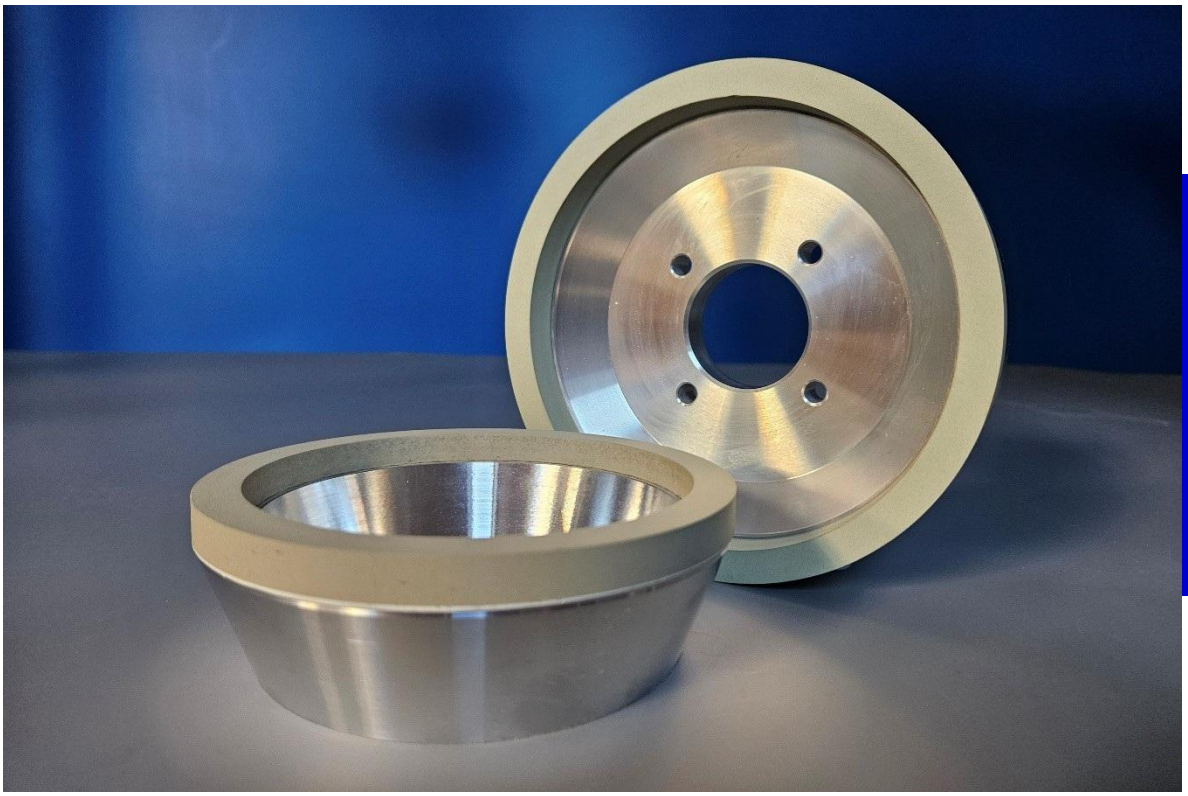
PCD/PCBN Ceramic Grinding Wheels, C05



Characteristics

PCD (polycrystalline diamond) is a synthetic superhard material used in the manufacture of cutting tools. It is composed of extremely hard, micron-sized diamond grains and is designed for machining materials such as ceramics, aluminum, copper, laminates, wood, plastics, and rubber.

PCBN (polycrystalline cubic boron nitride) is a synthetic material manufactured in a process similar to PCD; however, instead of diamond, it consists of micron-sized grains of cubic boron nitride (CBN).

PCBN is primarily used for machining materials such as tool steels, high-speed steels (HSS), and high-alloy steels.

Compared to conventional tool materials, sharpening tools made of PCD or PCBN requires a different approach in terms of grinding methods and grinding wheel characteristics. Sharpening polycrystalline tools is a demanding task for both end users and grinding wheel manufacturers.

