PFERD TOOLS

Solid carbide tools

Performance. Productivity. Precision.

pferd.com

Solid carbide tools
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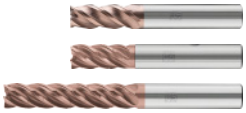

Performance stainless solid carbide end mills

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Performance aluminium solid carbide end mills

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Universal solid carbide drills

- Universal solid carbide drill U 63

Innovative by Tradition

PFERD TOOLS is synonymous with high-quality, precise and innovative tools with the wow factor. We've been developing solutions for work on surfaces and for cutting and machining materials since 1799.

We have a global presence and are there for you whenever you need us in more than 100 countries, both on site and digitally. With our innovative strength and expertise, we pursue a clear mission: to provide solutions that make a real difference to you and your projects.

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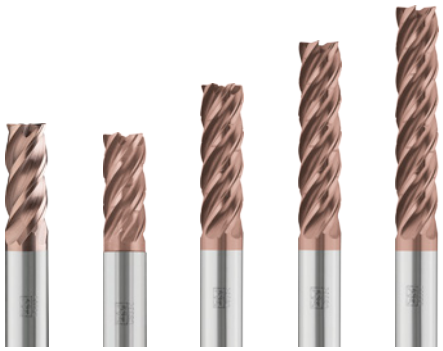
Solid carbide tools
Highlights from the PFERD TOOLS range

Performance stainless solid carbide end mills

By combining a material-specific tool geometry and state-of-the-art coatings, the performance stainless solid carbide end mills are ideal for machining stainless steel and titanium alloys. The high-performance tools have been optimized for both conventional and dynamic milling, meaning they ensure a more reliable process and higher productivity when used on materials that are difficult to machine.

Advantages:
- Optimum temperature control when working on materials that are difficult to machine.
- Optimized helix angle for improved chip evacuation.
- Unequal pitch and unequal helix angle for low-vibration work with smooth running.



Performance aluminium solid carbide end mills

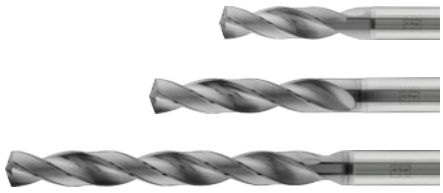
The material-specific geometry of our solid carbide end mills from the Performance Aluminium Line has been optimized for use in the most demanding aluminium machining scenarios. The universal high-performance tools are suitable for a variety of applications, from roughing to finishing. Can also be used for dynamic milling (trochoidal milling) and in large overhangs and deep cavities, depending on the specific type.

Advantages:
- Large polished chip channels for optimum chip control.
- Increased process reliability at high cutting speeds.
- Unequal pitch for low-vibration machining with smooth running.

Universal solid carbide drills

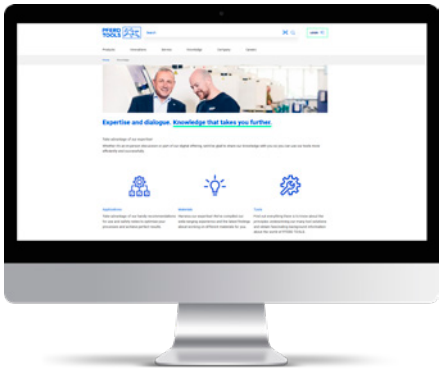
Solid carbide drills from the Universal Line can be used universally on the most important materials such as steel, stainless steel, cast iron and non-ferrous metals. To achieve the highest performance, the surface post-treatment is tailored to each specific drill.

Advantages:
- Double margin flute for increased process stability and high-quality bores.
- Inner coolant supply for increased tool life and controlled chip removal.
- State-of-the-art coatings.



More expert information online

Scan the QR code to find out a wide range of tool and application knowledge relating to PFERD TOOLS' high-quality tools and their huge variety of materials.



Solid carbide tools
General information

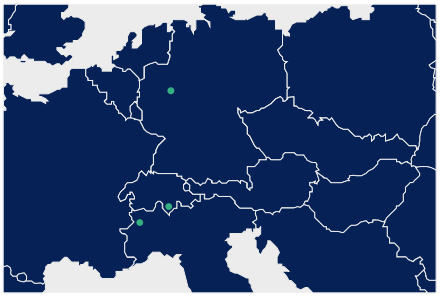
PFERD TOOLS solid carbide tools

Our solid carbide tools combine the very best of our long-standing, comprehensive expertise in the development and manufacture of milling and drilling tools with our ongoing specialization in the field of surface treatment and coatings. As such, we provide the right solutions for tomorrow's manufacturing, today.

All the benefits to you at a glance:

- The highest production and quality standards due to precise micro and macro geometry together with carbide optimised for specific applications.
- High productivity due to optimum stock removal rate.

Comprehensive expertise at all levels



Innovations made in Europe

In our innovative centres of expertise for surface treatment and coatings, located in Germany, Italy and Switzerland, we develop and manufacture solid carbide tools that make a real difference. Our equipment currently includes 93 state-of-the-art CNC tool grinding machines.

Premium quality without compromises

When it comes to the quality of our solid carbide tools, we don't leave anything to chance. We use state-of-the-art measuring equipment to ensure super-accurate tolerances down to the last micrometer, which enables us to meet and exceed the highest demands for process reliability, productivity and precision.

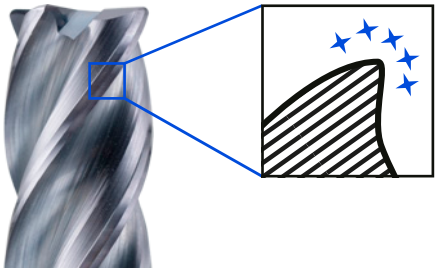
The right choice for every application

Whether it's common, universal machining applications or material-specific high-performance applications: our user-centric range has been tailored to your specific requirements.Depending on the specific tool and type, we can provide solid carbide tools with diameters ranging from 0.1 mm to 32 mm.

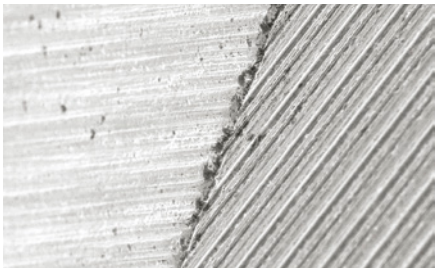
Pooled expertise in surface treatment and coatings

From tool preparation to the coating stage and the post-treatment of the layer: each individual process step is designed to provide the best possible tool solution for your machining processes.

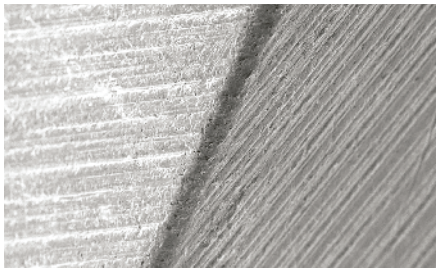
Tool preparation



Defined rounded cutting edges for improved coating adhesion, a sturdier cutting edge and, in turn, a longer tool life and higher tool productivity.



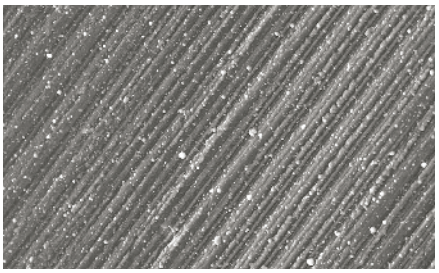
Non-rounded cutting edge.



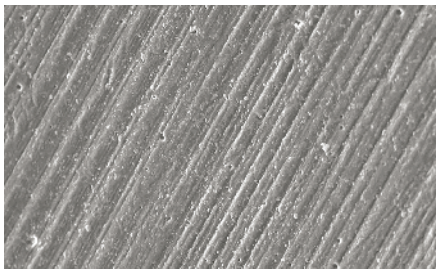
Defined rounded cutting edge.

Smoothing

Smoothing rough areas on the surface using post-treatment processes (e.g. removing droplets after applying a coating) in order to reduce friction and extend the tool life.



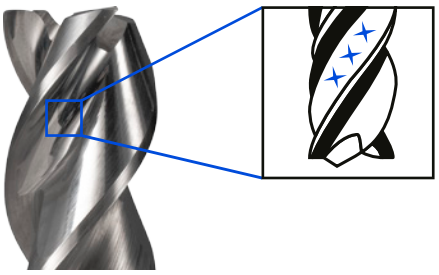
Tool surface with droplets.



Tool surface without droplets.

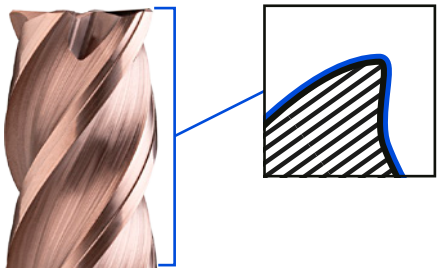
Polish grinding

Chip channels have been optimized for specific materials, ensuring controlled chip evacuation and that the tool does not clog up when machining non-ferrous metals with a high volume of chips.

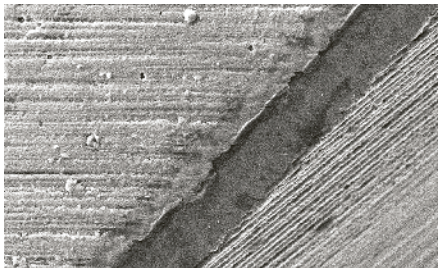


Polished chip channels for optimum chip control.

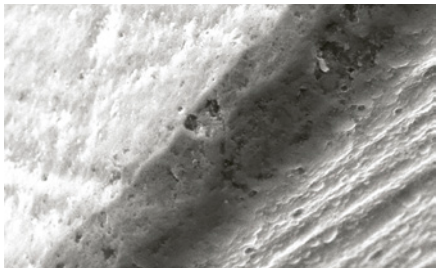
Coatings



High-performance PVD coatings, optimized for use with different materials and applications, thanks to state-of-the-art in-house coating technology.



Coating on an untreated tool surface.



Coating on a pretreated tool surface.

Technical customer support

If you have any questions about optimizing your stock removal applications, our sales representatives and technical advisers will be happy to help or visit you. PFERD TOOLS works alongside you to provide application engineering solutions for working with diverse materials. Please do not hesitate to contact us for further information. You can find our worldwide sales office addresses at: **www.pferd.com**.

Custom-made products

If you cannot find the solution for your particular application in our catalogue range, we are happy to produce solid carbide milling and drilling tools to meet your wishes and requirements. Our sales representatives and technical advisers will be happy to assist you in analyzing your task.

Find your ideal tool solution in just three steps:

- **1. Process analysis**
  Make an appointment with our experienced sales representatives and technical advisers. You can find our worldwide sales office addresses at **www.pferd.com.**
- **2. Production**
  Our production teams subsequently create a technical drawing with which your made-to-order product will be produced.
- **3. Use**
  See the quality, performance and economic value of products from PFERD TOOLS for yourself!

Solid carbide end mills
Explanation of pictograms used

Geometry – Type

- 45° corner chamfer
- Sharp
- Radius
- 60° conical shape
- 90° conical shape
- Full radius

Geometry – Number of flutes

- Number of flutes

Geometry – helix angle

- Helix angle
- Unequal helix angle

Norm

- Company standard
- DIN 6527 L
- DIN 6527 K

Shank type

- Cylindrical shank HA in accordance with DIN 6535
- Weldon shank HB in accordance with DIN 6535 with lateral driving surface

Tool type

- Reduced neck, neck relief
- Polished chip channels
- Roughing
- Chip divider

Feed direction

- Feed xy
- Feed xy(z)
- Feed xyz

Unequal pitch

- Unequal cutting pitch

Applications

- Side milling
- Slot cutting
- Ramping
- Drilling
- Chamfering/deburring
- Profile milling
- Profile milling – use of shoulder
- Profile milling – use of tip
- Dynamic milling/trochoidal milling

Formulae for cut data calculation

$$n = \frac{V_c \times 1{,}000}{DC \times \pi} \text{ RPM}$$

Rotational speed

$$V_c = \frac{DC \times \pi \times n}{1{,}000} \text{ m/min}$$

Cutting speed

$$V_f = f_z \times ZEFP \times n \text{ mm/min}$$

Feeding speed

Explanation of the abbreviations

- a_p = cutting depth
- a_e = contact width
- DC = milling cutter diameter in [mm]
- f_z = feed per tooth in [mm/tooth]
- n = spindle rotational speed in [rev/min]
- v_c = cutting speed in [m/min]
- v_f = feeding speed in [mm/min]
- ZEFP = effective no. of teeth

Solid carbide end mills
Explanation of item designation

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SCM-UC4-M100C-M72HB AL40
① ② ③ ④ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑭

① Tool group
SCM = Solid Carbide Mill

② Product line
U = Universal
H = High Performance

③ Shape
B = Full radius end mill (ball nose)
D = Deburring end mill (deburring/chamfering)
C = Cylindrical end mill with centre cut
CR = Cylindrical end mill for roughing
CD = Cylindrical end mill with chip divider

④ Number of cutting edges

⑤ Material group
ISO groups P, M, K, N, S, H, O.
Omitted unless specified.

⑥ Units
M = Metric
I = Imperial

⑦ Cutting diameter
Metric: mm x 10
Example: D 10.5 mm = 105

⑧ Corner design
A = Angled
Example: A90°
C = Chamfer
R = radius with size
Example: R40 for 4.0 mm
S = Sharp

⑨ Cut length class

XS:	Extra short
S:	Short
M:	Medium
L:	Long
XL:	Extra long
XXL:	Extra extra long (>4xD)

⑩ Total length
Metric: total length LF in mm.
Not specified for deburring end mills.

⑪ Shank type
HA = Cylindrical
HB = Weldon shank (in accordance with DIN 6535)
Additional shank diameter for design with DC < 6 mm and DCON = 6 mm

⑫ *

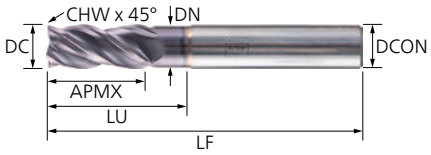
⑬ *

⑭ Grade

*Optional

Explanation of short names in accordance with ISO 13399

APMX	= Maximum cutting depth
CHW	= Chamfer width
DC	= Cutting diameter
DCON	= Shank diameter
DN	= Neck diameter
KAPR	= Tool cutting edge angle
LF	= Total length
LU	= Working length
RE	= Corner radius
ZEFP	= No. of teeth



Universal solid carbide end mills
Material suitability overview

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Universal

Material group			Ballnose mill UB	Deburring end mill UD	Solid carbide mill with two flutes UC2	Solid carbide mill with three flutes UC3	Solid carbide mill with four flutes UC4	Solid carbide mill with four flutes UCR4	Solid carbide mill with five flutes UC5	Solid carbide mill with five flutes UCD5	Solid carbide mill with six/eight flutes
P	Steel	All types of steel and cast steel	●	●	●	●	●	●	●	●	●
M	Stainless steel	Ferritic and martensitic	●	●	●	●	●	○	●	●	●
		Austenitic	●	●	●	●	●	○	●	●	●
		High-temperature-resistant and ferritic-austenitic (duplex)	○	●	○	○	○	○	○	○	○
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	●	●	●	●	●	●	●	●	●
		Cast iron with nodular graphite (GJS, GGG)	●	●	●	●	●	●	●	●	●
N	Non-ferrous metals	Aluminium	○	●	○	○	○	○	○	○	○
		Copper, brass, bronze and red brass	●	●	○	○	○	○	○	○	○
S	Super and titanium alloys	Heat-resistant super alloys based on Fe, Ni and Co		○		○	○		○	○	●
		Pure titanium		○		○	○	○	○	○	●
		Titanium alloys		○		○	○	○	○	○	●
H	Hard steels and chilled castings	Heat-treated and hardened steels up to 50 HRC	●	○	○	○	○	○	○	○	○
		Hardened steels up to 58 HRC	○								
		Hardened steels over 58 HRC									
O	Other	Thermoplastics	○	○	○	○	○		○	○	○
		Duroplastics									
		GRP/CRP reinforced plastics, graphite									

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with two flutes UC2

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Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC								
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]							
						4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	90	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			500 to 700 N/mm²	●	85	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			700 to 1,000 N/mm²	●	80	0.02	0.02	0.02	0.03	0.04	0.045	0.055	0.07
			1,000 to 1,400 N/mm²	●	70	0.02	0.02	0.02	0.03	0.04	0.045	0.055	0.07
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	55	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Austenitic	e.g. 1.4301, 1.4571	●	55	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		High-temperature-resistant and ferritic-austenitic (duplex)		○	45	0.018	0.018	0.02	0.025	0.03	0.04	0.05	0.065
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	80	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	65	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	135	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			Al over 10% Si	○	110	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Copper, brass, bronze and red brass		○	90	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co										
		Pure titanium											
		Titanium alloys											
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.02	0.02	0.02	0.03	0.04	0.055	0.06	0.07
			up to 58 HRC										
			over 58 HRC										
O	Other	Thermoplastics		○	90	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Duroplastics											
		GRP/CRP reinforced plastics, graphite											

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with two flutes UC2

PFERD TOOLS

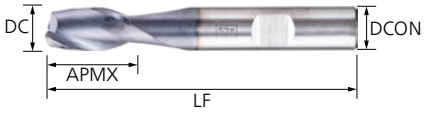
Recommended cutting speeds [m/min]

Material group		Specification/ example material		Suitability	Side milling a_p = 1 x DC; a_e = 0.1 x DC								
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]							
						4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	210	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			500 to 700 N/mm²	●	190	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			700 to 1,000 N/mm²	●	170	0.025	0.025	0.035	0.045	0.06	0.07	0.08	0.1
			1,000 to 1,400 N/mm²	●	150	0.025	0.025	0.035	0.045	0.06	0.07	0.08	0.1
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	120	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Austenitic	e.g. 1.4301, 1.4571	●	120	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		High-temperature-resistant and ferritic-austenitic (duplex)		○	90	0.025	0.025	0.033	0.038	0.045	0.06	0.08	0.1
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	180	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	140	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	250	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			Al over 10% Si	○	200	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Copper, brass, bronze and red brass		○	200	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co										
		Pure titanium											
		Titanium alloys											
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	75	0.025	0.025	0.035	0.045	0.06	0.07	0.08	0.1
			up to 58 HRC										
			over 58 HRC										
O	Other	Thermoplastics		○	200	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Duroplastics											
		GRP/CRP reinforced plastics, graphite											

● = highly suitable ○ = suitable

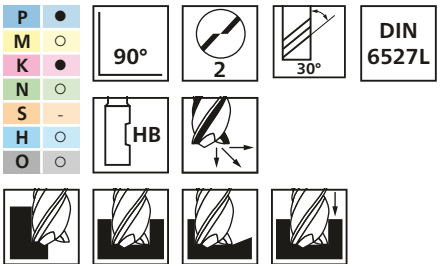
Universal solid carbide end mills

Universal solid carbide end mills with two flutes UC2



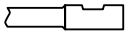
Sharp corner design – metric

Mills for full slot milling, drill slot milling and roughing with high contact widths. Suitable for universal machining applications on a variety of materials.



Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Good chip removal due to very large chip channel.

DC [mm]	DCON [mm]	APMX [mm]	LF [mm]	ZEFP		Item no.	Designation
Long HB			 **HB**				
4	6	8	57	2	1	23000124	SCM-UC2-M040S-S57HB6 AL40
5	6	10	57	2	1	23000125	SCM-UC2-M050S-S57HB6 AL40
6	6	10	57	2	1	23000126	SCM-UC2-M060S-S57HB AL40
8	8	16	63	2	1	23000127	SCM-UC2-M080S-S63HB AL40
10	10	19	72	2	1	23000128	SCM-UC2-M100S-S72HB AL40
12	12	22	83	2	1	23000129	SCM-UC2-M120S-S83HB AL40
16	16	26	92	2	1	23000130	SCM-UC2-M160S-S92HB AL40

Universal solid carbide end mills

Universal solid carbide end mills with three flutes UC3

PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			500 to 700 N/mm²	●	120	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			700 to 1,000 N/mm²	●	100	0.01	0.016	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			1,000 to 1,400 N/mm²	●	80	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	45	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Austenitic	e.g. 1.4301, 1.4571	●	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		High-temperature-resistant and ferritic-austenitic (duplex)		○	40	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	100	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	200	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			Al over 10% Si	○	180	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Copper, brass, bronze and red brass		○	200	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	35	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Pure titanium		○	100	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Titanium alloys		○	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics		○	110	0.025	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with three flutes UC3

PFERD TOOLS

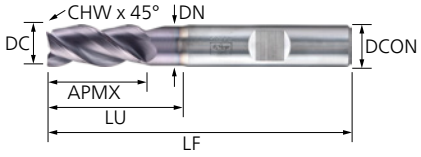
Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Side milling a_p = 1 x DC; a_e = 0.4 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			500 to 700 N/mm²	●	160	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			700 to 1,000 N/mm²	●	150	0.01	0.016	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			1,000 to 1,400 N/mm²	●	110	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	70	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Austenitic	e.g. 1.4301, 1.4571	●	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		High-temperature-resistant and ferritic-austenitic (duplex)		○	60	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	140	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	250	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
			Al over 10% Si	○	200	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Copper, brass, bronze and red brass		○	200	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	45	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Pure titanium		○	110	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Titanium alloys		○	60	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics		○	200	0.04	0.05	0.05	0.065	0.075	0.09	0.12	0.16	0.2
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

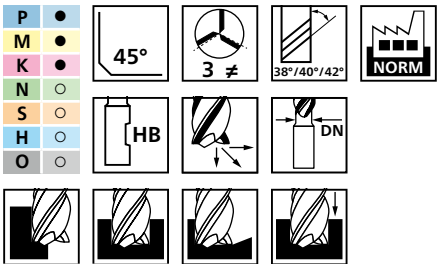
Universal solid carbide end mills

Universal solid carbide end mills with three flutes UC3



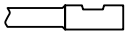
Chamfer corner design – metric

Mills for full slot milling, drill slot milling and a wide range of roughing tasks. Suitable for universal machining applications on a variety of materials.



Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation
Long HB				 **HB**						
3	6	2.8	8	57	11	0.1	3	1	23000131	SCM-UC3-M030C-M57HB6 AL40
4	6	3.7	11	57	16	0.1	3	1	23000132	SCM-UC3-M040C-M57HB6 AL40
5	6	4.7	13	57	18	0.15	3	1	23000133	SCM-UC3-M050C-M57HB6 AL40
6	6	5.6	13	57	18	0.2	3	1	23000134	SCM-UC3-M060C-M57HB AL40
8	8	7.5	19	63	26	0.2	3	1	23000135	SCM-UC3-M080C-M63HB AL40
10	10	9.5	22	72	32	0.2	3	1	23000136	SCM-UC3-M100C-M72HB AL40
12	12	11	26	83	36	0.3	3	1	23000137	SCM-UC3-M120C-M83HB AL40
16	16	15	32	92	42	0.3	3	1	23000138	SCM-UC3-M160C-M92HB AL40

Universal solid carbide end mills

Universal solid carbide end mills with four flutes UC4

PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	135	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			500 to 700 N/mm²	●	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
			700 to 1,000 N/mm²	●	110	0.01	0.016	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			1,000 to 1,400 N/mm²	●	80	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	70	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Austenitic	e.g. 1.4301, 1.4571	●	60	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		High-temperature-resistant and ferritic-austenitic (duplex)		○	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	130	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	100	0.01	0.016	0.03	0.03	0.04	0.06	0.06	0.085	0.1
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	200	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
			Al over 10% Si	○	180	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
		Copper, brass, bronze and red brass		○	200	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	35	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Pure titanium		○	100	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
		Titanium alloys		○	50	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.01	0.012	0.02	0.02	0.03	0.045	0.045	0.06	0.07
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics		○	180	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.1	0.11
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with four flutes UC4

PFERD TOOLS

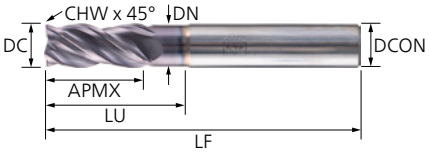
Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Side milling a_p = 2 x DC; a_e = 0.4 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			500 to 700 N/mm²	●	160	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
			700 to 1,000 N/mm²	●	150	0.01	0.016	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			1,000 to 1,400 N/mm²	●	110	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	85	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Austenitic	e.g. 1.4301, 1.4571	●	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		High-temperature-resistant and ferritic-austenitic (duplex)		○	65	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	180	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	140	0.01	0.016	0.035	0.035	0.045	0.075	0.075	0.1	0.12
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	230	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
			Al over 10% Si	○	210	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
		Copper, brass, bronze and red brass		○	230	0.03	0.035	0.035	0.04	0.05	0.06	0.08	0.1	0.13
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	45	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Pure titanium		○	120	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
		Titanium alloys		○	70	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	75	0.01	0.012	0.025	0.025	0.035	0.055	0.055	0.07	0.085
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics		○	210	0.04	0.04	0.06	0.06	0.07	0.07	0.085	0.1	0.12
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

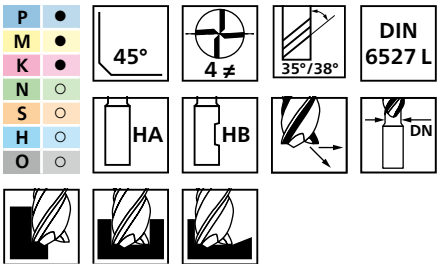
Universal solid carbide end mills

Universal solid carbide end mills with four flutes UC4



Chamfer corner design – metric

Mills for various applications, from roughing through to finishing and ramping. Suitable for universal machining applications on a variety of materials.



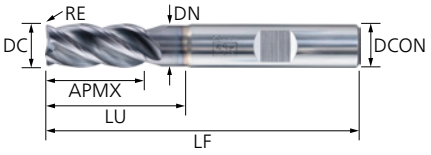
Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation
Long HA					HA					
3	6	2.8	8	57	18	0.13	4	1	23000148	SCM-UC4-M030C-M57HA6 AL40
4	6	3.6	11	57	21	0.13	4	1	23000149	SCM-UC4-M040C-M57HA6 AL40
5	6	4.6	13	57	21	0.2	4	1	23000150	SCM-UC4-M050C-M57HA6 AL40
6	6	5.5	13	57	21	0.2	4	1	23000151	SCM-UC4-M060C-M57HA AL40
8	8	7.5	19	63	27	0.2	4	1	23000152	SCM-UC4-M080C-M63HA AL40
10	10	9.5	22	72	32	0.2	4	1	23000153	SCM-UC4-M100C-M72HA AL40
12	12	11.5	26	83	38	0.3	4	1	23000154	SCM-UC4-M120C-M83HA AL40
16	16	15.5	32	92	44	0.3	4	1	23000155	SCM-UC4-M160C-M92HA AL40
20	20	19.5	38	104	54	0.4	4	1	23000156	SCM-UC4-M200C-M104HA AL40
Long HB					HB					
3	6	2.8	8	57	18	0.13	4	1	23000139	SCM-UC4-M030C-M57HB6 AL40
4	6	3.6	11	57	21	0.13	4	1	23000140	SCM-UC4-M040C-M57HB6 AL40
5	6	4.6	13	57	21	0.2	4	1	23000141	SCM-UC4-M050C-M57HB6 AL40
6	6	5.5	13	57	21	0.2	4	1	23000142	SCM-UC4-M060C-M57HB AL40
8	8	7.5	19	63	27	0.2	4	1	23000143	SCM-UC4-M080C-M63HB AL40
10	10	9.5	22	72	32	0.2	4	1	23000144	SCM-UC4-M100C-M72HB AL40
12	12	11.5	26	83	38	0.3	4	1	23000145	SCM-UC4-M120C-M83HB AL40
16	16	15.5	32	92	44	0.3	4	1	23000146	SCM-UC4-M160C-M92HB AL40
20	20	19.5	38	104	54	0.4	4	1	23000147	SCM-UC4-M200C-M104HB AL40

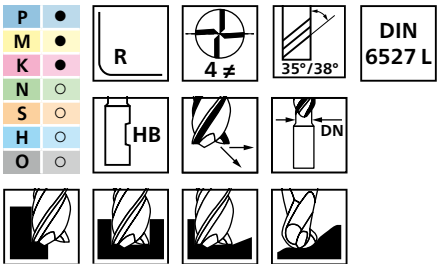
Universal solid carbide end mills

Universal solid carbide end mills with four flutes UC4



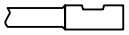
Radius corner design – metric

Mills for various applications, from roughing through to finishing. The radius design enables free-form profile cutting. Suitable for universal machining applications on a variety of materials.



Special features:

- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
Long HB					 **HB**					
8	8	7.46	19	63	27	0.5	4	1	23000157	SCM-UC4-M080R05-M63HB AL40
						1	4	1	23000158	SCM-UC4-M080R10-M63HB AL40
						1.5	4	1	23000159	SCM-UC4-M080R15-M63HB AL40
						2	4	1	23000160	SCM-UC4-M080R20-M63HB AL40
10	10	9.5	22	72	32	0.5	4	1	23000161	SCM-UC4-M100R05-M72HB AL40
						1	4	1	23000162	SCM-UC4-M100R10-M72HB AL40
						1.5	4	1	23000163	SCM-UC4-M100R15-M72HB AL40
						2	4	1	23000164	SCM-UC4-M100R20-M72HB AL40
12	12	11.5	26	83	38	0.5	4	1	23000165	SCM-UC4-M120R05-M83HB AL40
						1	4	1	23000166	SCM-UC4-M120R10-M83HB AL40
						1.5	4	1	23000167	SCM-UC4-M120R15-M83HB AL40
						2	4	1	23000168	SCM-UC4-M120R20-M83HB AL40
16	16	15.5	32	92	44	1	4	1	23000169	SCM-UC4-M160R10-M92HB AL40
						1.5	4	1	23000170	SCM-UC4-M160R15-M92HB AL40
						2	4	1	23000171	SCM-UC4-M160R20-M92HB AL40
20	20	19.5	38	104	54	1	4	1	23000172	SCM-UC4-M200R10-M104HB AL40
						2	4	1	23000173	SCM-UC4-M200R20-M104HB AL40

Universal solid carbide end mills

Universal solid carbide end mills with four flutes UCR4

PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Side milling a_p = max; a_e = 0,4 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	180	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
			500 to 700 N/mm²	●	160	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
			700 to 1,000 N/mm²	●	120	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
			1,000 to 1,400 N/mm²	●	95	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	70	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		Austenitic	e.g. 1.4301, 1.4571	○	60	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		High-temperature-resistant and ferritic-austenitic (duplex)		○	50	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	160	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB											
N	Non-ferrous metals	Aluminium	Alu up to 10% Si											
			Alu over 10% Si											
		Copper, brass, bronze and red brass												
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co											
		Pure titanium		○	40	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		Titanium alloys		○	30	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC											
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics												
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with four flutes UCR4

PFERD TOOLS

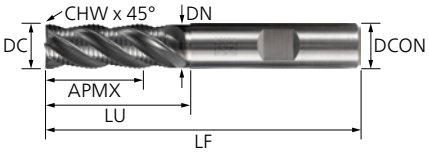
Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Side milling a_p = max; a_e = 0,4 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	180	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
			500 to 700 N/mm²	●	160	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
			700 to 1,000 N/mm²	●	120	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
			1,000 to 1,400 N/mm²	●	95	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	70	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		Austenitic	e.g. 1.4301, 1.4571	○	60	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		High-temperature-resistant and ferritic-austenitic (duplex)		○	50	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	160	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB											
N	Non-ferrous metals	Aluminium	Alu up to 10% Si											
			Alu over 10% Si											
		Copper, brass, bronze and red brass												
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co											
		Pure titanium		○	40	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
		Titanium alloys		○	30	0.020	0.026	0.033	0.036	0.048	0.060	0.072	0.096	0.120
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC											
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics												
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

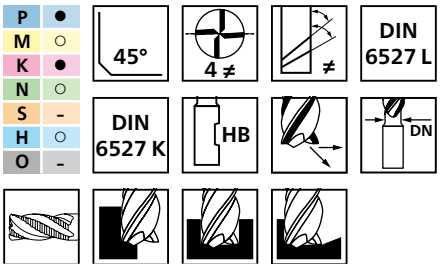
Universal solid carbide end mills

Universal solid carbide end mills with four flutes UCR4



Chamfer corner design with roughing – metric

Mills with roughing for various applications, from roughing through to finishing and ramping. Suitable for universal machining applications on a variety of materials.



