345	51.5
	20	2	250	0.160	12.0	5.0	3980	1275	76.5

Application



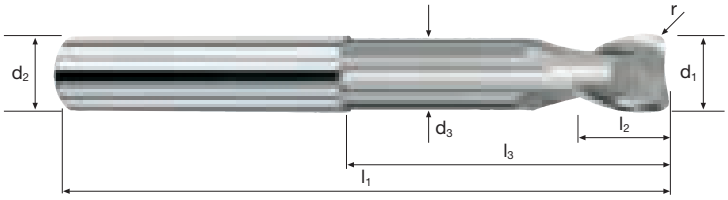
Material	d1 [mm]	z	v_c [m/min]	f_z [mm]	a_p [mm]	a_e [mm]	d_{eff} [mm]	n [min⁻¹]	v_f [mm/min]	β [°]
Wrought aluminium alloys Si < 6%	6	2	500	0.110	0.35	0.35	5.99	26570	5845	45°
	8	2	500	0.145	0.40	0.40	7.98	19945	5785	45°
	10	2	500	0.180	0.45	0.45	10.00	15915	5730	45°
	12	2	500	0.240	0.50	0.50	12.00	13265	6365	45°
	16	2	500	0.320	0.60	0.60	16.00	9945	6365	45°
	20	2	500	0.400	0.75	0.75	19.98	7965	6370	45°
Unalloyed copper	6	2	400	0.090	0.35	0.35	5.99	21255	3825	45°
	8	2	400	0.115	0.40	0.40	7.98	15955	3670	45°
	10	2	400	0.145	0.45	0.45	10.00	12735	3695	45°
	12	2	400	0.190	0.50	0.50	12.00	10610	4030	45°
	16	2	400	0.255	0.60	0.60	16.00	7960	4060	45°
	20	2	400	0.320	0.75	0.75	19.98	6375	4080	45°
Thermoplastics	6	2	800	0.110	0.35	0.35	5.99	42515	9355	45°
	8	2	800	0.145	0.40	0.40	7.98	31910	9255	45°
	10	2	800	0.180	0.45	0.45	10.00	25465	9165	45°
	12	2	800	0.240	0.50	0.50	12.00	21220	10185	45°
	16	2	800	0.320	0.60	0.60	16.00	15915	10185	45°
	20	2	800	0.400	0.75	0.75	19.98	12745	10195	45°
Cast aluminium Si 6% - 15%	6	2	300	0.075	0.35	0.35	5.99	15945	2390	45°
	8	2	300	0.100	0.40	0.40	7.98	11965	2395	45°
	10	2	300	0.125	0.45	0.45	10.00	9550	2390	45°
	12	2	300	0.170	0.50	0.50	12.00	7960	2705	45°
	16	2	300	0.225	0.60	0.60	16.00	5970	2685	45°
	20	2	300	0.280	0.75	0.75	19.98	4780	2675	45°

Corner radius end mills AluSpeed

Smooth-edged, medium length version

HSS | Favora® | Base-X | B | X-Generation

HM MG10	λ 30° γ 15°



Roughing

Finishing

ToolSchool

Rm < 850			Al Aluminium > 99%	Al Aluminium Alloy	Al Aluminium Cast		Cu Copper	Plastic Thermoplast	

Example: **Order-N°.** Coating **C** Article-N°. **5277** ø-Code **.300**

ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	z	5277 $	CELERO C5277 $
.300	6	6	5.5	70	7	33	1.0	2	58.70	65.00
.391	8	8	7.4	80	9	43	1.0	2	73.00	82.00
.450	10	10	9.2	84	11	43	1.5	2	100.00	111.00
.501	12	12	11.0	97	13	51	1.5	2	123.00	137.00
.610	16	16	15.0	115	17	66	2.0	2	193.00	214.00
.682	20	20	19.0	130	21	79	2.0	2	281.00	313.00

passion
for precision

fraisa

End milling tools for graphite
Micro with ball nose

Shank ø 6mm, tolerance r ±0.005

N° 6064	MicrospheroXG	X-Generation X	5xd R F	d_1 0.2 – 6.0	C Graphite			467
N° 6066	MicrospheroXG	X-Generation X	8xd R F	d_1 0.2 – 6.0	C Graphite			469
N° 6068	MicrospheroXG	X-Generation X	10xd R F	d_1 0.4 – 6.0	C Graphite			471
N° 6070	MicrospheroXG	X-Generation X	12xd R F	d_1 0.4 – 2.0	C Graphite			473

Shank ø 3mm, tolerance r ±0.01

N° 5782	Microcut-B3	Base-X B	3xd R F	d_1 0.2 – 3.0	C Graphite			475
N° 5784	Microcut-B5	Base-X B	5xd R F	d_1 0.5 – 3.0	C Graphite			477
N° 5786	Microcut-B8	Base-X B	8xd R F	d_1 0.5 – 3.0	C Graphite			479
N° 5787	Microcut-B10	Base-X B	10xd R F	d_1 0.5 – 3.0	C Graphite			481
N° 5791	Microcut-B12	Base-X B	12xd R F	d_1 1.0 – 3.0	C Graphite			483
N° 5793	Microcut-B15	Base-X B	15xd R F	d_1 1.0 – 3.0	C Graphite			485
N° 15795	Microcut-B20	Base-X B	20xd R F	d_1 1.0 – 3.0	C Graphite			487

End milling tools for graphite
Micro with corner radius

Shank ø 6mm, tolerance r ±0.005

N° 6034		**MicrotoroXG**	X-Generation	**X**	**5xd**	**R** **F**	r 0.05, 0.1, 0.2, 0.5	**C** Graphite	489
N° 6036		**MicrotoroXG**	X-Generation	**X**	**8xd**	**R** **F**	r 0.05, 0.1, 0.2, 0.5	**C** Graphite	491
N° 6038		**MicrotoroXG**	X-Generation	**X**	**10xd**	**R** **F**	r 0.05, 0.1, 0.2, r 0.5	**C** Graphite	493

Shank ø 3mm, tolerance r 0/+0.03

N° 5754		**Microcut-T5**	Base-X	**B**	**5xd**	**R** **F**	r 0.2	**C** Graphite	495
N° 5756		**Microcut-T8**	Base-X	**B**	**8xd**	**R** **F**	r 0.2	**C** Graphite	497

End milling tools for graphite
Micro, cylindrical

Shank ø 3mm

N° 5712	**Microcut-C3**	Base-X **B**	**3xd** R F	d_1 0.2 – 3.0 45°	**C** Graphite			499
N° 5714	**Microcut-C5**	Base-X **B**	**5xd** R F	d_1 0.5 – 3.0 45°	**C** Graphite			501
N° 5716	**Microcut-C8**	Base-X **B**	**8xd** R F	d_1 0.5 – 3.0 45°	**C** Graphite			503
N° 5717	**Microcut-C10**	Base-X **B**	**10xd** R F	d_1 0.5 – 3.0 45°	**C** Graphite			505

End milling tools for graphite
Ball nose

Tolerance r ±0.005

N° 7480	**SpheroXG**	X-Generation X	3xd R F	d_1 6 – 12	C Graphite			507
N° 7484	**SpheroXG**	X-Generation X	6xd R F	d_1 6 – 12	C Graphite			509

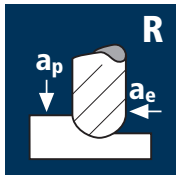
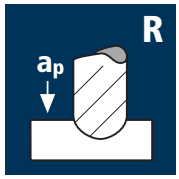
End milling tools for graphite
Corner radius

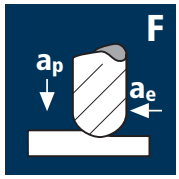
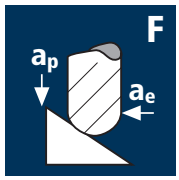
Tolerance r ±0.005

N° 7284	**ToroXG**	X-Generation **X**	6xd R F	r 0.5, 1.0	C Graphite			511

Tolerance r 0/+0.03

N° 5630		Base-X **B**	R F	r 1.0, 1.5	C Graphite			513
N° 5640		Base-X **B**	R F	r 0.15, 0.2, 0.3, 0.5	C Graphite			515
N° 5645		Base-X **B**	R F	r 0.15, 0.2, 0.3, 0.5	C Graphite			517
N° 5650		Base-X **B**	R F	r 0.5	C Graphite			519

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.10	0.10	60	100	120	180
		0.3	2	0.004	0.15	0.20	120	200	240	360
		0.4	2	0.005	0.20	0.25	150	250	300	450
		0.5	2	0.006	0.25	0.30	180	300	360	540
		0.6	2	0.007	0.25	0.35	210	350	420	630
		0.8	2	0.009	0.35	0.50	270	450	540	810
		1.0	2	0.012	0.45	0.60	360	600	720	1080
		1.5	2	0.018	0.70	0.90	540	900	1080	1620
		2.0	2	0.024	0.90	1.20	720	1200	1440	2160
	Graphite B	3.0	2	0.035	1.35	1.80	1050	1750	2100	3150
		4.0	2	0.047	1.80	2.40	1410	2350	2820	4230
		5.0	2	0.059	2.25	3.00	1770	2950	3540	5310
		6.0	2	0.071	2.70	3.60	2130	3550	4260	6390
	Graphite B	0.2	2	0.002	0.10	0.20	60	100	120	180
		0.3	2	0.003	0.15	0.30	90	150	180	270
		0.4	2	0.004	0.20	0.40	120	200	240	360
		0.5	2	0.005	0.25	0.50	150	250	300	450
		0.6	2	0.005	0.25	0.60	150	250	300	450
		0.8	2	0.007	0.35	0.80	210	350	420	630
		1.0	2	0.009	0.45	1.00	270	450	540	810
		1.5	2	0.014	0.70	1.50	420	700	840	1260
		2.0	2	0.018	0.90	2.00	540	900	1080	1620
	Graphite B	3.0	2	0.027	1.35	3.00	810	1350	1620	2430
		4.0	2	0.036	1.80	4.00	1080	1800	2160	3240
		5.0	2	0.045	2.25	5.00	1350	2250	2700	4050
		6.0	2	0.055	2.70	6.00	1650	2750	3300	4950

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.003	0.03	0.04	90	150	180	270
		0.3	2	0.004	0.04	0.06	120	200	240	360
		0.4	2	0.005	0.06	0.08	150	250	300	450
		0.5	2	0.007	0.07	0.10	210	350	420	630
		0.6	2	0.008	0.08	0.12	240	400	480	720
		0.8	2	0.011	0.11	0.16	330	550	660	990
		1.0	2	0.013	0.14	0.20	390	650	780	1170
		1.5	2	0.020	0.21	0.30	600	1000	1200	1800
		2.0	2	0.027	0.28	0.40	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.42	0.60	1200	2000	2400	3600
		4.0	2	0.053	0.56	0.80	1590	2650	3180	4770
		5.0	2	0.067	0.70	1.00	2010	3350	4020	6030
		6.0	2	0.080	0.84	1.20	2400	4000	4800	7200
	Graphite B	0.2	2	0.003	0.04	0.04	90	150	180	270
		0.3	2	0.004	0.05	0.05	120	200	240	360
		0.4	2	0.005	0.07	0.07	150	250	300	450
		0.5	2	0.007	0.09	0.09	210	350	420	630
		0.6	2	0.008	0.11	0.11	240	400	480	720
		0.8	2	0.011	0.14	0.14	330	550	660	990
		1.0	2	0.013	0.18	0.18	390	650	780	1170
		1.5	2	0.020	0.27	0.27	600	1000	1200	1800
		2.0	2	0.027	0.36	0.36	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.54	0.54	1200	2000	2400	3600
		4.0	2	0.053	0.72	0.72	1590	2650	3180	4770
		5.0	2	0.067	0.90	0.90	2010	3350	4020	6030
		6.0	2	0.080	1.08	1.08	2400	4000	4800	7200

Ball nose end mills MicrospheroXG

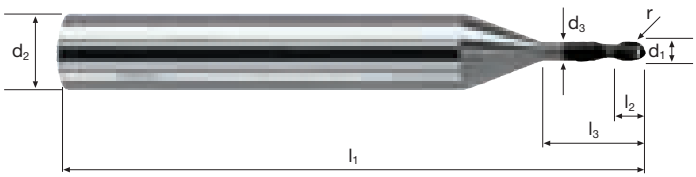
Shank Ø 6mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r

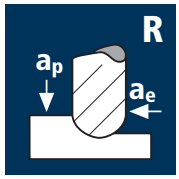
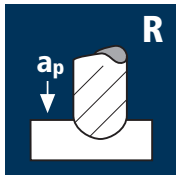


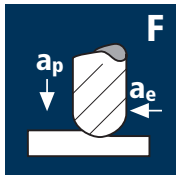
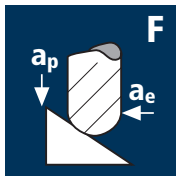
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **6064** ø-Code **.020**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DIAPLUS B6064 $
.020	0.2	6	0.18	57	0.2	1.0	0.10	9.5°	2	85.00
.030	0.3	6	0.25	57	0.3	1.5	0.15	9.3°	2	77.00
.040	0.4	6	0.35	57	0.4	2.0	0.20	9.1°	2	77.00
.050	0.5	6	0.45	57	0.5	2.5	0.25	12.3°	2	77.00
.060	0.6	6	0.55	57	0.6	3.0	0.30	11.9°	2	77.00
.080	0.8	6	0.75	57	0.8	4.0	0.40	11.0°	2	77.00
.100	1.0	6	0.95	57	1.0	5.0	0.50	10.2°	2	77.00
.120	1.5	6	1.40	57	1.5	7.5	0.75	8.4°	2	77.00
.140	2.0	6	1.90	57	2.0	10.0	1.00	6.9°	2	77.00
.180	3.0	6	2.80	57	3.0	15.0	1.50	4.4°	2	77.00
.182	3.0	6	2.80	61	3.0	18.0	1.50	3.9°	2	77.00
.220	4.0	6	3.70	61	4.0	20.0	2.00	2.6°	2	82.00
.222	4.0	6	3.70	66	4.0	25.0	2.00	2.2°	2	89.00
.260	5.0	6	4.60	66	5.0	25.0	2.50	1.2°	2	94.00
.300	6.0	6	5.50	69	6.0	30.0	3.00	0.0°	2	99.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.10	0.10	60	100	120	180
		0.3	2	0.004	0.10	0.20	120	200	240	360
		0.4	2	0.005	0.15	0.25	150	250	300	450
		0.5	2	0.006	0.20	0.30	180	300	360	540
		0.6	2	0.007	0.25	0.35	210	350	420	630
		0.8	2	0.009	0.30	0.50	270	450	540	810
		1.0	2	0.012	0.40	0.60	360	600	720	1080
		1.5	2	0.018	0.60	0.90	540	900	1080	1620
		2.0	2	0.024	0.80	1.20	720	1200	1440	2160
	Graphite B	3.0	2	0.035	1.20	1.80	1050	1750	2100	3150
		4.0	2	0.047	1.60	2.40	1410	2350	2820	4230
		5.0	2	0.059	2.00	3.00	1770	2950	3540	5310
		6.0	2	0.071	2.40	3.60	2130	3550	4260	6390
	Graphite B	0.2	2	0.002	0.10	0.20	60	100	120	180
		0.3	2	0.003	0.10	0.30	90	150	180	270
		0.4	2	0.004	0.15	0.40	120	200	240	360
		0.5	2	0.005	0.20	0.50	150	250	300	450
		0.6	2	0.005	0.25	0.60	150	250	300	450
		0.8	2	0.007	0.30	0.80	210	350	420	630
		1.0	2	0.009	0.40	1.00	270	450	540	810
		1.5	2	0.014	0.60	1.50	420	700	840	1260
		2.0	2	0.018	0.80	2.00	540	900	1080	1620
	Graphite B	3.0	2	0.027	1.20	3.00	810	1350	1620	2430
		4.0	2	0.036	1.60	4.00	1080	1800	2160	3240
		5.0	2	0.045	2.00	5.00	1350	2250	2700	4050
		6.0	2	0.055	2.40	6.00	1650	2750	3300	4950

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.003	0.02	0.04	90	150	180	270
		0.3	2	0.004	0.04	0.05	120	200	240	360
		0.4	2	0.005	0.05	0.07	150	250	300	450
		0.5	2	0.007	0.06	0.09	210	350	420	630
		0.6	2	0.008	0.07	0.11	240	400	480	720
		0.8	2	0.011	0.10	0.14	330	550	660	990
		1.0	2	0.013	0.12	0.18	390	650	780	1170
		1.5	2	0.020	0.18	0.27	600	1000	1200	1800
		2.0	2	0.027	0.24	0.36	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.36	0.54	1200	2000	2400	3600
		4.0	2	0.053	0.48	0.72	1590	2650	3180	4770
		5.0	2	0.067	0.60	0.90	2010	3350	4020	6030
		6.0	2	0.080	0.72	1.08	2400	4000	4800	7200
	Graphite B	0.2	2	0.003	0.03	0.03	90	150	180	270
		0.3	2	0.004	0.05	0.05	120	200	240	360
		0.4	2	0.005	0.06	0.06	150	250	300	450
		0.5	2	0.007	0.08	0.08	210	350	420	630
		0.6	2	0.008	0.10	0.10	240	400	480	720
		0.8	2	0.011	0.13	0.13	330	550	660	990
		1.0	2	0.013	0.16	0.16	390	650	780	1170
		1.5	2	0.020	0.24	0.24	600	1000	1200	1800
		2.0	2	0.027	0.32	0.32	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.48	0.48	1200	2000	2400	3600
		4.0	2	0.053	0.64	0.64	1590	2650	3180	4770
		5.0	2	0.067	0.80	0.80	2010	3350	4020	6030
		6.0	2	0.080	0.96	0.96	2400	4000	4800	7200

Ball nose end mills MicrospheroXG

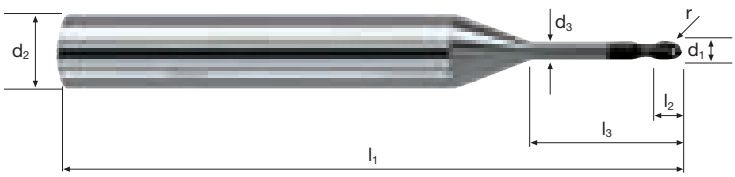
Shank Ø 6mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r

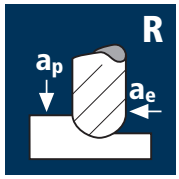
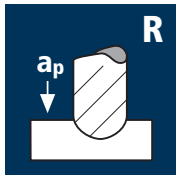


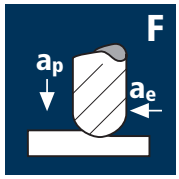
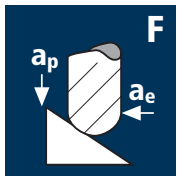
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **6066** ø-Code **.020**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DIAPLUS B6066 $
.020	0.2	6	0.18	57	0.2	1.6	0.10	9.3°	2	85.00
.030	0.3	6	0.25	57	0.3	2.4	0.15	9.0°	2	77.00
.040	0.4	6	0.35	57	0.4	3.2	0.20	8.5°	2	77.00
.050	0.5	6	0.45	57	0.5	4.0	0.25	11.1°	2	77.00
.060	0.6	6	0.55	57	0.6	4.8	0.30	10.5°	2	77.00
.080	0.8	6	0.75	57	0.8	6.4	0.40	9.4°	2	77.00
.100	1.0	6	0.95	57	1.0	8.0	0.50	8.4°	2	77.00
.120	1.5	6	1.40	57	1.5	12.0	0.75	6.5°	2	77.00
.140	2.0	6	1.90	61	2.0	16.0	1.00	5.1°	2	77.00
.180	3.0	6	2.80	66	3.0	24.0	1.50	3.1°	2	85.00
.220	4.0	6	3.70	75	4.0	32.0	2.00	1.7°	2	94.00
.260	5.0	6	4.60	80	5.0	40.0	2.50	0.8°	2	99.00
.300	6.0	6	5.50	87	6.0	48.0	3.00	0.0°	2	107.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.4	2	0.005	0.15	0.15	150	250	300	450
		0.5	2	0.006	0.20	0.20	180	300	360	540
		0.6	2	0.007	0.25	0.25	210	350	420	630
		0.8	2	0.009	0.30	0.30	270	450	540	810
		1.0	2	0.012	0.40	0.40	360	600	720	1080
		1.5	2	0.018	0.60	0.60	540	900	1080	1620
		2.0	2	0.024	0.80	0.80	720	1200	1440	2160
		3.0	2	0.035	1.20	1.20	1050	1750	2100	3150
		4.0	2	0.047	1.60	1.60	1410	2350	2820	4230
	Graphite B	5.0	2	0.059	2.00	2.00	1770	2950	3540	5310
		6.0	2	0.071	2.40	2.40	2130	3550	4260	6390
	Graphite B	0.4	2	0.003	0.10	0.40	90	150	180	270
		0.5	2	0.004	0.15	0.50	120	200	240	360
		0.6	2	0.004	0.20	0.60	120	200	240	360
		0.8	2	0.006	0.25	0.80	180	300	360	540
		1.0	2	0.007	0.30	1.00	210	350	420	630
		1.5	2	0.011	0.45	1.50	330	550	660	990
		2.0	2	0.015	0.60	2.00	450	750	900	1350
		3.0	2	0.022	0.90	3.00	660	1100	1320	1980
		4.0	2	0.029	1.20	4.00	870	1450	1740	2610
	Graphite B	5.0	2	0.036	1.50	5.00	1080	1800	2160	3240
		6.0	2	0.044	1.80	6.00	1320	2200	2640	3960

