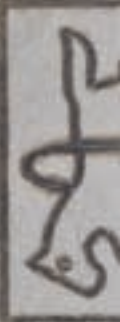

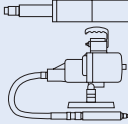
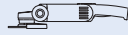




PFERD





Tool drive	Contents	Page
■	<b>General information</b>	<b>3-4</b>
■	<b>Bond types</b>	<b>5</b>
■	<b>Grit size comparison</b>	<b>6</b>
■	<b>Cutting speeds and safety recommendations</b>	<b>7-8</b>
■	<b>Standard and special product range</b>	<b>9-11</b>
<b>Electroplate-bonded diamond and CBN grinding tools</b>		
	<b>Files</b> ■ Diamond escapement files and sets <b>12</b> ■ Diamond needle files and sets <b>13</b> ■ Diamond riffler files and set <b>14</b> ■ Diamond handy files and sets <b>15</b> ■ Diamond files for manual filing tools <b>16</b> ■ Diamond machinist's files <b>17</b>	
	<b>Diamond sheeting</b>	<b>17</b>
	<b>Mounted points</b> ■ Diamond grinding points and special shapes <b>18-21</b> ■ CBN grinding points and special shapes <b>22-25</b>	
	<b>Diamond cut-off wheels</b>	<b>26</b>
	<b>Diamond-tipped sabre saw blades</b>	<b>27</b>
	<b>Sharpening block</b>	<b>31</b>

Tool drive	Contents	Page
<b>Resinoid-bonded diamond and CBN grinding tools</b>		
	<b>Standard and special range diamond and CBN</b>	<b>29-35</b>
<b>Ceramic-bonded CBN grinding tools</b>		
	<b>Special program</b>	<b>36</b>
<b>Diamond tools in other catalogues</b>		
	<b>Diamond cut-off wheels</b> For detailed information and ordering data please refer to catalogue 206.	
	<b>COMBIDISC® diamond</b> For detailed information and ordering data please refer to catalogue 204.	
	<b>Diamond abrasive spiral bands</b> For detailed information and ordering data please refer to catalogue 204.	
	<b>Diamond handpads and velcro-backed discs</b> For detailed information and ordering data please refer to catalogue 204.	
	<b>Diamond polishing pastes and polishing tools</b> For detailed information and ordering data please refer to catalogue 204.	


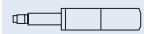
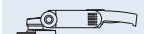
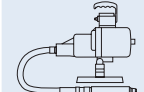


### Standard and special product range

PFERD stocks the range of products listed above as well as a broad spectrum of made to order items.

PFERD manufactures individual tools or small series with diamond or CBN cost effectively for applications which are not covered by the standard product range. Individual solutions can be developed in teamwork with our technicians.

We can produce flexible, quick and reliable solutions according to your requirements in proven PFERD quality. Please refer to page 10 for further information.

	Manual applications
	Straight grinders
	Angle grinders
	Flexible shaft drives

### Diamond and CBN product range

PFERD offers a high-quality, efficient and immediately available range of systems for surface finishing work – coarse to mirror polishing, right up to material cutting.

In addition to this wide range of standard grinding tools, PFERD also specialises in the customer-specific manufacture of electroplated-, resinoid-, ceramic and metal-bonded diamond and CBN tools.

These tools cut extremely well and have both a longer tool life as well as a better dimensional stability than standard grinding tools.

### Superhard abrasives

The term "superhard abrasives" refers to

1. **Diamond**
2. **CBN Cubic Boron Nitride**  
(cubic crystal boron nitride)

These abrasives are termed "superhard" because they are significantly harder than conventional abrasives, e.g., aluminium oxide and silicon carbide (see graph).

Diamond occurs in nature but, like CBN, can also be produced synthetically.

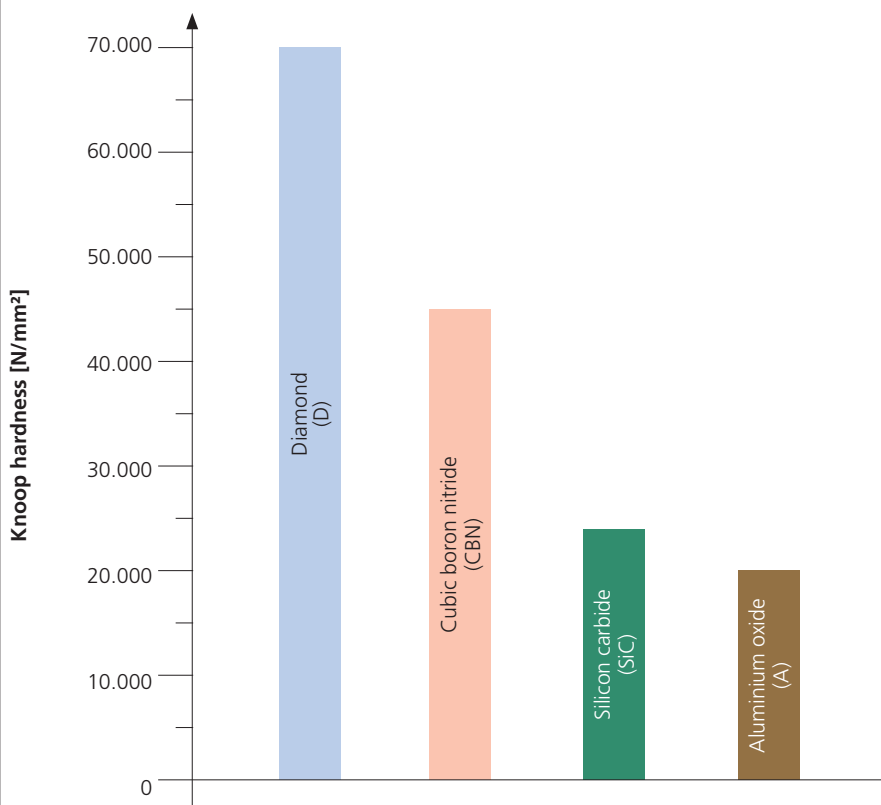
At extremely high pressures and temperatures, pure carbon (C) synthesizes to diamond, whereas the chemical elements boron (B) and nitrogen (N) synthesize to cubic crystalline boron nitride. Different cutting properties can be imparted to these abrasives by varying the process parameters during synthesis.

As the graph shows, CBN is nearly as hard as diamond.

#### Processes

- Precision grinding
- Precision cutting
- Deep grinding
- Round grinding
- Profile grinding
- Coordinate grinding
- Inner grinding
- Deburring

Comparison: hardness of abrasives



### The use of diamond and CBN according to application

	Industries	Tool and mould making	Machine/plant construction	Aerospace industry	Ceramic industry	Foundries	Automotive industry	Tool industry
Materials								
Synthetic carbons, graphite,	-	D	-	-	-	-	-	-
GRP/CRP, epoxy resins	D	D	D	-	-	-	D	-
Cast-, grey cast-, nodular iron	-	-	-	-	-	D/B	-	-
Carbides green and sintered	D	-	-	-	-	-	-	D
Ceramic, oxide ceramic, cermets, silicon carbide	-	D	-	-	D	-	D	D
Magnetic materials, ferrite (soft and hard ferrite)	-	D	-	-	-	-	D	-
Friction pads, brake pads	-	-	-	-	-	-	D	-
Tungsten carbide, nickel-based alloys	D	D	D	-	-	-	-	-
Tungsten electrodes	-	D	-	-	-	-	-	-
Chrome steel, ball bearing steel	-	B	-	-	-	-	B	-
Case-hardened steel	B	B	-	-	-	-	B	-
High-performance high-speed steel (HSS), tool steel	B	-	-	-	-	-	-	B
D = Diamond	B = CBN							

### Advantages of grinding tools with diamond and CBN

- Superb tool life and dimensional stability.
- Short processing times.
- Reduction of less unproductive work time as the tool does not need to be dressed or changed so often.
- Avoids thermal damage to the workpiece as low resulting grinding temperatures.
- Consistent quality for various types of workpieces.



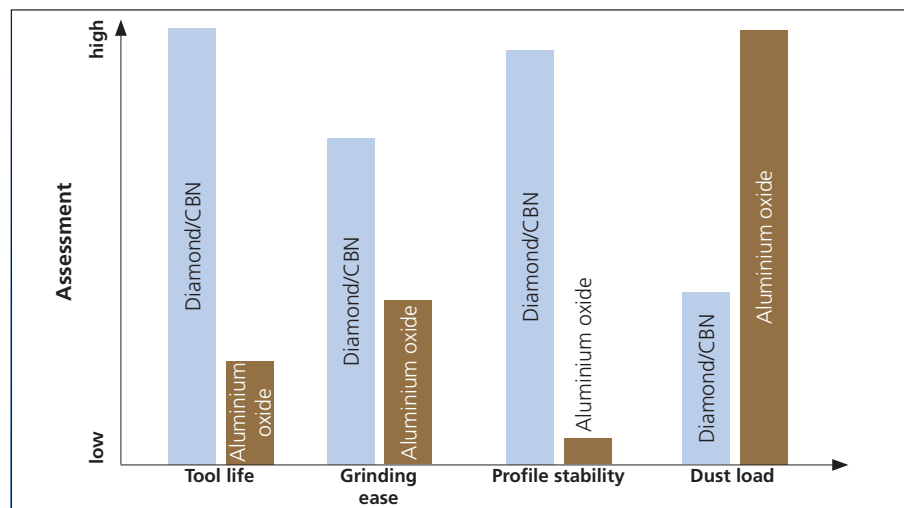
### Economical comparison of diamond and CBN against aluminium oxide

Diamond and CBN tools are characterised by

- longer tool life,
- improved abrasive qualities and
- longer-lasting profile-holding properties in comparison to similar tools that use normal or zirconia alumina.

The dust exposure is substantially reduced. This makes the product user-friendly.

The information in the adjacent diagram is valid when the optimal conditions and the required parameters are maintained.



### Diamond abrasives

#### Main uses for diamond

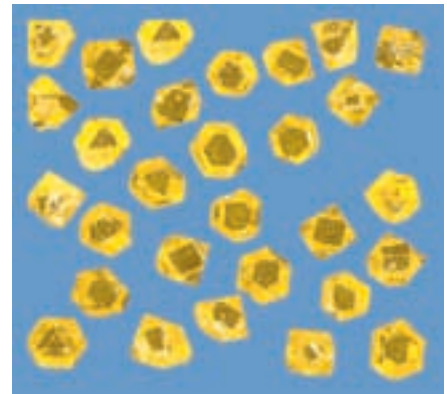
Diamond and CBN abrasives do not compete, but complement each other.

Diamond is not suitable for machining steel, because a chemical reaction between the iron (Fe) in the steel and the carbon (C) in the diamond would cause exceedingly fast tool wear. Using diamond abrasives on steel will therefore not be cost-effective.

#### Diamond tools

##### are suitable for working on

- Carbides (sintered)
- Carbides (green compacts)
- Glass
- Ceramics (including engineering ceramics)
- Porcelain
- Wear-resistant coatings
- Ferrite
- Silicon
- Graphite, synthetic carbon
- Thermoset plastics
- Glass-fibre reinforced plastics
- Natural and synthetic stone
- Refractory materials



### CBN abrasives

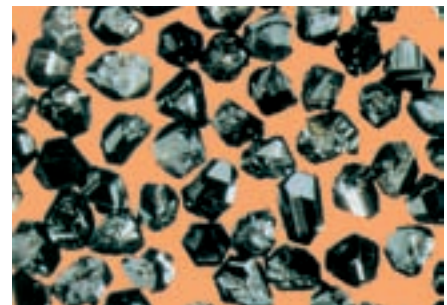
#### Main uses for CBN

CBN is only slightly less harder than diamond but does not react to the iron (Fe) contained in steel.

#### CBN tools

##### are suitable for working on

- High-speed steels
- Tool steels
- Case-hardened steels
- Ball-bearing steels
- Chromium steels
- Hardened steel materials with a hardness grade of over 54 HRC

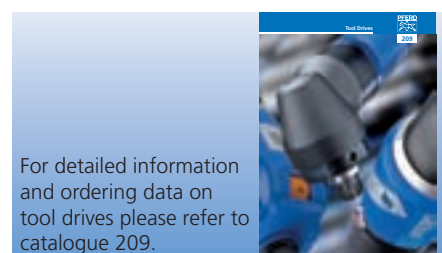


### Suitable drives for diamond and CBN tools

One prerequisite for the economical use of diamond and CBN tools is the selection of the appropriate tool drive. Not only the machines power but also the optimum RPM is extremely important. Please refer to the tables on pages 7 and 8 for guidelines on cutting speeds and RPM.

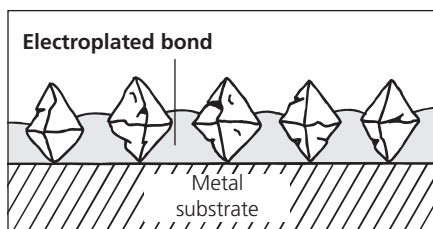
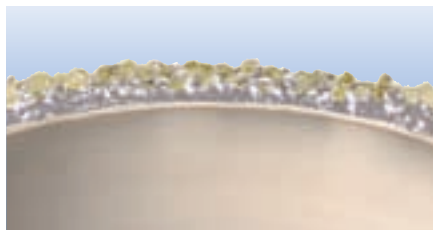
The following drives are suitable:

- Stationary machines,
- air grinders,
- air filing machines and
- electric angle grinders.



For detailed information and ordering data on tool drives please refer to catalogue 209.

### Electroplated bond



#### Abrasive structure

Electroplated diamond and CBN tools have a **monolayer** of abrasive coating on a metal substrate which is bonded through a nickel layer. This creates a very open tool surface with large chip spaces.

