



**Cutting tools for stationary applications**



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### Cutting tools for stationary applications

■ Highlights from the PFERD range	3
■ General information	3
■ Material suitability overview	4
■ Explanation of pictograms used	5
■ Formula for cutting data calculation	5
■ Explanation of item designation	6

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### Universal solid tungsten carbide end mills

■ Universal end mill with two flutes UC2	9
■ Universal end mill with three flutes UC3	12
■ Universal end mill with four flutes UC4	15
■ Universal end mill with six flutes UC6	18
■ Universal deburring end mill UD	20
■ Universal full radius ball nose end mill UB	23

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### Custom-made products

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

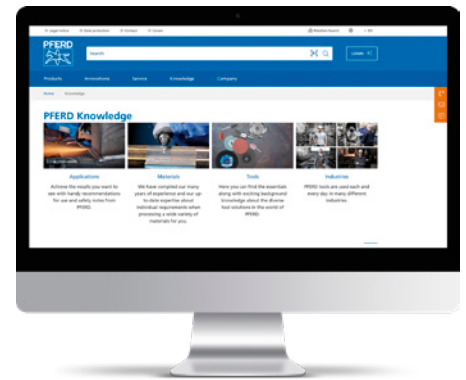
#### Find your ideal tool solution in just three steps:

- 1. Process analysis  
Make an appointment with our experienced sales representatives and technical advisers. You can find our worldwide sales office addresses by visiting [www.pferd.com](http://www.pferd.com).
- 2. Production  
Our production teams create a technical drawing for your made-to-order product.
- 3. Use  
See the quality, performance and economic value of PFERD products for yourself!



### Find additional in-depth information online

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



## General information

### Cutting tools for stationary applications from PFERD

PFERD supplies cutting tools for all of the most common stationary applications. PFERD solid carbide mills are suitable for a wide range of milling operations on lathes and milling machines, and in automated centers. The tools' optimum stock removal rate ensures high productivity.

- The highest quality standards thanks to precise product geometry and state-of-the-art coatings.
- High productivity due to optimum stock removal rate.



### 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 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](http://www.pferd.com).





# Cutting tools for stationary applications

## General information



### Resharpener

All PFERD cutting tools for stationary applications can be reground. Please contact us for further information.

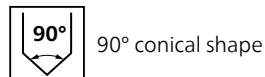
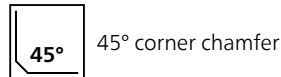
## Material suitability overview

Material group			Universal full radius end mill Ball nose UB2	Universal deburring end mill UD4/6	Universal end mill with two flutes UC2	Universal end mill with three flutes UC3	Universal end mill with four flutes UC4	Universal end mill with six flutes UC6
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	●	●	●	●	●	●
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	Aluminum	○	●	○	○	○	○
		Copper, brass, bronze, 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						

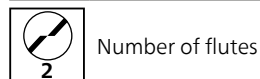
● = highly recommended    ○ = recommended



### Geometry – Type



### Geometry – Number of flutes



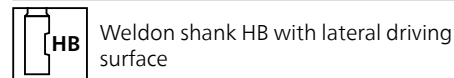
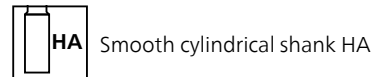
### Geometry – Torsion



### Norm



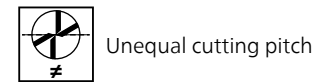
### Shank type



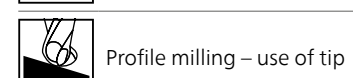
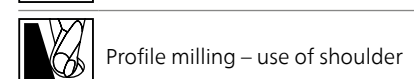
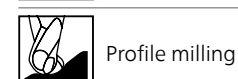
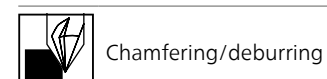
### Feed direction



### Unequal pitch



### Applications



## Formula for cutting data calculation

$$n = \frac{V_c \times 12}{DC \times \pi} \text{ RPM}$$

### Rotational speed

$$V_c = \frac{DC \times \pi \times n}{12} \text{ ft./min}$$

### Peripheral speed

$$V_f = f_z \times ZEPF \times n \text{ in./min}$$

### Feeding speed

### Abbreviations explanation

- $a_p$  = cutting depth
- $a_e$  = contact width
- DC = cutting diameter [inches]

- $f_z$  = Feed per tooth in [in/tooth]
- $n$  = spindle rotational speed in [rev/min]
- $V_c$  = Cutting speed [ft/min]

- $V_f$  = Feeding speed [in/min]
- ZEPF = Effective no. of cutting edges



# Cutting tools for stationary applications

## Explanation of item designation



**SCM-UC4-13/8C-M2.5HA AL40**

**① Tool group**

SCM = Solid carbide mill

**② Product line**

U = Universal Line

**③ Shape**

B = Full radius end mill (ball nose)  
D = Chamfering end mill (deburring/  
chamfering)  
C = Cylindrical end mill with center cut

**④ Number of cutting edges**

**⑤ Material group**

ISO groups P, M, K, N, S, H.  
Blank, unless specified.

**⑥ Units**

I = Imperial

**⑦ Cutting diameter**

Imperial: Inches  
Example: 3/8" diameter

**⑧ Corner design**

A = Angled  
Example: A90°  
C = Chamfer  
R = radius with size  
Example: R.030 for .030"  
S = Sharp

**⑨ Cut length class**

XS: APMX < 1 x DC  
S: APMX 1-2 x DC  
M: APMX 2-2.5 x DC  
L: APMX 2.5-3 x DC  
XL: APMX >3 x DC

**⑩ Total length**

Imperial: total length LF in inches.  
Not specified for chamfering end mills.