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.4	2	0.005	0.04	0.06	150	250	300	450
		0.5	2	0.007	0.05	0.08	210	350	420	630
		0.6	2	0.008	0.06	0.10	240	400	480	720
		0.8	2	0.011	0.08	0.13	330	550	660	990
		1.0	2	0.013	0.10	0.16	390	650	780	1170
		1.5	2	0.020	0.15	0.24	600	1000	1200	1800
		2.0	2	0.027	0.20	0.32	810	1350	1620	2430
		3.0	2	0.040	0.30	0.48	1200	2000	2400	3600
		4.0	2	0.053	0.40	0.64	1590	2650	3180	4770
	Graphite B	5.0	2	0.067	0.50	0.80	2010	3350	4020	6030
		6.0	2	0.080	0.60	0.96	2400	4000	4800	7200
	Graphite B	0.4	2	0.005	0.06	0.06	150	250	300	450
		0.5	2	0.007	0.07	0.07	210	350	420	630
		0.6	2	0.008	0.08	0.08	240	400	480	720
		0.8	2	0.011	0.11	0.11	330	550	660	990
		1.0	2	0.013	0.14	0.14	390	650	780	1170
		1.5	2	0.020	0.21	0.21	600	1000	1200	1800
		2.0	2	0.027	0.28	0.28	810	1350	1620	2430
		3.0	2	0.040	0.42	0.42	1200	2000	2400	3600
		4.0	2	0.053	0.56	0.56	1590	2650	3180	4770
	Graphite B	5.0	2	0.067	0.70	0.70	2010	3350	4020	6030
		6.0	2	0.080	0.84	0.84	2400	4000	4800	7200

Ball nose end mills MicrospheroXG

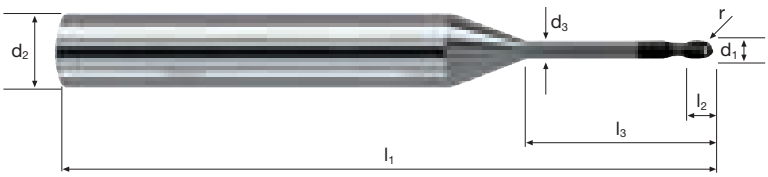
Shank Ø 6mm, cylindrical neck, 10xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r

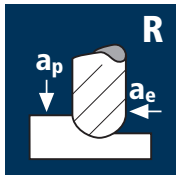
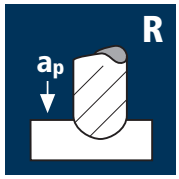


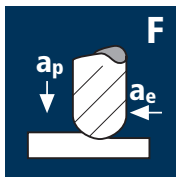
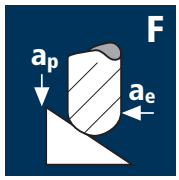
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **6068** ø-Code **.040**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DIAPLUS B6068 $
.040	0.4	6	0.35	57	0.4	4.0	0.20	8.3°	2	77.00
.050	0.5	6	0.45	57	0.5	5.0	0.25	10.3°	2	77.00
.060	0.6	6	0.55	57	0.6	6.0	0.30	9.7°	2	77.00
.080	0.8	6	0.75	57	0.8	8.0	0.40	8.5°	2	77.00
.100	1.0	6	0.95	57	1.0	10.0	0.50	7.6°	2	77.00
.120	1.5	6	1.40	61	1.5	15.0	0.75	5.7°	2	77.00
.140	2.0	6	1.90	66	2.0	20.0	1.00	4.3°	2	77.00
.180	3.0	6	2.80	75	3.0	30.0	1.50	2.5°	2	89.00
.220	4.0	6	3.70	80	4.0	40.0	2.00	1.4°	2	94.00
.260	5.0	6	4.60	100	5.0	50.0	2.50	0.6°	2	102.00
.300	6.0	6	5.50	100	6.0	60.0	3.00	0.0°	2	107.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.4	2	0.004	0.10	0.15	120	200	240	360
		0.5	2	0.005	0.15	0.20	150	250	300	450
		0.6	2	0.006	0.20	0.25	180	300	360	540
		0.8	2	0.008	0.25	0.30	240	400	480	720
		1.0	2	0.009	0.30	0.40	270	450	540	810
		1.5	2	0.014	0.45	0.60	420	700	840	1260
		2.0	2	0.019	0.60	0.80	570	950	1140	1710
	Graphite B	0.4	2	0.003	0.10	0.40	90	150	180	270
		0.5	2	0.004	0.10	0.50	120	200	240	360
		0.6	2	0.004	0.10	0.60	120	200	240	360
		0.8	2	0.006	0.15	0.80	180	300	360	540
		1.0	2	0.007	0.20	1.00	210	350	420	630
		1.5	2	0.011	0.30	1.50	330	550	660	990
		2.0	2	0.015	0.40	2.00	450	750	900	1350

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.4	2	0.004	0.04	0.06	120	200	240	360
		0.5	2	0.005	0.05	0.07	150	250	300	450
		0.6	2	0.006	0.06	0.08	180	300	360	540
		0.8	2	0.009	0.08	0.11	270	450	540	810
		1.0	2	0.011	0.10	0.14	330	550	660	990
		1.5	2	0.016	0.15	0.21	480	800	960	1440
		2.0	2	0.021	0.20	0.28	630	1050	1260	1890
	Graphite B	0.4	2	0.004	0.04	0.04	120	200	240	360
		0.5	2	0.005	0.05	0.05	150	250	300	450
		0.6	2	0.006	0.06	0.06	180	300	360	540
		0.8	2	0.009	0.08	0.08	270	450	540	810
		1.0	2	0.011	0.10	0.10	330	550	660	990
		1.5	2	0.016	0.15	0.15	480	800	960	1440
		2.0	2	0.021	0.20	0.20	630	1050	1260	1890

Ball nose end mills MicrospheroXG

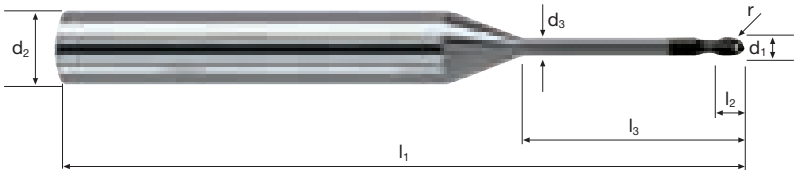
Shank Ø 6mm, cylindrical neck, 12xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r

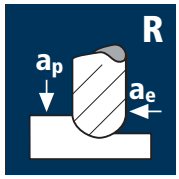
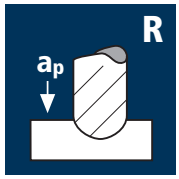


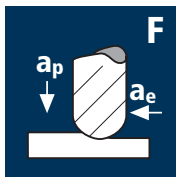
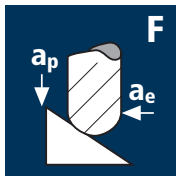
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **6070** ø-Code **.040**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DIAPLUS B6070 $
.040	0.4	6	0.35	57	0.4	4.8	0.20	8.0°	2	77.00
.050	0.5	6	0.45	57	0.5	6.0	0.25	9.9°	2	77.00
.060	0.6	6	0.55	57	0.6	7.2	0.30	9.2°	2	77.00
.080	0.8	6	0.75	57	0.8	9.6	0.40	8.0°	2	77.00
.100	1.0	6	0.95	61	1.0	12.0	0.50	7.0°	2	77.00
.120	1.5	6	1.40	66	1.5	18.0	0.75	5.1°	2	77.00
.140	2.0	6	1.90	69	2.0	24.0	1.00	3.9°	2	85.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.10	0.10	60	100	120	180
		0.3	2	0.003	0.15	0.20	90	150	180	270
		0.4	2	0.004	0.20	0.25	120	200	240	360
		0.5	2	0.005	0.25	0.30	150	250	300	450
		0.6	2	0.006	0.30	0.35	180	300	360	540
		0.8	2	0.008	0.40	0.50	240	400	480	720
		1.0	2	0.009	0.50	0.60	270	450	540	810
		1.2	2	0.011	0.60	0.70	330	550	660	990
		1.5	2	0.014	0.75	0.90	420	700	840	1260
	Graphite B	2.0	2	0.019	1.00	1.20	570	950	1140	1710
		2.5	2	0.024	1.25	1.50	720	1200	1440	2160
		3.0	2	0.028	1.50	1.80	840	1400	1680	2520
	Graphite B	0.2	2	0.001	0.10	0.20	30	50	60	90
		0.3	2	0.002	0.15	0.30	60	100	120	180
		0.4	2	0.003	0.20	0.40	90	150	180	270
		0.5	2	0.004	0.25	0.50	120	200	240	360
		0.6	2	0.004	0.30	0.60	120	200	240	360
		0.8	2	0.006	0.40	0.80	180	300	360	540
		1.0	2	0.007	0.50	1.00	210	350	420	630
		1.2	2	0.009	0.60	1.20	270	450	540	810
		1.5	2	0.011	0.75	1.50	330	550	660	990
	Graphite B	2.0	2	0.015	1.00	2.00	450	750	900	1350
		2.5	2	0.018	1.25	2.50	540	900	1080	1620
		3.0	2	0.022	1.50	3.00	660	1100	1320	1980

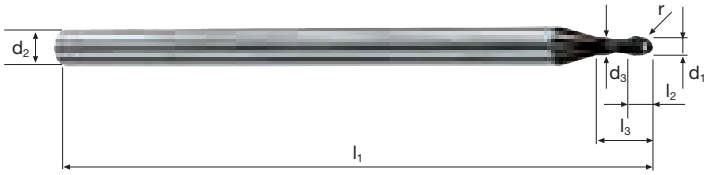
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.03	0.04	60	100	120	180
		0.3	2	0.003	0.05	0.06	90	150	180	270
		0.4	2	0.004	0.06	0.08	120	200	240	360
		0.5	2	0.005	0.08	0.10	150	250	300	450
		0.6	2	0.006	0.09	0.12	180	300	360	540
		0.8	2	0.009	0.12	0.16	270	450	540	810
		1.0	2	0.011	0.15	0.20	330	550	660	990
		1.2	2	0.013	0.18	0.24	390	650	780	1170
		1.5	2	0.016	0.23	0.30	480	800	960	1440
	Graphite B	2.0	2	0.021	0.30	0.40	630	1050	1260	1890
		2.5	2	0.027	0.38	0.50	810	1350	1620	2430
		3.0	2	0.032	0.45	0.60	960	1600	1920	2880
	Graphite B	0.2	2	0.002	0.04	0.04	60	100	120	180
		0.3	2	0.003	0.06	0.06	90	150	180	270
		0.4	2	0.004	0.08	0.08	120	200	240	360
		0.5	2	0.005	0.10	0.10	150	250	300	450
		0.6	2	0.006	0.12	0.12	180	300	360	540
		0.8	2	0.009	0.16	0.16	270	450	540	810
		1.0	2	0.011	0.20	0.20	330	550	660	990
		1.2	2	0.013	0.24	0.24	390	650	780	1170
		1.5	2	0.016	0.30	0.30	480	800	960	1440
	Graphite B	2.0	2	0.021	0.40	0.40	630	1050	1260	1890
		2.5	2	0.027	0.50	0.50	810	1350	1620	2430
		3.0	2	0.032	0.60	0.60	960	1600	1920	2880

Ball nose end mills Microcut-B3

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X **B** | X-Generation

HM Micro | λ **30°** γ **5°**

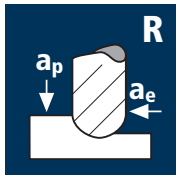
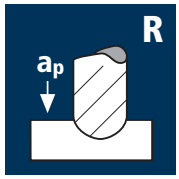


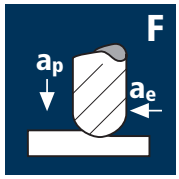
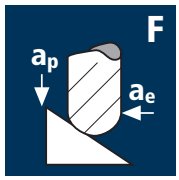
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5782** ø-Code **.020**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	DIAMANT B5782 $
.020	0.2	3	0.18	40	0.24	0.6	0.10	9.4°	2	70.00
.030	0.3	3	0.25	40	0.36	0.9	0.15	9.0°	2	64.00
.040	0.4	3	0.35	40	048	1.2	0.20	8.7°	2	61.00
.050	0.5	3	0.45	40	0.60	1.5	0.25	11.8°	2	61.00
.060	0.6	3	0.55	40	0.72	1.8	0.30	11.2°	2	58.30
.080	0.8	3	0.75	40	0.96	2.4	0.40	10.1°	2	58.30
.100	1.0	3	0.95	50	1.20	3.0	0.50	9.0°	2	58.30
.108	1.2	3	1.10	50	1.44	3.6	0.60	7.9°	2	58.30
.120	1.5	3	1.40	50	1.80	4.5	0.75	6.5°	2	58.30
.140	2.0	3	1.90	50	2.40	6.0	1.00	4.1°	2	58.30
.160	2.5	3	2.30	50	3.00	7.5	1.25	2.0°	2	58.30
.180	3.0	3	2.80	50	3.60	9.0	1.50	0.0°	2	58.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.5	2	0.005	0.25	0.30	150	250	300	450
		0.6	2	0.006	0.25	0.35	180	300	360	540
		0.7	2	0.007	0.30	0.40	210	350	420	630
		0.8	2	0.008	0.35	0.50	240	400	480	720
		0.9	2	0.008	0.40	0.55	240	400	480	720
		1.0	2	0.009	0.45	0.60	270	450	540	810
		1.2	2	0.011	0.55	0.70	330	550	660	990
		1.5	2	0.014	0.70	0.90	420	700	840	1260
		1.8	2	0.017	0.80	1.10	510	850	1020	1530
	Graphite B	2.0	2	0.019	0.90	1.20	570	950	1140	1710
		2.3	2	0.022	1.05	1.40	660	1100	1320	1980
		2.5	2	0.024	1.15	1.50	720	1200	1440	2160
		2.8	2	0.026	1.25	1.70	780	1300	1560	2340
		3.0	2	0.028	1.35	1.80	840	1400	1680	2520
	Graphite B	0.5	2	0.004	0.25	0.50	120	200	240	360
		0.6	2	0.004	0.25	0.60	120	200	240	360
		0.7	2	0.005	0.30	0.70	150	250	300	450
		0.8	2	0.006	0.35	0.80	180	300	360	540
		0.9	2	0.007	0.40	0.90	210	350	420	630
		1.0	2	0.007	0.45	1.00	210	350	420	630
		1.2	2	0.009	0.55	1.20	270	450	540	810
		1.5	2	0.011	0.70	1.50	330	550	660	990
		1.8	2	0.013	0.80	1.80	390	650	780	1170
	Graphite B	2.0	2	0.015	0.90	2.00	450	750	900	1350
		2.3	2	0.017	1.05	2.30	510	850	1020	1530
		2.5	2	0.018	1.15	2.50	540	900	1080	1620
		2.8	2	0.020	1.25	2.80	600	1000	1200	1800
		3.0	2	0.022	1.35	3.00	660	1100	1320	1980

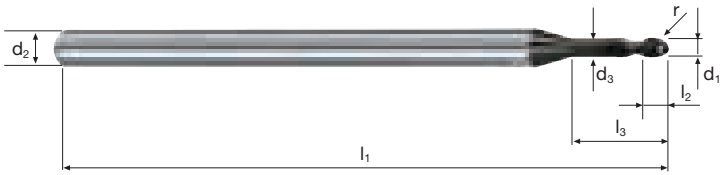
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.5	2	0.005	0.07	0.10	150	250	300	450
		0.6	2	0.006	0.08	0.12	180	300	360	540
		0.7	2	0.007	0.10	0.14	210	350	420	630
		0.8	2	0.009	0.11	0.16	270	450	540	810
		0.9	2	0.010	0.13	0.18	300	500	600	900
		1.0	2	0.011	0.14	0.20	330	550	660	990
		1.2	2	0.013	0.17	0.24	390	650	780	1170
		1.5	2	0.016	0.21	0.30	480	800	960	1440
		1.8	2	0.019	0.25	0.36	570	950	1140	1710
	Graphite B	2.0	2	0.021	0.28	0.40	630	1050	1260	1890
		2.3	2	0.025	0.32	0.46	750	1250	1500	2250
		2.5	2	0.027	0.35	0.50	810	1350	1620	2430
		2.8	2	0.030	0.39	0.56	900	1500	1800	2700
		3.0	2	0.032	0.42	0.60	960	1600	1920	2880
	Graphite B	0.5	2	0.005	0.09	0.09	150	250	300	450
		0.6	2	0.006	0.11	0.11	180	300	360	540
		0.7	2	0.007	0.13	0.13	210	350	420	630
		0.8	2	0.009	0.14	0.14	270	450	540	810
		0.9	2	0.010	0.16	0.16	300	500	600	900
		1.0	2	0.011	0.18	0.18	330	550	660	990
		1.2	2	0.013	0.22	0.22	390	650	780	1170
		1.5	2	0.016	0.27	0.27	480	800	960	1440
		1.8	2	0.019	0.32	0.32	570	950	1140	1710
	Graphite B	2.0	2	0.021	0.36	0.36	630	1050	1260	1890
		2.3	2	0.025	0.41	0.41	750	1250	1500	2250
		2.5	2	0.027	0.45	0.45	810	1350	1620	2430
		2.8	2	0.030	0.50	0.50	900	1500	1800	2700
		3.0	2	0.032	0.54	0.54	960	1600	1920	2880

Ball nose end mills Microcut-B5

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | **B** | X-Generation

HM Micro | λ **30°** γ **5°**

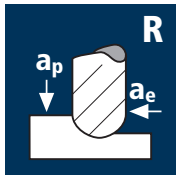
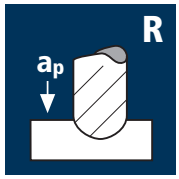


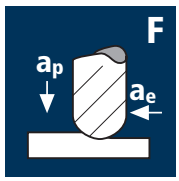
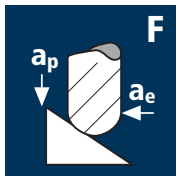
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5784** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	DIAMANT B5784 $
.050	0.5	3	0.45	40	0.60	2.5	0.25	10.1°	2	61.00
.060	0.6	3	0.55	40	0.72	3.0	0.30	9.4°	2	58.30
.070	0.7	3	0.65	40	0.84	3.5	0.35	8.7°	2	58.30
.080	0.8	3	0.75	40	0.96	4.0	0.40	8.1°	2	58.30
.090	0.9	3	0.85	40	1.08	4.5	0.45	7.4°	2	58.30
.100	1.0	3	0.95	50	1.20	5.0	0.50	6.9°	2	58.30
.108	1.2	3	1.10	50	1.44	6.0	0.60	5.8°	2	58.30
.120	1.5	3	1.40	50	1.80	7.5	0.75	4.5°	2	58.30
.132	1.8	3	1.70	50	2.16	9.0	0.90	3.3°	2	58.30
.140	2.0	3	1.90	50	2.40	10.0	1.00	2.7°	2	58.30
.152	2.3	3	2.20	50	2.76	11.5	1.15	1.8°	2	58.30
.160	2.5	3	2.30	50	3.00	12.5	1.25	1.2°	2	58.30
.172	2.8	3	2.60	50	3.36	14.0	1.40	0.5°	2	58.30
.180	3.0	3	2.80	50	3.60	15.0	1.50	0.0°	2	58.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.5	2	0.005	0.20	0.30	150	250	300	450
		0.6	2	0.006	0.25	0.35	180	300	360	540
		0.8	2	0.008	0.30	0.50	240	400	480	720
		1.0	2	0.009	0.40	0.60	270	450	540	810
		1.2	2	0.011	0.50	0.70	330	550	660	990
		1.5	2	0.014	0.60	0.90	420	700	840	1260
		2.0	2	0.019	0.80	1.20	570	950	1140	1710
		2.5	2	0.024	1.00	1.50	720	1200	1440	2160
		3.0	2	0.028	1.20	1.80	840	1400	1680	2520
	Graphite B	0.5	2	0.004	0.20	0.50	120	200	240	360
		0.6	2	0.004	0.25	0.60	120	200	240	360
		0.8	2	0.006	0.30	0.80	180	300	360	540
		1.0	2	0.007	0.40	1.00	210	350	420	630
		1.2	2	0.009	0.50	1.20	270	450	540	810
		1.5	2	0.011	0.60	1.50	330	550	660	990
		2.0	2	0.015	0.80	2.00	450	750	900	1350
		2.5	2	0.018	1.00	2.50	540	900	1080	1620
		3.0	2	0.022	1.20	3.00	660	1100	1320	1980

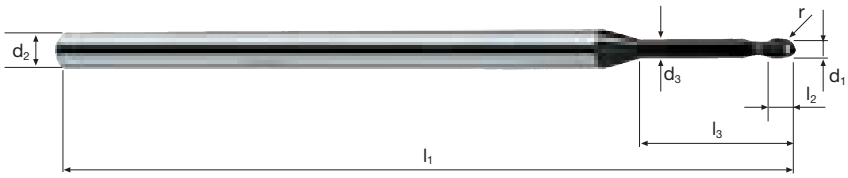
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.5	2	0.005	0.06	0.09	150	250	300	450
		0.6	2	0.006	0.07	0.11	180	300	360	540
		0.8	2	0.009	0.10	0.14	270	450	540	810
		1.0	2	0.011	0.12	0.18	330	550	660	990
		1.2	2	0.013	0.14	0.22	390	650	780	1170
		1.5	2	0.016	0.18	0.27	480	800	960	1440
		2.0	2	0.021	0.24	0.36	630	1050	1260	1890
		2.5	2	0.027	0.30	0.45	810	1350	1620	2430
		3.0	2	0.032	0.36	0.54	960	1600	1920	2880
	Graphite B	0.5	2	0.005	0.08	0.08	150	250	300	450
		0.6	2	0.006	0.10	0.10	180	300	360	540
		0.8	2	0.009	0.13	0.13	270	450	540	810
		1.0	2	0.011	0.16	0.16	330	550	660	990
		1.2	2	0.013	0.19	0.19	390	650	780	1170
		1.5	2	0.016	0.24	0.24	480	800	960	1440
		2.0	2	0.021	0.32	0.32	630	1050	1260	1890
		2.5	2	0.027	0.40	0.40	810	1350	1620	2430
		3.0	2	0.032	0.48	0.48	960	1600	1920	2880

Ball nose end mills Microcut-B8

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro	λ 30° γ 5°

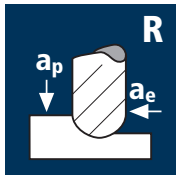
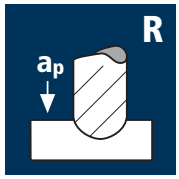