#### Advantages

- Very easy to cut due to the coating type.
- Virtually any substrate geometry can be coated.
- Due to their monolayer structure comparatively low in cost.

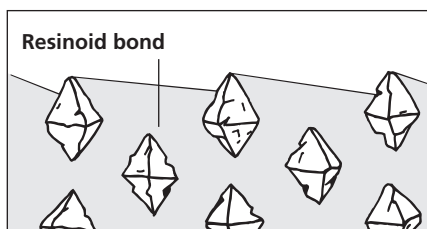
#### Fields of applications

The properties of electroplated tools can be varied over a wide range by selecting the appropriate grit size. Coarse grit tools have proven particularly suitable for soft materials such as glass-fibre reinforced plastics, whereas harder materials require a much finer grit. The electroplated nickel layer is extremely hard and wear-resistant.

#### Dry and wet grinding

Electroplated-bond tools can be used for both dry and wet grinding regardless of their design.

### Resinoid bond



#### Abrasive structure

The abrasive coating of a resinoid-bonded diamond or CBN grinding wheel is composed of

- grit,
- bond and
- filling material.

The bond is compacted so densely so that it contain no pores (see sketch).

#### Advantages

- Very high coarse stock removal rate due to the low bond hardness.
- Short grinding times.
- Little heat generated, i.e. "cool grinding".

#### Fields of applications

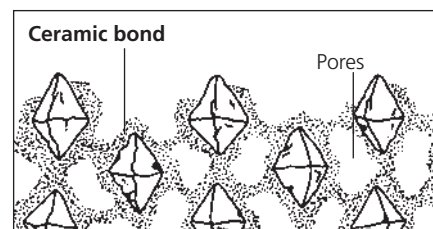
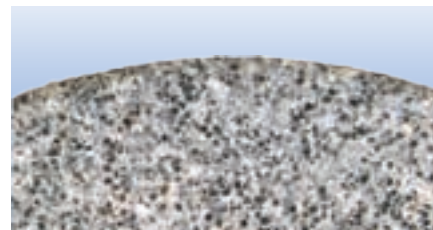
Resin bonded diamond and CBN abrasive tools have met with a particularly rapid acceptance in tool grinding applications (dry and wet grinding). The cutting materials machined in this industry, i.e. carbides (ground with diamond) and high-speed or tool steel (ground with CBN), call for the use of extremely wear-resistant abrasive grit which generates very little heat.

Grit concentration: C 38 - C 125  
Grit size recommendation: D/B 15 - D/B 252

#### Dry and wet grinding

Depending on the type of resinoid bond, these tools can be used for either wet or dry grinding. Tools for wet grinding can not be used for dry grinding!  
Technologically, wet grinding is superior to dry grinding in terms of both tool life and stock removal rates.

### Ceramic bond



#### Abrasive structure

The grinding layer of ceramic-bond CBN-tools comprises

- grit,
- bond and
- pores.

An important sign of the ceramic bond is the coating structure.

#### Advantages

- The pore spaces in a ceramic facilitate chip transport and coolant flows during grinding.
- Can be dressed without then having to sharpen (open) the tools.
- The bond structure can be adapted very sensitively and accurately to the requirements of the grinding process.

#### Fields of applications

Ceramic bond CBN grinding tools are highly effective for internal grinding operations on steel (large contact areas). They are also exceptionally well suited for a larger number of other production grinding processes.

Grit concentration: C 75 - C 200  
Grit size recommendation: B 46 - B 252

#### Wet grinding


Ceramic-bonded tools are always used wet. The use of an oil coolant will greatly prolong the tool life.

### Grit size comparison: Micro-grit sizes acc. to ISO 6106 and acc. to US mesh size

#### Definition of grit size

The size of the abrasive particles used for diamond and CBN tools is usually stated according to the FEPA standard (FEPA = Fédération Européenne des Fabricants de Produits Abrasifs).

Grit size is measured in terms of the nominal mesh size of specific screens and denotes the approximate grain diameter in  $\mu\text{m}$ , i.e., a **high number** indicates a **coarse** grit while a **small number** refers to a **fine** grit size.

Grit sizes	Grit designation [ $\mu\text{m}$ ] ISO 6106 (FEPA Standard)		Equivalent US merk number/Inch US mesh size
	Diamond	CBN	
Micro-grit	D 15	-	-
	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	B 502	35/ 45
	D 602	B 602	30/ 40
	D 852	B 852	20/ 30

#### Grit concentration

The grit concentration refers to the number of abrasive particles per unit volume of the coating.

It is normally expressed on a scale from C 25 to C 200 (see table).

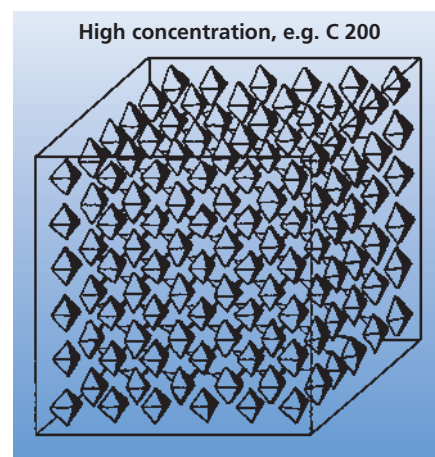
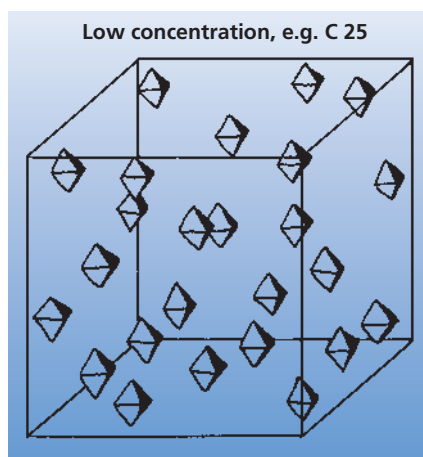
Diamond and CBN grain weights are conventionally measured in carats (ct). Thus, a C 25 concentration means a carat weight of 1,1 ct per  $\text{cm}^3$  of coating volume.

A high concentration of abrasive particles makes the tool more wear-resistant, which is particularly desirable for profile grinding operations or in applications involving very small diameters.

In most cases, the tool life depends on the grit concentration, i.e., the higher the grit concentration the longer the tool life. This more than outweighs the extra tool costs (due to greater diamond or CBN grit volumes).

Potential drawbacks of higher grit concentrations lie in the need for higher grinding forces and higher process temperatures. Hence, a higher grit concentration need not necessarily be the best solution in terms of economic and technological efficiency.

Concentration code	Carat weight per $\text{cm}^3$ abrasive volume [ $\text{ct}/\text{cm}^3$ ]	Grit volume in % of abrasive volume
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
C 150	6,6	37,50
C 175	7,7	43,75
C 200	8,8	50,00





### Recommended cutting speeds

The recommended cutting speed ranges are dependent on each application and always lie below the maximum cutting speed of the tool. The recommended RPM gives optimum cost/benefit.

The wide range of tasks and applications makes it very difficult to define generally applicable technical parameters for electroplated bond tools. The rates given below should be considered as a guideline only.

**The recommended cutting speeds serve only as guideline values.**

**PFERD offers individual advice on questions referring to processing with diamond and CBN tools. Our experienced technical advisors are always happy to help. You can find our global sales addresses at [www.pferd.com](http://www.pferd.com)**

### Recommended cutting speed [m/s] for diamond and CBN tools

Bond type		Application	8	12	15	18	20	25	30	40	50	80
Electroplated bond tools	Diamond	Dry grinding	←→					←→ FVK (GRP + CRP)				
		Wet grinding	←→									
	CBN	Dry grinding	←→					←→				
		Wet grinding	←→									
Resinoid bond tools	Diamond	Dry grinding	←→					←→				
		Wet grinding	←→									
	CBN	Dry grinding	←→					←→				
		Wet grinding	←→									
Ceramic bond tools	CBN	Wet grinding	←→									

### Recommendations for use

The specified operating values listed above result from the physical qualities of the hard materials and their respective bonds. If possible, wet grinding should be carried out in preference to dry grinding. A bond system produced for wet grinding has a longer productivity and tool life if it is not used for dry grinding.

Please select as large a tool diameter as possible, as the number of cutting grit increases with a larger tool circumference; more cutting edges are utilised.

Diamond tools should generally not be used at high speeds when dry grinding, as diamonds are heat sensitive.

An exception to this rule are materials which do not generate such high process heat when being worked on, and/or the generated heat is carried out of the grinding zone in the chips due to the high stock removal rate (e.g. FRP materials). It is often not possible to use very small mounted points with the recommended minimum RPM. Diamond tools can always be used below the limits given. Please observe however that other operating parameters such as feed rate and infeed must be adapted accordingly.

If diamond tools are used in wet grinding, the pressure and amount of coolant must be adjusted to match any increase in cutting speed. If the cooling proves insufficient, the tool and/or the workpiece may be destroyed.

CBN can generally be used at higher cutting speeds than diamond as it has a superior temperature stability.

In order to benefit most from the advantages of the CBN cutting material, the tools should not be used below the cutting speeds listed above.



# Diamond / CBN Tools

## Cutting Speeds and Safety Recommendations

### Conversion table

from  
 ❶ cutting speed [m/s]  
 ❷ in rotational speed [RPM]  
 ❸ per tool diameter

**Example:**  
 Diamond grinding point  
 Diameter: 20 mm,  
 Cutting speed: 25 m/s  
**Rotational speed: 23.870 RPM**

❸ Tool dia. [mm]	❶ Cutting speed [m/s]											
	8	12	15	18	20	25	30	40	50	80	100	125
	❷ Rotational speed [RPM]											
1	152.790	229.180										
2	76.390	114.590	143.240	171.890	190.990	238.730						
3	50.930	76.390	95.490	114.590	127.320	159.160	190.990					
4	38.200	57.300	71.620	85.940	95.490	119.370	143.240	190.990				
5	30.560	45.840	57.300	68.760	76.390	95.490	114.590	152.790	190.990			
6	25.470	38.200	47.750	57.300	63.660	79.580	95.490	127.320	159.160			
7	21.830	32.740	40.930	49.110	54.570	68.210	81.850	109.140	136.420	218.270		
8	19.100	28.650	35.810	42.970	47.750	59.680	71.620	95.490	119.370	190.990	238.730	
9	16.980	25.470	31.830	38.200	42.440	53.050	63.660	84.880	106.100	169.770	212.210	
10	15.280	22.920	28.650	34.380	38.200	47.750	57.300	76.390	95.490	152.790	190.990	238.730
12	12.730	19.100	23.870	28.650	31.830	39.790	47.750	63.660	79.580	127.320	159.160	198.940
15	10.190	15.280	19.100	22.920	25.470	31.830	38.200	50.930	63.660	101.860	127.320	159.160
18	8.490	12.730	15.920	19.100	21.220	26.530	31.830	42.440	53.050	84.880	106.100	132.630
20	7.640	11.460	14.320	17.190	19.100	23.870	28.650	38.200	47.750	76.390	95.490	119.370
25	6.110	9.170	11.460	13.750	15.280	19.100	22.920	30.560	38.200	61.120	76.400	95.490
30	5.090	7.640	9.550	11.460	12.730	15.920	19.100	25.470	31.830	50.930	63.660	79.580
40	3.820	5.730	7.160	8.590	9.550	11.940	14.320	19.100	23.870	38.200	47.750	59.680
50	3.060	4.580	5.730	6.880	7.640	9.550	11.460	15.280	19.100	30.560	38.200	47.750
75	2.040	3.060	3.820	4.580	5.090	6.370	7.640	10.190	12.730	20.370	25.470	31.830
100	1.530	2.290	2.870	3.440	3.820	4.780	5.730	7.640	9.550	15.280	19.100	23.870
125	1.220	1.830	2.290	2.750	3.060	3.820	4.580	6.110	7.640	12.220	15.280	19.100
150	1.020	1.530	1.910	2.290	2.550	3.180	3.820	5.090	6.370	10.190	12.730	15.920
175	870	1.310	1.640	1.960	2.180	2.730	3.270	4.370	5.460	8.730	10.910	13.640
200	760	1.150	1.430	1.720	1.910	2.390	2.870	3.820	4.780	7.640	9.550	11.940
250	610	920	1.150	1.380	1.530	1.910	2.290	3.060	3.820	6.110	7.640	9.550
300	510	760	960	1.150	1.280	1.600	1.910	2.550	3.180	5.090	6.370	7.960
350	440	660	820	980	1.090	1.360	1.640	2.180	2.730	4.370	5.460	6.820
400	380	570	720	860	960	1.200	1.430	1.910	2.390	3.820	4.780	5.970
450	340	510	640	760	850	1.060	1.270	1.700	2.120	3.400	4.240	5.310
500	310	460	570	690	760	960	1.150	1.530	1.910	3.060	3.820	4.780
600	260	380	480	570	640	800	960	1.270	1.590	2.550	3.180	3.980

### Safety note

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 its tools in accordance with the specified safety regulations. The operator is responsible for the grinding application; correct tool drive use, correct handling and use of the abrasive tool.

### Safety recommendations:



= Wear eye protection!



= Wear hearing protection!



= Read the instructions!







# Diamond / CBN Grinding Tools, Electroplated Bond

Special Tools Made to Customer Requirements



## PFERD manufacturing strengths

Manufacturing tools to customer specifications is one of PFERD's particular strengths.

Electroplated abrasive tools are fast-cutting products. Tool bodies of almost any geometry can be coated with diamond or CBN abrasive. As a result, this tool group is unsurpassed when it comes to manufacturing flexibility and sheer diversity of realizable tool shapes. Electroplated tools have high cutting action.

Due to their monolayer abrasive coating, electroplated bond tools are comparatively low-cost items. Their performance properties can be varied within a broad range through the appropriate choice of grit size.