**⑪ Shank type**

HA = Cylindrical  
HB = Weldon shank  
Additional shank diameter for design with  
DC < 1/4" and DCON = 1/4"

⑫ \*

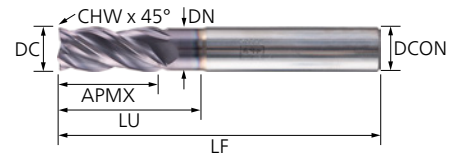
⑬ \*

**⑭ Grade material**


\*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



### Recommended peripheral speeds [SFPM]

Material group			Specification/ example material	Suitability	Full slot milling $a_p = 1 \times DC$ ; $a_e = 1 \times DC$ 						
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]					
						1/8	3/16	1/4	5/16	3/8	1/2
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	300	.0011	.0013	.0017	.0020	.0023	.0033
			500 to 700 N/mm <sup>2</sup>	•	280	.0011	.0013	.0017	.0020	.0023	.0033
			700 to 1,000 N/mm <sup>2</sup>	•	260	.0006	.0008	.0008	.0012	.0015	.0019
			1,000 to 1,400 N/mm <sup>2</sup>	•	230	.0006	.0008	.0008	.0012	.0015	.0019
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	•	180	.0011	.0013	.0017	.0020	.0023	.0033
			Austenitic	•	180	.0011	.0013	.0017	.0020	.0023	.0033
			High-temperature-resistant and ferritic-austenitic (duplex)	○	150	.0005	.0007	.0008	.0010	.0011	.0017
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	260	.0011	.0013	.0017	.0020	.0023	.0033
			Cast iron with nodular graphite (GJS, GGG)	•	215	.0011	.0013	.0017	.0020	.0023	.0033
N	Non-ferrous metals	Aluminum	Al up to 10% Si	○	440	.0011	.0013	.0017	.0020	.0023	.0033
			Al > 10% Si	○	360	.0011	.0013	.0017	.0020	.0023	.0033
		Copper, brass, bronze and red brass	○	300	.0011	.0013	.0017	.0020	.0023	.0033	
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	○	200	.0006	.0008	.0008	.0012	.0015	.0023
			up to 58 HRC								
			> 58 HRC								
O	Other	Thermoplastics		○	300	.0011	.0013	.0017	.0020	.0023	.0033
		Duroplastics									
		GRP/CRP reinforced plastics, graphite									

• = highly recommended    ○ = recommended




# Cutting tools for stationary applications

## Universal end mill with two flutes UC2



### Recommended peripheral speeds [SFPM]

Material group			Specification/ example material	Suitability	Side milling $a_p = 1 \times DC$ ; $a_e = 0.1 \times DC$ 						
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]					
						1/8	3/16	1/4	5/16	3/8	1/2
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	690	.0016	.0019	.0027	.0029	.0034	.0050
			500 to 700 N/mm <sup>2</sup>	•	625	.0016	.0019	.0027	.0029	.0034	.0050
			700 to 1,000 N/mm <sup>2</sup>	•	560	.0008	.0009	.0015	.0018	.0023	.0029
			1,000 to 1,400 N/mm <sup>2</sup>	•	490	.0008	.0009	.0015	.0018	.0023	.0029
M	Stainless steel	Ferritic and martensitic Austenitic High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4105, 1.4122	•	400	.0016	.0019	.0027	.0029	.0034	.0050
			e.g. 1.4301, 1.4571	•	400	.0016	.0019	.0027	.0029	.0034	.0050
			e.g. 1.4362, 1.4462	○	300	.0008	.0009	.0014	.0015	.0017	.0025
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron) Cast iron with nodular graphite (GJS, GGG)	up to 180 HB	•	590	.0016	.0019	.0027	.0029	.0034	.0050
			160 to 260 HB	•	460	.0016	.0019	.0027	.0029	.0034	.0050
N	Non-ferrous metals	Aluminum Copper, brass, bronze and red brass	Al up to 10% Si	○	820	.0016	.0019	.0027	.0029	.0034	.0050
			Al > 10% Si	○	660	.0016	.0019	.0027	.0029	.0034	.0050
				○	660	.0016	.0019	.0027	.0029	.0034	.0050
S	Super and titanium alloys	Heat-resistant super alloys Pure titanium Titanium alloys	Based on Fe, Ni and Co								
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	250	.0008	.0009	.0015	.0018	.0023	.0029
			up to 58 HRC								
			> 58 HRC								
O	Other	Thermoplastics Duroplastics GRP/CRP reinforced plastics, graphite		○	660	.0016	.0019	.0027	.0029	.0034	.0050

• = highly recommended    ○ = recommended

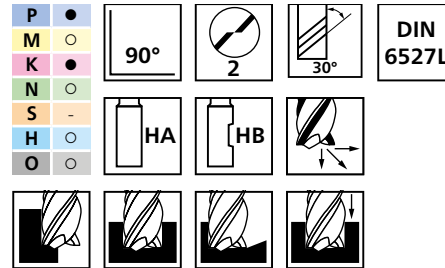









### Sharp corner design

End mills for full slot milling, drill slot milling and for roughing with high contact widths. The solid tungsten carbide end mills are suitable for universal use 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 space.

DC [Inch]	DCON [Inch]	APMX [Inch]	LF [Inch]	ZEFP		Item no.	Designation
<b>Long HA</b>		 HA					
1/8	1/8	1/4	1-1/2	2	1	23003024	SCM-UC2-I1/8S-M1.5HA AL40
3/16	3/16	3/8	2-1/4	2	1	23003025	SCM-UC2-I3/16S-M2.25HA AL40
<b>Long HB</b>		 HB					
1/4	1/4	1/2	2-1/2	2	1	23003026	SCM-UC2-I1/4S-M2.5HB AL40
5/16	5/16	5/8	2-1/2	2	1	23003027	SCM-UC2-I5/16S-M2.5HB AL40
3/8	3/8	3/4	2-1/2	2	1	23003028	SCM-UC2-I3/8S-M2.5HB AL40
1/2	1/2	1	3	2	1	23003029	SCM-UC2-I1/2S-M3HB AL40




