

JG PRECISION
T O O L S













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THE PRECISION
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ABSOLUTE PRECISION

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MILLS HUMMILL



Did you know that hummingbirds are not only the smallest but also the fastest birds in the world? The rate of precise movements of their wings is about 80-90 per second. It was this unusual bird that became the inspiration for creating our equally unique collection of our mills, which we called HUMMILL - hummingbird in English.

Material groups:



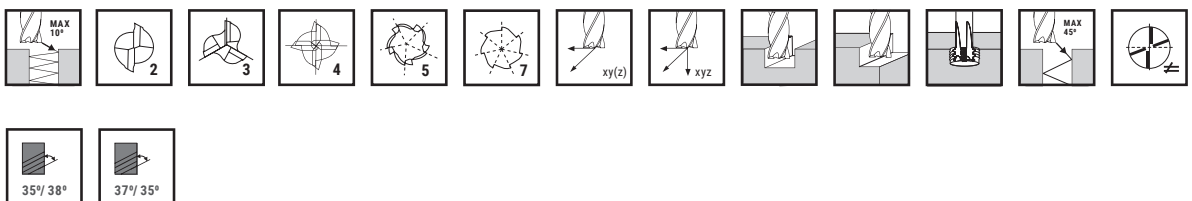
Coating types:



Technical parameters:

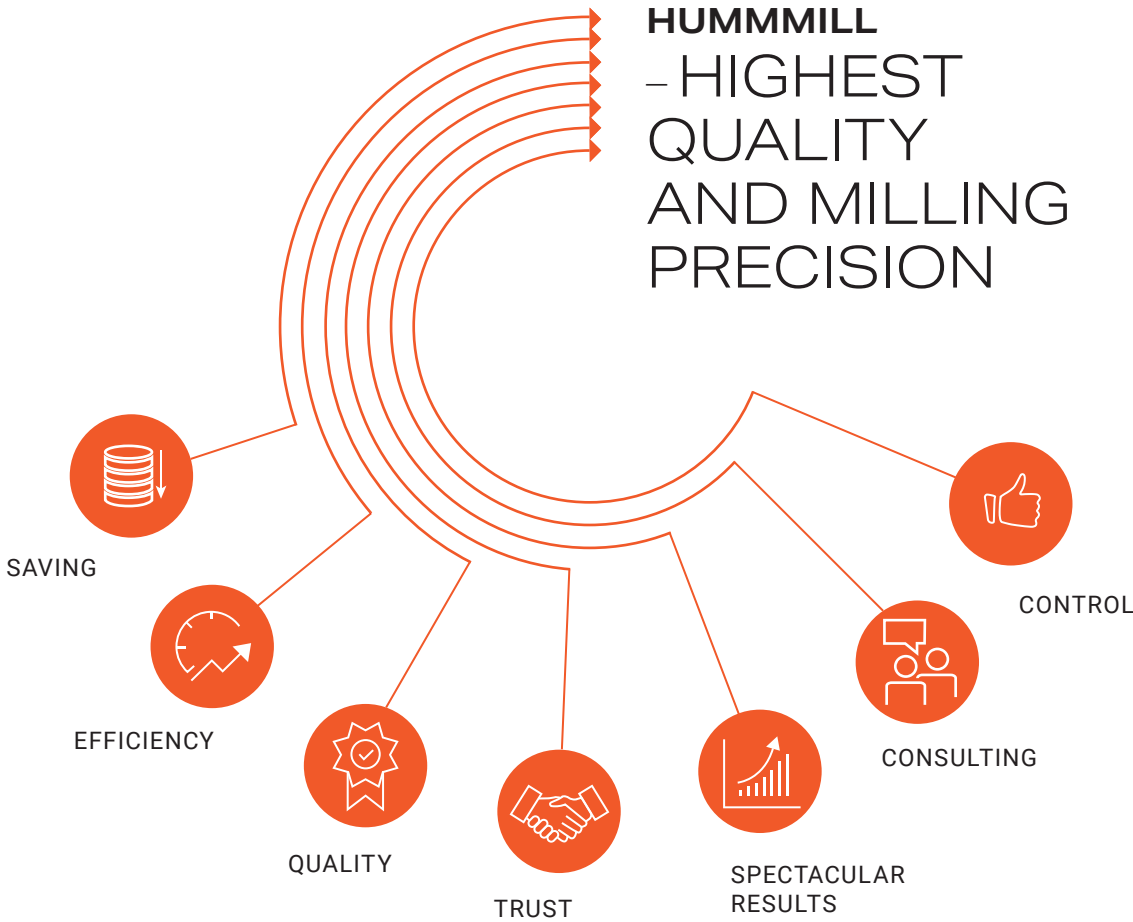


Application types:



WHAT DISTINGUISHES OUR TURNING TOOL HOLDERS:

- 1 very high accuracy
- 2 specially designed geometry
- 3 optimization for work at high cutting parameters
- 4 special carbides with a submicron structure
- 5 ultra-smooth PVD coatings

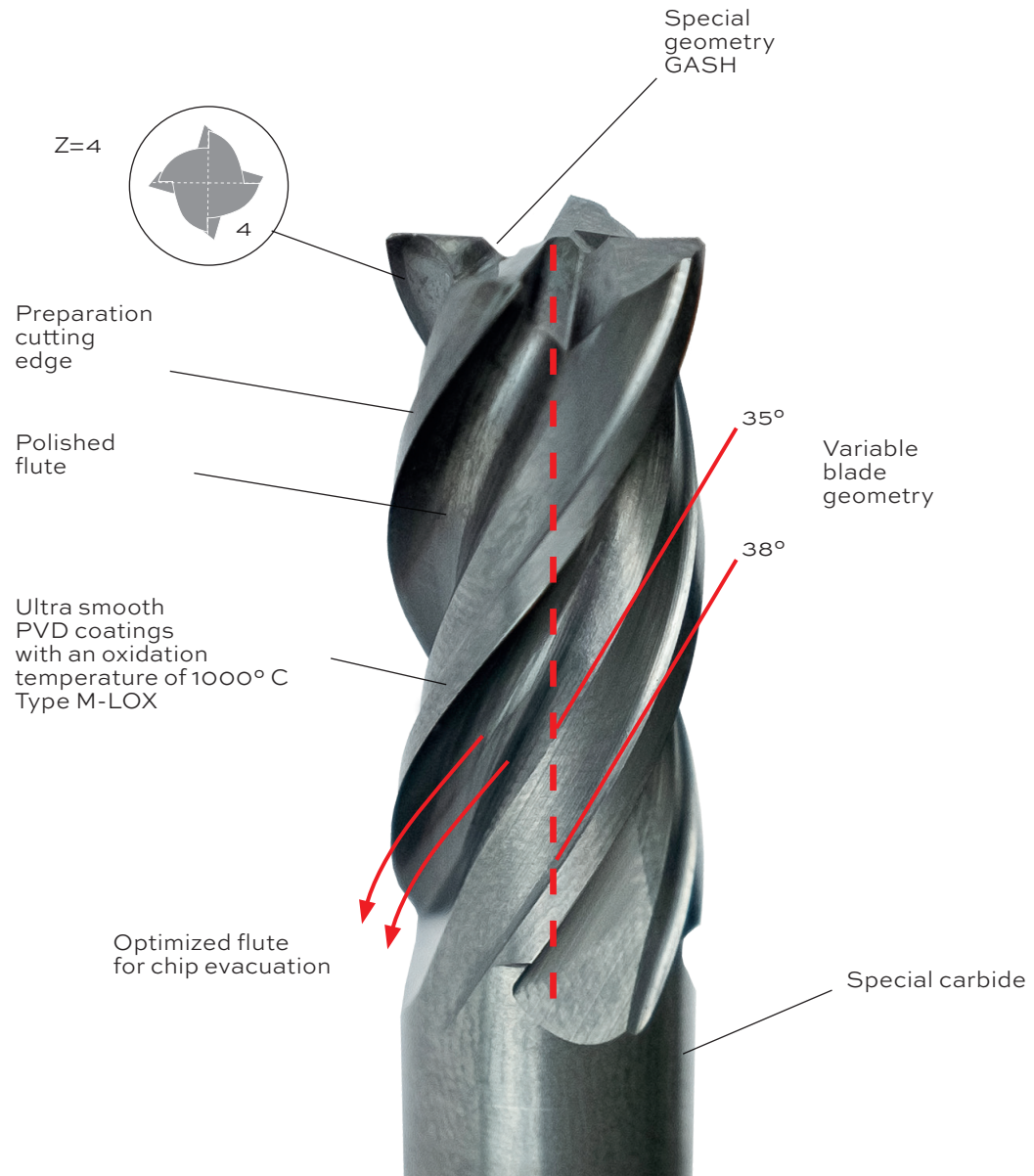


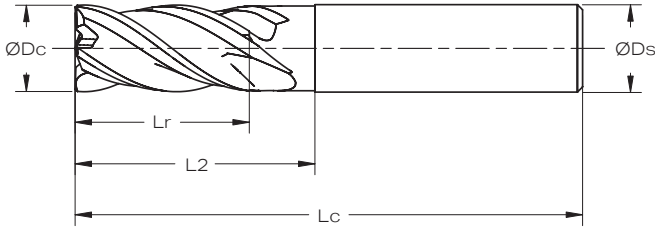
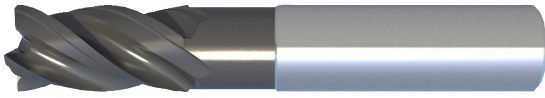
HUMM STEEL

- special gash geometry
- ramp work 45°
- prepared cutting edge

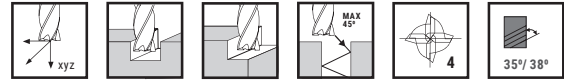
Humm Steel cutters are distinguished by a specially designed gash geometry that allows working on a 45 degree ramp. Our tool works like a drill and milling cutter in one - so in practice, it allows you to reduce the number of tools needed and save money during the time needed for its replacement, thus reducing costs.