Special features:

- Design with neck chip channel.
- Optimum chip control thanks to roughing cut.
- Unequal pitch and unequal helix angle for low-vibration work with smooth running.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation
Short HB					HB					
6	6	5.4	10	54	18	0.15	4	1	23000356	SCM-UCR4-M060C-S54HB AP40
8	8	7.4	12	58	22	0.2	4	1	23000357	SCM-UCR4-M080C-S58HB AP40
10	10	9.4	15	66	26	0.3	4	1	23000358	SCM-UCR4-M100C-S66HB AP40
12	12	11.2	18	73	28	0.4	4	1	23000359	SCM-UCR4-M120C-S73HB AP40
Long HB					HB					
6	6	5.4	15	57	21	0.15	4	1	23000350	SCM-UCR4-M060C-M57HB AP40
8	8	7.4	20	63	27	0.2	4	1	23000351	SCM-UCR4-M080C-M63HB AP40
10	10	9.4	25	72	32	0.3	4	1	23000352	SCM-UCR4-M100C-M72HB AP40
12	12	11.2	30	83	38	0.4	4	1	23000353	SCM-UCR4-M120C-M83HB AP40
16	16	15.2	32	92	42	0.5	4	1	23000354	SCM-UCR4-M160C-M92HB AP40
20	20	19.2	40	104	54	0.6	4	1	23000355	SCM-UCR4-M200C-M104HB AP40

Universal solid carbide end mills

Universal solid carbide end mills with five flutes UC5

PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	140	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
			500 to 700 N/mm²	●	120	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
			700 to 1,000 N/mm²	●	90	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
			1,000 to 1,400 N/mm²	●	70	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	70	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		Austenitic	e.g. 1.4301, 1.4571	○	60	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		High-temperature-resistant and ferritic-austenitic (duplex)		○	50	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	120	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	80	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		○	40	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		Titanium alloys		○	30	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with five flutes UC5

PFERD TOOLS

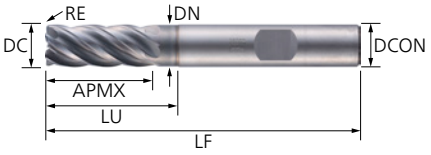
Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Side milling a_p = 2 x DC; a_e = 0.4 x D 										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	180	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
			500 to 700 N/mm²	●	160	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
			700 to 1,000 N/mm²	●	120	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
			1,000 to 1,400 N/mm²	●	95	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	80	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		Austenitic	e.g. 1.4301, 1.4571	○	70	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		High-temperature-resistant and ferritic-austenitic (duplex)		○	60	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	160	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	120	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		○	45	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		Titanium alloys		○	35	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

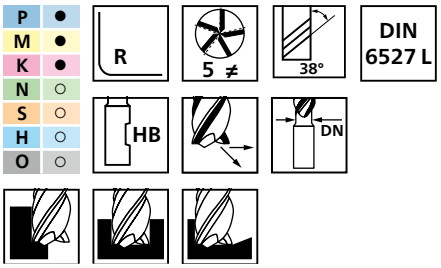
Universal solid carbide end mills

Universal solid carbide end mills with five flutes UC5



Radius corner design – metric

Mills for various applications, from roughing through to finishing. Suitable for universal machining applications on a variety of materials.



Special features:

- Unequal pitch for low-vibration work with smooth running.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
Long HB					HB					
6	6	5.7	13	57	20	0.5	5	1	23000845	SCM-UC5-M060R05-M57HB AP40
8	8	7.7	19	63	25	0.5	5	1	23000846	SCM-UC5-M080R05-M63HB AP40
10	10	9.7	22	72	30	0.5	5	1	23000847	SCM-UC5-M100R05-M72HB AP40
12	12	11.6	26	83	36	0.5	5	1	23000848	SCM-UC5-M120R05-M83HB AP40
16	16	15.6	32	92	42	1	5	1	23000849	SCM-UC5-M160R10-M92HB AP40
20	20	19.6	38	104	52	1	5	1	23000850	SCM-UC5-M200R10-M104HB AP40
25	25	24.5	45	124	65	1	5	1	23000851	SCM-UC5-M250R10-M124HB AP40

Universal solid carbide end mills

Universal solid carbide end mills with five flutes UCD5

PFERD TOOLS

Recommended cutting speeds [m/min] – radius corner design with chip divider, 2xD

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	140	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
			500 to 700 N/mm²	●	120	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
			700 to 1,000 N/mm²	●	90	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
			1,000 to 1,400 N/mm²	●	70	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	70	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		Austenitic	e.g. 1.4301, 1.4571	○	60	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		High-temperature-resistant and ferritic-austenitic (duplex)		○	50	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	120	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	80	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		○	40	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
		Titanium alloys		○	30	0.014	0.018	0.023	0.027	0.036	0.045	0.054	0.072	0.090	0.113
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with five flutes UCD5

PFERD TOOLS

Recommended cutting speeds [m/min] – radius corner design with chip divider, 2xD

Material group			Specification/ example material	Suitability	Side milling a_p = 2 x DC; a_e = 0.4 x D 										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	180	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
			500 to 700 N/mm²	●	160	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
			700 to 1,000 N/mm²	●	120	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
			1,000 to 1,400 N/mm²	●	95	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	80	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		Austenitic	e.g. 1.4301, 1.4571	○	70	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		High-temperature-resistant and ferritic-austenitic (duplex)		○	60	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	160	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	120	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		○	45	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
		Titanium alloys		○	35	0.016	0.022	0.027	0.032	0.043	0.054	0.065	0.086	0.108	0.135
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with five flutes UCD5

PFERD TOOLS

Recommended cutting speeds [m/min] – radius corner design with chip divider, 3xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = 3 x DC; a_e = 0.08										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	250	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
			500 to 700 N/mm²	●	220	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
			700 to 1,000 N/mm²	●	160	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
			1,000 to 1,400 N/mm²	●	130	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	90	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
		Austenitic	e.g. 1.4301, 1.4571	○	80	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
		High-temperature-resistant and ferritic-austenitic (duplex)		○	70	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	180	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	160	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		○	70	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
		Titanium alloys		○	50	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with five flutes UCD5

Recommended cutting speeds [m/min] – radius corner design with chip divider, 4xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = 4 x DC; a_e = 0.06										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	250	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
			500 to 700 N/mm²	●	220	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
			700 to 1,000 N/mm²	●	160	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
			1,000 to 1,400 N/mm²	●	130	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	90	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
		Austenitic	e.g. 1.4301, 1.4571	○	80	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
		High-temperature-resistant and ferritic-austenitic (duplex)		○	70	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	180	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	160	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		○	70	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
		Titanium alloys		○	50	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with five flutes UCD5

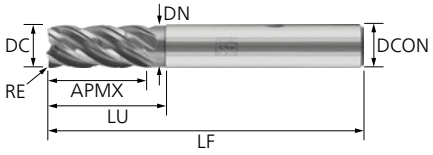
Recommended cutting speeds [m/min] – radius corner design with chip divider, 5xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = 5 x DC; a_e = 0.06										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	250	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
			500 to 700 N/mm²	●	220	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
			700 to 1,000 N/mm²	●	160	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
			1,000 to 1,400 N/mm²	●	130	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	○	90	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
		Austenitic	e.g. 1.4301, 1.4571	○	80	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
		High-temperature-resistant and ferritic-austenitic (duplex)		○	70	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	180	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	160	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		○	70	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
		Titanium alloys		○	50	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

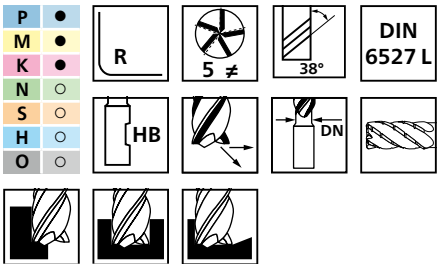
Universal solid carbide end mills

Universal solid carbide end mills with five flutes UCD5



Radius corner design with chip divider, 2xD – metric

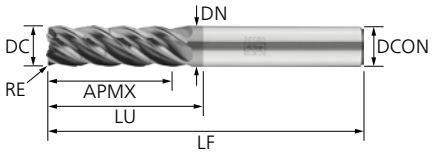
Mills with chip divider for various applications, from roughing through to finishing. Suitable for universal machining applications on a variety of materials.



Special features:

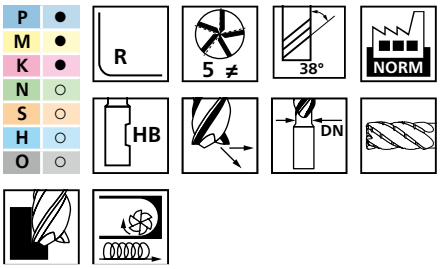
- Optimum chip control thanks to chip divider.
- Unequal pitch for low-vibration work with smooth running.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
Long HB					HB					
6	6	5.7	13	57	20	0.5	5	1	23000852	SCM-UCD5-M060R05-M57HB AP40
8	8	7.7	19	63	25	0.5	5	1	23000853	SCM-UCD5-M080R05-M63HB AP40
10	10	9.7	22	72	30	0.5	5	1	23000854	SCM-UCD5-M100R05-M72HB AP40
12	12	11.6	26	83	36	0.5	5	1	23000855	SCM-UCD5-M120R05-M83HB AP40
16	16	15.6	32	92	42	1	5	1	23000856	SCM-UCD5-M160R10-M92HB AP40
20	20	19.6	38	104	52	1	5	1	23000857	SCM-UCD5-M200R10-M104HB AP40
25	25	24.5	45	124	65	1	5	1	23000858	SCM-UCD5-M250R10-M124HB AP40



Radius corner design, 3xD – metric

Mills with chip divider and long usable length for dynamic machining and trochoidal milling. Suitable for universal machining applications on a variety of materials.



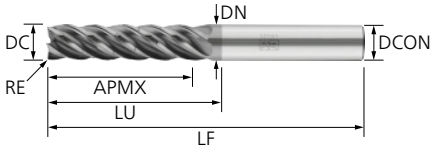
Special features:

- Optimum chip control thanks to chip divider.
- Unequal pitch for low-vibration work with smooth running.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
3xD HB					HB					
6	6	5.7	19	66	23	0.5	5	1	23000859	SCM-UCD5-M060R05-L66HB AP40
8	8	7.7	25	70	29	0.5	5	1	23000860	SCM-UCD5-M080R05-L70HB AP40
10	10	9.7	31	78	35	0.5	5	1	23000861	SCM-UCD5-M100R05-L78HB AP40
12	12	11.6	38	92	42	0.5	5	1	23000862	SCM-UCD5-M120R05-L92HB AP40
16	16	15.6	50	110	56	1	5	1	23000863	SCM-UCD5-M160R10-L110HB AP40
20	20	19.6	62	125	70	1	5	1	23000864	SCM-UCD5-M200R10-L125HB AP40
25	25	24.5	78	150	88	1	5	1	23000865	SCM-UCD5-M250R10-L150HB AP40

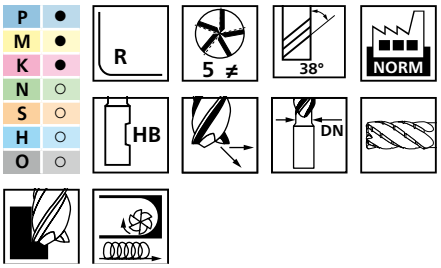
Universal solid carbide end mills

Universal solid carbide end mills with five flutes UCD5



Radius corner design with chip divider, 4xD – metric

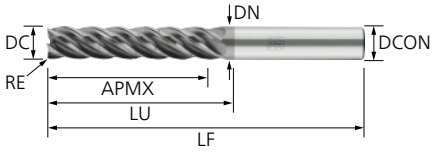
Mills with chip divider and long usable length for dynamic machining and trochoidal milling. Suitable for universal machining applications on a variety of materials.



Special features:

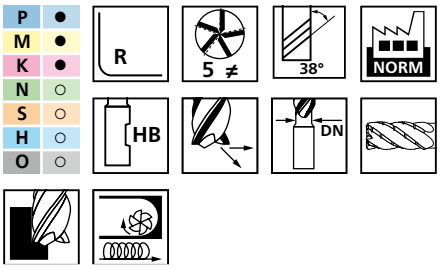
- Optimum chip control thanks to chip divider.
- Unequal pitch for low-vibration work with smooth running.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
4xD HB					HB					
6	6	5.7	24	66	29	0.5	5	1	23000866	SCM-UCD5-M060R05-XL66HB AP40
8	8	7.7	32	74	37	0.5	5	1	23000867	SCM-UCD5-M080R05-XL74HB AP40
10	10	9.7	40	88	45	0.5	5	1	23000868	SCM-UCD5-M100R05-XL88HB AP40
12	12	11.6	48	105	54	0.5	5	1	23000869	SCM-UCD5-M120R05-XL105HB AP40
16	16	15.6	64	124	72	1	5	1	23000870	SCM-UCD5-M160R10-XL124HB AP40
20	20	19.6	80	148	90	1	5	1	23000871	SCM-UCD5-M200R10-XL148HB AP40
25	25	24.5	100	182	115	1	5	1	23000872	SCM-UCD5-M250R10-XL182HB AP40



Radius corner design with chip divider, 5xD – metric

Mills with chip divider and long usable length for dynamic machining and trochoidal milling. Suitable for universal machining applications on a variety of materials.



Special features:

- Optimum chip control thanks to chip divider.
- Unequal pitch for low-vibration work with smooth running.
- Design with neck chip channel.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
5xD HB					HB					
6	6	5.7	30	74	35	0.5	5	1	23000873	SCM-UCD5-M060R05-XXL74HB AP40
8	8	7.7	40	84	45	0.5	5	1	23000874	SCM-UCD5-M080R05-XXL84HB AP40
10	10	9.7	50	100	55	0.5	5	1	23000875	SCM-UCD5-M100R05-XXL100HB AP40
12	12	11.6	60	115	66	0.5	5	1	23000876	SCM-UCD5-M120R05-XXL115HB AP40
16	16	15.6	80	142	88	1	5	1	23000877	SCM-UCD5-M160R10-XXL142HB AP40
20	20	19.6	100	165	110	1	5	1	23000878	SCM-UCD5-M200R10-XXL165HB AP40
25	25	24.5	125	200	138	1	5	1	23000879	SCM-UCD5-M250R10-XXL200HB AP40

Universal solid carbide end mills

Universal solid carbide end mills with six/eight flutes UC6/8

PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Side milling a_p = 1.5 x DC; a_e = 0.05 x DC						
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]					
						6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	200	0.035	0.04	0.055	0.065	0.08	0.1
			500 to 700 N/mm²	●	160	0.035	0.04	0.055	0.065	0.08	0.1
			700 to 1,000 N/mm²	●	120	0.035	0.04	0.055	0.065	0.08	0.1
			1,000 to 1,400 N/mm²	●	100	0.025	0.03	0.04	0.05	0.065	0.08
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	100	0.025	0.025	0.04	0.05	0.065	0.08
		Austenitic	e.g. 1.4301, 1.4571	●	80	0.025	0.03	0.04	0.05	0.065	0.08
		High-temperature-resistant and ferritic-austenitic (duplex)		○	65	0.02	0.025	0.03	0.04	0.05	0.065
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	170	0.03	0.04	0.055	0.065	0.08	0.1
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	140	0.03	0.04	0.055	0.065	0.08	0.1
N	Non-ferrous metals	Aluminium	Al up to 10% Si								
			Al over 10% Si	○	300	0.03	0.04	0.055	0.065	0.08	0.1
		Copper, brass, bronze and red brass		○	340	0.03	0.04	0.055	0.065	0.08	0.1
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	●	40	0.02	0.025	0.03	0.035	0.045	0.065
		Pure titanium		●	80	0.02	0.025	0.03	0.035	0.045	0.065
		Titanium alloys		●	70	0.02	0.025	0.03	0.035	0.045	0.065
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	60	0.025	0.03	0.03	0.035	0.045	0.065
			up to 58 HRC								
			over 58 HRC								
O	Other	Thermoplastics		○	300	0.03	0.04	0.055	0.065	0.08	0.1
		Duroplastics									
		GRP/CRP reinforced plastics, graphite									

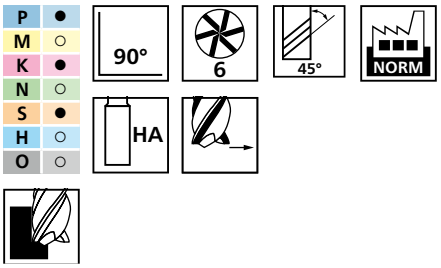
● = highly suitable ○ = suitable

Universal solid carbide end mills

Universal solid carbide end mills with six/eight flutes UC6/8

Sharp corner design – metric

Mills for finishing and for trimming of workpiece contours. The low tool deflection allows very precise working. Suitable for universal machining applications on a variety of materials.



Special features:

- High surface quality.
- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.

DC [mm]	DCON [mm]	APMX [mm]	LF [mm]	ZEFP		Item no.	Designation
Long HA			HA				
6	6	13	57	6	1	23000174	SCM-UC6-M060S-M57HA AL40
8	8	19	63	6	1	23000175	SCM-UC6-M080S-M63HA AL40
10	10	22	72	6	1	23000176	SCM-UC6-M100S-M72HA AL40
12	12	26	83	6	1	23000177	SCM-UC6-M120S-M83HA AL40
16	16	32	92	6	1	23000178	SCM-UC6-M160S-S92HA AL40
20	20	38	104	8	1	23000179	SCM-UC8-M200S-S104HA AL40

Universal solid carbide end mills
Universal deburring end mill UD

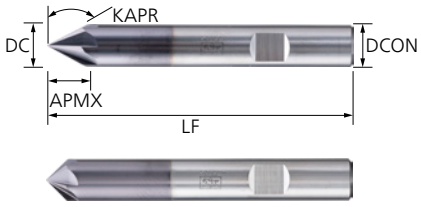
PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Chamfering/deburring a_p = 0.2 x DC; a_e = 0.1 x DC				
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]			
						6	8	10	12
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	180	0.045	0.065	0.085	0.14
			500 to 700 N/mm²	●	160	0.045	0.065	0.085	0.14
			700 to 1,000 N/mm²	●	140	0.025	0.04	0.045	0.075
			1,000 to 1,400 N/mm²	●	120	0.025	0.04	0.045	0.075
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	100	0.025	0.04	0.045	0.075
		Austenitic	e.g. 1.4301, 1.4571	●	75	0.025	0.04	0.045	0.075
		High-temperature-resistant and ferritic-austenitic (duplex)		●	60	0.025	0.04	0.045	0.075
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	180	0.045	0.065	0.085	0.14
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	140	0.025	0.04	0.045	0.075
N	Non-ferrous metals	Aluminium	Al up to 10% Si	●	300	0.045	0.065	0.085	0.14
			Al over 10% Si	●	260	0.045	0.065	0.085	0.14
		Copper, brass, bronze and red brass		●	300	0.045	0.065	0.085	0.14
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	50	0.025	0.04	0.045	0.075
		Pure titanium		○	140	0.025	0.04	0.045	0.075
		Titanium alloys		○	70	0.025	0.04	0.045	0.075
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	70	0.025	0.04	0.045	0.075
			up to 58 HRC						
			over 58 HRC						
O	Other	Thermoplastics		○	300	0.045	0.065	0.085	0.14
		Duroplastics							
		GRP/CRP reinforced plastics, graphite							

● = highly suitable ○ = suitable

Universal solid carbide end mills
Universal deburring end mill UD



Conical shape – metric

Mills for deburring and chamfering. Suitable for universal machining applications on a variety of materials.

