



multidec[®] -MILL

Solid Carbide Tools

**Universal Milling
End Mills & Deburring**

- Suitable for General Machining and Long Turning
- Chip Management System for Seamless Operation
- Flute Lengths Tailored for Diverse Machining Needs
- Weldon Flat Design for Precision and Stability



www.GenSwiss.com | 413-562-4800 | sales@genswiss.com

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With multidec®-MILL, a new product range consisting of universal milling tools are now available. These tools are characterized by having an excellent price/performance ratio, and are as diverse as their areas of application. The multidec®-MILL product range is continuously being developed and expanded.

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- Preferred Application
- Possible Application
- Application Not Recommended

Series	Order Designation	Steel	Stainless Steel	Titanium & Ti-Alloys	Non Ferrous Metals	Hardened	Machining Recommendations
							1 = unsuitable to 6 = optimal
End mills	UMMS 4...x 020...	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
	UMMS 4...x 0XS...	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
Trochoidal End mills	UMMTR 5...x030...	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
	UMMTR 5...x040...	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
Deburring Tools	UMME...x60°	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
	UMME...x90°	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
Front/back Deburring Tools	UMMVR 4...x90°	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
	UMMVRL 4...x90°	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
Concave quarter radius mills	UMMVK 4...R	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6
Front/back Concave quarter radius mills	UMMVKL 4...R	■	■	□	□	-	Roughing 1 2 3 4 5 6 Finishing 1 2 3 4 5 6

multidec® -MILL Series Descriptions

Solid Carbide End Mills, Deburring Tools, Concave Quarter Radius Drills

Series	Depth	Flute Ø	Flute Length	Shank Ø	# of Teeth	Uneven Tooth Pitch	Tolerance	Coating	Milling Application
UMMS 4...x 020 ...	2 x Ø	2-20	0.9-52	6-20	4	Yes	h6	HMP700	Full Groove, Contour, Trochoidal
UMMS 4...x 0XS ...	2 x Ø	2-12		6-12	4	No	h6	HMP800	Full Groove, Contour
UMMTR 5...x030...	3 x Ø	6-20	23-70	6-20	5	Yes	h6	HMP700	Trochoidal, Helical
UMMTR 5...x040...	4 x Ø	6-20		6-20	5	Yes	h6	HMP700	Trochoidal, Helical
UMME...x60°...		1-16		3-16	3-4	Yes	h6	HMP700	Deburring
UMME...x90°...		1-16	5-8	3-16	3-4	Yes	h6	HMP700	Deburring
UMMVR 4...x 90°...		2-12	8-23	4-12	4	No	h6	HMP700	Deburring
UMMVRL 4...x 90°...		3-12			4	No	h6	HMP700	Deburring
UMMVK 4...R...		3.6-5		4-25	4	No	h6	HMP700	Corner Radius
UMMVKL 4...R...		5.6-7			4	No	h6	HMP700	Corner Radius

Legend

The dimensions listed in the tool tables refer to the following tool parameters:

CHW	Corner Chamfer Width
D	Shank Diameter
d₁	Flute Diameter
dc₁	MIN Cutting Diameter
dc₂	MAX Cutting Diameter
DN	Clearance Diameter
l₁	Flute Length/Length of Cut
l₂	Neck Length
L	Overall Length (OAL)
R	Radius
Z	Number of Flutes (Teeth)

Recommended cutting specifications

The cutting speed and feed are important parameters during cutting, both influence the machining time and the workpiece quality. All of the parameters specified in this document must be considered as guideline values. Each depend on the respective workpiece clamping, tool clamping, machine performance, machine stability, the tool itself and more. Each cutting value recommendation is therefore just a rough guideline.

Please contact our application engineers **call 413-562-4800** or **email sales@genswiss.com** for more information.

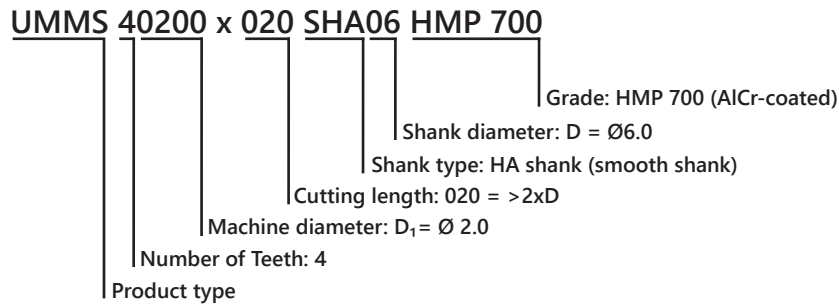
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Experience affordable performance at your shop with this solid carbide end mill platform, available in three, four and five flute geometries.

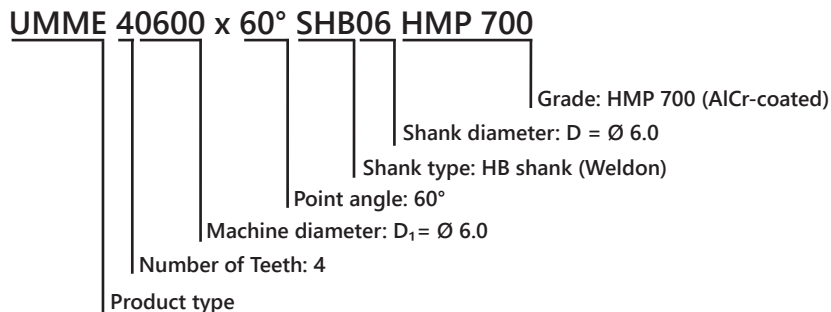
Features

- Suitable for general machining as well as long turning
- Chip Management System for seamless operation
- Flute lengths tailored for diverse machining needs
- Weldon flat design for precision and stability

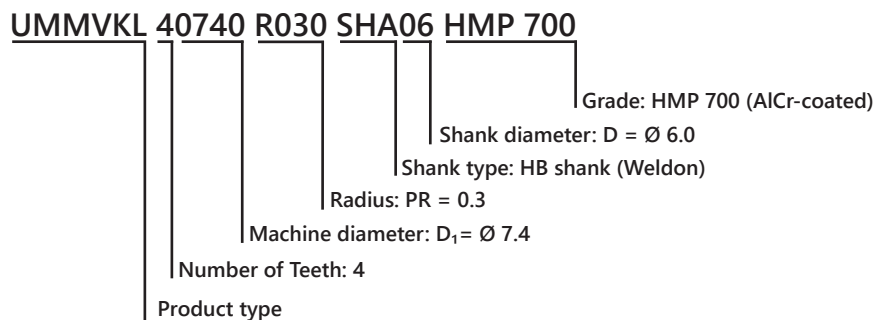
DESIGNATION SYSTEM FOR END MILLS



DESIGNATION SYSTEM FOR DEBURRING TOOLS



DESIGNATION SYSTEM FOR CONCAVE QUARTER RADIUS MILLS



Symbols for tool attributes

	Number of teeth Example: five teeth		Uneven tooth pitch		Cutting length Example: Drilling depth 3xD ₁
	Shank type Straight shank DIN 6535 (HA)		Edge reinforcement Corner radius (RE)		Dynamic helix angle
	Weldon DIN6535 (HB)		Corner chamfer (CHW)		Helix angle Example: Helix angle 40°
	Chip breaker		Sharp-edged		Point angle Example: Point angle 90°

UMMS 4... x 020 ...							UNI Uneven tooth pitch Cut over centre
UMMS 4... x 0XS ...							UNI Cut over centre
UMMTR 5... x 030 ...							UNI Uneven tooth pitch Cut over centre
UMMTR 5... x 040 ...							UNI Uneven tooth pitch Cut over centre
UMME ... x 60° ...							
UMME ... x 90° ...							
UMMVR 4... x 90° ...							
UMMVRL 4... x 90° ...							
UMMVK 4... R...							
UMMVKL 4... R...							

