Diamond and CBN tools

PFERD

205

Diamond and CBN tools

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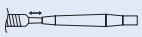
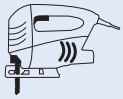
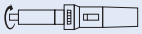
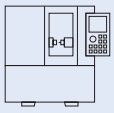
	Air-powered filing machine		Sabre saw
	Straight grinder		Stationary tool drives, robots, special machines

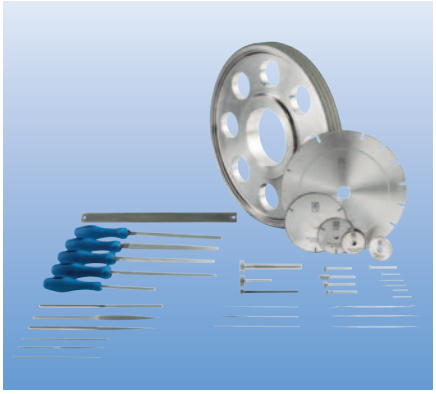
In use in many industries

The use of efficient tools for surface finishing and cutting of materials is an important factor for economic value in many processes and industries.

For certain materials and applications, tools with superhard abrasive like diamond or CBN (cubic boron nitride) abrasives provide a cost-effective alternative to conventional tools.

With their high hardness, they have a particularly long tool life and are an established problem-solver in many industries:

- Automotive industry and suppliers
- Energy industry
- Foundries (grey and nodular cast iron)
- Ceramic industry
- Plastics processing (GRP/CRP)
- Machine and plant construction
- Medical equipment
- Tool and mould construction
- Tool industry



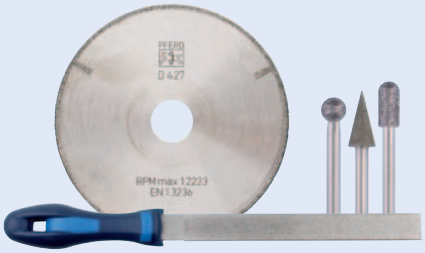
PFERDERGONOMICS®

The **PFERD**ERGONOMICS® programme aims at the long-term reduction of dust, noise and vibration levels produced by tools, and on perceptibly increasing tool haptics. The focus is on people.

Recognize straight away the areas where our tools offer you advantages. Tools with **PFERD**ERGONOMICS® properties are marked with corresponding pictograms.

Electroplated diamond and CBN tools are characterized by low dust generation due to their wear-resistant coating.

Diamond machinist's files are supplied with ergonomic file handles.



For further information and appropriate PFERD tools, please refer to the brochures "**PFERD**ERGONOMICS® – the focus is on people" and "Health and safety at the workplace – noise and vibration limits".

Packaging

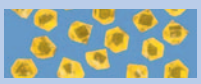
Diamond and CBN tool packaging is matched to the requirements of the industry. It protects the tools as much as possible from dirt and damage. The packaging units (PU) for the individual tools are listed in the product tables.

Diamond file sets and diamond machinist's files and sheets are supplied in practical, sturdy plastic boxes. These are ideal for storing the tools in the tool trolley or on the workbench.

Particularly large or heavy products made to order are supplied in sturdy wooden crates that protect the tools during transport.

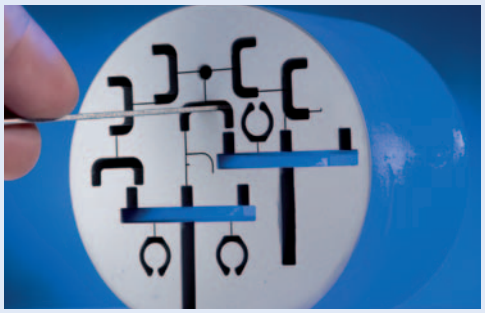
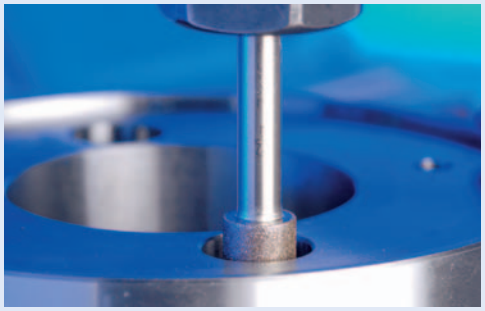
Colour coding system

Using the colour coding system, you recognize straightaway the abrasive of the tool.

Diamond = blue	CBN = red
	

PFERDVIDEO

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

General application ▶	Material ▶	Detailed application ▶
Filing 	■ Hardened steels ■ Tungsten carbide ■ Ceramic ■ Glass ■ Ferrite ■ Nickel- and titanium-based alloys	Precision filing
		Precision filing with air-powered filing machines
		Machining concave and convex surfaces
	■ Fibre-reinforced plastics (GRP/CRP)	Deburring, chamfering and breaking of edges
Grinding 	■ Tungsten carbide ■ Ceramic ■ Glass ■ Ferrite ■ Nickel- and titanium-based alloys	Grinding of bores, radii, contours, profiles and shoulders, as well as deburring and chamfering
		Internal grinding of bores
	■ Tungsten carbide	Sharpening of tungsten carbide tools
	■ Hardened steel materials up to approx. 54 HRC	Grinding of bores, radii, contours, profiles and shoulders, as well as deburring and chamfering
		Internal grinding of bores
	■ HSS (High Speed Steel)	Sharpening of HSS tools
	■ Fibre-reinforced plastics (GRP/CRP)	Deburring, chamfering and general grinding work
Cutting 	■ Tungsten carbide ■ Ceramic ■ Glass ■ Ferrite ■ Nickel- and titanium-based alloys	Cut-off grinding
	■ Fibre-reinforced plastics (GRP/CRP)	Cut-off grinding, trimming, making cut-outs and cutting to size of straight contours
		Sawing, trimming, making cut-outs and cutting to size of curved contours
	■ Grey and nodular cast iron	Separation of open risers, burrs, feeders, sprues, parting lines etc.

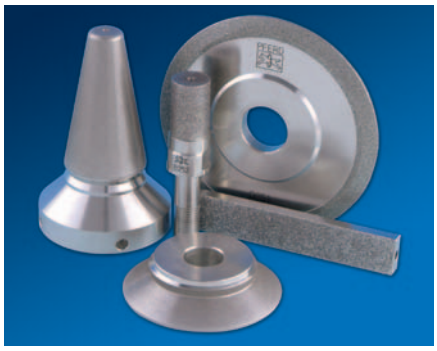
Customer-specific tools

PFERD specializes in the design, support and production of customer-specific electroplated tools.

Our production has a wide range of possibilities and can respond to individual customer requirements with a high degree of flexibility. It can accommodate almost all blank geometries with various grit sizes. The electroplated bond also makes the economic production of small batch sizes possible.

Our experienced technical advisors will be glad to visit you and develop individual tool solutions for your applications.

Further information on this subject can be found on page 10.



Associations

PFERD is an active member of the Association of German Abrasive Manufacturers (VDS), the Federation of European Producers of Abrasives (FEPA) and the Organization for the Safety of Abrasives (OSA). The national and international activities of those associations include the areas of safety, standardization, classification, and quality assurance.

FEPA

VDS Verband Deutscher Schleifmittelwerke

OSA®

Superhard abrasives

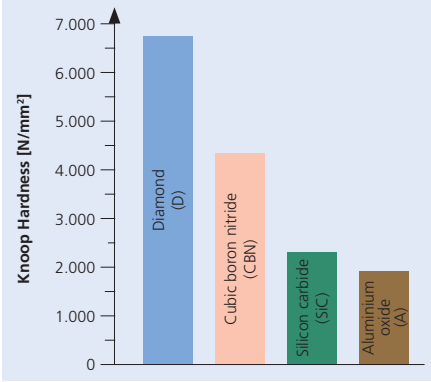
Diamond and CBN form the group of superhard abrasives.

Diamond is the hardest naturally occurring solid. It consists of pure carbon in crystalline structure. For grinding tools, the diamonds used are generally synthetic, produced at very high temperatures under high pressure. The properties of the abrasive can be optimized for the subsequent application of the tool.

CBN (cubic boron nitride) is the second-hardest solid known. It consists of boron and nitrogen in a crystalline structure.

For work on certain materials, diamond and CBN tools are an economic alternative to tools with conventional abrasives such as aluminium oxide and silicon carbide. Diamond and CBN grain is much harder and its cutting edges are very resistant to blunting. Diamond and CBN tools therefore enjoy a very long tool life.

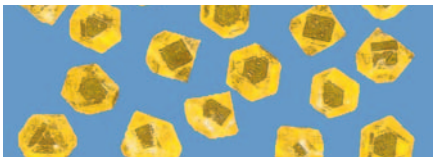
Hardness comparison of abrasives



Materials

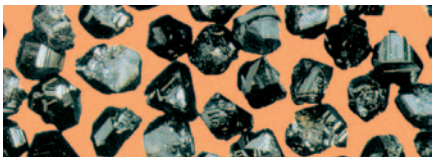
Diamond and CBN abrasives are used when materials cannot be machined with conventional abrasives such as aluminium oxide or silicon carbide. They also provide a more economical solution for some applications.

Due to high chemical wear, rotating diamond tools are not suitable for work on steel. CBN tools are used for these applications. The two abrasives complement each other ideally. In the adjacent overview, you will find various materials associated with the abrasives.



Diamond

- Duroplastics, in particular with glass or carbon fibre reinforcement (GRP, CRP)
- Ferrite (magnetic material)
- Glass
- Graphite and synthetic carbon
- Grey and nodular cast iron
- Tungsten carbide
- Nickel- or titanium-based superalloys
- Technical ceramics
- Wear-resistant coatings (powder metal alloys and hardfacing alloys)



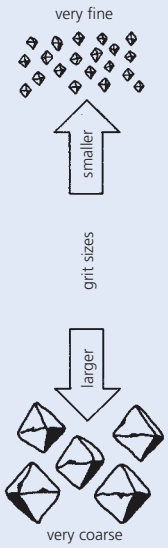
CBN

- Case-hardened steels
- Roller-bearing and ball-bearing steels
- Tool steels
- Other hardened steel materials with a hardness up to approx. 54 HRC

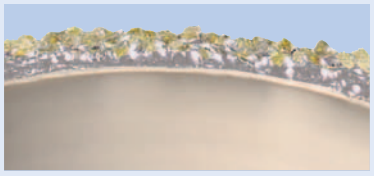
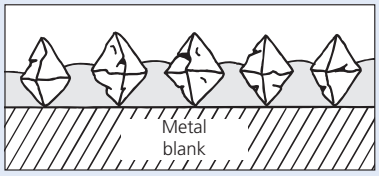
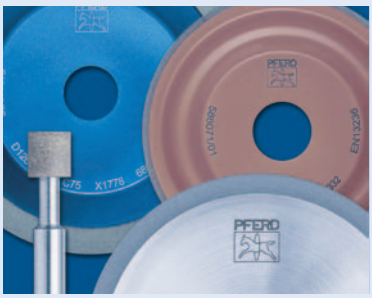
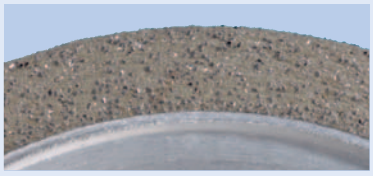
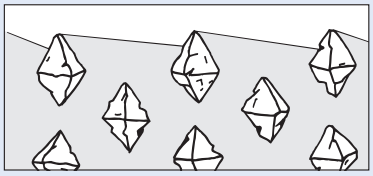
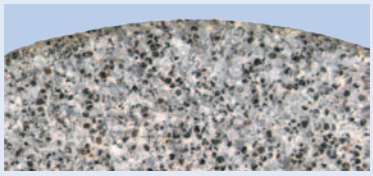
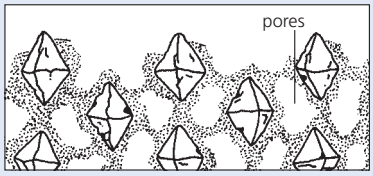
Grit sizes

The grit size data for diamond and CBN tools relate to the average grit diameter in µm. Thus, the higher the number specified in the grit designation, the coarser the grit size. A coarse grit size increases stock removal and surface roughness of the workpiece.

Selecting the optimum grit size depends on the intended application, the material to be machined, the tool drive employed and a wide range of other factors. As a general rule: The harder the material to be worked and the finer the desired surface roughness, the finer the selected grit size should be.



Grit sizes	Grit size designation [µm] ISO 6106 (FEPA standard)		Equivalent US mesh number/inch US Mesh Size
	Diamond	CBN	
Micro-grit	D 25	-	-
	D 46	B 46	325/400
	D 54	B 54	270/325
	D 64	B 64	230/270
	D 76	B 76	200/230
	D 91	B 91	170/200
	D 107	B 107	140/170
	D 126	B 126	120/140
	D 151	B 151	100/120
	D 181	B 181	80/100
	D 213	B 213	70/ 80
	D 251	-	60/ 70
	-	B 252	60/ 80
	D 301	B 301	50/ 60
	D 357	B 357	45/ 50
	D 427	B 427	40/ 50
	D 502	-	35/ 45
	D 602	-	30/ 40
	D 711	-	25/ 30
	D 852	-	20/ 30

	Electroplated bond	Resinoid bond	Ceramic bond
Bond type	  	  	  
Tool construction	The main characteristic of electroplated tools is the monolayer coating with diamond or CBN grit. The coating is provided by the fixation of abrasive grit onto a metal blank via an electrochemically deposited nickel layer. The nickel layer thickness is around half of the grit diameter used.	The abrasive coating of resinoid-bonded diamond and CBN tools consists of abrasive grit, bond and fillers. The bond is tightly pressed, i.e. it has no pores. The sintered **metal bond** is closely related to the resinoid bond. This is characterized by a higher grit retention strength and dimensional stability when compared to the resinoid bond.	The abrasive coating of ceramic-bonded CBN tools consists of abrasive grit, bond and pores. A fundamental feature of the ceramic bond is the open coating structure.
Advantages	■ Shorter work time due to the coating type ■ Reduction in unproductive idle times because dressing and profiling are not required ■ Reduction in tool costs due to the monolayer coating and the possibility of recoating ■ Individual tool profiles ■ Constant tool geometry due to the monolayer coating Further information on the advantages of electroplated tools can be found on page 19.	Resinoid bond: ■ Short grinding times because the low bond hardness enables very high stock removal rates ■ Low heat generation, i.e. cooler grinding Metal bond: ■ High dimensional stability and wear resistance	■ Cool grinding through facilitated chip removal and easy coolant flow due to the porous coating structure ■ Can be dressed without subsequent sharpening of the tools ■ The bond structure can be very sensitively and precisely adapted to the requirements of the grinding process
Applications	Electroplated tools are problem solvers for work on various materials, such as particularly hard or abrasive materials. Through the selection of the grit sizes, the characteristics of the electrochemically coated tool can be adapted to the application. Electroplated diamond and CBN tools are used for both wet and dry grinding.	Resinoid-bonded diamond and CBN grinding discs are often used for grinding or sharpening tungsten carbide or HSS tools, as well as in other production grinding processes. Metal-bonded tools are used for grinding glass and industrial ceramics. Resinoid- and metal-bonded diamond and CBN tools are used for both wet and dry grinding, according to tool specification.	Ceramic-bonded CBN grinding tools are used for internal grinding of hardened steels (large contact surfaces). There are many other production grinding processes for which ceramic-bonded tools are ideal. Ceramic-bonded CBN tools are used exclusively for wet grinding.
	Pages 10–31	**Pages 32–39**	**–**