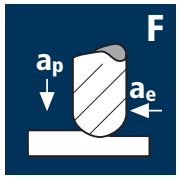
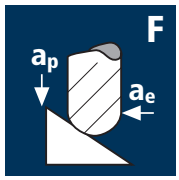
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5786** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	DIAMANT B5786 $
.050	0.5	3	0.45	40	0.60	4.0	0.25	8.4°	2	61.00
.060	0.6	3	0.55	40	0.72	4.8	0.30	7.6°	2	58.30
.080	0.8	3	0.75	40	0.96	6.4	0.40	6.2°	2	58.30
.100	1.0	3	0.95	50	1.20	8.0	0.50	5.1°	2	58.30
.108	1.2	3	1.10	50	1.44	9.6	0.60	4.2°	2	58.30
.120	1.5	3	1.40	60	1.80	12.0	0.75	3.1°	2	58.30
.140	2.0	3	1.90	60	2.40	16.0	1.00	1.7°	2	58.30
.160	2.5	3	2.30	60	3.00	20.0	1.25	0.8°	2	58.30
.180	3.0	3	2.80	60	3.60	24.0	1.50	0.0°	2	58.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.5	2	0.005	0.20	0.20	150	250	300	450
		0.6	2	0.006	0.25	0.25	180	300	360	540
		0.8	2	0.008	0.30	0.30	240	400	480	720
		1.0	2	0.009	0.40	0.40	270	450	540	810
		1.2	2	0.011	0.50	0.50	330	550	660	990
		1.5	2	0.014	0.60	0.60	420	700	840	1260
		2.0	2	0.019	0.80	0.80	570	950	1140	1710
		2.5	2	0.024	1.00	1.00	720	1200	1440	2160
		3.0	2	0.028	1.20	1.20	840	1400	1680	2520
	Graphite B	0.5	2	0.003	0.15	0.50	90	150	180	270
		0.6	2	0.003	0.20	0.60	90	150	180	270
		0.8	2	0.004	0.25	0.80	120	200	240	360
		1.0	2	0.005	0.30	1.00	150	250	300	450
		1.2	2	0.007	0.35	1.20	210	350	420	630
		1.5	2	0.008	0.45	1.50	240	400	480	720
		2.0	2	0.011	0.60	2.00	330	550	660	990
		2.5	2	0.014	0.75	2.50	420	700	840	1260
		3.0	2	0.016	0.90	3.00	480	800	960	1440

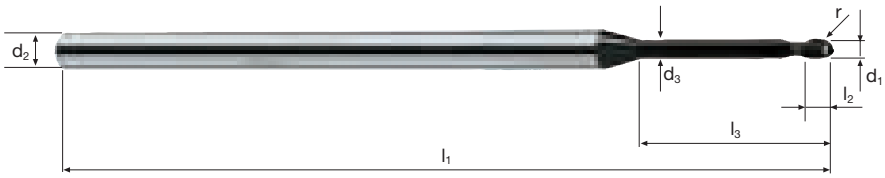
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.5	2	0.005	0.05	0.08	150	250	300	450
		0.6	2	0.006	0.06	0.10	180	300	360	540
		0.8	2	0.009	0.08	0.13	270	450	540	810
		1.0	2	0.011	0.10	0.16	330	550	660	990
		1.2	2	0.013	0.12	0.19	390	650	780	1170
		1.5	2	0.016	0.15	0.24	480	800	960	1440
		2.0	2	0.021	0.20	0.32	630	1050	1260	1890
		2.5	2	0.027	0.25	0.40	810	1350	1620	2430
		3.0	2	0.032	0.30	0.48	960	1600	1920	2880
	Graphite B	0.5	2	0.005	0.07	0.07	150	250	300	450
		0.6	2	0.006	0.08	0.08	180	300	360	540
		0.8	2	0.009	0.11	0.11	270	450	540	810
		1.0	2	0.011	0.14	0.14	330	550	660	990
		1.2	2	0.013	0.17	0.17	390	650	780	1170
		1.5	2	0.016	0.21	0.21	480	800	960	1440
		2.0	2	0.021	0.28	0.28	630	1050	1260	1890
		2.5	2	0.027	0.35	0.35	810	1350	1620	2430
		3.0	2	0.032	0.42	0.42	960	1600	1920	2880

Ball nose end mills Microcut-B10

Shank Ø 3mm, cylindrical neck, 10xd

HSS | Favora® | Base-X | **B** | X-Generation

HM Micro | λ **30°** γ **5°**

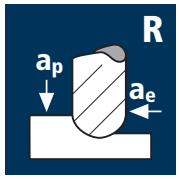
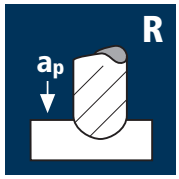


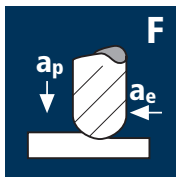
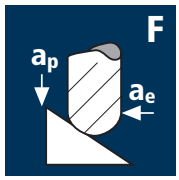
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5787** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	DIAMANT B5787 $
.050	0.5	3	0.45	40	0.60	5.0	0.25	7.5°	2	61.00
.060	0.6	3	0.55	40	0.72	6.0	0.30	6.7°	2	58.30
.080	0.8	3	0.75	40	0.96	8.0	0.40	5.4°	2	58.30
.100	1.0	3	0.95	50	1.20	10.0	0.50	4.3°	2	58.30
.108	1.2	3	1.10	50	1.44	12.0	0.60	3.5°	2	58.30
.120	1.5	3	1.40	60	1.80	15.0	0.75	2.6°	2	58.30
.140	2.0	3	1.90	60	2.40	20.0	1.00	1.4°	2	58.30
.160	2.5	3	2.30	60	3.00	25.0	1.25	0.6°	2	58.30
.180	3.0	3	2.80	60	3.60	30.0	1.50	0.0°	2	58.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.0	2	0.007	0.30	0.40	210	350	420	630
		1.2	2	0.008	0.35	0.50	240	400	480	720
		1.5	2	0.011	0.45	0.60	330	550	660	990
		2.0	2	0.014	0.60	0.80	420	700	840	1260
		2.5	2	0.018	0.75	1.00	540	900	1080	1620
		3.0	2	0.021	0.90	1.20	630	1050	1260	1890
	Graphite B	1.0	2	0.005	0.20	1.00	150	250	300	450
		1.2	2	0.007	0.25	1.20	210	350	420	630
		1.5	2	0.008	0.30	1.50	240	400	480	720
		2.0	2	0.011	0.40	2.00	330	550	660	990
		2.5	2	0.014	0.50	2.50	420	700	840	1260
		3.0	2	0.016	0.60	3.00	480	800	960	1440

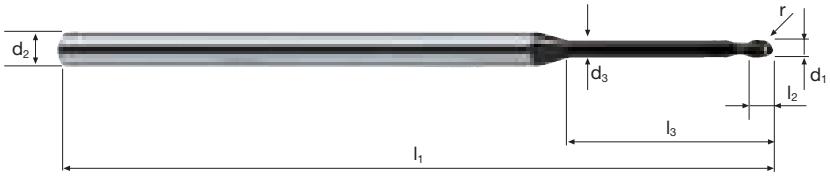
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.0	2	0.008	0.10	0.14	240	400	480	720
		1.2	2	0.010	0.12	0.17	300	500	600	900
		1.5	2	0.012	0.15	0.21	360	600	720	1080
		2.0	2	0.016	0.20	0.28	480	800	960	1440
		2.5	2	0.020	0.25	0.35	600	1000	1200	1800
		3.0	2	0.024	0.30	0.42	720	1200	1440	2160
	Graphite B	1.0	2	0.008	0.10	0.10	240	400	480	720
		1.2	2	0.010	0.12	0.12	300	500	600	900
		1.5	2	0.012	0.15	0.15	360	600	720	1080
		2.0	2	0.016	0.20	0.20	480	800	960	1440
		2.5	2	0.020	0.25	0.25	600	1000	1200	1800
		3.0	2	0.024	0.30	0.30	720	1200	1440	2160

Ball nose end mills Microcut-B12

Shank Ø 3mm, cylindrical neck, 12xd

HSS | Favora® | Base-X | **B** | X-Generation

HM Micro | λ **30°** γ **5°**

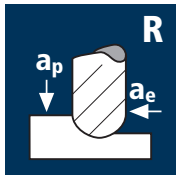
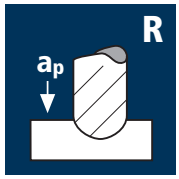


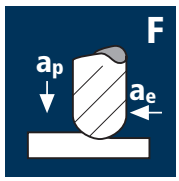
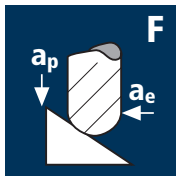
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5791** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	DIAMANT B5791 $
.100	1.0	3	0.95	50	1.20	12.0	0.50	3.8°	2	60.00
.108	1.2	3	1.10	60	1.44	14.4	0.60	3.0°	2	60.00
.120	1.5	3	1.40	60	1.80	18.0	0.75	2.2°	2	60.00
.140	2.0	3	1.90	60	2.40	24.0	1.00	1.2°	2	60.00
.160	2.5	3	2.30	70	3.00	30.0	1.25	0.5°	2	60.00
.180	3.0	3	2.80	70	3.60	36.0	1.50	0.0°	2	60.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	1.0	2	0.007	0.20	0.30	210	350	420	630
		1.2	2	0.008	0.25	0.35	240	400	480	720
		1.5	2	0.011	0.30	0.45	330	550	660	990
		2.0	2	0.014	0.40	0.60	420	700	840	1260
		2.5	2	0.018	0.50	0.75	540	900	1080	1620
		3.0	2	0.021	0.60	0.90	630	1050	1260	1890
	Graphite B	1.0	2	0.005	0.10	1.00	150	250	300	450
		1.2	2	0.007	0.10	1.20	210	350	420	630
		1.5	2	0.008	0.15	1.50	240	400	480	720
		2.0	2	0.011	0.20	2.00	330	550	660	990
		2.5	2	0.014	0.25	2.50	420	700	840	1260
		3.0	2	0.016	0.30	3.00	480	800	960	1440

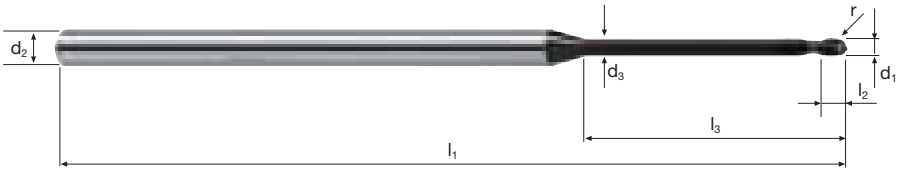
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	1.0	2	0.008	0.08	0.10	240	400	480	720
		1.2	2	0.010	0.10	0.12	300	500	600	900
		1.5	2	0.012	0.12	0.15	360	600	720	1080
		2.0	2	0.016	0.16	0.20	480	800	960	1440
		2.5	2	0.020	0.20	0.25	600	1000	1200	1800
		3.0	2	0.024	0.24	0.30	720	1200	1440	2160
	Graphite B	1.0	2	0.008	0.08	0.08	240	400	480	720
		1.2	2	0.010	0.10	0.10	300	500	600	900
		1.5	2	0.012	0.12	0.12	360	600	720	1080
		2.0	2	0.016	0.16	0.16	480	800	960	1440
		2.5	2	0.020	0.20	0.20	600	1000	1200	1800
		3.0	2	0.024	0.24	0.24	720	1200	1440	2160

Ball nose end mills Microcut-B15

Shank Ø 3mm, cylindrical neck, 15xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro | λ 30° γ 5°

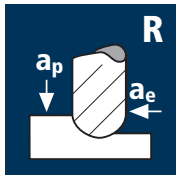


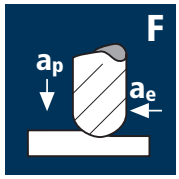
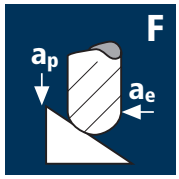
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5793** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	DIAMANT B5793 $
.100	1.0	3	0.95	60	1.20	15.0	0.50	3.2°	2	62.00
.108	1.2	3	1.10	60	1.44	18.0	0.60	2.5°	2	62.00
.120	1.5	3	1.40	70	1.80	22.5	0.75	1.8°	2	62.00
.140	2.0	3	1.90	70	2.40	30.0	1.00	1.0°	2	62.00
.160	2.5	3	2.30	70	3.00	37.5	1.25	0.4°	2	62.00
.180	3.0	3	2.80	80	3.60	45.0	1.50	0.0°	2	62.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	1.0	2	0.007	0.15	0.20	210	350	420	630
		1.2	2	0.008	0.20	0.25	240	400	480	720
		1.5	2	0.011	0.25	0.30	330	550	660	990
		2.0	2	0.014	0.30	0.40	420	700	840	1260
		2.5	2	0.018	0.40	0.50	540	900	1080	1620
		3.0	2	0.021	0.45	0.60	630	1050	1260	1890

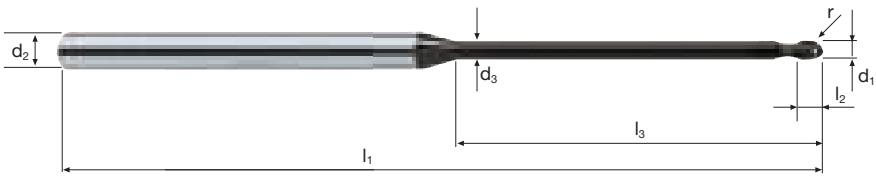
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	1.0	2	0.008	0.06	0.08	240	400	480	720
		1.2	2	0.010	0.07	0.10	300	500	600	900
		1.5	2	0.012	0.09	0.12	360	600	720	1080
		2.0	2	0.016	0.12	0.16	480	800	960	1440
		2.5	2	0.020	0.15	0.20	600	1000	1200	1800
		3.0	2	0.024	0.18	0.24	720	1200	1440	2160
	Graphite B	1.0	2	0.008	0.06	0.06	240	400	480	720
		1.2	2	0.010	0.07	0.07	300	500	600	900
		1.5	2	0.012	0.09	0.09	360	600	720	1080
		2.0	2	0.016	0.12	0.12	480	800	960	1440
		2.5	2	0.020	0.15	0.15	600	1000	1200	1800
		3.0	2	0.024	0.18	0.18	720	1200	1440	2160

Ball nose end mills Microcut-B20

Shank Ø 3mm, cylindrical neck, 20xd

HSS | Favora® | Base-X | **B** | X-Generation

HM Micro | λ **30°** γ **5°**

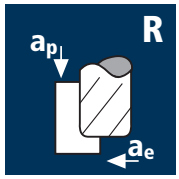
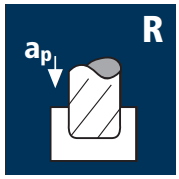


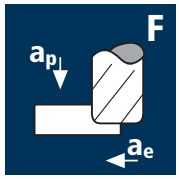
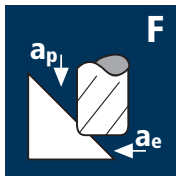
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **15795** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r ±0.01	α	z	DIAMANT B15795 $
.100	1.0	3	0.95	60	1.20	20.0	0.50	2.5°	2	65.00
.108	1.2	3	1.10	60	1.44	24.0	0.60	2.0°	2	65.00
.120	1.5	3	1.40	70	1.80	30.0	0.75	1.4°	2	65.00
.140	2.0	3	1.90	80	2.40	40.0	1.00	0.8°	2	65.00
.160	2.5	3	2.30	80	3.00	50.0	1.25	0.3°	2	65.00
.180	3.0	3	2.80	90	3.60	60.0	1.50	0.0°	2	65.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.10	0.10	60	100	120	180
		0.3	2	0.004	0.15	0.20	120	200	240	360
		0.4	2	0.005	0.20	0.25	150	250	300	450
		0.5	2	0.006	0.25	0.30	180	300	360	540
		0.6	2	0.007	0.25	0.35	210	350	420	630
		0.8	2	0.009	0.35	0.50	270	450	540	810
		1.0	2	0.012	0.45	0.60	360	600	720	1080
		1.5	2	0.018	0.70	0.90	540	900	1080	1620
		2.0	2	0.024	0.90	1.20	720	1200	1440	2160
	Graphite B	3.0	2	0.035	1.35	1.80	1050	1750	2100	3150
		4.0	2	0.047	1.80	2.40	1410	2350	2820	4230
		5.0	2	0.059	2.25	3.00	1770	2950	3540	5310
		6.0	2	0.071	2.70	3.60	2130	3550	4260	6390
	Graphite B	0.2	2	0.002	0.10	0.20	60	100	120	180
		0.3	2	0.003	0.15	0.30	90	150	180	270
		0.4	2	0.004	0.20	0.40	120	200	240	360
		0.5	2	0.005	0.25	0.50	150	250	300	450
		0.6	2	0.005	0.25	0.60	150	250	300	450
		0.8	2	0.007	0.35	0.80	210	350	420	630
		1.0	2	0.009	0.45	1.00	270	450	540	810
		1.5	2	0.014	0.70	1.50	420	700	840	1260
		2.0	2	0.018	0.90	2.00	540	900	1080	1620
	Graphite B	3.0	2	0.027	1.35	3.00	810	1350	1620	2430
		4.0	2	0.036	1.80	4.00	1080	1800	2160	3240
		5.0	2	0.045	2.25	5.00	1350	2250	2700	4050
		6.0	2	0.055	2.70	6.00	1650	2750	3300	4950

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.003	0.03	0.04	90	150	180	270
		0.3	2	0.004	0.04	0.06	120	200	240	360
		0.4	2	0.005	0.06	0.08	150	250	300	450
		0.5	2	0.007	0.07	0.10	210	350	420	630
		0.6	2	0.008	0.08	0.12	240	400	480	720
		0.8	2	0.011	0.11	0.16	330	550	660	990
		1.0	2	0.013	0.14	0.20	390	650	780	1170
		1.5	2	0.020	0.21	0.30	600	1000	1200	1800
		2.0	2	0.027	0.28	0.40	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.42	0.60	1200	2000	2400	3600
		4.0	2	0.053	0.56	0.80	1590	2650	3180	4770
		5.0	2	0.067	0.70	1.00	2010	3350	4020	6030
		6.0	2	0.080	0.84	1.20	2400	4000	4800	7200
	Graphite B	0.2	2	0.003	0.04	0.04	90	150	180	270
		0.3	2	0.004	0.05	0.05	120	200	240	360
		0.4	2	0.005	0.07	0.07	150	250	300	450
		0.5	2	0.007	0.09	0.09	210	350	420	630
		0.6	2	0.008	0.11	0.11	240	400	480	720
		0.8	2	0.011	0.14	0.14	330	550	660	990
		1.0	2	0.013	0.18	0.18	390	650	780	1170
		1.5	2	0.020	0.27	0.27	600	1000	1200	1800
		2.0	2	0.027	0.36	0.36	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.54	0.54	1200	2000	2400	3600
		4.0	2	0.053	0.72	0.72	1590	2650	3180	4770
		5.0	2	0.067	0.90	0.90	2010	3350	4020	6030
		6.0	2	0.080	1.08	1.08	2400	4000	4800	7200

Corner radius end mills MicrotoroXG

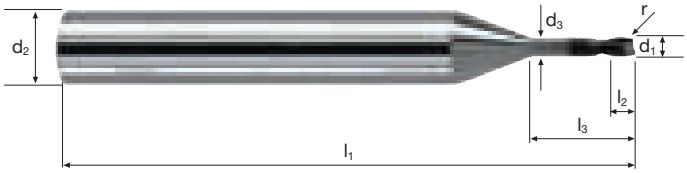
Shank Ø 6mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r

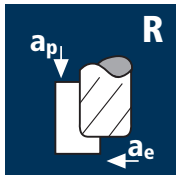
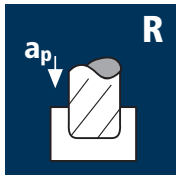


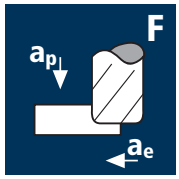
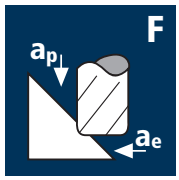
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **6034** ø-Code **.020**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DIAPLUS B6034 $
.020	0.2	6	0.18	57	0.2	1.0	-	9.5°	2	81.00
.030	0.3	6	0.25	57	0.3	1.5	-	9.2°	2	74.00
.040	0.4	6	0.35	57	0.4	2.0	0.05	9.0°	2	74.00
.048	0.5	6	0.45	57	0.5	2.5	0.05	12.2°	2	74.00
.050	0.5	6	0.45	57	0.5	2.5	0.10	12.2°	2	74.00
.060	0.6	6	0.55	57	0.6	3.0	0.10	11.7°	2	74.00
.080	0.8	6	0.75	57	0.8	4.0	0.10	10.8°	2	74.00
.098	1.0	6	0.95	57	1.0	5.0	0.10	9.9°	2	74.00
.100	1.0	6	0.95	57	1.0	5.0	0.20	9.9°	2	74.00
.120	1.5	6	1.40	57	1.5	7.5	0.20	8.1°	2	74.00
.140	2.0	6	1.90	57	2.0	10.0	0.20	6.6°	2	74.00
.180	3.0	6	2.80	57	3.0	15.0	0.20	4.2°	2	74.00
.182	3.0	6	2.80	61	3.0	18.0	0.20	3.7°	2	74.00
.215	4.0	6	3.70	61	4.0	20.0	0.20	2.5°	2	79.00
.217	4.0	6	3.70	66	4.0	25.0	0.20	2.0°	2	86.00
.220	4.0	6	3.70	61	4.0	20.0	0.50	2.6°	2	79.00
.222	4.0	6	3.70	66	4.0	25.0	0.50	2.1°	2	86.00
.255	5.0	6	4.60	66	5.0	25.0	0.20	1.1°	2	91.00
.260	5.0	6	4.60	66	5.0	25.0	0.50	1.1°	2	91.00
.295	6.0	6	5.50	69	6.0	30.0	0.20	0.0°	2	96.00
.300	6.0	6	5.50	69	6.0	30.0	0.50	0.0°	2	96.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.10	0.10	60	100	120	180
		0.3	2	0.004	0.10	0.20	120	200	240	360
		0.4	2	0.005	0.15	0.25	150	250	300	450
		0.5	2	0.006	0.20	0.30	180	300	360	540
		0.6	2	0.007	0.25	0.35	210	350	420	630
		0.8	2	0.009	0.30	0.50	270	450	540	810
		1.0	2	0.012	0.40	0.60	360	600	720	1080
		1.5	2	0.018	0.60	0.90	540	900	1080	1620
		2.0	2	0.024	0.80	1.20	720	1200	1440	2160
	Graphite B	3.0	2	0.035	1.20	1.80	1050	1750	2100	3150
		4.0	2	0.047	1.60	2.40	1410	2350	2820	4230
		5.0	2	0.059	2.00	3.00	1770	2950	3540	5310
		6.0	2	0.071	2.40	3.60	2130	3550	4260	6390
	Graphite B	0.2	2	0.002	0.10	0.20	60	100	120	180
		0.3	2	0.003	0.10	0.30	90	150	180	270
		0.4	2	0.004	0.15	0.40	120	200	240	360
		0.5	2	0.005	0.20	0.50	150	250	300	450
		0.6	2	0.005	0.25	0.60	150	250	300	450
		0.8	2	0.007	0.30	0.80	210	350	420	630
		1.0	2	0.009	0.40	1.00	270	450	540	810
		1.5	2	0.014	0.60	1.50	420	700	840	1260
		2.0	2	0.018	0.80	2.00	540	900	1080	1620
	Graphite B	3.0	2	0.027	1.20	3.00	810	1350	1620	2430
		4.0	2	0.036	1.60	4.00	1080	1800	2160	3240
		5.0	2	0.045	2.00	5.00	1350	2250	2700	4050
		6.0	2	0.055	2.40	6.00	1650	2750	3300	4950