Humm Steel cutters also have a prepared cutting edge which is significant increases their lifespan. They are also distinguished by a polished flute and its optimized flute a shape that allows you to increase parameters up to 30% while maintaining full service life tools.





RECOMMENDATIONS



Stock items

Dc	Ds	Lr	L2	Lc	C	Z	Item number
6,00	6,00	13	21	57	0,13	4	800.060.00
8,00	8,00	19	27	63	0,15	4	800.080.00
10,00	10,00	22	32	72	0,2	4	800.100.00
12,00	12,00	26	38	83	0,25	4	800.120.00
16,00	16,00	32	44	92	0,35	4	800.160.00
20,00	20,00	38	54	104	0,4	4	800.200.00

Dc	Ds	Lr	L2	Lc	R	Z	Item number
6	6	13	21	57	1	4	800.060.10
8	8	19	27	63	1	4	800.080.10
10	10	22	32	72	1	4	800.100.10
12	12	26	38	83	1	4	800.120.10
16	16	32	44	92	1	4	800.160.10
20	20	38	54	104	1	4	800.200.10

Dc	Ds	Lr	L2	Lc	R	Z	Item number
6	6	13	21	57	0,5	4	800.060.05
8	8	19	27	63	0,5	4	800.080.05
10	10	22	32	72	0,5	4	800.100.05
12	12	26	38	83	0,5	4	800.120.05
16	16	32	44	92	0,5	4	800.160.05
20	20	38	54	104	0,5	4	800.200.05

Recommended milling conditions

Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	Diameter outside (mm)						
			ø6	ø8	ø10	ø12	ø16	ø20	
TO 750 N/mm³	1Dc x 0.5Dc	Spindle rotation (min⁻¹)	9 000	7 100	5 400	4 500	3 300	2 700	
		Feed (mm/min)	900	880	840	800	780	700	
TO 30 HRC	1Dc x 0.2Dc	Spindle rotation (min⁻¹)	8 600	6 800	5 200	4 300	3 000	2 400	
		Feed (mm/min)	900	680	820	800	750	650	
30-44 HRC	1Dc x 0.5Dc	Spindle rotation (min⁻¹)	8 400	6 600	5 000	4 300	3 200	2 600	
		Feed (mm/min)	750	720	700	640	600	550	
CAST IRON	1Dc x 0.5Dc	Spindle rotation (min⁻¹)	8 800	6 600	5 100	4 200	3 200	2 500	
		Feed (mm/min)	1 100	950	910	860	800	780	

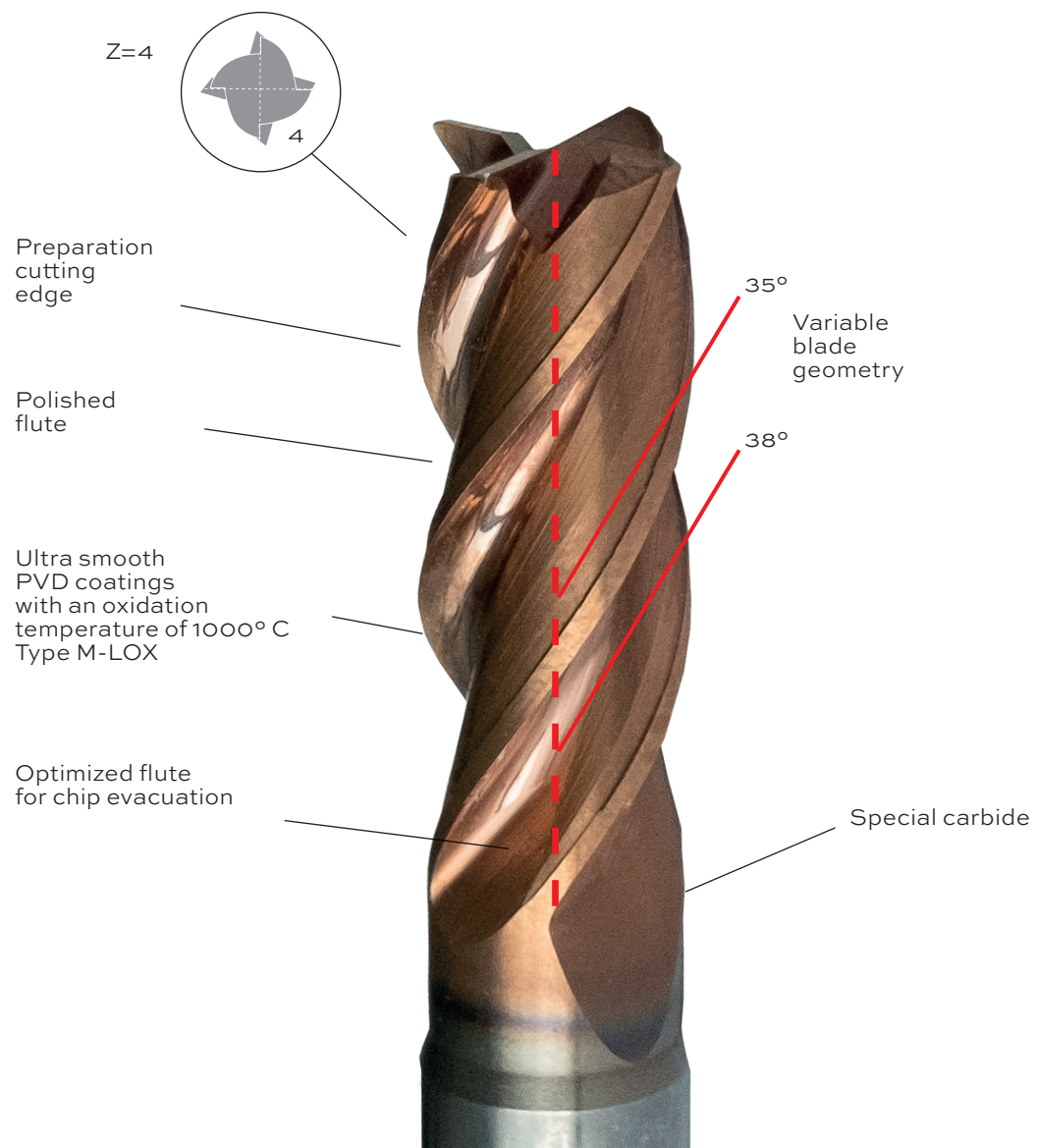
Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	Diameter outside (mm)						
			ø6	ø8	ø10	ø12	ø16	ø20	
TO 750 N/mm³	1Dc x 1Dc	Spindle rotation (min⁻¹)	8 000	6 200	5 000	4 000	2 900	2 300	
		Feed (mm/min)	760	720	690	620	580	500	
TO 30 HRC	1Dc x 1Dc	Spindle rotation (min⁻¹)	7 800	6 000	4 800	4 000	3 000	2 400	
		Feed (mm/min)	750	730	710	680	650	620	
30-44 HRC	1Dc x 1Dc	Spindle rotation (min⁻¹)	6 100	4 500	3 500	3 200	2 300	1 700	
		Feed (mm/min)	590	550	550	540	510	450	
CAST IRON	1Dc x 1Dc	Spindle rotation (min⁻¹)	6 200	4 600	3 700	3 200	2 400	1 800	
		Feed (mm/min)	650	620	580	560	550	540	

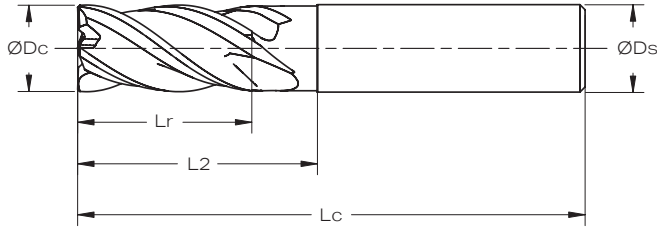
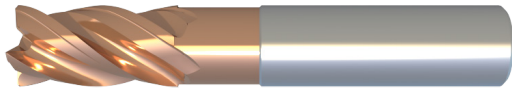
HUMM INOX

- reinforced blade
- high oxidation temperature
- reduced vibration
- easy chip evacuation

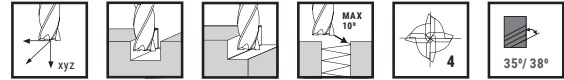
Humm Inox mills have specially designed flank angles, i.e so-called bald spot to strengthen the blade and reduce material pick-up or galling the back of the mill. They are also distinguished by a special coating based on high silicon oxidation temperature of more than 12,000°C.

In our Humm Inox mills, we also used a polished chip flute to improve the chip evacuation and variable geometry, reducing vibrations, giving the ability to work at higher parameters.