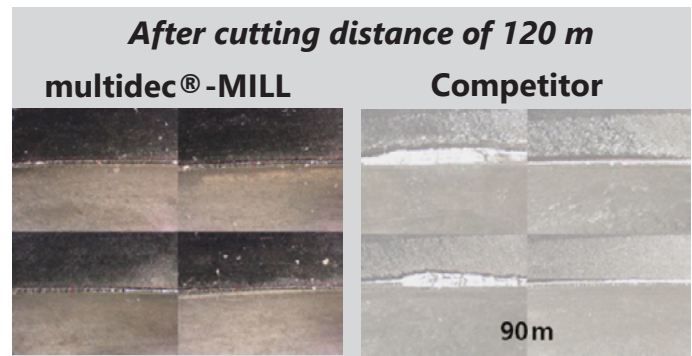
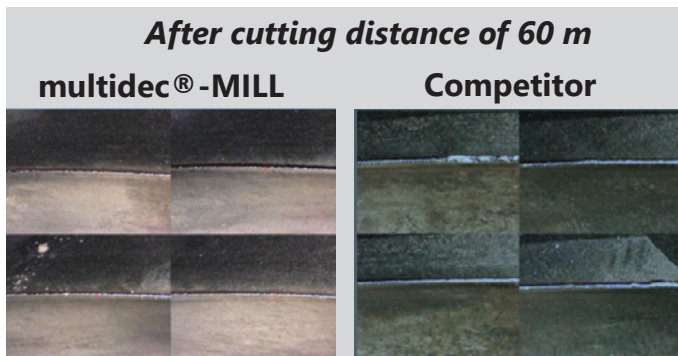
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Success stories

Application Parameters - Cutting distance determination 2xD UMMS 4120...

A milling tool with Ø 12 mm was used for contour milling in order to determine the cutting distance in meters.

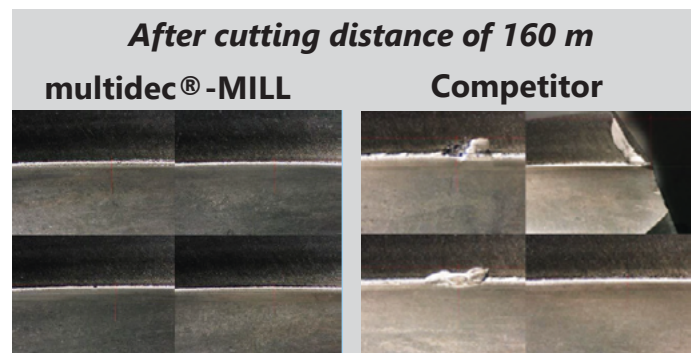
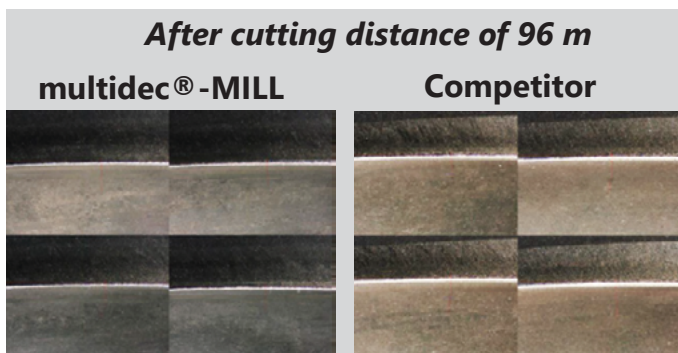
Machine model	Hermle C32U / HSK63	Cutting speed (vc)	160 m/min
Material No.	1.7225 / 42CrMo4+QT	Feed per tooth (fz)	0.075 mm/Z
Operation	contour milling	Axial cutting depth (ap)	15 mm
Cooling	external air blow	Radial cutting depth (ae)	15 mm



Application Parameters – Cutting distance determination 2×D UMMS 4120...

A milling tool with Ø 12 mm was used for contour milling in order to determine the cutting distance in meters.

Machine model	Hermle C32U / HSK63	Cutting speed (vc)	85 m/min
Material No.	1.4571 / X6CrNiMoTi (V4A)	Feed per tooth (fz)	0.062 mm/Z
Operation	contour milling	Axial cutting depth (ap)	12 mm
Cooling	external cooling lubricant	Radial cutting depth (ae)	2.4 mm



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UMMS 4 x 020
02XD

End Mills

Pg. 8



UMMS 4 x 0XS
02XD

End Mills

Pg. 10



UMMTR 5 x 030
03XD

Trochoidal End Mills

Pg. 11



UMMTR 5... x 040
04XD

Trochoidal End Mills

Pg. 12



UMME ... x 60°

Deburring

Pg. 13



UMME ... x 90°

Deburring

Pg. 14



UMMVR 4... x 90°

Front/back Deburring

Pg. 15



UMMVRL 4 ... x 90°

Front/back Deburring

Pg. 16



UMMVK4 ... R

Concave Qtr Radius Mill

Pg. 17

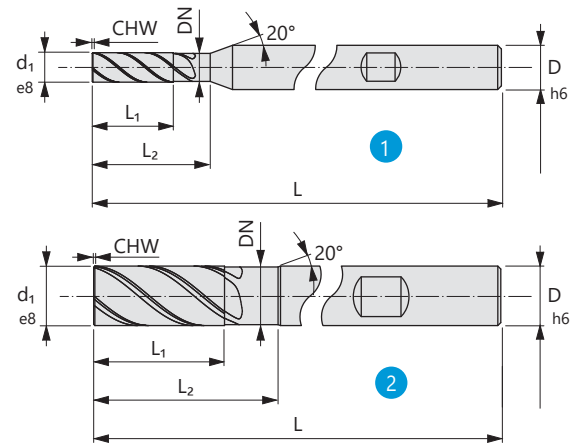
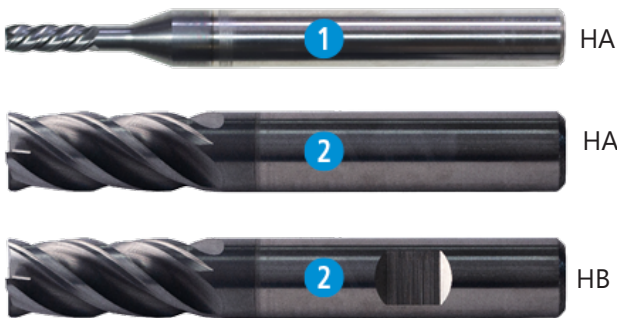
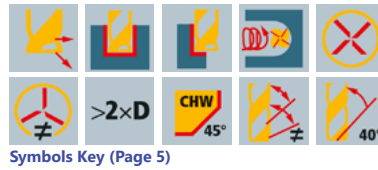


UMMVKL 4... R...

