TC burrs for tough applications
especially in foundries, dockyards and steel constructions

PFERD

TRUST BLUE

- Innovative high-performance cuts providing exceptional impact resistance
- Very robust, high-performance cuts for minimizing damages such as tooth chipping/ breakage and splintering
- Developed specifically for applications involving high impact loads

TC burrs for tough applications

General information

The TOUGH and TOUGH-S cuts have been specially designed for tough operating conditions in dockyards, foundries and steel constructions. They are also ideal for use in all manufacturing sectors where, due to the difficult production environment, tooth breakages or other damage to conventional burrs is a frequent occurrence.

Application examples:

- High-impact applications, due to use of shank extensions
- Heavy-duty applications, due to angled working
- Applications with a large surface contact between workpiece and burr
- Milling of narrow contours
- Applications where high rotational speeds are not available

Advantages:

- Innovative, special cuts providing exceptional impact resistance
- Minimizing of tooth chipping/breakage, splintering and burr failures due to very robust, high-performance cuts
- Also useable in the low rotational speed range

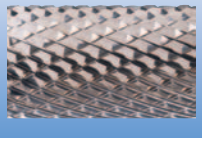
Note:

- Due to their extreme impact resistance, they can perfectly be used as long shank variants. Available as products made to order with any shank length. Please contact us.
- The TOUGH and TOUGH-S cuts can be used on materials up to 55 HRC. For harder materials, it is recommended to perform trials beforehand.

Cut TOUGH

Tungsten carbide burrs with TOUGH cut are particularly aggressive and are characterized by high stock removal.

Cut TOUGH-S



Tungsten carbide burrs with TOUGH-S cut are characterized by smooth milling and high stock removal.

Recommended rotational speed range

To determine the recommended cutting speed range [m/min], please proceed as follows:

❶ Select the material group to be machined
❷ Select the cut
❸ Establish the cutting speed range

To determine the recommended rotational speed range, please proceed as follows:

❹ Select the required burr diameter
❺ The cutting speed range and the burr diameter determine the recommended rotational speed range

❶ Material group			Application	❷ Cut	❸ Cutting speed
Steel, cast steel	Non-hardened, non-heat-treated steels up to 1,200 N/mm² (< 38 HRC)	Construction steels, carbon steels, tool steels, non-alloyed steels, case-hardened steels, cast steel	Coarse stock removal with impact load	TOUGH	250–600 m/min
				TOUGH-S	
	Hardened, heat-treated steels over 1,200 N/mm² (> 38 HRC)	Tool steels, tempering steels, alloyed steels, cast steel		TOUGH	250–350 m/min
				TOUGH-S	
Non-ferrous metals	High-temperature-resistant materials	Nickel-based and cobalt-based alloys (engine and turbine construction)	Coarse stock removal with impact load	TOUGH	250–450 m/min
				TOUGH-S	
Cast iron	Grey cast iron, white cast iron	Cast iron with flake graphite EN-GJL (GG), with nodular graphite/ nodular cast iron EN-GJS (GGG), white annealed cast iron EN-GJMW (GTW), black cast iron EN-GJMB (GTS)	Coarse stock removal with impact load	TOUGH	250–600 m/min
				TOUGH-S	

Example:
TC burr,
Cut TOUGH
Burr dia.12 mm.
Coarse stock removal with impact load on non-hardened, non-heat-treated steels.
Cutting speed: 250–600 m/min
Rotational speed**: 7,000–16,000 RPM**

❹ Burr dia. [mm]	❺ Cutting speed [m/min]			
	250	350	450	600
	Rotational speed [RPM]			
8	10,000	14,000	18,000	24,000
10	8,000	11,000	14,000	19,000
12	7,000	9,000	12,000	16,000
16	5,000	7,000	9,000	12,000

You will find our extensive range of tungsten carbide burrs in the PFERD Tool Manual, Catalogue 202.

PFERDVIDEO

You will receive more information here or at www.pferd.com

Minimized tooth breakage

Chipping, tooth failures and major burr damage are often encountered in applications involving high impact loads.

The TOUGH and TOUGH-S cuts have been especially developed to resist high impact loads. The longer tool life as well as the high stock removal of these tools result in greater cost-effectiveness compared to conventional burrs.