# Cutting tools for stationary applications

## Universal end mill with three flutes UC3




### Recommended peripheral speeds [SFPM]

Material group			Specification/ example material	Suitability	Full slot milling $a_p = 1 \times DC$ ; $a_e = 1 \times DC$ 							
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]						
						1/8	3/16	1/4	5/16	3/8	1/2	5/8
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	430	.0004	.0011	.0013	.0016	.0023	.0025	.0033
			500 to 700 N/mm <sup>2</sup>	•	400	.0004	.0011	.0013	.0016	.0023	.0025	.0033
			700 to 1,000 N/mm <sup>2</sup>	•	330	.0004	.0008	.0008	.0012	.0017	.0019	.0023
			1,000 to 1,400 N/mm <sup>2</sup>	•	260	.0004	.0008	.0008	.0012	.0017	.0019	.0023
M	Stainless steel	Ferritic and martensitic Austenitic High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4105, 1.4122	•	150	.0004	.0008	.0008	.0012	.0017	.0019	.0023
			e.g. 1.4301, 1.4571	•	165	.0004	.0008	.0008	.0012	.0017	.0019	.0023
			e.g. 1.4362, 1.4462	◦	130	.0004	.0008	.0008	.0012	.0017	.0019	.0023
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron) Cast iron with nodular graphite (GJS, GGG)	up to 180 HB	•	430	.0004	.0011	.0013	.0016	.0023	.0025	.0033
			160 to 260 HB	•	330	.0004	.0011	.0013	.0016	.0023	.0025	.0033
N	Non-ferrous metals	Aluminum Copper, brass, bronze and red brass	Al up to 10% Si	◦	445	.0013	.0013	.0017	.0020	.0023	.0033	.0039
			Al > 10% Si	◦	360	.0013	.0013	.0017	.0020	.0023	.0033	.0039
				◦	300	.0013	.0013	.0017	.0020	.0023	.0033	.0039
S	Super and titanium alloys	Heat-resistant super alloys Pure titanium Titanium alloys	Based on Fe, Ni and Co	◦	115	.0004	.0008	.0008	.0012	.0017	.0019	.0023
				◦	330	.0004	.0008	.0008	.0012	.0017	.0019	.0023
				◦	165	.0004	.0008	.0008	.0012	.0017	.0019	.0023
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	◦	200	.0004	.0008	.0008	.0012	.0017	.0019	.0023
			up to 58 HRC									
			> 58 HRC									
O	Other	Thermoplastics Duroplastics GRP/CRP reinforced plastics, graphite		◦	360	.0010	.0013	.0017	.0020	.0023	.0033	.0039

• = highly recommended    ◦ = recommended



### Recommended peripheral speeds [SFPM]

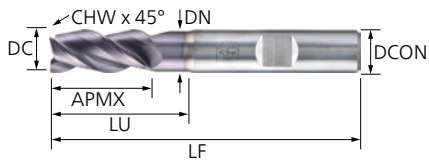
Material group			Specification/ example material	Suitability	Side milling $a_p = 1 \times DC$ ; $a_e = 0.4 \times DC$ 							
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]						
						1/8	3/16	1/4	5/16	3/8	1/2	5/8
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	●	590	.0004	.0013	.0015	.0018	.0028	.0031	.0039
			500 to 700 N/mm <sup>2</sup>	●	525	.0004	.0013	.0015	.0018	.0028	.0031	.0039
			700 to 1,000 N/mm <sup>2</sup>	●	490	.0004	.0009	.0010	.0014	.0021	.0023	.0027
			1,000 to 1,400 N/mm <sup>2</sup>	●	360	.0004	.0009	.0010	.0014	.0021	.0023	.0027
M	Stainless steel	Ferritic and martensitic Austenitic High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4105, 1.4122	●	230	.0004	.0009	.0010	.0014	.0021	.0023	.0027
			e.g. 1.4301, 1.4571	●	250	.0004	.0009	.0010	.0014	.0021	.0023	.0027
			e.g. 1.4362, 1.4462	○	200	.0004	.0009	.0010	.0014	.0021	.0023	.0027
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron) Cast iron with nodular graphite (GJS, GGG)	up to 180 HB	●	590	.0004	.0013	.0015	.0018	.0028	.0031	.0039
			160 to 260 HB	●	460	.0004	.0013	.0015	.0018	.0028	.0031	.0039
N	Non-ferrous metals	Aluminum Copper, brass, bronze and red brass	Al up to 10% Si	○	820	.0017	.0019	.0027	.0029	.0034	.0050	.0063
			Al > 10% Si	○	655	.0017	.0019	.0027	.0029	.0034	.0050	.0063
				○	655	.0017	.0019	.0027	.0029	.0034	.0050	.0063
S	Super and titanium alloys	Heat-resistant super alloys Pure titanium Titanium alloys	Based on Fe, Ni and Co	○	150	.0004	.0009	.0010	.0014	.0021	.0023	.0027
				○	360	.0004	.0009	.0010	.0014	.0021	.0023	.0027
				○	200	.0004	.0009	.0010	.0014	.0021	.0023	.0027
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	250	.0004	.0009	.0010	.0014	.0021	.0023	.0027
			up to 58 HRC									
			> 58 HRC									
O	Other	Thermoplastics Duroplastics GRP/CRP reinforced plastics, graphite		○	660	.0017	.0019	.0027	.0029	.0034	.0050	.0063

● = highly recommended    ○ = recommended



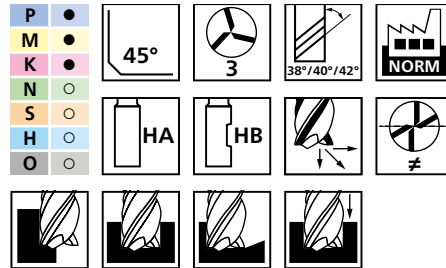
# Universal solid tungsten carbide end mills