While coarse-grit tools have been found particularly effective on soft materials such as, e.g. glass-fibre reinforced plastics, much finer grit is needed to machine harder surfaces.



The galvanically-produced nickel layer is extremely hard and wear-resistant. The resulting diamond and CBN grit bond is very hard and allows not only grinding tools but also files to be produced according to this manufacturing principle. Diamond files, for example, are used on hardened steels and on tungsten carbide.

## No limitations on shapes and batch sizes

Electroplated bond tools can be manufactured cost-efficiently in customised versions, whether as a one-off tool or in small batches. This allows us to respond very flexibly to individual customer needs.

Tool bodies of any shape and substrate material (e.g. steel, stainless steel, brass, etc.) can be coated with diamond or CBN abrasive material.



## PFERD manufacturing options

- Complete new tool
- Coating of new blank (NB)
- Recoating (WB)

Please include a technical drawing or fully dimensioned manual sketch with your purchase order and indicate the desired grit size and grit type. If possible, determine the material to be machined so that the abrasive coating can be perfectly matched to the particular application. Abrasive material can also be applied to customer-supplied blanks. For this service, please specify the surface area to be coated as well as the desired grit size. Note that the thickness of the abrasive layer must be taken into account to meet final specification dimensions accurately.

Tools made of steel or stainless steel can be easily recoated several times provided the tool body contours are undamaged. The abrasive material can be applied continuously or in segments, whether along the circumference and/or on the face side(s) of the tool.

## PFERD manufacturing options

### Complete new tool

Tool body  
made by PFERD

#### Material that is to be coated

- Steel
- Stainless steel (INOX)
- Brass

### Coating of new blanks (NB)

Customer-supplied tool body

#### Material that is to be coated

- Steel
- Stainless steel (INOX)
- Brass

### Re coating (WB)

Re coating only makes sense for:

- Complex tool bodies
- Complicated contours

#### Important:

- Tool body must not be damaged.

#### Material that is to be coated

- Steel
- Stainless steel (INOX)
- No brass

### The advantages of electroplated diamond and CBN tools

- The abrasive grains project well out of the bond, leaving large chips spaces which prevent tool loading even at high removal rates.
- Sharp, superhard abrasive particles ensure maximum cutting performance without undesirable heat build-up.
- The tools are coated with a monolayer of abrasive grit. They are therefore cheaper than other diamond and CBN tools, which makes them suitable for processing smaller batch sizes.
- Virtually any tool shape (profile) can be produced.

### Recommended operating conditions for electroplated diamond and CBN tools

#### Generally, the following applies:

- High tool concentricity.
- Low-vibration running.
- Sturdy machine and tool mounting.
- Workpieces are fixed securely.
- Sufficient drive power output is required to ensure that the recommended RPM is maintained under load.
- The use of coolant has a positive effect on the grinding result and the tool life.

**If the bond coating is completely blocked, please clean it with the DSB 2005025 sharpening block. Please refer to catalogue 206 for detailed information and ordering data.**



Further information regarding electroplated diamond and CBN tools please refer to the PRAXIS "Electroplated Diamond and CBN Tools".

**PRAXIS**

## Diamond Files

### General guidelines for diamond files

Files for steel processing are almost always coated with **diamond grit**. The file is moved at a low cutting speed over the material, thus generating only low temperatures which do **not** cause chemical wear on the diamond grit. This allows the higher hardness diamond (in comparison to CBN) to be utilised for an optimum tool life.

### Apply only slight pressure to the file, especially in workpiece edge areas!

**Use a coarse grit for roughing, medium grit for general purpose filing, and fine grit for finishing applications.**

The information on grit sizes is compiled according to ISO 6106.

**Loaded diamond files can usually be cleaned in kerosene or other cleaning fluids (e.g., anti-static plastic cleaner) using a file brush. Often it will suffice to knock the file against a hard object. Avoid contact with grease when using files!**

Grit size	FEPA	Recommendations for use
extremely fine	D 15	very fine prefinishing
very fine	D 25 / D 46	fine prefinishing
fine	D 91	prefinishing
medium	D 126	general purpose
coarse	D 151 / D 181	coarse stock removal
very coarse	D 251	coarse stock removal

#### Sectors of industry / target groups

- Tool and mould construction
- Foundries
- Automotive
- Aerospace
- Vehicle construction
- Machine and system construction





# Diamond / CBN Grinding Tools, Electroplated Bond

## Diamond Escapement Files



### Diamond escapement files



Diamond escapement files are used on very small shapes in toolmaking applications and general precision mechanics.

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

Grit size D 15 and finer grit sizes can be supplied upon request.



Diamond escapement files have a forged shank, which eliminates the need for a handle.

#### Ordering example:

EAN 4007220**535530**

DF 3608 D 25

Please state required grit size.

Order No.	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	535530	323625	254622	254639	140	40	4,2 x 1,5	1	4
DF 3609	535516	323632	254462	254479	140	40	3,8 x 1,8	1	4
DF 3610	535509	323649	254493	254509	140	40	4 x 1,2	1	4
DF 3614	535561	323656	254554	254578	140	40	3	1	4
DF 3617	535578	323663	254523	254530	140	40	4 x 1,2	1	4
DF 3619	535547	323670	254592	254608	140	40	2 x 2	1	4
DF 3621	535523	323687	254653	254660	140	40	1,8	1	4

### Diamond escapement file sets



Diamond escapement file sets are supplied in a plastic pouch protecting them from corrosion and mechanical damage.

#### Contents: 1 piece each of

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 state the required grit size.

Order No.	Grit size				Overall length [mm]		
	D 25	D 46	D 91	D 126			
	EAN 4007220						
DF 3090	535639	323700	323694	017364	140	1	27

### 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 barette



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

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

**Diamond needle files in extra slim design (S)** are particularly suitable for work on deep-set contours.

Order No,	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	806210	806227	806234	140	70	5,3 x 1,3	1	6
DF 4132S	806241	806258	806265	140	70	2,8	1	6
DF 4142S	806272	806289	806296	140	70	2,3	1	6
DF 4162S	806302	806319	806326	140	70	2,8	1	6

#### Needle files

DF 4112	016664	016671	016688	140	70	5,5 x 1,6	1	8
DF 4112R	016695	016701	016718	140	70	5,5 x 1,6	1	8
DF 4122	016725	016732	016749	140	70	5,5 x 1,6	1	8
DF 4132	016756	016763	016770	140	70	3,5	1	7
DF 4142	016787	016794	016800	140	70	2,6 x 2,6	1	7
DF 4152	016817	016824	016831	140	70	5,5 x 1,6	1	8
DF 4162	016848	016855	016862	140	70	3,2	1	7
DF 4172	016879	016886	016893	140	70	5 x 1,8	1	8
DF 4182	016909	016916	016923	140	70	5 x 2,4	1	8
DF 4192	016930	016947	-	140	70	5 x 2,2	1	8
DF 4102T	016633	016640	016657	140	70	5 x 2	1	8

Diamond needle file sets are supplied in a plastic pouch which protects them from corrosion and damage.

#### Contents DF 4205: 1 piece each of



DF 4112 (hand)  
DF 4132 (three square)  
DF 4142 (square)  
DF 4152 (half round)  
DF 4162 (round)

#### Contents DF 4211: 1 piece each of

DF 4112 (hand)  
DF 4112R (hand with round 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 file sets



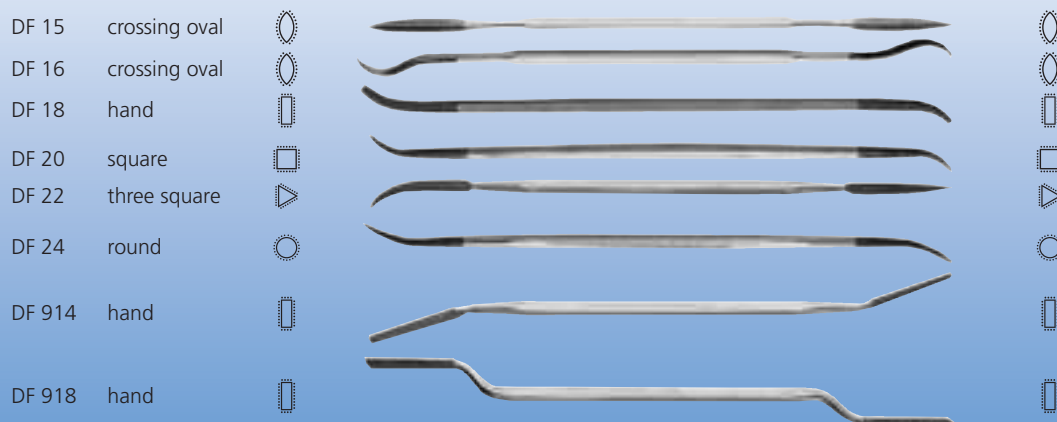
Order No.	Grit size			Overall length [mm]		
	D 91	D 126	D 181			
	EAN 4007220					
DF 4205	017371	017388	017395	140	1	50
DF 4211	017401	017418	017425	140	1	100

# Diamond / CBN Grinding Tools, Electroplated Bond

## Diamond Riffler Files



### Diamond riffler files



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



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

#### Ordering example:

EAN 4007220017036

DF 15 D 126

Please state the required grit size.

Order No.	Grit size		Overall length [mm]	Coating length [mm]	Cross-section with coating [mm]		
	D 91	D 126					
	EAN 4007220						
DF 15	-	017036	150	2 x 25	3,2 x 2	1	8
DF 16	017050	017067	150	2 x 25	3,7 x 2	1	8
DF 18	017081	017098	150	2 x 25	3,1 x 3	1	8
DF 20	017111	017128	150	2 x 25	2,5 x 2,5	1	8
DF 22	017142	017159	150	2 x 25	3	1	8
DF 24	017173	017180	150	2 x 25	3	1	8
DF 914	-	016978	150	2 x 25	3,8 x 1,6	1	8
DF 918	-	017005	150	2 x 25	4 x 2	1	8



### Diamond riffler file set



Diamond riffler file sets are supplied in a plastic pouch protecting them from corrosion and damage.

#### Contents: 1 piece each of

- DF 16 (crossing)
- DF 18 (flat)
- DF 20 (square)
- DF 22 (three square)
- DF 24 (round)

Order No.	Grit size	EAN 4007220	Overall length [mm]		
DF 1624	D 126	355381	150	1	50



### Diamond handy files

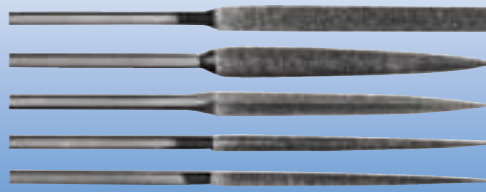
DF 2601 hand

DF 2602 half round

DF 2607 three square

DF 2608 square

DF 2610 round





Diamond handy files have a forged shank which eliminates the need for a handle.

### Ordering example:

EAN 40072200**17302**

DF 2601 D 126

Please state the required grit size.

Order No.	Grit size		Overall length [mm]	Coating length [mm]	Cross-section with coating [mm]		
	D 126	D 181					
	EAN 4007220						
DF 2601	017302	535455	215	100	10,3 x 2,8	1	50
DF 2602	017319	535462	215	100	12,5 x 3,8	1	50
DF 2607	017326	535479	215	100	10	1	50
DF 2608	017333	535486	215	100	5,5 x 5,5	1	50
DF 2610	017340	535493	215	100	6,7	1	50

Diamond handy file sets are supplied in a plastic pouch to protect them from corrosion and damage.

### Ordering example:

EAN 40072200**17357**

DF 2627 D 126

Please state the required grit size.

**Contents:** 1 piece each of

DF 2601 (hand)

DF 2602 (half round)



DF 2607 (three square)

DF 2608 (square)

DF 2610 (round)

### Diamond handy file sets













Order No.	Grit size		Overall length [mm]		
	D 126	D 181			
	EAN 4007220				
DF 2627	017357	535585	215	1	300



# Diamond / CBN Grinding Tools, Electroplated Bond

## Diamond Files for Manual Filing Tools




Diamond files for manual filing tools				round	DF 5331 - 5347	
		hand, coated on one side	DF 5301 - 5309		three square	DF 5365 - 5375
		hand, coated on both sides	DF 5310 - 5314		crossing oval	DF 5352 - 5362
		hand, only face sides coated	DF 5316 - 5324		knife	DF 5380 - 5382
		square	DF 5390 - 5393		flat conical	DF 0103, DF 0106

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

Suitable for use with filing machine PFG 07/220.  
Please refer to catalogue 209 for detailed information and ordering data.

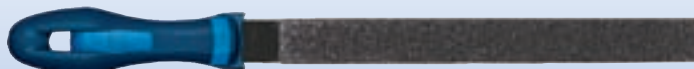
The shank diameters on the diamond files are 3 mm.

