PFERD Tough Burs

Tungsten Carbide Burs for Tough Applications

- Design optimized for hand-held applications.
- Special cut patterns minimize tooth chipping/breakage, splintering and bur head failures.
- Developed specifically for applications involving high impact loads.

PFERD Tough Burs

New in the PFERD Range: Innovative High-Performance Cuts

For heavy-duty applications in shipyards, foundries and steel construction, PFERD has developed two new special cut patterns for its tungsten carbide burs.

The new 3R and 3RS cuts represent a new PFERD product line designed especially for tough operating conditions. These tungsten carbide burs are characterized by their exceptional impact resistance and performance. The new cuts are ideal for all uses involving high mechanical shock or impact loads. Susceptibility to tooth chipping/breakage, splintering and bur head cracking has been effectively minimized. Even when milling at low RPM with an only moderately powerful machine, the occurrence of tooth failures is markedly reduced.

Like all other PFERD quality burs, our 3R and 3RS cut types distinguish themselves by their perfectly matched tooth geometry, number of teeth, helix angle, rake angle, and concentricity. Thanks to a very high stock removal capability over the entire service life, these tools deliver outstanding results in minimum time.

The new 3R and 3RS cuts are the latest addition to the existing PFERD range. They are not intended as substitutes for our proven standard cuts for general-use burs.

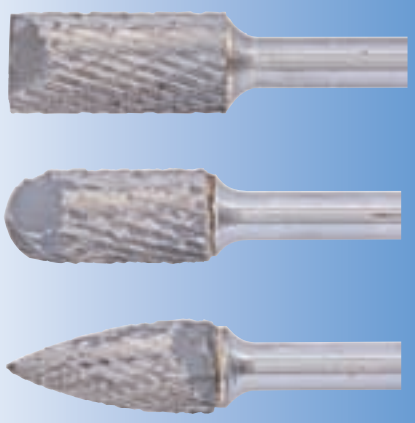
For the complete line of tungsten carbide burs please refer to our PFERD Catalogue 202, which we will gladly send to you upon request!

The new 3R and 3RS Cut Patterns Minimize Tooth Breakage on Tungsten Carbide Burs

Problem

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

Tooth Chipping / Failure



Thanks to perfectly matched production parameters, the new 3R and 3RS cut patterns will substantially reduce tooth failures on tungsten carbide burs.

Advantages of Tough Burs

- Reduced risk of damage or failure in hand-held applications.
- Less vibration, impact, and tooth breakage when used at below-recommended operating speeds.

Solutions and Advantages

Double Cut (3R)

- Cross cut.
- **Coarse and aggressive machining with high stock removal, even at low RPM.**

Diamond Cut (3RS)

- Cross cut.
- **Coarse machining with smoother bur operation, even at low RPM.**
- **Less aggressive than 3R cut.**

Distribution in Single-Bur Packs

Tungsten carbide burs featuring the new 3R and 3RS cut patterns are supplied in single-unit packs. The proven plastic box ensures an optimum protection of bur teeth. For easy differentiation from the remaining product range, burs with 3R and 3RS cuts are clearly marked.

Material Groups		Application	Cut	Recommended Cutting Rate
Non-hardened, non-heat treated steels up to 1200 N/mm² (< 35 HRC)	Constructional steels Carbon steels Tool steels Non-alloyed steels Case-hardened steels, Steel castings	Coarse machining = high stock removal with impact loading	Double Cut (3R)	850 - 2,000 SFPM
			Diamond Cut (3RS)	
Hardened, heat-treated steels exceeding 1200 N/mm² (> 35 HRC)	Tool steels Tempering steels Alloyed steels Steel castings		Double Cut (3R)	850 - 1,150 SFPM
			Diamond Cut (3RS)	
Cast iron	Grey cast iron Spheroidal graphite cast iron	Coarse machining = high stock removal with impact loading	Double Cut (3R)	850 - 2,000 SFPM
			Diamond Cut (3RS)	

Recommended Rotational Speeds [RPM] for Tungsten Carbide Burs for Tough Applications

See the table across for the recommended rotational speeds [RPM] of burs in the various diameters.
Note that optimum RPM is a function of the cutting rate [SFPM] as indicated in the table.