Universal end mill with three flutes UC3



## Chamfer corner design

End mills for full slot milling, drill slot milling and for a wide range of roughing tasks. The solid tungsten carbide end mills are suitable for universal use 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 [Inch]	DCON [Inch]	DN [Inch]	APMX [Inch]	LF [Inch]	LU [Inch]	CHW [Inch]	ZEFP		Item no.	Designation
<b>Long HA</b>										
1/8	1/8	0.118	1/4	1-1/2	3/8	.015	3	1	<a href="#">23003030</a>	SCM-UC3-I1/8C-M1.5HA AL40
3/16	3/16	0.176	3/8	2-1/4	9/16	.015	3	1	<a href="#">23003031</a>	SCM-UC3-I3/16C-M2.25HA AL40
<b>Long HB</b>										
1/4	1/4	0.235	1/2	2-1/2	3/4	.015	3	1	<a href="#">23003032</a>	SCM-UC3-I1/4C-M2.5HB AL40
5/16	5/16	0.294	5/8	2-1/2	7/8	.015	3	1	<a href="#">23003033</a>	SCM-UC3-I5/16C-M2.5HB AL40
3/8	3/8	0.353	3/4	2-1/2	1	.020	3	1	<a href="#">23003034</a>	SCM-UC3-I3/8C-M2.5HB AL40
1/2	1/2	0.470	1	3	1-1/2	.020	3	1	<a href="#">23003035</a>	SCM-UC3-I1/2C-M3HB AL40
5/8	5/8	0.588	1-1/4	3-1/2	1-3/4	.020	3	1	<a href="#">23003036</a>	SCM-UC3-I5/8C-M3.5HB AL40

### Recommended peripheral speeds [SFPM]

Material group			Specification/ example material	Suitability	Full slot milling $a_p = 1 \times DC$ ; $a_e = 1 \times DC$ 									
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]								
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	450	.0004	.0006	.0011	.0013	.0016	.0023	.0025	.0033	.0038
			500 to 700 N/mm <sup>2</sup>	•	430	.0004	.0006	.0011	.0013	.0016	.0023	.0025	.0033	.0038
			700 to 1,000 N/mm <sup>2</sup>	•	360	.0004	.0006	.0008	.0008	.0016	.0017	.0019	.0023	.0026
			1,000 to 1,400 N/mm <sup>2</sup>	•	260	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	•	230	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
		Austenitic	e.g. 1.4301, 1.4571	•	200	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362, 1.4462	◦	165	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	430	.0004	.0006	.0011	.0013	.0016	.0023	.0025	.0033	.0038
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	330	.0004	.0006	.0011	.0013	.0016	.0023	.0025	.0033	.0038
N	Non-ferrous metals	Aluminum	Al up to 10% Si	◦	660	.0008	.0012	.0015	.0021	.0016	.0026	.0033	.0039	.0041
			Al > 10% Si	◦	590	.0008	.0012	.0015	.0021	.0016	.0026	.0033	.0039	.0041
		Copper, brass, bronze and red brass		◦	660	.0008	.0012	.0015	.0021	.0016	.0026	.0033	.0039	.0041
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	◦	115	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
		Pure titanium		◦	330	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
		Titanium alloys		◦	165	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	◦	200	.0004	.0005	.0008	.0008	.0016	.0017	.0019	.0023	.0026
			up to 58 HRC											
			> 58 HRC											
O	Other	Thermoplastics		◦	590	.0008	.0012	.0015	.0021	.0016	.0026	.0033	.0039	.0041
		Duroplastics												
		GRP/CRP reinforced plastics, graphite												

• = highly recommended    ◦ = recommended






# Cutting tools for stationary applications

Universal end mill with four flutes UC4

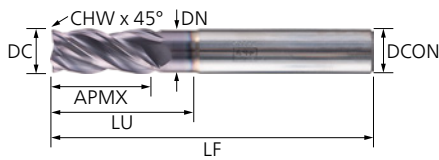


## Recommended peripheral speeds [SFPM]

Material group			Specification/ example material	Suitability	Side milling $a_p = 2 \times DC$ ; $a_e = 0.4 \times DC$ 										
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]									
						1/8	5/32	3/16	1/4	5/16	3/8	1/2	5/8	3/4	
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	590	.0004	.0006	.0013	.0015	.0018	.0028	.0031	.0039	.0045	
			500 to 700 N/mm <sup>2</sup>	•	525	.0004	.0006	.0013	.0015	.0018	.0028	.0031	.0039	.0045	
			700 to 1,000 N/mm <sup>2</sup>	•	490	.0004	.0006	.0009	.0010	.0014	.0021	.0023	.0027	.0032	
			1,000 to 1,400 N/mm <sup>2</sup>	•	360	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032	
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	•	280	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032	
			Austenitic	e.g. 1.4301, 1.4571	•	250	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032
			High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362, 1.4462	◦	215	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	590	.0004	.0006	.0013	.0015	.0018	.0028	.0031	.0039	.0045	
			Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	460	.0004	.0006	.0013	.0015	.0018	.0028	.0031	.0039	.0045
N	Non-ferrous metals	Aluminum	Al up to 10% Si	◦	755	.0013	.0014	.0013	.0017	.0020	.0023	.0033	.0039	.0049	
			Al > 10% Si	◦	690	.0013	.0014	.0013	.0017	.0020	.0023	.0033	.0039	.0049	
		Copper, brass, bronze and red brass		◦	755	.0013	.0014	.0013	.0017	.0020	.0023	.0033	.0039	.0049	
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	◦	150	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032	
			Pure titanium		◦	400	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032
			Titanium alloys		◦	230	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	◦	250	.0004	.0005	.0009	.0010	.0014	.0021	.0023	.0027	.0032	
			up to 58 HRC												
			> 58 HRC												
O	Other	Thermoplastics		◦	690	.0017	.0016	.0023	.0025	.0027	.0026	.0035	.0039	.0045	
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

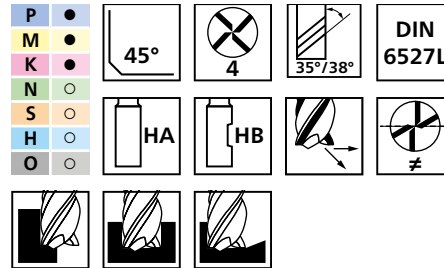
• = highly recommended    ◦ = recommended





### Chamfer corner design

End mills for various applications, from roughing through to finishing and ramping. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.