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

Order No.	Grit size	EAN 4007220	Profile	Coating type	Overall length [mm]	Coating length [mm]	Cross-section with coating [mm]		
DF 5301	D 126	256718	hand	one side	50	15	2,0 x 1,0	1	6
DF 5303	D 126	256749	hand	one side	50	15	3,0 x 1,0	1	6
DF 5305	D 126	256817	hand	one side	50	15	4,0 x 1,0	1	6
DF 5307	D 126	256848	hand	one side	50	15	5,0 x 2,0	1	6
DF 5309	D 126	256879	hand	one side	60	25	5,0 x 2,0	1	6
DF 5310	D 126	256909	hand	both sides	50	15	2,0 x 1,0	1	6
DF 5311	D 126	256930	hand	both sides	50	15	3,0 x 1,0	1	6
DF 5312	D 126	256961	hand	both sides	50	15	4,0 x 1,0	1	6
DF 5313	D 126	256992	hand	both sides	50	15	5,0 x 2,0	1	6
DF 5314	D 126	257029	hand	both sides	60	25	5,0 x 2,0	1	6
DF 5316	D 126	257050	hand	both face sides	50	15	0,5 x 4,0	1	6
DF 5320	D 126	257111	hand	both face sides	50	15	1,0 x 4,0	1	6
DF 5324	D 126	257142	hand	both face sides	60	25	1,0 x 4,0	1	6
DF 5390	D 126	257296	square	complete	50	15	1,5 x 1,5	1	6
DF 5391	D 126	257326	square	complete	50	15	3,0 x 3,0	1	6
DF 5392	D 126	257357	square	complete	50	15	4,0 x 4,0	1	6
DF 5393	D 126	257388	square	complete	50	15	5,0 x 5,0	1	6
DF 5331	D 126	257418	round	complete	50	15	1,0	1	6
DF 5335	D 126	257449	round	complete	50	15	2,0	1	6
DF 5339	D 126	257470	round	complete	50	15	3,0	1	6
DF 5345	D 126	257500	round	complete	50	15	4,0	1	6
DF 5337	D 126	257531	round	complete	60	25	2,0	1	6
DF 5343	D 126	257562	round	complete	60	25	3,0	1	6
DF 5347	D 126	257593	round	complete	60	25	4,0	1	6
DF 5365	D 126	257173	three square	complete	50	15	2,0 x 2,0	1	6
DF 5367	D 126	257203	three square	complete	50	15	3,5 x 3,5	1	6
DF 5371	D 126	257234	three square	complete	60	25	3,5 x 3,5	1	6
DF 5375	D 126	257265	three square	complete	60	25	4,5 x 4,5	1	6
DF 5352	D 126	257623	crossing	complete	50	15	2,0 x 1,0	1	6
DF 5356	D 126	257654	crossing	complete	50	15	3,5 x 2,0	1	6
DF 5360	D 126	257685	crossing	complete	50	12	6,0 x 3,0	1	6
DF 5358	D 126	257715	crossing	complete	60	25	3,5 x 2,0	1	6
DF 5362	D 126	257746	crossing	complete	60	25	6,0 x 3,0	1	6
DF 5380	D 126	257777	knife	complete	50	15	1,0 x 4,0	1	6
DF 5382	D 126	257807	knife	complete	50	15	2,0 x 6,0	1	6
DF 0103	D 126	665862	flat conical	complete	55	16	3,3 x 1,0	1	6
DF 0106/55	D 126	665879	flat conical	complete	55	16	6,3 x 1,0	1	6
DF 0106/73	D 126	665886	flat conical	complete	73	16	6,3 x 1,0	1	6

### Diamond machinist's files

DF 1112 hand



DF 1132 three square



DF 1132 three square



DF 1142 square



DF 1152 half round



DF 1152 half round



DF 1162 round



Diamond machinist's files are used among other things in large tool construction. The grit sizes D 251 are also suitable for work on FRP materials (GRP/CRP).



Diamond machinist's files are supplied with ergonomic handle.

#### Ordering example:

EAN 4007220**255117**

DF 1112/100 D 126

Please state the required grit size.

Order No.	Grit size			Overall length [mm]	Coating length [mm]	Cross-section with coating [mm]		
	D 126	D 151	D 251					
	EAN 4007220							
DF 1112/100	255117	805954	805961	100	85	10 x 3,2	1	45
DF 1112/125	255131	-	-	125	110	11,2 x 4,2	1	65
DF 1112/150	255155	805978	805985	150	135	13 x 5	1	100
DF 1112/200	-	017203	017210	200	180	20 x 5	1	190
DF 1132/100	255179	-	-	100	85	7	1	40
DF 1132/200	-	017227	017234	200	180	16	1	200
DF 1142/200	-	017241	-	200	180	8 x 8	1	130
DF 1152/100	255193	-	-	100	85	12 x 4	1	45
DF 1152/200	-	017265	017272	200	180	20 x 6	1	150
DF 1162/200	-	017289	-	200	180	8	1	110

## Diamond Sheets



The flexible backing materials on the diamond sheets adapts to the workpiece surface. Complex contours can be worked on with relatively little effort.

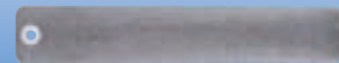
#### Ordering example:



EAN 4007220**806371**

D BL 30-0,7-170 D 64

Please state the required grit size.

### Diamond sheets



Order No.	Grit size		Overall length [mm]	Coating type	Cross-section with coating [mm]		
	D 64	D 126					
	EAN 4007220						
D BL 30-0,7-170	806371	-	170	complete	0,7 x 30	1	35
D BL 35-1,3-350	-	806388	350	complete	1,3 x 35	1	35



# Diamond / CBN Grinding Tools, Electroplated Bond

## Diamond Grinding Points and Special Shapes



### Cylindrical shape ZY



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

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

#### Recommendation for use:

The longitudinal feed rate can be maximum 2/3 of the head length per workpiece rotation. The feed is dependent on the material being processed, the cutting speed, the tool stability, its adapter and the machine.

#### Ordering note:

A = shouldered shank

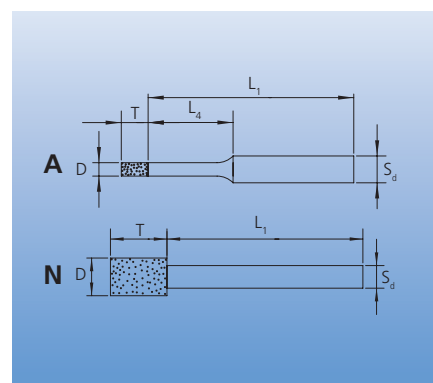
N = cylindrical shank



#### Ordering example:

EAN 4007220**354322**

DZY-A 0,5-2/3 D 64

Please state the required grit size.



Order No.	Grit size				Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]	Reduced dia. length (L <sub>d</sub> ) [mm]		
	D 64	D 91	D 126	D 181						
	EAN 4007220									

Shank ø 3 mm

DZY-A 0,5-2/3	354322	-	-	-	0,5 x 2	3	38	5	5	25
DZY-A 0,8-2/3	354339	-	-	-	0,8 x 2	3	38	5	5	25
DZY-A 1,0-4/3	354346	257883	257890	-	1,0 x 4	3	36	9	5	25
DZY-A 1,2-4/3	354353	354360	354377	-	1,2 x 4	3	36	9	5	25
DZY-A 1,4-4/3	354384	354391	354407	-	1,4 x 4	3	36	9	5	25
DZY-A 1,6-4/3	-	354421	354438	-	1,6 x 4	3	36	10	5	25
DZY-A 1,8-4/3	-	354452	354469	-	1,8 x 4	3	36	10	5	25
DZY-A 2,0-4/3	-	260784	119181	-	2,0 x 4	3	36	10	5	25
DZY-A 2,2-4/3	-	-	354506	-	2,2 x 4	3	36	14	5	25
DZY-A 2,4-4/3	-	354520	354537	-	2,4 x 4	3	36	14	5	25
DZY-A 2,6-4/3	-	354551	354568	-	2,6 x 4	3	36	14	5	25
DZY-A 2,8-4/3	-	-	354599	-	2,8 x 4	3	36	14	5	25
DZY-A 3,0-4/3	354605	260821	119204	-	3,0 x 4	3	36	19	5	25
DZY-N 3,5-5/3	-	260845	119211	-	3,5 x 5	3	45	-	5	25
DZY-N 4,0-5/3	-	260869	119228	260876	4,0 x 5	3	45	-	5	30
DZY-N 4,5-5/3	-	260883	119235	-	4,5 x 5	3	45	-	5	30
DZY-N 5,0-5/3	-	260906	119242	260913	5,0 x 5	3	45	-	5	30
DZY-N 5,5-6/3	-	257944	257951	257968	5,5 x 6	3	44	-	5	30

Shank ø 6 mm

DZY-A 6,0-6/6	-	260920	119259	260937	6,0 x 6	6	54	19	1	18
DZY-N 7,0-8/6	-	-	119266	260951	7,0 x 8	6	52	-	1	18
DZY-N 8,0-8/6	-	260968	119273	260975	8,0 x 8	6	52	-	1	18
DZY-N 9,0-8/6	-	-	258040	-	9,0 x 8	6	52	-	1	18
DZY-N 10,0-8/6	-	260982	119280	260999	10,0 x 8	6	52	-	1	20
DZY-N 12,0-8/6	-	261002	119297	261019	12,0 x 8	6	52	-	1	22
DZY-N 15,0-10/6	-	-	119303	-	15,0 x 10	6	50	-	1	25

Shank ø 10 mm

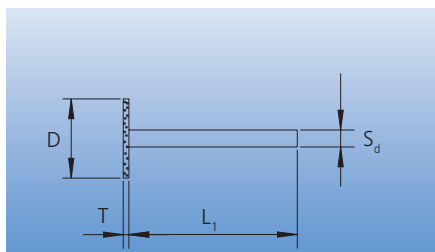
DZY-N 15,0-10/10	-	-	355091	-	15,0 x 10	10	110	-	1	100
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Shank ø 6 mm

DZY-N 18,0-10/6	-	-	258163	-	18,0 x 10	6	50	-	1	35
DZY-N 20,0-10/6	-	-	258194	-	20,0 x 10	6	50	-	1	40

Shank ø 12 mm

DZY-N 25,0-10/12	-	-	355138	-	25,0 x 10	12	110	-	1	140
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The special ZY shape is suitable for grinding out slots and grooves in hard-to-reach areas.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

**Ordering example:**



EAN 4007220**353240**

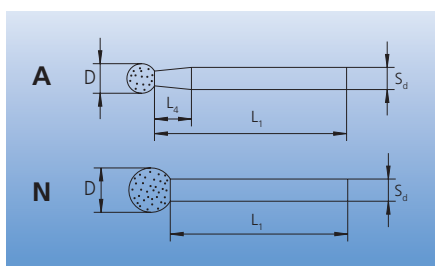
DZY-N/8,0-0,5/3 D 64

Please state the required grit size.

**Special shape ZY**



Order No.	Grit size		Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
	D 64	D 91					
	EAN 4007220						
DZY-N 8,0-0,5/3	353240	-	8,0 x 0,5	3	35	1	5
DZY-N 14,0-0,5/3	353257	-	14,0 x 0,5	3	35	1	10
DZY-N 14,0-1,0/3	353264	353271	14,0 x 1,0	3	35	1	10



Spherical (ball) shape KU grinding points are commonly used in hand-guided deflashing of plastic shapes. They are also particularly well suited for engraving, contour grinding and tool deburring tasks.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.



**Ordering note:**

A = shouldered shank

N = cylindrical shank

**Spherical shape KU**



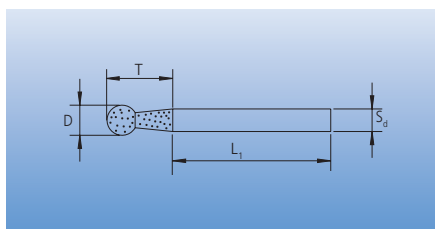
Order No.	Grit size				Dia. D [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]	Reduced dia. length (L <sub>4</sub> ) [mm]		
	D 64	D 91	D 126	D 181						
	EAN 4007220									

Shank ø 3 mm

DKU-A 1,0/3	354926	258620	258637	258644	1	3	44	10	5	25
DKU-A 2,0/3	354933	258651	258668	258675	2	3	43	8	5	25
DKU-A 3,0/3	354940	258682	258699	258705	3	3	42	6	5	25
DKU-A 4,0/3	-	258712	258729	258736	4	3	41	5	5	25
DKU-A 5,0/3	-	258743	258750	258767	5	3	40	2	5	25
DKU-N 6,0/3	-	258774	258781	258798	6	3	39	-	1	5

Shank ø 6 mm

DKU-A 8,0/6	-	258835	258842	-	8	6	52	10	1	15
DKU-A 10,0/6	-	258897	258903	258910	10	6	50	5	1	20
DKU-N 12,0/6	-	-	258965	-	12	6	48	-	1	24





Special shape KU points are commonly used in hand-guided deflashing of plastic shapes.

These special-shape KU points are additionally grit-coated on the narrow shank section below the head. Their special geometry provides optimum results in machining shaped workpieces.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

**Special shape KU**



Order No.	Grit size		Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
	D 126	D 181					
	EAN 4007220						
DKU 3,0-10,0/3	-	353844	3,0 x 10	3	40	1	5
DKU 3,3-7,0/3	353851	-	3,3 x 7	3	33	1	5
DKU 4,0-10,0/3	-	353868	4,0 x 10	3	40	1	5

# Diamond / CBN Grinding Tools, Electroplated Bond

## Diamond Grinding Points and Special Shapes



### Cylindrical with radius end WR



Cylindrical points with radius end (WR) are ideal for general-purpose deburring and grinding jobs performed with handheld machines.

The coarse grit size D 357 gives excellent results in machining fibre-reinforced plastics. (GRP/CRP).

Please refer to tables on pages 7 and 8 for the recommended cutting speeds.