Example:
Tungsten carbide bur, cut 3R,
1/2" head diameter,
coarse machining of non-hardened and non heat-treated steels.
Cutting rate: 850 - 2,000 SFPM
Rotational speed: 7,000 - 16,000 RPM

Cutting Speed [SFPM]								
SFPM / Dia. [Inches]	850	1,000	1,150	1,300	1,500	1,650	2,000	2,950
	Rotational Speed [RPM]							
3/8	8,000	10,000	11,000	13,000	14,000	16,000	19,000	39,000
1/2	7,000	8,000	9,000	11,000	12,000	13,000	16,000	24,000
5/8	5,000	6,000	7,000	8,000	9,000	10,000	12,000	18,000

Safety Notes

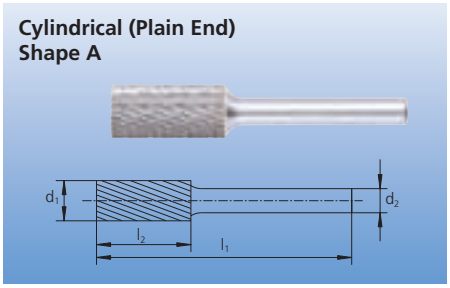
= Wear safety goggles!

= Use ear protection!

= Observe safety recommendations!

For safety reasons, **tungsten carbide burs with longer shafts** must be operated at substantially lower RPM levels (refer also to page 4).
Use only **rigid clamping systems and power tools** to avoid safety hazards!

Cylindrical (Plain End) Shape A



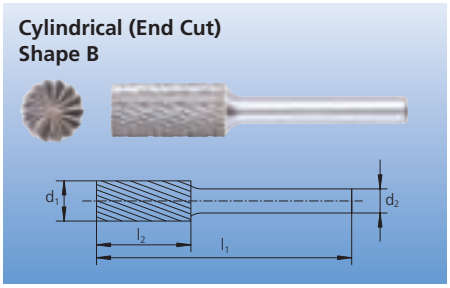
Cylindrical bur with plain end (uncut).

Application
- Deburring

PFERD Specification Number
ZYA

Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
				Double Cut (3R)	Diamond Cut (3RS)	
3/8 x 3/4	SA-3	1/4	2-1/2	22152	22153	1
1/2 x 1	SA-5	1/4	2-3/4	22156	22157	1

Cylindrical (End Cut) Shape B



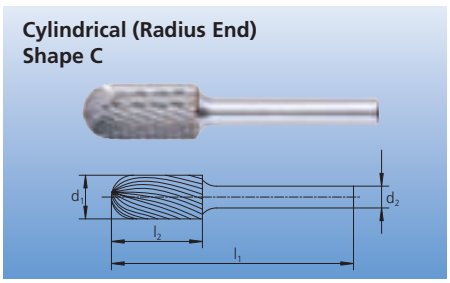
Cylindrical bur with end cut.

Application
- Interior contour work, i.e., peripheral and face milling

PFERD Specification Number
ZYAS

Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
				Double Cut (3R)	Diamond Cut (3RS)	
3/8 x 3/4	SB-3	1/4	2-1/2	22182	–	1
1/2 x 1	SB-5	1/4	2-3/4	22186	22187	1

Cylindrical (Radius End) Shape C



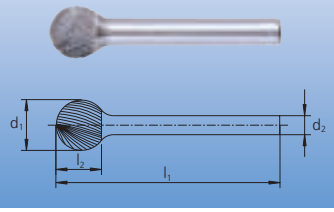
General-use shape (combination of cylindrical and spherical geometries).

Application
- Surface milling
- Contouring

PFERD Specification Number
WRC

Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
				Double Cut (3R)	Diamond Cut (3RS)	
3/8 x 3/4	SC-3	1/4	2-1/2	22212	–	1
3/8 x 3/4	SC-3	3/8	2-1/2	22873	22874	1
1/2 x 1	SC-5	1/4	2-3/4	22216	22217	1
1/2 x 1	SC-5	3/8	2-3/4	22875	22876	1
Extended Shank						
3/8 x 3/4	SC-3L6	1/4	6-5/8	22734	–	1

Ball
Shape D



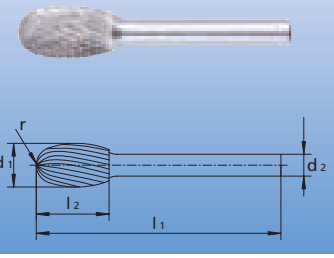
Ball-shaped bur.