Front/back Concave
Quarter Radius Mill

Pg. 18

End Mills

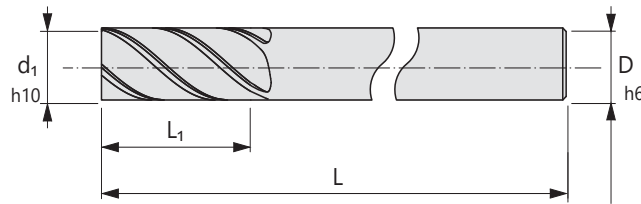


UMMS 4... x 020 ...

Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	DN Clearance Ø	CHW Corner Chamfer Width	L ₂ Neck Length	Z # Flutes	L OAL	D Shank Ø	Coating	Fig.	Shank
7007-552000	UMMS 40200 x 020 SHA06 ...	2mm	5mm	1.8mm	0.1mm	9mm	4	57mm	6mm	HMP700	1	HA
7007-552001	UMMS 40300 x 020 SHA06 ...	3mm	8mm	2.8mm	0.1mm	12mm	4	57mm	6mm	HMP700	1	HA
7007-552002	UMMS 40400 x 020 SHA06 ...	4mm	11mm	3.8mm	0.1mm	16mm	4	57mm	6mm	HMP700	1	HA
7007-552003	UMMS 40500 x 020 SHA06 ...	5mm	13mm	4.8mm	0.2mm	19mm	4	57mm	6mm	HMP700	1	HA
7007-552004	UMMS 40600 x 020 SHA06 ...	6mm	13mm	5.8mm	0.2mm	19mm	4	57mm	6mm	HMP700	2	HA
7007-552005	UMMS 40800 x 020 SHA08 ...	8mm	20mm	7.7mm	0.2mm	26mm	4	63mm	8mm	HMP700	2	HA
7007-552006	UMMS 41000 x 020 SHA10 ...	10mm	22mm	9.7mm	0.2mm	31mm	4	72mm	10mm	HMP700	2	HA
7007-552007	UMMS 41200 x 020 SHA12 ...	12mm	26mm	11.6mm	0.2mm	38mm	4	83mm	12mm	HMP700	2	HA
7007-552008	UMMS 41600 x 020 SHA16 ...	16mm	32mm	15.5mm	0.3mm	42mm	4	92mm	16mm	HMP700	2	HA
7007-552009	UMMS 42000 x 020 SHA20 ...	20mm	42mm	19.5mm	0.3mm	52mm	4	104mm	20mm	HMP700	2	HA
7007-552010	UMMS 40200 x 020 SHB06 ...	2mm	5mm	1.8mm	0.1mm	9mm	4	57mm	6mm	HMP700	1	HB
7007-552011	UMMS 40300 x 020 SHB06 ...	3mm	8mm	2.8mm	0.1mm	12mm	4	57mm	6mm	HMP700	1	HB
7007-552012	UMMS 40400 x 020 SHB06 ...	4mm	11mm	3.8mm	0.1mm	16mm	4	57mm	6mm	HMP700	1	HB
7007-552013	UMMS 40500 x 020 SHB06 ...	5mm	13mm	4.8mm	0.2mm	19mm	4	57mm	6mm	HMP700	1	HB
7007-552014	UMMS 40600 x 020 SHB06 ...	6mm	13mm	5.8mm	0.2mm	19mm	4	57mm	6mm	HMP700	2	HB
7007-552015	UMMS 40800 x 020 SHB08 ...	8mm	20mm	7.7mm	0.2mm	26mm	4	63mm	8mm	HMP700	2	HB
7007-552016	UMMS 41000 x 020 SHB10 ...	10mm	22mm	9.7mm	0.2mm	31mm	4	72mm	10mm	HMP700	2	HB
7007-552017	UMMS 41200 x 020 SHB12 ...	12mm	26mm	11.6mm	0.2mm	38mm	4	83mm	12mm	HMP700	2	HB
7007-552018	UMMS 41600 x 020 SHB16 ...	16mm	32mm	15.5mm	0.3mm	42mm	4	92mm	16mm	HMP700	2	HB
7007-552019	UMMS 42000 x 020 SHB20 ...	20mm	42mm	19.5mm	0.3mm	52mm	4	104mm	20mm	HMP700	2	HB

Cutting Data for UNI End Mills Z4 2xD				Steel		Stainless steel	Non-ferrous metals	Cast iron
Guideline values				1 	2 			
				 ¹ Preferably used for full groove and contour milling ² Preferably used for trochoidal milling				
Tensile strength (N/mm ²)				<850	<1100	<850	<600	<1000
Cutting speeds vc (m/min)				185	165	85	360	200
DC (mm)	APMX (mm)	Plunge angle (°)	Application	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
2.0	5.0	0.4	 Full groove milling $a_p = 1 \times D$ $a_e = 1 \times D$	0.010	0.010	–	0.013	0.013
3.0	8.0	0.4		0.013	0.013	–	0.013	0.015
4.0	11.0	0.4		0.013	0.013	–	0.015	0.015
5.0	13.0	0.4		0.020	0.020	–	0.025	0.025
6.0	13.0	0.7		0.030	0.030	–	0.030	0.035
8.0	20.0	0.8		0.040	0.040	–	0.045	0.045
10.0	22.0	1.2		0.045	0.045	–	0.065	0.050
12.0	26.0	1.8		0.050	0.050	–	0.085	0.055
16.0	32.0	2.4		0.055	0.055	–	0.100	0.060
20.0	42.0	3.0		0.065	0.065	–	0.110	0.070
2.0	5.0	0.4	 Contour milling $a_p = APMX_{max}$ $a_e = 0.2 \times D$	0.013	0.013	0.010	0.015	0.015
3.0	8.0	0.4		0.015	0.015	0.013	0.015	0.018
4.0	11.0	0.4		0.015	0.015	0.013	0.025	0.018
5.0	13.0	0.4		0.025	0.025	0.020	0.030	0.030
6.0	13.0	0.7		0.035	0.035	0.030	0.050	0.040
8.0	20.0	0.8		0.045	0.045	0.040	0.065	0.050
10.0	22.0	1.2		0.055	0.055	0.045	0.085	0.060
12.0	26.0	1.8		0.065	0.065	0.050	0.100	0.070
16.0	32.0	2.4		0.070	0.070	0.055	0.110	0.075
20.0	42.0	3.0		0.085	0.085	0.065	0.125	0.090
2.0	5.0	0.4	 Trochoidal milling $a_p = APMX_{max}$ $a_e = 0.08 \times D$	0.028	0.022	0.020	0.045	0.025
3.0	8.0	0.4		0.040	0.032	0.028	0.064	0.036
4.0	11.0	0.4		0.055	0.044	0.039	0.088	0.050
5.0	13.0	0.4		0.065	0.052	0.046	0.104	0.059
6.0	13.0	0.7		0.085	0.068	0.060	0.136	0.077
8.0	20.0	0.8		0.100	0.080	0.070	0.160	0.090
10.0	22.0	1.2		0.120	0.096	0.084	0.192	0.108
12.0	26.0	1.8		0.140	0.112	0.098	0.224	0.126
16.0	32.0	2.4		0.160	0.128	0.112	0.256	0.144
20.0	42.0	3.0		0.185	0.148	0.130	0.296	0.167

End Mills



UMMS 4... x 0XS ...