#### Ordering note:

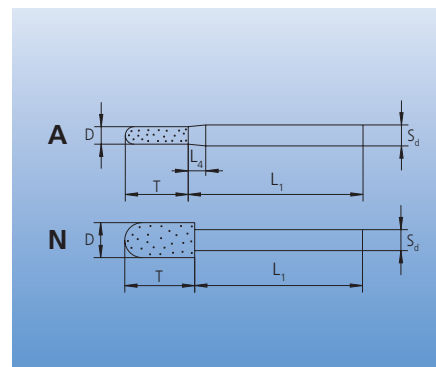
A = shouldered shank

N = cylindrical shank

#### Ordering example:

EAN 4007220353981

DWR 5,0-18,0/6 D 357



Order No.	Grit size	EAN 4007220	Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]	Reduced dia. length (L <sub>4</sub> ) [mm]		
DWR 5,0-18,0/6	D 357	353981	5,0 x 18,0	6	50	5	1	20
DWR 6,0-18,0/6	D 357	353998	6,0 x 18,0	6	50	5	1	20
DWR 10,0-20,0/6	D 357	354001	10,0 x 20,0	6	50	-	1	28

### Pointed tree shape SPG



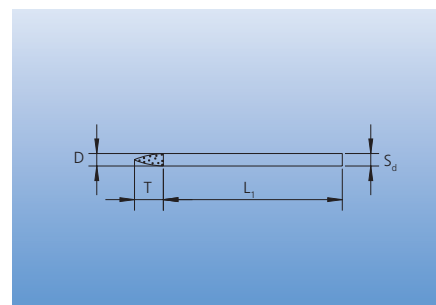
The pointed tree (SPG) shape is exceptionally well suited for machining small holes or bores.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

#### Ordering example:

EAN 4007220536421

DSPG 3,0-7,0/3 D 126



Order No.	Grit size	EAN 4007220	Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
DSPG 3,0-7,0/3	D 126	536421	3,0 x 7,0	3	43	1	5
DSPG 3,0-13,0/3	D 126	806203	3,0 x 13,0	3	37	1	5

### Cup shape KT



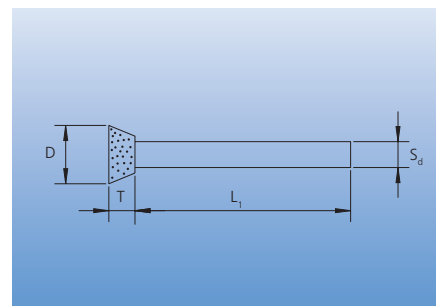
Due to its special geometry, the KT cup shape is perfectly suited to work on profiles, planar surfaces and ledges without the cylindrical surface being damaged.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

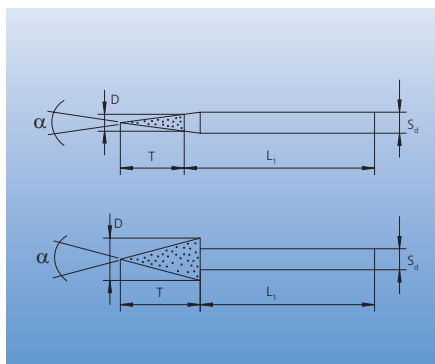
#### Ordering example:

EAN 4007220354018

DKT 3,0-8,0°/3 D 126



Order No.	Grit size	EAN 4007220	Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
Shank ø 3 mm							
DKT 3,0-8,0°/3	D 126	354018	3,0 x 7,0	3	43	1	5
Shank ø 6 mm							
DKT 10,0-30,0°/6	D 126	354025	10,0 x 5,0	6	50	1	20



Conical pointed SK tools are perfect for regrounding centering holes as well as for chamfering.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

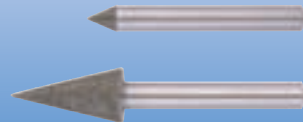
**Ordering example:**



EAN 4007220**354049**

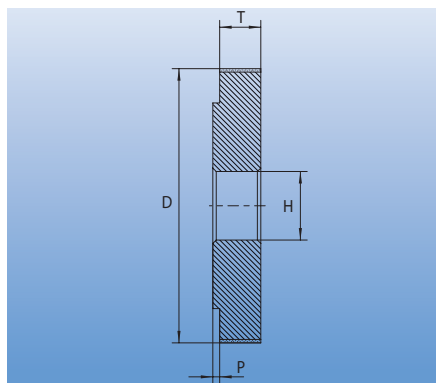
DSK 6,0-7°/6 D 64

Please state the required grit size.

**Conical pointed shape SK**



Order No.	Grit size		Dia. x overall width D x T [mm]	Angle α	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
	D 64	D 126						
	EAN 4007220							
DSK 6,0-7°/6	354049	-	6,0 x 45,0	7°	6	50	1	20
DSK 6,0-12°/6	354056	-	6,0 x 26,0	12°	6	50	1	20
DSK 6,0-15°/6	354063	-	6,0 x 21,0	15°	6	50	1	20
DSK 6,0-30°/6	354032	354070	6,0 x 11,0	30°	6	50	1	20
DSK 6,0-45°/6	393383	-	6,0 x 7,0	45°	6	50	1	20
DSK 6,0-60°/6	393390	-	6,0 x 5,0	60°	6	50	1	20
DSK 10,0-60°/6	806128	806135	10,0 x 9,0	60°	6	50	1	20
DSK 10,0-90°/6	806142	806159	10,0 x 5,0	90°	6	50	1	20
DSK 15,0-60°/6	806166	806173	15,0 x 13,0	60°	6	50	1	20
DSK 15,0-90°/6	806180	806197	15,0 x 7,5	90°	6	50	1	20



Diamond grinding discs are intended for use in stationary machines.

Their centering shoulder allows them to be accurately mounted and aligned on the machine spindle.

Combined with a strong mandrel, these tools are ideal for grinding in deep-set or long bores.

Please refer to tables on pages 7 and 8 for the recommended cutting speeds.

**Ordering example:**



EAN 4007220**665893**

D1A1 12-10-8 D 151

Please state the required grit size.

**Grinding discs 1 A 1**



Order No.	Grit size		Dia. x overall width D x T [mm]	Cent. hole dia. H [mm]	With test collar P [mm]		
	D 151	D 251					
	EAN 4007220						
D1A1 12-10-8	665893	665930	12,0 x 10,0	8	-	1	5
D1A1 14-10-8	665961	665916	14,0 x 10,0	8	-	1	7
D1A1 16-10-8	665978	665947	16,0 x 10,0	8	-	1	10
D1A1 18-10-8	665992	665985	18,0 x 10,0	8	2	1	15
D1A1 20-10-8	354629	666005	20,0 x 10,0	8	2	1	34
D1A1 30-10-10	354636	666012	30,0 x 10,0	10	2	1	65
D1A1 40-10-10	354643	666029	40,0 x 10,0	10	2	1	110
D1A1 50-10-10	354131	666036	50,0 x 10,0	10	2	1	170



# Diamond / CBN Grinding Tools, Electroplated Bond

## CBN Grinding Points and Special Shapes



### Cylindrical shape ZY



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

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

#### Recommendation for use:

The longitudinal feed rate can be maximum 2/3 of the head length per workpiece rotation. The feed is dependent on the material being processed on, the cutting speed, the tool stability, its adapter and the machine.

#### Ordering note:

A = shouldered shank

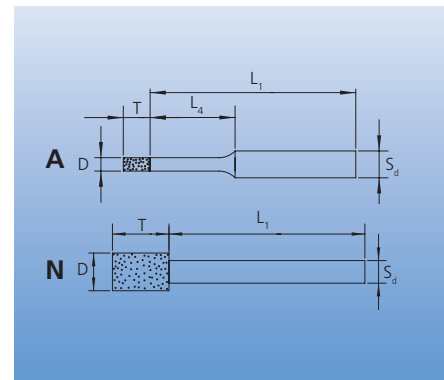
N = cylindrical shank

#### Ordering example:

EAN 4007220354650

BZY-A 0,5-2/3 B 64

Please state the required grit size.



Order No.	Grit size		Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]	Reduced dia. length (L <sub>4</sub> ) [mm]		
	B 64	B 126						
	EAN 4007220							

Shank ø 3 mm

BZY-A 0,5-2/3	354650	-	0,5 x 2	3	38	5	5	25
BZY-A 0,8-2/3	354667	-	0,8 x 2	3	38	5	5	25
BZY-A 1,0-4/3	354674	258224	1,0 x 4	3	36	9	5	25
BZY-A 1,2-4/3	354681	354698	1,2 x 4	3	36	9	5	25
BZY-A 1,4-4/3	-	354711	1,4 x 4	3	36	9	5	25
BZY-A 1,6-4/3	354728	354735	1,6 x 4	3	36	10	5	25
BZY-A 1,8-4/3	-	354759	1,8 x 4	3	36	10	5	25
BZY-A 2,0-4/3	354766	119310	2,0 x 4	3	36	10	5	25
BZY-A 2,2-4/3	-	354780	2,2 x 4	3	36	14	5	25
BZY-A 2,4-4/3	354797	354803	2,4 x 4	3	36	14	5	25
BZY-A 2,6-4/3	354810	354827	2,6 x 4	3	36	14	5	25
BZY-A 2,8-4/3	-	354841	2,8 x 4	3	36	14	5	25
BZY-A 3,0-4/3	354858	119334	3,0 x 4	3	36	19	5	25
BZY-N 3,5-5/3	354865	119341	3,5 x 5	3	45	-	5	25
BZY-N 4,0-5/3	354872	119358	4,0 x 5	3	45	-	5	30
BZY-N 4,5-5/3	-	119365	4,5 x 5	3	45	-	5	30
BZY-N 5,0-5/3	354896	119372	5,0 x 5	3	45	-	5	30
BZY-N 5,5-6/3	-	258286	5,5 x 6	3	44	-	5	30

Shank ø 6 mm

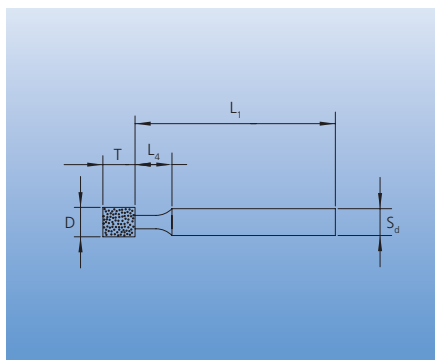
BZY-A 6,0-6/6	354919	119389	6,0 x 6	6	54	19	1	18
BZY-N 7,0-8/6	-	119396	7,0 x 8	6	52	-	1	18
BZY-N 8,0-8/6	-	119402	8,0 x 8	6	52	-	1	18
BZY-N 9,0-8/6	-	258408	9,0 x 8	6	52	-	1	18
BZY-N 10,0-8/6	-	119419	10,0 x 8	6	52	-	1	20
BZY-N 11,0-10/6	-	258439	11,0 x 10	6	50	-	1	20
BZY-N 12,0-8/6	-	119426	12,0 x 8	6	52	-	1	22
BZY-N 13,0-10/6	-	258460	13,0 x 10	6	50	-	1	22
BZY-N 14,0-10/6	-	258491	14,0 x 10	6	50	-	1	25
BZY-N 15,0-10/6	-	119433	15,0 x 10	6	50	-	1	25

Shank ø 10 mm

BZY-N 15,0-10/10	-	355145	15,0 x 10	10	110	-	1	100
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Shank ø 6 mm

BZY-N 18,0-10/6	-	258521	18,0 x 10	6	50	-	1	35
BZY-N 20,0-10/6	-	258552	20,0 x 10	6	50	-	1	40



Cylindrical points with carbide shank are used for internal grinding on stationary machines. The modulus of elasticity of the carbide shank is approx. 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 carbide shank offer higher stock removal rates, superior surface qualities and longer tool life.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

### Ordering example:



EAN 4007220**353714**

BZY-N 4-5/3 HM B 151

Please state the required grit size.

### Cylindrical points with carbide shank



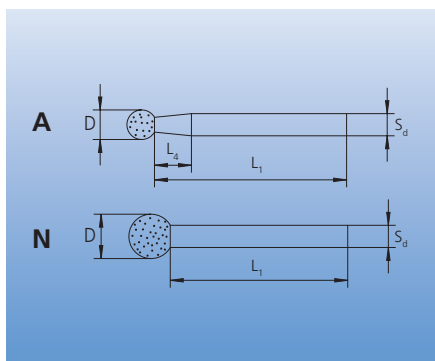
Order No.	Grit size		Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]	Reduced dia. length (L <sub>4</sub> ) [mm]		
	B 151	B 252						
	EAN 4007220							

Shank ø 3 mm

BZY-N 4-5/3 HM	353714	-	4,0 x 5,0	3	43	-	1	10
BZY-N 5-5/3 HM	353721	-	5,0 x 5,0	3	43	-	1	10

Shank ø 6 mm

BZY-A 6-6/6 HM	353691	-	6,0 x 6,0	6	98	19	1	50
BZY-N 8-8/6 HM	353738	353745	8,0 x 8,0	6	98	-	1	55
BZY-N 12-8/6 HM	-	353752	12,0 x 8,0	6	98	-	1	60



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

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

### Ordering note:

A = shouldered shank

N = cylindrical shank

### Ordering example:



EAN 4007220**258996**

BKU-A 1,0/3 B 126

Please state the required grit size.

### Spherical shape KU



Order No.	Grit size		Dia. D [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]	Reduced dia. length (L <sub>4</sub> ) [mm]		
	B 64	B 126						
	EAN 4007220							

Shank ø 3 mm

BKU-A 1,0/3	-	258996	1,0	3	44	10	5	25
BKU-A 2,0/3	354964	259023	2,0	3	43	8	5	25
BKU-A 3,0/3	354971	259054	3,0	3	42	6	5	25
BKU-A 4,0/3	-	259085	4,0	3	41	5	5	25
BKU-A 5,0/3	-	259115	5,0	3	40	2	5	25
BKU-N 6,0/3	-	259146	6,0	3	39	-	1	5

Shank ø 6 mm

BKU-A 8,0/6	-	259207	8,0	6	52	10	1	15
BKU-A 10,0/6	-	259269	10,0	6	50	5	1	20
BKU-N 12,0/6	-	259320	12,0	6	48	-	1	24

# Diamond / CBN Grinding Tools, Electroplated Bond

## CBN Grinding Points and Special Shapes



### Cylindrical with radius end WR



Cylindrical points with radius end (WR) are ideal for general-purpose deburring and grinding jobs performed with handheld machines. This product gives excellent results in machining fibre-reinforced plastics.