For the sharpening process of tools with PCD/PCBN inserts to be carried out correctly, the following are essential:
– a high-precision grinding machine with adequate structural rigidity and an effective vibration-damping system, ensuring the high level of accuracy required for sharpening polycrystalline tools;
– a specially designed grinding wheel intended for high-performance and precision grinding, enabling the achievement of excellent cutting-edge quality.

Modern diamond grinding wheels designed for sharpening tools with cutting inserts made of polycrystalline diamond (PCD) and cubic boron nitride (PCBN).
Cutting inserts with polycrystalline diamond and CBN cutting edges are exceptionally durable tools; however, they require occasional resharpening.
Thanks to the use of advanced technology, these grinding wheels are applied in precise and high-performance sharpening processes for superhard PCD/PCBN tools, which are increasingly used in advanced manufacturing technologies across many industrial sectors.

Ceramic-bond diamond grinding wheels used for sharpening cutting inserts made of polycrystalline diamond (PCD) and cubic boron nitride (PCBN) offer the following advantages:
– high quality of the PCD/PCBN cutting edge after sharpening;
– short grinding time;
– long grinding wheel service life;
– high efficiency and precision;
– significant reduction in unit sharpening costs;
– cool grinding (low thermal impact).

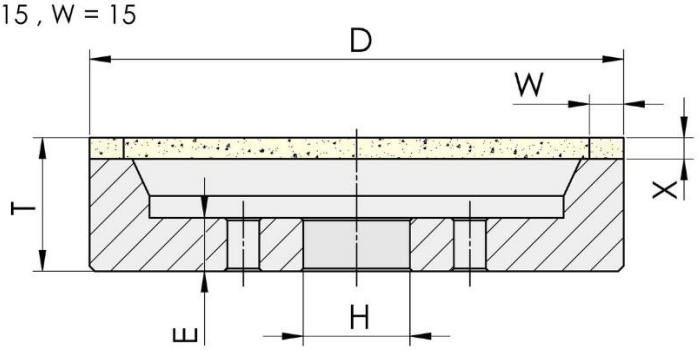
Table of Contents

Application

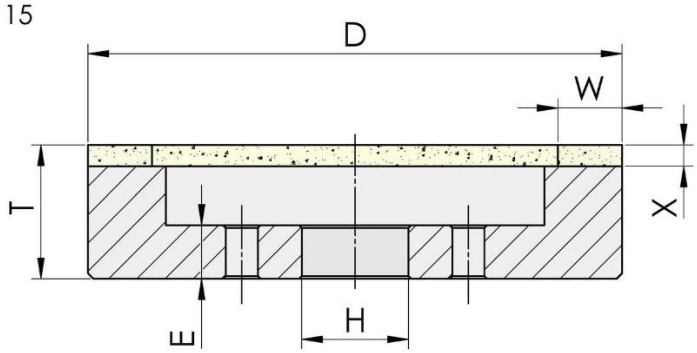
The Type **6A2** grinding wheel is used for sharpening cutting inserts and tools made of polycrystalline diamond (PCD) and polycrystalline cubic boron nitride (PCBN).

Dimensions

W < 15 , W = 15



W > 15



D	W	X	T	E	H
30	3	5	25	8	as per order
50	3 | 5	5	25	10	as per order
75	3 | 5 | 10	5	25	10	as per order
80	3 | 5 | 10	5	25	10	as per order
100	3 | 6 | 10 | 15	5	25	10	as per order
125	3	5	25 | 40	12	as per order
125	5 | 6 | 10 | 15 | 20	5 | 10	25 | 40	12	as per order
150	3 | 4 | 5 | 6 | 8 | 10 | 15 | 20	5 | 6 | 10	40	12	as per order
200	4 | 5 | 6 | 10 | 15 | 20	5 | 8	57	13	as per order
250	4 | 6	5 | 8	70	15	as per order
250	10 | 15 | 20	6 | 10	70	15	as per order

Note: Grinding wheels of types other than those presented in this offer can be manufactured upon request. Custom production includes both the wheel type (shape) and the parameters of the abrasive layer.