### Special features:

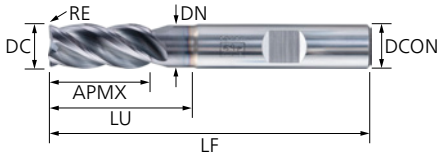
- High productivity due to optimum stock removal rate.
- Long tool life due to modern tool coating.
- Design with neck chip channel.

DC [Inch]	DCON [Inch]	DN [Inch]	APMX [Inch]	LF [Inch]	LU [Inch]	CHW [Inch]	ZEFP		Item no.	Designation
<b>Long HA</b> HA										
1/8	1/8	.118	1/4	1-1/2	3/8	.015	4	1	<a href="#">23003043</a>	SCM-UC4-I1/8C-M1.5HA AL40
5/32	5/32	.147	5/16	2	7/16	.015	4	1	<a href="#">23003044</a>	SCM-UC4-I5/32C-M2HA AL40
3/16	3/16	.176	3/8	2-1/4	9/16	.015	4	1	<a href="#">23003045</a>	SCM-UC4-I3/16C-M2.25HA AL40
1/4	1/4	.235	1/2	2-1/2	3/4	.015	4	1	<a href="#">23003046</a>	SCM-UC4-I1/4C-M2.5HA AL40
5/16	5/16	.294	5/8	2-1/2	7/8	.015	4	1	<a href="#">23003047</a>	SCM-UC4-I5/16C-M2.5HA AL40
3/8	3/8	.353	3/4	2-1/2	1	.020	4	1	<a href="#">23003048</a>	SCM-UC4-I3/8C-M2.5HA AL40
1/2	1/2	.470	1	3	1-1/2	.020	4	1	<a href="#">23003049</a>	SCM-UC4-I1/2C-M3HA AL40
5/8	5/8	.588	1-1/4	3-1/2	1-3/4	.020	4	1	<a href="#">23003050</a>	SCM-UC4-I5/8C-M3.5HA AL40
3/4	3/4	.705	1-1/2	4	2-1/4	.020	4	1	<a href="#">23003051</a>	SCM-UC4-I3/4C-M4HA AL40
<b>Long HB</b> HB										
1/4	1/4	.235	1/2	2-1/2	3/4	.015	4	1	<a href="#">23003037</a>	SCM-UC4-I1/4C-M2.5HB AL40
5/16	5/16	.294	5/8	2-1/2	7/8	.015	4	1	<a href="#">23003038</a>	SCM-UC4-I5/16C-M2.5HB AL40
3/8	3/8	.353	3/4	2-1/2	1	.020	4	1	<a href="#">23003039</a>	SCM-UC4-I3/8C-M2.5HB AL40
1/2	1/2	.470	1	3	1-1/2	.020	4	1	<a href="#">23003040</a>	SCM-UC4-I1/2C-M3HB AL40
5/8	5/8	.588	1-1/4	3-1/2	1-3/4	.020	4	1	<a href="#">23003041</a>	SCM-UC4-I5/8C-M3.5HB AL40
3/4	3/4	.705	1-1/2	4	2-1/4	.020	4	1	<a href="#">23003042</a>	SCM-UC4-I3/4C-M4HB AL40



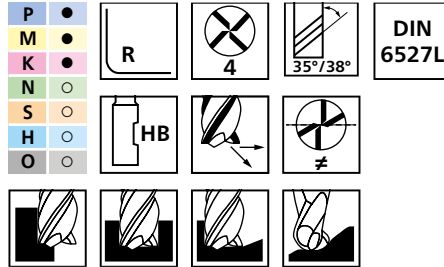
# Universal solid tungsten carbide end mills

Universal end mill with four flutes UC4



## Radius

End mills for various applications, from roughing through to finishing. The radius design is also suitable for free-form profile cutting. The solid tungsten carbide end mills can be used universally on a large number 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 [Inch]	DCON [Inch]	DN [Inch]	APMX [Inch]	LF [Inch]	LU [Inch]	RE [Inch]	ZEPF		Item no.	Designation
<b>Long HB</b>										
5/16	5/16	.294	5/8	2-1/2	7/8	.015	4	1	<a href="#">23003052</a>	SCM-UC4-I5/16R0.015-M2.5HB AL40
						.03	4	1	<a href="#">23003053</a>	SCM-UC4-I5/16R0.03-M2.5HB AL40
3/8	3/8	.353	3/4	2-1/2	1	.03	4	1	<a href="#">23003054</a>	SCM-UC4-I3/8R0.03-M2.5HB AL40
						.06	4	1	<a href="#">23003055</a>	SCM-UC4-I3/8R0.06-M2.5HB AL40
1/2	1/2	.470	1	3	1-1/2	.06	4	1	<a href="#">23003056</a>	SCM-UC4-I1/2R0.06-M3HB AL40
					1-1/2	.09	4	1	<a href="#">23003057</a>	SCM-UC4-I1/2R0.09-M3HB AL40
5/8	5/8	.588	1-1/4	3-1/2	1-3/4	.09	4	1	<a href="#">23003058</a>	SCM-UC4-I5/8R0.09-M3.5HB AL40
						.125	4	1	<a href="#">23003059</a>	SCM-UC4-I5/8R0.125-M3.5HB AL40
3/4	3/4	.705	1-1/2	4	2-1/4	.125	4	1	<a href="#">23003060</a>	SCM-UC4-I3/4R0.125-M4HB AL40