P ● M ● K ● N ● S ○ H ○ O ○

60° | 90° | 4-6 | 0° | NORM | HB

Special features:
- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.

DC [mm]	DCON [mm]	APMX [mm]	LF [mm]	KAPR	ZEFP		Item no.	Designation
60° HB				HB				
6	6	5.2	57	60	4	1	23000116	SCM-UD4-M060A60°-HB AL40
8	8	6.9	63	60	5	1	23000117	SCM-UD5-M080A60°-HB AL40
10	10	8.7	72	60	6	1	23000118	SCM-UD6-M100A60°-HB AL40
12	12	10.4	83	60	6	1	23000119	SCM-UD6-M120A60°-HB AL40
90° HB				HB				
6	6	3	57	45	4	1	23000120	SCM-UD4-M060A90°-HB AL40
8	8	4	63	45	5	1	23000121	SCM-UD5-M080A90°-HB AL40
10	10	5	72	45	6	1	23000122	SCM-UD6-M100A90°-HB AL40
12	12	6	83	45	6	1	23000123	SCM-UD6-M120A90°-HB AL40

Set SCM-UD-SET-M060/080/100 A90°HB AL40 3TLG

The set contains three solid carbide end mills for deburring and chamfering. The solid carbide end mills are suitable for universal use in a variety of materials.

P ● M ● K ● N ● S ○ H ○ O ○

90° | 4-6 | 0° | NORM | HB

Contents:
The set contains one each of the following: SCM-UD4-M060A90°-HB AL40, SCM-UD5-M080A90°-HB AL40 and SCM-UD6-M100A90°-HB AL40.

Version	Contents [Piece]	Contents tool diameter		Item no.	Designation
90°	3	6, 8, 10	1	23000203	SCM-UD-SET-M060/080/100 A 90°HB AL40 3TLG

Universal solid carbide end mills
Universal ballnose mill UB

PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Profile milling – use of tip 										
					a_p	a_e	Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]							
								3	4	5	6	8	10	12	16
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	up to 0.1 x D	up to 0.3 x D	900	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			500 to 700 N/mm²	●	up to 0.1 x D	up to 0.3 x D	700	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			700 to 1,000 N/mm²	●	up to 0.1 x D	up to 0.3 x D	550	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			1,000 to 1,400 N/mm²	●	up to 0.06 x D	up to 0.3 x D	400	0.015	0.025	0.03	0.04	0.045	0.055	0.065	0.08
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	up to 0.06 x D	up to 0.3 x D	180	0.015	0.025	0.03	0.04	0.045	0.055	0.065	0.08
		Austenitic	e.g. 1.4301, 1.4571	●	up to 0.06 x D	up to 0.3 x D	130	0.015	0.025	0.03	0.04	0.045	0.055	0.065	0.08
		High-temperature-resistant and ferritic-austenitic (duplex)		○	up to 0.06 x D	up to 0.3 x D	100	0.01	0.018	0.02	0.03	0.04	0.05	0.06	0.07
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	up to 0.1 x D	up to 0.3 x D	800	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	up to 0.1 x D	up to 0.3 x D	750	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	up to 0.1 x D	up to 0.3 x D	1.200	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
			Al over 10% Si	●	up to 0.1 x D	up to 0.3 x D	850	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
		Copper, brass, bronze and red brass		●	up to 0.1 x D	up to 0.3 x D	1.100	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium													
		Titanium alloys													
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	●	up to 0.06 x D	up to 0.3 x D	200	0.01	0.018	0.02	0.03	0.04	0.05	0.06	0.07
			up to 58 HRC	○	up to 0.06 x D	up to 0.3 x D	150	0.01	0.018	0.02	0.03	0.04	0.05	0.06	0.07
			over 58 HRC												
O	Other	Thermoplastics		○	up to 0.1 x D	up to 0.3 x D	1.200	0.025	0.04	0.055	0.065	0.075	0.08	0.09	0.12
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Universal solid carbide end mills
Universal ballnose mill UB

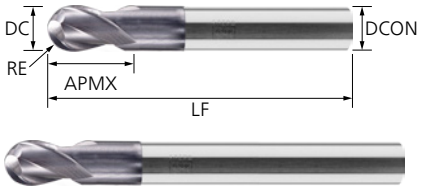
PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Profile milling – use of shoulder									
					a_p	a_e	Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]						
								3	4	5	6	8	10	12	16
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	up to 0.1 x D	up to 0.45 x D	570	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			500 to 700 N/mm²	●	up to 0.1 x D	up to 0.45 x D	450	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			700 to 1,000 N/mm²	●	up to 0.1 x D	up to 0.45 x D	350	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			1,000 to 1,400 N/mm²	●	up to 0.1 x D	up to 0.45 x D	250	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	up to 0.1 x D	up to 0.45 x D	130	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
		Austenitic	e.g. 1.4301, 1.4571	●	up to 0.1 x D	up to 0.45 x D	80	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
		High-temperature-resistant and ferritic-austenitic (duplex)		○	up to 0.1 x D	up to 0.45 x D	60	0.015	0.03	0.04	0.05	0.06	0.07	0.08	0.1
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	up to 0.1 x D	up to 0.45 x D	550	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	up to 0.1 x D	up to 0.45 x D	500	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	up to 0.1 x D	up to 0.45 x D	750	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
			Al over 10% Si	●	up to 0.1 x D	up to 0.45 x D	600	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
		Copper, brass, bronze and red brass		●	up to 0.1 x D	up to 0.45 x D	700	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium													
		Titanium alloys													
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	●	up to 0.1 x D	up to 0.45 x D	150	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
			up to 58 HRC	○	up to 0.1 x D	up to 0.45 x D	110	0.02	0.04	0.05	0.06	0.07	0.08	0.1	0.12
			over 58 HRC												
O	Other	Thermoplastics		○	up to 0.1 x D	up to 0.45 x D	750	0.04	0.06	0.08	0.1	0.11	0.12	0.14	0.18
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

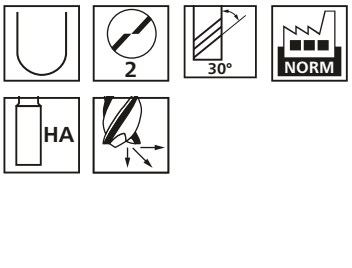
Universal solid carbide end mills
Universal ballnose mill UB



Ballnose – metric

Mills for free-form profile cutting. Suitable for universal machining applications on a variety of materials.

P	●
M	○
K	●
N	○
S	-
H	○
O	○



Special features:
- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.

D_c [mm]	DCON [mm]	APMX [mm]	LF [mm]	RE [mm]	ZEFP		Item no.	Designation
Long HA				HA				
3	6	5	54	1.5	2	1	23000100	SCM-UB2-M030R-S54HA6 AL40
4	6	8	54	2	2	1	23000101	SCM-UB2-M040R-S54HA6 AL40
5	6	9	54	2.5	2	1	23000102	SCM-UB2-M050R-S54HA6 AL40
6	6	10	54	3	2	1	23000103	SCM-UB2-M060R-S54HA AL40
8	8	12	58	4	2	1	23000104	SCM-UB2-M080R-S58HA AL40
10	10	14	66	5	2	1	23000105	SCM-UB2-M100R-S66HA AL40
12	12	16	73	6	2	1	23000106	SCM-UB2-M120R-S73HA AL40
16	16	22	82	8	2	1	23000107	SCM-UB2-M160R-S82HA AL40
Extra long HA				HA				
3	6	5	80	1.5	2	1	23000108	SCM-UB2-M030R-S80HA6 AL40
4	6	8	80	2	2	1	23000109	SCM-UB2-M040R-S80HA6 AL40
5	6	9	100	2.5	2	1	23000110	SCM-UB2-M050R-S100HA6 AL40
6	6	10	100	3	2	1	23000111	SCM-UB2-M060R-S100HA AL40
8	8	12	100	4	2	1	23000112	SCM-UB2-M080R-S100HA AL40
10	10	14	100	5	2	1	23000113	SCM-UB2-M100R-S100HA AL40
12	12	16	100	6	2	1	23000114	SCM-UB2-M120R-S100HA AL40
16	16	22	150	8	2	1	23000115	SCM-UB2-M160R-S150HA AL40

Performance stainless solid carbide end mills
Material suitability overview

PFERD TOOLS

Performance stainless

Material group			Solid carbide mill with four flutes HC4M	Solid carbide mill with five flutes HCD5M
P	Steel	All types of steel and cast steel		
M	Stainless steel	Ferritic and martensitic	●	●
		Austenitic	●	●
		High-temperature-resistant and ferritic-austenitic (duplex)	●	●
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)		
		Cast iron with nodular graphite (GJS, GGG)		
N	Non-ferrous metals	Aluminium	○	○
		Copper, brass, bronze and red brass	○	○
S	Super and titanium alloys	Heat-resistant super alloys based on Fe, Ni and Co		
		Pure titanium	●	●
		Titanium alloys	●	●
H	Hard steels and chilled castings	Heat-treated and hardened steels up to 50 HRC		
		Hardened steels up to 58 HRC		
		Hardened steels over 58 HRC		
O	Other	Thermoplastics		
		Duroplastics		
		GRP/CRP reinforced plastics, graphite		

● = highly suitable ○ = suitable

Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with four flutes HC4M

PFERD TOOLS

Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC											
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]										
						1	2	3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²													
			500 to 700 N/mm²													
			700 to 1,000 N/mm²													
			1,000 to 1,400 N/mm²													
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	100	0.005	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
		Austenitic	e.g. 1.4301, 1.4571	●	90	0.005	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
		High-temperature-resistant and ferritic-austenitic (duplex)		●	70	0.005	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB													
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB													
N	Non-ferrous metals	Aluminium	Al up to 10% Si													
			Al over 10% Si													
		Copper, brass, bronze and red brass														
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co													
		Pure titanium		●	50	0.005	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
		Titanium alloys		●	40	0.005	0.010	0.015	0.020	0.025	0.030	0.040	0.050	0.060	0.080	0.100	0.125
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC													
			up to 58 HRC													
			over 58 HRC													
O	Other	Thermoplastics														
		Duroplastics														
		GRP/CRP reinforced plastics, graphite														

● = highly suitable ○ = suitable

Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with four flutes HC4M

PFERD TOOLS

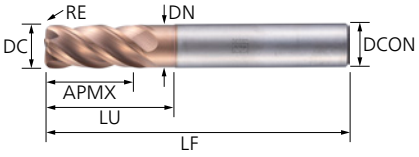
Recommended cutting speeds [m/min]

Material group			Specification/ example material	Suitability	Side milling a_p = 2 x DC; a_e = 0.4 x DC											
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]										
						1	2	3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²													
			500 to 700 N/mm²													
			700 to 1,000 N/mm²													
			1,000 to 1,400 N/mm²													
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	110	0.006	0.012	0.018	0.024	0.030	0.036	0.048	0.060	0.072	0.096	0.120	0.150
		Austenitic	e.g. 1.4301, 1.4571	●	100	0.006	0.012	0.018	0.024	0.030	0.036	0.048	0.060	0.072	0.096	0.120	0.150
		High-temperature-resistant and ferritic-austenitic (duplex)		●	80	0.006	0.012	0.018	0.024	0.030	0.036	0.048	0.060	0.072	0.096	0.120	0.150
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB													
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB													
N	Non-ferrous metals	Aluminium	Al up to 10% Si													
			Al over 10% Si													
		Copper, brass, bronze and red brass														
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co													
		Pure titanium		●	50	0.006	0.012	0.018	0.024	0.030	0.036	0.048	0.060	0.072	0.096	0.120	0.150
		Titanium alloys		●	40	0.006	0.012	0.018	0.024	0.030	0.036	0.048	0.060	0.072	0.096	0.120	0.150
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC													
			up to 58 HRC													
			over 58 HRC													
O	Other	Thermoplastics														
		Duroplastics														
		GRP/CRP reinforced plastics, graphite														

● = highly suitable ○ = suitable

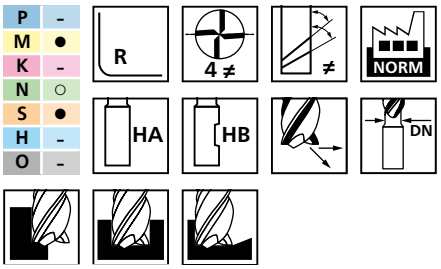
Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with four flutes HC4M



Radius corner design – metric

Mills with neck chip channel for various applications from roughing through to finishing, as well as full slot milling up to 1xD. Thanks to their material-specific geometry and coating, the mills have been optimized for use in stainless materials.



Special features:

- Unequal pitch and unequal helix angle for low-vibration work with smooth running.
- Optimized helix angle for improved chip evacuation.
- Optimum temperature control when working on materials that are difficult to machine.

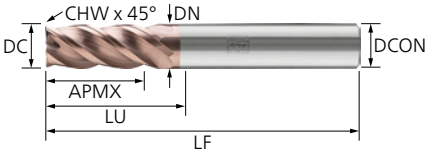
DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
Long HA					HA					
6	6	5.7	13	57	20	0.5	4	1	23000892	SCM-HC4M-M060R05-M57HA TI40
						1	4	1	23000893	SCM-HC4M-M060R10-M57HA TI40
8	8	7	19	63	25	0.5	4	1	23000894	SCM-HC4M-M080R05-M63HA TI40
						1	4	1	23000895	SCM-HC4M-M080R10-M63HA TI40
						2	4	1	23000896	SCM-HC4M-M080R20-M63HA TI40
10	10	9.7	22	72	30	0.5	4	1	23000897	SCM-HC4M-M100R05-M72HA TI40
						1	4	1	23000898	SCM-HC4M-M100R10-M72HA TI40
						2	4	1	23000899	SCM-HC4M-M100R20-M72HA TI40
12	12	11.6	26	83	36	0.5	4	1	23000900	SCM-HC4M-M120R05-M83HA TI40
						1	4	1	23000901	SCM-HC4M-M120R10-M83HA TI40
						2	4	1	23000902	SCM-HC4M-M120R20-M83HA TI40
						3	4	1	23000903	SCM-HC4M-M120R30-M83HA TI40
16	16	15.6	32	92	42	1	4	1	23000904	SCM-HC4M-M160R10-M92HA TI40
						2	4	1	23000905	SCM-HC4M-M160R20-M92HA TI40
						3	4	1	23000906	SCM-HC4M-M160R30-M92HA TI40
						4	4	1	23000907	SCM-HC4M-M160R40-M92HA TI40
20	20	19.6	38	104	52	1	4	1	23000908	SCM-HC4M-M200R10-M104HA TI40
						2	4	1	23000909	SCM-HC4M-M200R20-M104HA TI40
						3	4	1	23000910	SCM-HC4M-M200R30-M104HA TI40
						4	4	1	23000911	SCM-HC4M-M200R40-M104HA TI40
25	25	24.5	45	125	65	2	4	1	23000912	SCM-HC4M-M250R20-M125HA TI40
						3	4	1	23000913	SCM-HC4M-M250R30-M125HA TI40
						4	4	1	23000914	SCM-HC4M-M250R40-M125HA TI40
Long HB					HB					
6	6	5.7	13	57	20	0.5	4	1	23000927	SCM-HC4M-M060R05-M57HB TI40
						1	4	1	23000928	SCM-HC4M-M060R10-M57HB TI40
8	8	7	19	63	25	0.5	4	1	23000929	SCM-HC4M-M080R05-M63HB TI40
						1	4	1	23000930	SCM-HC4M-M080R10-M63HB TI40
						2	4	1	23000931	SCM-HC4M-M080R20-M63HB TI40
10	10	9.7	22	72	30	0.5	4	1	23000932	SCM-HC4M-M100R05-M72HB TI40
						1	4	1	23000933	SCM-HC4M-M100R10-M72HB TI40
						2	4	1	23000934	SCM-HC4M-M100R20-M72HB TI40
12	12	11.6	26	83	36	0.5	4	1	23000935	SCM-HC4M-M120R05-M83HB TI40
						1	4	1	23000936	SCM-HC4M-M120R10-M83HB TI40
						2	4	1	23000937	SCM-HC4M-M120R20-M83HB TI40
						3	4	1	23000938	SCM-HC4M-M120R30-M83HB TI40
16	16	15.6	32	92	42	1	4	1	23000939	SCM-HC4M-M160R10-M92HB TI40
						2	4	1	23000940	SCM-HC4M-M160R20-M92HB TI40

Continued on next page

Performance stainless solid carbide end mills

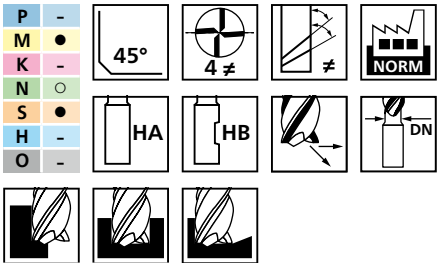
Performance stainless solid carbide end mills with four flutes HC4M

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
16	16	15.6	32	92	42	3	4	1	23000941	SCM-HC4M-M160R30-M92HB TI40
						4	4	1	23000942	SCM-HC4M-M160R40-M92HB TI40
20	20	19.6	38	104	52	1	4	1	23000943	SCM-HC4M-M200R10-M104HB TI40
						2	4	1	23000944	SCM-HC4M-M200R20-M104HB TI40
						3	4	1	23000945	SCM-HC4M-M200R30-M104HB TI40
						4	4	1	23000946	SCM-HC4M-M200R40-M104HB TI40
25	25	24.5	45	125	65	2	4	1	23000947	SCM-HC4M-M250R20-M125HB TI40
						3	4	1	23000948	SCM-HC4M-M250R30-M125HB TI40
						4	4	1	23000949	SCM-HC4M-M250R40-M125HB TI40



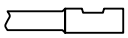
Chamfer corner design – metric

Mills with neck chip channel for various applications from roughing through to finishing, as well as full slot milling up to 1xD. Thanks to their material-specific geometry and coating, the mills have been optimized for use in stainless materials.