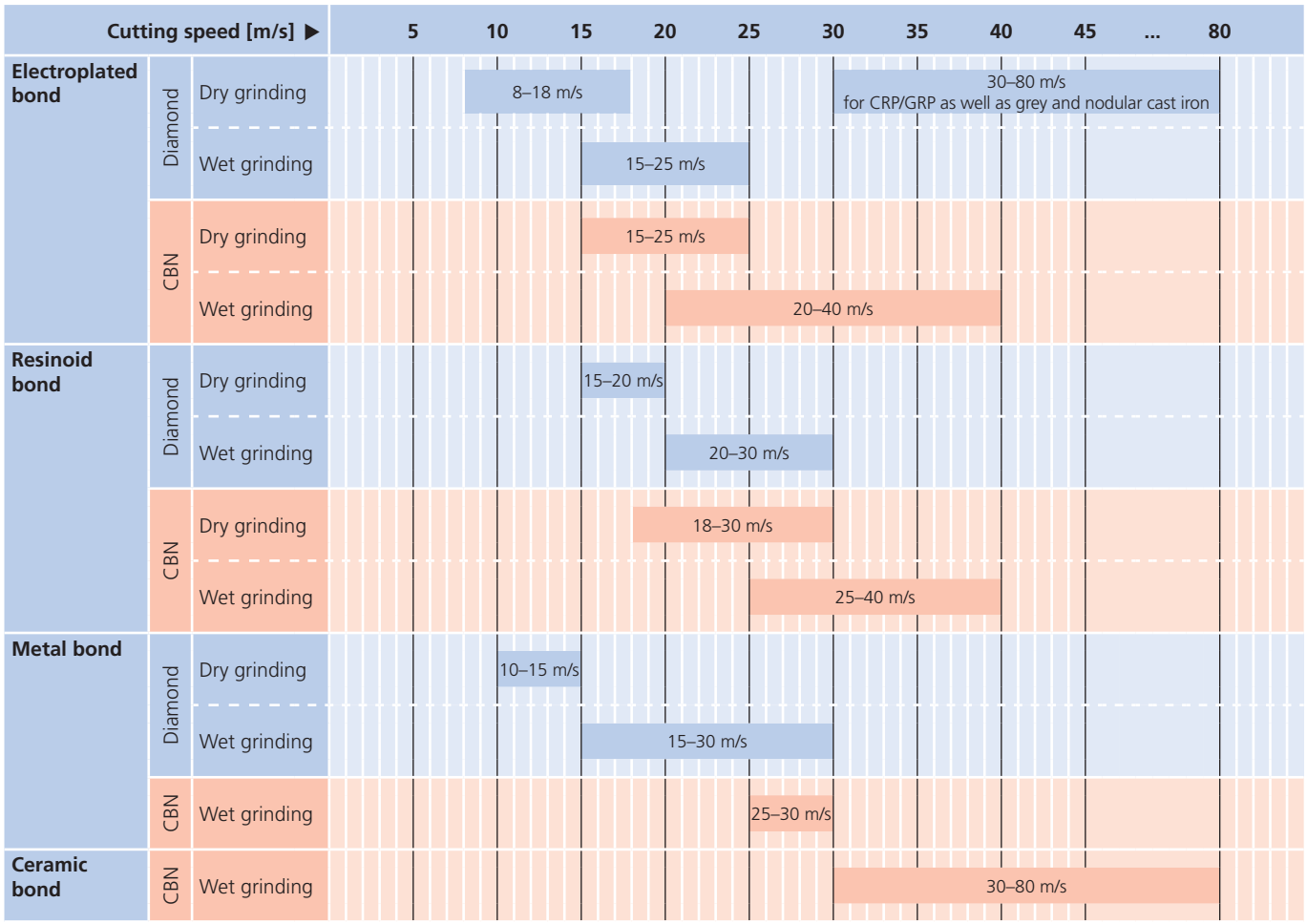
Diamond and CBN tools

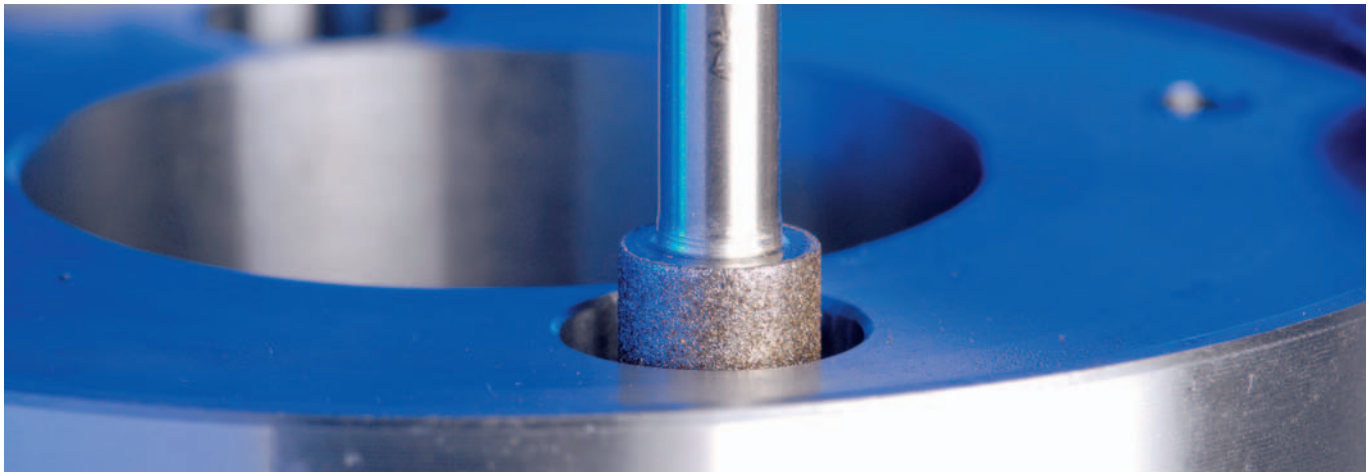
Recommended cutting speeds

The recommended cutting speed ranges depend on the application and must not exceed the maximum permissible peripheral speed. Because of the wide range of tasks and application fields of electroplated diamond and CBN tools, as well as the large influence of the employed tool drive, it is not possible to specify a generally valid cutting speed. The recommended cutting speed ranges serve as reference values.

Generally, the following applies:

- In dry grinding, do not use diamond tools at too high a cutting speed in order to avoid thermal damage to the abrasive.
- If possible, do not use CBN tools under the cutting speeds specified below. The optimum cutting speed has a direct effect on the economic value of the tools in use.
- All parameters must always be coordinated with each other within the grinding process. If the cutting speed is changed, among others the feed, infeed and coolant supply must be adjusted accordingly.
- Electroplated diamond and CBN tools can be used in dedicated stationary applications up to a peripheral speed of 125 m/s.





Refer to the table for the recommended rotational speed based on the diameter and cutting speed of your tool.

Example:
Diamond grinding point
Diameter: 20 mm
Cutting speed: 25 m/s
Rotational speed: 23,900 RPM

Tool dia. [mm]	Cutting speed [m/s]											
	8	12	15	18	20	25	30	40	50	80	100	125
	Rotational speed [RPM]											
1	153,000	-	-	-	-	-	-	-	-	-	-	-
2	76,400	115,000	143,000	172,000	191,000	-	-	-	-	-	-	-
3	50,900	76,400	95,500	115,000	127,000	159,000	191,000	-	-	-	-	-
4	38,200	57,300	71,600	85,900	95,500	119,000	143,000	-	-	-	-	-
5	30,600	45,800	57,300	68,800	76,400	95,500	115,000	153,000	-	-	-	-
6	25,500	38,200	47,700	57,300	63,700	79,600	95,500	127,000	159,000	-	-	-
7	21,800	32,700	40,900	49,100	54,600	68,200	81,900	109,000	136,000	-	-	-
8	19,100	28,600	35,800	43,000	47,700	59,700	71,600	95,500	119,000	191,000	-	-
9	17,000	25,500	31,800	38,200	42,400	53,100	63,700	84,900	106,000	170,000	-	-
10	15,300	22,900	28,600	34,400	38,200	47,700	57,300	76,400	95,500	153,000	191,000	-
12	12,700	19,100	23,900	28,600	31,800	39,800	47,700	63,700	79,600	127,000	159,000	199,000
14	10,900	16,400	20,500	24,600	27,300	34,100	40,900	54,600	68,200	109,000	136,000	171,000
15	10,200	15,300	19,100	22,900	25,500	31,800	38,200	50,900	63,700	102,000	127,000	159,000
16	9,500	14,300	17,900	21,500	23,900	29,800	35,800	47,700	59,700	95,500	119,000	149,000
18	8,500	12,700	15,900	19,100	21,200	26,500	31,800	42,400	53,100	84,900	106,000	133,000
20	7,600	11,500	14,300	17,200	19,100	23,900	28,600	38,200	47,700	76,400	95,500	119,000
22	6,900	10,400	13,000	15,600	17,400	21,700	26,000	34,700	43,400	69,400	86,800	109,000
25	6,100	9,200	11,500	13,800	15,300	19,100	22,900	30,600	38,200	61,100	76,400	95,500
30	5,100	7,600	9,500	11,500	12,700	15,900	19,100	25,500	31,800	50,900	63,700	79,600
40	3,800	5,700	7,200	8,600	9,500	11,900	14,300	19,100	23,900	38,200	47,700	59,700
50	3,100	4,600	5,700	6,900	7,600	9,500	11,500	15,300	19,100	30,600	38,200	47,700
75	2,000	3,100	3,800	4,600	5,100	6,400	7,600	10,200	12,700	20,400	25,500	31,800
100	1,530	2,300	2,900	3,400	3,800	4,800	5,700	7,600	9,500	15,300	19,100	23,900
125	1,220	1,830	2,300	2,800	3,100	3,800	4,600	6,100	7,600	12,200	15,300	19,100
150	1,020	1,530	1,910	2,300	2,500	3,200	3,800	5,100	6,400	10,200	12,700	15,900
175	870	1,310	1,640	1,960	2,200	2,700	3,300	4,400	5,500	8,700	10,900	13,600
200	760	1,150	1,430	1,720	1,910	2,400	2,900	3,800	4,800	7,600	9,500	11,900
230	660	1,000	1,250	1,490	1,660	2,100	2,500	3,300	4,200	6,600	8,300	10,400
250	610	920	1,150	1,380	1,530	1,910	2,300	3,100	3,800	6,100	7,600	9,500
300	510	760	950	1,150	1,270	1,590	1,910	2,500	3,200	5,100	6,400	8,000
350	440	650	820	980	1,090	1,360	1,640	2,200	2,700	4,400	5,500	6,800
400	380	570	720	860	950	1,190	1,430	1,910	2,400	3,800	4,800	6,000
450	340	510	640	760	850	1,060	1,270	1,700	2,100	3,400	4,200	5,300
500	310	460	570	690	760	950	1,150	1,530	1,910	3,100	3,800	4,800
600	250	380	480	570	640	800	950	1,270	1,590	2,500	3,200	4,000

Safety notes:

PFERD diamond and CBN grinding tools comply with the highest quality and safety requirements and are manufactured and labelled according to the European safety standard EN 13236.
PFERD manufactures all tools in accordance with the specified safety regulations.

The operator is responsible for the grinding application, including correct tool drive use, correct handling and use of the grinding tools.

 = Wear eye protection!

 = Wear hearing protection!

 = Read the safety instructions!

Diamond and CBN tools electroplated bond

Customer-specific tool solutions

PFERD specializes in the support and production of customer-specific electroplated diamond and CBN tools.

Almost all tool blank geometries can be coated with various grit sizes. The electroplated bond also enables the economic production of small batch sizes. Because of the diverse possibilities, our production can respond to individual customer requirements with a high degree of flexibility.

Our technical advisors will be happy to visit you on-site to develop individual tool solutions for your applications.

Get the best possible advice for superhard solutions!

PFERDVIDEO

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

1. Process analysis and tool development

Contact us at www.pferd.com and arrange an appointment with our experienced sales representatives and technical advisors.

If you already have precise ideas about the desired tool, you can provide us with a technical drawing or a dimensioned sketch and information on the desired abrasives and grit sizes.

Our employees will **analyze your application with you on-site** and develop the most economic individual tooling solution for you! You will then receive a quote. Three production variants are possible:

2. Production

Complete production
From design and construction, through manufacture of the tool blank (steel, stainless steel or brass) and its coating with diamond or CBN grit, to the balancing of the finished tool, PFERD offers you all the production steps from a single source. This guarantees you the highest level of quality, flexibility, and on-time delivery.

Coating
Steel, stainless steel or brass blanks provided by the customer can also be coated with diamond or CBN grit – an early, close cooperation is recommended.

Recoating
PFERD offers recoating of blunt tools with steel or stainless steel blanks as an economic alternative to replacement production.
Tools with brass blanks cannot be recoated.

3. Use

Our flexible production and global logistics network ensure that you receive your new tool on time.

If desired, your personal sales representative and a technical advisor will set up all the process parameters together with you.

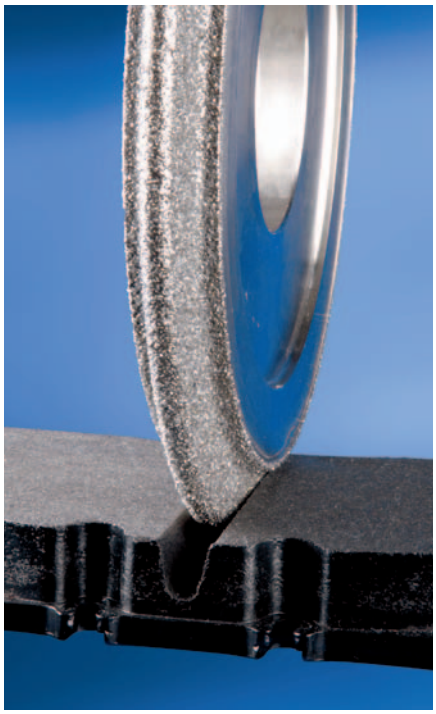
Allow yourself to be persuaded by the quality, performance and economic value of PFERD tools.

PFERD offers comprehensive information on various topics related to cutting and surface finishing.

In our **PRAXIS "PFERD tools for use on plastics"** you will find lots of information about plastics and their properties, valuable practical tips and tricks, as well as the appropriate tools which meet the high demands of this material.

In the brochure **"Electroplated diamond tools – economical processing of grey and nodular cast iron"** we have combined our standard and special product range for use on grey and nodular cast iron.

Please contact us!




PFERD
D 602


84268
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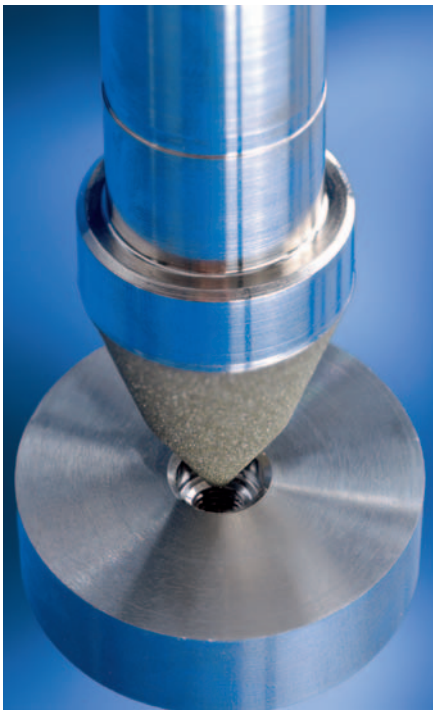
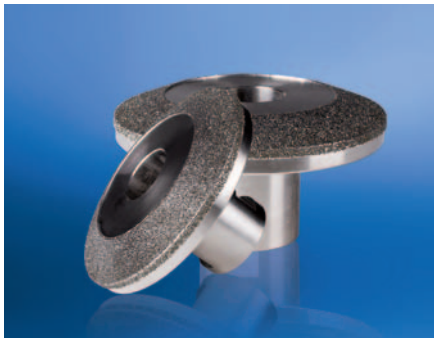
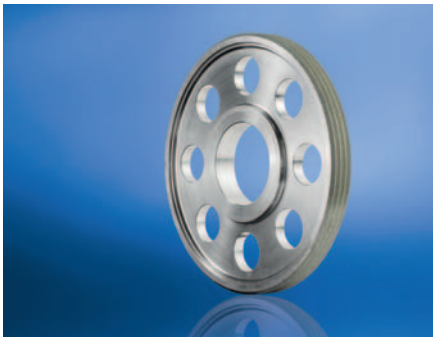
13236





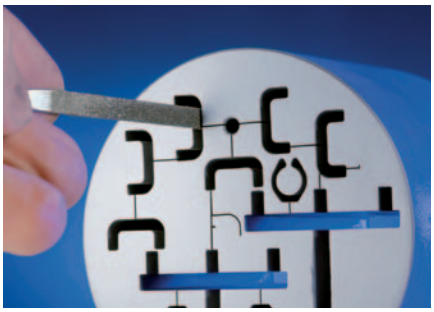



PFERD
D357
RPM max 20372
EN 13236
PFERD
D151
RPM max 30558
EN 13236
PFERD
D427
PFERD
D 427
RPM max 6112
EN 13236

Diamond files and sheets are used particularly successfully for tasks where conventional files fail down due to the hardness of the material to be worked.