### Recommended peripheral speeds [SFPM]

Material group			Specification/ example material	Suitability	Side milling $a_p = 1.5 \times DC$ ; $a_e = 0.05 \times DC$ 					
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]				
						1/4	5/16	3/8	1/2	5/8
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	656	.0015	.0016	.0021	.0027	.0031
			500 to 700 N/mm <sup>2</sup>	•	525	.0015	.0016	.0021	.0027	.0031
			700 to 1,000 N/mm <sup>2</sup>	•	394	.0015	.0016	.0021	.0027	.0031
			1,000 to 1,400 N/mm <sup>2</sup>	•	328	.0010	.0012	.0015	.0021	.0025
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	•	262	.0010	.0010	.0015	.0021	.0025
		Austenitic	e.g. 1.4301, 1.4571	•	328	.0010	.0012	.0015	.0021	.0025
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362, 1.4462	○	213	.0008	.0010	.0011	.0017	.0020
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	558	.0013	.0016	.0021	.0027	.0031
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	459	.0013	.0016	.0021	.0027	.0031
N	Non-ferrous metals	Aluminum	Al up to 10% Si	•	1115	.0013	.0016	.0021	.0027	.0031
			Al > 10% Si	○	984	.0013	.0016	.0021	.0027	.0031
		Copper, brass, bronze and red brass		○	1115	.0013	.0016	.0021	.0027	.0031
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	•	131	.0008	.0010	.0011	.0015	.0018
		Pure titanium		•	262	.0008	.0010	.0011	.0015	.0018
		Titanium alloys		•	230	.0008	.0010	.0011	.0015	.0018
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	197	.0010	.0012	.0011	.0015	.0018
			up to 58 HRC							
			> 58 HRC							
O	Other	Thermoplastics		○	984	.0013	.0016	.0021	.0027	.0031
		Duroplastics								
		GRP/CRP reinforced plastics, graphite								

• = highly recommended    ○ = recommended



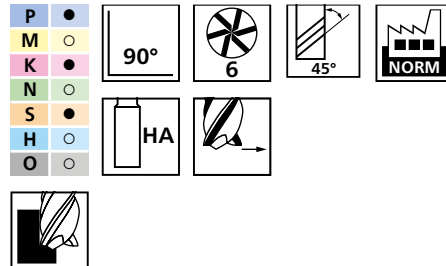
# Universal solid tungsten carbide end mills

Universal end mill with six flutes UC6



## Sharp corner design

End mills for finishing and for trimming of workpiece contours. The low tool deflection allows very precise working. The solid tungsten carbide end mills are suitable for universal use 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 [Inch]	DCON [Inch]	APMX [Inch]	LF [Inch]	ZEFP		Item no.	Designation
<b>Long HA</b>							
1/4	1/4	1/2	2-1/2	6	1	<a href="#">23003061</a>	SCM-UC6-I1/4S-M2.5HA AL40
5/16	5/16	5/8	2-1/2	6	1	<a href="#">23003062</a>	SCM-UC6-I5/16S-M2.5HA AL40
3/8	3/8	3/4	2-1/2	6	1	<a href="#">23003063</a>	SCM-UC6-I3/8S-M2.5HA AL40
1/2	1/2	1	3	6	1	<a href="#">23003064</a>	SCM-UC6-I1/2S-M3HA AL40
5/8	5/8	1-1/4	3-1/2	6	1	<a href="#">23003065</a>	SCM-UC6-I5/8S-M3.5HA AL40



### Recommended peripheral speeds [SFPM]

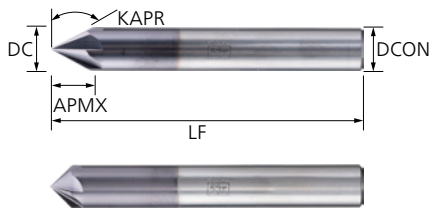
Material group			Specification/ example material	Suitability	Chamfering/deburring $a_p = 0.2 \times DC$ ; $a_e = 0.1 \times DC$ 				
					Cutting speed $v_c$ [ft./min]	Tooth feed $f_z$ [in./tooth] for cutting diameter DC [in.]			
						1/8	1/4	3/8	1/2
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	590	.0004	.0019	.0032	.0058
			500 to 700 N/mm <sup>2</sup>	•	525	.0004	.0019	.0032	.0058
			700 to 1,000 N/mm <sup>2</sup>	•	460	.0004	.0010	.0017	.0031
			1,000 to 1,400 N/mm <sup>2</sup>	•	400	.0004	.0010	.0017	.0031
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	•	250	.0004	.0010	.0017	.0031
		Austenitic	e.g. 1.4301, 1.4571	•	325	.0004	.0010	.0017	.0031
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362, 1.4462	•	200	.0004	.0010	.0017	.0031
K	Cast iron	Cast iron with flake graphite (GJL, GG, grey cast iron)	up to 180 HB	•	590	.0008	.0019	.0032	.0058
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	460	.0004	.0010	.0017	.0031
N	Non-ferrous metals	Aluminum	Al up to 10% Si	•	990	.0008	.0019	.0032	.0058
			Al > 10% Si	•	850	.0008	.0019	.0032	.0058
		Copper, brass, bronze and red brass		•	990	.0008	.0019	.0032	.0058
S	Super and titanium alloys	Heat-resistant super alloys	Based on Fe, Ni and Co	○	160	.0004	.0010	.0017	.0031
		Pure titanium		○	460	.0004	.0010	.0017	.0031
		Titanium alloys		○	230	.0004	.0010	.0017	.0031
H	Hard steels and chilled castings	Heat-treated and hardened steels	up to 50 HRC	○	230	.0004	.0010	.0017	.0031
			up to 58 HRC						
			> 58 HRC						
O	Other	Thermoplastics		○	990	.0008	.0019	.0032	.0058
		Duroplastics							
		GRP/CRP reinforced plastics, graphite							

• = highly recommended    ○ = recommended



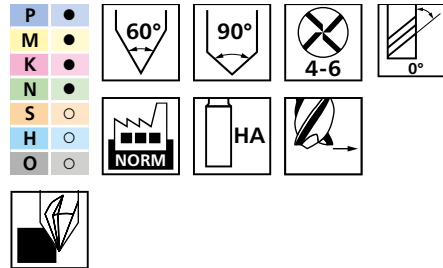
# Universal solid tungsten carbide end mills

## Universal deburring end mill UD



### Conical shape

End mills for deburring and chamfering. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.