RECOMMENDATIONS



Stock items

Dc	Ds	Lr	L2	Lc	C	Z	Item number
6,00	6,00	13	21	57	0,13	4	810.060.00
8,00	8,00	19	27	63	0,15	4	810.080.00
10,00	10,00	22	32	72	0,20	4	810.100.00
12,00	12,00	26	38	83	0,25	4	810.120.00
16,00	16,00	32	44	92	0,35	4	810.160.00
20,00	20,00	38	54	104	0,40	4	810.200.00

Dc	Ds	Lr	L2	Lc	R	Z	Item number
6	6	13	21	57	1	4	810.060.10
8	8	19	27	63	1	4	810.080.10
10	10	22	32	72	1	4	810.100.10
12	12	26	38	83	1	4	810.120.10
16	16	32	44	92	1	4	810.160.10
20	20	38	54	104	1	4	810.200.10

Dc	Ds	Lr	L2	Lc	R	Z	Item number
6	6	13	21	57	0,5	4	810.060.05
8	8	19	27	63	0,5	4	810.080.05
10	10	22	32	72	0,5	4	810.100.05
12	12	26	38	83	0,5	4	810.120.05
16	16	32	44	92	0,5	4	810.160.05
20	20	38	54	104	0,5	4	810.200.05

Recommended milling conditions

Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	Diameter outside (mm)						
			ø6	ø8	ø10	ø12	ø16	ø20	
TO 30 HRC	1Dc x 0.5Dc	Spindle rotation (min ⁻¹)	8 800	6 600	5 300	4 400	3 300	2 600	
		Feed (mm/min)	1 400	1 580	1 260	1 230	990	950	
STAINLESS STEEL	1Dc x 0.5Dc	Spindle rotation (min ⁻¹)	5 500	4 100	3 300	2 700	2 100	1 600	
		Feed (mm/min)	880	820	790	710	570	490	
HEAT RESISTANT MATERIALS	1Dc x 0.2Dc	Spindle rotation (min ⁻¹)	1 600	1 200	1 000	800	600	500	
		Feed (mm/min)	110	130	120	120	120	110	
TITANIUM ALLOYS	1Dc x 0.5Dc	Spindle rotation (min ⁻¹)	2 900	2 200	1 800	1 500	1 100	900	
		Feed (mm/min)	230	260	220	220	200	210	

Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	Diameter outside (mm)						
			ø6	ø8	ø10	ø12	ø16	ø20	
TO 30 HRC	1Dc x 1Dc	Spindle rotation (min ⁻¹)	8 000	6 000	4 800	4 000	3 000	2 400	
		Feed (mm/min)	1 300	1 400	1 100	1 100	900	900	
STAINLESS STEEL	1Dc x 1Dc	Spindle rotation (min ⁻¹)	4 800	3 600	2 900	2 400	1 800	1 400	
		Feed (mm/min)	760	720	690	620	500	430	
MaterialY ŽAROODPORNE	1Dc x 1Dc	Spindle rotation (min ⁻¹)	1 300	1 000	800	700	500	400	
		Feed (mm/min)	90	110	100	100	100	90	
TITANIUM ALLOYS	1Dc x 1Dc	Spindle rotation (min ⁻¹)	2 700	2 000	1 600	1 300	1 000	800	
		Feed (mm/min)	210	240	200	200	180	180	

HUMM UNI

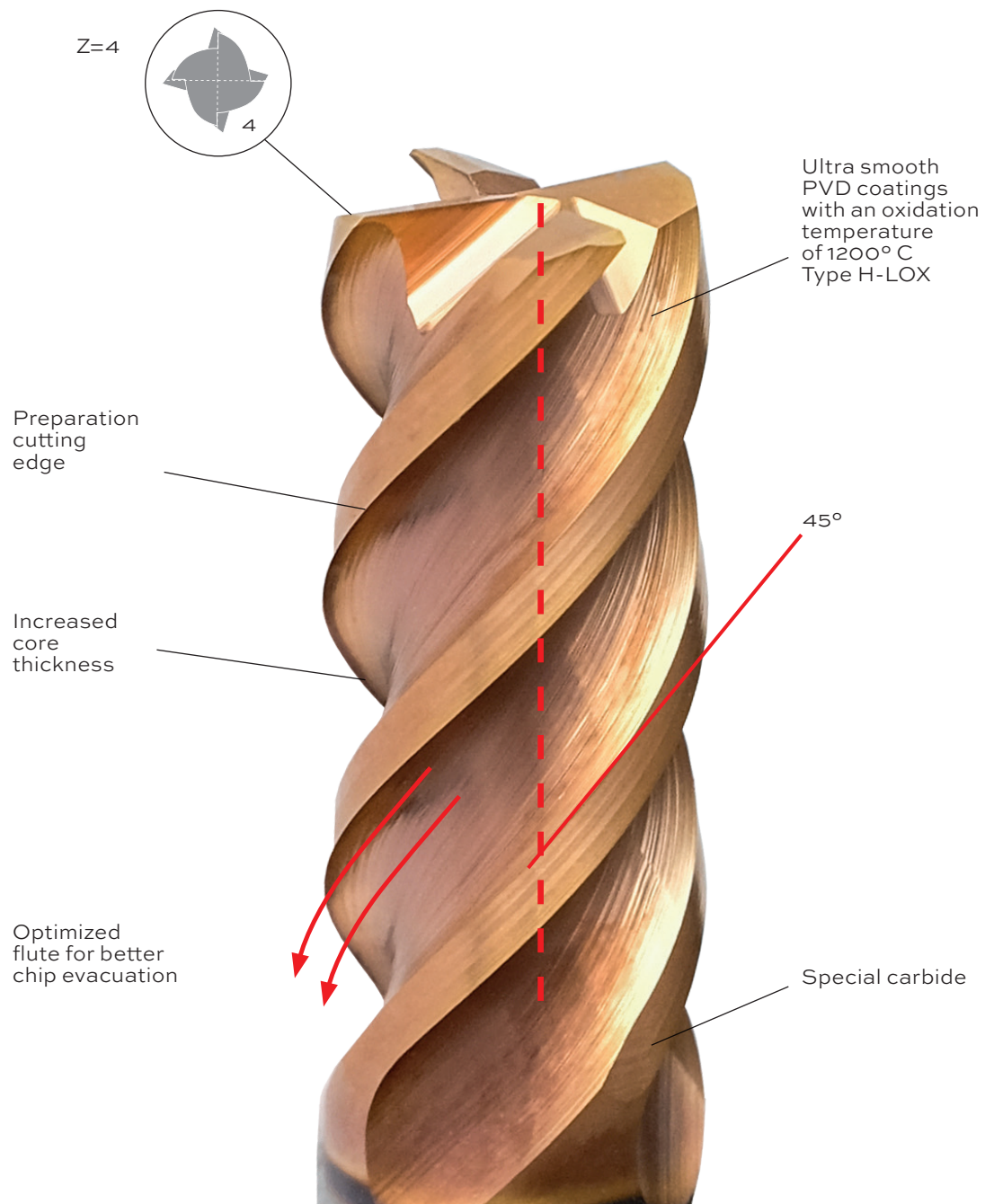
for different materials

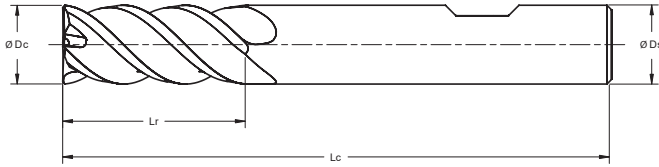
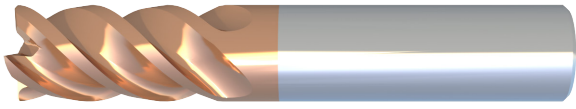
higher rigidity

special PVD coating

We decided to increase the thickness of the core to achieve greater rigidity and eliminate the possibility of bending the tool during heavy machining.

In this case, we also used a special high-performance PVD coating oxidation temperature of over 1200°C.





RECOMMENDATIONS			
P ~ 750 N/mm ²	P ~ 30 HRC	P 30-44 HRC	K Cast Iron
C	h6 Shank Dia.	M-LOX	

Stock items

Dc	Ds	Lr	Lc	C	Z	Item number
6,00	6,00	13	57	0,13	4	820.060.00
8,00	8,00	19	63	0,15	4	820.080.00
10,00	10,00	22	72	0,20	4	820.100.00
12,00	12,00	26	83	0,25	4	820.120.00
* 16,00	16,00	32	92	0,35	4	820.160.00

* conditional use for Dc x 1Dc operation

Recommended milling conditions

Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	Diameter outside (mm)				
			ø6	ø8	ø10	ø12	ø16
TO 750 N/mm ³	1Dc x 0.5Dc	Spindle rotation (min ⁻¹)	9 000	7 100	5 400	4 500	3 300
		Feed (mm/min)	900	880	840	800	780
TO 30 HRC	1Dc x 0.2Dc	Spindle rotation (min ⁻¹)	3 600	6 800	5 200	4 300	3 000
		Feed (mm/min)	900	680	820	800	750
30-44 HRC	1Dc x 0.5Dc	Spindle rotation (min ⁻¹)	8 400	6 600	5 000	4 300	3 200
		Feed (mm/min)	750	720	700	640	600
CAST IRON	1Dc x 0.5Dc	Spindle rotation (min ⁻¹)	8 800	6 600	5 100	4 200	3 200
		Feed (mm/min)	1 100	950	910	860	800