Special features:

- Unequal pitch and unequal helix angle for low-vibration work with smooth running.
- Optimized helix angle for improved chip evacuation.
- Optimum temperature control when working on materials that are difficult to machine.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation
Long HA					 **HA**					
1	6		2	50		0.05	4	1	23000880	SCM-HC4M-M010C-M50HA6 HP40
2	6		4	50		0.05	4	1	23000881	SCM-HC4M-M020C-M50HA6 HP40
3	6		6	57		0.1	4	1	23000882	SCM-HC4M-M030C-M57HA6 HP40
4	6		9	57		0.1	4	1	23000883	SCM-HC4M-M040C-M57HA6 HP40
5	6		13	57		0.1	4	1	23000884	SCM-HC4M-M050C-M57HA6 HP40
6	6	5.7	13	57	20	0.15	4	1	23000885	SCM-HC4M-M060C-M57HA TI40
8	8	7.7	19	63	25	0.2	4	1	23000886	SCM-HC4M-M080C-M63HA TI40
10	10	9.7	22	72	30	0.2	4	1	23000887	SCM-HC4M-M100C-M72HA TI40
12	12	11.6	26	83	36	0.25	4	1	23000888	SCM-HC4M-M120C-M83HA TI40
16	16	15.6	32	92	42	0.3	4	1	23000889	SCM-HC4M-M160C-M92HA TI40
20	20	19.6	38	104	52	0.3	4	1	23000890	SCM-HC4M-M200C-M104HA TI40
25	25	24.5	45	125	65	0.3	4	1	23000891	SCM-HC4M-M250C-M125HA TI40
Long HB					 **HB**					
1	6		2	50		0.05	4	1	23000915	SCM-HC4M-M010C-M50HB6 HP40
2	6		4	50		0.05	4	1	23000916	SCM-HC4M-M020C-M50HB6 HP40
3	6		6	57		0.1	4	1	23000917	SCM-HC4M-M030C-M57HB6 HP40
4	6		9	57		0.1	4	1	23000918	SCM-HC4M-M040C-M57HB6 HP40
5	6		13	57		0.1	4	1	23000919	SCM-HC4M-M050C-M57HB6 HP40
6	6	5.7	13	57	20	0.15	4	1	23000920	SCM-HC4M-M060C-M57HB TI40
8	8	7.7	19	63	25	0.2	4	1	23000921	SCM-HC4M-M080C-M63HB TI40
10	10	9.7	22	72	30	0.2	4	1	23000922	SCM-HC4M-M100C-M72HB TI40
12	12	11.6	26	83	36	0.25	4	1	23000923	SCM-HC4M-M120C-M83HB TI40
16	16	15.6	32	92	42	0.3	4	1	23000924	SCM-HC4M-M160C-M92HB TI40
20	20	19.6	38	104	52	0.3	4	1	23000925	SCM-HC4M-M200C-M104HB TI40
25	25	24.5	45	125	65	0.3	4	1	23000926	SCM-HC4M-M250C-M125HB TI40

Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with five flutes HCD5M

PFERD TOOLS

Recommended cutting speeds [m/min] – radius corner design with chip divider, 2xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = 2 x DC; a_e = 0.08										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²												
			500 to 700 N/mm²												
			700 to 1,000 N/mm²												
			1,000 to 1,400 N/mm²												
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	140	0.038	0.050	0.063	0.076	0.101	0.126	0.151	0.202	0.252	0.315
		Austenitic	e.g. 1.4301, 1.4571	●	130	0.038	0.050	0.063	0.076	0.101	0.126	0.151	0.202	0.252	0.315
		High-temperature-resistant and ferritic-austenitic (duplex)		●	100	0.038	0.050	0.063	0.076	0.101	0.126	0.151	0.202	0.252	0.315
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB												
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB												
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		●	100	0.038	0.050	0.063	0.076	0.101	0.126	0.151	0.202	0.252	0.315
		Titanium alloys		●	100	0.038	0.050	0.063	0.076	0.101	0.126	0.151	0.202	0.252	0.315
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with five flutes HCD5M

PFERD TOOLS

Recommended cutting speeds [m/min] – radius corner design with chip divider, 3xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = 3 x DC; a_e = 0.08										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²												
			500 to 700 N/mm²												
			700 to 1,000 N/mm²												
			1,000 to 1,400 N/mm²												
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	140	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
		Austenitic	e.g. 1.4301, 1.4571	●	130	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
		High-temperature-resistant and ferritic-austenitic (duplex)		●	100	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB												
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB												
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		●	100	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
		Titanium alloys		●	100	0.034	0.045	0.057	0.068	0.091	0.113	0.136	0.181	0.227	0.284
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with five flutes HCD5M

PFERD TOOLS

Recommended cutting speeds [m/min] – radius corner design with chip divider, 4xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = 4 x DC; a_e = 0.06										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²												
			500 to 700 N/mm²												
			700 to 1,000 N/mm²												
			1,000 to 1,400 N/mm²												
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	140	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
		Austenitic	e.g. 1.4301, 1.4571	●	130	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
		High-temperature-resistant and ferritic-austenitic (duplex)		●	100	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB												
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB												
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		●	100	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
		Titanium alloys		●	100	0.030	0.040	0.050	0.060	0.081	0.101	0.121	0.161	0.202	0.252
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with five flutes HCD5M

PFERD TOOLS

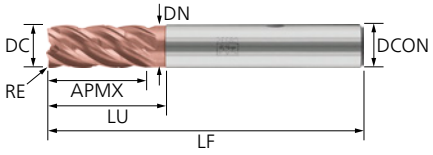
Recommended cutting speeds [m/min] – radius corner design with chip divider, 5xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = 5 x DC; a_e = 0.06										
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]									
						3	4	5	6	8	10	12	16	20	25
P	Steel	All types of steel and cast steel	up to 500 N/mm²												
			500 to 700 N/mm²												
			700 to 1,000 N/mm²												
			1,000 to 1,400 N/mm²												
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	140	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
		Austenitic	e.g. 1.4301, 1.4571	●	130	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
		High-temperature-resistant and ferritic-austenitic (duplex)		●	100	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB												
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB												
N	Non-ferrous metals	Aluminium	Alu up to 10% Si												
			Alu over 10% Si												
		Copper, brass, bronze and red brass													
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co												
		Pure titanium		●	100	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
		Titanium alloys		●	100	0.026	0.035	0.044	0.053	0.071	0.088	0.106	0.141	0.176	0.221
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC												
			up to 58 HRC												
			over 58 HRC												
O	Other	Thermoplastics													
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

● = highly suitable ○ = suitable

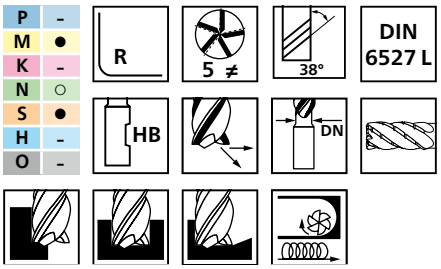
Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with five flutes HCD5M



Radius corner design with chip divider, 2xD – metric

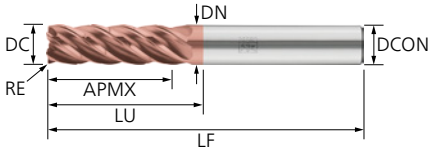
Mills with chip divider and neck chip channel for dynamic machining and trochoidal milling. Thanks to their material-specific geometry and coating, the mills have been optimized for use in stainless materials.



Special features:

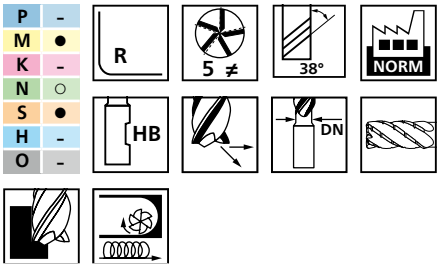
- Unequal pitch for low-vibration work with smooth running.
- Optimized helix angle for improved chip evacuation.
- Optimum temperature control when working on materials that are difficult to machine.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
Long HB										
6	6	5.7	13	57	20	0.5	5	1	23000950	SCM-HCD5M-M060R05-M57HB TI40
8	8	7.7	19	63	25	0.5	5	1	23000951	SCM-HCD5M-M080R05-M63HB TI40
10	10	9.7	22	72	30	0.5	5	1	23000952	SCM-HCD5M-M100R05-M72HB TI40
12	12	11.6	26	83	36	0.5	5	1	23000953	SCM-HCD5M-M120R05-M83HB TI40
16	16	15.6	32	92	42	1	5	1	23000954	SCM-HCD5M-M160R10-M92HB TI40
20	20	19.6	38	104	52	1	5	1	23000955	SCM-HCD5M-M200R10-M104HB TI40
25	25	24.5	45	124	65	1	5	1	23000956	SCM-HCD5M-M250R10-M124HB TI40



Radius corner design with chip divider, 3xD – metric

Mills with chip divider and neck chip channel for dynamic machining and trochoidal milling. Thanks to their material-specific geometry and coating, the mills have been optimized for use in stainless materials.



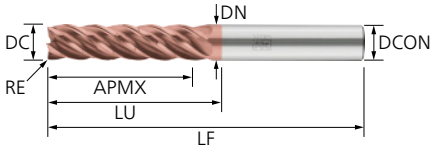
Special features:

- Unequal pitch for low-vibration work with smooth running.
- Optimized helix angle for improved chip evacuation.
- Optimum temperature control when working on materials that are difficult to machine.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
3xD HB										
6	6	5.7	19	66	23	0.5	5	1	23000957	SCM-HCD5M-M060R05-L66HB TI40
8	8	7.7	25	70	29	0.5	5	1	23000958	SCM-HCD5M-M080R05-L70HB TI40
10	10	9.7	31	78	35	0.5	5	1	23000959	SCM-HCD5M-M100R05-L78HB TI40
12	12	11.6	38	92	42	0.5	5	1	23000960	SCM-HCD5M-M120R05-L92HB TI40
16	16	15.6	50	110	56	1	5	1	23000961	SCM-HCD5M-M160R10-L110HB TI40
20	20	19.6	62	125	70	1	5	1	23000962	SCM-HCD5M-M200R10-L125HB TI40
25	25	24.5	78	150	88	1	5	1	23000963	SCM-HCD5M-M250R10-L150HB TI40

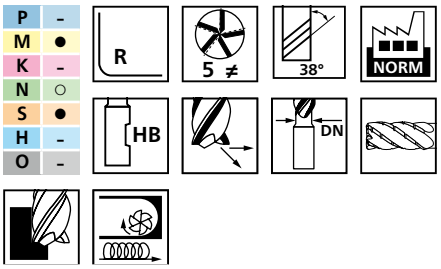
Performance stainless solid carbide end mills

Performance stainless solid carbide end mills with five flutes HCD5M



Radius corner design with chip divider, 4xD – metric

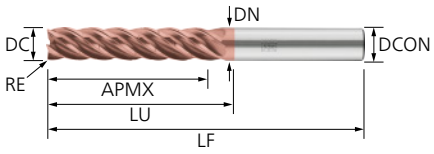
Mills with chip divider and neck chip channel for dynamic machining and trochoidal milling. Thanks to their material-specific geometry and coating, the mills have been optimized for use in stainless materials.



Special features:

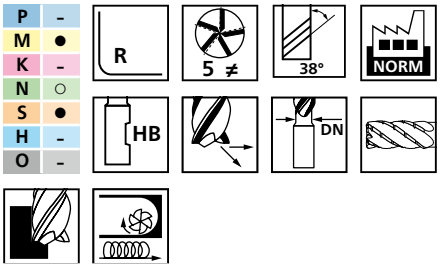
- Unequal pitch for low-vibration work with smooth running.
- Optimized helix angle for improved chip evacuation.
- Optimum temperature control when working on materials that are difficult to machine.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
4xD HB										
6	6	5.7	24	66	29	0.5	5	1	23000964	SCM-HCD5M-M060R05-XL66HB TI40
8	8	7.7	32	74	37	0.5	5	1	23000965	SCM-HCD5M-M080R05-XL74HB TI40
10	10	9.7	40	88	45	0.5	5	1	23000966	SCM-HCD5M-M100R05-XL88HB TI40
12	12	11.6	48	105	54	0.5	5	1	23000967	SCM-HCD5M-M120R05-XL105HB TI40
16	16	15.6	64	124	72	1	5	1	23000968	SCM-HCD5M-M160R10-XL124HB TI40
20	20	19.6	80	148	90	1	5	1	23000969	SCM-HCD5M-M200R10-XL148HB TI40
25	25	24.5	100	182	115	1	5	1	23000970	SCM-HCD5M-M250R10-XL182HB TI40



Radius corner design with chip divider, 5xD – metric

Mills with chip divider and neck chip channel for dynamic machining and trochoidal milling. Thanks to their material-specific geometry and coating, the mills have been optimized for use in stainless materials.