#### Special features:

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

DC [Inch]	DCON [Inch]	APMX [Inch]	LF [Inch]	KAPR	ZEFP		Item no.	Designation
<b>60° HA</b>					HA			
1/8	1/8	7/64	1-1/2	60	4	1	23003016	SCM-UD4-I1/8A60°-HA AL40
1/4	1/4	7/32	2-1/2	60	4	1	23003017	SCM-UD4-I1/4A60°-HA AL40
3/8	3/8	21/64	2-1/2	60	6	1	23003018	SCM-UD6-I3/8A60°-HA AL40
1/2	1/2	7/16	3	60	6	1	23003019	SCM-UD6-I1/2A60°-HA AL40
<b>90° HA</b>					HA			
1/8	1/8	1/16	1-1/2	45	4	1	23003020	SCM-UD4-I1/8A90°-HA AL40
1/4	1/4	1/8	2-1/2	45	4	1	23003021	SCM-UD4-I1/4A90°-HA AL40
3/8	3/8	3/16	2-1/2	45	6	1	23003022	SCM-UD6-I3/8A90°-HA AL40
1/2	1/2	1/4	3	45	6	1	23003023	SCM-UD6-I1/2A90°-HA AL40

### Recommended peripheral speeds [SFPM]

Material group			Specification/ example material	Suitability	Profile milling – use of tip 											
					a <sub>p</sub>	a <sub>e</sub>	Cutting speed v <sub>c</sub> [ft./min]	Tooth feed f <sub>t</sub> [in./tooth] for cutting diameter DC [in.]								
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	up to 0.1 x D	up to 0.3 x D	2950	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
			500 to 700 N/mm <sup>2</sup>	•	up to 0.1 x D	up to 0.3 x D	2300	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
			700 to 1,000 N/mm <sup>2</sup>	•	up to 0.1 x D	up to 0.3 x D	1800	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
			1,000 to 1,400 N/mm <sup>2</sup>	•	up to 0.06 x D	up to 0.3 x D	1300	.0006	.0011	.0017	.0018	.0021	.0027	.0031	.0038	
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	•	up to 0.06 x D	up to 0.3 x D	600	.0006	.0011	.0017	.0018	.0021	.0027	.0031	.0038	
			Austenitic	e.g. 1.4301, 1.4571	•	up to 0.06 x D	up to 0.3 x D	425	.0006	.0011	.0017	.0018	.0021	.0027	.0031	.0038
			High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362, 1.4462	○	up to 0.06 x D	up to 0.3 x D	325	.0004	.0008	.0013	.0016	.0019	.0025	.0027	.0034
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	2625	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
			Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	up to 0.1 x D	up to 0.3 x D	2450	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056
N	Non-ferrous metals	Aluminum	Al up to 10% Si	○	up to 0.1 x D	up to 0.3 x D	3925	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
			Al > 10% Si	•	up to 0.1 x D	up to 0.3 x D	2800	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
		Copper, brass, bronze and red brass		•	up to 0.1 x D	up to 0.3 x D	3600	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
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	660	.0004	.0008	.0013	.0016	.0019	.0025	.0027	.0034	
			up to 58 HRC	○	up to 0.06 x D	up to 0.3 x D	490	.0004	.0008	.0013	.0016	.0019	.0025	.0027	.0034	
			> 58 HRC													
O	Other	Thermoplastics		○	up to 0.1 x D	up to 0.3 x D	3950	.0010	.0021	.0027	.0029	.0030	.0038	.0047	.0056	
		Duroplastics														
		GRP/CRP reinforced plastics, graphite														

• = highly recommended    ○ = recommended




# Cutting tools for stationary applications

Universal full radius ball nose end mill UB



## Recommended peripheral speeds [SFPM]

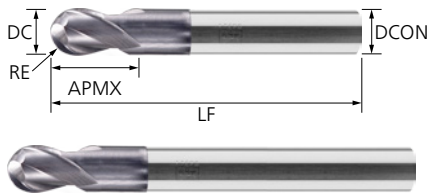
Material group			Specification/ example material	Suitability	Profile milling – use of shoulder 										
					a <sub>p</sub>	a <sub>e</sub>	Cutting speed v <sub>c</sub> [ft./min]	Tooth feed f <sub>t</sub> [in./tooth] for cutting diameter DC [in.]							
								1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4
P	Steel	All types of steel and cast steel up to 1,400 N/mm <sup>2</sup>	up to 500 N/mm <sup>2</sup>	•	up to 0.1 x D	up to 0.45 x D	1870	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
			500 to 700 N/mm <sup>2</sup>	•	up to 0.1 x D	up to 0.45 x D	1475	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
			700 to 1,000 N/mm <sup>2</sup>	•	up to 0.1 x D	up to 0.45 x D	1150	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
			1,000 to 1,400 N/mm <sup>2</sup>	•	up to 0.1 x D	up to 0.45 x D	820	.0008	.0019	.0025	.0027	.0030	.0042	.0047	.0056
M	Stainless steel	Ferritic and martensitic	e.g. 1.4105, 1.4122	•	up to 0.1 x D	up to 0.45 x D	425	.0008	.0019	.0025	.0027	.0030	.0042	.0047	.0056
		Austenitic	e.g. 1.4301, 1.4571	•	up to 0.1 x D	up to 0.45 x D	260	.0008	.0019	.0025	.0027	.0030	.0042	.0047	.0056
		High-temperature-resistant and ferritic-austenitic (duplex)	e.g. 1.4362, 1.4462	◦	up to 0.1 x D	up to 0.45 x D	200	.0006	.0015	.0021	.0023	.0026	.0033	.0039	.0047
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	1800	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
		Cast iron with nodular graphite (GJS, GGG)	160 to 260 HB	•	up to 0.1 x D	up to 0.45 x D	1640	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
N	Non-ferrous metals	Aluminum	Al up to 10% Si	◦	up to 0.1 x D	up to 0.45 x D	2460	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
			Al > 10% Si	•	up to 0.1 x D	up to 0.45 x D	1975	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
		Copper, brass, bronze and red brass		•	up to 0.1 x D	up to 0.45 x D	2300	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
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	490	.0008	.0019	.0025	.0027	.0030	.0042	.0047	.0056
			up to 58 HRC	◦	up to 0.1 x D	up to 0.45 x D	360	.0008	.0019	.0025	.0027	.0030	.0042	.0047	.0056
			> 58 HRC												
O	Other	Thermoplastics		◦	up to 0.1 x D	up to 0.45 x D	2475	.0017	.0030	.0042	.0043	.0045	.0058	.0070	.0084
		Duroplastics													
		GRP/CRP reinforced plastics, graphite													