Recommended D/D milling conditions

Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	Diameter outside (mm)				
			ø6	ø8	ø10	ø12	ø16
TO 750 N/mm ³	1Dc x 1Dc	Spindle rotation (min ⁻¹)	8 000	6 200	5 000	4 000	2 900
		Feed (mm/min)	760	720	690	620	580
TO 30 HRC	1Dc x 1Dc	Spindle rotation (min ⁻¹)	7 800	6 000	4 800	4 000	3 000
		Feed (mm/min)	750	730	710	680	650
30-44 HRC	1Dc x 1Dc	Spindle rotation (min ⁻¹)	6 100	4 500	3 500	3 200	2 300
		Feed (mm/min)	590	550	550	540	510
CAST IRON	1Dc x 1Dc	Spindle rotation (min ⁻¹)	6 200	4 600	3 700	3 200	2 400
		Feed (mm/min)	650	620	580	560	550

HUMM VOLU

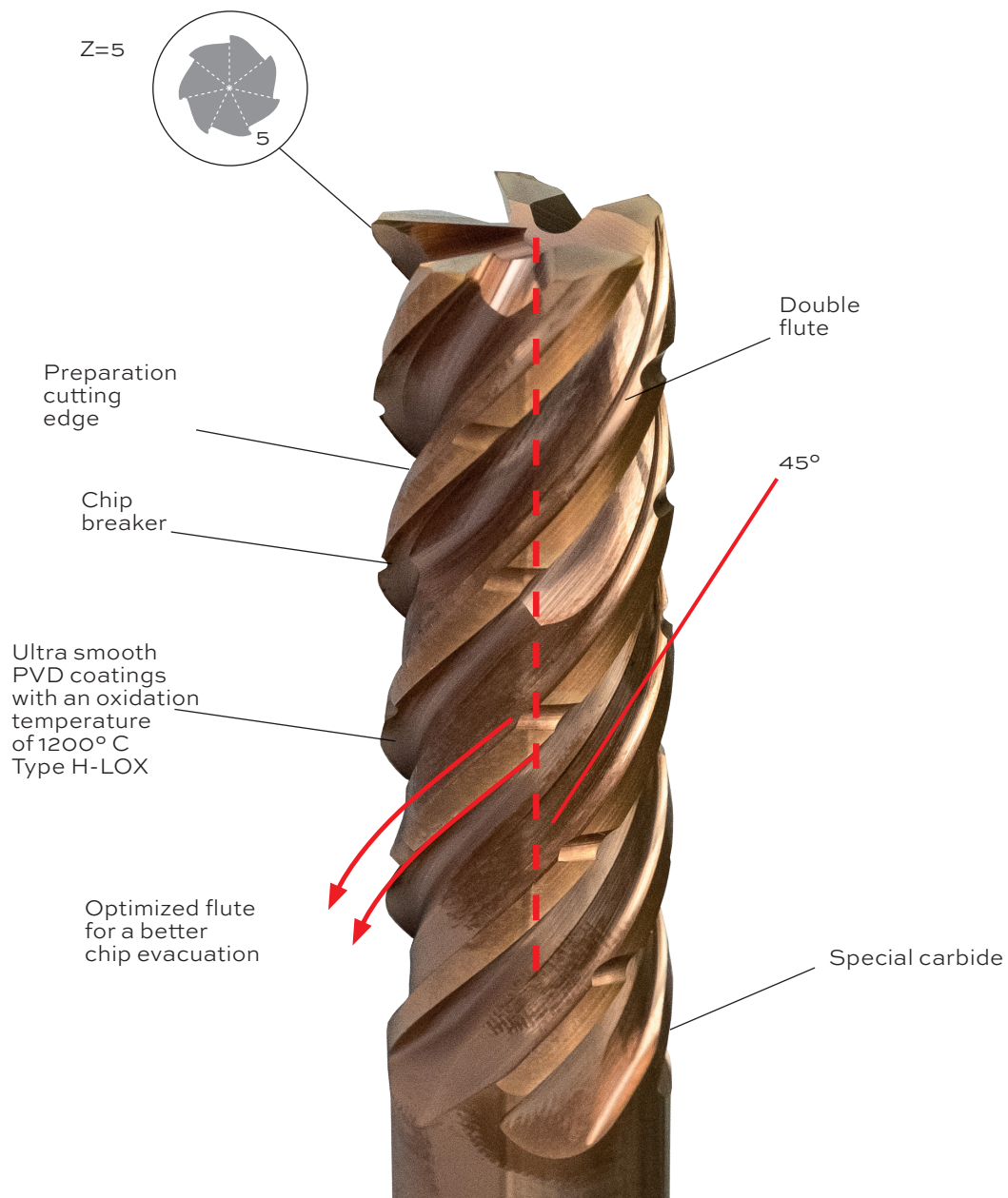
high-performance machining

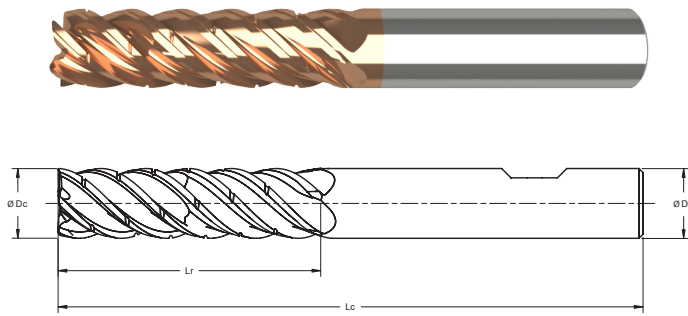
variable cutting geometry

double flute

Humm Volu mills have a specially developed stepped flute to deliver high-performance machining. They are distinguished by an ultra-smooth, high-temperature PVD coating oxidation, over 1200°C.

The tool shows very high resistance and resistance to adhesion and abrasion, thanks to using special carbide.





RECOMMENDATIONS				
P ~ 750 N/mm ²	P ~ 30 HRC	P 30-44 HRC	M Stainless steel	K Cast Iron
C	h6 Shank Dia.	H-LOX		

Stock items

Dc	Ds	Lr	Lc	C	Z	Item number
6,00	6,00	23	65	0,08	5	830.060.00
8,00	8,00	32	75	0,1	5	830.080.00
10,00	10,00	40	85	0,1	5	830.100.00
12,00	12,00	45	100	0,15	5	830.120.00
16,00	16,00	55	115	0,2	5	830.160.00