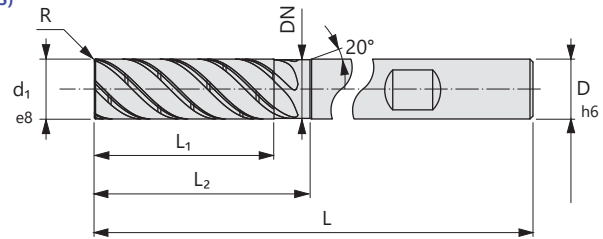
Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	L OAL	D Shank Ø	Z # Flutes	Coating	Shank
7007-552126	UMMS 40200 x 0XS SHA06 ...	2mm	4mm	38mm	6mm	4	HMP800	HA
7007-552127	UMMS 40300 x 0XS SHA06 ...	3mm	5mm	38mm	6mm	4	HMP800	HA
7007-552128	UMMS 40400 x 0XS SHA06 ...	4mm	7mm	38mm	6mm	4	HMP800	HA
7007-552129	UMMS 40500 x 0XS SHA06 ...	5mm	8mm	38mm	6mm	4	HMP800	HA
7007-552130	UMMS 40600 x 0XS SHA06 ...	6mm	8mm	38mm	6mm	4	HMP800	HA
7007-552131	UMMS 40800 x 0XS SHA08 ...	8mm	11mm	43mm	8mm	4	HMP800	HA
7007-552132	UMMS 41000 x 0XS SHA10 ...	10mm	13mm	50mm	10mm	4	HMP800	HA
7007-552133	UMMS 41200 x 0XS SHA12 ...	12mm	14mm	63mm	12mm	4	HMP800	HA

* HMP 800 = PVD coating (AlCr)

Cutting Data for UNI End Mills Z4 2xD Guideline values

Cutting Data for UNI End Mills Z4 2xD Guideline values			Steel		Stainless steel	Non-ferrous metals	Cast iron
							
Tensile strength (N/mm²)			<800	<1300	<850	<600	<1000
Cutting speeds vc (m/min)			120	75	40	360	100
DC (mm)	APMX (mm)	Application	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
2.0	4.0	 Full groove milling $a_p=0.5 \times D$ $a_e=1 \times D$	0.002	0.002	0.002	-	0.002
3.0	5.0		0.004	0.004	0.004	-	0.004
4.0	7.0		0.009	0.009	0.009	-	0.009
5.0	8.0		0.014	0.014	0.014	-	0.014
6.0	8.0		0.018	0.018	0.018	-	0.018
8.0	11.0		0.023	0.023	0.023	-	0.023
10.0	13.0		0.028	0.028	0.028	-	0.028
12.0	14.0		0.035	0.035	0.035	-	0.035
Tensile strength (N/mm²)			<800	<1300	<850	<600	<1000
Cutting speeds vc (m/min)			150	90	45	360	125
2.0	4.0	 Contour milling $a_p=1 \times D$ $a_e=0.2 \times D$	0.002	0.002	0.002	–	0.002
3.0	5.0		0.004	0.004	0.004	–	0.004
4.0	7.0		0.007	0.007	0.007	–	0.007
5.0	8.0		0.012	0.012	0.012	–	0.012
6.0	8.0		0.016	0.016	0.016	–	0.016
8.0	11.0		0.020	0.020	0.020	–	0.020
10.0	13.0		0.025	0.025	0.025	–	0.025
12.0	14.0		0.050	0.050	0.050	–	0.050

Trochoidal End Mills



UMMTR 5... x 030 ...

Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	DN Clearance Ø	R Radius	L ₂ Neck Length	L OAL	D Shank Ø	Z # Flutes	Coating	Shank
7007-552020	UMMTR 50600 x 030 SHA06 ...	6mm	19mm	5.8mm	0.2mm	23mm	65mm	6mm	5	HMP700	HA
7007-552021	UMMTR 50800 x 030 SHA08 ...	8mm	25mm	7.8mm	0.2mm	29mm	70mm	8mm	5	HMP700	HA
7007-552022	UMMTR 51000 x 030 SHA10 ...	10mm	31mm	9.8mm	0.2mm	36mm	80mm	10mm	5	HMP700	HA
7007-552023	UMMTR 51200 x 030 SHA12 ...	12mm	37mm	11.8mm	0.2mm	42mm	93mm	12mm	5	HMP700	HA
7007-552024	UMMTR 51600 x 030 SHA16 ...	16mm	49mm	15.8mm	0.3mm	56mm	110mm	16mm	5	HMP700	HA
7007-552025	UMMTR 52000 x 030 SHA20 ...	20mm	61mm	19.8mm	0.3mm	70mm	126mm	20mm	5	HMP700	HA
7007-552026	UMMTR 50600 x 030 SHB06 ...	6mm	19mm	5.8mm	0.2mm	23mm	65mm	6mm	5	HMP700	HB
7007-552027	UMMTR 50800 x 030 SHB08 ...	8mm	25mm	7.8mm	0.2mm	29mm	70mm	8mm	5	HMP700	HB
7007-552028	UMMTR 51000 x 030 SHB10 ...	10mm	31mm	9.8mm	0.2mm	36mm	80mm	10mm	5	HMP700	HB
7007-552029	UMMTR 51200 x 030 SHB12 ...	12mm	37mm	11.8mm	0.2mm	42mm	93mm	12mm	5	HMP700	HB
7007-552030	UMMTR 51600 x 030 SHB16 ...	16mm	49mm	15.8mm	0.3mm	56mm	110mm	16mm	5	HMP700	HB
7007-552031	UMMTR 52000 x 030 SHB20 ...	20mm	61mm	19.8mm	0.3mm	70mm	126mm	20mm	5	HMP700	HB

Cutting Data for UNI Trochoidal End Mills Z5 3 x D

Guideline values

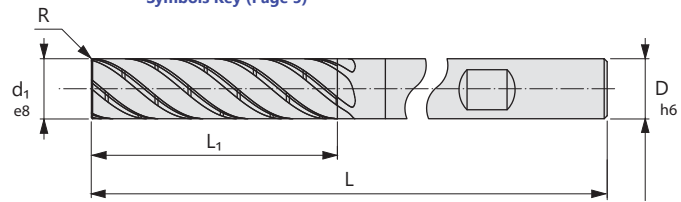
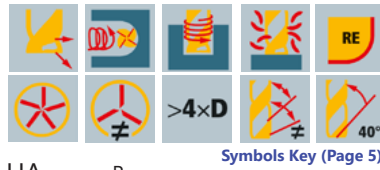
				Steel		Stainless steel	Non-ferrous metals	Cast iron
				1	2			
				1 Preferably used for helical milling 2 Preferably used for trochoidal milling				
Tensile strength (N/mm ²)				<850		<850	<600	<1000
Cutting speeds v _c (m/min)				270		135	440	220
DC (mm)	APMX (mm)	Plunge angle (°)	Application	Feeds f _z (mm/Z)	Feeds f _z (mm/Z)	Feeds f _z (mm/Z)	Feeds f _z (mm/Z)	Feeds f _z (mm/Z)
6.0	19.0	0.7	 Trochoidal milling a _p =APMXmax a _e =0.08×D	0.090	0.072	0.072	0.135	0.081
8.0	25.0	0.9		0.105	0.084	0.084	0.158	0.095
10.0	31.0	0.9		0.120	0.096	0.096	0.180	0.108
12.0	37.0	1.2		0.138	0.110	0.110	0.207	0.124
16.0	49.0	1.2		0.165	0.132	0.132	0.248	0.149
20.0	61.0	1.5		0.192	0.154	0.154	0.288	0.173
6.0	19.0	0.7	 Helical milling	0.049	0.039	0.039	0.073	0.044
8.0	25.0	0.9		0.057	0.046	0.046	0.086	0.051
10.0	31.0	0.9		0.065	0.052	0.052	0.098	0.059
12.0	37.0	1.2		0.075	0.060	0.060	0.112	0.067
16.0	49.0	1.2		0.090	0.072	0.072	0.134	0.081
20.0	61.0	1.5		0.104	0.083	0.083	0.156	0.094

multidec[®]-MILL

Trochoidal End Mills



UMMTR 5... x 040 ...



Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	R Radius	L OAL	D Shank Ø	Z # Flutes	Shank	Coating
7007-552032	UMMTR 50600 x 040 SHA06 ...	6mm	25mm	0.2mm	70mm	6mm	5	HA	HMP700
7007-552033	UMMTR 50800 x 040 SHA08 ...	8mm	33mm	0.2mm	75mm	8mm	5	HA	HMP700
7007-552034	UMMTR 51000 x 040 SHA10 ...	10mm	41mm	0.2mm	90mm	10mm	5	HA	HMP700
7007-552035	UMMTR 51200 x 040 SHA12 ...	12mm	49mm	0.2mm	100mm	12mm	5	HA	HMP700
7007-552036	UMMTR 51600 x 040 SHA16 ...	16mm	65mm	0.3mm	130mm	16mm	5	HA	HMP700
7007-552037	UMMTR 52000 x 040 SHA20 ...	20mm	81mm	0.3mm	150mm	20mm	5	HA	HMP700
7007-552038	UMMTR 50600 x 040 SHB06 ...	6mm	25mm	0.2mm	70mm	6mm	5	HB	HMP700
7007-552039	UMMTR 50800 x 040 SHB08 ...	8mm	33mm	0.2mm	75mm	8mm	5	HB	HMP700
7007-552040	UMMTR 51000 x 040 SHB10 ...	10mm	41mm	0.2mm	90mm	10mm	5	HB	HMP700
7007-552041	UMMTR 51200 x 040 SHB12 ...	12mm	49mm	0.2mm	100mm	12mm	5	HB	HMP700
7007-552042	UMMTR 51600 x 040 SHB16 ...	16mm	65mm	0.3mm	130mm	16mm	5	HB	HMP700
7007-552043	UMMTR 52000 x 040 SHB20 ...	20mm	81mm	0.3mm	150mm	20mm	5	HB	HMP700

Cutting Data for UNI Trochoidal End Mills Z5 4xD

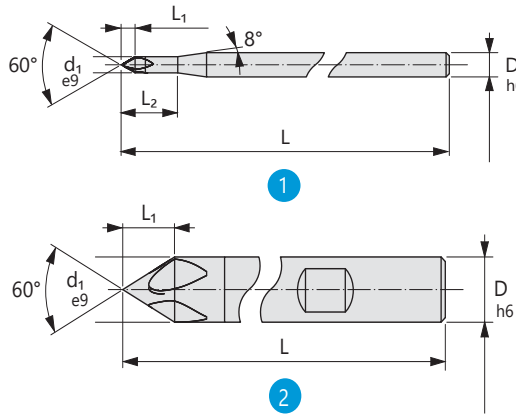
Guideline values

Steel	Stainless Steel	Non-ferrous metals	Cast Iron
  1 Preferably used for helical milling 2 Preferably used for trochoidal milling			

Tensile strength (N/mm ²)				<850	<1100	<850	<600	<1000
Cutting speeds vc (m/min)				270	200	135	440	220
DC (mm)	APMX (mm)	Plunge angle (°)	Application	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
6.0	25.0	0.7	 Trochoidal milling $a_p = APMX_{max}$ $a_e = 0.08 \times D$	0.080	0.064	0.064	0.120	0.072
8.0	33.0	0.9		0.095	0.076	0.076	0.143	0.086
10.0	41.0	0.9		0.110	0.088	0.088	0.165	0.099
12.0	49.0	1.2		0.125	0.100	0.100	0.188	0.113
16.0	65.0	1.2		0.150	0.120	0.120	0.225	0.135
20.0	81.0	1.5	 Helical milling	0.170	0.136	0.136	0.255	0.153
6.0	25.0	0.7		0.038	0.030	0.030	0.057	0.034
8.0	33.0	0.9		0.045	0.036	0.036	0.068	0.041
10.0	41.0	0.9		0.052	0.042	0.042	0.078	0.047
12.0	49.0	1.2		0.059	0.048	0.048	0.089	0.053
16.0	65.0	1.2		0.071	0.057	0.057	0.107	0.064
20.0	81.0	1.5		0.081	0.065	0.065	0.121	0.073

multidec[®]-MILL

Deburring Tools



UTILIS
scorpion[™]
mill



UMME ... x 60° ...

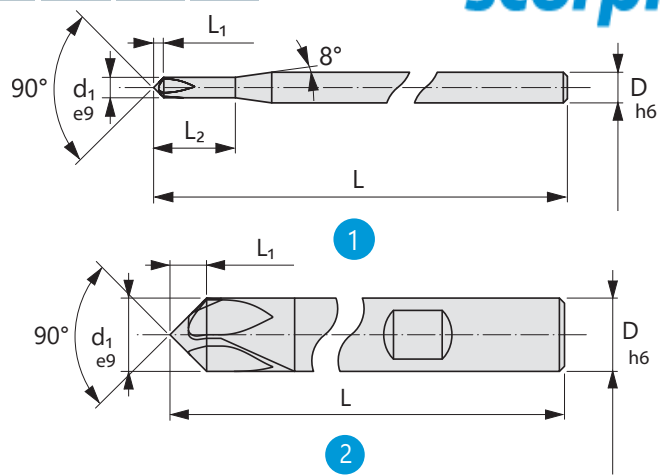
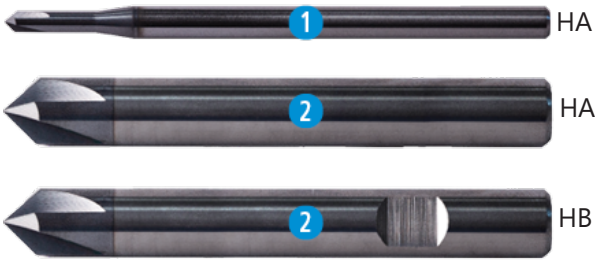
Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	L ₂ Neck Length	L OAL	D Shank Ø	Z # Flutes	Shank	Fig.	Coating
7007-552044	UMME 30100 x 60° SHA03 ...	1mm	0.9mm	5mm	50mm	3mm	3	HA	1	HMP700
7007-552045	UMME 30200 x 60° SHA03 ...	2mm	1.9mm	8mm	50mm	3mm	3	HA	1	HMP700
7007-552046	UMME 30300 x 60° SHA03 ...	3mm	2.9mm	—	50mm	3mm	3	HA	2	HMP700
7007-552047	UMME 40400 x 60° SHA04 ...	4mm	3.9mm	—	50mm	4mm	4	HA	2	HMP700
7007-552048	UMME 40600 x 60° SHA06 ...	6mm	5.9mm	—	50mm	6mm	4	HA	2	HMP700
7007-552049	UMME 40800 x 60° SHA08 ...	8mm	7.9mm	—	58mm	8mm	4	HA	2	HMP700
7007-552050	UMME 41000 x 60° SHA10 ...	10mm	9.9mm	—	66mm	10mm	4	HA	2	HMP700
7007-552051	UMME 41200 x 60° SHA12 ...	12mm	11.9mm	—	73mm	12mm	4	HA	2	HMP700
7007-552052	UMME 41600 x 60° SHA16 ...	16mm	15.8mm	—	82mm	16mm	4	HA	2	HMP700
7007-552053	UMME 40600 x 60° SHB06 ...	6mm	5.9mm	—	50mm	6mm	4	HB	2	HMP700
7007-552054	UMME 40800 x 60° SHB08 ...	8mm	7.9mm	—	58mm	8mm	4	HB	2	HMP700
7007-552055	UMME 41000 x 60° SHB10 ...	10mm	9.9mm	—	66mm	10mm	4	HB	2	HMP700
7007-552056	UMME 41200 x 60° SHB12 ...	12mm	11.9mm	—	73mm	12mm	4	HB	2	HMP700
7007-552057	UMME 41600 x 60° SHB16 ...	16mm	15.8mm	—	82mm	16mm	4	HB	2	HMP700