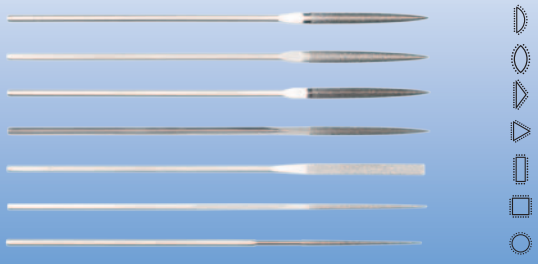
Note:
Diamond files and sheets are also used for processing hardened steel. The working temperatures are so low that no chemical wear occurs. This allows the higher hardness of the diamond grain to be exploited for a longer tool life.

Recommendations for use:
- Apply only slight pressure to the file, especially in workpiece edge areas.
- Loaded diamond files can be cleaned in kerosene or anti-static plastic cleaner with a file brush. Alternatively, ultrasonic cleaning is also possible. Often it will suffice to knock the file against a hard object.
- Avoid contact with grease when using files!



Diamond escapement files

Diamond escapement files



Diamond escapement files are used on very small shapes in tool making and precision mechanics.

They have a forged shank which allows the use without additional handle.

Grit sizes D 25 and D 46 provide ultra-fine surface finishes.

Ordering example:
EAN 4007220**535530**
DF 3608 D 25
Please complete the description with the grit size.

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Description	Profile	Grit size				Overall length [mm]	Coating length [mm]	Cross section with coating [mm]	
		D 25	D 46	D 91	D 126				
		EAN 4007220							
DF 3608	Half-round	535530	323625	254622	254639	140	40	4.2 x 1.5	1
DF 3609	Crossing oval	535516	323632	254462	254479	140	40	3.8 x 1.8	1
DF 3610	Barrette	535509	323649	254493	254509	140	40	4 x 1.2	1
DF 3614	Three square	535561	323656	254554	254578	140	40	3	1
DF 3617	Hand	535578	323663	254523	254530	140	40	4 x 1.2	1
DF 3619	Square	535547	323670	254592	254608	140	40	2 x 2	1
DF 3621	Round	535523	323687	254653	254660	140	40	1.8	1

Diamond escapement file sets are supplied in a sturdy, practical plastic box which protects the tools from damage. This is ideal for keeping in the tool trolley or workbench.

Contents:
1 piece each
DF 3608 (Half-round)
DF 3614 (Three square)
DF 3617 (Hand)
DF 3619 (Square)
DF 3621 (Round)

Ordering example:
EAN 4007220**535639**
DF 3090 D 25
Please complete the description with the desired grit size.

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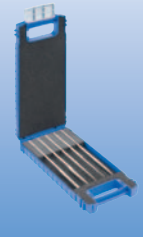
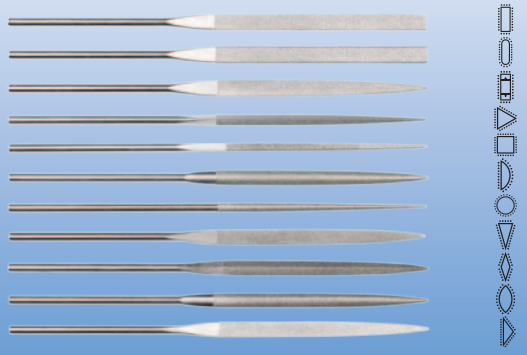
Diamond escapement file sets



Description	Grit size				
	D 25	D 46	D 91	D 126	
	EAN 4007220				
DF 3090	535639	323700	323694	017364	1

Diamond needle files

DF 4112 Hand
DF 4112R Hand with rounded edges
DF 4122 Flat
DF 4132 Three square
DF 4142 Square
DF 4152 Half-round
DF 4162 Round
DF 4172 Knife
DF 4182 Feather edge
DF 4192 Crossing oval
DF 4102T Barrette



Diamond needle files are designed for general use in tool making.

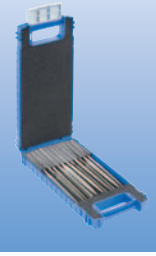
Diamond needle files in extra slim design (S) are particularly suitable for work on hard-to-reach contours.

Both types can be used with the quick-mounting handle 210-1 and needle file holder NFH 212. Please refer to Catalogue 201 for detailed information and ordering data.

Ordering example:
EAN 4007220**806227**
DF 4112S D 126
Please complete the description with the desired grit size.

Description	Profile	Grit size			Overall length [mm]	Coating length [mm]	Cross section with coating [mm]	
		D 91	D 126	D 181				
		EAN 4007220						
Needle files, extra slim (S)								
DF 4112S	Hand	-	806227	-	140	70	5.3 x 1.3	1
DF 4132S	Three square	-	806258	-	140	70	2.8	1
DF 4142S	Square	-	806289	-	140	70	2.3	1
DF 4162S	Round	-	806319	-	140	70	2.8	1
Needle files								
DF 4112	Hand	016664	016671	016688	140	70	5.5 x 1.6	1
DF 4112R	Hand with rounded edges	016695	016701	016718	140	70	5.5 x 1.6	1
DF 4122	Flat	016725	016732	016749	140	70	5.5 x 1.6	1
DF 4132	Three square	016756	016763	016770	140	70	3.5	1
DF 4142	Square	016787	016794	016800	140	70	2.6 x 2.6	1
DF 4152	Half round	016817	016824	016831	140	70	5.5 x 1.6	1
DF 4162	Round	016848	016855	016862	140	70	3.2	1
DF 4172	Knife	016879	016886	016893	140	70	5 x 1.8	1
DF 4182	Feather edge	016909	016916	016923	140	70	5 x 2.4	1
DF 4192	Crossing oval	016930	016947	016954	140	70	5 x 2.2	1
DF 4102	Barrette	016633	016640	016657	140	70	5 x 2	1

Diamond needle file sets



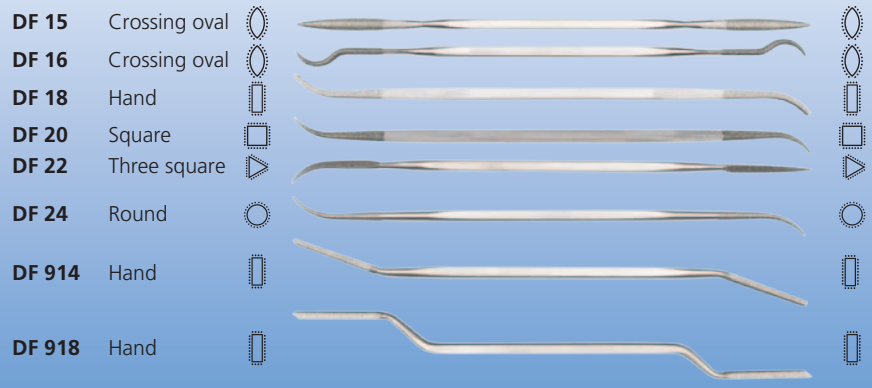
Diamond needle file sets are supplied in a sturdy, practical plastic box, which protects the tools from damage. This is ideal for keeping on the tool trolley or workbench.

Contents DF 4205:
1 piece each
DF 4112 (Hand)
DF 4132 (Three square)
DF 4142 (Square)
DF 4152 (Half-round)
DF 4162 (Round)

Contents DF 4211:
1 piece each
DF 4112 (Hand)
DF 4112R (Hand with rounded edges)
DF 4122 (Flat)
DF 4132 (Three square)
DF 4142 (Square)
DF 4152 (Half-round)
DF 4162 (Round)
DF 4172 (Knife)
DF 4182 (Feather edge)
DF 4192 (Crossing oval)
DF 4102T (Barrette)

Description	Grit size			
	D 91	D 126	D 181	
	EAN 4007220			
DF 4205	017371	017388	017395	1
DF 4211	017401	017418	017425	1

Diamond riffler files



Diamond riffler files are used for work on hard-to-reach areas and complex geometries.

The coating length is 25 mm on both sides of the files.

They can be used with riffler file holder RFH 150. Please refer to Catalogue 201 for detailed information and ordering data.

Ordering example:
EAN 4007220**017029**
DF 15 D 91
Please complete the description with the desired grit size.

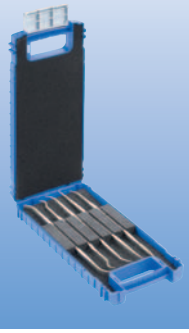
Description	Profile	Grit size		Overall length [mm]	Double-sided coating length [mm]	Cross section with coating [mm]	
		D 91	D 126				
		EAN 4007220					
DF 15	Crossing oval	017029	017036	150	25	3.2 x 2	1
DF 16	Crossing oval	017050	017067	150	25	3.7 x 2	1
DF 18	Hand	017081	017098	150	25	3.1 x 3	1
DF 20	Square	017111	017128	150	25	2.5 x 2.5	1
DF 22	Three square	017142	017159	150	25	3	1
DF 24	Round	017173	017180	150	25	3	1
DF 914	Hand	016961	016978	150	25	3.8 x 1.6	1
DF 918	Hand	016992	017005	150	25	4 x 2	1

Diamond riffler file sets are supplied in a sturdy, practical plastic box, which protects the tools from damage.
This is ideal for keeping on the tool trolley or workbench.

Contents:
1 piece each
DF 16 (Crossing oval)
DF 18 (Hand)
DF 20 (Square)
DF 22 (Three square)
DF 24 (Round)

Ordering example:
EAN 4007220**355381**
DF 1624 D 126

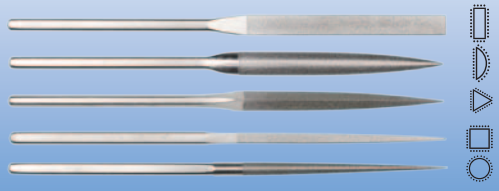
Diamond riffler file sets



Description	Grit size	EAN 4007220	
DF 1624	D 126	355381	1

Diamond handy files

DF 2601 Hand
DF 2602 Half-round
DF 2607 Three square
DF 2608 Square
DF 2610 Round



Diamond handy files have a forged shank which allows the use without additional handle.

Ordering example:
EAN 4007220**017302**
DF 2601 D 126
Please complete the description with the desired grit size.

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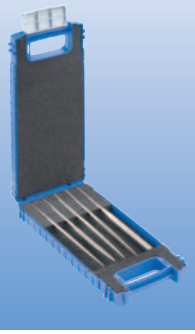
Description	Profile	Grit size		Overall length [mm]	Coating length [mm]	Cross section with coating [mm]	
		D 126	D 181				
		EAN 4007220					
DF 2601	Hand	017302	535455	215	100	10.3 x 2.8	1
DF 2602	Half-round	017319	535462	215	100	12.5 x 3.8	1
DF 2607	Three square	017326	535479	215	100	10	1
DF 2608	Square	017333	535486	215	100	5.5 x 5.5	1
DF 2610	Round	017340	535493	215	100	6.7	1

Diamond handy file sets



Diamond handy file sets are supplied in a sturdy, practical plastic box, which protects the tools from damage. This is ideal for keeping on the tool trolley or workbench.

Contents:
1 piece each
DF 2601 (Hand)
DF 2602 (Half-round)
DF 2607 (Three square)
DF 2608 (Square)
DF 2610 (Round)

Ordering example:
EAN 4007220**017357**
DF 2627 D 126
Please complete the description with the desired grit size.

PFERDERGONOMICS®:
HapticFilter

Description	Grit size		
	D 126	D 181	
	EAN 4007220		
DF 2627	017357	535585	1

Diamond machinist's files

Diamond machinist's files are used, among other industries, in large tool construction. Grit size D 251 is also suitable for work on fibre-reinforced plastics (GRP/CRP). Diamond machinist's files are supplied with ergonomic handle.

Ordering example:
EAN 4007220**255117**
DF 1112/100 D 126
Please complete the description with the desired grit size.

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Haptic Filter

Description	Profile	Grit size			Overall length [mm]	Coating length [mm]	Cross section with coating [mm]	
		D 126	D 151	D 251				
		EAN 4007220						
DF 1112/100	Hand	255117	805954	805961	100	85	10 x 3.2	1
DF 1112/125	Hand	255131	955888	-	125	110	11.2 x 4.2	1
DF 1112/150	Hand	255155	805978	805985	150	135	13 x 5	1
DF 1112/200	Hand	-	017203	017210	200	180	22.5 x 5.5	1
DF 1132/100	Three square	255179	955895	-	100	85	7	1
DF 1132/200	Three square	-	017227	017234	200	180	14	1
DF 1142/200	Square	-	017241	-	200	180	7.5 x 7.5	1
DF 1152/100	Half-round	255193	955901	-	100	85	12 x 4	1
DF 1152/200	Half-round	-	017265	017272	200	180	22 x 6.5	1
DF 1162/200	Round	-	017289	-	200	180	8	1

Diamond sheets

The flexible diamond sheets adapt to the workpiece surface. Convex and concave contours can be worked on with relatively little effort.

Ordering example:
EAN 4007220**806371**
D BL 30-0.7-170 D 64
Please complete the description with the desired grit size.

Diamond sheets

Description	Grit size		Overall length [mm]	Cross section with coating [mm]	Coating type	
	D 64	D 126				
	EAN 4007220					
DBL 30-0,7-170	806371	955925	170	0.7 x 30	complete	1
DBL 35-1,3-350	955918	806388	350	1.3 x 35	complete	1

Diamond files for air-powered filing machines

DF 5301 - 5309	Hand, coated on one side	**DF 5365 - 5375**	Three square
DF 5310 - 5314	Hand, coated on both sides	**DF 5352 - 5362**	Crossing oval
DF 5316 - 5324	Hand, only face sides coated	**DF 5380 - 5382**	Knife
DF 5390 - 5393	Square	**DF 0103, DF 0106**	Flat conical
DF 5331 - 5347	Round		

Diamond files for use with manual filing tools can be employed in machines, as well as for hand filing.

The shank diameter of the diamond files is 3 mm.

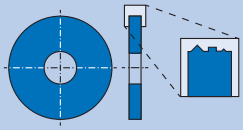
Please refer to Catalogue 209 for detailed information and ordering data on air filing machine PFG 07/220.