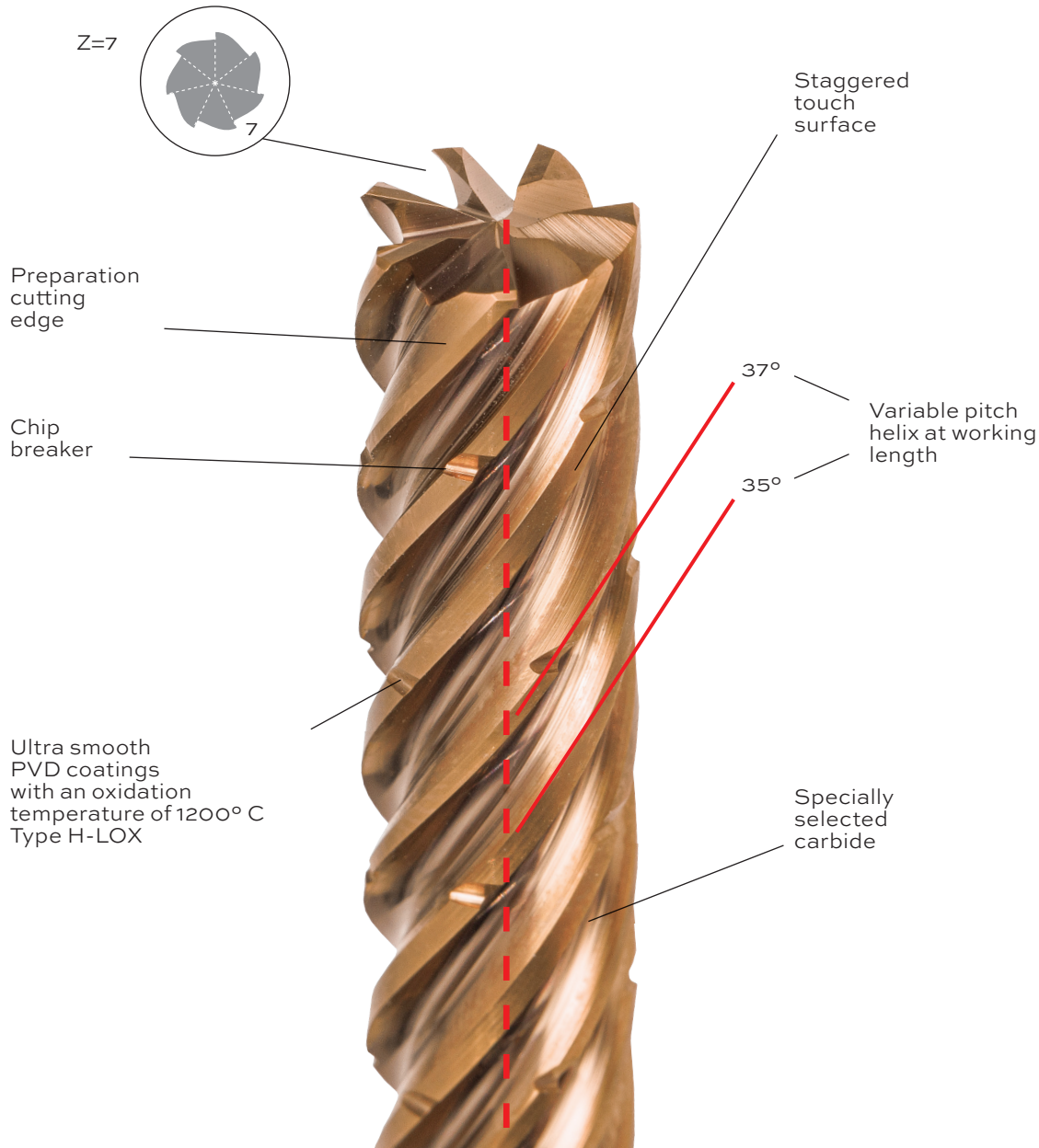
Recommended milling conditions

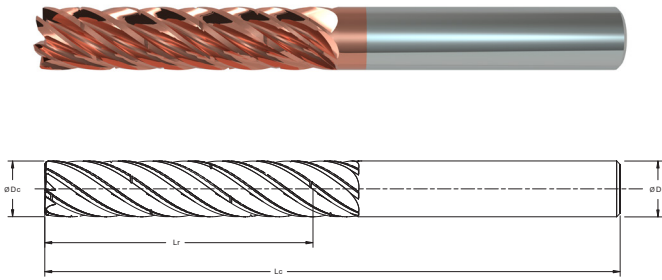
	Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	ø6	ø8	ø10	ø12	ø16				
				Spindle rotation (min ⁻¹)	Feed (mm/min)	Spindle rotation (min ⁻¹)	Feed (mm/min)	Spindle rotation (min ⁻¹)	Feed (mm/min)	Spindle rotation (min ⁻¹)	Feed (mm/min)	
	TO 750 N/mm ³	3Dc x 0.1Dc		14 500	6 600	11 100	6 400	9 200	6 000	7 605	5 700	5 000
				13 100	6 200	10 000	6 000	7 950	6 630	4 900		
	TO 30 HRC	3Dc x 0.1Dc		11 620	4 800	8 700	7 000	5 800	4 300			
				9 100	2 400	6 700	5 400	4 500	3 400			
	30-44 HRC	3Dc x 0.1Dc		13 250	4 100	9 950	7 960	6 600	4 900			
				4 100	4 000	3 900	3 600	3 100				
	STAINLESS STEEL	3Dc x 0.1Dc										
	CAST IRON	3Dc x 0.1Dc										

HUMM VOLU+

- high-performance machining
- variable blade geometry
- special PVD coating
- high speed machining

The Humm Volu+ series cutters are perfect for high-speed machining in which the full working length of the cutter is used and high speeds are used cutting. Thanks to the use of 7 blades, even more efficient processing is possible compared to the classic version. The larger core diameter reduces vibrations and lower cutting resistance, which results in greater machining stability. The use of the H-Lox coating increases resistance and adhesion strength and abrasion, which increases the tool life.





RECOMMENDATIONS				
P ~ 750 N/mm ²	P ~ 30 HRC	P 30-44 HRC	M Stainless steel	K Cast Iron
C	h6 Shank Dia.	H-LOX		
		45°		

Stock items

Dc	Ds	Lr	Lc	C	Z	Item number
6,00	6,00	24	70	0,2	7	840.060.00
8,00	8,00	32	90	0,2	7	840.080.00
10,00	10,00	40	100	0,3	7	840.100.00
12,00	12,00	48	110	0,3	7	840.120.00
16,00	16,00	64	131	0,3	7	840.160.00

Recommended milling conditions

	Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	ø6	ø8	ø10	ø12	ø16
				Spindle rotation (min ⁻¹)	Feed (mm/min)	Spindle rotation (min ⁻¹)	Feed (mm/min)	Spindle rotation (min ⁻¹)
	TO 750 N/mm ²	3Dc x 0,1Dc	Spindle rotation (min ⁻¹)	10 150	7 770	6 440	5 323	3 990
			Feed (mm/min)	3 696	3 584	3 360	3 192	2 800
	TO 30 HRC	3Dc x 0,1Dc	Spindle rotation (min ⁻¹)	9 170	7 000	5 565	4 641	3 430
			Feed (mm/min)	3 472	3 360	3 192	3 024	3 800
	30-44 HRC	3Dc x 0,1Dc	Spindle rotation (min ⁻¹)	7 400	5 500	4 500	3 700	2 500
			Feed (mm/min)	2 688	2 520	2 464	2 352	2 184
	STAINLESS STEEL	3Dc x 0,1Dc	Spindle rotation (min ⁻¹)	9 275	6 965	5 572	4 620	3 430
			Feed (mm/min)	2 296	2 240	2 184	2 016	1 736
	CAST IRON	3Dc x 0,1Dc	Spindle rotation (min ⁻¹)	6 660	4 950	4 050	3 330	2 250
			Feed (mm/min)	2 419	2 268	2 217	2 116	1 965

HUMM ALU

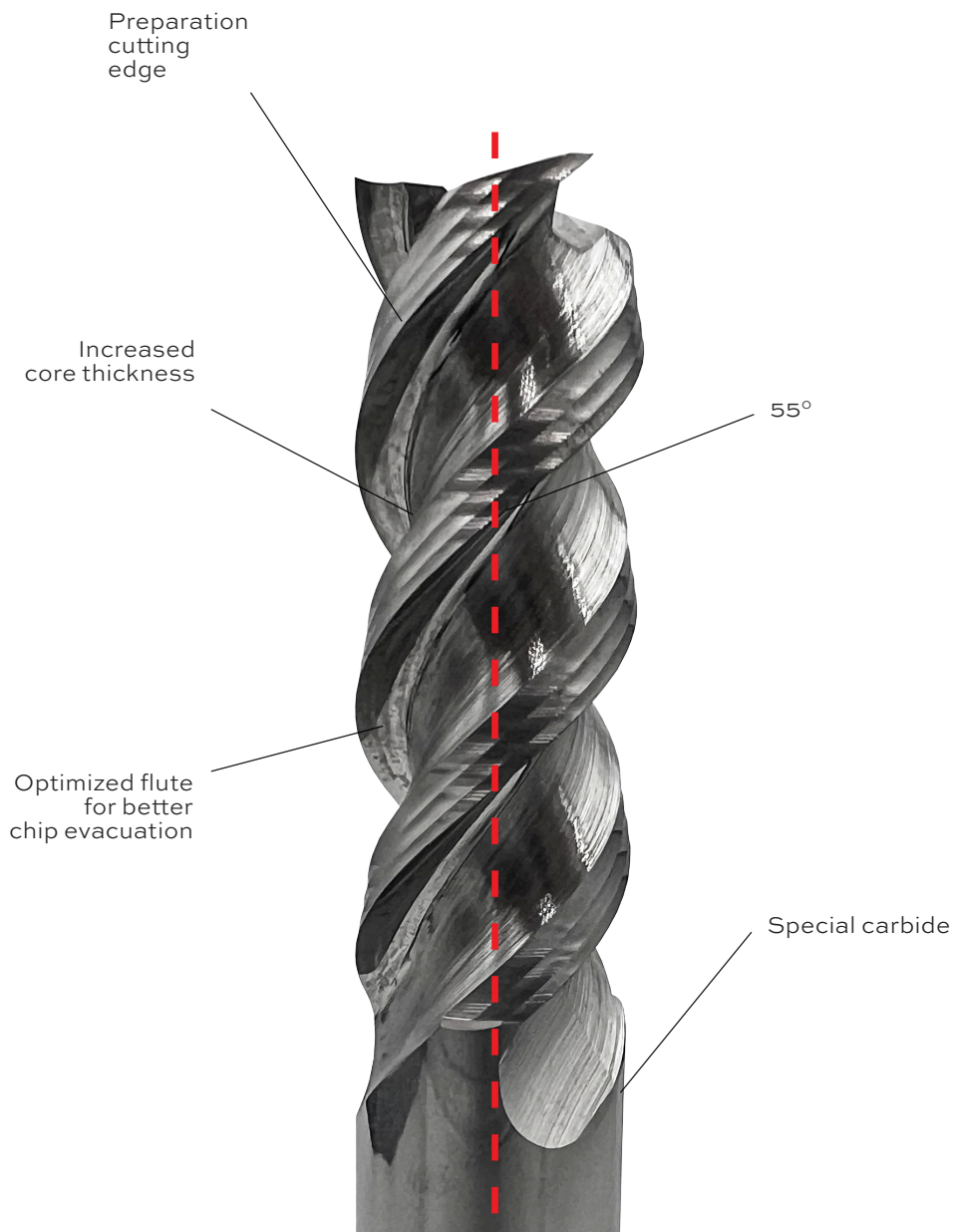
polished groove

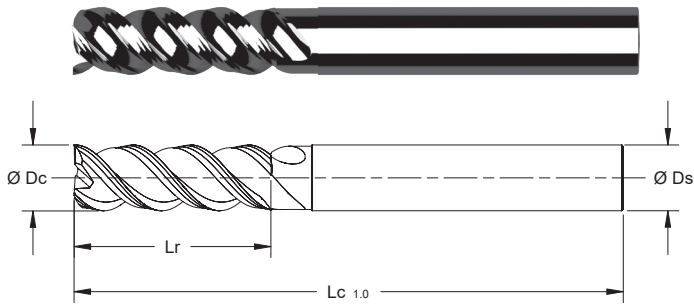
greater stiffness

edge preparation

The basic criterion when designing HUMM ALU mills was to create a tool that could work in aluminum alloys.