TC burrs with long shanks

TC burrs with TOUGH and TOUGH-S cuts can perfectly be used as long shank variants. For safety reasons, **tungsten carbide burrs with longer shanks** must be operated at substantially lower rotational speeds. For more information on TC burrs with long shanks and on rotational speeds, please refer to page 7.

Use only **rigid clamping systems and tool drives** to avoid safety hazards!

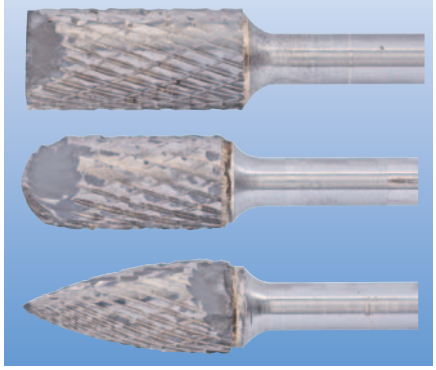
Safety notes:

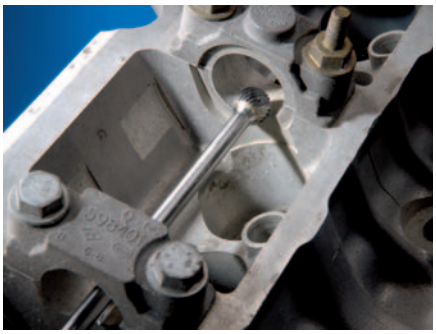
= Wear eye protection!

= Wear hearing protection!

= Read the safety instructions!

Tooth chipping / failure on conventional burrs



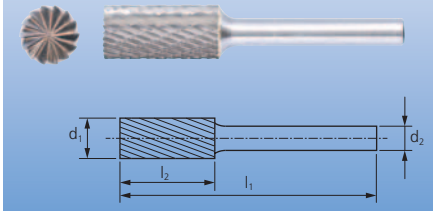


TC burrs cut TOUGH and TOUGH-S

Cylindrical burr according to DIN 8032.
Shape ZYAS with circumferential and end cut.

Ordering example:
EAN 4007220**769997**
ZYAS 0820/6 TOUGH
Please complete the description with the desired cut.

Cylindrical shape ZYA
Cylindrical shape ZYAS with end cut

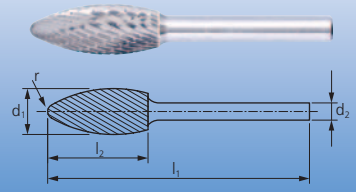


Description	Cut		Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	
	TOUGH	TOUGH-S				
	EAN 4007220					
Shank dia. 6 mm without end cut						
ZYA 0820/6	895504	-	6	8 x 20	55	1
ZYA 1020/6	895658	-	6	10 x 20	60	1
ZYA 1225/6	895665	895672	6	12 x 25	65	1
Shank dia. 6 mm with end cut						
ZYAS 0820/6	769997	-	6	8 x 20	60	1
ZYAS 1020/6	770023	-	6	10 x 20	60	1
ZYAS 1225/6	869109	-	6	12 x 25	65	1
Shank dia. 8 mm with end cut						
ZYAS 1225/8	770054	-	8	12 x 25	65	1

TC burrs for tough applications

TC burrs cut TOUGH and TOUGH-S

Flame shape

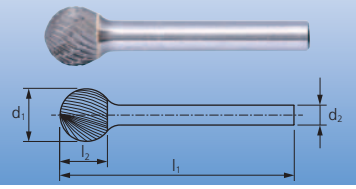


Flame-shaped burr according to ISO 7755/8.

Ordering example:
EAN 4007220**770061**
B 0820/6 TOUGH

Description	Cut TOUGH EAN 4007220	Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	Radius r [mm]	
Shank dia. 6 mm						
B 0820/6	770061	6	8 x 20	60	1.5	1
B 1230/6	770085	6	12 x 30	70	2.1	1
Shank dia. 8 mm						
B 1230/8	770092	8	12 x 30	70	2.1	1

Ball shape KUD

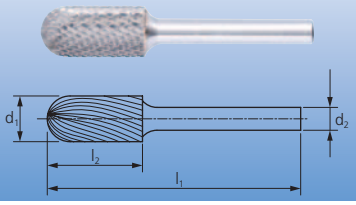


Ball-shaped burr according to DIN 8032.