Ordering example:
EAN 4007220**256718**
DF 5301 D 126

Description	Profile	Grit size	EAN 4007220	Coating type	Overall length [mm]	Coating length [mm]	Cross section with coating [mm]	
DF 5301	Hand	D 126	256718	one side	50	15	2 x 1	1
DF 5303	Hand	D 126	256749	one side	50	15	3 x 1	1
DF 5305	Hand	D 126	256817	one side	50	15	4 x 1	1
DF 5307	Hand	D 126	256848	one side	50	15	5 x 2	1
DF 5309	Hand	D 126	256879	one side	60	25	5 x 2	1
DF 5310	Hand	D 126	256909	both sides	50	15	2 x 1	1
DF 5311	Hand	D 126	256930	both sides	50	15	3 x 1	1
DF 5312	Hand	D 126	256961	both sides	50	15	4 x 1	1
DF 5313	Hand	D 126	256992	both sides	50	15	5 x 2	1
DF 5314	Hand	D 126	257029	both sides	60	25	5 x 2	1
DF 5316	Hand	D 126	257050	face side	50	15	0.5 x 4	1
DF 5320	Hand	D 126	257111	face side	50	15	1 x 4	1
DF 5324	Hand	D 126	257142	face side	60	25	1 x 4	1
DF 5390	Square	D 126	257296	complete	50	15	1.5 x 1.5	1
DF 5391	Square	D 126	257326	complete	50	15	3 x 3	1
DF 5392	Square	D 126	257357	complete	50	15	4 x 4	1
DF 5393	Square	D 126	257388	complete	50	15	5 x 5	1
DF 5331	Round	D 126	257418	complete	50	15	1	1
DF 5335	Round	D 126	257449	complete	50	15	2	1
DF 5339	Round	D 126	257470	complete	50	15	3	1
DF 5345	Round	D 126	257500	complete	50	15	4	1
DF 5337	Round	D 126	257531	complete	60	25	2	1
DF 5343	Round	D 126	257562	complete	60	25	3	1
DF 5347	Round	D 126	257593	complete	60	25	4	1
DF 5365	Three square	D 126	257173	complete	50	15	2	1
DF 5367	Three square	D 126	257203	complete	50	15	3.5	1
DF 5371	Three square	D 126	257234	complete	60	25	3.5	1
DF 5375	Three square	D 126	257265	complete	60	25	4.5	1
DF 5352	Crossing oval	D 126	257623	complete	50	15	2 x 1	1
DF 5356	Crossing oval	D 126	257654	complete	50	15	3.5 x 2	1
DF 5360	Crossing oval	D 126	257685	complete	50	12	6 x 3	1
DF 5358	Crossing oval	D 126	257715	complete	60	25	3.5 x 2	1
DF 5362	Crossing oval	D 126	257746	complete	60	25	6 x 3	1
DF 5380	Knife	D 126	257777	complete	50	15	1 x 4	1
DF 5382	Knife	D 126	257807	complete	50	15	2 x 6	1
DF 0103	Flat conical	D 126	665862	complete	55	16	3.3 x 1	1
DF 0106/55	Flat conical	D 126	665879	complete	55	16	6.3 x 1	1
DF 0106/73	Flat conical	D 126	665886	complete	73	16	6.3 x 1	1

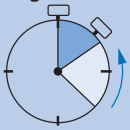
The advantages of electroplated diamond and CBN grinding tools

Individual tool geometry



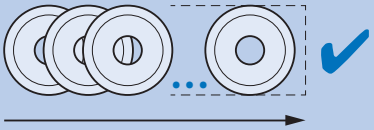
- Since virtually any machine-produced tool blank geometry can be used, electroplated diamond and CBN tools offer maximum flexibility in terms of tool profiles.

Shorter processing time



- The individual diamond or CBN grit projects well out of the electroplated bond. The resulting large chip spaces reduce tool loading while delivering very high stock removal. In conjunction with a sharp-edged superhard grit, they guarantee maximum cutting characteristics and a very high stock removal rate.

Constant tool geometry

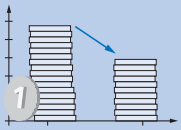


- The tool geometry of electroplated tools is retained because of the monolayer coating. This eliminates time-consuming profiling. The constant tool geometry enables work on deep-lying areas for a high number of workpieces, minimizes the formation of dust and allows the use on robots.

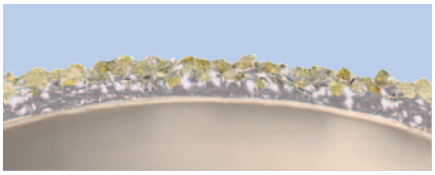
Reduction in unproductive idle time

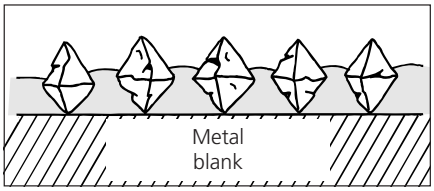
- The combination of the superhard abrasives diamond or CBN and an electroplated bond results in very long tool life and thus a reduction in tool changing times.
- No expensive and complicated dressing. Electroplated diamond and CBN tools are ready for immediate use because of their monolayer coating.

Reduction in tool costs



- Electroplated tools are less expensive than tools with other bond types due to their monolayer coating. They also provide an economic solution for the production of small batch sizes.
- Complex and/or large tool blanks can be recoated and reused.





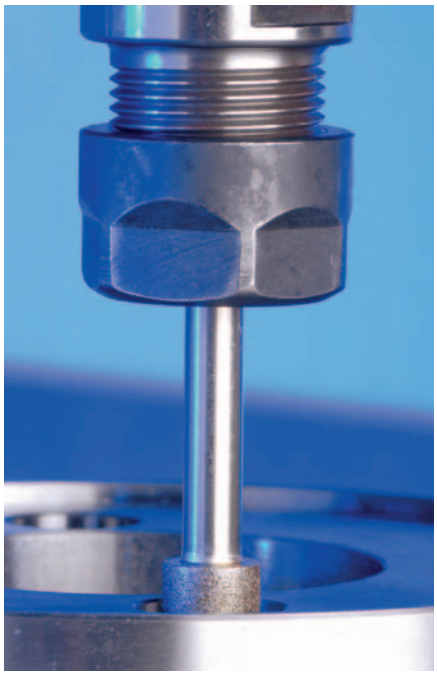
Powered tools

Conditions for use:

- Because of the monolayer coating, drive spindles and tool holders must have a high concentricity. The finer the grit size used, the more accurate the concentricity needs to be.
- The tool drive must have sufficient power output on the grinding spindle to ensure the required rotational speed even under load.
- For stationary tool drives, the tool machine, tool and workpiece holder must be sufficiently rigid.
- The workpiece must be mounted stable.

Recommendations for use:

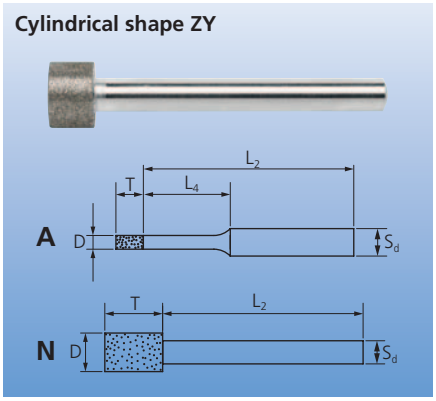
- Electroplated diamond and CBN tools can be used for both dry and wet grinding. If possible, wet grinding is to be preferred in order to reduce tool wear and the risk of thermal damage.
- Generally, the following applies: For optimum economic value, select a grit size that is as coarse as possible and as fine as necessary. Influencing factors include the hardness of the material and the finish quality required.
- Loaded tools can be cleaned using ultrasound. In the event of strong contamination of the coating, please clean using the sharpening block DSB 2005025 (EAN 4007220**168332**). More detailed information and ordering data can be found in Catalogue 206.
- Select the tool diameter as large as possible, since this increases the number of diamond or CBN grit that engage the workpiece. For internal grinding, the maximum tool diameter is 3/4 of the diameter to be ground.
- The longitudinal feed rate for internal grinding must not exceed 2/3 of the total width per workpiece rotation. The infeed depends on the material to be machined, the cutting speed, the stability of the tool, its holder and the tool drive.



PFERDVIDEO

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

Cylindrical shape ZY



The cylindrical shape ZY is suitable for grinding bores, radii and contours using stationary or handheld equipment.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 400722**0354322**
DZY-A 0.5-2/3 D 64
Please complete the description with the desired grit size.

PFERDERGONOMICS®:

Emission Filter

Description	Grit size				Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	Reduced dia. length L_4 [mm]	
	D 64	D 91	D 126	D 181					
	EAN 4007220								
Shank dia. 3 mm									
DZY-A 0,5-2/3	354322	-	-	-	0.5 x 2	3	38	5	5
DZY-A 0,8-2/3	354339	-	-	-	0.8 x 2	3	38	5	5
DZY-A 1,0-4/3	354346	257883	257890	-	1.0 x 4	3	36	9	5
DZY-A 1,2-4/3	354353	354360	354377	-	1.2 x 4	3	36	9	5
DZY-A 1,4-4/3	354384	354391	354407	-	1.4 x 4	3	36	9	5
DZY-A 1,6-4/3	-	354421	354438	-	1.6 x 4	3	36	10	5
DZY-A 1,8-4/3	-	354452	354469	-	1.8 x 4	3	36	10	5
DZY-A 2,0-4/3	354476	260784	119181	-	2.0 x 4	3	36	10	5
DZY-A 2,2-4/3	-	354490	354506	-	2.2 x 4	3	36	14	5
DZY-A 2,4-4/3	-	354520	354537	-	2.4 x 4	3	36	14	5
DZY-A 2,6-4/3	-	354551	354568	-	2.6 x 4	3	36	14	5
DZY-A 2,8-4/3	-	354582	354599	-	2.8 x 4	3	36	14	5
DZY-A 3,0-4/3	354605	260821	119204	-	3.0 x 4	3	36	19	5
DZY-N 3,5-5/3	-	260845	119211	-	3.5 x 5	3	45	-	5
DZY-N 4,0-5/3	-	260869	119228	260876	4.0 x 5	3	45	-	5
DZY-N 4,5-5/3	-	260883	119235	-	4.5 x 5	3	45	-	5
DZY-N 5,0-5/3	-	260906	119242	260913	5.0 x 5	3	45	-	5
DZY-N 5,5-6/3	-	257944	257951	257968	5.5 x 6	3	44	-	5
Shank dia. 6 mm									
DZY-A 6,0-6/6	-	260920	119259	260937	6.0 x 6	6	54	19	1
DZY-N 7,0-8/6	-	-	119266	260951	7.0 x 8	6	52	-	1
DZY-N 8,0-8/6	-	260968	119273	260975	8.0 x 8	6	52	-	1
DZY-N 9,0-8/6	-	-	258040	-	9.0 x 8	6	52	-	1
DZY-N 10,0-8/6	-	260982	119280	260999	10.0 x 8	6	52	-	1
DZY-N 12,0-8/6	-	261002	119297	261019	12.0 x 8	6	52	-	1
DZY-N 15,0-10/6	-	-	119303	-	15.0 x 10	6	50	-	1
Shank dia. 10 mm									
DZY-N 15,0-10/10	-	-	355091	-	15.0 x 10	10	110	-	1
Shank dia. 6 mm									
DZY-N 18,0-10/6	-	-	258163	-	18.0 x 10	6	50	-	1
DZY-N 20,0-10/6	-	-	258194	-	20.0 x 10	6	50	-	1
Shank dia. 12 mm									
DZY-N 25,0-10/12	-	-	355138	-	25.0 x 10	12	110	-	1

For diamond grinding discs 1A1 for internal grinding, please refer to page 24.

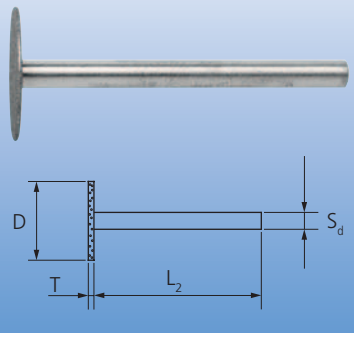
The special shape ZY is suitable for grinding out slots and grooves in hard-to-reach areas.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**353240**
DZY-N 8.0-0.5/3 D 64
Please complete the description with the desired grit size.

PFERDERGONOMICS®:
EmissionFilter

Special shape ZY



Description	Grit size		Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	
	D 64	D 91				
	EAN 4007220					
Shank dia. 3 mm						
DZY-N 8,0-0,5/3	353240	-	8.0 x 0.5	3	35	1
DZY-N 14,0-0,5/3	353257	-	14.0 x 0.5	3	35	1
DZY-N 14,0-1,0/3	353264	353271	14.0 x 1	3	35	1

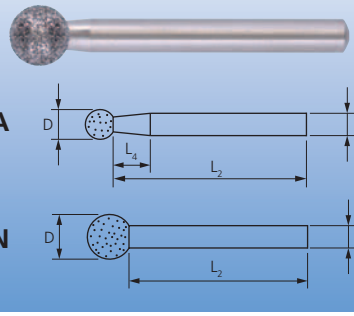
Spherical shape KU is often used in manual applications. This shape is well suited for engraving, contour grinding and deburring tasks.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**354926**
DKU-A 1.0/3 D 64
Please complete the description with the desired grit size.

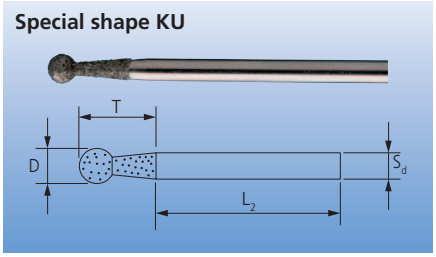
PFERDERGONOMICS®:
EmissionFilter

Spherical shape KU



Description	Grit size				Max. dia. [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	Reduced dia. length L_4 [mm]	
	D 64	D 91	D 126	D 181					
	EAN 4007220								
Shank dia. 3 mm									
DKU-A 1,0/3	354926	258620	258637	258644	1.0	3	44	10	5
DKU-A 2,0/3	354933	258651	258668	258675	2.0	3	43	8	5
DKU-A 3,0/3	354940	258682	258699	258705	3.0	3	42	6	5
DKU-A 4,0/3	-	258712	258729	258736	4.0	3	41	5	5
DKU-A 5,0/3	-	258743	258750	258767	5.0	3	40	2	5
DKU-N 6,0/3	-	258774	258781	258798	6.0	3	39	-	1
Shank dia. 6 mm									
DKU-A 8,0/6	-	-	258842	-	8.0	6	52	10	1
DKU-A 10,0/6	-	-	258903	-	10.0	6	50	5	1
DKU-N 12,0/6	-	-	258965	-	12.0	6	48	-	1

Special shape KU



The special shape KU is often used for engraving plastics in manual applications. This shape is also coated with grit under the ball-shaped part of the grinding point on the narrow shank. The special shape of the tool provides optimum results when machining profiles.

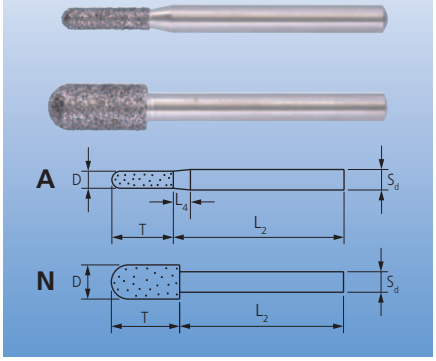
Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**353844**
DKU 3.0-10/3 D 181

PFERDERGONOMICS®:
Emission Filter

Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	
Shank dia. 3 mm						
DKU 3,0-10/3	D 181	353844	3.0 x 10	3	40	1
DKU 4,0-10/3	D 181	353868	4.0 x 10	3	40	1

Cylindrical shape with radius end WR



The cylindrical shape with radius end WR is best suited for manual applications and can be used for a wide variety of deburring and grinding tasks.
Coarse grit size D 357 is especially well suited for use on fibre-reinforced plastics (GRP/CRP).

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**955932**
DWR 5.0-18/6 D 126
Please complete the description with the desired grit size.

PFERDERGONOMICS®:
Emission Filter

Description	Grit size		Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	Reduced dia. length L_4 [mm]	
	D 126	D 357					
	EAN 4007220						
Shank dia. 6 mm							
DWR-A 5,0-18/6	955932	353981	5.0 x 18	6	50	5	1
DWR-A 6,0-18/6	955949	353998	6.0 x 18	6	50	5	1
DWR-N 10,0-20/6	955956	354001	10.0 x 20	6	50	-	1

More PFERD tools and tips and tricks for work on plastics can be found in our PRAXIS brochure "PFERD tools for use on plastics". Please contact us.