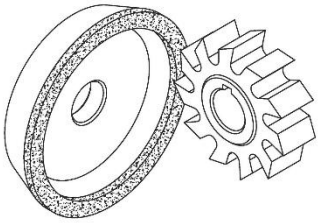
Order Example

Wheel type	D W X H	Body	Grain	Binder	Assortment
6A2	150x5x10x40	KA	D15	V	6A2-150x5x10x40 KA D15 V
6A2	250x6x8x40	KA	D9	V	6A2-250x6x8x40 KA D9 V

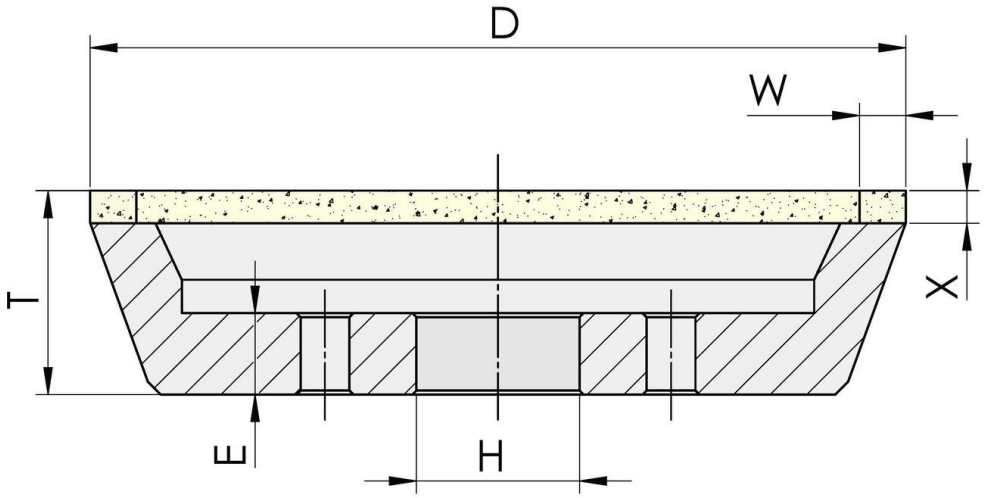
Grinding Wheels – Type **11A2**

Application

The Type **11A2** grinding wheel is used for sharpening cutting inserts and tools made of polycrystalline diamond (PCD) and polycrystalline cubic boron nitride (PCBN).



Dimensions



D	W	X	T	E	H
30	3	5	25	8	as per order
50	3 | 5	5	25	10	as per order
75	3 | 5 | 10	5	25	10	as per order
80	3 | 5 | 10	5	25	10	as per order
100	3 | 6 | 10 | 15	5	25	10	as per order
125	3	5	25 | 40	12	as per order
125	5 | 6 | 10 | 15 | 20	5 | 10	25 | 40	12	as per order
150	3 | 4 | 5 | 6 | 8 | 10 | 15 | 20	5 | 6 | 10	40	12	as per order
200	4 | 5 | 6 | 10 | 15 | 20	5 | 8	57	13	as per order
250	4 | 6	5 | 8	70	15	as per order
250	10 | 15 | 20	6 | 10	70	15	as per order

Note: Grinding wheels of types other than those presented in this offer can be manufactured upon request. Custom manufacturing covers both the wheel type (shape) and the parameters of the abrasive layer.

Order Example

Wheel type	D W X H	Body	Grain	Binder	Assortment
11A2	150x5x10x40	KA	D15	V	11A2-150x5x10x40 KA D15 V
11A2	250x6x8x40	KA	D9	V	11A2-250x6x8x40 KA D9 V

Grinding Wheel Selection Guide

The most important criterion for selecting a grinding wheel is the required surface quality of the ground cutting edge. For grinding wheels used in sharpening PCD and PCBN tools, four basic grit sizes are applied:

Grit Size Selection

Grit Size	Type of Machining	Application
D22	Rough Grinding	Regenerative grinding – edge profiling and sharpening of heavily worn cutting inserts.
D15	Universal	Standard grit size – enables high sharpening efficiency and good surface quality when additional spark-out passes are applied.
D9	Finish grinding	Finishing grinding – achieving very high surface quality of the cutting insert edge.
D6	Superfinishing	Super-precision grinding – enables the achievement of excellent surface quality on sharpened surfaces.