Cutting Data for UNI Deburring Tools 60°

Guideline values

		Steel		Stainless steel	Non-ferrous metals	Cast iron
Tensile strength (N/mm ²)		<850		<850	<600	<1000
Cutting speeds vc (m/min)		100		60	250	90
DC (mm)	Application	Feeds fz (mm/Z)		Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
1.0	Deburring ap=APMXmax ae=0.1×D	0.010	0.010	0.008	0.015	0.013
2.0		0.013	0.013	0.010	0.018	0.015
3.0		0.015	0.015	0.012	0.025	0.020
4.0		0.020	0.020	0.015	0.030	0.025
6.0		0.030	0.030	0.022	0.040	0.035
8.0		0.035	0.035	0.028	0.050	0.040
10.0		0.045	0.045	0.035	0.060	0.050
12.0		0.055	0.055	0.045	0.080	0.060
16.0		0.075	0.075	0.055	0.100	0.080

Deburring Tools



UMME ... x 90° ...

Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	L ₂ Neck Length	L OAL	D Shank Ø	Z # Flutes	Fig.	Shank	Coating
7007-552058	UMME 30100 x 90° SHA03 ...	1mm	0.7mm	5mm	50mm	3mm	3	1	HA	HMP700
7007-552059	UMME 30200 x 90° SHA03 ...	2mm	1.4mm	8mm	50mm	3mm	3	1	HA	HMP700
7007-552060	UMME 30300 x 90° SHA03 ...	3mm	2.1mm		50mm	3mm	3	2	HA	HMP700
7007-552061	UMME 40400 x 90° SHA04 ...	4mm	2.8mm		50mm	4mm	4	2	HA	HMP700
7007-552062	UMME 40600 x 90° SHA06 ...	6mm	4.2mm		50mm	6mm	4	2	HA	HMP700
7007-552063	UMME 40800 x 90° SHA08 ...	8mm	5.6mm		58mm	8mm	4	2	HA	HMP700
7007-552064	UMME 41000 x 90° SHA10 ...	10mm	7.0mm		66mm	10mm	4	2	HA	HMP700
7007-552065	UMME 41200 x 90° SHA12 ...	12mm	8.5mm		73mm	12mm	4	2	HA	HMP700
7007-552066	UMME 41600 x 90° SHA16 ...	16mm	11.2mm		82mm	16mm	4	2	HA	HMP700
7007-552067	UMME 40600 x 90° SHB06 ...	6mm	4.2mm		50mm	6mm	4	2	HB	HMP700
7007-552068	UMME 40800 x 90° SHB08 ...	8mm	5.6mm		58mm	8mm	4	2	HB	HMP700
7007-552069	UMME 41000 x 90° SHB10 ...	10mm	7.0mm		66mm	10mm	4	2	HB	HMP700
7007-552070	UMME 41200 x 90° SHB12 ...	12mm	8.5mm		73mm	12mm	4	2	HB	HMP700
7007-552071	UMME 41600 x 90° SHB16 ...	16mm	11.2mm		82mm	16mm	4	2	HB	HMP700

Cutting Data for UNI Deburring Tools 90°

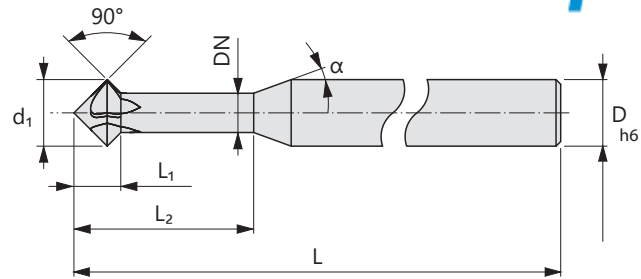
Guideline values

		Steel		Stainless steel	Non-ferrous metals	Cast iron
Tensile strength (N/mm ²)		<850		<850	<600	<1000
Cutting speeds vc (m/min)		100		60	250	90
DC (mm)	Application	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
1.0	 Deburring $a_p = APMX_{max}$ $a_e = 0.1 \times D$	0.010	0.010	0.013	0.008	0.015
20		0.013	0.013	0.015	0.010	0.018
30		0.015	0.015	0.020	0.012	0.025
4.0		0.020	0.020	0.025	0.015	0.030
6.0		0.030	0.030	0.022	0.040	0.035
8.0		0.035	0.035	0.028	0.050	0.040
10.0		0.045	0.045	0.035	0.060	0.050
12.0		0.055	0.055	0.045	0.080	0.060
16.0		0.075	0.075	0.055	0.100	0.080

Front/back Deburring Tools



Symbols Key (Page 5)



UMMVR 4... x 90° ...

Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	L ₂ Neck Length	α	L OAL	D Shank Ø	Z # Flutes	Shank	Coating
7007-552072	UMMVR 40200 x 90° SHA04 ...	2mm	1.5mm	8mm	20°	50mm	4mm	4	HA	HMP700
7007-552073	UMMVR 40300 x 90° SHA04 ...	3mm	2.0mm	10mm	20°	50mm	4mm	4	HA	HMP700
7007-552074	UMMVR 40400 x 90° SHA04 ...	4mm	2.5mm	10mm	20°	50mm	4mm	4	HA	HMP700
7007-552075	UMMVR 40500 x 90° SHA06 ...	5mm	3.0mm	15mm	20°	65mm	6mm	4	HA	HMP700
7007-552076	UMMVR 40600 x 90° SHA06 ...	6mm	4.0mm	15mm	20°	65mm	6mm	4	HA	HMP700
7007-552077	UMMVR 40800 x 90° SHA08 ...	8mm	2.5mm	20mm	30°	70mm	8mm	4	HA	HMP700
7007-552078	UMMVR 41000 x 90° SHA10 ...	10mm	4.0mm	23mm	30°	73mm	10mm	4	HA	HMP700
7007-552079	UMMVR 41200 x 90° SHA12 ...	12mm	6.0mm	23mm	30°	73mm	12mm	4	HA	HMP700