Special features:

- Unequal pitch for low-vibration work with smooth running.
- Optimized helix angle for improved chip evacuation.
- Optimum temperature control when working on materials that are difficult to machine.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
5xD HB										
6	6	5.7	30	74	35	0.5	5	1	23000971	SCM-HCD5M-M060R05-XXL74HB TI40
8	8	7.7	40	84	45	0.5	5	1	23000972	SCM-HCD5M-M080R05-XXL84HB TI40
10	10	9.7	50	100	55	0.5	5	1	23000973	SCM-HCD5M-M100R05-XXL100HB TI40
12	12	11.6	60	115	66	0.5	5	1	23000974	SCM-HCD5M-M120R05-XXL115HB TI40
16	16	15.6	80	142	88	1	5	1	23000975	SCM-HCD5M-M160R10-XXL142HB TI40
20	20	19.6	100	165	110	1	5	1	23000976	SCM-HCD5M-M200R10-XXL165HB TI40
25	25	24.5	125	200	138	1	5	1	23000977	SCM-HCD5M-M250R10-XXL200HB TI40

Performance aluminium solid carbide end mills

Material suitability overview

Performance Aluminium

Material group			Solid carbide mill with three flutes HC3N
P	Steel	All types of steel and cast steel	
M	Stainless steel	Ferritic and martensitic	
		Austenitic	
		High-temperature-resistant and ferritic-austenitic (duplex)	
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	
		Cast iron with nodular graphite (GJS, GGG)	
N	Non-ferrous metals	Aluminium	●
		Copper, brass, bronze and red brass	●
S	Super and titanium alloys	Heat-resistant super alloys based on Fe, Ni and Co	
		Pure titanium	
		Titanium alloys	
H	Hard steels and chilled castings	Heat-treated and hardened steels up to 50 HRC	
		Hardened steels up to 58 HRC	
		Hardened steels over 58 HRC	
O	Other	Thermoplastics	●
		Duroplastics	●
		GRP/CRP reinforced plastics, graphite	

● = highly suitable ○ = suitable

Performance aluminium solid carbide end mills

Performance aluminium solid carbide end mills with three flutes HC3N

Recommended cutting speeds [m/min] – radius and chamfer corner designs

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²											
			500 to 700 N/mm²											
			700 to 1,000 N/mm²											
			1,000 to 1,400 N/mm²											
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122											
		Austenitic	e.g. 1.4301, 1.4571											
		High-temperature-resistant and ferritic-austenitic (duplex)												
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB											
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB											
N	Non-ferrous metals	Aluminium	Alu up to 10% Si	●	450	0.027	0.036	0.045	0.055	0.073	0.091	0.109	0.145	0.182
			Alu over 10% Si	●	420	0.027	0.036	0.045	0.055	0.073	0.091	0.109	0.145	0.182
		Copper, brass, bronze and red brass		●	350	0.027	0.036	0.045	0.055	0.073	0.091	0.109	0.145	0.182
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co											
		Pure titanium												
		Titanium alloys												
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC											
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics		●	400	0.027	0.036	0.045	0.055	0.073	0.091	0.109	0.145	0.182
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

Performance aluminium solid carbide end mills

Performance aluminium solid carbide end mills with three flutes HC3N

Recommended cutting speeds [m/min] – radius and chamfer corner designs

Material group			Specification/ example material	Suitability	Side milling a_p = max; a_e = 0.25 x DC									
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]								
						3	4	5	6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²											
			500 to 700 N/mm²											
			700 to 1,000 N/mm²											
			1,000 to 1,400 N/mm²											
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122											
		Austenitic	e.g. 1.4301, 1.4571											
		High-temperature-resistant and ferritic-austenitic (duplex)												
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB											
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB											
N	Non-ferrous metals	Aluminium	Alu up to 10% Si	●	520	0.041	0.055	0.068	0.082	0.109	0.136	0.164	0.218	0.273
			Alu over 10% Si	●	480	0.041	0.055	0.068	0.082	0.109	0.136	0.164	0.218	0.273
		Copper, brass, bronze and red brass		●	400	0.041	0.055	0.068	0.082	0.109	0.136	0.164	0.218	0.273
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co											
		Pure titanium												
		Titanium alloys												
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC											
			up to 58 HRC											
			over 58 HRC											
O	Other	Thermoplastics		●	450	0.041	0.055	0.068	0.082	0.109	0.136	0.164	0.218	0.273
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

● = highly suitable ○ = suitable

Performance aluminium solid carbide end mills

Performance aluminium solid carbide end mills with three flutes HC3N

Recommended cutting speeds [m/min] – chamfer corner design, excessive length

Material group			Specification/ example material	Suitability	Full slot milling a_p = 1 x DC; a_e = 1 x DC			
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]		
						10	12	16
P	Steel	All types of steel and cast steel	up to 500 N/mm²					
			500 to 700 N/mm²					
			700 to 1,000 N/mm²					
			1,000 to 1,400 N/mm²					
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122					
		Austenitic	e.g. 1.4301, 1.4571					
		High-temperature-resistant and ferritic-austenitic (duplex)						
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB					
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB					
N	Non-ferrous metals	Aluminium	Alu up to 10% Si	●	430	0.080	0.100	0.120
			Alu over 10% Si	●	400	0.080	0.100	0.120
		Copper, brass, bronze and red brass		●	320	0.080	0.100	0.120
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co					
		Pure titanium						
		Titanium alloys						
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC					
			up to 58 HRC					
			over 58 HRC					
O	Other	Thermoplastics		●	450	0.080	0.100	0.120
		Duroplastics						
		GRP/CRP reinforced plastics, graphite						

● = highly suitable ○ = suitable

Performance aluminium solid carbide end mills

Performance aluminium solid carbide end mills with three flutes HC3N

Recommended cutting speeds [m/min] – chamfer corner design, excessive length

Material group			Specification/ example material	Suitability	Side milling a_p = max; a_e = 0.4 x DC			
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]		
						10	12	16
P	Steel	All types of steel and cast steel	up to 500 N/mm²					
			500 to 700 N/mm²					
			700 to 1,000 N/mm²					
			1,000 to 1,400 N/mm²					
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122					
		Austenitic	e.g. 1.4301, 1.4571					
		High-temperature-resistant and ferritic-austenitic (duplex)						
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB					
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB					
N	Non-ferrous metals	Aluminium	Alu up to 10% Si	●	490	0.092	0.115	0.138
			Alu over 10% Si	●	450	0.092	0.115	0.138
		Copper, brass, bronze and red brass		●	360	0.092	0.115	0.138
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co					
		Pure titanium						
		Titanium alloys						
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC					
			up to 58 HRC					
			over 58 HRC					
O	Other	Thermoplastics		●	450	0.092	0.115	0.138
		Duroplastics						
		GRP/CRP reinforced plastics, graphite						

● = highly suitable ○ = suitable

Performance aluminium solid carbide end mills

Performance aluminium solid carbide end mills with three flutes HC3N

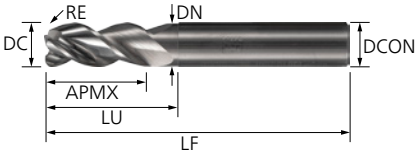
Recommended cutting speeds [m/min] – chamfer corner design, >4xD

Material group			Specification/ example material	Suitability	Dynamic milling a_p = max; a_e = 0.10						
					Cutting speed v_c [m/min]	Tooth feed f_z [mm/tooth] for cutting diameter DC [mm]					
						6	8	10	12	16	20
P	Steel	All types of steel and cast steel	up to 500 N/mm²								
			500 to 700 N/mm²								
			700 to 1,000 N/mm²								
			1,000 to 1,400 N/mm²								
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122								
		Austenitic	e.g. 1.4301, 1.4571								
		High-temperature-resistant and ferritic-austenitic (duplex)									
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB								
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB								
N	Non-ferrous metals	Aluminium	Alu up to 10% Si	●	450	0.067	0.090	0.112	0.134	0.179	0.224
			Alu over 10% Si	●	420	0.067	0.090	0.112	0.134	0.179	0.224
		Copper, brass, bronze and red brass		●	350	0.067	0.090	0.112	0.134	0.179	0.224
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co								
		Pure titanium									
		Titanium alloys									
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC								
			up to 58 HRC								
			over 58 HRC								
O	Other	Thermoplastics		●	450	0.067	0.090	0.112	0.134	0.179	0.224
		Duroplastics									
		GRP/CRP reinforced plastics, graphite									

● = highly suitable ○ = suitable

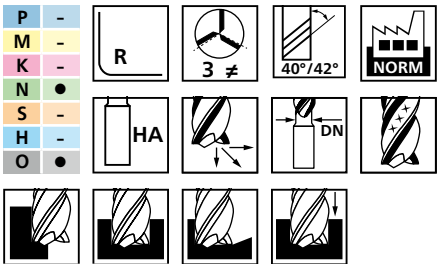
Performance aluminium solid carbide end mills

Performance aluminium solid carbide end mills with three flutes HC3N



Radius corner design – metric

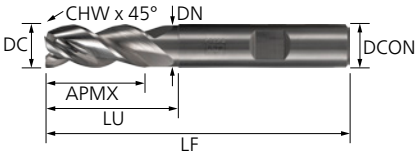
Mills for various applications, from roughing through to finishing. Ideally suited to machining aluminium alloys, non-ferrous metals and plastics.



Special features:

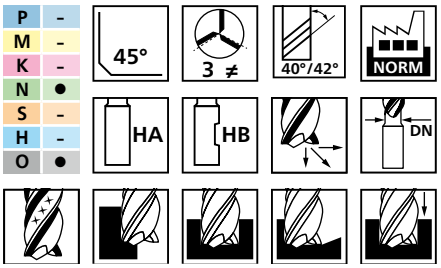
- Large polished chip channels for optimum chip control.
- Increased process reliability at high cutting speeds.
- Unequal pitch for low-vibration work with smooth running.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	RE [mm]	ZEFP		Item no.	Designation
Long HA					HA					
6	6	5.7	13	57	20	0.5	3	1	23000428	SCM-HC3N-M060R05-M57HA UC40
8	8	7.7	19	63	25	0.5	3	1	23000429	SCM-HC3N-M080R05-M63HA UC40
						1	3	1	23000430	SCM-HC3N-M080R10-M63HA UC40
10	10	9.7	22	72	30	1	3	1	23000431	SCM-HC3N-M100R10-M72HA UC40
						1.5	3	1	23000432	SCM-HC3N-M100R15-M72HA UC40
						2	3	1	23000433	SCM-HC3N-M100R20-M72HA UC40
12	12	11.6	26	83	36	1	3	1	23000434	SCM-HC3N-M120R10-M83HA UC40
						1.5	3	1	23000435	SCM-HC3N-M120R15-M83HA UC40
						2	3	1	23000436	SCM-HC3N-M120R20-M83HA UC40
16	16	15.6	32	92	42	1	3	1	23000437	SCM-HC3N-M160R10-M93HA UC40
						2	3	1	23000438	SCM-HC3N-M160R20-M93HA UC40
						3	3	1	23000439	SCM-HC3N-M160R30-M93HA UC40
20	20	19.6	38	104	52	2	3	1	23000440	SCM-HC3N-M200R20-M104HA UC40
						3	3	1	23000441	SCM-HC3N-M200R30-M104HA UC40



Chamfer corner design – metric

Mills for various applications, from roughing through to finishing. Ideally suited to machining aluminium alloys, non-ferrous metals and plastics.



Special features:

- Large polished chip channels for optimum chip control.
- Increased process reliability at high cutting speeds.
- Unequal pitch for low-vibration work with smooth running.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation
Long HA					HA					
3	6		8	57		0.05	3	1	23000410	SCM-HC3N-M030C-M57HA6 UC40
4	6		11	57		0.05	3	1	23000411	SCM-HC3N-M040C-M57HA6 UC40
5	6		13	57		0.1	3	1	23000412	SCM-HC3N-M050C-M57HA6 UC40
6	6	5.7	13	57	20	0.1	3	1	23000413	SCM-HC3N-M060C-M57HA UC40
8	8	7.7	19	63	25	0.15	3	1	23000414	SCM-HC3N-M080C-M63HA UC40
10	10	9.7	22	72	30	0.2	3	1	23000415	SCM-HC3N-M100C-M72HA UC40
12	12	11.7	26	83	36	0.25	3	1	23000416	SCM-HC3N-M120C-M83HA UC40
16	16	15.6	32	92	42	0.3	3	1	23000417	SCM-HC3N-M160C-M93HA UC40
20	20	19.6	38	104	52	0.35	3	1	23000418	SCM-HC3N-M200C-M104HA UC40

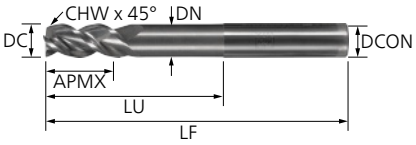
Continued on next page

Performance aluminium solid carbide end mills

Performance aluminium solid carbide end mills with three flutes HC3N

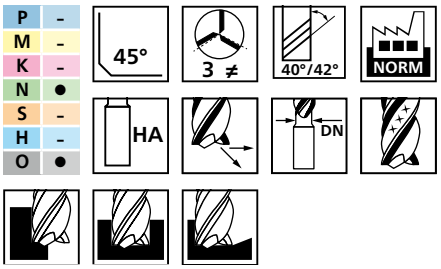
PFERD TOOLS

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation
Long HB					HB					
3	6		8	57		0.05	3	1	23000419	SCM-HC3N-M030C-M57HB6 UC40
4	6		11	57		0.05	3	1	23000420	SCM-HC3N-M040C-M57HB6 UC40
5	6		13	57		0.05	3	1	23000421	SCM-HC3N-M050C-M57HB6 UC40
6	6	5.7	13	57	20	0.1	3	1	23000422	SCM-HC3N-M060C-M57HB UC40
8	8	7.7	19	63	25	0.15	3	1	23000423	SCM-HC3N-M080C-M63HB UC40
10	10	9.7	22	72	30	0.2	3	1	23000424	SCM-HC3N-M100C-M72HB UC40
12	12	11.7	26	83	36	0.25	3	1	23000425	SCM-HC3N-M120C-M83HB UC40
16	16	15.6	32	92	42	0.3	3	1	23000426	SCM-HC3N-M160C-M93HB UC40
20	20	19.6	38	104	52	0.35	3	1	23000427	SCM-HC3N-M200C-M104HB UC40



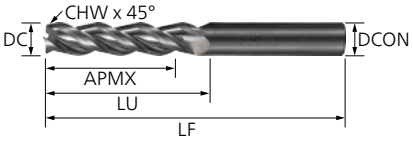
Chamfer corner design, extra-long – metric

Mills with neck chip channel for use in large overhangs or deep cavities. Ideally suited to machining aluminium alloys, non-ferrous metals and plastics.



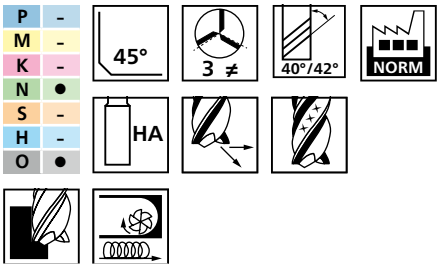
Special features:
- Large polished chip channels for optimum chip control.
- Increased process reliability at high cutting speeds.
- Unequal pitch for low-vibration work with smooth running.

DC [mm]	DCON [mm]	DN [mm]	APMX [mm]	LF [mm]	LU [mm]	CHW [mm]	ZEFP		Item no.	Designation
Extra long HA					HA					
10	10	9.7	22	104	55	0.2	3	1	23000448	SCM-HC3N-M100C-M104HA UC40
12	12	11.6	26	110	64	0.25	3	1	23000449	SCM-HC3N-M120C-M110HA UC40
16	16	15.6	32	130	75	0.3	3	1	23000450	SCM-HC3N-M160C-M130HA UC40



Chamfer corner design, >4xD – metric

Mills with long usable length for dynamic machining and trochoidal milling. Ideally suited to machining aluminium alloys, non-ferrous metals and plastics.



Special features:
- Large polished chip channels for optimum chip control.
- Increased process reliability at high cutting speeds.
- Unequal pitch for low-vibration work with smooth running.

DC [mm]	DCON [mm]	APMX [mm]	LF [mm]	CHW [mm]	ZEFP		Item no.	Designation
>4xD HA				HA				
6	6	26	75	0.1	3	1	23000442	SCM-HC3N-M060C-XXL75HA UC40
8	8	36	78	0.15	3	1	23000443	SCM-HC3N-M080C-XXL78HA UC40
10	10	45	104	0.2	3	1	23000444	SCM-HC3N-M100C-XXL104HA UC40
12	12	53	110	0.25	3	1	23000445	SCM-HC3N-M120C-XXL110HA UC40
16	16	63	130	0.3	3	1	23000446	SCM-HC3N-M160C-XXL130HA UC40
20	20	75	150	0.35	3	1	23000447	SCM-HC3N-M200C-XXL150HA UC40

Universal solid carbide drills
Material suitability overview

Material group			Universal solid carbide drill U
P	Steel	All types of steel and cast steel	●
M	Stainless steel	Ferritic and martensitic	●
		Austenitic	●
		High-temperature-resistant and ferritic-austenitic (duplex)	○
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	●
		Cast iron with nodular graphite (GJS, GGG)	●
N	Non-ferrous metals	Aluminium	○
		Copper, brass, bronze and red brass	○
S	Super and titanium alloys	Heat-resistant super alloys based on Fe, Ni and Co	○
		Pure titanium	○
		Titanium alloys	○
H	Hard steels and chilled castings	Heat-treated and hardened steels up to 50 HRC	●
		Hardened steels up to 58 HRC	○
		Hardened steels over 58 HRC	○
O	Other	Thermoplastics	○
		Duroplastics	○
		GRP/CRP reinforced plastics, graphite	

● = highly suitable ○ = suitable

Explanation of pictograms used

Geometry – Type

140° point angle

Geometry – Number of flutes

Number of flutes

Geometry – helix angle

Helix angle

Norm

Company standard

DIN 6537 K

DIN 6537 L

Shank type

Smooth cylindrical shank HA in accordance with DIN 6535

Tool type

Internal coolant

Feed direction

Feed z

Applications

Drilling

Universal solid carbide drills
Formulae for cutting data calculation

$$n = \frac{V_c \times 1{,}000}{DC \times \pi} \text{ RPM}$$

Rotational speed

$$V_c = \frac{DC \times \pi \times n}{1{,}000} \text{ m/min}$$

Cutting speed

$$V_f = f_n \times n \text{ mm/min}$$

Feeding speed

Explanation of the abbreviations

- a_p = cutting depth
- a_e = contact width
- DC = cutting diameter in [mm]
- f_n = feed per revolution
- n = spindle rotational speed in [rev/min]
- v_c = cutting speed in [m/min]
- v_f = feeding speed in [mm/min]

Explanation of item designation

SCD-U-5D-M12.500-60IC LA40

① ② ⑤ ⑥ ⑦ ⑨ ⑪ ⑬

① Tool group
SCD = Solid Carbide Drill

② Product line
U = Universal

③ Shape
Omitted if a standard drill.