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.003	0.02	0.04	90	150	180	270
		0.3	2	0.004	0.04	0.05	120	200	240	360
		0.4	2	0.005	0.05	0.07	150	250	300	450
		0.5	2	0.007	0.06	0.09	210	350	420	630
		0.6	2	0.008	0.07	0.11	240	400	480	720
		0.8	2	0.011	0.10	0.14	330	550	660	990
		1.0	2	0.013	0.12	0.18	390	650	780	1170
		1.5	2	0.020	0.18	0.27	600	1000	1200	1800
		2.0	2	0.027	0.24	0.36	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.36	0.54	1200	2000	2400	3600
		4.0	2	0.053	0.48	0.72	1590	2650	3180	4770
		5.0	2	0.067	0.60	0.90	2010	3350	4020	6030
		6.0	2	0.080	0.72	1.08	2400	4000	4800	7200
	Graphite B	0.2	2	0.003	0.03	0.03	90	150	180	270
		0.3	2	0.004	0.05	0.05	120	200	240	360
		0.4	2	0.005	0.06	0.06	150	250	300	450
		0.5	2	0.007	0.08	0.08	210	350	420	630
		0.6	2	0.008	0.10	0.10	240	400	480	720
		0.8	2	0.011	0.13	0.13	330	550	660	990
		1.0	2	0.013	0.16	0.16	390	650	780	1170
		1.5	2	0.020	0.24	0.24	600	1000	1200	1800
		2.0	2	0.027	0.32	0.32	810	1350	1620	2430
	Graphite B	3.0	2	0.040	0.48	0.48	1200	2000	2400	3600
		4.0	2	0.053	0.64	0.64	1590	2650	3180	4770
		5.0	2	0.067	0.80	0.80	2010	3350	4020	6030
		6.0	2	0.080	0.96	0.96	2400	4000	4800	7200

Corner radius end mills MicrotoroXG

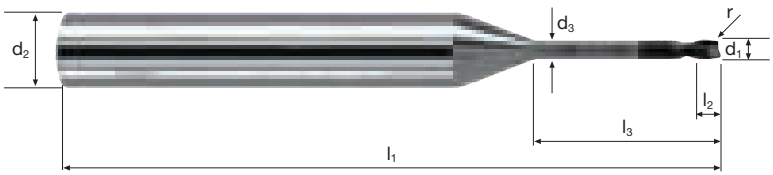
Shank Ø 6mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r

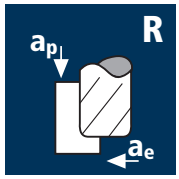
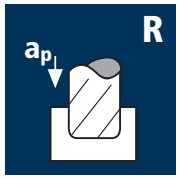


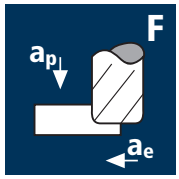
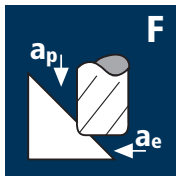
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **6036** ø-Code **.020**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DIAPLUS B6036 $
.020	0.2	6	0.18	57	0.2	1.6	-	9.2°	2	81.00
.030	0.3	6	0.25	57	0.3	2.4	-	8.8°	2	74.00
.040	0.4	6	0.35	57	0.4	3.2	0.05	8.4°	2	74.00
.048	0.5	6	0.45	57	0.5	4.0	0.05	11.0°	2	74.00
.050	0.5	6	0.45	57	0.5	4.0	0.10	11.0°	2	74.00
.060	0.6	6	0.55	57	0.6	4.8	0.10	10.3°	2	74.00
.080	0.8	6	0.75	57	0.8	6.4	0.10	9.2°	2	74.00
.098	1.0	6	0.95	57	1.0	8.0	0.10	8.3°	2	74.00
.100	1.0	6	0.95	57	1.0	8.0	0.20	8.3°	2	74.00
.120	1.5	6	1.40	57	1.5	12.0	0.20	6.4°	2	74.00
.140	2.0	6	1.90	61	2.0	16.0	0.20	4.9°	2	74.00
.180	3.0	6	2.80	66	3.0	24.0	0.20	2.9°	2	81.00
.215	4.0	6	3.70	75	4.0	32.0	0.20	1.7°	2	90.00
.220	4.0	6	3.70	75	4.0	32.0	0.50	1.7°	2	90.00
.255	5.0	6	4.60	80	5.0	40.0	0.20	0.7°	2	95.00
.260	5.0	6	4.60	80	5.0	40.0	0.50	0.7°	2	95.00
.295	6.0	6	5.50	87	6.0	48.0	0.20	0.0°	2	104.00
.300	6.0	6	5.50	87	6.0	48.0	0.50	0.0°	2	104.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.4	2	0.005	0.15	0.15	150	250	300	450
		0.5	2	0.006	0.20	0.20	180	300	360	540
		0.6	2	0.007	0.25	0.25	210	350	420	630
		0.8	2	0.009	0.30	0.30	270	450	540	810
		1.0	2	0.012	0.40	0.40	360	600	720	1080
		1.5	2	0.018	0.60	0.60	540	900	1080	1620
		2.0	2	0.024	0.80	0.80	720	1200	1440	2160
		3.0	2	0.035	1.20	1.20	1050	1750	2100	3150
		4.0	2	0.047	1.60	1.60	1410	2350	2820	4230
	Graphite B	5.0	2	0.059	2.00	2.00	1770	2950	3540	5310
		6.0	2	0.071	2.40	2.40	2130	3550	4260	6390
	Graphite B	0.4	2	0.004	0.10	0.40	120	200	240	360
		0.5	2	0.005	0.15	0.50	150	250	300	450
		0.6	2	0.005	0.20	0.60	150	250	300	450
		0.8	2	0.007	0.25	0.80	210	350	420	630
		1.0	2	0.009	0.30	1.00	270	450	540	810
		1.5	2	0.014	0.45	1.50	420	700	840	1260
		2.0	2	0.018	0.60	2.00	540	900	1080	1620
		3.0	2	0.027	0.90	3.00	810	1350	1620	2430
		4.0	2	0.036	1.20	4.00	1080	1800	2160	3240
	Graphite B	5.0	2	0.045	1.50	5.00	1350	2250	2700	4050
		6.0	2	0.055	1.80	6.00	1650	2750	3300	4950

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.4	2	0.005	0.04	0.06	150	250	300	450
		0.5	2	0.007	0.05	0.08	210	350	420	630
		0.6	2	0.008	0.06	0.10	240	400	480	720
		0.8	2	0.011	0.08	0.13	330	550	660	990
		1.0	2	0.013	0.10	0.16	390	650	780	1170
		1.5	2	0.020	0.15	0.24	600	1000	1200	1800
		2.0	2	0.027	0.20	0.32	810	1350	1620	2430
		3.0	2	0.040	0.30	0.48	1200	2000	2400	3600
		4.0	2	0.053	0.40	0.64	1590	2650	3180	4770
	Graphite B	5.0	2	0.067	0.50	0.80	2010	3350	4020	6030
		6.0	2	0.080	0.60	0.96	2400	4000	4800	7200
	Graphite B	0.4	2	0.005	0.06	0.06	150	250	300	450
		0.5	2	0.007	0.07	0.07	210	350	420	630
		0.6	2	0.008	0.08	0.08	240	400	480	720
		0.8	2	0.011	0.11	0.11	330	550	660	990
		1.0	2	0.013	0.14	0.14	390	650	780	1170
		1.5	2	0.020	0.21	0.21	600	1000	1200	1800
		2.0	2	0.027	0.28	0.28	810	1350	1620	2430
		3.0	2	0.040	0.42	0.42	1200	2000	2400	3600
		4.0	2	0.053	0.56	0.56	1590	2650	3180	4770
	Graphite B	5.0	2	0.067	0.70	0.70	2010	3350	4020	6030
		6.0	2	0.080	0.84	0.84	2400	4000	4800	7200

Corner radius end mills MicrotoroXG

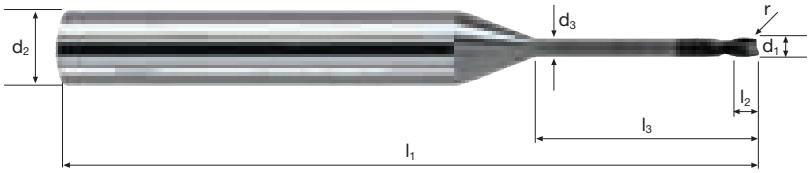
Shank Ø 6mm, cylindrical neck, 10xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r

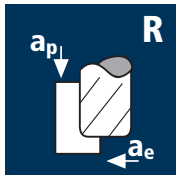
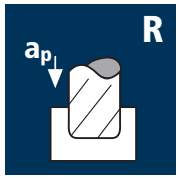


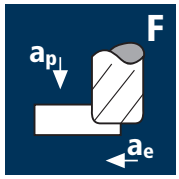
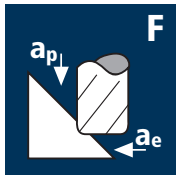
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **6038** ø-Code **.040**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	α	z	DIAPLUS B6038 $
.040	0.4	6	0.35	57	0.4	4.0	0.05	8.1°	2	74.00
.048	0.5	6	0.45	57	0.5	5.0	0.05	10.3°	2	74.00
.050	0.5	6	0.45	57	0.5	5.0	0.10	10.4°	2	74.00
.060	0.6	6	0.55	57	0.6	6.0	0.10	9.6°	2	74.00
.080	0.8	6	0.75	57	0.8	8.0	0.10	8.4°	2	74.00
.098	1.0	6	0.95	57	1.0	10.0	0.10	7.4°	2	74.00
.100	1.0	6	0.95	57	1.0	10.0	0.20	7.4°	2	74.00
.120	1.5	6	1.40	61	1.5	15.0	0.20	5.5°	2	74.00
.140	2.0	6	1.90	66	2.0	20.0	0.20	4.2°	2	74.00
.180	3.0	6	2.80	75	3.0	30.0	0.20	2.5°	2	86.00
.215	4.0	6	3.70	80	4.0	40.0	0.20	1.4°	2	90.00
.220	4.0	6	3.70	80	4.0	40.0	0.50	1.4°	2	90.00
.255	5.0	6	4.60	100	5.0	50.0	0.20	0.6°	2	99.00
.260	5.0	6	4.60	100	5.0	50.0	0.50	0.6°	2	99.00
.295	6.0	6	5.50	100	6.0	60.0	0.20	0.0°	2	104.00
.300	6.0	6	5.50	100	6.0	60.0	0.50	0.0°	2	104.00

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.0	2	0.009	0.45	0.60	270	450	540	810
		1.2	2	0.011	0.55	0.70	330	550	660	990
		1.5	2	0.014	0.70	0.90	420	700	840	1260
		2.0	2	0.019	0.90	1.20	570	950	1140	1710
		2.5	2	0.024	1.15	1.50	720	1200	1440	2160
		3.0	2	0.028	1.35	1.80	840	1400	1680	2520
	Graphite B	1.0	2	0.007	0.45	1.00	210	350	420	630
		1.2	2	0.009	0.55	1.20	270	450	540	810
		1.5	2	0.011	0.70	1.50	330	550	660	990
		2.0	2	0.015	0.90	2.00	450	750	900	1350
		2.5	2	0.018	1.15	2.50	540	900	1080	1620
		3.0	2	0.022	1.35	3.00	660	1100	1320	1980

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	1.0	2	0.011	0.14	0.20	330	550	660	990
		1.2	2	0.013	0.17	0.24	390	650	780	1170
		1.5	2	0.016	0.21	0.30	480	800	960	1440
		2.0	2	0.021	0.28	0.40	630	1050	1260	1890
		2.5	2	0.027	0.35	0.50	810	1350	1620	2430
		3.0	2	0.032	0.42	0.60	960	1600	1920	2880
	Graphite B	1.0	2	0.011	0.18	0.18	330	550	660	990
		1.2	2	0.013	0.22	0.22	390	650	780	1170
		1.5	2	0.016	0.27	0.27	480	800	960	1440
		2.0	2	0.021	0.36	0.36	630	1050	1260	1890
		2.5	2	0.027	0.45	0.45	810	1350	1620	2430
		3.0	2	0.032	0.54	0.54	960	1600	1920	2880

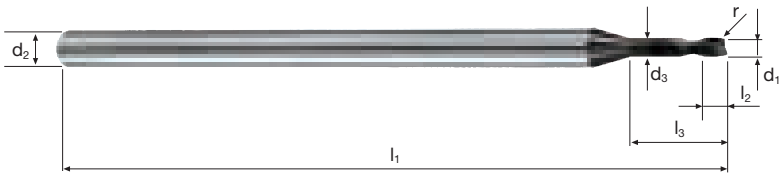
Corner radius end mills Microcut-T5

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X | B | X-Generation

HM Micro

λ 25°
γ 6°



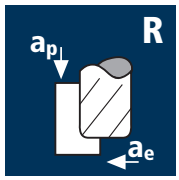
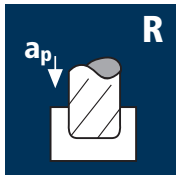
C Graphite

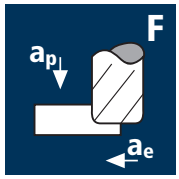
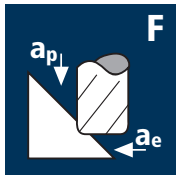
CF/GF Fiber Reinforced Plastics

Example:
Order-N°. Coating **B** Article-N°. **5754** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	DIAMANT B5754 $
.100	1.0	3	0.95	50	1.20	5.0	0.20	6.6°	2	54.80
.108	1.2	3	1.10	50	1.44	6.0	0.20	5.5°	2	54.80
.120	1.5	3	1.40	50	1.80	7.5	0.20	4.2°	2	54.80
.140	2.0	3	1.90	50	2.40	10.0	0.20	2.5°	2	54.80
.160	2.5	3	2.30	50	3.00	12.5	0.20	1.1°	2	54.80
.180	3.0	3	2.80	50	3.60	15.0	0.20	0.0°	2	54.80

IX

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	1.0	2	0.009	0.40	0.60	270	450	540	810
		1.2	2	0.011	0.50	0.70	330	550	660	990
		1.5	2	0.014	0.60	0.90	420	700	840	1260
		2.0	2	0.019	0.80	1.20	570	950	1140	1710
		2.5	2	0.024	1.00	1.50	720	1200	1440	2160
		3.0	2	0.028	1.20	1.80	840	1400	1680	2520
	Graphite B	1.0	2	0.007	0.40	1.00	210	350	420	630
		1.2	2	0.009	0.50	1.20	270	450	540	810
		1.5	2	0.011	0.60	1.50	330	550	660	990
		2.0	2	0.015	0.80	2.00	450	750	900	1350
		2.5	2	0.018	1.00	2.50	540	900	1080	1620
		3.0	2	0.022	1.20	3.00	660	1100	1320	1980

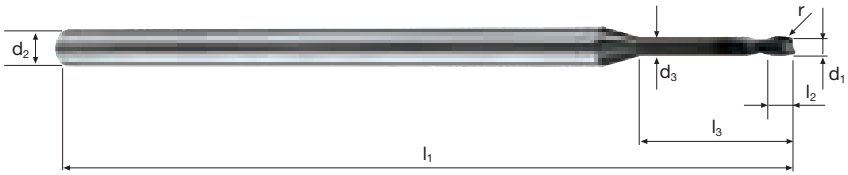
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	1.0	2	0.011	0.12	0.18	330	550	660	990
		1.2	2	0.013	0.14	0.22	390	650	780	1170
		1.5	2	0.016	0.18	0.27	480	800	960	1440
		2.0	2	0.021	0.24	0.36	630	1050	1260	1890
		2.5	2	0.027	0.30	0.45	810	1350	1620	2430
		3.0	2	0.032	0.36	0.54	960	1600	1920	2880
	Graphite B	1.0	2	0.011	0.16	0.16	330	550	660	990
		1.2	2	0.013	0.19	0.19	390	650	780	1170
		1.5	2	0.016	0.24	0.24	480	800	960	1440
		2.0	2	0.021	0.32	0.32	630	1050	1260	1890
		2.5	2	0.027	0.40	0.40	810	1350	1620	2430
		3.0	2	0.032	0.48	0.48	960	1600	1920	2880

Corner radius end mills Microcut-T8

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X | **B** | X-Generation

HM Micro | λ **25°** γ **6°**

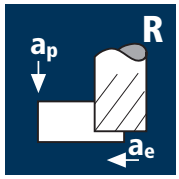
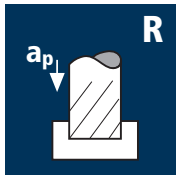


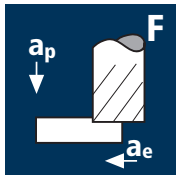
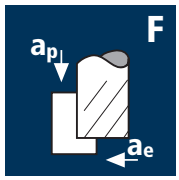
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5756** ø-Code **.100**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	r 0/+0.03	α	z	DIAMANT B5756 $
.100	1.0	3	0.95	50	1.20	8.0	0.20	4.9°	2	54.80
.108	1.2	3	1.10	50	1.44	9.6	0.20	4.0°	2	54.80
.120	1.5	3	1.40	60	1.80	12.0	0.20	3.0°	2	54.80
.140	2.0	3	1.90	60	2.40	16.0	0.20	1.7°	2	54.80
.160	2.5	3	2.30	60	3.00	20.0	0.20	0.7°	2	54.80
.180	3.0	3	2.80	60	3.60	24.0	0.20	0.0°	2	54.80

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.10	0.10	60	100	120	180
		0.3	2	0.003	0.15	0.20	90	150	180	270
		0.4	2	0.004	0.20	0.25	120	200	240	360
		0.5	2	0.005	0.25	0.30	150	250	300	450
		0.6	2	0.006	0.25	0.35	180	300	360	540
		0.8	2	0.008	0.35	0.50	240	400	480	720
		1.0	2	0.009	0.45	0.60	270	450	540	810
		1.2	2	0.011	0.55	0.70	330	550	660	990
		1.5	2	0.014	0.70	0.90	420	700	840	1260
	Graphite B	2.0	2	0.019	0.90	1.20	570	950	1140	1710
		2.5	2	0.024	1.15	1.50	720	1200	1440	2160
		3.0	2	0.028	1.35	1.80	840	1400	1680	2520
	Graphite B	0.2	2	0.001	0.10	0.20	30	50	60	90
		0.3	2	0.002	0.15	0.30	60	100	120	180
		0.4	2	0.003	0.20	0.40	90	150	180	270
		0.5	2	0.004	0.25	0.50	120	200	240	360
		0.6	2	0.004	0.25	0.60	120	200	240	360
		0.8	2	0.006	0.35	0.80	180	300	360	540
		1.0	2	0.007	0.45	1.00	210	350	420	630
		1.2	2	0.009	0.55	1.20	270	450	540	810
		1.5	2	0.011	0.70	1.50	330	550	660	990
	Graphite B	2.0	2	0.015	0.90	2.00	450	750	900	1350
		2.5	2	0.018	1.15	2.50	540	900	1080	1620
		3.0	2	0.022	1.35	3.00	660	1100	1320	1980

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.2	2	0.002	0.03	0.04	60	100	120	180
		0.3	2	0.003	0.04	0.06	90	150	180	270
		0.4	2	0.004	0.06	0.08	120	200	240	360
		0.5	2	0.005	0.07	0.10	150	250	300	450
		0.6	2	0.006	0.08	0.12	180	300	360	540
		0.8	2	0.009	0.11	0.16	270	450	540	810
		1.0	2	0.011	0.14	0.20	330	550	660	990
		1.2	2	0.013	0.17	0.24	390	650	780	1170
		1.5	2	0.016	0.21	0.30	480	800	960	1440
	Graphite B	2.0	2	0.021	0.28	0.40	630	1050	1260	1890
		2.5	2	0.027	0.35	0.50	810	1350	1620	2430
		3.0	2	0.032	0.42	0.60	960	1600	1920	2880
	Graphite B	0.2	2	0.002	0.04	0.04	60	100	120	180
		0.3	2	0.003	0.05	0.05	90	150	180	270
		0.4	2	0.004	0.07	0.07	120	200	240	360
		0.5	2	0.005	0.09	0.09	150	250	300	450
		0.6	2	0.006	0.11	0.11	180	300	360	540
		0.8	2	0.009	0.14	0.14	270	450	540	810
		1.0	2	0.011	0.18	0.18	330	550	660	990
		1.2	2	0.013	0.22	0.22	390	650	780	1170
		1.5	2	0.016	0.27	0.27	480	800	960	1440
	Graphite B	2.0	2	0.021	0.36	0.36	630	1050	1260	1890
		2.5	2	0.027	0.45	0.45	810	1350	1620	2430
		3.0	2	0.032	0.54	0.54	960	1600	1920	2880