Other grinding wheel parameters (grit concentration, hardness, and structure) are selected individually for each user, depending on the type of machining, the grinding machine used, and the properties of the tool being sharpened.

Sharpening Parameters

When sharpening PCD and PCBN tools, special attention must be paid to the correct selection of sharpening process parameters. Even a diamond grinding wheel manufactured using the most advanced technology will not be effective if its application conditions and/or machining parameters are selected incorrectly.

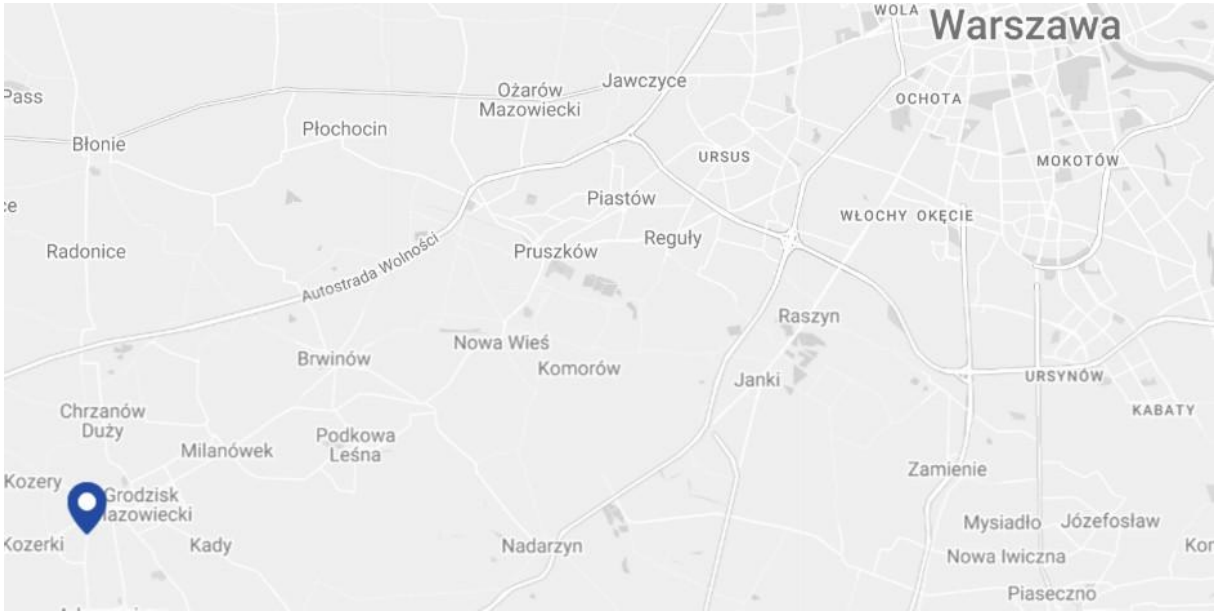
Selection of Machining Parameters

Grinding Speed	20 m/s – recommended, 15–30 m/s – permissible*	
Stock Allowance	Rough grinding:	0.02–0.05 mm / pass
	Standard grinding:	0.01–0.025 mm / pass
	Finishing grinding:	0.005–0.01 mm / pass
Oscillation Frequency	60 min^{-1} – recommended, 50–120 min^{-1} – permissible	
Number of Spark-Out Passes	3-8	
Recommended Dressing Stick Type	Aluminum oxide dressing stick: **5410 - 20x10x100 99A 320 J7V**	
Coolant	Oil–water emulsion 3–5%	
Notes	The grinding wheel infeed must always be carried out outside the machining zone.	

*If the grinding wheel appears too hard, the grinding speed should be reduced to 15–18 m/s and dressing should be performed more frequently. If the grinding wheel wears too quickly, the grinding speed should be increased to 22–30 m/s.

Ordering

If possible, please specify in your order the type of tool being sharpened, the type of machining and its conditions, as well as the machine type for which the grinding wheels are being selected. This will allow the grinding wheel to be optimally matched to your requirements.



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