We decided to increase the thickness of the core so as to obtain greater stiffness and eliminate the possibility of bending the tool during heavy machining. In this case, we used a polished flute and properly prepared the cutting edge so that the tool worked as effectively as possible in aluminum alloys.





RECOMMENDATIONS	

Stock items

Dc	Ds	Lr	Lc	Z	Item number
6,00	6,00	18	50	3	850.060.00
8,00	8,00	20	60	3	850.080.00
10,00	10,00	30	75	3	850.100.00
12,00	12,00	32	75	3	850.120.00
16,00	16,00	45	100	3	850.160.00

Recommended milling conditions

	Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	ø6	ø8	ø10	ø12	ø16
	ALUMINIUM ALLOY	2Dc x 0.5Dc	Spindle rotation (min ⁻¹)	15 000	11 000	9 000	7 000	5 000
		Feed (mm/min)	300	300	300	300	300	

Recommended milling conditions D/D

	Material	Machining parameters (ap x ae) (mm)	Diameter outside (mm)	ø6	ø8	ø10	ø12	ø16
	ALUMINIUM ALLOY	2Dc x 1Dc	Spindle rotation (min ⁻¹)	11 000	8 000	6 000	5 000	4 000
		Feed (mm/min)	200	200	200	200	200	

HUMM BALL

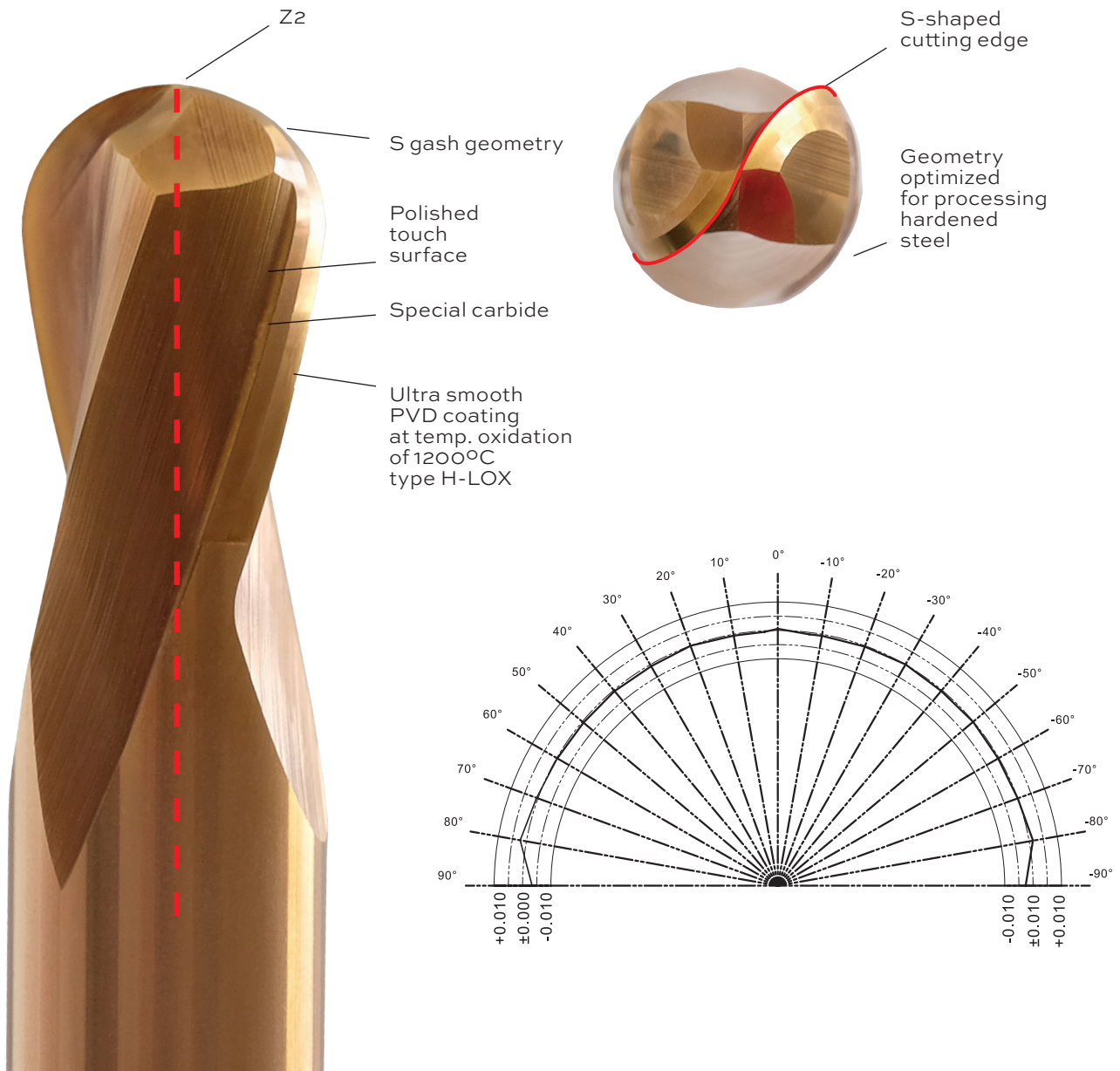
ball mill

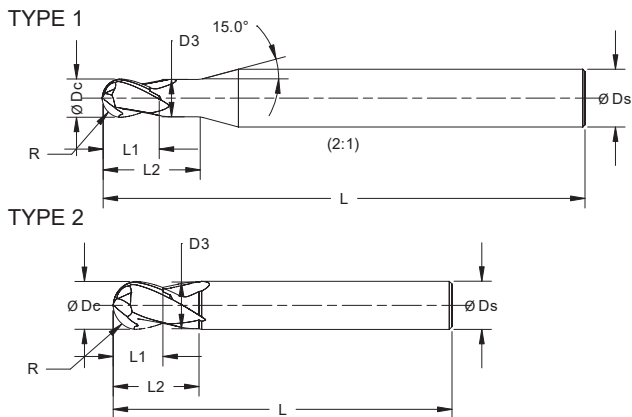
short cutter working part

2 flutes

Humm Ball mills have an optimized S-shaped cutting edge, which enables very gentle and smooth operation. The use of appropriate carbide and a polished cutting edge causes improvement of properties at work and directly affects the extension of its durability.

The Humm Ball cutter is ideal for profiling and materials with hardness up to 68 HRC.





RECOMMENDATIONS				
P 30-44 HRC	H ~68 HRC			
h5 Shank Dia.	20°	R_{0,01}	R_{0,005}	H-LOX
R_{≤6} -0,005 R_{>6} -0,01				

Stock items

R	Dc	Ds	D3	L1	L2	L	z	TYP	Item number
1	2	6	1,9	2	4	57	2	1	600.020.00
1,5	3	6	2,9	3	6	57	2	1	600.030.00
2	4	6	3,9	4	8	57	2	1	600.040.00
2,5	5	6	4,9	5	10	57	2	1	600.050.00
3	6	6	5,85	6	12	57	2	2	600.060.00
4	8	8	7,85	8	14	63	2	2	600.080.00
5	10	10	9,7	10	18	72	2	2	600.100.00
6	12	12	11,7	12	22	83	2	2	600.120.00

Recommended milling conditions

<p>ap=0,05 Dc ae=0,2 Dc</p> <p>Inclination angle $\alpha < 15^\circ$</p>	Rough tooling	Radius R (mm)	1	1,5	2	2,5	3	4	5	6
	30-44 HRC	Spindle rotation (min ⁻¹)	20 000	16 000	12 000	10 000	8 000	6 000	4 800	4 000
		Feed (mm/min)	1 160	1 440	1 460	1 460	1 470	1 510	1 500	1 340
	TO 68 HRC	Spindle rotation (min ⁻¹)	13 000	8 500	6 400	5 300	4 200	3 200	2 500	2 100
Feed (mm/min)		560	580	600	590	590	600	590	530	
<p>ap=0,05-0,1 mm ae=0,02 Dc</p> <p>Inclination angle $\alpha < 15^\circ$</p>	Finishing tooling	Radius R (mm)	1	1,5	2	2,5	3	4	5	6
	30-44 HRC	Spindle rotation (min ⁻¹)	20 000	17 000	13 000	9 750	8 500	6 400	5 100	4 200
		Feed (mm/min)	2 400	2 380	2 210	2 040	1 870	1 540	1 330	1 130
	TO 68 HRC	Spindle rotation (min ⁻¹)	15 000	13 000	9 600	7 500	6 400	4 800	3 800	3 200
Feed (mm/min)		1 350	1 560	1 440	1 380	1 280	1 060	910	800	