Ordering example:
EAN 4007220**770160**
KUD 1210/6 TOUGH

Description	Cut TOUGH EAN 4007220	Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	
Shank dia. 6 mm					
KUD 0807/6	955383	6	8 x 7	47	1
KUD 1009/6	953037	6	10 x 9	49	1
KUD 1210/6	770160	6	12 x 10	51	1

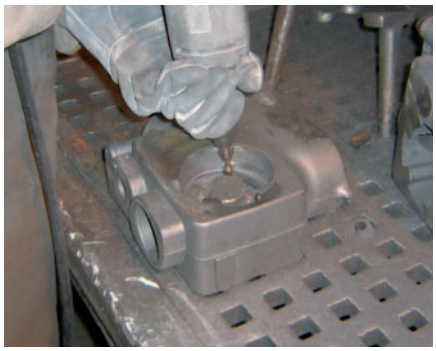
Cylindrical shape with radius end WRC



Cylindrical burr with radius end according to DIN 8032. Combination of cylindrical and ball-shaped geometries.

Ordering example:
EAN 4007220**770108**
WRC 0820/6 TOUGH
Please complete the description with the desired cut.

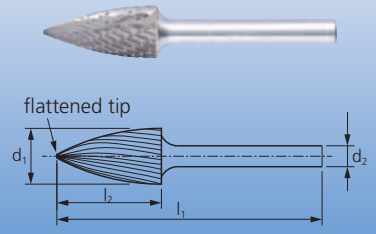
Description	Cut TOUGH	Cut TOUGH-S	Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	
	EAN 4007220					
Shank dia. 6 mm						
WRC 0820/6	770108	-	6	8 x 20	60	1
WRC 1020/6	770115	-	6	10 x 20	60	1
WRC 1225/6	770122	770139	6	12 x 25	65	1
Shank dia. 8 mm						
WRC 1225/8	769881	770153	8	12 x 25	65	1



Pointed tree-shaped burr according to DIN 8032, flattened tip.

Ordering example:
EAN 4007220**770252**
SPG 1020/6 TOUGH
Please complete the description with the desired cut.

Pointed tree shape SPG

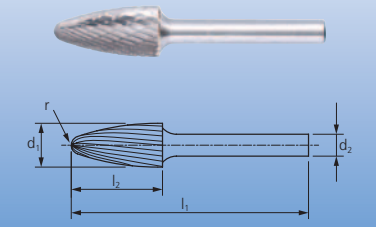


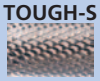
Description	Cut		Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	
	TOUGH 	TOUGH-S 				
	EAN 4007220					
Shank dia. 6 mm						
SPG 1020/6	770252	770269	6	10 x 20	60	1
SPG 1225/6	770276	-	6	12 x 25	65	1
Shank dia. 8 mm						
SPG 1225/8	770283	-	8	12 x 25	65	1

Tree-shaped burr with radius end according to DIN 8032.

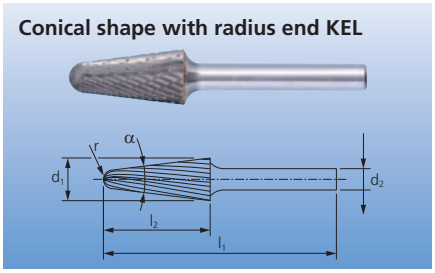
Ordering example:
EAN 4007220**770191**
RBF 0820/6 TOUGH
Please complete the description with the desired cut.

Tree shape with radius end RBF



Description	Cut		Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	Radius r [mm]	
	TOUGH 	TOUGH-S 					
	EAN 4007220						
Shank dia. 6 mm							
RBF 0820/6	770191	-	6	8 x 20	60	1.2	1
RBF 1020/6	770207	-	6	10 x 20	60	2.5	1
RBF 1225/6	770214	770238	6	12 x 25	65	2.5	1
RBF 1625/6	869116	-	6	16 x 25	65	4.9	1
Shank dia. 8 mm							
RBF 1225/8	770221	770245	8	12 x 25	65	2.5	1

Conical shape with radius end KEL

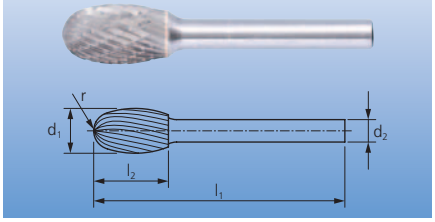


Conical burr with radius end according to DIN 8032.