• = highly recommended    ◦ = recommended



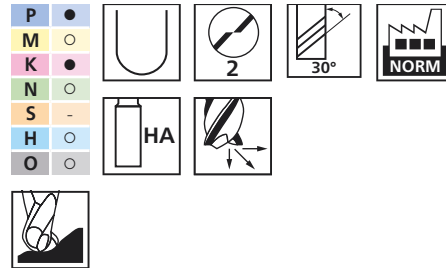
# Universal solid tungsten carbide end mills

## Universal full radius ball nose end mill UB



### Full radius

End mills for free-form profile cutting. The solid tungsten carbide end mills are suitable for universal use on a variety of materials.



### Special features:

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

D <sub>c</sub> [Inch]	D <sub>CON</sub> [Inch]	APMX [Inch]	LF [Inch]	RE [Inch]	ZEFP		Item no.	Designation
<b>Long HA</b> HA								
1/8	1/8	1/4	2	1/16	2	1	<a href="#">23003000</a>	SCM-UB2-I1/8R-M2HA AL40
3/16	3/16	3/8	2	3/32	2	1	<a href="#">23003001</a>	SCM-UB2-I3/16R-M2HA AL40
1/4	1/4	1/2	2	1/8	2	1	<a href="#">23003002</a>	SCM-UB2-I1/4R-M2HA AL40
5/16	5/16	5/8	2-1/2	5/32	2	1	<a href="#">23003003</a>	SCM-UB2-I5/16R-M2.5HA AL40
3/8	3/8	3/4	2-1/2	3/16	2	1	<a href="#">23003004</a>	SCM-UB2-I3/8R-M2.5HA AL40
1/2	1/2	1	3	1/4	2	1	<a href="#">23003005</a>	SCM-UB2-I1/2R-M3HA AL40
5/8	5/8	1-1/4	3-1/2	5/16	2	1	<a href="#">23003006</a>	SCM-UB2-I5/8R-M3.5HA AL40
3/4	3/4	1-1/2	4	3/8	2	1	<a href="#">23003007</a>	SCM-UB2-I3/4R-M4HA AL40
<b>Extra long HA</b> HA								
1/8	1/8	1/4	3	1/16	2	1	<a href="#">23003008</a>	SCM-UB2-I1/8R-M3HA AL40
3/16	3/16	3/8	3	3/32	2	1	<a href="#">23003009</a>	SCM-UB2-I3/16R-M3HA AL40
1/4	1/4	1/2	3-1/2	1/8	2	1	<a href="#">23003010</a>	SCM-UB2-I1/4R-M3.5HA AL40
5/16	5/16	5/8	4	5/32	2	1	<a href="#">23003011</a>	SCM-UB2-I5/16R-M4HA AL40
3/8	3/8	3/4	4	3/16	2	1	<a href="#">23003012</a>	SCM-UB2-I3/8R-M4HA AL40
1/2	1/2	1	4-1/2	1/4	2	1	<a href="#">23003013</a>	SCM-UB2-I1/2R-M4.5HA AL40
5/8	5/8	1-1/4	5	5/16	2	1	<a href="#">23003014</a>	SCM-UB2-I5/8R-M5HA AL40
3/4	3/4	1-1/2	6	3/8	2	1	<a href="#">23003015</a>	SCM-UB2-I3/4R-M6HA AL40



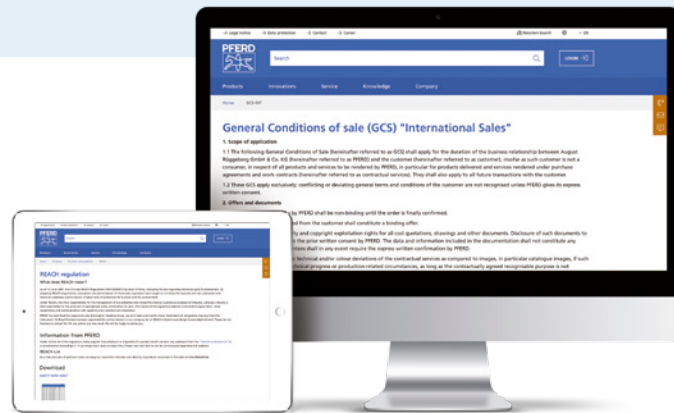


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Our new products have **blue** item numbers in the Tool Manual. Discontinued products are in *italics* and identified accordingly in the corresponding product tables.



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## REACH Regulation (EC) No. 1907/2006

By adopting REACH (registration, evaluation and authorisation of chemicals), legislators have sought to minimize the hazards and risks associated with chemical substances and to ensure a higher level of protection for humans and the environment.



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## PFERD repair service

Our highly experienced team at our Marienheide plant in Germany ensures that repairs are carried out quickly and looks after the provision of spare parts. Please send any queries to: [pferd.power.tools@pferd.com](mailto:pferd.power.tools@pferd.com)