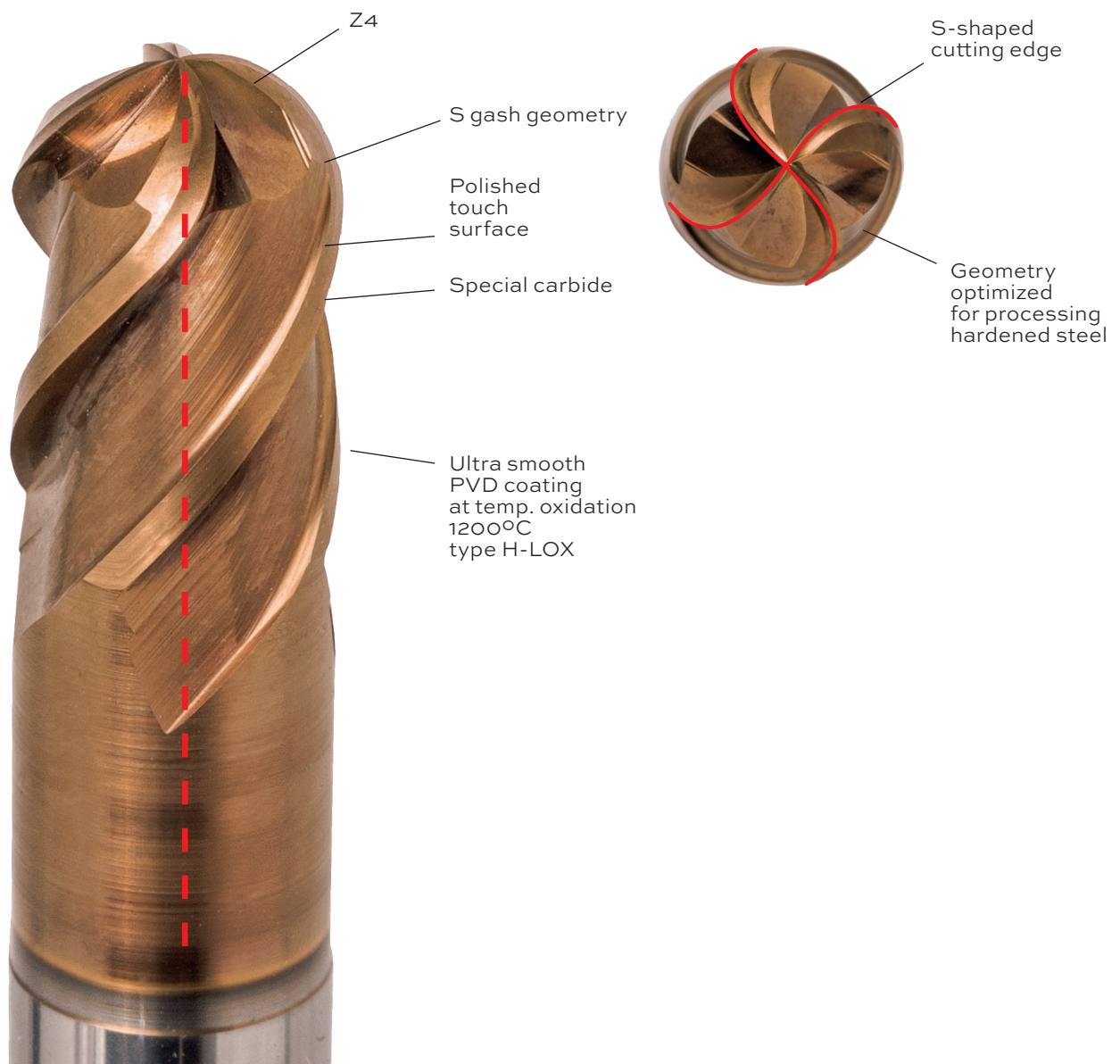
HUMM BALL Q

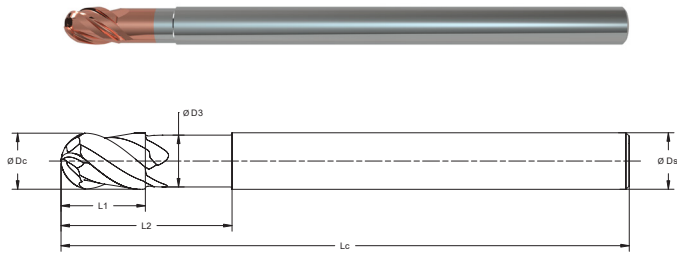
ball mill

4 flutes

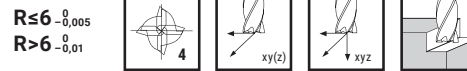
The Humm Ball Q mill, thanks to two additional blades, can work in solid material at higher processing parameters. S-shaped cutting edge geometry for smooth and smooth cutting. The wide flute provides excellent chip evacuation, which further improves the cutting stability.

Suitable for machining of hardened steel up to 72HRC.





RECOMMENDATIONS



Stock items

R	Dc	Ds	D3	L1	L2	L	z	Item number
3	6	6	5,7	9	18	80	4	604.060.00
4	8	8	7,6	12	24	90	4	604.080.00
5	10	10	9,5	15	30	90	4	604.100.00
6	12	12	11,5	18	36	90	4	604.120.00

Recommended milling conditions

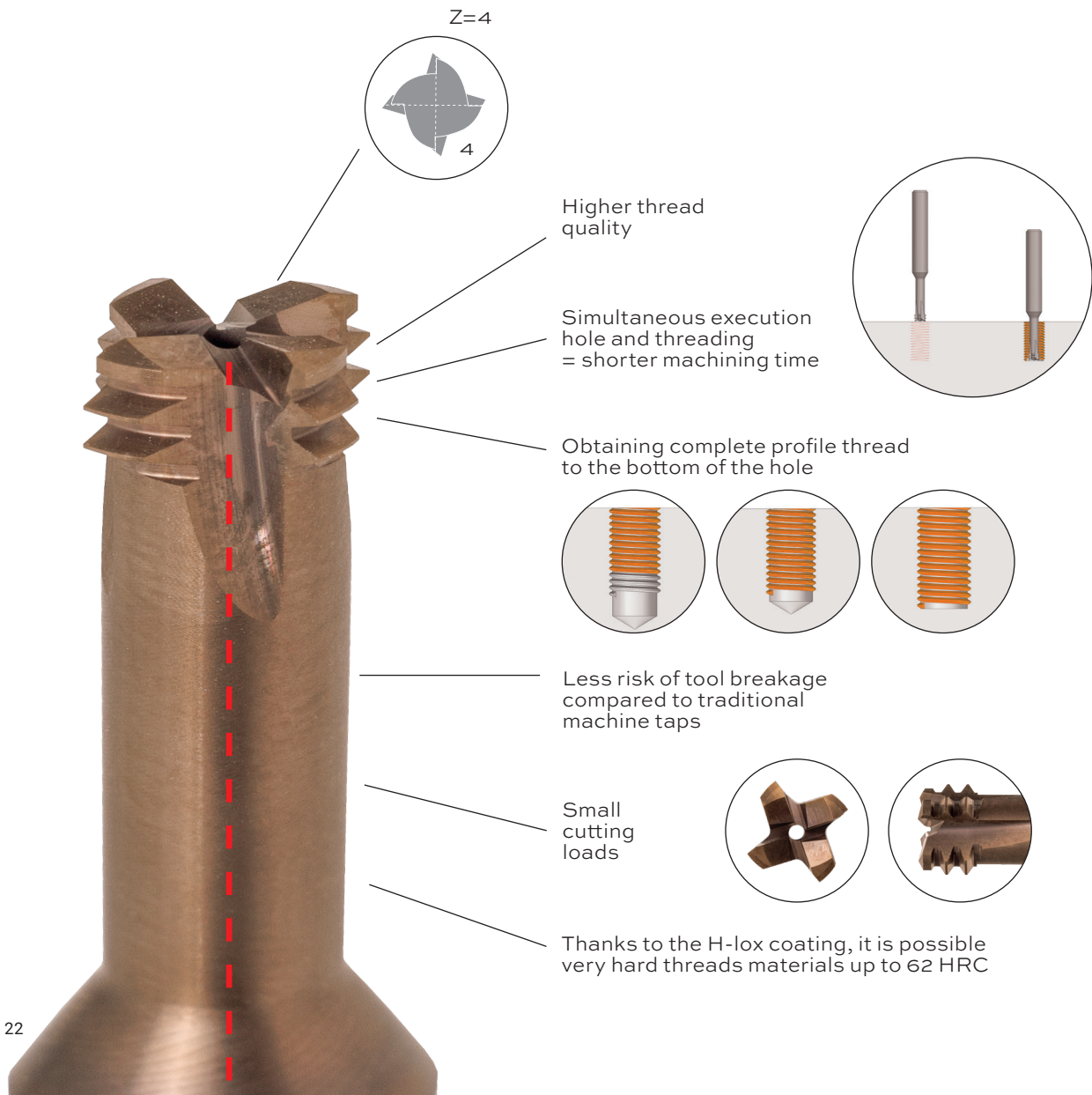
<p>ap=0,05 Dc ae=0,2 Dc</p> <p>Inclination angle $\alpha < 15^\circ$</p>	Rough tooling	Radius R (mm)	3	4	5	6
	30-44 HRC	Spindle rotation (min ⁻¹)	8 000	6 000	4 800	4 000
		Feed (mm/min)	1 250	1 283	1 275	1 139
	TO 68 HRC	Spindle rotation (min ⁻¹)	3 700	2 800	2 200	1 900
Feed (mm/min)		750	780	770	760	
<p>ap=0,05-0,1 mm ae=0,02 Dc</p> <p>Inclination angle $\alpha < 15^\circ$</p>	Finishing tooling	Radius R (mm)	3	4	5	6
	30-44 HRC	Spindle rotation (min ⁻¹)	11 100	8 400	6 700	5 600
		Feed (mm/min)	3 230	3 360	3 350	3 190
	TO 68 HRC	Spindle rotation (min ⁻¹)	6 400	4 800	3 800	3 200
Feed (mm/min)		1 020	1 060	1 050	1 000	

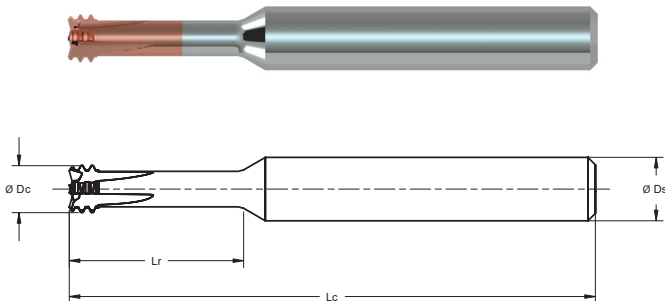
HUMM DT

- 2 operations with 1 tool
- no leading hole
- thread to the bottom of the hole
- high thread quality

The HUMM DT series for thread milling have a special geometry that allows the thread to be produced in full material without the need to make a pilot hole. Due to the low cutting resistance, thread mills last longer than traditional taps machines and can be used on machines with less power. The advantage of this solution is the possibility of threading to the bottom of the hole.