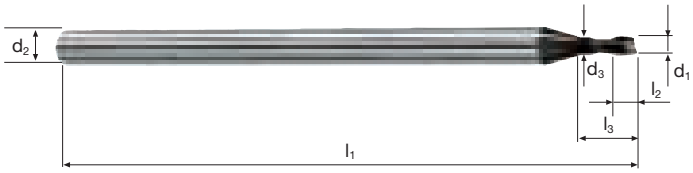
Cylindrical end mills Microcut-C3

Shank Ø 3mm, cylindrical neck, 3xd

HSS | Favora® | Base-X **B** | X-Generation

HM Micro | λ **25°** γ **6°**

45°

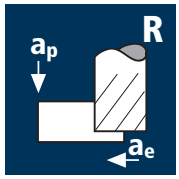
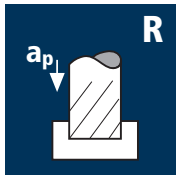


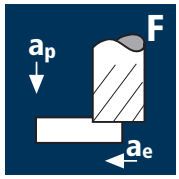
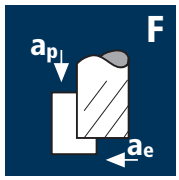
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5712** ø-Code **.020**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	DIAMANT B5712 $
.020	0.2	3	0.18	40	0.24	0.6	-	9.4°	2	62.00
.030	0.3	3	0.25	40	0.36	0.9	-	9.0°	2	56.40
.040	0.4	3	0.35	40	0.48	1.2	-	8.5°	2	53.80
.050	0.5	3	0.45	40	0.60	1.5	-	11.5°	2	53.80
.060	0.6	3	0.55	40	0.72	1.8	-	11.9°	2	51.30
.080	0.8	3	0.75	40	0.96	2.4	-	9.6°	2	51.30
.100	1.0	3	0.95	50	1.20	3.0	0.07	8.5°	2	51.30
.108	1.2	3	1.10	50	1.44	3.6	0.07	7.4°	2	51.30
.120	1.5	3	1.40	50	1.80	4.5	0.07	5.9°	2	51.30
.140	2.0	3	1.90	50	2.40	6.0	0.10	3.7°	2	51.30
.160	2.5	3	2.30	50	3.00	7.5	0.10	1.7°	2	51.30
.180	3.0	3	2.80	50	3.60	9.0	0.10	0.0°	2	51.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.5	2	0.005	0.25	0.30	150	250	300	450
		0.6	2	0.006	0.25	0.35	180	300	360	540
		0.7	2	0.007	0.30	0.40	210	350	420	630
		0.8	2	0.008	0.35	0.50	240	400	480	720
		0.9	2	0.008	0.40	0.55	240	400	480	720
		1.0	2	0.009	0.45	0.60	270	450	540	810
		1.2	2	0.011	0.55	0.70	330	550	660	990
		1.5	2	0.014	0.70	0.90	420	700	840	1260
		1.8	2	0.017	0.80	1.10	510	850	1020	1530
	Graphite B	2.0	2	0.019	0.90	1.20	570	950	1140	1710
		2.3	2	0.022	1.05	1.40	660	1100	1320	1980
		2.5	2	0.024	1.15	1.50	720	1200	1440	2160
		2.8	2	0.026	1.25	1.70	780	1300	1560	2340
		3.0	2	0.028	1.35	1.80	840	1400	1680	2520
	Graphite B	0.5	2	0.004	0.25	0.50	120	200	240	360
		0.6	2	0.004	0.25	0.60	120	200	240	360
		0.7	2	0.005	0.30	0.70	150	250	300	450
		0.8	2	0.006	0.35	0.80	180	300	360	540
		0.9	2	0.007	0.40	0.90	210	350	420	630
		1.0	2	0.007	0.45	1.00	210	350	420	630
		1.2	2	0.009	0.55	1.20	270	450	540	810
		1.5	2	0.011	0.70	1.50	330	550	660	990
		1.8	2	0.013	0.80	1.80	390	650	780	1170
	Graphite B	2.0	2	0.015	0.90	2.00	450	750	900	1350
		2.3	2	0.017	1.05	2.30	510	850	1020	1530
		2.5	2	0.018	1.15	2.50	540	900	1080	1620
		2.8	2	0.020	1.25	2.80	600	1000	1200	1800
		3.0	2	0.022	1.35	3.00	660	1100	1320	1980

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.5	2	0.005	0.07	0.10	150	250	300	450
		0.6	2	0.006	0.08	0.12	180	300	360	540
		0.7	2	0.007	0.10	0.14	210	350	420	630
		0.8	2	0.009	0.11	0.16	270	450	540	810
		0.9	2	0.010	0.13	0.18	300	500	600	900
		1.0	2	0.011	0.14	0.20	330	550	660	990
		1.2	2	0.013	0.17	0.24	390	650	780	1170
		1.5	2	0.016	0.21	0.30	480	800	960	1440
		1.8	2	0.019	0.25	0.36	570	950	1140	1710
	Graphite B	2.0	2	0.021	0.28	0.40	630	1050	1260	1890
		2.3	2	0.025	0.32	0.46	750	1250	1500	2250
		2.5	2	0.027	0.35	0.50	810	1350	1620	2430
		2.8	2	0.030	0.39	0.56	900	1500	1800	2700
		3.0	2	0.032	0.42	0.60	960	1600	1920	2880
	Graphite B	0.5	2	0.005	0.09	0.09	150	250	300	450
		0.6	2	0.006	0.11	0.11	180	300	360	540
		0.7	2	0.007	0.13	0.13	210	350	420	630
		0.8	2	0.009	0.14	0.14	270	450	540	810
		0.9	2	0.010	0.16	0.16	300	500	600	900
		1.0	2	0.011	0.18	0.18	330	550	660	990
		1.2	2	0.013	0.22	0.22	390	650	780	1170
		1.5	2	0.016	0.27	0.27	480	800	960	1440
		1.8	2	0.019	0.32	0.32	570	950	1140	1710
	Graphite B	2.0	2	0.021	0.36	0.36	630	1050	1260	1890
		2.3	2	0.025	0.41	0.41	750	1250	1500	2250
		2.5	2	0.027	0.45	0.45	810	1350	1620	2430
		2.8	2	0.030	0.50	0.50	900	1500	1800	2700
		3.0	2	0.032	0.54	0.54	960	1600	1920	2880

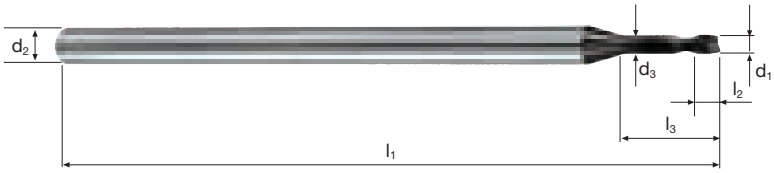
Cylindrical end mills Microcut-C5

Shank Ø 3mm, cylindrical neck, 5xd

HSS | Favora® | Base-X **B** | X-Generation

HM Micro | λ **25°** γ **6°**

45°

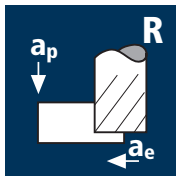
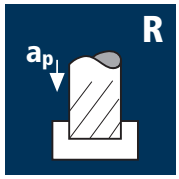


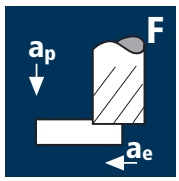
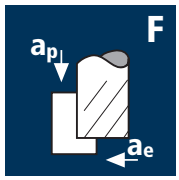
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5714** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	DIAMANT B5714 $
.050	0.5	3	0.45	40	0.60	2.5	-	9.9°	2	53.80
.060	0.6	3	0.55	40	0.72	3.0	-	9.2°	2	51.30
.070	0.7	3	0.65	40	0.84	3.5	-	8.4°	2	51.30
.080	0.8	3	0.75	40	0.96	4.0	-	7.8°	2	51.30
.090	0.9	3	0.85	40	1.08	4.5	-	7.2°	2	51.30
.100	1.0	3	0.95	50	1.20	5.0	0.07	6.6°	2	51.30
.108	1.2	3	1.10	50	1.44	6.0	0.07	5.5°	2	51.30
.120	1.5	3	1.40	50	1.80	7.5	0.07	4.2°	2	51.30
.132	1.8	3	1.70	50	2.16	9.0	0.07	3.1°	2	51.30
.140	2.0	3	1.90	50	2.40	10.0	0.10	2.5°	2	51.30
.152	2.3	3	2.10	50	2.76	11.5	0.10	1.6°	2	51.30
.160	2.5	3	2.30	50	3.00	12.5	0.10	1.1°	2	51.30
.172	2.8	3	2.60	50	3.36	14.0	0.10	0.4°	2	51.30
.180	3.0	3	2.80	50	3.60	15.0	0.10	0.0°	2	51.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.5	2	0.005	0.20	0.30	150	250	300	450
		0.6	2	0.006	0.25	0.35	180	300	360	540
		0.8	2	0.008	0.30	0.50	240	400	480	720
		1.0	2	0.009	0.40	0.60	270	450	540	810
		1.2	2	0.011	0.50	0.70	330	550	660	990
		1.5	2	0.014	0.60	0.90	420	700	840	1260
		2.0	2	0.019	0.80	1.20	570	950	1140	1710
		2.5	2	0.024	1.00	1.50	720	1200	1440	2160
		3.0	2	0.028	1.20	1.80	840	1400	1680	2520
	Graphite B	0.5	2	0.004	0.20	0.50	120	200	240	360
		0.6	2	0.004	0.25	0.60	120	200	240	360
		0.8	2	0.006	0.30	0.80	180	300	360	540
		1.0	2	0.007	0.40	1.00	210	350	420	630
		1.2	2	0.009	0.50	1.20	270	450	540	810
		1.5	2	0.011	0.60	1.50	330	550	660	990
		2.0	2	0.015	0.80	2.00	450	750	900	1350
		2.5	2	0.018	1.00	2.50	540	900	1080	1620
		3.0	2	0.022	1.20	3.00	660	1100	1320	1980

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min⁻¹ vf [mm/min]	n=25000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]	n=45000 min⁻¹ vf [mm/min]
	Graphite B	0.5	2	0.005	0.06	0.09	150	250	300	450
		0.6	2	0.006	0.07	0.11	180	300	360	540
		0.8	2	0.009	0.10	0.14	270	450	540	810
		1.0	2	0.011	0.12	0.18	330	550	660	990
		1.2	2	0.013	0.14	0.22	390	650	780	1170
		1.5	2	0.016	0.18	0.27	480	800	960	1440
		2.0	2	0.021	0.24	0.36	630	1050	1260	1890
		2.5	2	0.027	0.30	0.45	810	1350	1620	2430
		3.0	2	0.032	0.36	0.54	960	1600	1920	2880
	Graphite B	0.5	2	0.005	0.08	0.08	150	250	300	450
		0.6	2	0.006	0.10	0.10	180	300	360	540
		0.8	2	0.009	0.13	0.13	270	450	540	810
		1.0	2	0.011	0.16	0.16	330	550	660	990
		1.2	2	0.013	0.19	0.19	390	650	780	1170
		1.5	2	0.016	0.24	0.24	480	800	960	1440
		2.0	2	0.021	0.32	0.32	630	1050	1260	1890
		2.5	2	0.027	0.40	0.40	810	1350	1620	2430
		3.0	2	0.032	0.48	0.48	960	1600	1920	2880

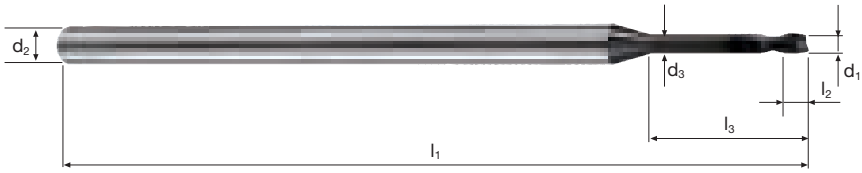
Cylindrical end mills Microcut-C8

Shank Ø 3mm, cylindrical neck, 8xd

HSS | Favora® | Base-X **B** | X-Generation

HM Micro | λ **25°** γ **6°**

45°

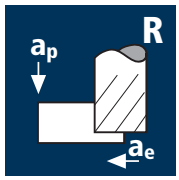


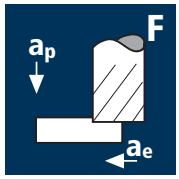
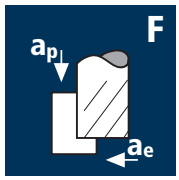
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5716** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	DIAMANT B5716 $
.050	0.5	3	0.45	40	0.60	4.0	-	8.3°	2	53.80
.060	0.6	3	0.55	40	0.72	4.8	-	7.4°	2	51.30
.080	0.8	3	0.75	40	0.96	6.4	-	6.0°	2	51.30
.100	1.0	3	0.95	50	1.20	8.0	0.07	4.9°	2	51.30
.108	1.2	3	1.10	50	1.44	9.6	0.07	4.0°	2	51.30
.120	1.5	3	1.40	60	1.80	12.0	0.07	3.0°	2	51.30
.140	2.0	3	1.90	60	2.40	16.0	0.10	1.7°	2	51.30
.160	2.5	3	2.30	60	3.00	20.0	0.10	0.7°	2	51.30
.180	3.0	3	2.80	60	3.60	24.0	0.10	0.0°	2	51.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.5	2	0.005	0.20	0.20	150	250	300	450
		0.6	2	0.006	0.25	0.25	180	300	360	540
		0.8	2	0.008	0.30	0.30	240	400	480	720
		1.0	2	0.009	0.40	0.40	270	450	540	810
		1.2	2	0.011	0.50	0.50	330	550	660	990
		1.5	2	0.014	0.60	0.60	420	700	840	1260
		2.0	2	0.019	0.80	0.80	570	950	1140	1710
		2.5	2	0.024	1.00	1.00	720	1200	1440	2160
		3.0	2	0.028	1.20	1.20	840	1400	1680	2520
	Graphite B	0.5	2	0.003	0.15	0.50	90	150	180	270
		0.6	2	0.003	0.20	0.60	90	150	180	270
		0.8	2	0.004	0.25	0.80	120	200	240	360
		1.0	2	0.005	0.30	1.00	150	250	300	450
		1.2	2	0.007	0.35	1.20	210	350	420	630
		1.5	2	0.008	0.45	1.50	240	400	480	720
		2.0	2	0.011	0.60	2.00	330	550	660	990
		2.5	2	0.014	0.75	2.50	420	700	840	1260
		3.0	2	0.016	0.90	3.00	480	800	960	1440

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=15000 min^{-1} vf [mm/min]	n=25000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]	n=45000 min^{-1} vf [mm/min]
	Graphite B	0.5	2	0.005	0.05	0.08	150	250	300	450
		0.6	2	0.006	0.06	0.09	180	300	360	540
		0.8	2	0.009	0.08	0.12	270	450	540	810
		1.0	2	0.011	0.10	0.15	330	550	660	990
		1.2	2	0.013	0.12	0.18	390	650	780	1170
		1.5	2	0.016	0.15	0.23	480	800	960	1440
		2.0	2	0.021	0.20	0.30	630	1050	1260	1890
		2.5	2	0.027	0.25	0.38	810	1350	1620	2430
		3.0	2	0.032	0.30	0.45	960	1600	1920	2880
	Graphite B	0.5	2	0.005	0.07	0.07	150	250	300	450
		0.6	2	0.006	0.08	0.08	180	300	360	540
		0.8	2	0.009	0.11	0.11	270	450	540	810
		1.0	2	0.011	0.14	0.14	330	550	660	990
		1.2	2	0.013	0.17	0.17	390	650	780	1170
		1.5	2	0.016	0.21	0.21	480	800	960	1440
		2.0	2	0.021	0.28	0.28	630	1050	1260	1890
		2.5	2	0.027	0.35	0.35	810	1350	1620	2430
		3.0	2	0.032	0.42	0.42	960	1600	1920	2880

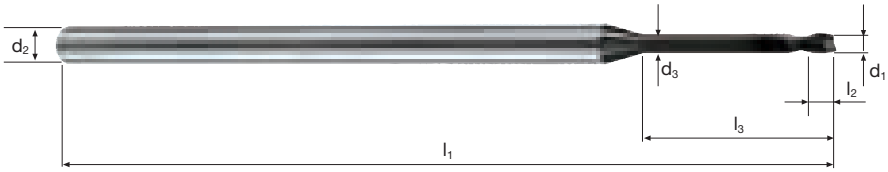
Cylindrical end mills Microcut-C10

Shank Ø 3mm, cylindrical neck, 10xd

HSS | Favora® | Base-X **B** | X-Generation

HM Micro | λ **25°** γ **6°**

45°

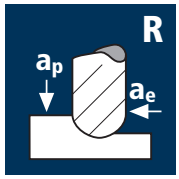
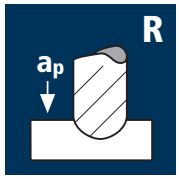


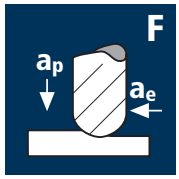
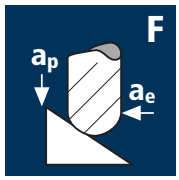
C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5717** ø-Code **.050**

ø Code	d1 ±0.01	d2 h6	d3	l1	l2	l3	45°	α	z	DIAMANT B5717 $
.050	0.5	3	0.45	40	0.60	5.0	-	7.4°	2	53.80
.060	0.6	3	0.55	40	0.72	6.0	-	6.6°	2	51.30
.080	0.8	3	0.75	40	0.96	8.0	-	5.2°	2	51.30
.100	1.0	3	0.95	50	1.20	10.0	0.07	4.2°	2	51.30
.108	1.2	3	1.10	50	1.44	12.0	0.07	3.4°	2	51.30
.120	1.5	3	1.40	60	1.80	15.0	0.07	2.5°	2	51.30
.140	2.0	3	1.90	60	2.40	20.0	0.10	1.4°	2	51.30
.160	2.5	3	2.30	60	3.00	25.0	0.10	0.6°	2	51.30
.180	3.0	3	2.80	60	3.60	30.0	0.10	0.0°	2	51.30

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	6	2	0.071	3.00	3.60	1420	2130	2840	4260
		8	2	0.094	4.00	4.80	1880	2820	3760	5640
		10	2	0.118	5.00	6.00	2360	3540	4720	7080
		12	2	0.141	6.00	7.20	2820	4230	5640	8460
	Graphite B	6	2	0.055	3.00	6.0	1100	1650	2200	3300
		8	2	0.073	4.00	8.0	1460	2190	2920	4380
		10	2	0.091	5.00	10.0	1820	2730	3640	5460
		12	2	0.109	6.00	12.0	2180	3270	4360	6540

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	6	2	0.080	0.90	1.20	1600	2400	3200	4800
		8	2	0.107	1.20	1.60	2140	3210	4280	6420
		10	2	0.133	1.50	2.00	2660	3990	5320	7980
		12	2	0.160	1.80	2.40	3200	4800	6400	9600
	Graphite B	6	2	0.080	1.20	0.40	1600	2400	3200	4800
		8	2	0.107	1.60	0.40	2140	3210	4280	6420
		10	2	0.133	2.00	0.40	2660	3990	5320	7980
		12	2	0.160	2.40	0.40	3200	4800	6400	9600

Ball nose end mills SpheroXG

Tolerance r ±0.005, 3xd

HSS | Favora® | Base-X | X-Generation X

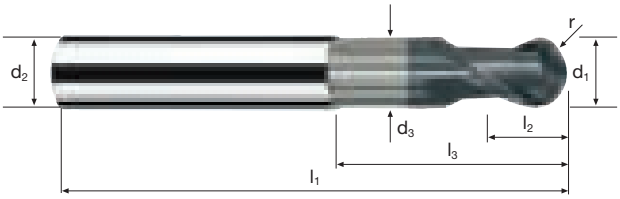
HM XA

λ 30°
γ 15°

h5

d1

r



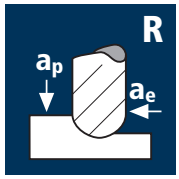
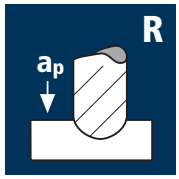
C Graphite

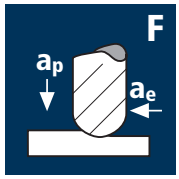
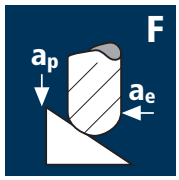
CF/GF Fiber Reinforced Plastics

Example:
Order-N°. Coating **B** Article-N°. **7480** ø-Code **.300**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	z	DIAPLUS B7480 $
.300	6	6	5.5	57	7	20	3.0	2	92.00
.391	8	8	7.4	63	9	26	4.0	2	115.00
.450	10	10	9.2	72	11	31	5.0	2	157.00
.501	12	12	11.0	83	13	37	6.0	2	193.00

IX

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	6	2	0.071	2.70	3.60	1420	2130	2840	4260
		8	2	0.094	3.60	4.80	1880	2820	3760	5640
		10	2	0.118	4.50	6.00	2360	3540	4720	7080
		12	2	0.141	5.40	7.20	2820	4230	5640	8460
	Graphite B	6	2	0.055	2.70	6.0	1100	1650	2200	3300
		8	2	0.073	3.60	8.0	1460	2190	2920	4380
		10	2	0.091	4.50	10.0	1820	2730	3640	5460
		12	2	0.109	5.40	12.0	2180	3270	4360	6540

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	6	2	0.080	0.85	1.20	1600	2400	3200	4800
		8	2	0.107	1.10	1.60	2140	3210	4280	6420
		10	2	0.133	1.40	2.00	2660	3990	5320	7980
		12	2	0.160	1.70	2.40	3200	4800	6400	9600
	Graphite B	6	2	0.080	1.10	0.35	1600	2400	3200	4800
		8	2	0.107	1.45	0.35	2140	3210	4280	6420
		10	2	0.133	1.80	0.35	2660	3990	5320	7980
		12	2	0.160	2.15	0.35	3200	4800	6400	9600