Ordering example:
EAN 4007220**770320**
KEL 1225/6 TOUGH

Description	Cut TOUGH  EAN 4007220	Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	Winkel α	Radius r [mm]	
Shank dia. 6 mm							
KEL 1225/6	770320	6	12 x 25	65	14°	3.3	1
Shank dia. 8 mm							
KEL 1225/8	770337	8	12 x 25	65	14°	3.3	1

Oval shape TRE



Oval burr according to DIN 8032.

Ordering example:
EAN 4007220**770344**
TRE 1016/6 TOUGH

Description	Cut TOUGH  EAN 4007220	Shank dia. d_2 [mm]	Burr dia. x length d_1 x l_2 [mm]	Overall length l_1 [mm]	Radius r [mm]	
Shank dia. 6 mm						
TRE 1016/6	770344	6	10 x 16	56	4.0	1
TRE 1220/6	770351	6	12 x 20	60	5.0	1
Shank dia. 8 mm						
TRE 1220/8	770368	8	12 x 20	60	5.0	1

Set 1712 HM

Set 1712 HM contains five tungsten carbide burrs in the most common shapes and dimensions. The sturdy plastic box protects the tools from dirt and damage.
The burrs are secured at the shanks, facilitating the selection and withdrawal of the tools.
Five further unused slots are available for other burrs.

Contents:
5 tungsten carbide burrs,
shank diameter 6 mm, cut TOUGH
1 piece each:
WRC 1225/6 TOUGH
SPG 1225/6 TOUGH
RBF 1225/6 TOUGH
KEL 1225/6 TOUGH
TRE 1220/6 TOUGH

Description	Cut TOUGH  EAN 4007220	
Shank dia. 6 mm		
1712 HM	955635	1

Long shank variants – available on request

Tungsten carbide burrs for tough applications are optionally available in 150 and 200 mm shank lengths. They are particularly well suited for use in hard-to-reach areas. Because of their high impact resistance, they represent an optimum combination of a tungsten carbide burr and a long shank or shank extension, respectively.
Shanks may also be cut to length by the user.

Tungsten carbide burrs with special shank lengths

Safety notes:

When working with long shank burrs, the burr must be in contact with the workpiece (or inserted in the bore or slot to be machined) before the machine is turned on. As a rule, the tool must remain in contact with the workpiece for as long as the machine is running.

Failure to observe this procedure may result in shank failure and hence an increased accident risk. If the continuous contact between the tool and the workpiece is not guaranteed, the ❸ **maximum idling speeds** stated in the table **should not be exceeded**.

For safety reasons, the ❷ **maximum application speeds with contact to the workpiece** require a reduction in the recommended standard shank burr speed. The reduced speeds are stated in the table.

To determine the recommended rotational speed range, please proceed as follows:

❶ Select the required burr diameter
❷ For the maximum application speed [RPM] with workpiece contact, please refer to the right-hand side of the table

❶ Burr dia. [mm]	❸ Maximum idling speed [RPM] without contact to the workpiece		❷ Maximum application speed [RPM] with contact to the workpiece	
	Shank length [mm]			
	75	150	75	150
6	6,000	-	15,000	-
8	-	6,000	-	11,000
12	-	3,000	-	7,000
16	-	2,000	-	5,000

TC burrs for tough applications

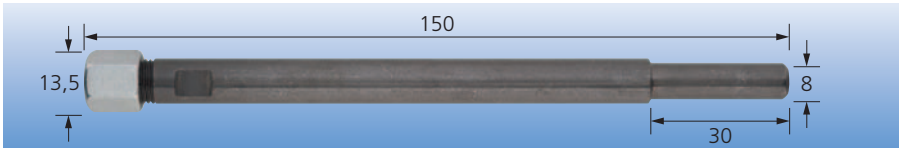
Drive spindle extensions

Burrs (shank dia. 3, 6 and 8 mm) can be extended with spindle extensions. They allow access to hard-to-reach areas. The spindle extension is mounted in the collet chuck of the tool drive (air-powered or electric), or in the handpiece of the flexible shaft. In some applications, spindle extensions are an efficient alternative to customized burrs with long shanks.