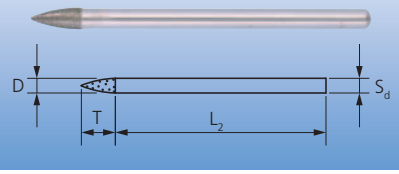
Pointed tree shape SPG is exceptionally well suited to machining small holes or bores, as well as for engraving work.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**536421**
DSPG 3.0-7/3 D 126

PFERDERGONOMICS®:
Emission Filter

Pointed tree shape SPG



Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	
Shank dia. 3 mm						
DSPG 3,0-7/3	D 126	536421	3.0 x 7	3	43	1
DSPG 3,0-13/3	D 126	806203	3.0 x 13	3	37	1
Shank dia. 6 mm						
DSPG 6,0-18/6	D 126	955963	6.0 x 18	6	50	1

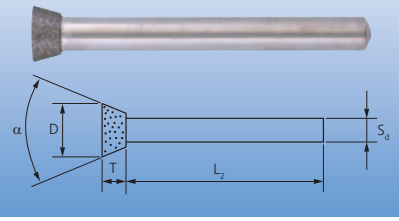
The cup shape KT is ideal for work on profiles, planar surfaces and ledges, without the cylindrical surface being damaged.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**354018**
DKT 3.0-8°/3 D 126

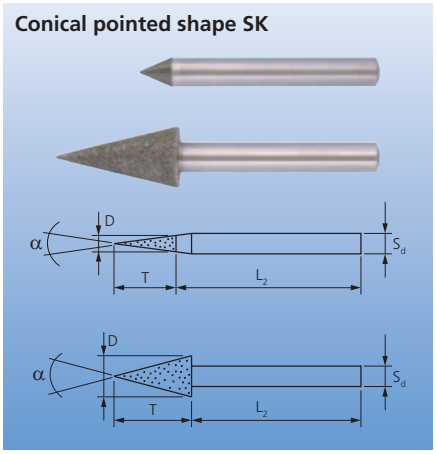
PFERDERGONOMICS®:
Emission Filter

Cup shape KT



Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Angle α	Shank dia. S_d [mm]	Shank length L_2 [mm]	
Shank dia. 3 mm							
DKT 3,0-8°/3	D 126	354018	3.0 x 7	8°	3	43	1
Shank dia. 6 mm							
DKT 10,0-30°/6	D 126	354025	10.0 x 5	30°	6	50	1

Conical pointed shape SK



Conical pointed shape SK is exceptionally well suited for deburring bores, regrinding centring holes and for chamfering.

Please refer to page 8 for the recommended cutting speeds.

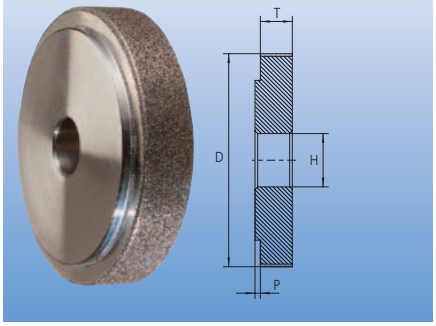
Ordering example:
EAN 4007220**354049**
DSK 6.0-7°/6 D 64
Please complete the description with the desired grit size.

PFERDERGONOMICS®:
Emission Filter

Description	Grit size		Outer dia. x total width D x T [mm]	Angle α	Shank dia. S_d [mm]	Shank length L_2 [mm]	
	D 64	D 126					
	EAN 4007220						
Shank dia. 6 mm							
DSK 6,0-7°/6	354049	955970	6.0 x 45	7°	6	50	1
DSK 6,0-12°/6	354056	955987	6.0 x 26	12°	6	50	1
DSK 6,0-15°/6	354063	955994	6.0 x 21	15°	6	50	1
DSK 6,0-30°/6	354032	354070	6.0 x 11	30°	6	50	1
DSK 6,0-60°/6	393390	956007	6.0 x 5	60°	6	50	1
DSK 10,0-60°/6	806128	806135	10.0 x 9	60°	6	50	1
DSK 10,0-90°/6	806142	806159	10.0 x 5	90°	6	50	1
DSK 15,0-60°/6	806166	806173	15.0 x 13	60°	6	50	1
DSK 15,0-90°/6	806180	806197	15.0 x 7.5	90°	6	50	1

Diamond grinding discs

Grinding discs 1A1

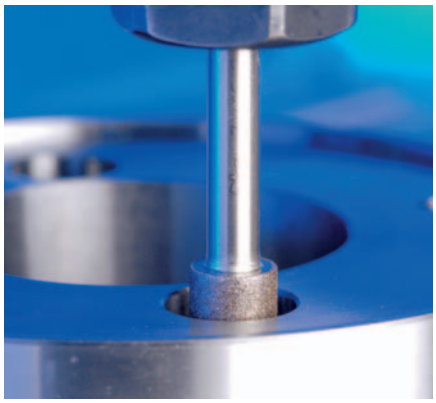


Diamond grinding discs are intended for use on stationary machines. Grinding discs with an outer diameter of more than 18 mm have an additional centring shoulder which allows them to be accurately mounted and aligned on the machine spindle. Combined with a stable mandrel, these tools are ideal for work in deep-set or long bores.

Please refer to page 8 for the recommended cutting speed.

Ordering example:
EAN 4007220**665893**
D1A1 12-10-8 D 151

Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Centre hole dia. H [mm]	Width centring shoulder P [mm]	
D1A1 12-10-8	D 151	665893	12.0 x 10	8	-	1
D1A1 14-10-8	D 151	665961	14.0 x 10	8	-	1
D1A1 16-10-8	D 151	665978	16.0 x 10	8	-	1
D1A1 18-10-8	D 151	665992	18.0 x 10	8	2	1
D1A1 20-10-8	D 151	354629	20.0 x 10	8	2	1
D1A1 30-10-10	D 151	354636	30.0 x 10	10	2	1
D1A1 40-10-10	D 151	354643	40.0 x 10	10	2	1
D1A1 50-10-10	D 151	354131	50.0 x 10	10	2	1



The cylindrical shape ZY is suitable for grinding bores, radii and contours using stationary or handheld equipment.

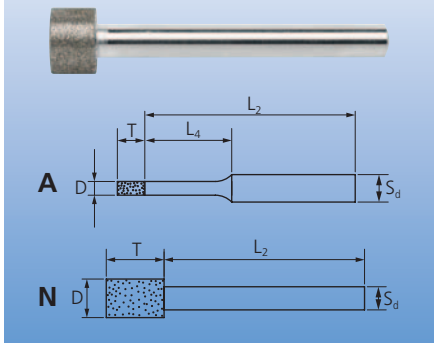
Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**354650**
BZY-A 0.5-2/3 B 64
Please complete the description with the desired grit size.

PFERDERGONOMICS®:

Emission Filter

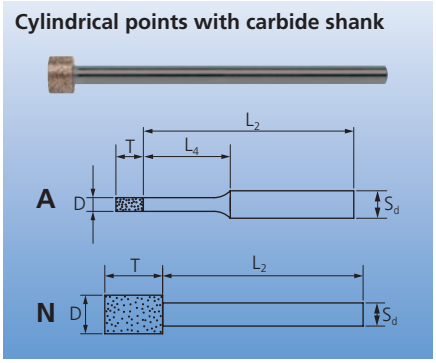
Cylindrical shape ZY



Description	Grit size		Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	Reduced dia. length L_4 [mm]	
	B 64	B 126					
	EAN 4007220						
Shank dia. 3 mm							
BZY-A 0,5-2/3	354650	-	0.5 x 2	3	38	5	5
BZY-A 0,8-2/3	354667	-	0.8 x 2	3	38	5	5
BZY-A 1,0-4/3	354674	258224	1.0 x 4	3	36	9	5
BZY-A 1,2-4/3	354681	354698	1.2 x 4	3	36	9	5
BZY-A 1,4-4/3	-	354711	1.4 x 4	3	36	9	5
BZY-A 1,6-4/3	354728	354735	1.6 x 4	3	36	10	5
BZY-A 1,8-4/3	-	354759	1.8 x 4	3	36	10	5
BZY-A 2,0-4/3	354766	119310	2.0 x 4	3	36	10	5
BZY-A 2,2-4/3	-	354780	2.2 x 4	3	36	14	5
BZY-A 2,4-4/3	354797	354803	2.4 x 4	3	36	14	5
BZY-A 2,6-4/3	354810	354827	2.6 x 4	3	36	14	5
BZY-A 2,8-4/3	-	354841	2.8 x 4	3	36	14	5
BZY-A 3,0-4/3	354858	119334	3.0 x 4	3	36	19	5
BZY-N 3,5-5/3	354865	119341	3.5 x 5	3	45	-	5
BZY-N 4,0-5/3	354872	119358	4.0 x 5	3	45	-	5
BZY-N 4,5-5/3	-	119365	4.5 x 5	3	45	-	5
BZY-N 5,0-5/3	354896	119372	5.0 x 5	3	45	-	5
BZY-N 5,5-6/3	-	258286	5.5 x 6	3	44	-	5
Shank dia. 6 mm							
BZY-A 6,0-6/6	354919	119389	6.0 x 6	6	54	19	1
BZY-N 7,0-8/6	-	119396	7.0 x 8	6	52	-	1
BZY-N 8,0-8/6	-	119402	8.0 x 8	6	52	-	1
BZY-N 9,0-8/6	-	258408	9.0 x 8	6	52	-	1
BZY-N 10,0-8/6	-	119419	10.0 x 8	6	52	-	1
BZY-N 11,0-10/6	-	258439	11.0 x 10	6	50	-	1
BZY-N 12,0-8/6	-	119426	12.0 x 8	6	52	-	1
BZY-N 13,0-10/6	-	258460	13.0 x 10	6	50	-	1
BZY-N 14,0-10/6	-	258491	14.0 x 10	6	50	-	1
BZY-N 15,0-10/6	-	119433	15.0 x 10	6	50	-	1
Shank dia. 10 mm							
BZY-N 15,0-10/10	-	355145	15.0 x 10	10	110	-	1
Shank dia. 6 mm							
BZY-N 18,0-10/6	-	258521	18.0 x 10	6	50	-	1
BZY-N 20,0-10/6	-	258552	20.0 x 10	6	50	-	1

CBN grinding discs 1A1 for internal grinding, see page 28.

Cylindrical points with carbide shank



Cylindrical points with tungsten carbide shank are used for internal grinding on stationary machines.
The elastic modulus of the tungsten carbide shank is approximately three times higher than that of a steel shank. The modulus of elasticity indicates the amount of deformation which a body undergoes as a result of a given load.

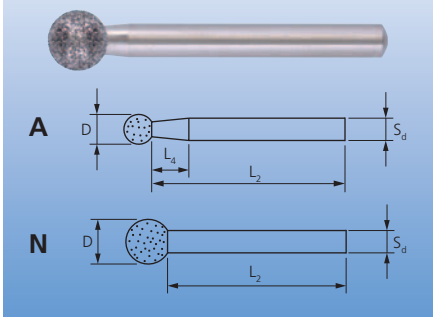
In internal grinding applications, tools with a tungsten carbide shank offer higher stock removal rates, superior surfaces and more precise shape and position tolerances.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**353714**
BZY-N 4.0-5/3 HM B 151

Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	Reduced dia. length L_4 [mm]	
Shank dia. 3 mm							
BZY-N 4,0-5/3 HM	B 151	353714	4.0 x 5	3	43	-	1
BZY-N 5,0-5/3 HM	B 151	353721	5.0 x 5	3	43	-	1
Shank dia. 6 mm							
BZY-A 6,0-6/6 HM	B 151	353691	6.0 x 6	6	98	19	1
BZY-N 8,0-8/6 HM	B 151	353738	8.0 x 8	6	98	-	1
BZY-N 12,0-8/6 HM	B 151	956014	12.0 x 8	6	98	-	1

Spherical shape KU



Spherical shape KU grinding points are often used for engraving, contour grinding and deburring tasks.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**354957**
BKU-A 1.0/3 B 64
Please complete the description with the desired grit size.

PFERDERGONOMICS®:
EmissionFilter

Description	Grit size		Max. dia. [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	Reduced dia. length L_4 [mm]	
	B 64	B 126					
	EAN 4007220						
Shank dia. 3 mm							
BKU-A 1,0/3	354957	258996	1.0	3	44	10	5
BKU-A 2,0/3	354964	259023	2.0	3	43	8	5
BKU-A 3,0/3	354971	259054	3.0	3	42	6	5
BKU-A 4,0/3	-	259085	4.0	3	41	5	5
BKU-A 5,0/3	-	259115	5.0	3	40	2	5
BKU-N 6,0/3	-	259146	6.0	3	39	-	1
Shank dia. 6 mm							
BKU-A 8,0/6	-	259207	8.0	6	52	10	1
BKU-A 10,0/6	-	259269	10.0	6	50	5	1
BKU-N 12,0/6	-	259320	12.0	6	48	-	1

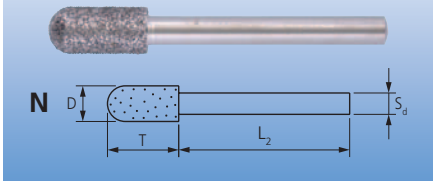
The cylindrical shape with radius end WR is best suited for manual applications and can be used for a wide variety of deburring and grinding work.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**354087**
BWR-N 5.0-10/3 B 126

PFERDERGONOMICS®:
EmissionFilter

Cylindrical shape with radius end WR



Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	
Shank dia. 3 mm						
BWR-N 5,0-10/3	B 126	354087	5.0 x 10	3	40	1
BWR-N 6,0-10/3	B 126	354094	6.0 x 10	3	40	1

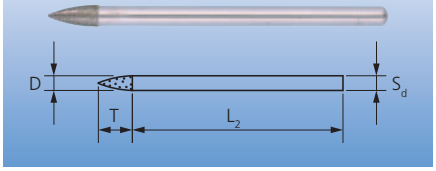
Pointed tree shape SPG is exceptionally well suited for machining small holes or bores as well as for engraving work.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**354100**
BSPG 3.0-7/3 B 126

PFERDERGONOMICS®:
EmissionFilter

Pointed tree shape SPG



Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Shank dia. S_d [mm]	Shank length L_2 [mm]	
Shank dia. 3 mm						
BSPG 3,0-7/3	B 126	354100	3.0 x 7	3	43	1
Shank dia. 6 mm						
BSPG 6,0-18/6	B 126	354117	6.0 x 18	6	50	1

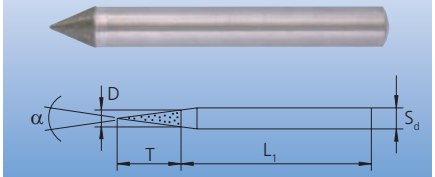
Conical pointed shape SK is exceptionally well suited for deburring bores, regrinding centring holes and chamfering.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**393406**
BSK 6.0-45°/6 B 64

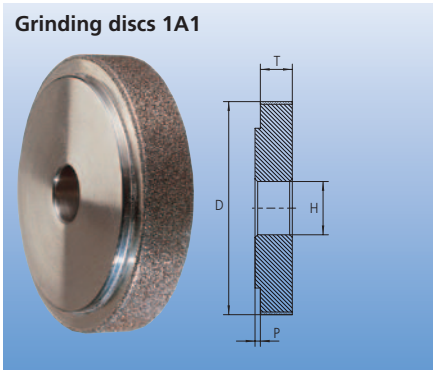
PFERDERGONOMICS®:
EmissionFilter

Conical pointed shape SK



Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Angle α	Shank dia. S_d [mm]	Shank length L_2 [mm]	
Shank dia. 6 mm							
BSK 6,0-45°/6	B 64	393406	6.0 x 7	45°	6	50	1
BSK 6,0-60°/6	B 64	393413	6.0 x 5	60°	6	50	1

Grinding discs 1A1

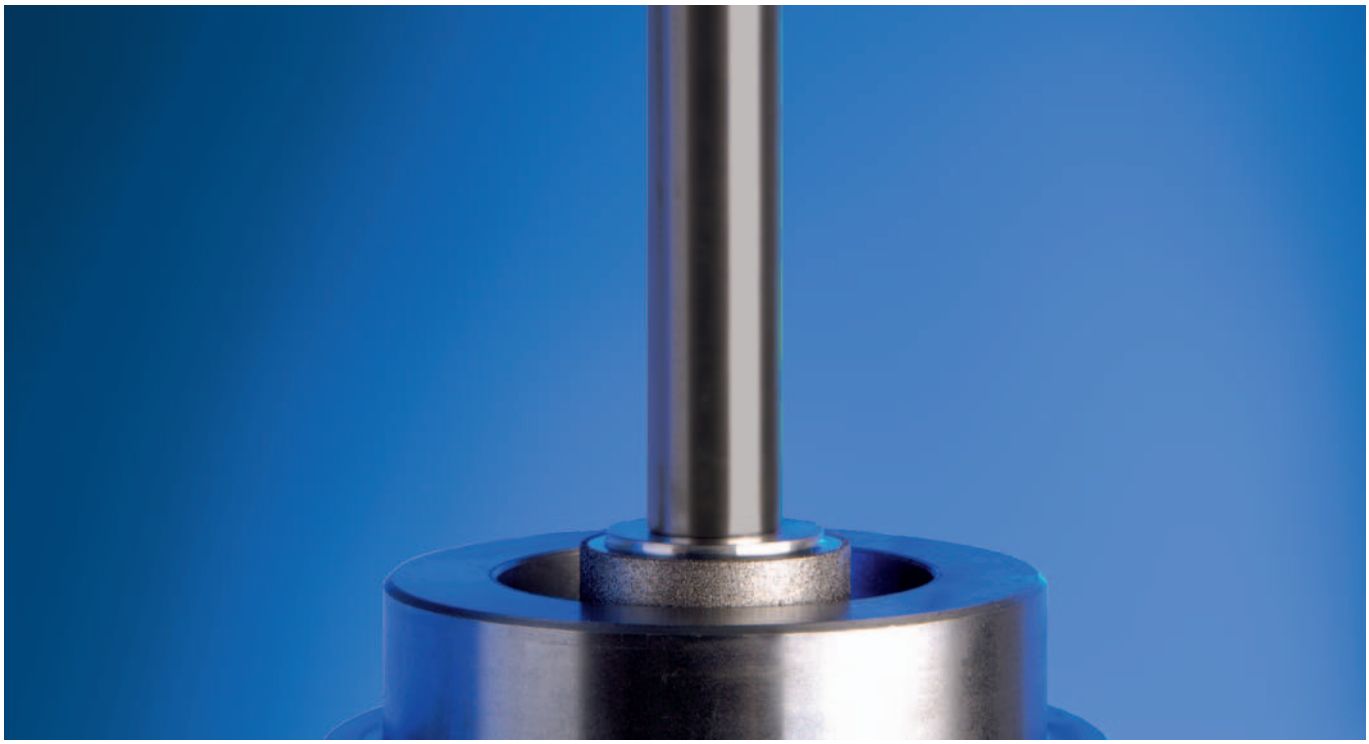


CBN grinding discs are intended for use on stationary machines. Grinding discs have an additional centring shoulder which allows them to be accurately mounted and aligned on the machine spindle. Combined with a stable mandrel, these tools are ideal for work in deep-set or long bores.