Ball nose end mills SpheroXG

Tolerance r ±0.005, 6xd

HSS | Favora® | Base-X | X-Generation X

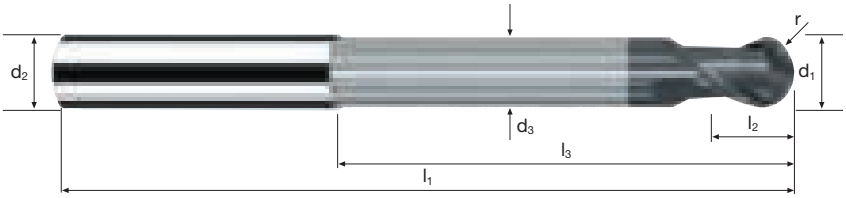
HM XA

λ 30°
γ 15°

h5

d1

r



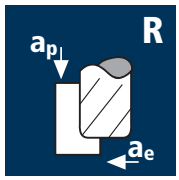
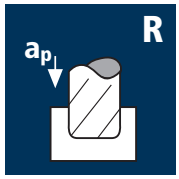
C Graphite

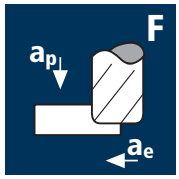
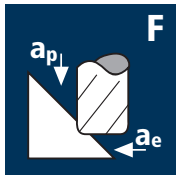
CF/GF Fiber Reinforced Plastics

Example:
Order-N°. Coating **B** Article-N°. **7484** ø-Code **.300**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	z	DIAPLUS B7484 $
.300	6	6	5.5	80	7	43	3.0	2	104.00
.391	8	8	7.4	90	9	53	4.0	2	130.00
.450	10	10	9.2	105	11	64	5.0	2	176.00
.501	12	12	11.0	120	13	74	6.0	2	218.00

IX

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	6	2	0.056	4.80	2.40	1120	1680	2240	3360
		8	2	0.075	6.40	3.20	1500	2250	3000	4500
		10	2	0.094	8.00	4.00	1880	2820	3760	5640
		12	2	0.113	9.60	4.80	2260	3390	4520	6780
	Graphite B	6	2	0.044	3.0	6.0	880	1320	1760	2640
		8	2	0.058	4.0	8.0	1160	1740	2320	3480
		10	2	0.073	5.0	10.0	1460	2190	2920	4380
		12	2	0.087	6.0	12.0	1740	2610	3480	5220

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	6	2	0.080	0.48	2.70	1600	2400	3200	4800
		8	2	0.107	0.64	3.60	2140	3210	4280	6420
		10	2	0.133	0.80	4.50	2660	3990	5320	7980
		12	2	0.160	0.96	5.40	3200	4800	6400	9600
	Graphite B	6	2	0.080	0.90	0.90	1600	2400	3200	4800
		8	2	0.107	1.20	1.20	2140	3210	4280	6420
		10	2	0.133	1.50	1.50	2660	3990	5320	7980
		12	2	0.160	1.80	1.80	3200	4800	6400	9600

Corner radius end mills ToroXG

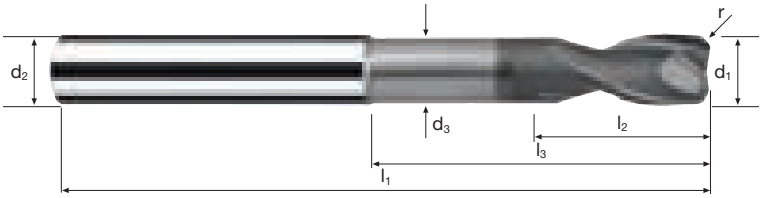
Tolerance r ±0.005, 6xd

HSS | Favora® | Base-X | X-Generation X

HM XA | λ 30° γ 15°

h5

d1 | r



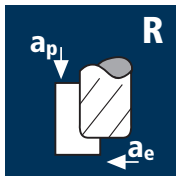
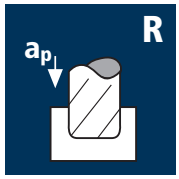
C Graphite

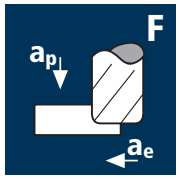
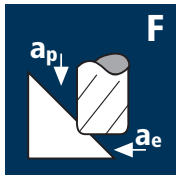
CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **7284** ø-Code **.300**

ø Code	d1 0/-0.01	d2 h5	d3	l1	l2	l3	r ±0.005	z	DIAPLUS B7284 $
.300	6	6	5.5	80	7	43	0.5	2	100.00
.297	6	6	5.5	80	7	43	1.0	2	100.00
.391	8	8	7.4	90	9	53	0.5	2	126.00
.388	8	8	7.4	90	9	53	1.0	2	126.00
.450	10	10	9.2	105	11	64	0.5	2	171.00
.445	10	10	9.2	105	11	64	1.0	2	171.00
.501	12	12	11.0	120	13	74	0.5	2	211.00
.496	12	12	11.0	120	13	74	1.0	2	211.00

IX

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	6	2	0.071	4.80	2.40	1420	2130	2840	4260
		8	2	0.094	6.40	3.20	1880	2820	3760	5640
		10	2	0.118	8.00	4.00	2360	3540	4720	7080
		12	2	0.141	9.60	4.80	2820	4230	5640	8460
	Graphite B	6	2	0.055	3.0	6.0	1100	1650	2200	3300
		8	2	0.073	4.0	8.0	1460	2190	2920	4380
		10	2	0.091	5.0	10.0	1820	2730	3640	5460
		12	2	0.109	6.0	12.0	2180	3270	4360	6540

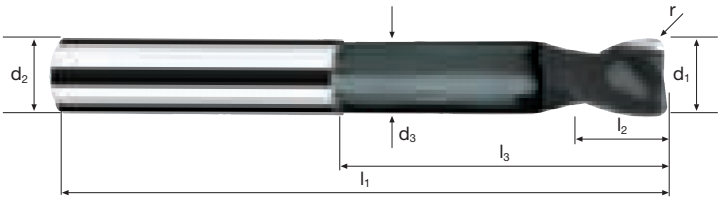
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	6	2	0.080	0.60	2.70	1600	2400	3200	4800
		8	2	0.107	0.80	3.60	2140	3210	4280	6420
		10	2	0.133	1.00	4.50	2660	3990	5320	7980
		12	2	0.160	1.20	5.40	3200	4800	6400	9600
	Graphite B	6	2	0.080	1.08	1.08	1600	2400	3200	4800
		8	2	0.107	1.44	1.44	2140	3210	4280	6420
		10	2	0.133	1.80	1.80	2660	3990	5320	7980
		12	2	0.160	2.16	2.16	3200	4800	6400	9600

Corner radius end mills

Tolerance r 0/+0.03

HSS | Favora® | Base-X **B** | X-Generation

HM XA	λ 30° γ 15°



C Graphite

CF/GF Fiber Reinforced Plastics

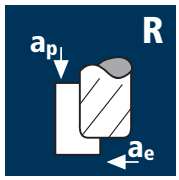
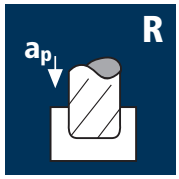
Example: **Order-N°.** Coating **B** Article-N°. **5630** ø-Code **.300**

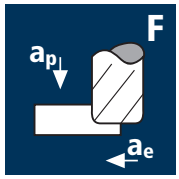
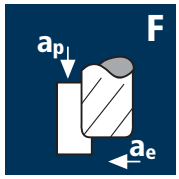
ø Code	d1 e8	d2 h6	d3	l1	l2	l3	r 0/+0.03	z	DIAMANT B5630 $
.300	6	6	5.5	70	7	33	1.0	2	85.00
.391	8	8	7.4	80	9	43	1.0	2	106.00
.450	10	10	9.2	84	11	43	1.5	2	145.00
.501	12	12	11.0	97	13	51	1.5	2	179.00

CNC Diameter D

d1	Tolerance e8		Diameter Minimum	Diameter Maximum	D
6	-0.038	-0.020	**5.962**	**5.980**	**5.971**
8	-0.047	-0.025	**7.953**	**7.975**	**7.964**
10			**9.953**	**9.975**	**9.964**
12	-0.059	-0.032	**11.941**	**11.968**	**11.955**

IX

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	2	3	0.024	4.0	0.50	720	1080	1440	2160
		3	3	0.035	6.0	0.75	1050	1575	2100	3150
		4	3	0.047	8.0	1.00	1410	2115	2820	4230
		5	3	0.059	10.0	1.25	1770	2655	3540	5310
		6	3	0.071	12.0	1.50	2130	3195	4260	6390
		8	3	0.094	16.0	2.00	2820	4230	5640	8460
		10	3	0.118	20.0	2.50	3540	5310	7080	10620
		12	3	0.141	24.0	3.00	4230	6345	8460	12690
	Graphite B	2	3	0.018	0.60	2.0	540	810	1080	1620
		3	3	0.027	0.90	3.0	810	1215	1620	2430
		4	3	0.036	1.20	4.0	1080	1620	2160	3240
		5	3	0.045	1.50	5.0	1350	2025	2700	4050
		6	3	0.055	1.80	6.0	1650	2475	3300	4950
		8	3	0.073	2.40	8.0	2190	3285	4380	6570
		10	3	0.091	3.00	10.0	2730	4095	5460	8190
		12	3	0.109	3.60	12.0	3270	4905	6540	9810

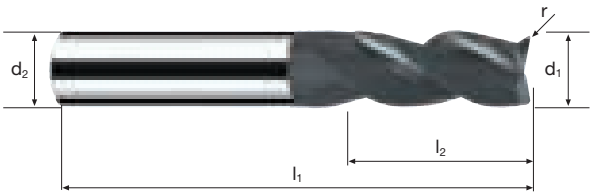
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	2	3	0.027	0.20	0.80	810	1215	1620	2430
		3	3	0.040	0.30	1.20	1200	1800	2400	3600
		4	3	0.053	0.40	1.60	1590	2385	3180	4770
		5	3	0.067	0.50	2.00	2010	3015	4020	6030
		6	3	0.080	0.60	2.40	2400	3600	4800	7200
		8	3	0.107	0.80	3.20	3210	4815	6420	9630
		10	3	0.133	1.00	4.00	3990	5985	7980	11970
		12	3	0.160	1.20	4.80	4800	7200	9600	14400
	Graphite B	2	3	0.027	4.0	0.30	810	1215	1620	2430
		3	3	0.040	6.0	0.45	1200	1800	2400	3600
		4	3	0.053	8.0	0.60	1590	2385	3180	4770
		5	3	0.067	10.0	0.75	2010	3015	4020	6030
		6	3	0.080	12.0	0.90	2400	3600	4800	7200
		8	3	0.107	16.0	1.20	3210	4815	6420	9630
		10	3	0.133	20.0	1.50	3990	5985	7980	11970
		12	3	0.160	24.0	1.80	4800	7200	9600	14400

Corner radius end mills

Tolerance r 0/+0.03

HSS | Favora® | Base-X **B** | X-Generation

HM XA	λ 40° γ 15°



C Graphite

CF/GF Fiber Reinforced Plastics

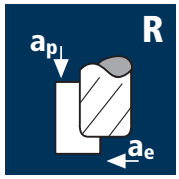
Example: **Order-N°.** Coating **B** Article-N°. **5640** ø-Code **.140**

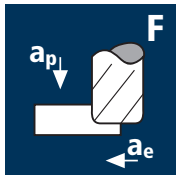
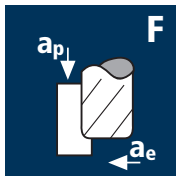
ø Code	d1 e8	d2 h6	l1	l2	r 0/+0.03	α	z	DIAMANT B5640 $
.140	2	3	40	6	0.15	3.4°	3	76.00
.180	3	3	40	12	0.15	0.0°	3	76.00
.220	4	4	50	14	0.20	0.0°	3	76.00
.260	5	5	50	16	0.30	0.0°	3	76.00
.300	6	6	63	19	0.30	0.0°	3	76.00
.391	8	8	63	19	0.50	0.0°	3	94.00
.450	10	10	72	22	0.50	0.0°	3	128.00
.501	12	12	75	25	0.50	0.0°	3	159.00

CNC Diameter D

d1	Tolerance e8		Diameter Minimum	Diameter Maximum	D
2	-0.028	-0.014	**1.972**	**1.986**	**1.979**
3			**2.972**	**2.986**	**2.979**
4	-0.038	-0.020	**3.962**	**3.980**	**3.971**
5			**4.962**	**4.980**	**4.971**
6			**5.962**	**5.980**	**5.971**
8	-0.047	-0.025	**7.953**	**7.975**	**7.964**
10			**9.953**	**9.975**	**9.964**
12	-0.059	-0.032	**11.941**	**11.968**	**11.955**

IX

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	2	3	0.019	6.0	0.40	570	855	1140	1710
		3	3	0.028	9.0	0.60	840	1260	1680	2520
		4	3	0.038	12.0	0.80	1140	1710	2280	3420
		5	3	0.047	15.0	1.00	1410	2115	2820	4230
		6	3	0.056	18.0	1.20	1680	2520	3360	5040
		8	3	0.075	24.0	1.60	2250	3375	4500	6750
		10	3	0.094	30.0	2.00	2820	4230	5640	8460
		12	3	0.113	36.0	2.40	3390	5085	6780	10170

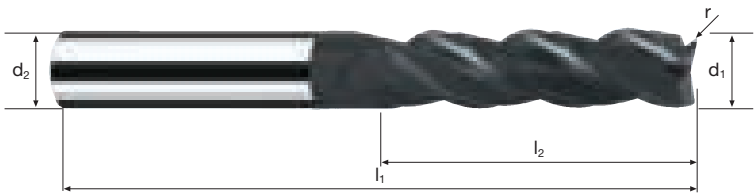
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min⁻¹ vf [mm/min]	n=15000 min⁻¹ vf [mm/min]	n=20000 min⁻¹ vf [mm/min]	n=30000 min⁻¹ vf [mm/min]
	Graphite B	2	3	0.021	0.20	0.70	630	945	1260	1890
		3	3	0.032	0.30	1.05	960	1440	1920	2880
		4	3	0.043	0.40	1.40	1290	1935	2580	3870
		5	3	0.053	0.50	1.75	1590	2385	3180	4770
		6	3	0.064	0.60	2.10	1920	2880	3840	5760
		8	3	0.085	0.80	2.80	2550	3825	5100	7650
		10	3	0.107	1.00	3.50	3210	4815	6420	9630
		12	3	0.128	1.20	4.20	3840	5760	7680	11520
	Graphite B	2	3	0.021	6.0	0.30	630	945	1260	1890
		3	3	0.032	9.0	0.45	960	1440	1920	2880
		4	3	0.043	12.0	0.60	1290	1935	2580	3870
		5	3	0.053	15.0	0.75	1590	2385	3180	4770
		6	3	0.064	18.0	0.90	1920	2880	3840	5760
		8	3	0.085	24.0	1.20	2550	3825	5100	7650
		10	3	0.107	30.0	1.50	3210	4815	6420	9630
		12	3	0.128	36.0	1.80	3840	5760	7680	11520

Corner radius end mills

Tolerance r 0/+0.03

HSS | Favora® | Base-X **B** | X-Generation

HM XA | λ **40°** γ **15°**



C Graphite

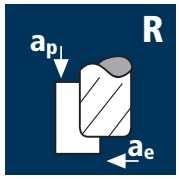
CF/GF Fiber Reinforced Plastics

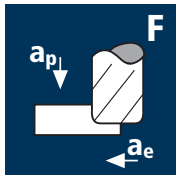
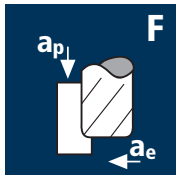
Example: **Order-N°.** Coating **B** Article-N°. **5645** ø-Code **.140**

ø Code	d1 e8	d2 h6	l1	l2	r 0/+0.03	α	z	DIAMANT B5645 $
.140	2	3	60	9	0.15	2.5°	3	89.00
.180	3	3	60	30	0.15	0.0°	3	89.00
.220	4	4	60	30	0.20	0.0°	3	89.00
.260	5	5	70	35	0.30	0.0°	3	89.00
.300	6	6	100	40	0.30	0.0°	3	89.00
.391	8	8	100	40	0.50	0.0°	3	111.00
.450	10	10	100	40	0.50	0.0°	3	151.00
.501	12	12	97	42	0.50	0.0°	3	187.00

CNC Diameter D

d1	Tolerance e8		Diameter Minimum	Diameter Maximum	D
2	-0.028	-0.014	**1.972**	**1.986**	**1.979**
3			**2.972**	**2.986**	**2.979**
4	-0.038	-0.020	**3.962**	**3.980**	**3.971**
5			**4.962**	**4.980**	**4.971**
6			**5.962**	**5.980**	**5.971**
8	-0.047	-0.025	**7.953**	**7.975**	**7.964**
10			**9.953**	**9.975**	**9.964**
12	-0.059	-0.032	**11.941**	**11.968**	**11.955**

Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	10	3	0.071	40	1.5	2130	3195	4260	6390
		12	3	0.085	48	1.8	2550	3825	5100	7650

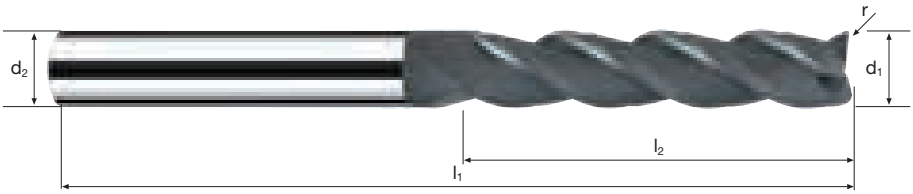
Application	Material	d1 [mm]	z	f_z [mm]	a_p [mm]	a_e [mm]	n=10000 min^{-1} vf [mm/min]	n=15000 min^{-1} vf [mm/min]	n=20000 min^{-1} vf [mm/min]	n=30000 min^{-1} vf [mm/min]
	Graphite B	10	3	0.080	1.0	3.0	2400	3600	4800	7200
		12	3	0.096	1.2	3.6	2880	4320	5760	8640
	Graphite B	10	3	0.080	40	1.0	2400	3600	4800	7200
		12	3	0.096	48	1.2	2880	4320	5760	8640

Corner radius end mills

Tolerance r 0/+0.03

HSS | Favora® | Base-X **B** | X-Generation

HM XA	λ 40° γ 15°



C Graphite

CF/GF Fiber Reinforced Plastics

Example: **Order-N°.** Coating **B** Article-N°. **5650** ø-Code **.450**

ø Code	d1 e8	d2 h6	l1	l2	r 0/+0.03	z	DIAMANT B5650 $
.450	10	10	125	55	0.5	3	157.00
.501	12	12	125	55	0.5	3	193.00

CNC Diameter D

d1	Tolerance e8		Diameter Minimum	Diameter Maximum	D
10	-0.047	-0.025	**9.953**	**9.975**	**9.964**
12	-0.059	-0.032	**11.941**	**11.968**	**11.955**

IX

passion
for precision

fraisa

Symbols/Formulas/Abbreviations/Article List

passion
for precision

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Legend to the product page

Performance rating

X-Generation **X**

Products that have a **high level of specialisation** for applications that go beyond (e**X**tra!) general applications and performance demands.

Base-X **B**

Products that have a **wide application area** within the scope of general applications **and high to very high performance demands**.

Favora® **F**

Products that have an **exceedingly wide application area, average performance demands** and a **favourable price-performance ratio**.

HSS

Products made from heavy-duty, high-speed steel for **basic applications** and/or performance demands limited by the machinery.

KS

Fraisa marks all exceptional innovations with the signature **KS**.
This is in memory of the legendary Head of Production and Development, Mr Konrad Schmid, who defined the Fraisa brand from 1969 until 2000.

Performance

Roughing

Finishing

This index describes the performance of the tool in comparison to other products in the respective chapter. The more boxes that are filled, the better it is suited for each operation. There is always an index for the roughing and finishing applications.