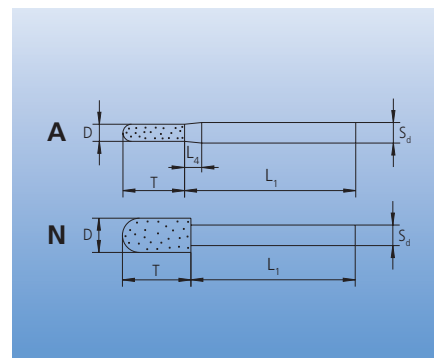
Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

#### Ordering note:

A = shouldered shank  
N = cylindrical shank

#### Ordering example:

EAN 4007220**354087**  
BWR 5,0-10,0/3 B 126



Order No.	Grit size	EAN 4007220	Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
BWR 5,0-10,0/3	B 126	354087	5,0 x 10,0	3	40	1	8
BWR 6,0-10,0/3	B 126	354094	6,0 x 10,0	3	40	1	8

### Pointed tree shape SPG

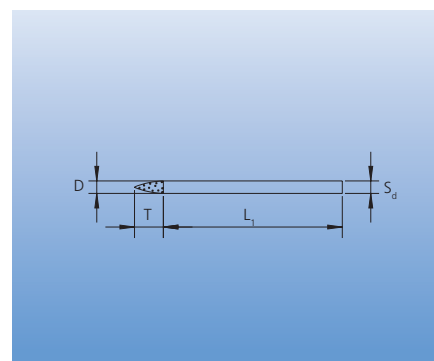


The pointed tree (SPG) shape is exceptionally well suited for machining small holes or bores.

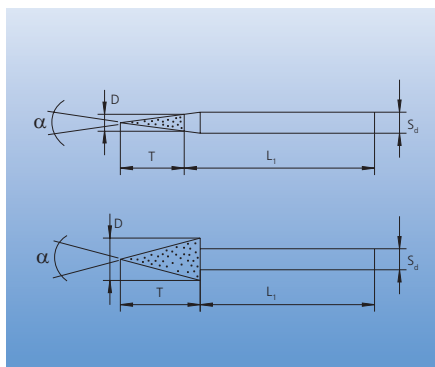
Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

#### Ordering example:

EAN 4007220**354100**  
BSPG 3,0-7,0/3 B 126



Order No.	Grit size	EAN 4007220	Dia. x overall width D x T [mm]	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
Shank ø 3 mm							
BSPG 3,0-7,0/3	B 126	354100	3,0 x 7,0	3	43	1	5
Shank ø 6 mm							
BSPG 6,0-18,0/6	B 126	354117	6,0 x 18,0	6	50	1	20



Conical pointed SK tools are perfect for regrounding centering holes as well as for chamfering.

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

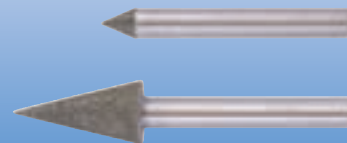
**Ordering example:**



EAN 4007220**354124**

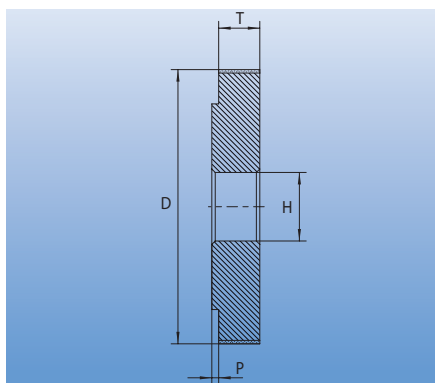
BSK 6,0-30°/6 B 126

Please state the required grit size.

**Conical pointed shape SK**



Order No.	Grit size		Dia. x overall width D x T [mm]	Angle α	Shank dia. S <sub>d</sub> [mm]	Shank length L <sub>1</sub> [mm]		
	B 64	B 126						
	EAN 4007220							
BSK 6,0-30°/6	-	354124	6,0 x 11,0	30°	6	50	1	20
BSK 6,0-45°/6	393406	-	6,0 x 7,0	45°	6	50	1	20



CBN grinding discs are intended for use in stationary applications. Their centering shoulder allows them to be accurately mounted and aligned on the machine spindle.

Combined with a strong mandrel, these tools are ideal for grinding in deep-set or long bores.

Please refer to tables on pages 7 and 8 for the recommended cutting speeds.



**Ordering example:**

EAN 4007220**355015**

B1A1 20-10-8 B 151

**Grinding discs 1 A 1**



Order No.	Grit size	EAN 4007220	Dia. x overall width D x T [mm]	Cent. hole dia. H [mm]	With test collar P [mm]		
B1A1 20-10-8	B 151	355015	20,0 x 10,0	8	2	1	34
B1A1 30-10-10	B 151	355039	30,0 x 10,0	10	2	1	65
B1A1 40-10-10	B 151	355053	40,0 x 10,0	10	2	1	110
B1A1 50-10-10	B 151	355077	50,0 x 10,0	10	2	1	170



# Diamond / CBN Grinding Tools, Electroplated Bond

## Diamond Cut-Off Wheels



Electroplated-bond diamond cut-off wheels are characterized by their particularly effective cutting performance. A single layer of diamond grit (see sketch) is deposited on a steel blank. This abrasive material is securely embedded in a metal bonding layer electroplated onto the blank.

Large chip spaces between grits provide the tool with a very high cutting capacity.

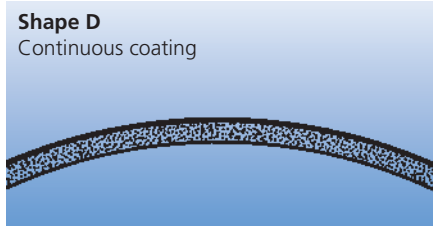
Wheels with coarse (e.g., D 427) diamond abrasive coatings are exceptionally suitable for cutting soft fibre-reinforced thermoset plastics (GRP and CRP).

### Special product range

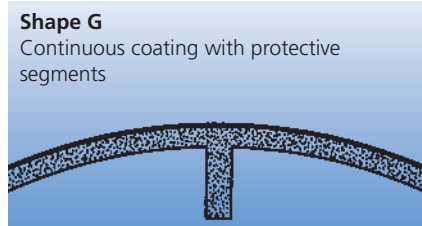
Cut-off wheels with electroplated diamond coatings can also be made to order. Coatings may be of the continuous or segmented type.

A coating with lateral protective segments can also be specified (refer to accompanying sketches). Please provide full dimensional and grit specifications with your order (see order example).

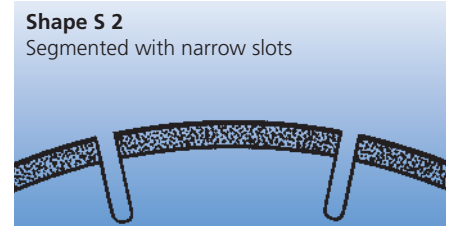
**CBN cut-off wheels are available on request!**



**Shape D**  
Continuous coating



**Shape G**  
Continuous coating with protective segments



**Shape S 2**  
Segmented with narrow slots



**Diamond cut-off wheels**

Please refer to the tables on pages 7 and 8 for the recommended cutting speeds.

### Recommendation for use:

Finer diamond grit sizes are used for cutting glass or ceramic, e.g. D 126 or D 181.  
When using rough diamond grit sizes (e.g. D 427), these tools are perfect for cutting fibre reinforced thermoset plastics, FRP (CRP/GRP).

### Ordering example:



EAN 4007220**308790**

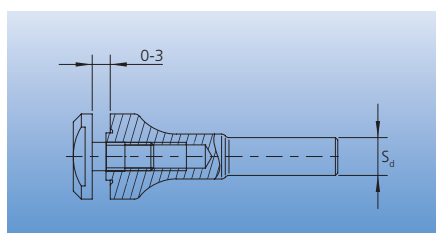
D1A1R 50-2-6 D 357 GAD

Please state the required grit size.

### How to order:

D1A1R = Shape  
50 = Diameter D [mm]  
2 = Width of cut T [mm]  
6 = Bore dia. H [mm]  
D357 = Grit type and size (D = Diamond)  
GAD = Bond coating type  
D = Coating shape



Order No.	EAN 4007220	Dia. D [mm]	Overall width T [mm]	Blade thickness E [mm]	Centr. hole dia. H [mm]	Shape	Protective segment per side	Diamond coating		
D1A1R 22-0,5-1,7 D 64 GAD	355190	22	0,5	0,3	1,7	D	none	contin.	1	5
D1A1R 30-1-10 D 151 GAD	355206	30	1,0	0,6	10,0	D	none	contin.	1	10
D1A1R 40-1-10 D 151 GAD	355213	40	1,0	0,6	10,0	D	none	contin.	1	15
D1A1R 50-1,4-6 D 151 GAD	355220	50	1,4	1,0	6,0	D	none	contin.	1	20
D1A1R 50-1,4-10 D 151 GAD	666043	50	1,4	1,0	10,0	D	none	contin.	1	20
D1A1R 50-2-6 D 357 GAD	308790	50	2,0	1,0	6,0	D	none	contin.	1	20
D1A1R 50-2-6 D 357 GAG	168530	50	2,0	1,0	6,0	G	3	contin.	1	20
D1A1R 50-2-10 D 357 GAD	666067	50	2,0	1,0	10,0	D	none	contin.	1	20
D1A1R 50-2-10 D 357 GAG	666050	50	2,0	1,0	10,0	G	3	contin.	1	20
D1A1R 75-2-10 D 357 GAG	393420	75	2,0	1,0	10,0	G	3	contin.	1	50
D1A1R 100-2-22,2 D 427 GAD	805992	100	2,0	1,0	22,2	D	none	contin.	1	110
D1A1R 100-2-22,2 D 427 GAG	806005	100	2,0	1,0	22,2	G	3	contin.	1	110
D1A1R 115-2-22,2 D 427 GAD	806012	115	2,0	1,0	22,2	D	none	contin.	1	125
D1A1R 115-2-22,2 D 427 GAG	806029	115	2,0	1,0	22,2	G	3	contin.	1	125
D1A1R 125-1,4-20 D 151 GAD	355237	125	1,4	1,0	20,0	D	none	contin.	1	150
D1A1R 125-2-22,2 D 427 GAD	806036	125	2,0	1,0	22,2	D	none	contin.	1	150
D1A1R 125-2-22,2 D 427 GAG	806043	125	2,0	1,0	22,2	G	3	contin.	1	150
D1A1R 178-2-22,2 D 427 GAD	806050	178	2,0	1,0	22,2	D	none	contin.	1	250
D1A1RSS 230-2,5-22,2 D 427 GAS2	806074	230	2,5	1,5	22,2	S2	none	segment.	1	520
D1A1RSS 250-2,5-22,2 D 427 GAS2	806081	250	2,5	1,5	22,2	S2	none	segment.	1	650
D1A1RSS 300-2,5-30,0 D 427 GAS2	806098	300	2,5	1,5	30,0	S2	none	segment.	1	900
D1A1RSS 350-2,8-30,0 D 427 GAS2	806104	350	2,8	1,8	30,0	S2	none	segment.	1	1,900
D1A1RSS 400-3,8-30,0 D 427 GAS2	806111	400	3,8	2,8	30,0	S2	none	segment.	1	2,500



Accessories for clamping diamond cut-off wheels.

### Arbors for diamond cut-off wheels



Order No.	EAN 4007220	Shank dia. $S_d$ [mm]	Suitable for centre hole [mm]		
BO 3/1,7	443606	3	1,7	1	4
BO 8/10 0-3	806401	8	10	1	39



## Diamond-Tipped Sabre Saw Blades

Diamond-tipped blades for sabre saws with Bosch-type blade mounting can be used on fibre-reinforced (GRP/CRP) plastics.

Diamond-tipped sabre saw blades in electroplated bond are noted for their high cutting performance and long service life. Special applications include cutting of GRP panels and sawing cutouts in tank and pressure vessel construction.

### Diamond-tipped sabre saw blades



Order No.	EAN 4007220	Coating length [mm]	Thickness [mm]	Overall length [mm]		
Dia-Stichsägeblatt* 50/75 D 357	535950	50	2	75	1	6
Dia-Stichsägeblatt* 75/100 D 357	535967	75	2	100	1	10

\* Dia-Stichsägeblatt = Diamond-tipped sabre saw blade

## Other Diamond Tools from the PFERD Program

### Diamond cut-off wheels



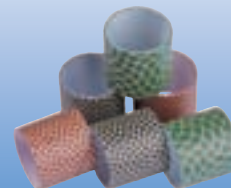
Please refer to catalogue 206 for detailed information and ordering data on diamond cut-off wheels.

### COMBIDISC® diamond abrasive discs



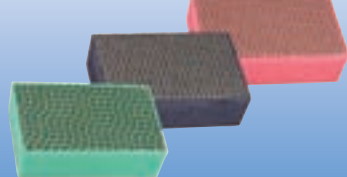
Please refer to catalogue 204 for detailed information and ordering data on COMBIDISC® diamond abrasive discs.

### Diamond abrasive spiral bands – small pack



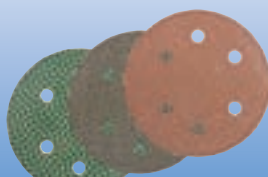
Please refer to catalogue 204 for detailed information and ordering data on diamond abrasive spiral bands.

### Hand pads diamond type



Please refer to catalogue 204 for detailed information and ordering data on hand pads (diamond type).

### Velcro-backed abrasive discs diamond type



Please refer to catalogue 204 for detailed information and ordering data on velcro-backed abrasive discs (diamond type).

### Diamond polishing pastes polishing tools



Please refer to catalogue 204 for detailed information and ordering data on diamond polishing pastes and polishing tools.