Please refer to page 8 for the recommended cutting speeds.

Ordering example:
EAN 4007220**355015**
B1A1 20-10-8 B 151

Description	Grit size	EAN 4007220	Outer dia. x total width D x T [mm]	Centre hole dia. H [mm]	Width centring shoulder P [mm]	
B1A1 20-10-8	B 151	355015	20.0 x 10	8	2	1
B1A1 30-10-10	B 151	355039	30.0 x 10	10	2	1
B1A1 40-10-10	B 151	355053	40.0 x 10	10	2	1
B1A1 50-10-10	B 151	355077	50.0 x 10	10	2	1



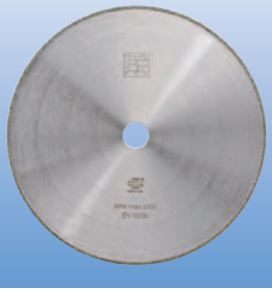
Electroplated diamond cut-off wheels with grit size D 852 are exceptionally well-suited to machine grey cast iron and nodular cast iron (GG and GGG or GJL and GJS).

Advantages:
- Very long tool life
- Ideal for work on deep-lying areas because of the constant tool diameter
- Easy and quick elimination of burning-in
- Minimized dust formation due to wear-resistant coating and coarse chips

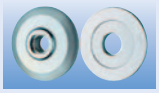
Ordering example:
EAN 4007220**956021**
D1A1R 230-3.8-22.23 D 852 GAD

PFERDERGONOMICS®:

Diamond cut-off wheels



Description	EAN 4007220	D [mm]	Cutting width T [mm]	Blade thickness E [mm]	Centre hole dia. H [mm]	Grit size	Shape	Protective segments per side	
Grey and nodular cast iron (GG and GGG or GJL and GJS)									
D1A1R 230-3,8-22,23 D 852 GAD	956021	230	3.8	1.8	22.23	D 852	D	none	1
D1A1R 400-4,5-40,0 D 852 GAD	947449	400	4.5	2.5	40	D 852	D	none	1



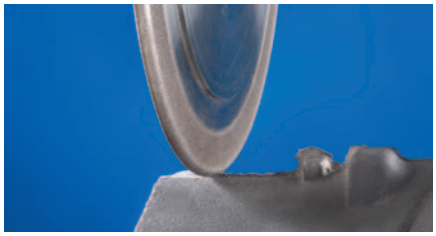
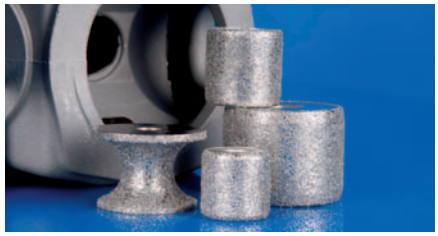
The use of the clamping flange set SFS 76 reduces noise development during manual grinding. It can be used with the diamond cut-off wheel D1A1R 230-3.8-22.23 D 852 GAD on angle grinders with M14 thread.

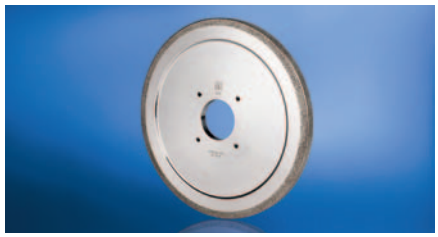
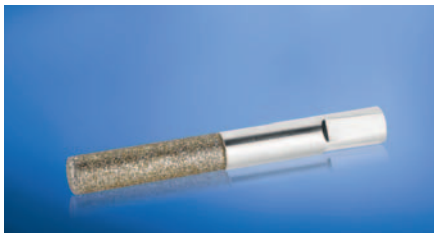
Ordering data and more detailed information about the clamping flange set can be found in Catalogue 206.

PFERDVIDEO

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

Customer-specific tool solutions for grey and nodular cast iron

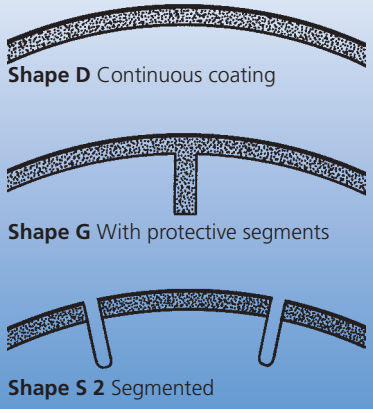
More information about customer-specific tool solutions can be found on page 10.

Diamond cut-off wheels

Electroplated diamond cut-off wheels are characterized by their particularly efficient cutting performance because of their large chip spaces. They are used with grit sizes from D 64 to D 427 for cutting hard materials such as tungsten carbide or ceramics and fibre-reinforced plastics (GRP/CRP).

PFERDERGONOMICS®:

Description	EAN 4007220	D [mm]	Cutting width T [mm]	Blade thickness E [mm]	Centre hole dia. H [mm]	Grit size	Shape	Protective segments per side	
Hard materials, e.g. glass, ceramics or tungsten carbide									
D1A1R 22-0,5-1,7 D 64 GAD	355190	22	0.5	0.3	1.7	D 64	D	none	1
D1A1R 30-1-10 D 151 GAD	355206	30	1.0	0.6	10	D 151	D	none	1
D1A1R 40-1-10 D 151 GAD	355213	40	1.0	0.6	10	D 151	D	none	1
D1A1R 50-1,4-6 D 151 GAD	355220	50	1.4	1.0	6	D 151	D	none	1
D1A1R 50-1,4-10 D 151 GAD	666043	50	1.4	1.0	10	D 151	D	none	1
D1A1R 125-1,4-20 D 151 GAD	355237	125	1.4	1.0	20	D 151	D	none	1
Fibre-reinforced plastics (GRP and CRP) as well as pre-sintered and green ceramic									
D1A1R 50-2-6 D 357 GAD	308790	50	2.0	1.0	6	D 357	D	none	1
D1A1R 50-2-6 D 357 GAG	168530	50	2.0	1.0	6	D 357	G	3	1
D1A1R 50-2-10 D 357 GAD	666067	50	2.0	1.0	10	D 357	D	none	1
D1A1R 50-2-10 D 357 GAG	666050	50	2.0	1.0	10	D 357	G	3	1
D1A1R 75-2-10 D 357 GAD	956038	75	2.0	1.0	10	D 357	D	3	1
D1A1R 75-2-10 D 357 GAG	393420	75	2.0	1.0	10	D 357	G	3	1
D1A1R 100-2-22,23 D 427 GAD	805992	100	2.0	1.0	22.23	D 427	D	none	1
D1A1R 100-2-22,23 D 427 GAG	806005	100	2.0	1.0	22.23	D 427	G	3	1
D1A1R 115-2-22,23 D 427 GAD	806012	115	2.0	1.0	22.23	D 427	D	none	1
D1A1R 115-2-22,23 D 427 GAG	806029	115	2.0	1.0	22.23	D 427	G	3	1
D1A1R 125-2-22,23 D 427 GAD	806036	125	2.0	1.0	22.23	D 427	D	none	1
D1A1R 125-2-22,23 D 427 GAG	806043	125	2.0	1.0	22.23	D 427	G	3	1
D1A1R 178-2-22,23 D 427 GAD	806050	178	2.0	1.0	22.23	D 427	D	none	1
D1A1RSS 230-2,5-22,23 D 427 GAS2	806074	230	2.5	1.5	22.23	D 427	S2	none	1
D1A1RSS 250-2,5-22,23 D 427 GAS2	806081	250	2.5	1.5	22.23	D 427	S2	none	1
D1A1RSS 300-2,5-30,0 D 427 GAS2	806098	300	2.5	1.5	30	D 427	S2	none	1
D1A1RSS 350-2,8-30,0 D 427 GAS2	806104	350	2.8	1.8	30	D 427	S2	none	1
D1A1RSS 400-3,8-30,0 D 427 GAS2	806111	400	3.8	2.8	30	D 427	S2	none	1



Shape D Continuous coating

Shape G With protective segments

Shape S 2 Segmented

Advice on tool selection:

- When cutting glass, ceramic or tungsten carbide, use fine grit sizes D 64 or D 151.
- When cutting pre-sintered ceramic, use coarse grit sizes D 357 or D 427.
- For cutting, trimming or cutting-to-length of fibre-reinforced plastics (GRP/CRP), use coarse grit sizes D 357 or D 427. Fine grit sizes D 64 and D 151 can also be used for small geometries.
- For tools to use when cutting-off grey and nodular cast iron, see page 29.
- Through its protective segments, shape G cut-off wheels offer a better free-cutting performance than shape D.

Recommendations for use:

- Please observe the recommended cutting speeds on page 8.
- Matching arbors for tools up to and including a diameter of 75 mm can be found on page 31.

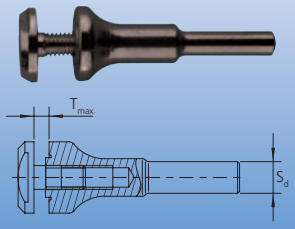
Other dimensions and CBN cut-off wheels are available on request. Further information on customer-specific tool solutions can be found on page 10.

Accessories for mounting diamond cut-off wheels up to a diameter of 75 mm.

Safety notes:
- For safety reasons, it is imperative to remain within the stated rotational speed limit

Ordering example:
EAN 4007220**443606**
BO 3/1.7 1

Arbor for diamand cut-off wheels

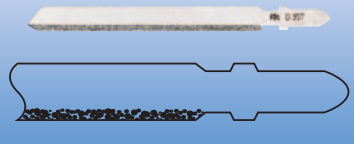


Description	EAN 4007220	Shank dia. S_d [mm]	Suitable for centre hole [mm]	Max. tool width $T_{max.}$ [mm]	Max. speed [RPM]	
BO 3/1,7 1	443606	3	1.7	1.0	28,000	1
BO 6/10 3	956045	6	10	3.0	30,000	1
BO 8/10 3	806401	8	10	3.0	30,000	1

Diamond sabre saw blades

Diamond sabre saw blades are exceptionally well suited to work on fibre-reinforced plastics (GRP/CRP), e.g. for making cut-outs in tank and pressure vessel construction or for cutting prefabricated slabs.
They are characterized, in particular, by their flexible guidability for producing a wide range of geometries and by their long tool life. Suitable for all Bosch-socket sabre saws.

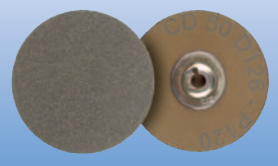
Diamond sabre saw blades



Description	EAN 4007220	Coating length [mm]	Grit size	Overall length [mm]	Total width [mm]	
DIA-SSB 50/75 D 357	535950	50	D 357	75	2	1
DIA-SSB 75/100 D 357	535967	75	D 357	100	2	1

Additional diamond tools in the PFERD product range

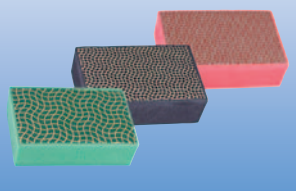
COMBIDISC® diamond abrasive discs



COMBIDISC® is a comprehensive range for surface finishing. COMBIDISC® diamond abrasive discs are ideally suited for work on wear-resistant coatings and hard facings out of tungsten carbide, chromium carbide, titanium carbide, etc.

Further information and ordering data can be found in Catalogue 204.

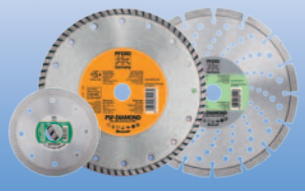
Diamond hand pads



Diamond hand pads are ideally suited for grinding work on wear-resistant coatings and hard facings out of tungsten carbide, chromium carbide, titanium carbide, etc.

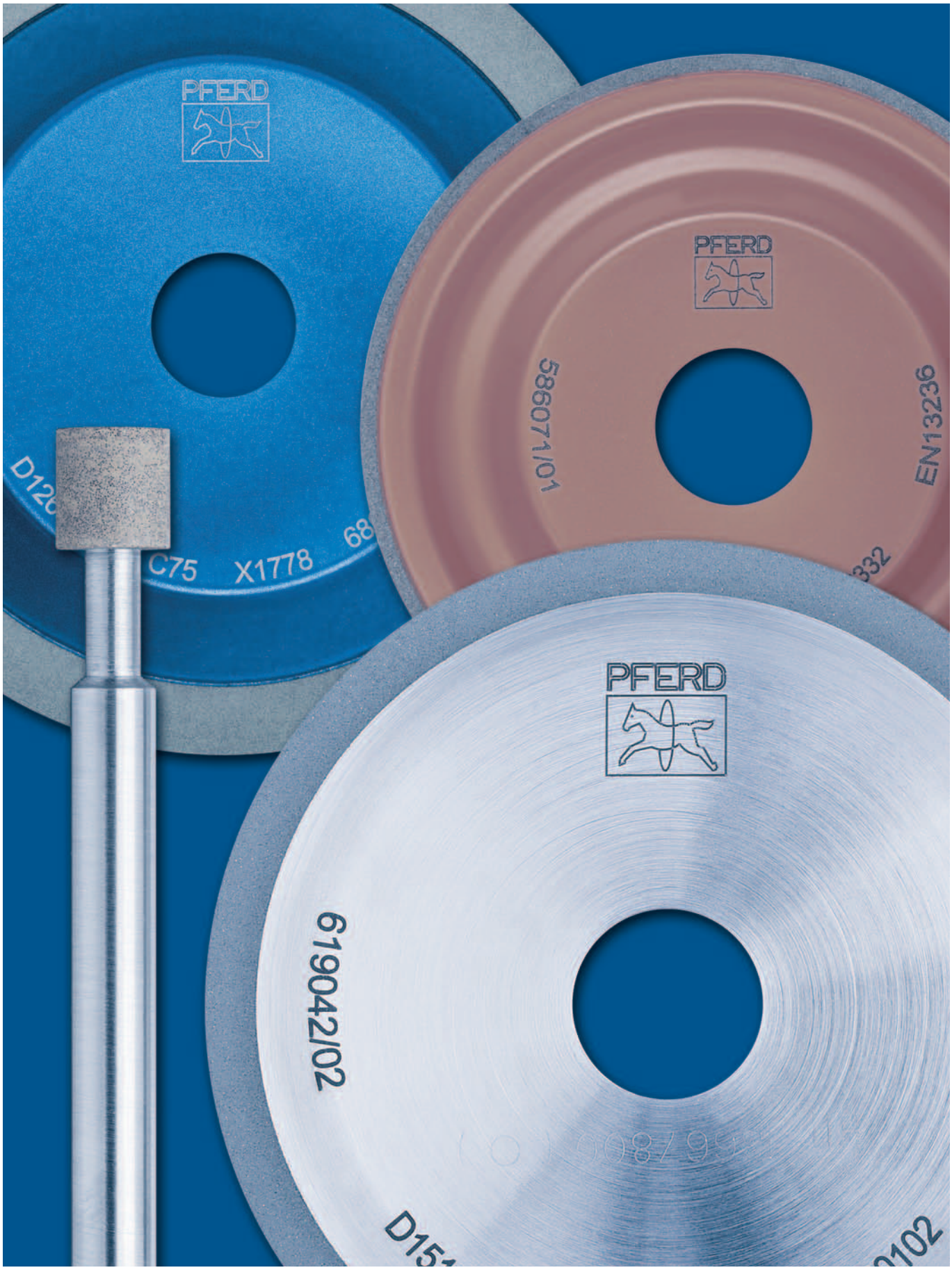
Further information and ordering data can be found in Catalogue 204.