Legend to the product page

Tool technologies

Milling tool with a variable helix angle
- Minimisation of oscillation and vibrations
- Increase in material removal rates and tool life

Milling tool with a variable helix angle
- Axial and radial vibration damping, as well as smooth and gentle cutting
- Better component surfaces and lower noise levels
- Less stress on the spindle and energy consumption, despite high metal removal volume

High-performance penetration edge
- Easy-cutting high-performance penetration edge for high penetration angles
- Higher performance, tool life and process reliability for penetration
- High functionality with cutting data from ToolExpert HelixRamp

Milling tool with scaled slot
- Extension of swarf space
- Optimised chip removal
- Highest possible axial and radial infeeds

Milling tool with a special groove geometry
- Optimised swarf/groove geometry for improved swarf removal
- Optimised relationship between core diameter and swarf space for a high level of tool stability

Milling tool with a partially polished blade
- Reinforcement of the exposed cutting corner
- Absorption of high cutting forces

Milling tool with a special protective chamfer
- Reinforcement of the main cutting edge against chipping
- High tooth feed rates are possible in the case of smooth-edged tools
- High axial and radial infeeds are possible in the case of profiled tools

Milling tool with special edge conditionin
- Conditioning of the main cutting edge for increased stability
- Increase the mechanical and thermal load on the cutting edge
- General increase in the tool life

Front chamfer
- Tool is supported in radial and axial directions
- Reduced vibrations
- Better surface quality from both side and end faces

Supporting chamfer
- Support for the tool in the radial and axial directions
- Reduced vibrations and higher performance
- Improved surface quality as a result of increased running smoothness

Milling tool with special free space design
- Significant reinforcement of the cutting edge
- Higher performance, less vibrations and improved component quality
- Longer tool life and more process safety - therefore higher degree of automation

Legend to the product page

Tool technologies

Finely balanced tools
- Finely balanced tools at least G2.5 at n=20,000 rpm or permissible residual imbalance <1gmm
- Reduction or elimination of the balancing process in the case of finely balanced clamping devices
- Improved surface quality as a result of increased running smoothness and fewer vibrations
- Increase in the service life of the machine spindle

Smooth transitions
- The shaft-neck-cutting edge transitions are fitted with smooth gradients and radii
- Improved tool rigidity and therefore less radial deflection
- Minimal step formation with several infeed depths
- Higher mechanical load and therefore improved performance

Milling tool with increased core diameter
- Improved tool rigidity and less tool deflection
- Higher performance in the area of the infeeds ap, ae and of the feed rate fz
- Better component accuracy through less tool deflection

Milling tool with shank of h5 tolerance
- High concentric and eccentric precision
- Optimal for modern precision chucks

Ball nose end mill with special edge conditioning for rough machining
- Conditioning of the main cutting edge for increased stability
- Significant increase in material removal rates compared to conventional ball nose mills
- General increase in the tool life

Ball nose end mill with special edge conditioning for finish machining
- Conditioning and smoothening of the main cutter profile
- Long term contour precision and surface quality
- General increase in the tool life

Corner radius end mill with special edge conditioning for roughing
- Conditioning of the main cutting edge for increased stability
- Significant increase of the material removal rate compared to standard corner radius end mills
- General increase in the tool life

Corner radius end mill with special edge conditioning for finishing
- Conditioning and smoothening of the main cutting edge
- Long-lasting contour accuracy and surface quality
- General increase in the tool life

Indexable insert
- Periphally ground, partially face polished on all sides
- Improved performance

Legend to the product page

Tool technologies

Ball nose end mill with a highly precise diameter tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Ball nose end mill with a highly precise radius tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

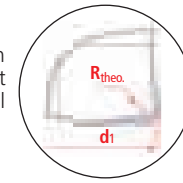
Corner radius end mill with a highly precise diameter tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Corner radius end mill with a highly precise radius tolerance
- Specially designed tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

Cylindrical end mill with a highly precise diameter tolerance
- Specially designed bearing tolerances simplify the programming and the secure finish of the end contour
- Highly precise tolerance field for high dimensional accuracy

High feed cutting (HFC) tool
- Tool with a special cutting geometry for high feed cutting
- High feeds are possible due to a defined swarf cross section distribution
- Large swarf space for quick and trouble-free removal of the swarf
- High removal volume with good contour convergency as well

The HFC tool has a theoretical programming radius ($R_{theo.}$). This value is stated for each diameter in the data table on the catalogue page and, for the CNC/CAM programming, it is stated as a tool radius. However as a result of the $R_{theo.}$ difference to the effective tool contour, residual material arises in the machining.



Legend to the product page

Cutting tool substrate material

HM XT	Fine grain carbide. Hardness 1900 HV. Co content 9%. Characterised by a particularly high level of toughness.
HM XA	Fine grain carbide. Hardness 1950 HV. Co content 8%. Characterised by a particularly high level of abrasion resistance.
HM XR	Fine grain carbide. Hardness 1590 HV. Co content 10%. Characterised by a particularly high level of toughness.
HM X10	Fine grain carbide. Hardness >1600 HV. Co content 10%. Characterised by a particularly high level of toughness and abrasion resistance.
HM UT	Fine grain carbide. Hardness 1680 HV. Co content 12%. Characterised by a particularly high level of toughness.
HM MG10	Fine grain carbide. Hardness 1600 HV. Co content 10%.
HM MG6	Fine grain carbide. Hardness 1800 HV. Co content 6%.
HM Plus	Ultrafine-grain carbide. Hardness 1800 HV. Co content 12%.
HM Micro	Ultrafine-grain carbide. Hardness 1680 HV. Co content 10%.
HM	Universal fine-grain carbide.

Legend to the product page

Cutting tool substrate material

CVD	Pure diamond produced by chemical vapour deposition (CVD). Characterised by optimum fracture toughness on the cutting edge and high thermal conductivity.
CBN	Cubic crystallized boron nitride (CBN). Hardness 4700 HV. Characterised by a particularly high level of abrasion resistance.
HSS PM/F	High-performance substrate material, powder metallurgically produced HSS alloys.
HSS-E Co8	High-performance high speed steel.

Legend to the product page

Form of the corner of the cutting edges

The corner between the front side blade and the circumference blade has a protective chamfer of 45°.
The size of the protective chamfer is stated for each diameter in the data table on the catalogue page.

The tool is furnished with a corner radius. For every diameter the size of the radius is listed in the corresponding data table of the catalogue.

Ball nose tool.

The corner between front cutting edge and circumferential cutting edge is executed sharp-edged.

High Feed Cutting (HFC) tool. Tool with a special cutting geometry for high feed milling.

High Feed Cutting (HFC) tool with corner radius. Tool with special cutting edge geometry for high feed machining.

Legend to the product page

Application suitability

A blue background means that the tool is particularly suitable for this material.

A light blue background means that the tool has good to adequate suitability for this material.

Chapter: Steel, stainless steel and titanium / 3D machining of steel / special shapes

Rm < 850	**Rm** 850-1100	**Rm** 1100-1300	**Rm** 1300-1500	**HRC** 48-56	**HRC** 56-60	**HRC** > 60	**Inox** Stainless	**Ti** Titanium	

Chapter: Aluminium and copper

Rm < 850			**Al** Aluminium > 99%	**Al** Aluminium Alloy	**Al** Aluminium Cast		**Cu** Copper	**Plastic** Thermoplast	

Additional material which can be machined is stated in the additional field

Legend to the product page

Shape of the shank / shank versions

Full carbide tools with a cylindrical shank: shank version in accordance with DIN 6535 HA

Full carbide tools with a cylindrical shank and a side clamping surface. Shank version in accordance with DIN 6535 HB

Short shank tools: In the diameter graduation and diameter tolerance, the shank corresponds to the DIN 6535 HB standard. The section behind the clamping surface is shortened.

HSS tools with a cylindrical shank and a side clamping surface: Shank version in accordance with DIN 1835 B

Shank material is made of high-quality recycled carbide (HM)

Helix angle and rake angle

λ **45°**
γ **5°**

Helix and rake angles are particularly important characteristics of milling tools. Due to this fact, helix angle λ and rake angle γ are specified for each tool. The exact values can vary with the tool diameter.

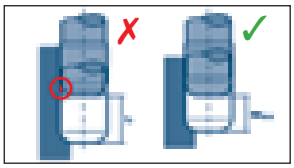
Crash angle α

Tools with a smaller cutting diameter than the shank diameter need specific attention during machining. A crash can surely be avoided when the limiting side surfaces are sloped with at least a minimum angle, the crash angle α, against the vertical.
The angle of collision is stated for each diameter in the data table on the catalogue page.

Abbreviations

d_1	Diameter of the cutting edge
d_2	Diameter of the shank
d_3	Diameter of the neck
l_1	Total length of the tool
l_2	Length of the cutting edge
l_3	Distance from the front of the tool to the end of the neck
fl	Number of flutes
r	Corner radius
α / ∡	Draft angle
FPT	Feed per tooth
SPEED	Cutting speed in surface feet
RPM	Revolutions per minute
FEED	Feed rate
ADOC	Axial depth of cut
RDOC	Radial depth of cut
d_{eff}	Effective diameter (when milling with corner radius or ball nose = effective diameter)
MRR	Material removal rate (removal of a certain material volume per minute)
R_m	Mechanical tensile strength
HRC	Hardness according to Rockwell C
45°	Size of the protective chamfer between the face end blade and the circumference blade
R_{theo}	Theoretical programming radius (R_{theo}) for HFC tools. See information at Tool Technology HFC
z	Number of cutting edges

AX-RV tools:



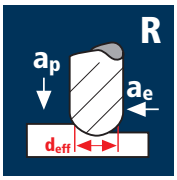
Clean transitions can be achieved with the AX-RV tools during finishing by means of several infeed depths. However, in this application the correct infeed depth is important. On the basis of the tool geometry with front radius, the limited axial infeed (ap_{lim}) is specified in the following table:

Axial infeed depth ap_{lim} for plane transition in wall for AX-RV2 and AX-RV3

d_1	l_2	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}	Radius r	ap_{lim}
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
3	4	0.5	2.5										
4	5	0.5	3.5										
5	6	0.5	4.5										
6	7	0.5	5.5	1.0	5.0					2.5	3.5		
8	9			1.0	7.0					2.5	5.5		
10	11			1.0	9.0	1.5	8.5			2.5	7.5	4.0	6.0
12	13			1.0	11.0	1.5	10.5			2.5	9.5	4.0	8.0
16	18			1.0	16.0	1.5	15.5	2.0	15.0	2.5	14.5	4.0	13.0
20	22			1.0	20.0	1.5	19.5	2.0	19.0	2.5	18.5	4.0	17.0
25	27			1.0	25.0	1.5	24.5			2.5	23.5	4.0	22.0

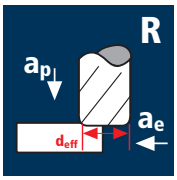
Application notes can be found in the chapter 3D

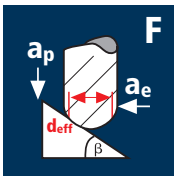
The application symbols are on the left next to the cutting data.
The letter, top right, provides information concerning strategy in relation to the stated cutting data.



R stands for «Roughing» - a process which requires sufficient power and stability with regard to the machine and clamping.

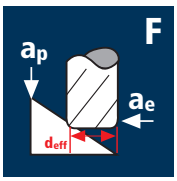
Z-level roughing: The cutting data given in the catalogue is for layer-by-layer removal. In this case the axial machine axis is set to constant depth and does not change. Pull and push cutting are therefore not recommended!





PF stands for «Pre-Finishing»
F stands for «Finishing»
SF stands for «Super-Finishing»

The cutting data given in the catalogue applies for removal from level surfaces and parallel with the shape of the workpiece. Pull and push cutting are permissible. Push cutting is however less than ideal and will result in a reduction in tool life.



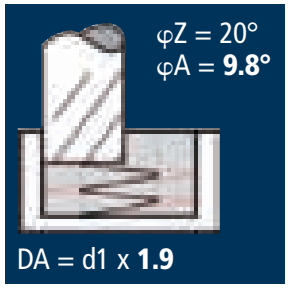
Infeed angle for monoblock milling tools

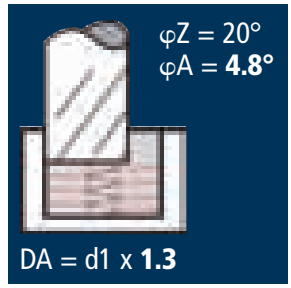
Chapter: Steel, stainless steel, titanium and nickel												
Material group	Rm 850-1500			HRC 48 - 60			Inox Stainless			Ti Titanium		
Version	N	M	L	N	M	L	N	M	L	N	M	L
Feed rate vf [%]	100%			100%			80%			80%		
z = 2	2.50°	1.80°	1.00°	1.50°	1.00°	0.60°	2.50°	1.80°	1.00°	2.50°	1.80°	1.00°
z = 3	2.00°	1.20°	0.80°	1.00°	0.65°	0.40°	2.00°	1.20°	0.80°	2.00°	1.20°	0.80°
z = 4	1.00°	0.65°	0.40°	0.50°	0.35°	0.20°	1.00°	0.65°	0.40°	1.00°	0.65°	0.40°
z > 4	0.40°	0.30°	0.20°	0.20°	0.15°	0.10°	0.40°	0.30°	0.20°	0.40°	0.30°	0.20°

Chapter: 3D machining												
Material group	Rm 850-1500			HRC 48 - 60			Inox Stainless			Ti Titanium		
Version	N	M	L	N	M	L	N	M	L	N	M	L
Feed rate vf [%]	100%			100%			80%			80%		
z = 2	0.50°	0.35°	0.25°	0.25°	0.20°	0.10°	0.50°	0.35°	0.25°	0.50°	0.35°	0.25°
z = 4	0.30°	0.25°	0.15°	0.20°	0.15°	0.10°	0.30°	0.25°	0.15°	0.30°	0.25°	0.15°
z > 4	0.20°	0.15°	0.10°	0.15°	0.10°	0.10°	0.20°	0.15°	0.10°	0.20°	0.15°	0.10°
HFC	0.50°	0.35°	0.25°	0.40°	0.30°	0.20°	0.50°	0.35°	0.25°	0.50°	0.35°	0.25°

Chapter: Aluminium and copper												
Material group	Al Aluminium Alloy						Cu Copper					
Version	N	M	2xd	3xd	4xd	5xd	N	M	2xd	3xd	4xd	5xd
Feed rate vf [%]	100%	100%										
z = 2	5.00°	4.00°	6.00°	5.00°	4.00°	2.50°	4.00°	3.00°	5.00°	4.00°	3.00°	2.00°
z = 3	4.50°	3.50°	5.00°	4.50°	3.50°	2.00°	3.50°	2.50°	4.00°	3.50°	2.50°	1.50°

The penetration angle (Helix) for NVDS-NVS-milling tools





Program the penetration angle φZ or φA correctly!

Conversion table φZ to φA with corresponding bore diameter											
Penetration angle φZ [°]	20°	18°	17.5°	16°	15°	13°	12°	10°	9°	8°	7°
Bore diameter DA	**Penetration angle φA [°]**										
DA = d1 x 1.3 [mm]	4.8°	4.3°	4.2°	3.8°	3.5°	3.0	2.8°	2.3°	2.1°	1.9°	1.6°
DA = d1 x 1.5 [mm]	6.9°	6.2°	6.0°	5.5°	5.1°	4.4°	4.1°	3.4°	3.0°	2.7°	2.3°
DA = d1 x 1.7 [mm]	8.5°	7.6°	7.4°	6.7°	6.3°	5.4°	5.0°	4.2°	3.7°	3.3°	2.9°
DA = d1 x 1.9 [mm]	**9.8°**	**8.7°**	**8.5°**	**7.7°**	**7.2°**	**6.2°**	**5.7°**	**4.8°**	**4.3°**	**3.8°**	**3.3°**

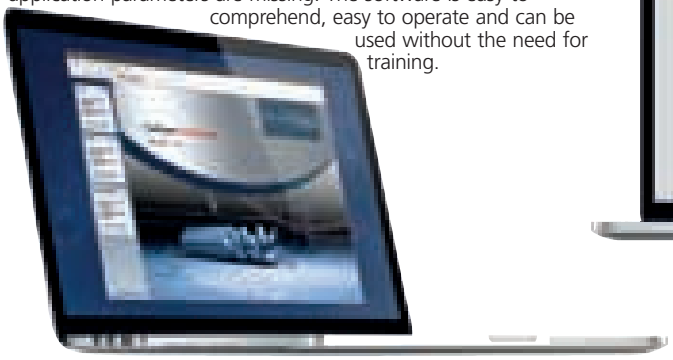
FRAISA recommendation

Use ToolExpert HelixRamp

Information for cutting data

The FRAISA cutting data software for reliable tool use

ToolExpert, the cutting data software is continuously expanded with new products and areas of application. The material database is so comprehensive that hardly any materials possessing suitable application parameters are missing. The software is easy to comprehend, easy to operate and can be used without the need for training.



The new online cutting data calculator ToolExpert HDC – High Dynamic Cutting

Put the productivity-increasing HDC high-performance roughing strategy (trochoidal milling) into practice.

The HDC milling (High Dynamic Cutting) is a high-performance rough machining strategy, which is characterised by constant cutting conditions. Consequently, the metal removal rate and the process reliability can be significantly increased. And at the same time the tool service life is increased!

CAM systems make the implementation of this strategy possible. However, the corresponding cutting data was not available up to now. This gap has been filled by the new ToolExpert HDC from FRAISA!

Use the online cutting data calculator ToolExpert HDC without having to download any software!

The new online cutting data calculator ToolExpert HelixRamp

With the new high-performance penetration edge, the NX-NVDS and NB-NVDS achieve a level of performance that facilitates peak productivity and process reliability in 7 dimensions!

This FRAISA innovation gives NVDS tools a ground-breaking performance range!

The development of the new penetration edge allows FRAISA to introduce the term high-performance penetration. The new high-performance penetration edge cuts easily and clears the chips without disrupting the process.

The cutting data software ToolExpert HelixRamp was developed for the new high-performance tools.

The software can conveniently be started using the FRAISA website. With just a few clicks, you can define the material, tool and penetration strategy, and receive the parameters to be programmed for your machine control or CAM system.

Use the online cutting data calculator ToolExpert HelixRamp without having to download any software!

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Calculation formulas for cutting data

	Formulas
d_1	Diameter of the cutting edge [mm]
z	Number of cutting edges
a_p	Axial infeed depth [mm]
a_e	Radial infeed depth [mm]
v_c	Cutting speed [m/min]
f_z	Feed per tooth and revolution [mm]
n	Spindle speed [min^{-1}]
v_f	Feed rate [mm/min]
f	Feed per rotation [mm]
Q	Material removal rate [cm^3/min]
d_{eff}	Effective engagement diameter [mm]
β	Setting angle «Beta» [° - DEG]
•	No application recommendation for the corresponding L-Type
L_A	Overall length from the spindle nose

Spindle speed

$$n = \frac{v_c \cdot 1000}{d_1 \cdot \pi} \left[\frac{1}{min}\right]$$

Cutting speed

$$v_c = \frac{d_1 \cdot n \cdot \pi}{1000} \left[\frac{m}{min}\right]$$

Feed rate

$$v_f = f_z \cdot z \cdot n \left[\frac{mm}{min}\right]$$

Feed per tooth

$$f_z = \frac{v_f}{z \cdot n} \; [mm]$$

Feed per rotation

$$f = f_z \cdot z \; [mm]$$

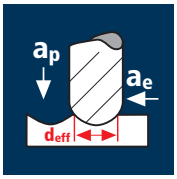
Material removal rate

$$Q = \frac{ap \cdot ae \cdot v_f}{1000} \left[\frac{cm^3}{min}\right]$$

i

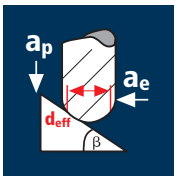
Calculation formulas for cutting data

Effective diameter for ball nose end mills at a set angle β = 0°



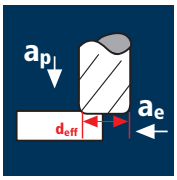
$$d_{eff} = 2 \cdot \sqrt{d_1 \cdot ap - ap^2} \quad [mm]$$

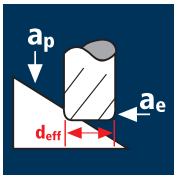
Effective diameter for ball nose end mills at a set angle 0 < β < 90°
Calculator setting in [° - DEG] ; entry of β in [°- DEG]



$$d_{eff} = d_1 \cdot \sin\left[\beta + \cos^{-1}\left(\frac{d_1 - 2 \cdot ap}{d_1}\right)\right] \quad [mm]$$

Effective diameter for corner radius end mills at a set angle 0 ≤ β < 90°
Calculator setting in [° - DEG] ; entry of β in [°- DEG]





$$d_{eff} = d_1 - 2 \cdot r + 2 \cdot r \cdot \sin\left[\beta + \cos^{-1}\left(1 - \frac{ap}{r}\right)\right] \quad [mm]$$

Calculation formulas for cutting data

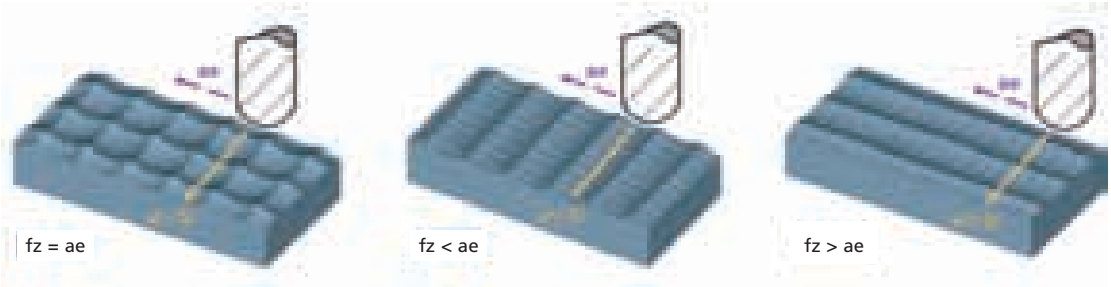
Theoretical surface roughness and surface qualities

Surface roughness in the direction of feed vf

$$R_{th,vf} = \left(\frac{d_1}{2} - \sqrt{\frac{d_1^2 - f_z^2}{4}} \right) \cdot 1000 \quad [\mu m]$$

Surface roughness in the infeed direction ae

$$R_{th,ae} = \left(\frac{d_1}{2} - \sqrt{\frac{d_1^2 - ae^2}{4}} \right) \cdot 1000 \quad [\mu m]$$



Surface qualities

Maximum roughness values Ra in µm; 1 µm = 0.001 mm					
3.2	1.6	0.8	0.4	0.2	0.1
Roughness classes					
N8	N7	N6	N5	N4	N3

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Hardness conversion table (R_m → HV10 → HB → HRC)

R_m [N/mm²]	HV 10	HB	HRC		R_m [N/mm²]	HV 10	HB	HRC
240	75	71			920	287	273	28
255	80	76			940	293	278	29
270	85	81			970	302	287	30
285	90	86			995	310	295	31
305	95	90			1020	317	301	32
320	100	95			1050	327	311	33
335	105	100			1080	336	319	34
350	110	105			1110	345	328	35
370	115	109			1140	355	337	36
385	120	114			1170	364	346	37
400	125	119			1200	373	354	38
415	130	124			1230	382	363	39
430	135	128			1260	392	372	40
450	140	133			1300	403	383	41
465	145	138			1330	413	393	42
480	150	143			1360	423	402	43
495	155	147			1400	434	413	44
510	160	152			1440	446	424	45
530	165	157			1480	458	435	46
545	170	162			1530	473	449	47
560	175	166			1570	484	460	48
575	180	171			1620	497	472	49
595	185	176			1680	514	488	50
610	190	181			1730	527	501	51
625	195	185			1790	544	517	52
640	200	190			1845	560	532	53
660	205	195			1910	578	549	54
675	210	199			1980	596	567	55
690	215	204			2050	615	584	56
705	220	209			2140	639	607	57
720	225	214				655	622	58
740	230	219				675		59
755	235	223				698		60
770	240	228				720		61
785	245	233				745		62
800	250	238	22			773		63
820	255	242	23			800		64
835	260	247	24			829		65
860	268	255	25			864		66
870	272	258	26			900		67
900	280	266	27			940		68

Dimensions (Diameter, radius)				Tolerance ISO e8		Tolerance ISO f8	
Millimeter		Inch					
over	up to	over	up to	Millimeter	Inch	Millimeter	Inch
–	6	–	.2362	-0.020 -0.038	-0.0008 -0.0015	-0.010 -0.028	-0.0004 -0.0011
6	10	.2362	.3937	-0.025 -0.047	-0.0010 -0.0019	-0.013 -0.035	-0.0005 -0.0014
10	18	.3937	.7087	-0.032 -0.059	-0.0013 -0.0023	-0.016 -0.043	-0.0006 -0.0017
18	30	.7087	1.1811	-0.040 -0.073	-0.0016 -0.0029	-0.020 -0.053	-0.0008 -0.0021

Dimensions (Diameter, radius)				Tolerance ISO h6		Tolerance ISO h10	
Millimeter		Inch					
over	up to	over	up to	Millimeter	Inch	Millimeter	Inch
–	6	–	.2362	0 -0.008	0 -0.0003	0 -0.048	0 -0.0019
6	10	.2362	.3937	0 -0.009	0 -0.0004	0 -0.058	0 -0.0023
10	18	.3937	.7087	0 -0.011	0 -0.0004	0 -0.070	0 -0.0028
18	30	.7087	1.1811	0 -0.013	0 -0.0005	0 -0.084	0 -0.0033

Dimensions (Diameter, radius)				Tolerance ISO k8		Tolerance ISO k12	
Millimeter		Inch					
over	up to	over	up to	Millimeter	Inch	Millimeter	Inch
–	6	–	.2362	+0.018 0	+.0007 0	+0.120 0	+.0047 0
6	10	.2362	.3937	+0.022 0	+.0009 0	+0.150 0	+.0059 0
10	18	.3937	.7087	+0.027 0	+.0011 0	+0.180 0	+.0071 0
18	30	.7087	1.1811	+0.033 0	+.0013 0	+0.210 0	+.0083 0

Coating suitability for milling tools

Coating suitability related to dry or wet machining conditions

A: Excellent suitability of the coating A during wet machining.
B: The suitability of the coating B during wet machining is sufficient to good.