Application
- Contouring
- Bore deburing
- Milling in preparation of build-up welding

PFERD Specification Number
KUD

	Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
					Double Cut (3R)	Diamond Cut (3RS)	
	1/2 x 7/16	SD-5	1/4	2-3/16	22244	22245	1
N!	5/8 x 9/16	SD-6	1/4	2-5/16	22246	--	1

Oval
Shape E



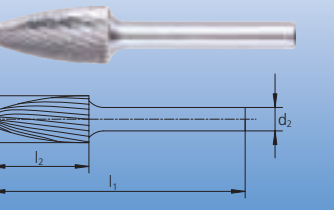
Oval bur.

Application
- Contouring

PFERD Specification Number
TRE

Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
				Double Cut (3R)	Diamond Cut (3RS)	
1/2 x 1	SE-5	1/4	2-3/4	22260	–	1

Tree (Radius End)
Shape F



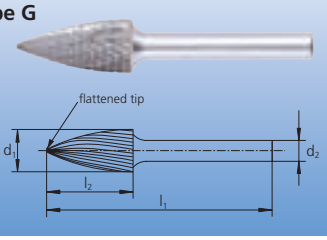
Tree-shaped bur.

Application
- Work on narrow workpiece contours

PFERD Specification Number
RBF

	Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
					Double Cut (3R)	Diamond Cut (3RS)	
	1/2 x 1	SF-5	1/4	2-3/4	22276	22277	1
	1/2 x 1	SF-5	3/8	2-3/4	22897	22898	1
N!	5/8 x 1	SF-6	1/4	2-3/4	22278		1
	Extended Shank						
	1/2 x 1	SF-5L6	1/4	6-7/8	22754	–	1

Tree (Pointed End)
Shape G



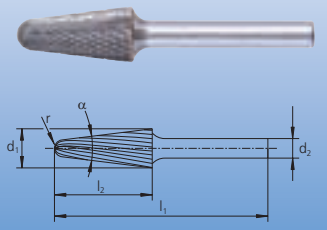
Bullet-shaped bur with flattened tip.

Application
- Work on narrow contours
- Milling of acute-angled surfaces

PFERD Specification Number
SPG

Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
				Double Cut (3R)	Diamond Cut (3RS)	
3/8 x 3/4	SG-3	1/4	2-1/2	22294	–	1
1/2 x 1	SG-5	1/4	2-3/4	22296	22297	1
N! 5/8 x 1	SG-6	1/4	2-3/4	22298		1
Extended Shank						
1/2 x 1	SG-5L6	1/4	6-7/8	22760	–	1

14° Taper (Radius End)
Shape L



Taper bur with radius end.
Angle α = 14°

Application
- Work on narrow workpiece contours and surfaces

PFERD Specification Number
KEL

Head Dia. x Length d_1 x l_2 [Inches]	SCTI No.	Shank Dia. d_2 [Inches]	Overall Length l_1 [Inches]	Cut Type and EDP Number		
				Double Cut (3R)	Diamond Cut (3RS)	
1/2 x 1-1/8	SL-4	1/4	3-1/16	22346	22347	1
Extended Shank						
1/2 x 1-1/8	SL-4L6	1/4	7-3/16	22774	–	1

Safety Notes

Special-length burs and burs with long shanks must be placed on the workpiece (or inserted in the bore or slot to be machined) before the machine is powered up. As a rule, the tool ought to 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.

Special Shapes and Long Shank Burs Available on Request

PFERD Tough Burs are available in 6" (150mm) and 8" (200 mm) shank lengths. These tools are particularly well suited for use in hard-to-reach areas. Because of their high impact-resistance characteristics, they represent an optimum combination of a tungsten carbide bur and a long shank or shank extension, respectively.
In addition, PFERD's full line of tungsten carbide burs can be special ordered with special shank diameters, shapes, head, lengths, diameters and cuts. Please inquire.

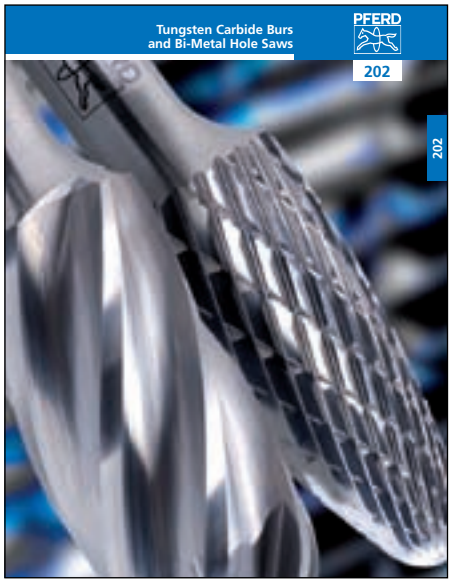
Burs with head diameter of 5/8" are available with 3/8" shank.
All burs are available with metric shanks by special order.