Thanks to the special cover H-lox coating, this tool can make threads in material with a hardness of up to 62 HRC and obtained the threads have a higher quality surface finish than the application traditional threading methods.





RECOMMENDATIONS			
P ~ 30 HRC	P 30-44 HRC	H ~ 55 HRC	H ~ 62 HRC
h5 Shank Dia.	H-LOX		

Stock items

D1	Dc	Ds	Lr	Lc	Z	Item number
M3x0.5	2,4	6	7,5	50	4	200.050.03
M4x07	3,1	6	10	50	4	200.070.04
M5x08	3,8	6	12,5	50	4	200.080.05
M6x1	4,6	6	15	50	4	200.100.06
M8x1,25	6,2	10	20	70	4	200.125.08
M10x1,5	7,5	10	25	70	4	200.150.10
M12x1,75	9	10	30	80	4	200.175.12

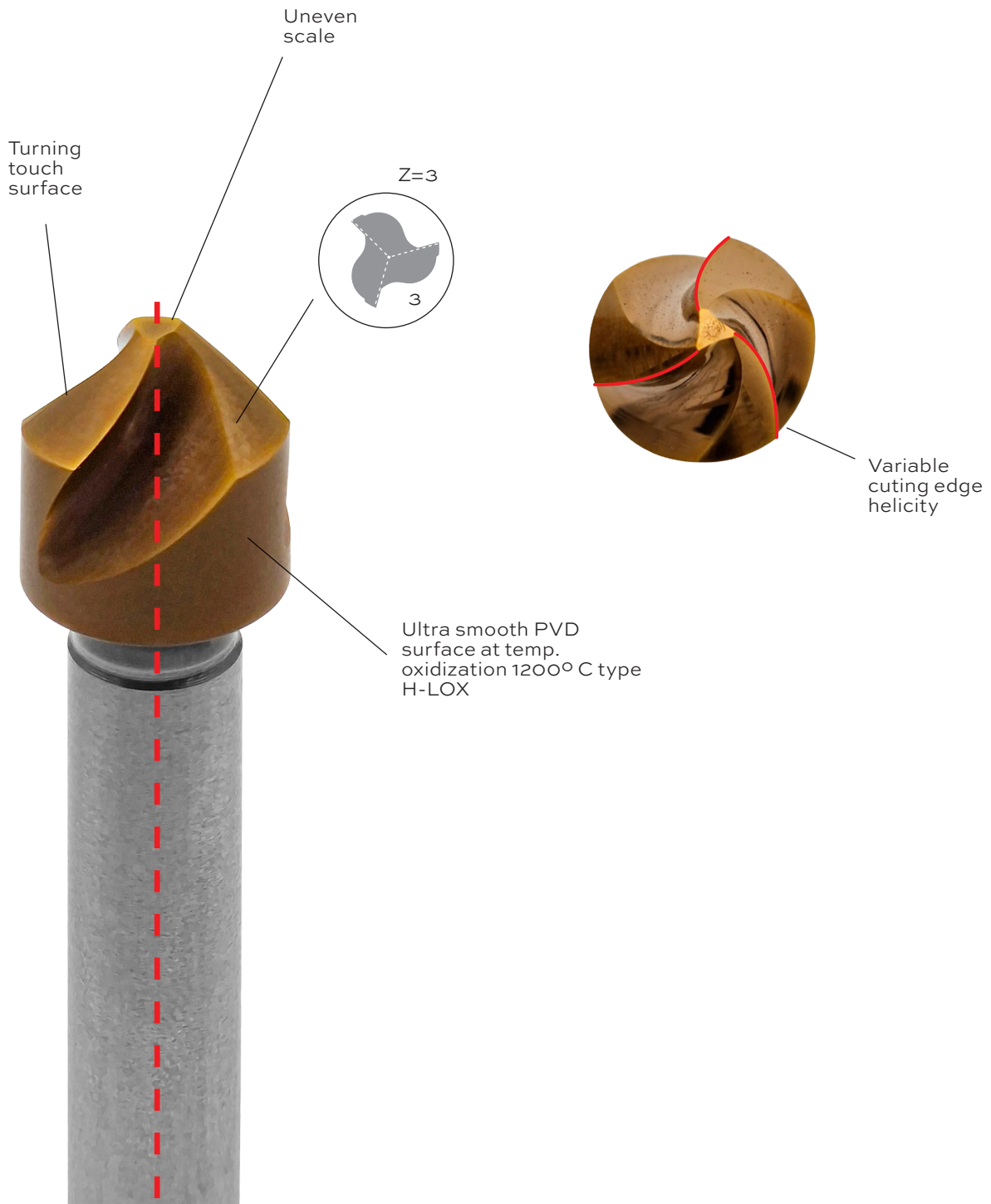
Recommended milling conditions gwintu

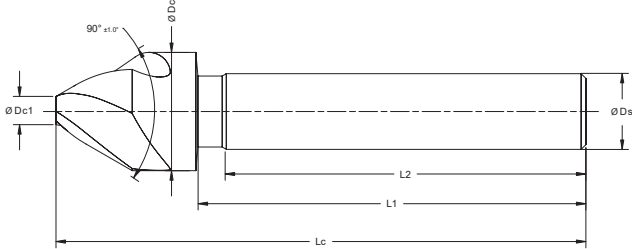
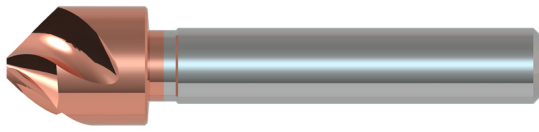
	Material	Diameter outside (mm)	M3x0.5	M4x07	M5x08	M6x1	M8x1,25	M10x1,5	M12x1,75
	TO 30 HRC	Spindle rotation (mm-1)		9 900	7 700	6 300	5 200	3 900	3 200
Feed (mm/min)			127	152	163	170	165	179	184
30-44 HRC	Spindle rotation (mm-1)		8 600	6 700	5 400	4 500	3 300	2 800	2 300
	Feed (mm/min)		103	127	130	134	128	148	145
55 HRC	Spindle rotation (mm-1)		7 300	5 600	4 600	3 800	2 800	2 300	1 900
	Feed (mm/min)		82	96	102	106	101	113	112
62 HRC	Spindle rotation (mm-1)		6 000	4 600	3 800	3 100	2 300	1 900	1 600
	Feed (mm/min)		53	62	66	67	64	72	72

HUMM SC-ASP

Variable pitch Variable helicity Variable blade geometry Z3

Series 120 tools have three unequally pitched blades, in addition to each blade has a variable twist. The combination of these two factors results in quiet and smooth operation without vibration. The geometry allows you to work with little force, the tools are perfect for manual processing. The countersinks are designed for universal use.





RECOMMENDATIONS



Stock items


Dc	Dc1	Ds.	Lc	z	L1	L2	Item number
8,5	2	6	56	3	41	38	120.085.90
10,5	2,5	6	56	3	41	38	120.105.90
12,5	2,8	8	56	3	41	38	120.125.90
16,5	3,2	10	63	3	43	40	120.165.90
20,5	3,5	10	67	3	43	40	120.205.90


Recommended milling conditions


Material	Diameter outside (mm)	$\phi 8,5$	$\phi 10,5$	$\phi 12,5$	$\phi 16,5$	$\phi 20,5$
		TO 750 N/mm ²	Vc (m/min)	37	37	37
TO 30 HRC	f (mm/obr)	0,14	0,15	0,15	0,18	0,21
	Vc (m/min)	29	29	29	29	29
30-44 HRC	f (mm/obr)	0,14	0,15	0,15	0,18	0,21
	Vc (m/min)	9	9	9	9	9
CAST IRON	f (mm/obr)	0,06	0,06	0,06	0,08	0,09
	Vc (m/min)	18	18	18	18	18
ALUMINIUM ALLOY	f (mm/obr)	0,14	0,15	0,15	0,18	0,21
	Vc (m/min)	104	104	104	104	104
	f (mm/obr)	0,17	0,18	0,19	0,23	0,26



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