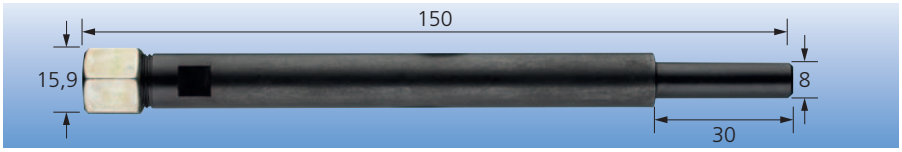
Safety notes:

- For safety reasons, it is not possible to use spindle extensions in combination with long shank burrs.
- For additional safety information, please refer to Catalogue 209.

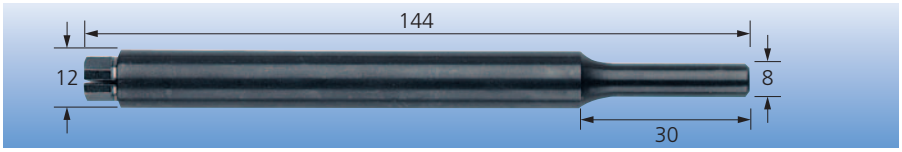
= Read the safety instructions!



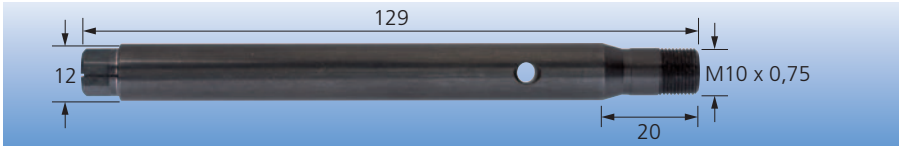
Extension SPV 150-6 S8
for shank diameter 6 mm



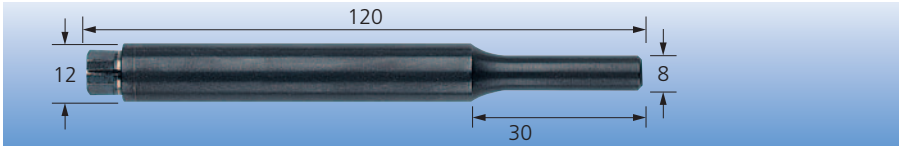
Extension SPV 150-8 S8
for shank diameter 8 mm



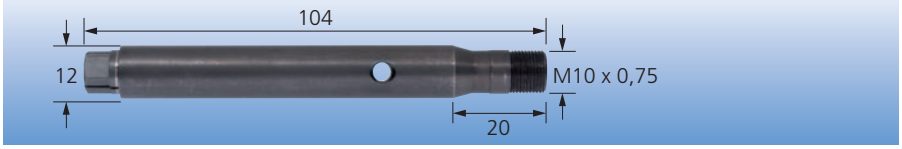
Extension SPV 100-6 S8
for shank diameter 6 mm



Extension SPV 100-6 SPG 6
for shank diameter 6 mm



Extension SPV 75-6 S8
for shank diameter 6 mm



Extension SPV 75-6 SPG 6
for shank diameter 6 mm

Description	EAN 4007220	Max. perm. speed [RPM]	Dia. mounting pin (drive/ handpiece) [mm]	Tool mounting [mm]	Overall length [mm]	Length mounting pin [mm]	Max. spindle dia. [mm]	Incl. collet dia. [mm]	Collet group	Net weight [kg]
SPV 75-6 SPG 6	333143	20,000	SPG 6	6	104	Special	12	6	10	0.073
SPV 75-6 S8	185278	20,000	8	6	120	30	12	6	10	0.076
SPV 100-6 SPG 6	656051	20,000	SPG 6	6	129	Special	12	6	10	0.096
SPV 100-6 S8	185261	20,000	8	6	144	30	12	6	10	0.098
SPV 150-6 S8	185315	10,000	8	6	150	30	13.5	-	-	0.082
SPV 150-8 S8	184400	10,000	8	8	150	30	15.9	-	-	0.110

More detailed information and ordering data for spindle extensions can be found in Catalogue 209.

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