PFERD's Full Line of Tungsten Carbide Burs

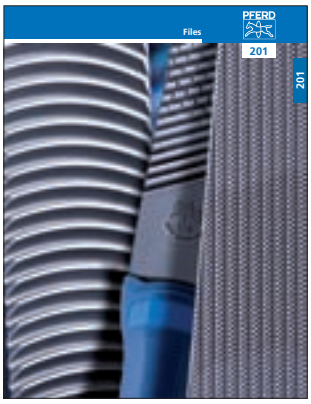
PFERD is pleased to offer a wide range of tungsten carbide burs and bur sets in standard shapes and cuts for machining materials of virtually any hardness. We apply our high standards of superior performance to key parameters such as shape, number of flutes, spiral angle, rake angle, and concentricity, to assure smooth operating, reduced power tool wear, and operator comfort and safety.

Call our Customer Service Department to order your copy of the "PFERD Tungsten Carbide Burs and Hole Saws" catalogue today!

USA **(800) 342-9015**
Canada **(866) 245-1555**

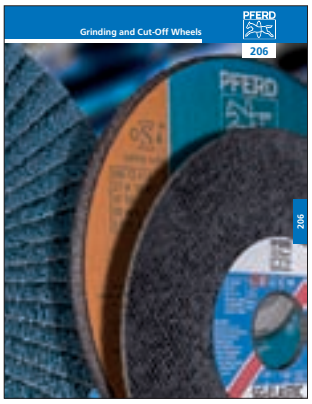


Quality Tools from One Source



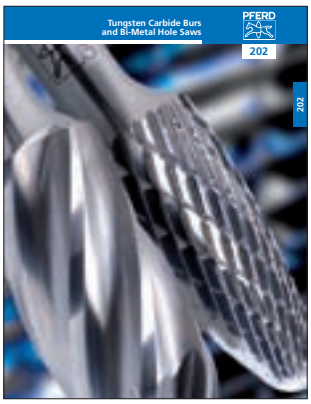
Catalogue 201

Files and Rasps



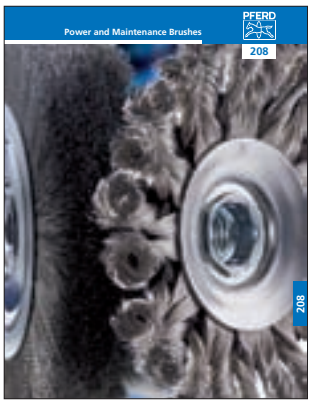
Catalogue 206

Grinding and
Cut-off Wheels



Catalogue 202

Tungsten Carbide Burs
and Hole Saws

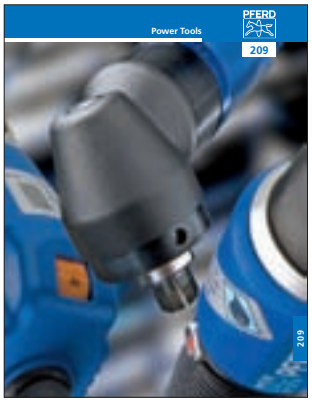


Catalogue 208

Power and
Maintenance Brushes

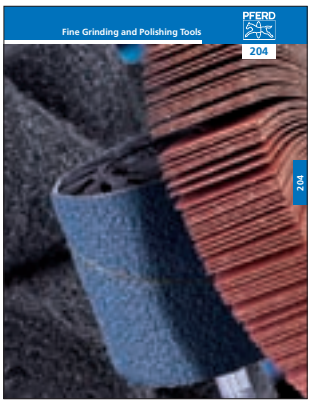
Catalogue 203

Mounted Points



Catalogue 209

Power Tools



Catalogue 204

Fine Grinding and
Polishing Tools

PFERD INC.
30 Jytek Drive · Leominster, MA 01453
Phone: (978) 840-6420 · Toll-Free: (800) 342-9015
Fax: (978) 840-6421
e-mail: sales@pferdusa.com · www.pferdusa.com

PFERD CANADA INC.
5570 McAdam Road · Mississauga, ONT L4Z1P1
Phone: (905) 501-1555 · Toll-Free: (866) 245-1555
Fax: (905) 501-1554
e-mail: sales@pferdcanada.ca · www.pferdcanada.ca

PFERD quality certified according to EN ISO 9001.

Printed in Germany. Subject to technical modification. **06/2010** 818 133