④ Material group
ISO groups P, M, K, N, S, H, O.
Combinations
Example: MS
Omitted unless specified.

⑤ Working length in the ratio L/D
3D ~ 3xD
5D ~ 5xD
8D ~ 8xD

⑥ Units
M = Metric

⑦ Cutting diameter
Metric: mm x 1000
Example: D 10.5 mm = 10,500
Example: D 8.5 mm = 08.500

⑧ Type

⑨ Working length
Metric: Working length LU in mm

⑩ Shank type
Blank if a cylindrical shank (HA)

⑪ Coolant supply
Blank if no IC
IC = Inner Coolant

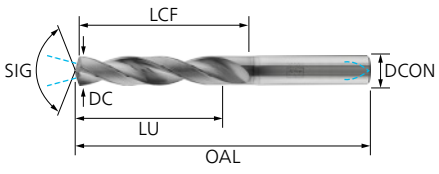
⑫ *

⑬ Grade

*Optional

Explanation of short names in accordance with ISO 13399

LU	= working length
DC	= cutting diameter
DCON	= shank diameter
OAL	= overall length
SIG	= point angle
LCF	= flute length



Universal solid carbide drills
Universal solid carbide drill U

PFERD TOOLS

Recommended cutting speeds [m/min] – version 3xD and 5xD

Material group			Specification/ example material	Suitability	Drilling (3-5xD with IC)								
					Cutting speed v_c [m/min]	Feed f_n [mm/revolution] for cutting diameter DC [mm]							
						3	4	5	6	8	10	12	16
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	110	0.110	0.132	0.165	0.176	0.231	0.242	0.286	0.341
			500 to 700 N/mm²	●	90	0.100	0.120	0.150	0.160	0.210	0.220	0.260	0.310
			700 to 1,000 N/mm²	●	75	0.085	0.102	0.128	0.136	0.179	0.187	0.221	0.264
			1,000 to 1,400 N/mm²	●	60	0.064	0.077	0.096	0.102	0.134	0.140	0.166	0.198
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	60	0.085	0.102	0.128	0.136	0.179	0.187	0.221	0.264
		Austenitic	e.g. 1.4301, 1.4571	●	50	0.050	0.075	0.088	0.100	0.110	0.130	0.140	0.170
		High-temperature-resistant and ferritic-austenitic (duplex)		○	35	0.038	0.056	0.066	0.075	0.083	0.098	0.105	0.128
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	110	0.150	0.185	0.233	0.280	0.300	0.335	0.375	0,450
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	80	0.135	0.167	0.209	0.252	0.270	0.302	0.338	0,405
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	250	0.150	0.185	0.233	0.280	0.300	0.335	0.375	0,450
			Al over 10% Si	○	220	0.135	0.167	0.209	0.252	0.270	0.302	0.338	0,405
		Copper, brass, bronze and red brass		○	160	0.100	0.120	0.150	0.160	0.210	0.220	0.260	0.310
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	25	0.034	0.047	0.051	0.055	0.068	0.085	0.102	0.119
		Pure titanium		○	40	0.040	0.055	0.060	0.065	0.080	0.100	0.120	0.140
		Titanium alloys		○	30	0.034	0.047	0.051	0.055	0.068	0.085	0.102	0.119
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	30	0.026	0.035	0.038	0.041	0.051	0.064	0.077	0.089
			up to 58 HRC										
			over 58 HRC										
O	Other	Thermoplastics											
		Duroplastics											
		GRP/CRP reinforced plastics, graphite											

● = highly suitable ○ = suitable

Universal solid carbide drills
Universal solid carbide drill U

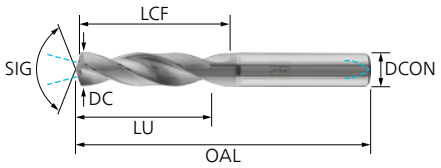
PFERD TOOLS

Recommended cutting speeds [m/min] – version 8xD

Material group			Specification/ example material	Suitability	Drilling (8xD with IC)							
					Cutting speed v_c [m/min]	Feed f_n [mm/revolution] for cutting diameter DC [mm]						
						3	4	5	6	8	10	12	16
P	Steel	All types of steel and cast steel	up to 500 N/mm²	●	102	0.102	0.123	0.153	0.164	0.215	0.225	0.266	0.317
			500 to 700 N/mm²	●	84	0.093	0.112	0.140	0.149	0.195	0.205	0.242	0.288
			700 to 1,000 N/mm²	●	70	0.079	0.095	0.119	0.126	0.166	0.174	0.206	0.245
			1,000 to 1,400 N/mm²	●	56	0.059	0.071	0.089	0.095	0.125	0.130	0.154	0.184
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	●	56	0.079	0.095	0.119	0.126	0.166	0.174	0.206	0.245
		Austenitic	e.g. 1.4301, 1.4571	●	47	0.047	0.070	0.081	0.093	0.102	0.121	0.130	0.158
		High-temperature-resistant and ferritic-austenitic (duplex)		○	33	0.035	0.052	0.061	0.070	0.077	0.091	0.098	0.119
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	●	102	0.140	0.172	0.216	0.260	0.279	0.312	0.349	0,419
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	●	74	0.126	0.155	0.195	0.234	0.251	0.280	0.314	0.377
N	Non-ferrous metals	Aluminium	Al up to 10% Si	○	233	0.140	0.172	0.216	0.260	0.279	0.312	0.349	0,419
			Al over 10% Si	○	205	0.126	0.155	0.195	0.234	0.251	0.280	0.314	0.377
		Copper, brass, bronze and red brass		○	149	0.093	0.112	0.140	0.149	0.195	0.205	0.242	0.288
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	23	0.032	0.043	0.047	0.051	0.063	0.079	0.095	0.111
		Pure titanium		○	37	0.037	0.051	0.056	0.060	0.074	0.093	0.112	0.130
		Titanium alloys		○	28	0.032	0.043	0.047	0.051	0.063	0.079	0.095	0.111
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC										
			up to 58 HRC										
			over 58 HRC										
O	Other	Thermoplastics											
		Duroplastics											
		GRP/CRP reinforced plastics, graphite											

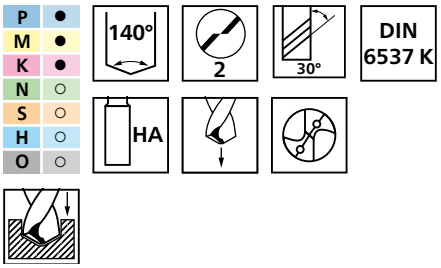
● = highly suitable ○ = suitable

Universal solid carbide drills
Universal solid carbide drill U

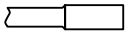


3xD type – metric

Solid carbide drills with inner coolant supply and state-of-the-art coating for universal use on a variety of materials.



Special features:
- Double margin flute for increased process stability and high-quality bores.
- Inner coolant supply for increased tool life and controlled chip removal.
- Optimised surface finishing for high performance.

DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
HA with IC			 **HA**				
3	6	14	20	2	1	23000494	SCD-U-3D-M03.000-14IC LA40
3.1	6	14	20	2	1	23000495	SCD-U-3D-M03.100-14IC LA40
3.2	6	14	20	2	1	23000496	SCD-U-3D-M03.200-14IC LA40
3.3	6	14	20	2	1	23000497	SCD-U-3D-M03.300-14IC LA40
3.4	6	14	20	2	1	23000498	SCD-U-3D-M03.400-14IC LA40
3.5	6	14	20	2	1	23000499	SCD-U-3D-M03.500-14IC LA40
3.6	6	14	20	2	1	23000500	SCD-U-3D-M03.600-14IC LA40
3.7	6	14	20	2	1	23000501	SCD-U-3D-M03.700-14IC LA40
3.8	6	17	24	2	1	23000502	SCD-U-3D-M03.800-17IC LA40
3.9	6	17	24	2	1	23000503	SCD-U-3D-M03.900-17IC LA40
4	6	17	24	2	1	23000504	SCD-U-3D-M04.000-17IC LA40
4.1	6	17	24	2	1	23000505	SCD-U-3D-M04.100-17IC LA40
4.2	6	17	24	2	1	23000506	SCD-U-3D-M04.200-17IC LA40
4.3	6	17	24	2	1	23000507	SCD-U-3D-M04.300-17IC LA40
4.4	6	17	24	2	1	23000508	SCD-U-3D-M04.400-17IC LA40
4.5	6	17	24	2	1	23000509	SCD-U-3D-M04.500-17IC LA40
4.6	6	17	24	2	1	23000510	SCD-U-3D-M04.600-17IC LA40
4.7	6	17	24	2	1	23000511	SCD-U-3D-M04.700-17IC LA40
4.8	6	20	28	2	1	23000512	SCD-U-3D-M04.800-20IC LA40
4.9	6	20	28	2	1	23000513	SCD-U-3D-M04.900-20IC LA40
5	6	20	28	2	1	23000514	SCD-U-3D-M05.000-20IC LA40
5.1	6	20	28	2	1	23000515	SCD-U-3D-M05.100-20IC LA40
5.2	6	20	28	2	1	23000516	SCD-U-3D-M05.200-20IC LA40
5.3	6	20	28	2	1	23000517	SCD-U-3D-M05.300-20IC LA40
5.4	6	20	28	2	1	23000518	SCD-U-3D-M05.400-20IC LA40
5.5	6	20	28	2	1	23000519	SCD-U-3D-M05.500-20IC LA40
5.6	6	20	28	2	1	23000520	SCD-U-3D-M05.600-20IC LA40
5.7	6	20	28	2	1	23000521	SCD-U-3D-M05.700-20IC LA40
5.8	6	20	28	2	1	23000522	SCD-U-3D-M05.800-20IC LA40
5.9	6	20	28	2	1	23000523	SCD-U-3D-M05.900-20IC LA40
6	6	20	28	2	1	23000524	SCD-U-3D-M06.000-20IC LA40
6.2	8	24	34	2	1	23000525	SCD-U-3D-M06.200-24IC LA40
6.3	8	24	34	2	1	23000526	SCD-U-3D-M06.300-24IC LA40
6.4	8	24	34	2	1	23000527	SCD-U-3D-M06.400-24IC LA40
6.5	8	24	34	2	1	23000528	SCD-U-3D-M06.500-24IC LA40
6.6	8	24	34	2	1	23000529	SCD-U-3D-M06.600-24IC LA40
6.7	8	24	34	2	1	23000530	SCD-U-3D-M06.700-24IC LA40
6.8	8	24	34	2	1	23000531	SCD-U-3D-M06.800-24IC LA40
6.9	8	24	34	2	1	23000532	SCD-U-3D-M06.900-24IC LA40
7	8	24	34	2	1	23000533	SCD-U-3D-M07.000-24IC LA40

Continued on next page

Universal solid carbide drills

Universal solid carbide drill U

PFERD TOOLS

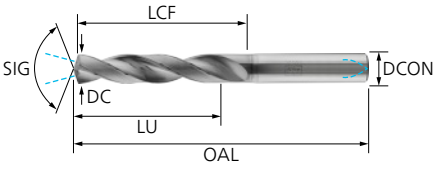
DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
7.2	8	29	41	2	1	23000534	SCD-U-3D-M07.200-29IC LA40
7.3	8	29	41	2	1	23000535	SCD-U-3D-M07.300-29IC LA40
7.4	8	29	41	2	1	23000536	SCD-U-3D-M07.400-29IC LA40
7.5	8	29	41	2	1	23000537	SCD-U-3D-M07.500-29IC LA40
7.6	8	29	41	2	1	23000538	SCD-U-3D-M07.600-29IC LA40
7.7	8	29	41	2	1	23000539	SCD-U-3D-M07.700-29IC LA40
7.8	8	29	41	2	1	23000540	SCD-U-3D-M07.800-29IC LA40
7.9	8	29	41	2	1	23000541	SCD-U-3D-M07.900-29IC LA40
8	8	29	41	2	1	23000542	SCD-U-3D-M08.000-29IC LA40
8.1	10	35	47	2	1	23000543	SCD-U-3D-M08.100-35IC LA40
8.2	10	35	47	2	1	23000544	SCD-U-3D-M08.200-35IC LA40
8.3	10	35	47	2	1	23000545	SCD-U-3D-M08.300-35IC LA40
8.4	10	35	47	2	1	23000546	SCD-U-3D-M08.400-35IC LA40
8.5	10	35	47	2	1	23000547	SCD-U-3D-M08.500-35IC LA40
8.6	10	35	47	2	1	23000548	SCD-U-3D-M08.600-35IC LA40
8.7	10	35	47	2	1	23000549	SCD-U-3D-M08.700-35IC LA40
8.8	10	35	47	2	1	23000550	SCD-U-3D-M08.800-35IC LA40
9	10	35	47	2	1	23000551	SCD-U-3D-M09.000-35IC LA40
9.2	10	35	47	2	1	23000552	SCD-U-3D-M09.200-35IC LA40
9.3	10	35	47	2	1	23000553	SCD-U-3D-M09.300-35IC LA40
9.4	10	35	47	2	1	23000554	SCD-U-3D-M09.400-35IC LA40
9.5	10	35	47	2	1	23000555	SCD-U-3D-M09.500-35IC LA40
9.6	10	35	47	2	1	23000556	SCD-U-3D-M09.600-35IC LA40
9.8	10	35	47	2	1	23000557	SCD-U-3D-M09.800-35IC LA40
9.9	10	35	47	2	1	23000558	SCD-U-3D-M09.900-35IC LA40
10	10	35	47	2	1	23000559	SCD-U-3D-M10.000-35IC LA40
10.1	12	40	55	2	1	23000560	SCD-U-3D-M10.100-40IC LA40
10.2	12	40	55	2	1	23000561	SCD-U-3D-M10.200-40IC LA40
10.3	12	40	55	2	1	23000562	SCD-U-3D-M10.300-40IC LA40
10.4	12	40	55	2	1	23000563	SCD-U-3D-M10.400-40IC LA40
10.5	12	40	55	2	1	23000564	SCD-U-3D-M10.500-40IC LA40
10.8	12	40	55	2	1	23000565	SCD-U-3D-M10.800-40IC LA40
11	12	40	55	2	1	23000566	SCD-U-3D-M11.000-40IC LA40
11.2	12	40	55	2	1	23000567	SCD-U-3D-M11.200-40IC LA40
11.3	12	40	55	2	1	23000568	SCD-U-3D-M11.300-40IC LA40
11.5	12	40	55	2	1	23000569	SCD-U-3D-M11.500-40IC LA40
11.6	12	40	55	2	1	23000570	SCD-U-3D-M11.600-40IC LA40
11.8	12	40	55	2	1	23000571	SCD-U-3D-M11.800-40IC LA40
12	12	40	55	2	1	23000572	SCD-U-3D-M12.000-40IC LA40
12.1	14	43	60	2	1	23000573	SCD-U-3D-M12.100-43IC LA40
12.2	14	43	60	2	1	23000574	SCD-U-3D-M12.200-43IC LA40
12.5	14	43	60	2	1	23000575	SCD-U-3D-M12.500-43IC LA40
12.7	14	43	60	2	1	23000576	SCD-U-3D-M12.700-43IC LA40
12.9	14	43	60	2	1	23000577	SCD-U-3D-M12.900-43IC LA40
13	14	43	60	2	1	23000578	SCD-U-3D-M13.000-43IC LA40
13.1	14	43	60	2	1	23000579	SCD-U-3D-M13.100-43IC LA40
13.5	14	43	60	2	1	23000580	SCD-U-3D-M13.500-43IC LA40
14	14	43	60	2	1	23000581	SCD-U-3D-M14.000-43IC LA40
14.1	16	45	65	2	1	23000582	SCD-U-3D-M14.100-45IC LA40
14.2	16	45	65	2	1	23000583	SCD-U-3D-M14.200-45IC LA40
14.5	16	45	65	2	1	23000584	SCD-U-3D-M14.500-45IC LA40
14.7	16	45	65	2	1	23000585	SCD-U-3D-M14.700-45IC LA40
15	16	45	65	2	1	23000586	SCD-U-3D-M15.000-45IC LA40
15.1	16	45	65	2	1	23000587	SCD-U-3D-M15.100-45IC LA40

Continued on next page

Universal solid carbide drills

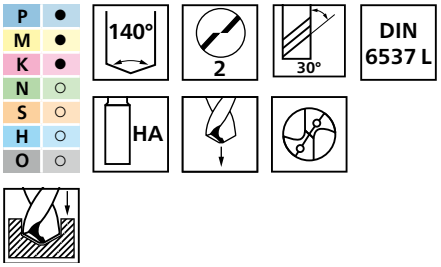
Universal solid carbide drill U

DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
15.2	16	45	65	2	1	23000588	SCD-U-3D-M15.200-45IC LA40
15.5	16	45	65	2	1	23000589	SCD-U-3D-M15.500-45IC LA40
15.8	16	45	65	2	1	23000590	SCD-U-3D-M15.800-45IC LA40
16	16	45	65	2	1	23000591	SCD-U-3D-M16.000-45IC LA40



5xD type – metric

Solid carbide drills with inner coolant supply and state-of-the-art coating for universal use on a variety of materials.