C: Excellent suitability of the coating C during dry machining.
D: The suitability of the coating D during dry machining is sufficient to good.

Coating suitability for milling tools in the corresponding material class

1 = Ideally suited 2 = Adequate to well-suited	U UNICUT-4X		P POLYCHROM		D DURO-S		V DURO-V		X X-AL		M MICRO		C CELERO	
Material classes														
Steel < 500 N/mm²	1	X	1	X	X	X	2	X	1	X	1	X	1	X
Steel 500 - 850 N/mm²	1	X	1	X	X	X	2	X	1	X	1	X	X	X
Steel 850 - 1100 N/mm²	1	X	1	1	X	X	2	1	1	1	1	X	X	X
Steel 1100 - 1300 N/mm²	2	2	2	1	X	X	2	1	2	1	1	X	X	X
Steel 1300 - 1500 N/mm²	2	2	2	1	X	2	2	1	2	1	2	1	X	X
Hardened tool steel 48-52 HRC	X	2	X	1	X	2	X	1	X	1	X	1	X	X
Hardened tool steel 52-56 HRC	X	X	X	1	X	1	X	1	X	1	X	1	X	X
Hardened tool steel 56-60 HRC	X	X	X	1	X	1	X	1	X	1	X	1	X	X
Hardened tool steel >60 HRC	X	X	X	2	X	1	X	1	X	1	X	X	X	X
Cold work tool steel (12% Cr) high alloyed [1.2379]	2	2	2	1	X	1	2	1	2	1	X	X	X	X
Cold work tool steel, low alloyed [1.2067]	2	2	2	1	X	1	2	1	2	1	X	X	X	X
Stainless steel ferritic/martensitic	1	X	1	X	X	X	2	X	1	X	1	X	X	X
Stainless steel [Cr-Ni/1.4301]	1	X	1	X	X	X	2	X	1	X	1	X	2	X
Stainless steel [Cr-Ni-Mo-.../1.4571]	1	X	1	X	X	X	2	X	1	X	1	X	X	X
Heat resistant steel [17-4 PH]	1	X	1	X	X	X	2	X	2	X	1	X	X	X
Nickel base alloys prec.-hard. [Inconel 718]	1	X	1	X	X	X	2	X	2	X	1	X	X	X
Cast iron (lamellar / spheroidal)	2	2	2	1	X	1	2	1	2	1	2	1	X	X
Titanium alloys up to 300 HB [Ti5Al2.5Sn]	1	X	1	X	2	X	2	X	2	X	1	X	2	X
Titanium alloy > 300 HB [Ti6Al4V]	1	X	1	X	1	X	2	X	2	X	1	X	X	X
Unalloyed aluminium	X	X	X	X	X	X	X	X	X	X	X	X	1	X
Wrought aluminium Si <6%	2	X	2	X	X	X	X	X	X	X	1	X	1	X
Unalloyed copper	2	X	2	X	X	X	2	X	2	X	1	X	1	X
Wrought copper alloys Bronze	2	2	2	1	X	2	2	1	2	1	2	1	X	X
Brass short chips [Ms58]	2	2	2	1	X	2	2	1	2	1	2	1	X	X
Thermoplastics	2	X	2	X	X	X	X	X	X	X	2	X	2	X
High speed steel hardened	X	X	X	X	X	1	X	1	X	2	X	X	X	X

General conditions

1. General

1.1 The contract is concluded with the written confirmation (Order confirmation) of Fraisa SA or its subsidiaries (hereinafter known in short as «supplier») that it accepts the order.

1.2 Any deviation from the order in the order confirmation forms part of the contract, unless the purchaser rejects it in writing within 5 working days from the receipt date of the order confirmation. Quotations, particularly those involving price lists, brochures, etc., which contain no acceptance dates, are non-binding.

1.3 These delivery conditions shall be binding if they are declared as applicable in the quotation or order confirmation. Other conditions of the purchaser are only applicable if they have been expressly accepted by the supplier and this acceptance is in writing.

1.4 All agreements and legally relevant declarations of the parties need to be made in writing in order to be applicable.

1.5 If any provision of these delivery conditions should prove wholly or partially ineffective, the parties shall replace this provision with a new agreement which comes as close to the intended legal and economic outcome as possible.

2. Scope of the delivery and services

The supplier's deliveries and services are itemised in the order confirmation, including any appendices to it. The supplier is authorised to make changes that lead to improvements, where these do not increase the price.

3. Brochures, catalogues and technical documents

Brochures and catalogues are not binding without other agreements. Information contained in technical documents is only binding if it is explicitly assured.

4. Prices

4.1 All prices are - in the absence of any agreement - net prices, ex works, excluding packaging, in freely available Swiss Francs or the local currency of the subsidiaries, without any deductions.

4.2 All additional costs, e.g. for freight, insurance, export, import and other permits and certifications, shall be borne by the purchaser.

4.3 Likewise, the purchaser shall bear all taxes (especially VAT), levies, fees, duties (and the like) that are imposed in connection with the contract, or reimburse the supplier for them against corresponding proof, if the supplier has to pay for them.

5. Payment terms

5.1 The payments are to be made by the purchaser in accordance with agreed payment terms at the location of the supplier's office without the deduction of discounts, expenses, taxes, duties, fees, duties (and the like). The obligation to make payment is fulfilled, when at the location of the supplier's office, the arranged amount have been made freely available to the supplier. The payment deadline is 30 days from the invoice date.

5.2 The payment deadline and/or the separately agreed payment deadlines must be met even if the transport, delivery or acceptance of the delivery is delayed or prevented for reasons for which the supplier is not responsible, if non-essential items are missing from the delivery, or if subsequent machining is necessary which does not make usage of the delivery impossible.

5.3 If the purchaser does not make payment by the payment deadline and/or the separately agreed payment deadline, he must, without notice, pay interest from the date the invoice is due at an interest rate based on the rate where the purchaser has his office, however at least 4% above the discount rate of the Swiss National Bank. The right to claim further damages is reserved.

6. Retention of title

6.1 The supplier shall retain ownership of all parts of the delivery until he has received the payments in accordance with the contract.

6.2 The purchaser is obliged to participate in measures which are necessary for the protection of the supplier's property; in particular, at the expense of the purchaser, he authorizes the supplier to register or enter the title in public records, books and the like according to the relevant national laws and to comply with all relevant formalities.

6.3 The purchaser shall maintain the delivered goods at his cost for the duration of retention of title and insure them on behalf of the supplier against theft, breakage, fire, water and other risks. He shall further take all measures to ensure that the supplier's property claim is in no way compromised nor cancelled.

7. Delivery deadline

7.1 The supplier shall strive to meet the delivery deadline which is recorded in the order confirmation. The delivery deadline is met if the «ready for despatch» message is sent to the purchaser by its expiry.

7.2 The meeting of the delivery deadline presupposes full compliance with the contractual obligations by the purchaser.

7.3 The delivery deadline shall be extended by an appropriate period if hindrances occur which, despite due care, the supplier cannot avert, regardless of whether they originate from him, the purchaser or a third party. Such hindrances include epidemics, mobilisation, war, riots, major breakdowns, accidents, labour disputes, delayed delivery or mistakes in the delivery of the necessary raw materials and semi-finished products, governmental actions or omissions, and natural events.

7.4 If a specific date is agreed upon instead of a delivery deadline, this is equivalent to the last day of a delivery deadline. Points 7.1 to 7.3 apply analogously.

7.5 In the case of delay, the purchaser is not entitled to compensation or other benefits, except for the agreement cited in point 7 or an agreement stipulated in a separate agreement. This restriction does not apply to unlawful intent or gross negligence on the part of the supplier.

8. Return of goods

For commercial product returns up to CHF 1,000.00, it is necessary for us to charge a reduction of 10% of the value of the goods, however at least CHF 30.00 for checking costs incurred by us. In the case of higher return values, prior consent from FRAISA SA is required. Custom designs and products with special labeling may not be returned.

9. Packaging

Packaging is separately charged by the supplier and cannot be returned.

10. Transfer of benefits and risks

10.1 At the latest, benefits and risks are passed to the purchaser when the delivery leaves the factory.

10.2 If the shipment is delayed at the request of the purchaser or for other reasons which the supplier is not responsible for, the risk is passed to the purchaser for the originally scheduled date of delivery from the factory. From this point on, the supplied products are stored and insured at the purchaser's expense and risk.

11. Shipping, transportation and insurance

11.1 The supplier must be informed of special requests concerning shipping, transportation and insurance in good time. Transportation takes place at the purchaser's expense and risk.

11.2 Complaints relating to the shipping or transportation should be addressed to the last carrier by the purchaser without delay upon receipt of the delivery or the shipping documents.

11.3 Insurance against all kinds of damage is the responsibility of the purchaser.

12. Checking and acceptance of the delivery

12.1 The purchaser must check the delivery upon receipt within 8 days and notify the supplier of any defects within the same period in writing. Failing this, the supply shall be deemed approved.

12.2 The supplier shall resolve the defects which are notified to him in accordance with point 12.1 as quickly as possible, or - at his option - replace defective goods.

12.3 In the case of defects of any sort relating to the delivery, the purchaser has no rights or rights to make claims other than those specifically mentioned in points 12 and 13 (warranty, liability for defects).

13. Warranty, liability for defects

13.1 The warranty period is 6 months. It begins with the date the delivery leaves the factory. In the case of replaced or repaired products, the warranty period starts afresh and shall last for 6 months from the date the replacement goods are shipped from the supplier. The guarantee expires prematurely if the purchaser or a third party undertakes inappropriate modifications or repairs or if the purchaser, when a fault has occurred, does not immediately take all appropriate measures to mitigate the damage and does not give the supplier the opportunity to resolve the defect.

13.2 Damage is excluded from the warranty and the supplier's liability which has arisen in circumstances which cannot be proven to be due to poor materials, faulty design or poor workmanship, e.g. natural wear, improper maintenance, failure to follow operating instructions, excessive strain, unsuitable equipment, chemical or electrolytic influences as well as other reasons that the supplier cannot be held responsible for.

13.3 The purchaser shall only be entitled to the replacement or repair of defective goods. The purchaser is not entitled to further claims, especially for compensation for damage or consequential damage. In no case can claims be considered by the purchaser for compensation for damage which is not caused to the object itself, e.g. loss of production, inability to use the goods, loss of contracts, loss of profit and other direct or indirect damage. This disclaimer does not apply to unlawful intent or gross negligence on the part of the supplier. Moreover, this disclaimer does not apply in so far as any mandatory provisions oppose it.

14. Place of jurisdiction and applicable law

14.1 The place of jurisdiction for the purchaser and the supplier is the place where the supplier has its head office. The supplier is entitled to take out legal action against the purchaser at its place of residence.

14.2 The contract shall be exclusively governed by the national commercial law which applies in the supplier's country. The provisions of the CISG do not apply.

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Article list Inch tools

Example: Article P5838

Article-N°.: 5838
Coating: P
Page: 37

Article-N°.		Coating										
INDEX		without	P	U	D	V	X	M	C	T	B	B
			POLYCHROM	UNICUT-4X	DURO-S	DURO-V	X-AL	MICRO	CELERO	TRIBO	DIAMANT	DIAPLUS
Chemical composition			TiAlCrN	TiAlCN	AlTiN	AlTiSiN	TiAlN/ AlCrN	TiAlN	TiB2	AlTiN + MoS2	C	C
Hardness [HV]			3000	3200	3600	4400	3300	3000	4000	3600	10000	10000
Max. temp. [°C]			1000	650	880	1100	1100	800	700	880	600	600
_ 5810	175		●									
_ 5820	191						●					
_ 5821	193						●					
_ 5822	177		●									
_ 5831	51		●									
_ 5832	49		●									
_ 5833	45		●									
_ 5834	53		●									
_ 5836	43		●									
_ 5837	47		●									
_ 5838	37		●									
_ 5840	93			●								
_ 5844	189			●								
_ 5850	151		●		●							
_ 5852	155		●		●							
_ 5855	107		●									
_ 5860	113			●								
_ 5864	163				●							
_ 5865	115			●								
_ 5866	109				●							
_ 5867	137				●							
_ 5868	117			●								
_ 5869	139				●							
_ 5875	215								●			
_ 5877	217								●			
_ 5885	187		●									
_ 5886	179			●	●							
_ 5887	183			●	●							
_ 5890	221								●			
_ 5891	219								●			
_ 5897	201								●			
_ 5918	79		●									
_ 5925	71		●									
_ 5926	141		●									
_ 5927	73		●									
_ 5931	51		●									
_ 5932	49		●									
_ 5933	45		●									

Article-N°.		Coating										
INDEX		without	P	U	D	V	X	M	C	T	B	B
			POLYCHROM	UNICUT-4X	DURO-S	DURO-V	X-AL	MICRO	CELERO	TRIBO	DIAMANT	DIAPLUS
_ 5934	53		●									
_ 5936	43		●									
_ 5937	47		●									
_ 5938	37		●									
_ 5939	41		●									
_ 5940	93			●								
_ 5944	189			●								
_ 5945	95			●								
_ 5947	69				●							
_ 5948	65				●							
_ 5949	61		●		●							
_ 5957	135				●							
_ 5958	67				●							
_ 5967	137				●							
_ 5969	139				●							
_ 5973	25		●									
_ 5974	27		●									
_ 5976	21		●									
_ 5979	23		●									
_ 7800	159						●					
_ 7804	161						●					
_ 7860	147						●					
_ 7864	149						●					
_ 9609	31			●								
_ 15640	227										●	
_ 15645	229										●	
_ 15650	231										●	
_ 15652	233										●	
_ 15680	235										●	
_ 15685	237										●	
_ 15690	239										●	
_ 15820	171						●					
_ 15821	173						●					
_ 15822	55		●									
_ 15823	59		●									
_ 15824	57		●									
_ 15831	209	●										
_ 15834	211	●										
_ 15835	205	●										
_ 15836	39		●									
_ 15838	213	●										
_ 15839	207	●										
_ 15840	195				●							
_ 15845	127		●									
_ 15846	125		●									
_ 15850	101		●									
_ 15851	103		●									
_ 15852	105		●									
_ 15853	165		●									
_ 15862	131		●									
_ 15866	111				●							
_ 15870	133		●									
_ 15871	129		●									
_ 15880	33		●									
_ 15881	35		●									
_ 15883	123		●									
_ 15894	87		●									
_ 15897	203								●			
_ 15913	77		●									
_ 15914	81		●									
_ 15922	55		●									
_ 15923	59		●									
_ 15924	57		●									
_ 15925	75		●									
_ 15936	39		●									

Article-N°.		Coating										
INDEX		without	P	U	D	V	X	M	C	T	B	B
			POLYCHROM	UNICUT-4X	DURO-S	DURO-V	X-AL	MICRO	CELERO	TRIBO	DIAMANT	DIAPLUS
_ 15945	127		●									
_ 15946	125		●									
_ 15962	131		●									
_ 15970	133		●									
_ 15971	129		●									
_ 15979	29		●									
_ 15980	33		●									
_ 15981	35		●									
_ 15983	123		●									
_ 15990	85		●									
_ 15991	83		●									
_ 15993	89		●									
_ 15995	91		●									
_ 15996	143		●									
_ 15997	145		●									
_ 45811	97		●									
_ 45812	99		●									

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Article list metric tools

Example: Article P8600

Article-N°.: 8600
Coating: P
Page: 247

Article-N°.		Coating										
INDEX		without	P	U	D	V	X	M	C	T	B	B
			POLYCHROM	UNICUT-4X	DURO-S	DURO-V	X-AL	MICRO	CELERO	TRIBO	DIAMANT	DIAPLUS
Chemical composition			TiAlCrN	TiAlCN	AlTiN	AlTiSiN	TiAlN/ AlCrN	TiAlN	TiB2	AlTiN + MoS2	C	C
Hardness [HV]			3000	3200	3600	4400	3300	3000	4000	3600	10000	10000
Max. temp. [°C]			1000	650	880	1100	1100	800	700	880	600	600
_ 5220	345		●									
_ 5222	355		●									
_ 5225	261		●									
_ 5240	257		●									
_ 5248	263				●							
_ 5249	271				●							
_ 5250	375		●									
_ 5252	381		●									
_ 5256	275				●							
_ 5259	273				●							
_ 5260	281		●									
_ 5266	279				●							
_ 5275	457	●							●			
_ 5277	459	●							●			
_ 5288	353		●									
_ 5290	349	●							●			
_ 5292	357								●			
_ 5325	261		●									
_ 5340	257		●									
_ 5348	263				●							
_ 5349	271				●							
_ 5356	275				●							
_ 5630	513										●	
_ 5640	515										●	
_ 5645	517										●	
_ 5650	519										●	
_ 5710	293	●										
_ 5712	289							●				
_ 5712	499										●	
_ 5714	303							●				
_ 5714	501										●	
_ 5716	309							●				
_ 5716	503										●	
_ 5717	313							●				
_ 5717	505										●	
_ 5721	315							●				
_ 5722	291				●							
_ 5724	305				●							

Article-N°.		Coating										
INDEX		without	P	U	D	V	X	M	C	T	B	B
			POLYCHROM	UNICUT-4X	DURO-S	DURO-V	X-AL	MICRO	CELERO	TRIBO	DIAMANT	DIAPLUS
_ 5726	311				●							
_ 5752	437							●				
_ 5754	441							●				
_ 5754	495										●	
_ 5756	445							●				
_ 5756	497										●	
_ 5762	439				●							
_ 5764	443				●							
_ 5766	447				●							
_ 5782	409							●				
_ 5782	475										●	
_ 5784	415							●				
_ 5784	477										●	
_ 5785	413	●										
_ 5786	419							●				
_ 5786	479										●	
_ 5787	423							●				
_ 5787	481										●	
_ 5791	425							●				
_ 5791	483										●	
_ 5792	411				●							
_ 5793	485										●	
_ 5794	417				●							
_ 5796	421				●							
_ 6034	489											●
_ 6036	491											●
_ 6038	493											●
_ 6064	467											●
_ 6066	469											●
_ 6068	471											●
_ 6070	473											●
_ 6532	427						●					
_ 6534	429						●					
_ 6536	431						●					
_ 6562	391						●					
_ 6564	393						●					
_ 6566	395						●					
_ 6568	397						●					
_ 6632	433						●					
_ 6634	435						●					
_ 6766	399						●					
_ 6768	401						●					
_ 6770	403						●					
_ 6772	405						●					
_ 7100	359						●					
_ 7104	367						●					
_ 7200	363						●					
_ 7204	371						●					
_ 7284	511											●
_ 7340	377		●									
_ 7400	331						●					
_ 7404	339						●					
_ 7420	329						●					
_ 7424	337						●					
_ 7454	343						●					
_ 7460	333						●					
_ 7464	341						●					
_ 7470	327					●						
_ 7474	335					●						
_ 7480	507											●
_ 7484	509											●
_ 7540	347		●									
_ 7600	383						●					
_ 7604	387						●					
_ 7620	385						●					

Article-N°.		Coating										
INDEX		without	P	U	D	V	X	M	C	T	B	B
			POLYCHROM	UNICUT-4X	DURO-S	DURO-V	X-AL	MICRO	CELERO	TRIBO	DIAMANT	DIAPLUS
_ 7624	389						●					
_ 8200	251		●									
_ 8404	253		●									
_ 8600	247		●									
_ 15207	255		●									
_ 15243	269		●									
_ 15250	277		●									
_ 15251	283		●									
_ 15266	285		●									
_ 15307	255		●									
_ 15308	267		●									
_ 15322	249		●									
_ 15323	265		●									
_ 15343	269		●									
_ 15520	453								●			
_ 15530	455								●			
_ 15711	287				●							
_ 15752	301							●				
_ 15754	307							●				
_ 15781	407				●							
_ 15795	487										●	
_ 45298	351			●								
_ 45317	259		●									
_ 45710	293							●				
_ 45713	297	●						●				
_ 45785	413							●				

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