### Advantages of synthetic resinoid-bonded diamond and CBN tools

- The coating qualities of the synthetic resin bond can be perfectly matched to the application.
- The tools are easy to dress. Deviating tool contours can be processed using the same tools.
- After dressing, please ensure that the coating is worked on using the sharpening block SBL 1002413, so that the easy cutting qualities of the tool are regained.
- Refer to page 31 in this catalogue for detailed information and order details.

### Recommended operating conditions for synthetic resinoid-bonded diamond and CBN tools

- Resinoid-bonded diamond and CBN grinding wheels are frequently used to grind or re-grind (i.e. sharpen) tungsten carbide or super high-speed steel (HSS) tools.
- Applications include both wet and dry grinding.
- In addition, these tools are successfully employed in a wide variety of production grinding processes.
- In selecting a machine for use with diamond or CBN tools, high rigidity and a sufficient power output are key criteria to be considered.
- Care should also be taken to ensure that the machine will achieve the recommended cutting speed.



### Coolant

**Diamond grinding wheels**  
Emulsions (1-5%).

**CBN grinding wheels**  
Low-viscosity mineral oils or emulsions (5-8%) with EP additives.

Cooling with pure mineral oil has been shown to yield substantial tool life benefits in many production grinding environments.

### Dry or wet grinding

Wet grinding is generally preferable to dry as it reduces the load on the grinding wheel, thereby causing less wear. Moreover, the risk of overheating the workpiece is much lower.

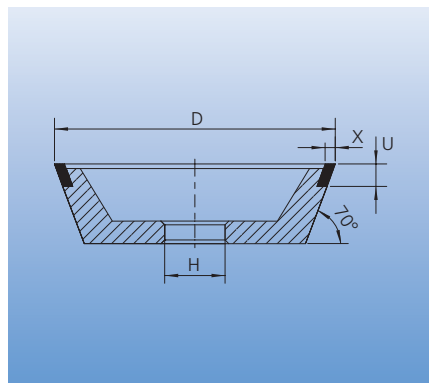
Nevertheless, resinoid-bonded diamond and CBN grinding wheels are very often used dry on tool grinding machines which are not equipped with suitable hoods or where constant visual monitoring is desirable.

### Order example

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

### Explanation Order example

11V9 = Name and shape of the tool acc. ISO 6104  
100 = Outer dia. D [mm]  
2 = Coating width X [mm]  
10 = Coating height U [mm]  
20 = Bore dia. H [mm]  
D 126 = Grit sizes  
(D = Diamond, B = CBN)  
PHT = Bond type  
C 75 = Grit concentration (C)



### PFERD abrasive bond types and their characteristics

In addition to the bond types described in this catalogue, a broad range of special bonds for special grinding tasks can be supplied by arrangement with our application engineers.

**For more information please contact our applications engineering team.**

#### ■ PHT

Phenolic resin bond for high-performance dry grinding.  
PHT bonds are designed for dry grinding, i.e. they provide "cool" grinding properties even without the use of a coolant.

#### ■ PHT 4.1 (only CBN)

Bond for maximum stock removal rates. Very long tool life. Suitable for dry and wet grinding.

#### ■ PH 4.2 (only CBN)

High-performance bond for cool dry grinding at low feed rates, self-wearing type. It is not necessary to readjust the core. Only for 11 V 9 and 12 V 9 up to 150 mm dia.

#### ■ PHST

Phenolic resin bond for dry grinding at very high stock removal rates.  
PHST type bonds have an even higher load resistance, i.e. they allow a greater amount of infeed per stroke without causing thermal damage to the workpiece.  
Inevitably, the reduction in grinding time is obtained at the price of a slightly shorter tool life.

#### ■ PHN

Phenolic resin bond for high-performance wet grinding.  
PHN is a bond type designed specifically for wet grinding. It is comparatively hard, providing an exceptional tool life and profile holding ability.

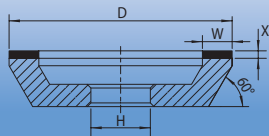




# Diamond / CBN Grinding Tools, Resinoid Bond

## Standard Range Diamond Grinding Tools (Dry Grinding)

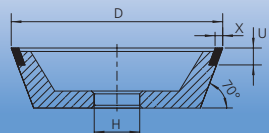




Shape 11A2/60°



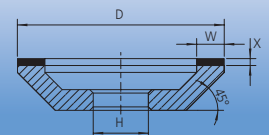
Diamond Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Concentr.	EAN 4007220		
11A2/60°	100 - 8 - 2 - 20	D 64	PHT	C 75	261965	1	277
11A2/60°	100 - 8 - 2 - 20	D 126	PHT	C 75	261972	1	277



Shape 11V9



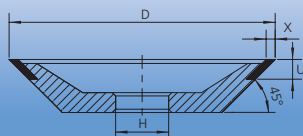
Diamond Shape	Dimension [mm] D - X - U - H	Grit size	Bond	Concentr.	EAN 4007220		
11V9	100 - 2 - 10 - 20	D 126	PHT	C 75	168592	1	261
11V9	100 - 3 - 10 - 20	D 126	PHST	C 75	168622	1	272



Shape 12A2/45°



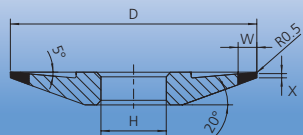
Diamond Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Concentr.	EAN 4007220		
12A2/45°	125 - 10 - 2 - 20	D 64	PHT	C 50	168677	1	391
12A2/45°	125 - 10 - 2 - 20	D126	PHT	C 75	168660	1	396



Shape 12V9



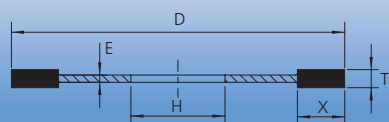
Diamond Shape	Dimension [mm] D - X - U - H	Grit size	Bond	Concentr.	EAN 4007220		
12V9	100 - 2 - 10 - 20	D 126	PHT	C 75	168646	1	234



Shape 4BT9



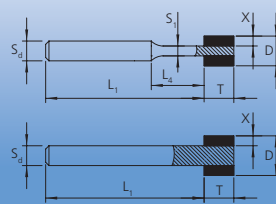
Diamond Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Concentr.	EAN 4007220		
4BT9	100 - 6 - 1 - 20	D 126	PHT	C 75	350119	1	132



Shape 1A1R





Diamond Shape	Dimension [mm] D - T - X - H	Grit size	Bond	Concentr.	EAN 4007220		
1A1R	100 - 1 - 5 - 20	D 151	PHT	C 75	350096	1	94
1A1R	150 - 1 - 7 - 20	D 151	PHT	C 75	806357	1	120

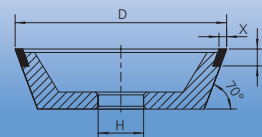
Shape 1A1W





Diamond Shape	Dimension [mm] D - T - X	Shank [mm]	Grit size	Bond	Con-centr.	EAN 4007220		
1A1W	3 - 5 - 0,75	3-50	D 126	PHN/T	C 100	665817	1	25
1A1W	4 - 5 - 1,0	3-50	D 126	PHN/T	C 100	665763	1	25
1A1W	5 - 5 - 1,5	3-50	D 126	PHN/T	C 100	665770	1	25
1A1W	6 - 6 - 1,5	6-50	D 126	PHN/T	C 100	665787	1	27
1A1W	8 - 8 - 2,0	6-50	D 126	PHN/T	C 100	665794	1	30
1A1W	10 - 8 - 2,0	6-50	D 126	PHN/T	C 100	665824	1	35

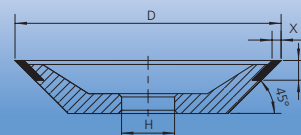
CBN Shape	Dimension [mm] D - X - U - H	Grit size	Bond	Concentr.	EAN 4007220		
11V9	100 - 2 - 10 - 20	B 126	PHT 4.1	C 75	350171	1	234
11V9	100 - 2 - 10 - 20	B 151	PH 4.2	-	535646	1	261
11V9	100 - 2 - 10 - 20	B 181	PHST	C 75	168684	1	261



Shape 11V9



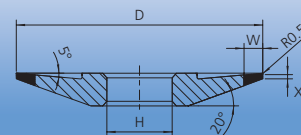
CBN Shape	Dimension [mm] D - X - U - H	Grit size	Bond	Concentr.	EAN 4007220		
12V9	100 - 2 - 10 - 20	B 126	PHT	C 75	168707	1	234



Shape 12V9



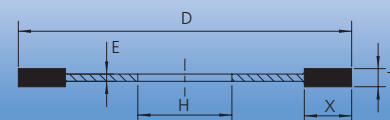
CBN Shape	Dimension [mm] D - W - X - H	Grit size	Bond	Concentr.	EAN 4007220		
4BT9	100 - 6 - 1 - 20	B 126	PHT	C 75	350126	1	132



Shape 4BT9



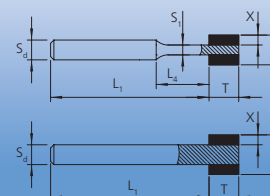
CBN Shape	Dimension [mm] D - T - X - H	Grit size	Bond	Concentr.	EAN 4007220		
1A1R	100 - 1 - 5 - 20	B 151	PHT	C 100	350102	1	100
1A1R	150 - 1 - 7 - 20	B 151	PHT	C 75	806364	1	120

Shape 1A1R



CBN Shape	Dimension [mm] D - T - X	Shank [mm]	Grit size	Bond	Concentr.	EAN 4007220		
1A1W	3 - 5 - 0,75	3-50	B 126	PHN/T	C 100	665695	1	25
1A1W	4 - 5 - 1,0	3-50	B 126	PHN/T	C 100	665701	1	25
1A1W	5 - 5 - 1,5	3-50	B 126	PHN/T	C 100	665718	1	25
1A1W	6 - 6 - 1,5	6-50	B 126	PHN/T	C 100	665725	1	27
1A1W	8 - 8 - 2,0	6-50	B 126	PHN/T	C 100	665732	1	30
1A1W	10 - 8 - 2,0	6-50	B 126	PHN/T	C 100	665749	1	35

Shape 1A1W



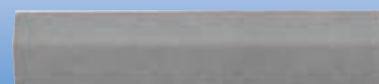
## Sharpening Block for Diamond / CBN Tools



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

The block is first soaked in coolant and then infed manually or by means of a suitable feeding device.

Grinding with the sharpening block will quickly restore the sharpness of your grinding wheels.

Sharpening block for diamond and CBN tools



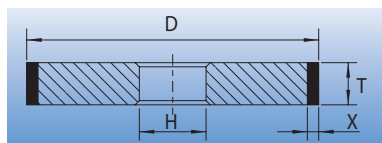
Order No.	Dimension [mm]	EAN 4007220		
SBL 1002413	100 x 24 x 13	255605	5	25

# Diamond / CBN Grinding Tools, Resinoid Bond

## Special Range Tool Shapes, Dimensions



Shape 1A1

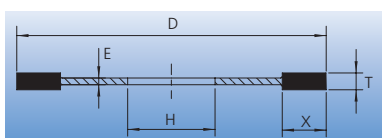


D [mm]	T [mm]	X [mm]	H [mm]
50	4 - 6 - 8 - 10 - 12	2 - 3 - 4	
75	5 - 6 - 8 - 10 - 12	2 - 3 - 4	
100	6 - 8 - 10 - 12	2 - 3 - 4	
125	8 - 10 - 12 - 15	2 - 3 - 4	
150	8 - 10 - 12 - 15	2 - 3 - 4	
175	8 - 10 - 12 - 15 - 20	2 - 3 - 4	
200	12 - 15 - 20 - 25 - 30	2 - 3 - 4	
225	12 - 15 - 20	2 - 3 - 4	
250	15 - 20 - 25 - 30 - 40 - 50	2 - 3 - 4	
300	15 - 20 - 25 - 30 - 40 - 50	2 - 3 - 4	
350	20 - 25 - 30 - 40 - 50	2 - 3 - 4	
400	25 - 30 - 40 - 50	2 - 3 - 4	
450	25 - 30 - 40 - 50	2 - 3 - 4	
500	25 - 30 - 40 - 50	2 - 3 - 4	

please specify!

Ordering example: 1BT1 200-20-4-127 D 126 PHN C 75

Shape 1A1R

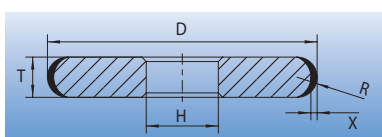


D [mm]	T [mm]	X [mm]	H [mm]	E [mm]
75	1	5		0,8
100	1	5		0,8
125	1	5		0,8
150	1	7		0,8
175	1,2	7		0,9
200	1,2	7		0,9

please specify!

Ordering example: 1A1 150-1-7-20 D 151 PHT C 75

Shape 1FF1

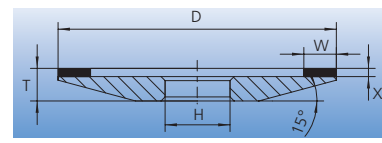


D [mm]	T [mm]	X [mm]	R [mm]	H [mm]
50	6	2	3	
50	8	2	4	
50	10	2	5	
75	6	2	3	
75	8	2	4	
75	10	2	5	
100	6	2	3	
100	8	2	4	
100	10	2	5	
100	12	2	6	
125	6	2	3	
125	8	2	4	
125	10	2	5	
125	12	2	6	
150	6	2	3	
150	8	2	4	
150	10	2	5	
150	12	2	6	

please specify!

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

Shape 4A2



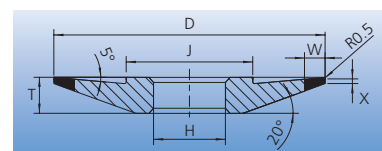
D [mm]	W [mm]	X [mm]	H [mm]	T-X [mm]
50	3			5
50	5			5
75	3			5
75	3			5
100	3			6
100	4			6
100	5			6
100	6			6
100	8			6
100	10			6
125	3			7
125	4			7
125	5			7
125	6			7
125	8			7
125	10			7
150	3			9
150	4			9
150	5			9
150	6			9
150	8			9
150	10			9
150	12,5			9

2 or 3 or 4

please specify!