Special features:

- Double margin flute for increased process stability and high-quality bores.
- Inner coolant supply for increased tool life and controlled chip removal.
- Optimised surface finishing for high performance.

DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
HA with IC			HA				
3	6	23	27	2	1	23000592	SCD-U-5D-M03.000-23IC LA40
3.1	6	23	27	2	1	23000593	SCD-U-5D-M03.100-23IC LA40
3.2	6	23	27	2	1	23000594	SCD-U-5D-M03.200-23IC LA40
3.3	6	23	27	2	1	23000595	SCD-U-5D-M03.300-23IC LA40
3.4	6	23	27	2	1	23000596	SCD-U-5D-M03.400-23IC LA40
3.5	6	23	27	2	1	23000597	SCD-U-5D-M03.500-23IC LA40
3.6	6	23	27	2	1	23000598	SCD-U-5D-M03.600-23IC LA40
3.7	6	23	27	2	1	23000599	SCD-U-5D-M03.700-23IC LA40
3.8	6	29	36	2	1	23000600	SCD-U-5D-M03.800-29IC LA40
3.9	6	29	36	2	1	23000601	SCD-U-5D-M03.900-29IC LA40
4	6	29	36	2	1	23000602	SCD-U-5D-M04.000-29IC LA40
4.1	6	29	36	2	1	23000603	SCD-U-5D-M04.100-29IC LA40
4.2	6	29	36	2	1	23000604	SCD-U-5D-M04.200-29IC LA40
4.3	6	29	36	2	1	23000605	SCD-U-5D-M04.300-29IC LA40
4.4	6	29	36	2	1	23000606	SCD-U-5D-M04.400-29IC LA40
4.5	6	29	36	2	1	23000607	SCD-U-5D-M04.500-29IC LA40
4.6	6	29	36	2	1	23000608	SCD-U-5D-M04.600-29IC LA40
4.7	6	29	36	2	1	23000609	SCD-U-5D-M04.700-29IC LA40
4.8	6	35	44	2	1	23000610	SCD-U-5D-M04.800-35IC LA40
4.9	6	35	44	2	1	23000611	SCD-U-5D-M04.900-35IC LA40
5	6	35	44	2	1	23000612	SCD-U-5D-M05.000-35IC LA40
5.1	6	35	44	2	1	23000613	SCD-U-5D-M05.100-35IC LA40
5.2	6	35	44	2	1	23000614	SCD-U-5D-M05.200-35IC LA40
5.3	6	35	44	2	1	23000615	SCD-U-5D-M05.300-35IC LA40
5.4	6	35	44	2	1	23000616	SCD-U-5D-M05.400-35IC LA40
5.5	6	35	44	2	1	23000617	SCD-U-5D-M05.500-35IC LA40
5.6	6	35	44	2	1	23000618	SCD-U-5D-M05.600-35IC LA40
5.7	6	35	44	2	1	23000619	SCD-U-5D-M05.700-35IC LA40
5.8	6	35	44	2	1	23000620	SCD-U-5D-M05.800-35IC LA40
5.9	6	35	44	2	1	23000621	SCD-U-5D-M05.900-35IC LA40
6	6	35	44	2	1	23000622	SCD-U-5D-M06.000-35IC LA40
6.1	8	43	53	2	1	23000623	SCD-U-5D-M06.100-43IC LA40

Continued on next page

Universal solid carbide drills

Universal solid carbide drill U

DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
6.2	8	43	53	2	1	23000624	SCD-U-5D-M06.200-43IC LA40
6.3	8	43	53	2	1	23000625	SCD-U-5D-M06.300-43IC LA40
6.4	8	43	53	2	1	23000626	SCD-U-5D-M06.400-43IC LA40
6.5	8	43	53	2	1	23000627	SCD-U-5D-M06.500-43IC LA40
6.6	8	43	53	2	1	23000628	SCD-U-5D-M06.600-43IC LA40
6.7	8	43	53	2	1	23000629	SCD-U-5D-M06.700-43IC LA40
6.8	8	43	53	2	1	23000630	SCD-U-5D-M06.800-43IC LA40
6.9	8	43	53	2	1	23000631	SCD-U-5D-M06.900-43IC LA40
7	8	43	53	2	1	23000632	SCD-U-5D-M07.000-43IC LA40
7.2	8	43	53	2	1	23000633	SCD-U-5D-M07.200-43IC LA40
7.3	8	43	53	2	1	23000634	SCD-U-5D-M07.300-43IC LA40
7.4	8	43	53	2	1	23000635	SCD-U-5D-M07.400-43IC LA40
7.5	8	43	53	2	1	23000636	SCD-U-5D-M07.500-43IC LA40
7.6	8	43	53	2	1	23000637	SCD-U-5D-M07.600-43IC LA40
7.7	8	43	53	2	1	23000638	SCD-U-5D-M07.700-43IC LA40
7.8	8	43	53	2	1	23000639	SCD-U-5D-M07.800-43IC LA40
7.9	8	43	53	2	1	23000640	SCD-U-5D-M07.900-43IC LA40
8	8	43	53	2	1	23000641	SCD-U-5D-M08.000-43IC LA40
8.1	10	49	61	2	1	23000642	SCD-U-5D-M08.100-49IC LA40
8.2	10	49	61	2	1	23000643	SCD-U-5D-M08.200-49IC LA40
8.3	10	49	61	2	1	23000644	SCD-U-5D-M08.300-49IC LA40
8.4	10	49	61	2	1	23000645	SCD-U-5D-M08.400-49IC LA40
8.5	10	49	61	2	1	23000646	SCD-U-5D-M08.500-49IC LA40
8.6	10	49	61	2	1	23000647	SCD-U-5D-M08.600-49IC LA40
8.7	10	49	61	2	1	23000648	SCD-U-5D-M08.700-49IC LA40
8.8	10	49	61	2	1	23000649	SCD-U-5D-M08.800-49IC LA40
9	10	49	61	2	1	23000650	SCD-U-5D-M09.000-49IC LA40
9.2	10	49	61	2	1	23000651	SCD-U-5D-M09.200-49IC LA40
9.3	10	49	61	2	1	23000652	SCD-U-5D-M09.300-49IC LA40
9.4	10	49	61	2	1	23000653	SCD-U-5D-M09.400-49IC LA40
9.5	10	49	61	2	1	23000654	SCD-U-5D-M09.500-49IC LA40
9.6	10	49	61	2	1	23000655	SCD-U-5D-M09.600-49IC LA40
9.8	10	49	61	2	1	23000656	SCD-U-5D-M09.800-49IC LA40
9.9	10	49	61	2	1	23000657	SCD-U-5D-M09.900-49IC LA40
10	10	49	61	2	1	23000658	SCD-U-5D-M10.000-49IC LA40
10.1	12	56	71	2	1	23000659	SCD-U-5D-M10.100-56IC LA40
10.2	12	56	71	2	1	23000660	SCD-U-5D-M10.200-56IC LA40
10.3	12	56	71	2	1	23000661	SCD-U-5D-M10.300-56IC LA40
10.4	12	56	71	2	1	23000662	SCD-U-5D-M10.400-56IC LA40
10.5	12	56	71	2	1	23000663	SCD-U-5D-M10.500-56IC LA40
10.8	12	56	71	2	1	23000664	SCD-U-5D-M10.800-56IC LA40
11	12	56	71	2	1	23000665	SCD-U-5D-M11.000-56IC LA40
11.2	12	56	71	2	1	23000666	SCD-U-5D-M11.200-56IC LA40
11.3	12	56	71	2	1	23000667	SCD-U-5D-M11.300-56IC LA40
11.5	12	56	71	2	1	23000668	SCD-U-5D-M11.500-56IC LA40
11.6	12	56	71	2	1	23000669	SCD-U-5D-M11.600-56IC LA40
11.8	12	56	71	2	1	23000670	SCD-U-5D-M11.800-56IC LA40
12	12	56	71	2	1	23000671	SCD-U-5D-M12.000-56IC LA40
12.1	14	60	77	2	1	23000672	SCD-U-5D-M12.100-60IC LA40
12.2	14	60	77	2	1	23000673	SCD-U-5D-M12.200-60IC LA40
12.5	14	60	77	2	1	23000674	SCD-U-5D-M12.500-60IC LA40
12.7	14	60	77	2	1	23000675	SCD-U-5D-M12.700-60IC LA40
12.9	14	60	77	2	1	23000676	SCD-U-5D-M12.900-60IC LA40
13	14	60	77	2	1	23000677	SCD-U-5D-M13.000-60IC LA40

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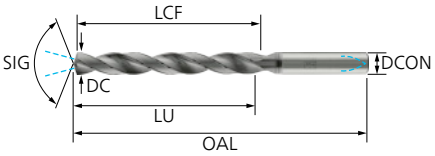
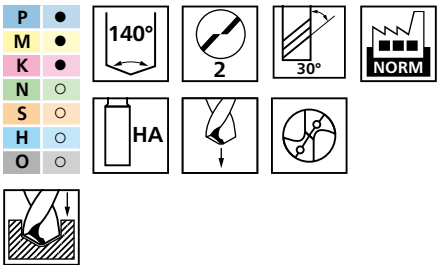
Universal solid carbide drills
Universal solid carbide drill U

DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
13.1	14	60	77	2	1	23000678	SCD-U-5D-M13.100-60IC LA40
13.3	14	60	77	2	1	23000679	SCD-U-5D-M13.300-60IC LA40
13.5	14	60	77	2	1	23000680	SCD-U-5D-M13.500-60IC LA40
13.8	14	60	77	2	1	23000681	SCD-U-5D-M13.800-60IC LA40
14	14	60	77	2	1	23000682	SCD-U-5D-M14.000-60IC LA40
14.1	16	63	83	2	1	23000683	SCD-U-5D-M14.100-63IC LA40
14.2	16	63	83	2	1	23000684	SCD-U-5D-M14.200-63IC LA40
14.5	16	63	83	2	1	23000685	SCD-U-5D-M14.500-63IC LA40
14.7	16	63	83	2	1	23000686	SCD-U-5D-M14.700-63IC LA40
14.8	16	63	83	2	1	23000687	SCD-U-5D-M14.800-63IC LA40
15	16	63	83	2	1	23000688	SCD-U-5D-M15.000-63IC LA40
15.1	16	63	83	2	1	23000689	SCD-U-5D-M15.100-63IC LA40
15.2	16	63	83	2	1	23000690	SCD-U-5D-M15.200-63IC LA40
15.5	16	63	83	2	1	23000691	SCD-U-5D-M15.500-63IC LA40
15.8	16	63	83	2	1	23000692	SCD-U-5D-M15.800-63IC LA40
16	16	63	83	2	1	23000693	SCD-U-5D-M16.000-63IC LA40



8xD type – metric

Solid carbide drills with inner coolant supply and state-of-the-art coating for universal use on a variety of materials.



Special features:

- Double margin flute for increased process stability and high-quality bores.
- Inner coolant supply for increased tool life and controlled chip removal.
- Optimised surface finishing for high performance.

DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
HA with IC			HA				
3	6	29	35	2	1	23000694	SCD-U-8D-M03.000-29IC LA40
3.2	6	30	35	2	1	23000695	SCD-U-8D-M03.200-30IC LA40
3.3	6	30	35	2	1	23000696	SCD-U-8D-M03.300-30IC LA40
3.4	6	30	35	2	1	23000697	SCD-U-8D-M03.400-30IC LA40
3.5	6	30	35	2	1	23000698	SCD-U-8D-M03.500-30IC LA40
3.6	6	30	35	2	1	23000699	SCD-U-8D-M03.600-30IC LA40
3.7	6	30	35	2	1	23000700	SCD-U-8D-M03.700-30IC LA40
3.8	6	37	44	2	1	23000701	SCD-U-8D-M03.800-37IC LA40
3.9	6	37	44	2	1	23000702	SCD-U-8D-M03.900-37IC LA40
4	6	37	44	2	1	23000703	SCD-U-8D-M04.000-37IC LA40
4.1	6	37	44	2	1	23000704	SCD-U-8D-M04.100-37IC LA40
4.2	6	37	44	2	1	23000705	SCD-U-8D-M04.200-37IC LA40
4.3	6	37	44	2	1	23000706	SCD-U-8D-M04.300-37IC LA40
4.5	6	37	44	2	1	23000707	SCD-U-8D-M04.500-37IC LA40
5	6	48	57	2	1	23000708	SCD-U-8D-M05.000-48IC LA40
5.1	6	48	57	2	1	23000709	SCD-U-8D-M05.100-48IC LA40
5.2	6	48	57	2	1	23000710	SCD-U-8D-M05.200-48IC LA40
5.3	6	48	57	2	1	23000711	SCD-U-8D-M05.300-48IC LA40
5.5	6	48	57	2	1	23000712	SCD-U-8D-M05.500-48IC LA40
5.6	6	48	57	2	1	23000713	SCD-U-8D-M05.600-48IC LA40

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Universal solid carbide drills

Universal solid carbide drill U

DC [mm]	DCON [mm]	LU [mm]	LCF [mm]	ZEFP		Item no.	Designation
5.8	6	48	57	2	1	23000714	SCD-U-8D-M05.800-48IC LA40
6	6	48	57	2	1	23000715	SCD-U-8D-M06.000-48IC LA40
6.2	8	66	76	2	1	23000716	SCD-U-8D-M06.200-66IC LA40
6.5	8	66	76	2	1	23000717	SCD-U-8D-M06.500-66IC LA40
6.6	8	66	76	2	1	23000718	SCD-U-8D-M06.600-66IC LA40
6.8	8	66	76	2	1	23000719	SCD-U-8D-M06.800-66IC LA40
6.9	8	66	76	2	1	23000720	SCD-U-8D-M06.900-66IC LA40
7	8	66	76	2	1	23000721	SCD-U-8D-M07.000-66IC LA40
7.4	8	66	76	2	1	23000722	SCD-U-8D-M07.400-66IC LA40
7.5	8	66	76	2	1	23000723	SCD-U-8D-M07.500-66IC LA40
7.8	8	66	76	2	1	23000724	SCD-U-8D-M07.800-66IC LA40
8	8	66	76	2	1	23000725	SCD-U-8D-M08.000-66IC LA40
8.1	10	84	96	2	1	23000726	SCD-U-8D-M08.100-84IC LA40
8.2	10	84	96	2	1	23000727	SCD-U-8D-M08.200-84IC LA40
8.5	10	84	96	2	1	23000728	SCD-U-8D-M08.500-84IC LA40
8.6	10	84	96	2	1	23000729	SCD-U-8D-M08.600-84IC LA40
8.7	10	84	96	2	1	23000730	SCD-U-8D-M08.700-84IC LA40
8.8	10	84	96	2	1	23000731	SCD-U-8D-M08.800-84IC LA40
9	10	84	96	2	1	23000732	SCD-U-8D-M09.000-84IC LA40
9.5	10	84	96	2	1	23000733	SCD-U-8D-M09.500-84IC LA40
9.6	10	84	96	2	1	23000734	SCD-U-8D-M09.600-84IC LA40
9.8	10	84	96	2	1	23000735	SCD-U-8D-M09.800-84IC LA40
9.9	10	84	96	2	1	23000736	SCD-U-8D-M09.900-84IC LA40
10	10	84	96	2	1	23000737	SCD-U-8D-M10.000-84IC LA40
10.2	12	100	115	2	1	23000738	SCD-U-8D-M10.200-100IC LA40
10.3	12	100	115	2	1	23000739	SCD-U-8D-M10.300-100IC LA40
10.5	12	100	115	2	1	23000740	SCD-U-8D-M10.500-100IC LA40
11	12	100	115	2	1	23000741	SCD-U-8D-M11.000-100IC LA40
11.2	12	100	115	2	1	23000742	SCD-U-8D-M11.200-100IC LA40
11.5	12	100	115	2	1	23000743	SCD-U-8D-M11.500-100IC LA40
11.8	12	100	115	2	1	23000744	SCD-U-8D-M11.800-100IC LA40
12	12	100	115	2	1	23000745	SCD-U-8D-M12.000-100IC LA40
12.5	14	117	134	2	1	23000746	SCD-U-8D-M12.500-117IC LA40
13	14	117	134	2	1	23000747	SCD-U-8D-M13.000-117IC LA40
13.1	14	117	134	2	1	23000748	SCD-U-8D-M13.100-117IC LA40
13.5	14	117	134	2	1	23000749	SCD-U-8D-M13.500-117IC LA40
14	14	117	134	2	1	23000750	SCD-U-8D-M14.000-117IC LA40
14.5	16	133	153	2	1	23000751	SCD-U-8D-M14.500-133IC LA40
15	16	133	153	2	1	23000752	SCD-U-8D-M15.000-133IC LA40
15.5	16	133	153	2	1	23000753	SCD-U-8D-M15.500-133IC LA40
16	16	133	153	2	1	23000774	SCD-U-8D-M16.000-133IC LA40