Diamond cut-off wheels for stonework and construction



For the many cutting tasks in construction and crafts, PFERD offers diamond cut-off wheels for concrete, exposed aggregate concrete, clinker brick, hard stone, granite or other building materials.

Further information and ordering data can be found in Catalogue 206.


PFERD
C75 X1778
PFERD
58607/01
EN13236
PFERD
619042/02

Resinoid-bonded diamond and CBN grinding discs are often used for grinding tungsten carbide or HSS tools, as well as in other production grinding processes. They are used in both wet and dry grinding. The characteristics of the resinoid bond can be optimally adjusted to the application.

Recommendations for use:

- A larger diameter D allows greater economic value because of better thermal and kinematic conditions.
- Always select a coating width, W or U, that is narrower than the workpiece to be ground.
- A larger coating thickness, X, affects the material cost for diamond or CBN and the bond. It has only little influence on production costs, however. A larger coating thickness, X, is therefore generally more economical.
- Please observe the recommended cutting speeds on page 8.

Dressing

Tools with resinoid bond are easy to dress. Different tool contours can be worked with the same tools. After dressing, ensure that the coating is worked on using sharpening block SBL 1002413, so that the easy cutting characteristics of the tool are regained. More detailed information and ordering data can be found on page 35.

Coolant

If possible, wet grinding is to be preferred to dry grinding. This reduces tool wear and the risk of thermal damage to the workpiece. Bonds that are designed for dry grinding may, in exceptional circumstances, also be used for wet grinding.

Diamond grinding discs:
Emulsion 1–5 %
CBN grinding discs:
Low-viscosity mineral oils
or emulsions (5–8 %) with EP-additives

Concentration

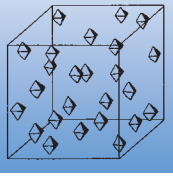
The concentration is the amount of grit in carats [ct] (= 0.2 g) per cubic centimetre of abrasive coating. A concentration C 100 corresponds to 4.4 ct/cm³ and around 25 % of the volume of the abrasive in the total bond. The usual spread of the concentration can be taken from the table below.

A high concentration makes the tool more resistant to wear. This characteristic is particularly desirable in all profile grinding tasks.

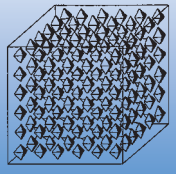
Tool life advantages resulting from a high concentration compensate, as a rule, the higher tool costs (due to higher diamond or CBN grit volume). Please note that a high concentration can cause larger grinding forces and higher process temperatures. This is therefore not always the technologically and economically best solution.

Concentration data	Carat weight per cm³ coating volume [ct/cm³]	Grit volume in % of the abrasive coating
C 25	1.1	6.25
C 38	1.65	9.50
C 50	2.2	12.50
C 75	3.3	18.75
C 100	4.4	25.00
C 125	5.5	31.25

Low concentration, e.g. C 25



High concentration, e.g. C 125

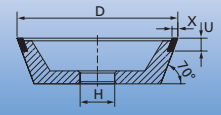


Bond types

PHT	PHN	PH 4.1	PH 4.2	PHST
Phenolic resin bond for high-performance dry grinding. The PHT bond is designed for dry grinding and allows cool grinding also without coolant.	Phenolic resin bond for high-performance wet grinding. The PHN bond is designed for wet grinding. It is comparatively hard and offers an excellent tool life and dimensional stability.	Phenolic resin bond for the highest stock removal rates. Very long tool life. Suitable for dry and wet grinding.	High-performance bond for cool dry grinding at low infeed rates. Only for 11V9 and 12V9 up to diameter 150 mm.	Phenolic resin bond for dry grinding at very high stock removal rates. The PHST bond type can take larger loads, i.e. it allows higher infeed per stroke without thermal damage to the workpiece. Inevitably, the reduction in grinding time is obtained at the price of a slightly shorter tool life.

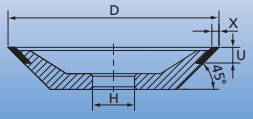
In addition to the listed bond types, a wide range of special bonds is available, which, in consultation with our technical advisors, can be used for special grinding work. Our technical advisors will be happy to provide a consultation at any time.

Shape 11V9



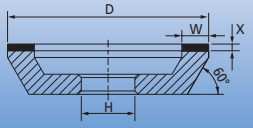
Shape	Dimension [mm] D - W - U - H	Grit size	Bond	Grit concentration	EAN 4007220	
11V9	100 - 2 - 10 - 20	D 126	PHT	C 75	168592	1
11V9	100 - 3 - 10 - 20	D 126	PHST	C 75	168622	1

Shape 12V9



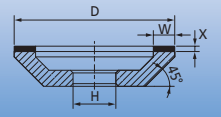
Shape	Dimension [mm] D - W - U - H	Grit size	Bond	Grit concentration	EAN 4007220	
12V9	100 - 2 - 10 - 20	D 126	PHT	C 75	168646	1

Shape 11A2/60°



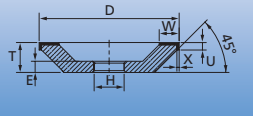
Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Grit concentration	EAN 4007220	
11A2/60°	100 - 8 - 2 - 20	D 64	PHT	C 75	261965	1
11A2/60°	100 - 8 - 2 - 20	D 126	PHT	C 75	261972	1

Shape 12A2/45°



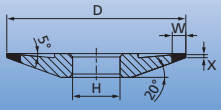
Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Grit concentration	EAN 4007220	
12A2/45°	125 - 10 - 2 - 20	D 64	PHT	C 50	168677	1
12A2/45°	125 - 10 - 2 - 20	D126	PHT	C 75	168660	1

Shape 12C9



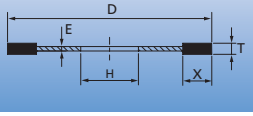
Shape	Dimension [mm] D - W - U - X - H	Grit size	Bond	Grit concentration	EAN 4007220	
12C9	100 - 10 - 4 - 3 - 20	D 126	PHT	C75	956052	1

Shape 4BT9



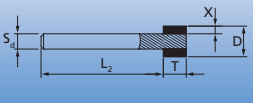
Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Grit concentration	EAN 4007220	
4BT9	100 - 6 - 1 - 20	D 126	PHT	C 75	350119	1

Shape 1A1R



Shape	Dimension [mm] D - T - X - H	Grit size	Bond	Grit concentration	EAN 4007220	
1A1R	100 - 1 - 5 - 20	D 151	PHT	C 75	350096	1
1A1R	150 - 1 - 7 - 20	D 151	PHT	C 75	806357	1

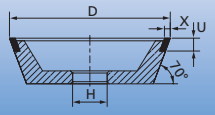
Shape 1A1W



Shape	Dimension [mm] D - T - X	Shank dia. S_d [mm]	Shank length L_2 [mm]	Grit size	Bond	Grit concentration	EAN 4007220	
1A1W	3 - 5 - 0.75	3	50	D 126	PHN/T	C 100	665817	1
1A1W	4 - 5 - 1	3	50	D 126	PHN/T	C 100	665763	1
1A1W	5 - 5 - 1.5	3	50	D 126	PHN/T	C 100	665770	1
1A1W	6 - 6 - 1.5	6	50	D 126	PHN/T	C 100	665787	1
1A1W	8 - 8 - 2	6	50	D 126	PHN/T	C 100	665794	1
1A1W	10 - 8 - 2	6	50	D 126	PHN/T	C 100	665824	1

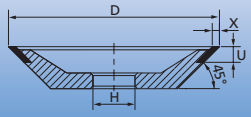
Shape	Dimension [mm] D - W - U - H	Grit size	Bond	Grit concen-tration	EAN 4007220	
11V9	100 - 2 - 10 - 20	B 126	PHT 4.1	C 75	350171	1
11V9	100 - 2 - 10 - 20	B 151	PH 4.2	-	535646	1
11V9	100 - 2 - 10 - 20	B 181	PHST	C 75	168684	1

Shape 11V9



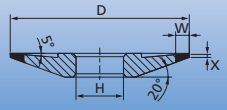
Shape	Dimension [mm] D - W - U - H	Grit size	Bond	Grit concen-tration	EAN 4007220	
12V9	100 - 2 - 10 - 20	B 126	PHT	C 75	168707	1

Shape 12V9



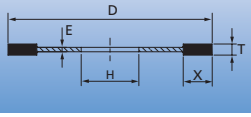
Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Grit concen-tration	EAN 4007220	
4BT9	100 - 6 - 1 - 20	B 126	PHT	C 75	350126	1

Shape 4BT9



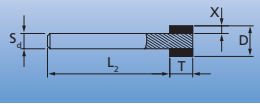
Shape	Dimension [mm] D - T - X - H	Grit size	Bond	Grit concen-tration	EAN 4007220	
1A1R	100 - 1 - 5 - 20	B 151	PHT	C 100	350102	1

Shape 1A1R



Shape	Dimension [mm] D - T - X	Shank dia. S_d [mm]	Shank length L_2 [mm]	Grit size	Bond	Grit concen-tration	EAN 4007220	
1A1W	3 - 5 - 0.75	3	50	B 126	PHN/T	C 100	665695	1
1A1W	4 - 5 - 1	3	50	B 126	PHN/T	C 100	665701	1
1A1W	5 - 5 - 1.5	3	50	B 126	PHN/T	C 100	665718	1
1A1W	6 - 6 - 1.5	6	50	B 126	PHN/T	C 100	665725	1
1A1W	8 - 8 - 2	6	50	B 126	PHN/T	C 100	665732	1
1A1W	10 - 8 - 2	6	50	B 126	PHN/T	C 100	665749	1

Shape 1A1W



Sharpening block for diamond and CBN tools

The sharpening block is used to restore the sharpness of resinoid-bonded diamond and CBN grinding discs (e.g. after dressing with a diamond dressing tool).

The sharpening block is first soaked in coolant and then in-fed manually or by means of a suitable feeding device. Grinding with the sharpening block will quickly restore the sharpness of your grinding disc.

Sharpening block for diamond and CBN tools

Description	EAN 4007220	Dimensions [mm]	
SBL 1002413	255605	100 x 13 x 24	5

Diamond and CBN tools resinoid bond

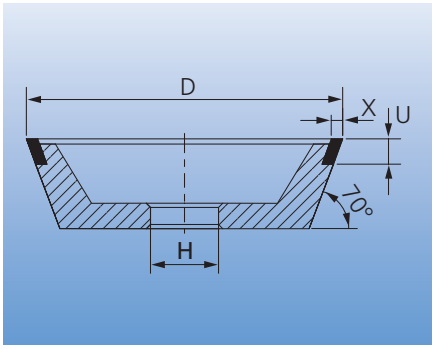
Customer-specific tool solutions

In addition to the standard resinoid-bonded diamond and CBN grinding tools available from stock, customer-specific tool solutions are also possible.
In your request, please specify the material to be worked, the application and the tool drive.

In the following tables, all the available shapes and dimensions are shown. For dimensions separated by slashes, please select the desired dimension.

Ordering example:
11V9 100-2-10-20 D 126 PHT C 75

Ordering example explanation:
11V9 = Designation and shape of the tool according to ISO 6104
100 = Outer diameter D [mm]
2 = Useable abrasive coating thickness X [mm]
10 = Coating width U [mm]
20 = Bore diameter H [mm]
D 126 = Grit size (D = diamond, B = CBN)
PHT = Bond type
C 75 = Grit concentration (C)

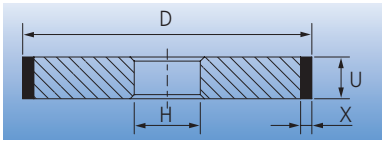


Abbreviation	Comment
α	Mount angle
D [mm]	Outer diameter
E [mm]	Bottom thickness
H [mm]	Bore diameter
J [mm]	Smaller diameter

Abbreviation	Comment
K [mm]	Internal diameter
L_2 [mm]	Shank length
L_4 [mm]	Reduced diameter length
R [mm]	Radius
S_1 [mm]	Reduced diameter

Abbreviation	Comment
S_d [mm]	Shank diameter
T [mm]	Total width
U [mm]	Coating width
W [mm]	Mounted point width
X [mm]	Useable abrasive coating thickness

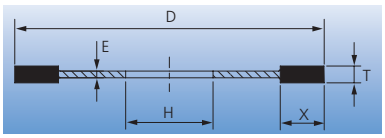
Shape 1A1



D [mm]	U [mm]	X [mm]	H [mm]
50	4 / 6 / 8 / 10 / 12	3 / 4 / 5 / 6	Please specify!
75	6 / 8 / 10 / 12	3 / 4 / 5 / 6	
100	6 / 8 / 10 / 12	3 / 4 / 5 / 6	
125	8 / 10 / 12 / 15	3 / 4 / 5 / 6	
150	8 / 10 / 12 / 15 / 20	3 / 4 / 5 / 6	
175	10 / 12 / 15 / 20	3 / 4 / 5	
200	12 / 15 / 20 / 25 / 30	3 / 4 / 5 / 6	
225	12 / 15 / 20	3 / 4 / 5	
250	15 / 20 / 25 / 30 / 40 / 50	3 / 4 / 5	
300	15 / 20 / 25 / 30 / 40 / 50	3 / 4 / 5 / 6	
350	20 / 25 / 30 / 40 / 50	3 / 4 / 5 / 6	
400	25 / 30 / 40 / 50	3 / 4 / 5 / 6	
450	25 / 30 / 40 / 50	3 / 4 / 5 / 6	
500	30 / 40 / 50	3 / 4 / 5 / 6	
600	35 / 40	3 / 5	

Ordering example: 1A1 200-20-4-127 D 126 PHN C 75

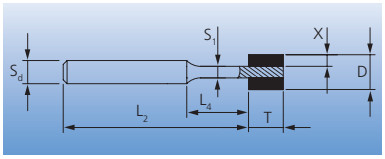
Shape 1A1R



D [mm]	T [mm]	X [mm]	H [mm]	E [mm]
75	1	5	H ≥ 20 mm Please specify!	0.8
100	1	5		0.8
125	1	5		0.8
150	1	7		0.8
175	1.2	7		0.9
200	1.2	7		0.9

Ordering example: 1A1R 150-1-7-20 D 151 PHT C 75

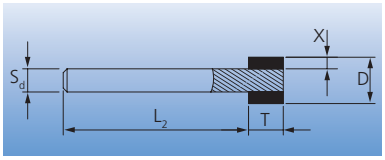
Shape 1A1W



D [mm]	T [mm]	X [mm]	S_d [mm]	L_2 [mm]	S_1 [mm]	L_4 [mm]
3	6	0.75	3	60	1.5	8
4	6	1	3	60	2	8
5	6	1.5	3	60	2	8
6	6	1.5	6	60	3	8
6	8	1.5	6	60	3	10
7	6	2	6	60	3	8
8	6	2	6	60	4	8
8	10	2	6	60	4	12
9	6	2	6	60	5	8

Ordering example: 1A1W 8-6-2-6-60-4-8 D 91 PHNT C 100

Shape 1A1W

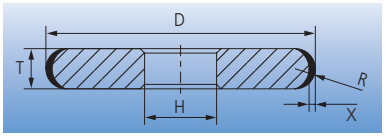


D [mm]	T [mm]	X [mm]	S_d [mm]	L_2 [mm]
10	6	2	6	60
10	10	2	6	60
12	6	2	6	60
12	10	2	6	60
15	6	2	6	60
15	10	2	6	60
18	6	2	6	60
18	10	2	6	60
20	6	2	6	60
20	10	2	6	60

Ordering example: 1A1W 15-10-2-6-60 D 91 PHNT C 100

Other dimensions on request!