Ordering example: 4A2/15° 100-4-2-20 D 64 PHT C 50

Shape 4BT9

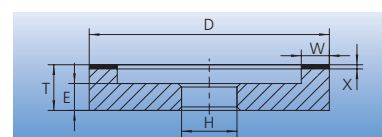


D [mm]	W [mm]	X [mm]	H [mm]	T [mm]	J [mm]
75	6	1		8	36
100	6	1		10	50
125	6	1		12	65
150	6	1		15	80

please specify!

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			20	8
50	5			20	8
75	3			20	10
75	5			20	10
75	10			20	10
100	5			20	10
100	8			20	10
100	10			20	10
100	12,5			20	10
100	15			20	10
125	4			23	10
125	6			23	10
125	8			23	10
125	10			23	10
125	12,5			23	10
125	15			23	10
125	20			23	10
125	25			23	10
150	6			23	10
150	8			23	10
150	10			23	10
150	12,5			23	10
150	15			23	10
150	20			23	10
150	25			23	10

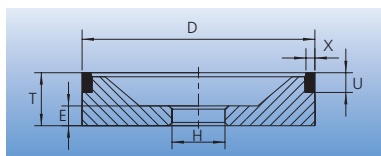
2 or 3 or 4

please specify!

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

Other dimensions available upon request!

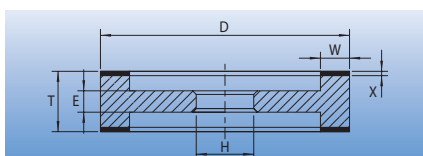
**Shape 6A9**



D [mm]	X [mm]	U [mm]	H [mm]	T [mm]	E [mm]
75	1,5	6		25	10
75	1,5	10		25	10
75	2	6		25	10
75	2	10		25	10
75	3	6		25	10
75	3	10		25	10
100	1,5	6		30	10
100	1,5	10		30	10
100	2	6		30	10
100	2	10		30	10
100	3	6		30	10
100	3	10	please specify!	30	10
125	1,5	6		30	10
125	1,5	10		30	10
125	2	6		30	10
125	2	10		30	10
125	3	6		30	10
125	3	10		30	10
150	1,5	6		35	10
150	1,5	10		35	10
150	2	6		35	10
150	2	10		35	10
150	3	6		35	10
150	3	10		35	10

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

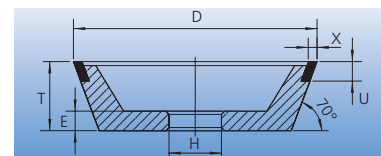
**Shape 9A3**



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

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

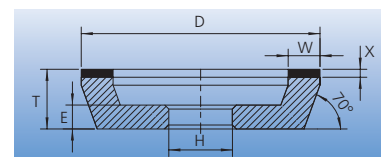
**Shape 11V9**



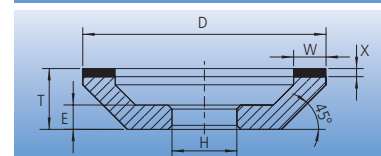
D [mm]	X [mm]	U [mm]	H [mm]	T [mm]	E [mm]
50	2	10		30	10
75	1,5	10		30	10
75	2	10		30	10
75	3	10		30	10
100	1,5	10		35	10
100	2	10		35	10
100	3	10	please specify!	35	10
125	1,5	10		40	10
125	2	10		40	10
125	3	10		40	10
150	1,5	10		50	10
150	2	10		50	10
150	3	10		50	10

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

**Shape 11A2**



**Shape 12A2/45°**



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

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

Other dimensions available upon request!

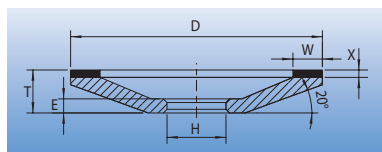


# Diamond / CBN Grinding Tools, Resinoid Bond

## Special Range Tool Shapes, Dimensions



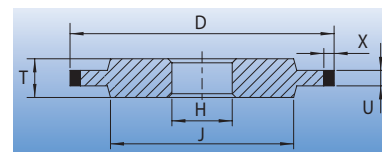
Shape 12A2/20°



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

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

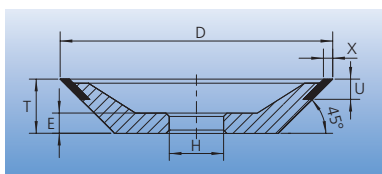
Shape 14A1



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

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

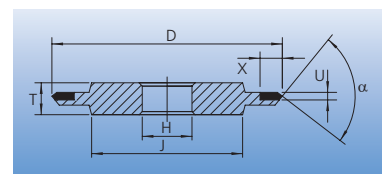
Shape 12V9



D [mm]	X [mm]	U [mm]	H [mm]	T [mm]	E [mm]
50	2	6		20	10
75	2	10		20	10
75	3	10		20	10
100	1,5	10		20	10
100	2	10	please specify!	20	10
100	3	10		20	10
125	1,5	10		25	10
125	2	10		25	10
125	3	10		25	10
150	2	10		25	10
150	3	10		25	10

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

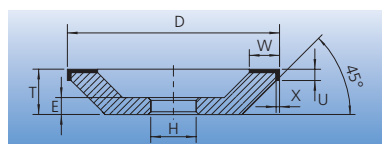
Shape 14E9



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

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

Shape 12C9

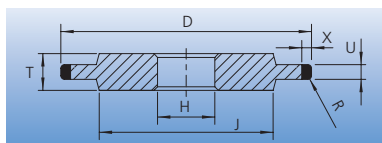


D [mm]	W [mm]	U [mm]	X [mm]	H [mm]	T [mm]	E [mm]
100	6	4	2		26	10
100	10	4	2		26	10
100	10	4	3		27	10
125	6	4	2		26	10
125	10	4	2	please specify!	26	10
125	10	4	3		27	10
125	12,5	5	2		26	10
150	10	4	2		26	10
150	10	4	3		27	10
150	12,5	5	2		26	10
150	15	5	2		26	10

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

Other dimensions available upon request!

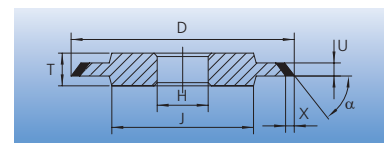
**Shape 14F1**



D [mm]	U [mm]	X [mm]	R [mm]	H [mm]	T [mm]	J [mm]
40	2		1		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	3 or 4 or 5 or 6	2	please specify!	6	50
100	2		1		6	70
100	3		1,5		6	70
100	4		2		6	70
125	2		1		6	100
125	3		1,5		6	100
125	4		2		6	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

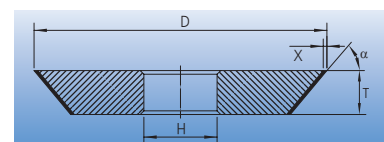
**Shape 14V1**



D [mm]	U [mm]	X [mm]	$\alpha$	H [mm]	T [mm]	J [mm]
50	6-8				6	30
75	6-8-10				6	45
100	8-10		20° to 89° (please specify individually!)	please specify	8	70
125	8-10	2 or 3 or 4			8	100
150	8-10				8	120
175	10				10	140
200	12-15				12	160
250	15-20				15	200
300	15-20				15	250

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

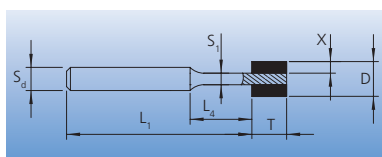
**Shape 1V1**



D [mm]	T [mm]	X [mm]	$\alpha$	H [mm]
50	6-8			
75	6-8-10			
100	8-10		20° to 89° (please specify individually!)	please specify
125	8-10	2 or 3 or 4		
150	8-10			
175	10			
200	12-15			
250	15-20			
300	15-20			

Other dimensions available upon request!

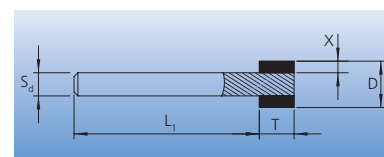
**Shape 1A1W**



D [mm]	T [mm]	X [mm]	S <sub>d</sub> [mm]	L <sub>1</sub> [mm]	S <sub>1</sub> [mm]	L <sub>4</sub> [mm]
3	6	0,75	3	60	1,5	8
4	6	1	3	60	2,0	8
5	6	1,5	3	60	2,0	8
6	6	1,5	6	60	3,0	8
6	8	1,5	6	60	3,0	10
7	6	2	6	60	3,0	8
8	6	2	6	60	4,0	8
8	10	2	6	60	4,0	12
9	6	2	6	60	5,0	8
10	6	2	6	60	—	—
10	10	2	6	60	—	—

Ordering example: 1A1W 8-6-2-6-60-4,0-8 D 91 PHNT C 100

**Shape 1A1W**



D [mm]	T [mm]	X [mm]	S <sub>d</sub> [mm]	L <sub>1</sub> [mm]
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 available upon request!

# CBN Grinding Tools, Ceramic Bond

## Special Range (Wet Grinding)



### Advantages of ceramic bond grinding tools

CBN abrasive particles are extremely hard and wear resistant. The cutting edge of the grain remains sharp (i.e., retains its cutting capacity) for much longer. This offers the following advantages:

- Low grinding forces, resulting in superior dimensional stability and shape holding properties. Spark-out times are shorter due to minimized spindle deflection.
- Prevention of overheating in the surface and near-surface zones of the workpiece. This characteristic is further emphasized by the exceptional thermal conductivity of the CBN grit.

Ceramic bond CBN tools offer an outstanding tool life and profile holding capability, even at high stock removal rates. The resulting benefits include:

- constant quality level over large product range;
- reduced idle times due to fewer dressing cycles and tool changes.

### Applications of ceramic bond CBN grinding tools

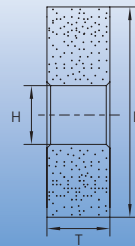
- Ceramic bond CBN grinding tools are used for grinding steel in **stationary** machines, mainly in volume production environments.
- Ceramic bond CBN grinding tools are always used wet. The coolant should contain EP additives. Tool life can be increased substantially by using a grinding oil.
- Cutting speeds should be in excess of 30 m/s. Higher cutting speeds increase the cost-effectiveness of the grinding process.
- The exceptional performance of ceramic bond CBN grinding tools can be further increased through the use of low-vibration machines.

### Composition and explanation of the order number

#### Tool shapes

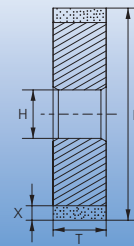
PFERD supplies standard grinding tool shapes as well as any special styles our customers may require. Based on the ISO 6104 standard for diamond and CBN grinding wheels a distinction is made between the following shapes:

Shape 1A8



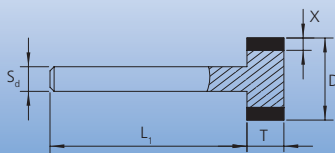
e.g. **1A8 12 - 6 - 6 (D - T - H)**  
**1A8** – Solid body without mount

Shape 1A1



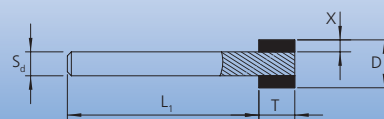
e.g. **1A1 20 - 5 - 3 - 5 (D - T - X - H)**  
**1A1** – Abrasive coating on mount

Shape 1A1W



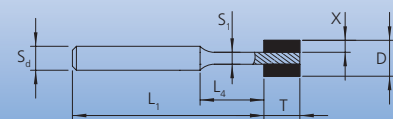
e.g. **1A1W 6 - 5 - 3 - 8 - 50 (D-T-X-S<sub>d</sub>-L<sub>1</sub>)**  
**1A1W** – Abrasive coating on mount with shank

Shape 1A8W  
cylindrical shank



e.g. **1A8W 10 - 5 - 6 - 50 (D - T - S<sub>d</sub> - L<sub>1</sub>)**  
**1A8W** – Solid body with cylindrical or shouldered shank

Shape 1A8W  
shouldered shank



e.g. **1A8W 10 - 4 - 8 - 50 - 3 - 10 (D - T - S<sub>d</sub> - L<sub>1</sub> - S<sub>1</sub> - L<sub>2</sub>)**  
**1A8W** – Solid body with cylindrical or shouldered shank

Style **1A8W** (cylindrical or shouldered shank) and **1A1W** tools are available with **steel** or **carbide shanks**.

The modulus of elasticity of carbides is about three times as high as that of steel. The modulus of elasticity describes the degree of deformation a body will undergo in response to loads. In internal grinding, a high modulus of elasticity of the tool shank means that the deformation of the tool by grinding forces will be minimized. This will result in the following specific benefits:

- prevention of geometry errors;
- substantial reduction in (non-productive) spark-out times.

#### Tool dimensions

The tool dimensions submitted should describe the tool as fully as possible, i.e., the dimensions of both the abrasive body and the shank (including its shoulder, where applicable) should be indicated as accurately as possible. Tools can also be produced to customer specifications. For tools made to order we need a technical drawing showing all relevant manufacturing dimensions.

#### Abrasive coating specifications

A complete specification of the abrasive should include the following data:

- Grit size,
- grit concentration and
- bond type.

The composition of the abrasive can be freely selected to obtain an optimum abrasive product for your application. In addition, the ceramic bond can be adapted exactly to comply to the individual machining task.

Just select any desired bond hardness, pore volume and pore structure.

**Please contact our applications engineering team for further details regarding optimum bond selection and tool design.**