Cutting Data for UNI Front/Back Deburring Tools 90°

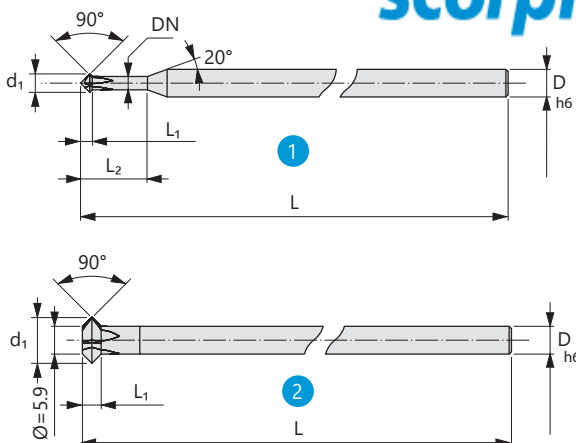
Guideline values

		Steel		Stainless steel	Non-ferrous metals	Cast iron
Tensile strength (N/mm ²)		<850		<850	<600	<1000
Cutting speeds vc (m/min)		70		30	150	45
DC (mm)	Application	Feeds fz (mm/Z)		Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
2.0	 Deburring $a_p=0.1 \times D$ $a_e=0.1 \times D$	0.011		0.010	0.009	0.012
3.0		0.014		0.013	0.011	0.015
4.0		0.017		0.015	0.014	0.019
5.0		0.019		0.017	0.015	0.021
6.0		0.022		0.020	0.018	0.024
8.0		0.028		0.025	0.022	0.031
10.0		0.033		0.030	0.026	0.036
12.0		0.038		0.034	0.030	0.042

Front/back Deburring Tools



Symbols Key (Page 5)



UMMVRL 4 ... x 90° ...

Item No.	Description	d ₁ Flute Ø	L ₁ Flute Length	L ₂ Neck Length	DN Clearance Diameter	L OAL	D Shank Ø	Z # Flutes	Fig.	Shank	Coating
7007-552080	UMMVRL 40300 x 90° SHA04 ...	3mm	2mm	10mm	2.2mm	75mm	4mm	4	1	HA	HMP700
7007-552081	UMMVRL 40380 x 90° SHA04 ...	3.8mm	2.7mm	13mm	2.9mm	75mm	4mm	4	1	HA	HMP700
7007-552082	UMMVRL 40400 x 90° SHA04 ...	4mm	2.7mm	13mm	2.9mm	75mm	4mm	4	1	HA	HMP700
7007-552083	UMMVRL 40480 x 90° SHA05 ...	4.8mm	3mm	15mm	3.9mm	75mm	5mm	4	1	HA	HMP700
7007-552084	UMMVRL 40500 x 90° SHA05 ...	5mm	3mm	15mm	3.9mm	75mm	5mm	4	1	HA	HMP700
7007-552085	UMMVRL 40580 x 90° SHA06 ...	5.8mm	4mm	15mm	3.9mm	100mm	6mm	4	1	HA	HMP700
7007-552086	UMMVRL 40600 x 90° SHA06 ...	6mm	4mm	15mm	3.9mm	100mm	6mm	4	1	HA	HMP700
7007-552087	UMMVRL 40780 x 90° SHA06 ...	7.8mm	2mm	—	—	100mm	6mm	4	2	HA	HMP700
7007-552088	UMMVRL 40800 x 90° SHA06 ...	8mm	2mm	—	—	100mm	6mm	4	2	HA	HMP700
7007-552089	UMMVRL 40980 x 90° SHA06 ...	9.8mm	4mm	—	—	100mm	6mm	4	2	HA	HMP700
7007-552090	UMMVRL 41000 x 90° SHA06 ...	10mm	4mm	—	—	100mm	6mm	4	2	HA	HMP700
7007-552091	UMMVRL 41180 x 90° SHA06 ...	11.8mm	6mm	—	—	100mm	6mm	4	2	HA	HMP700
7007-552092	UMMVRL 41200 x 90° SHA06 ...	12mm	6mm	—	—	100mm	6mm	4	2	HA	HMP700

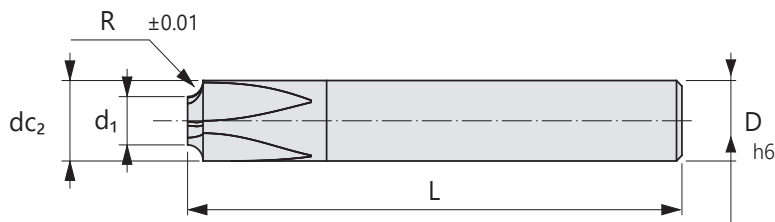
Cutting Data for UNI Front/Back Deburring Tools

Guideline values

		Steel		Stainless steel	Non-ferrous metals	Cast iron
						
Tensile strength (N/mm ²)		<850		<850	<600	<1000
Cutting speeds vc (m/min)		70		30	150	45
DC (mm)	Application	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
3.0	 Deburring ap=0.1×D ae=0.1×D	0.014	0.013	0.011	0.024	0.015
3.8		0.017	0.015	0.014	0.029	0.019
4.0		0.017	0.015	0.014	0.029	0.019
4.8		0.019	0.017	0.015	0.032	0.021
5.0		0.019	0.017	0.015	0.032	0.021
5.8		0.022	0.020	0.018	0.037	0.024
6.0		0.022	0.020	0.018	0.037	0.024
7.8		0.028	0.025	0.022	0.048	0.031
8.0		0.028	0.025	0.022	0.048	0.031
9.8		0.033	0.030	0.026	0.056	0.036
10.0		0.033	0.030	0.026	0.056	0.036
11.8		0.038	0.034	0.030	0.065	0.042
12.0		0.038	0.034	0.030	0.065	0.042

multidec[®]-MILL

Concave Quarter Radius Mill



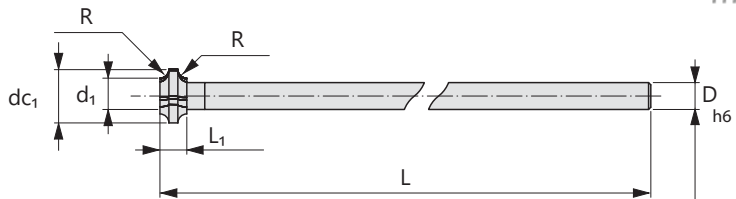
UMMVK 4... R...

Item No.	Description	R Radius	d1 Flute Ø	dc2 MAX Cut Ø	L OAL	D Shank Ø	Z # Teeth	Shank	Coating
7007-552096	UMMVK 40360 R020 SHA04 ...	0.2mm	3.6mm	4mm	50mm	4mm	4	HA	HMP700
7007-552095	UMMVK 40340 R030 SHA04 ...	0.3mm	3.4mm	4mm	50mm	4mm	4	HA	HMP700
7007-552094	UMMVK 40320 R040 SHA04 ...	0.4mm	3.2mm	4mm	50mm	4mm	4	HA	HMP700
7007-552093	UMMVK 40300 R050 SHA04 ...	0.5mm	3mm	4mm	50mm	4mm	4	HA	HMP700
7007-552099	UMMVK 40480 R060 SHA06 ...	0.6mm	4.8mm	6mm	50mm	6mm	4	HA	HMP700
7007-552098	UMMVK 40440 R080 SHA06 ...	0.8mm	4.4mm	6mm	50mm	6mm	4	HA	HMP700
7007-552097	UMMVK 40400 R100 SHA06 ...	1mm	4mm	6mm	50mm	6mm	4	HA	HMP700
7007-552100	UMMVK 40500 R150 SHA10 ...	1.5mm	5mm	10mm	55mm	10mm	4	HA	HMP700
7007-552102	UMMVK 40600 R200 SHA10 ...	2mm	6mm	10mm	66mm	10mm	4	HA	HMP700
7007-552104	UMMVK 40700 R250 SHA12 ...	2.5mm	7mm	12mm	73mm	12mm	4	HA	HMP700
7007-552103	UMMVK 40600 R300 SHA12 ...	3mm	6mm	12mm	73mm	12mm	4	HA	HMP700
7007-552108	UMMVK 40900 R350 SHA16 ...	3.5mm	9mm	16mm	80mm	16mm	4	HA	HMP700
7007-552106	UMMVK 40800 R400 SHA16 ...	4mm	8mm	16mm	80mm	16mm	4	HA	HMP700
7007-552105	UMMVK 40700 R450 SHA16 ...	4.5mm	7mm	16mm	80mm	16mm	4	HA	HMP700
7007-552110	UMMVK 41000 R500 SHA20 ...	5mm	10mm	20mm	80mm	20mm	4	HA	HMP700
7007-552107	UMMVK 40800 R600 SHA20 ...	6mm	8mm	20mm	80mm	20mm	4	HA	HMP700
7007-552109	UMMVK 40900 R800 SHA25 ...	8mm	9mm	25mm	100mm	25mm	4	HA	HMP700
7007-552101	UMMVK 40500 R1000 SHA25 ...	10mm	5mm	25mm	100mm	25mm	4	HA	HMP700