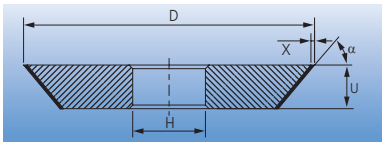
Shape 1FF1



D [mm]	T [mm]	X [mm]	R [mm]	H [mm]
50	6	2	3	Please specify!
50	8		4	
50	10		5	
75	6		3	
75	8		4	
75	10		5	
100	6		3	
100	8		4	
100	10		5	
100	12		6	
125	6		3	
125	8		4	
125	10		5	
125	12		6	
150	6		3	
150	8		4	
150	10		5	
150	12		6	

Ordering example: 1FF1 150-8/4R-2-32 D 126 PHN C 75

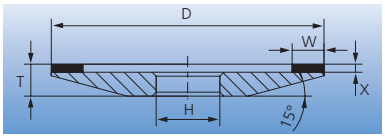
Shape 1V1



D [mm]	U [mm]	X [mm]	α	H [mm]
50	6 / 8	3 / 4	20° to 89° Please specify!	Please specify!
75	6 / 8 / 10			
100	8 / 10			
125	8 / 10			
150	8 / 10			
175	10			
200	12 / 15			
250	15 / 20			
300	15 / 20			

Ordering example: 1V1 150-8-3/60°-32 B 126 107 PHN C 75

Shape 4A2

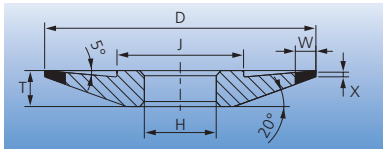


D [mm]	W [mm]	X [mm]	H [mm]	T-X [mm]
50	3 / 5	2 / 3 / 4	Please specify!	5
75	3 / 5			5
100	3 / 4 / 5 / 6 / 8 / 10			6
125	3 / 4 / 5 / 6 / 8 / 10			7
150	3 / 4 / 5 / 6 / 8 / 10 / 12.5			9

Ordering example: 4A2 100-4-2-20 D 64 PHT C 50

Other dimensions on request!

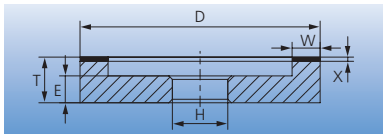
Shape 4BT9



D [mm]	W [mm]	X [mm]	H [mm]	T [mm]	J [mm]
75	6	1	Please specify!	8	36
100	6 / 10	1		10	50
125	6 / 10	1		12	65
150	6 / 10	1		15	80

Ordering example: 4BT9 100-6-1-20 D 126 PHN C 75

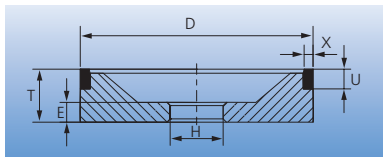
Shape 6A2



D [mm]	W [mm]	X [mm]	H [mm]	T-X [mm]	E [mm]
50	3 / 5	2 / 3 / 4	Please specify!	20	10
75	3 / 5 / 10			20	10
100	5 / 8 / 10 / 12.5 / 15			20	10
125	4 / 6 / 8 / 10 / 12.5 / 15 / 20 / 25			23	10
150	6 / 8 / 10 / 12.5 / 15 / 20 / 25			23	10

Ordering example: 6A2 125-10-2-20 D 126 PHT C 50

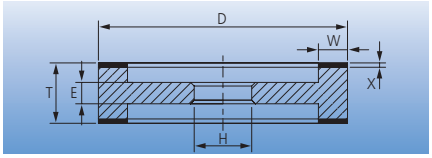
Shape 6A9



D [mm]	X [mm]	U [mm]	H [mm]	T [mm]	E [mm]
75	1.5	6 / 10	Please specify!	25	10
75	2	6 / 10		25	10
75	3	6 / 10		25	10
100	1.5	6 / 10		30	10
100	2	6 / 10		30	10
100	3	6 / 10		30	10
125	1.5	6 / 10		30	10
125	2	6 / 10		30	10
125	3	6 / 10		30	10
150	1.5	6 / 10		35	10
150	2	6 / 10		35	10
150	3	6 / 10		35	10

Ordering example: 6A9 100-2-10-20 D 126 PHN C 100

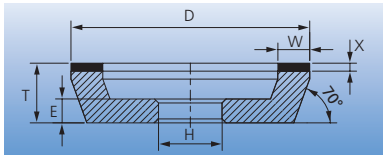
Shape 9A3



D [mm]	W [mm]	X [mm]	T [mm]	H [mm]	E [mm]
100	6 / 8 / 10	2 / 3	22	Please specify!	10
125	6 / 8 / 10		22		10
150	4 / 6 / 8 / 10 / 15		25 / 35		14
175	3 / 4 / 6 / 8 / 10 / 15		25 / 35		14
200	8 / 10 / 15		30		18

Ordering example: 9A3 150-8-2-25-20 D 64 PHN C 75

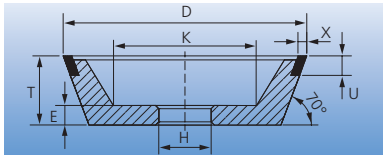
Shape 11A2



D [mm]	W [mm]	X [mm]	H [mm]	T - X [mm]	E [mm]
50	3 / 6	2 / 3 / 4	Please specify!	20	8
75	3 / 6 / 10			20	10
100	4 / 6 / 8 / 10			20	10
125	5 / 6 / 8 / 10 / 12.5 / 15			23	10
150	6 / 8 / 10 / 12.5 / 15			23	10
175	6 / 10 / 12.5 / 15			25	12

Ordering example: 11A2 125-10-2-20 D 126 PHT C 50

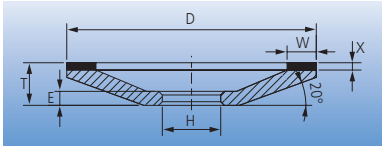
Shape 11V9



D [mm]	X [mm]	U [mm]	H [mm]	T [mm]	E [mm]	K [mm]
50	2	10	Please specify!	30	10	22
75	1.5 / 2 / 3	10		30	10	41
100	1.5 / 2 / 3	10		35	10	60
125	1.5 / 2 / 3	10		40	10	75
150	1.5 / 2 / 3	10		50	10	89

Ordering example: 11V9 100-2-10-20 D 126 PHT C 75

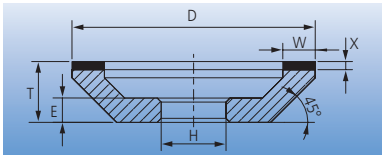
Shape 12A2/20°



D [mm]	W [mm]	X [mm]	H [mm]	T - X [mm]	E [mm]
75	3 / 5 / 6 / 8 / 10	2 / 3 / 4	Please specify!	8	5
100	3 / 5 / 6 / 8 / 10			10	6
125	5 / 6 / 8 / 10			14	8
150	5 / 6 / 8 / 10			16	9
175	6 / 10			18	10
200	6 / 10			20	11
250	6 / 10			23	13

Ordering example: 12A2/20° 125-10-2-20 D 126 PHT C 50

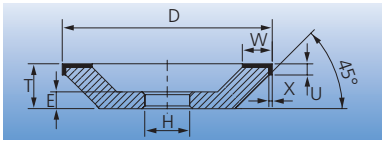
Shape 12A2/45°



D [mm]	W [mm]	X [mm]	H [mm]	T - X [mm]	E [mm]
50	3 / 6	2 / 3 / 4	Please specify!	15	8
75	3 / 6 / 10			20	9
100	4 / 6 / 8 / 10			23	10
125	5 / 6 / 8 / 10 / 12.5 / 15			23	10
150	6 / 8 / 10 / 12.5 / 15			23	10
175	6 / 10 / 12.5 / 15			25	12

Ordering example: 12A2/45° 125-10-2-20 D 126 PHT C 50

Shape 12C9

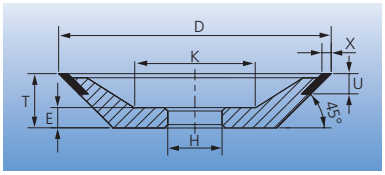


D [mm]	W [mm]	U [mm]	X [mm]	H [mm]	T [mm]	E [mm]
100	6 / 10	4	2	Please specify!	26	10
100	10	4	3		27	10
125	6 / 10	4	2		26	10
125	10	4	3		27	10
125	12.5	5	2		26	10
150	10	4	2		26	10
150	10	4	3		27	10
150	12.5 / 15	5	2		26	10

Ordering example: 12C9 100-10-4-2-20 D 64 PHN C 75

Other dimensions on request!

Shape 12V9

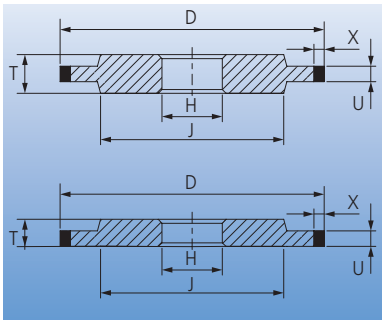


D [mm]	X [mm]	U [mm]	H [mm]	T [mm]	E [mm]	K [mm]
50	2	6	Please specify!	20	10	24
75	2 / 3	10		20	10	41
100	1.5 / 2 / 3	10		20	10	62
125	1.5 / 2 / 3	10		25	10	76
150	2 / 3	10		25	10	97

Ordering example: 12V9 100-2-10-20 D 126 PHT C 75

Shape 14A1

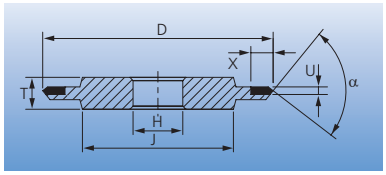
Shape 3A1



D [mm]	U [mm]	X [mm]	H [mm]	T [mm]	J [mm]
75	1 / 2	3 / 6	Please specify!	6	50
75	3 / 4 / 5	3 / 4 / 6		6	50
100	1 / 2	3 / 6		6	80
100	3 / 4 / 5	3 / 4 / 6		6	70
125	1 / 2	3 / 6		7	105
125	3 / 4 / 5 / 6	3 / 4 / 6		7	100
150	1 / 2	3 / 6		8	130
150	3 / 4 / 5 / 6	3 / 4 / 6		8	120
175	1 / 2	3 / 6		10	150
175	3 / 4 / 5 / 6 / 8	3 / 4 / 6		10	140
200	1 / 2	6		12	175
200	3 / 4 / 5 / 6 / 8 / 10	3 / 4 / 5 / 6		12	160
225	6 / 8 / 10	3 / 4 / 5		12	180
250	6 / 8 / 10 / 12	3 / 4 / 5		15	200
300	8 / 10 / 12	3 / 4 / 5 / 6		15	250
350	10 / 12 / 15	3 / 4 / 5 / 6		20	300
400	10 / 12 / 15 / 20	3 / 4 / 5 / 6		25	350
450	10 / 12 / 15 / 20	3 / 4 / 5 / 6		25	400
500	15 / 20 / 25	3 / 4 / 5 / 6		30	450
600	15 / 20 / 25 / 30	3 / 5		35	550

Ordering example: 14A1 150-6-3-32 D 107 PHN C 100

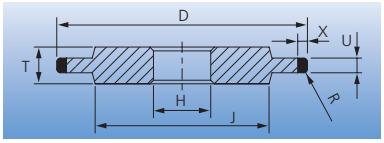
Shape 14E9



D [mm]	U [mm]	X [mm]	α	H [mm]	T [mm]	J [mm]
50	1 / 2	6	35° / 45° / 60° / 90°	Please specify!	6	32
75	1 / 2	6	35° / 45° / 60° / 90°		6	50
100	1 / 2	6	35° / 45° / 60° / 90°		6	70
125	1 / 2	6	35° / 45° / 60° / 90°		8	100
150	1 / 2	6	35° / 45° / 60° / 90°		8	120

Ordering example: 14E9 150-2-6-60°-32 D 107 PHN C 125

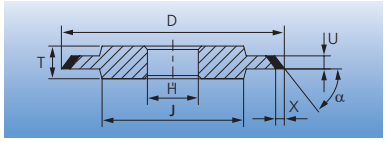
Shape 14F1



D [mm]	U [mm]	X [mm]	R [mm]	H [mm]	T [mm]	J [mm]
40	2	3 / 4 / 5 / 6	1	Please specify!	6	25
40	3		1.5		6	25
40	4		2		6	25
50	2		1		6	30
50	3		1.5		6	30
50	4		2		6	30
75	2		1		6	50
75	3		1.5		6	50
75	4		2		6	50
100	2		1		6	70
100	3		1.5		6	70
100	4		2		6	70
125	2		1		8	100
125	3		1.5		8	100
125	4		2		8	100
150	2		1		8	120
150	3		1.5		8	120
150	4		2		8	120

Ordering example: 14F1 150-2/1R-6-32 D 107 PHN C 125

Shape 14V1

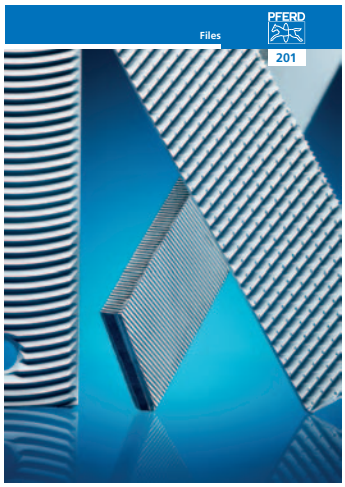


D [mm]	U [mm]	X [mm]	α	H [mm]	T [mm]	J [mm]
50	3 / 4 / 5	2 / 3 / 4	20° to 89° Please specify!	Please specify!	6	30
75	3 / 4 / 5				6	45
100	4 / 6				8	70
125	4 / 6				8	100
150	4 / 6				8	120
175	4 / 6 / 8				10	140
200	4 / 6 / 8 / 10				12	160
250	4 / 6 / 8 / 10 / 12				15	200
300	4 / 6 / 8 / 10 / 12				15	250

Ordering example: 14V1 150-6-3/60°-32 B 126 107 PHN C 75

Other dimensions on request!

Quality tools from a single source



Catalogue 201

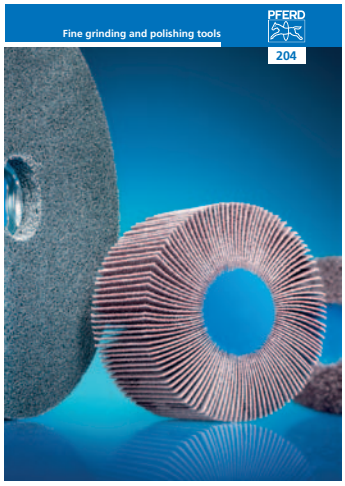
Files

Catalogue 202

Burrs

Catalogue 203

Mounted points



Catalogue 204

Fine grinding and polishing tools

Catalogue 205

Diamond and CBN tools

Catalogue 206

Grinding and cut-off-wheels

Catalogue 207

Stationary cut-off wheels

Catalogue 208

Industrial power brushes

Catalogue 209

Tool drives

Printed in Germany.
Subject to technical modifications.
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