Cutting Data for UNI Concave Quarter Radius Mills

Guideline values

Tensile strength (N/mm²)				<850	<1100	<850	<600	<1000
Cutting speeds vc (m/min)				155	95	70	450	115
PRFRAD (mm)	DCX- (mm)	DC (mm)	Application	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)	Feeds fz (mm/Z)
0.2	4.0	3.6	 Corner Radius Milling	0.022	0.020	0.018	0.037	0.024
0.3	4.0	3.4		0.022	0.020	0.018	0.037	0.024
0.4	4.0	3.2		0.022	0.020	0.018	0.037	0.024
0.5	4.0	3.0		0.022	0.020	0.018	0.037	0.024
0.6	6.0	4.8		0.026	0.023	0.021	0.044	0.029
0.8	6.0	4.4		0.026	0.023	0.021	0.044	0.029
1.0	6.0	4.0		0.026	0.023	0.021	0.044	0.029
1.5	10.0	5.0		0.028	0.025	0.022	0.048	0.031
2.0	10.0	6.0		0.032	0.029	0.026	0.054	0.035
2.5	12.0	7.0		0.035	0.032	0.028	0.060	0.039
3.0	12.0	6.0		0.035	0.032	0.028	0.060	0.039
3.5	16.0	9.0		0.038	0.034	0.030	0.065	0.042
4.0	16.0	8.0		0.038	0.034	0.030	0.065	0.042
4.5	16.0	7.0		0.038	0.034	0.030	0.065	0.042
5.0	20.0	10.0		0.040	0.036	0.032	0.068	0.044
6.0	20.0	8.0		0.040	0.036	0.032	0.068	0.044
8.0	25.0	9.0		0.043	0.039	0.034	0.073	0.047
10.0	25.0	5.0	0.043	0.039	0.034	0.073	0.047	



UMMVKL 4... R...

Item No.	Description	d ₁ Flute Ø	dc ₁ MIN Hole Size	R Radius	L ₁ Flute Length	L OAL	D Shank Ø	Z # Teeth	Shank	Coating
7007-552114	UMMVKL 40560 R020 SHA04 ...	5.6mm	6mm	0.2mm	2mm	75mm	4mm	4	HA	HMP700
7007-552120	UMMVKL 40760 R020 SHA06 ...	7.6mm	8mm	0.2mm	2mm	100mm	6mm	4	HA	HMP700
7007-552113	UMMVKL 40540 R030 SHA04 ...	5.4mm	6mm	0.3mm	2mm	75mm	4mm	4	HA	HMP700
7007-552119	UMMVKL 40740 R030 SHA06 ...	7.4mm	8mm	0.3mm	2mm	100mm	6mm	4	HA	HMP700
7007-552112	UMMVKL 40520 R040 SHA04 ...	5.2mm	6mm	0.4mm	2mm	75mm	4mm	4	HA	HMP700
7007-552118	UMMVKL 40720 R040 SHA06 ...	7.2mm	8mm	0.4mm	2mm	100mm	6mm	4	HA	HMP700
7007-552111	UMMVKL 40500 R050 SHA04 ...	5mm	6mm	0.5mm	2mm	75mm	4mm	4	HA	HMP700
7007-552115	UMMVKL 40700 R050 SHA06 ...	7mm	8mm	0.5mm	2mm	100mm	6mm	4	HA	HMP700
7007-552124	UMMVKL 40840 R080 SHA06 ...	8.4mm	10mm	0.8mm	4mm	100mm	6mm	4	HA	HMP700
7007-552122	UMMVKL 40800 R100 SHA06 ...	8mm	10mm	1mm	4mm	100mm	6mm	4	HA	HMP700
7007-552121	UMMVKL 40760 R120 SHA06 ...	7.6mm	10mm	1.2mm	5mm	100mm	6mm	4	HA	HMP700
7007-552116	UMMVKL 40700 R150 SHA06 ...	7mm	10mm	1.5mm	5mm	100mm	6mm	4	HA	HMP700
7007-552125	UMMVKL 40840 R180 SHA06 ...	8.4mm	12mm	1.8mm	6mm	100mm	6mm	4	HA	HMP700
7007-552123	UMMVKL 40800 R200 SHA06 ...	8.0mm	12mm	2mm	7mm	100mm	6mm	4	HA	HMP700
7007-552117	UMMVKL 40700 R250 SHA06 ...	7.0mm	12mm	2.5mm	8mm	100mm	6mm	4	HA	HMP700

Cutting Data for UNI Concave Quarter Radius Mills

Guideline values

				Steel		Stainless steel		Non-ferrous metals		Cast iron	
											
Tensile strength (N/mm ²)				<850		<1100		<850		<600	
Cutting speeds vc (m/min)				155		95		70		450	
PRFRAD (mm)	DCX- (mm)	DC (mm)	Application	Feeds fz (mm/Z)		Feeds fz (mm/Z)		Feeds fz (mm/Z)		Feeds fz (mm/Z)	
0.2	6.0	5.6		0.011	0.010	0.009		0.019		0.012	
0.2	8.0	7.6		0.014	0.013	0.011		0.024		0.015	
0.3	6.0	5.4		0.011	0.010	0.009		0.019		0.012	
0.3	8.0	7.4		0.014	0.013	0.011		0.024		0.015	
0.4	6.0	5.2		0.011	0.010	0.009		0.019		0.012	
0.4	8.0	7.2		0.014	0.013	0.011		0.024		0.015	
0.5	6.0	5.0		0.011	0.010	0.009		0.019		0.012	
0.5	8.0	7.0		0.014	0.013	0.011		0.024		0.015	
0.8	10.0	8.4		0.017	0.015	0.014		0.029		0.019	
1.0	10.0	8.0		0.017	0.015	0.014		0.029		0.019	
1.2	10.0	7.6		0.017	0.015	0.014		0.029		0.019	
1.5	10.0	7.0		0.017	0.015	0.014		0.029		0.019	
1.8	12.0	8.4		0.019	0.017	0.015		0.032		0.021	
2.0	12.0	8.0		0.019	0.017	0.015		0.032		0.021	
2.5	12.0	7.0		0.019	0.017	0.015		0.032		0.021	