Diamond- and CBN-

Grinding Wheels

Rieger

Contents

Innovation for more than 50 years

Riegger Diamantwerkzeuge offers its customers expert technical support in the field of grinding technology for diamond and CBN tools. This is based on the company's in-house development work and production of diamond and CBN grinding wheels as well as diamond dressing tools in Affalterbach.

The aim is to optimise the customer's grinding processes through continuous cooperation, whether in terms of quality or quantity. To this end, we create individually tailored solutions away from the standard, as required. This flexibility delivers innovation and results to each customer.

This interaction with our customers has been a constant since the company was established in 1968, carried right through to the current, third generation of entrepreneurs.

Constantin Riegger

Michael Riegger

„Short decision-making channels enable us to respond flexibly to the requirements of our customers. Even when special dimensions or short lead times are involved.“

Holger Caspar | Sales

„Our production depth, from the individual raw materials right through to the finished product, whether a grinding wheel or a dressing tool, enables us to offer customers tailored solutions“

Daniel Holz | Technical Office Team-Leader

„We are a family company and embody this on a daily basis in our team. We actively want to extend this to our customers too“

Christa Müller | Office Sales

„Our focus is not on product sales, but rather on customer service.“

Klaus Ruf | Sales

History

Riegger Diamantwerkzeuge GmbH was founded in 1968 by Mr Wolfang Riegger in Bittenfeld not far from the current headquarters in Affalterbach.

As a third generation family-run company, we have more than 50 years of tradition.

We have introduced various new technologies in bond systems and other processing technologies. However, our focus has always been our customers' grinding applications. Using our extensive experience, we can continue to provide the right finish.

Quality

„Quality is a shared responsibility- our company aims to maintain consistent levels of quality and reliability. Quality is the result of knowledge, skill and experience. The combination of these attributes, applied with individual responsibility and commitment, is what makes our products stand out."

Michael Riegger | Managing Director

Every single employee is responsible for the quality of our products. This is how we continuously deliver optimum quality. Faultless products within agreed lead times are the standards we live by. Through continuous optimisation, we also aim to maintain and improve our standards in future.

To underline our constant pursuit of the highest level of quality and service and to demonstrate that to the whole world, our company has been certified once again in line with EN ISO 9001.

Know-how

Through the close connection between application technology and our development department, we ensure that our developments always create added value for the customer. Our product development traditionally takes place in-house. This begins with the raw materials and ends with the use of the finished tool at the customer's site. This means we can respond flexibly to new challenges. Our employees' expertise makes us a valuable and competent partner.

Through our cooperation with universities and our work on research projects, we aim to continue to offer the most cutting-edge and efficient products on the market.

The performance of a diamond or CBN grinding wheel depends on many parameters. The most important include the quality of the diamond or CBN abrasive used, the concentration of the abrasive in the abrasive layer, the bond used to fix the abrasive in the abrasive layer, and the wheel body to which the abrasive layer is affixed. There are numerous possible combinations here. At Riegger, this amounts to over 230,000 possible combinations.

In addition to this is the shape and the dimensions of the grinding wheel. This is based on the standard of the Fédération Européenne des Fabricants de Produits Abrasifs (FEPA). However, we are also happy to produce grinding wheels that deviate from the standard to suit your specific requirements.

It is therefore important, when making an enquiry or placing an order, that you provide us with all the necessary parameters. We will be happy to advise you over the phone or on site regarding the right choice for your grinding process.

Sample order

Shape & dimensions	Bond system	Grit
FEPA dimensions Special shapes		Grit size Concentration (C)
1A1 D=100 T=12 X=8 H=20	**Hybrid**	**D64 C125**

Optional information for sizing the grinding wheel for your grinding application:

Machine details
Machine manufacturer
Machine type
Cooling
Dressing method

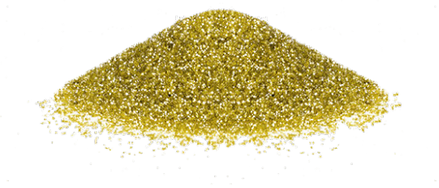
Application details
Workpiece
Workpiece material
Material hardness
Removal per pass
Absolute removal
Surface requirement

Diamond

Diamond is pure carbon with a cubic lattice structure. It is the hardest of all known materials. This property and a high abrasion resistance make it versatile for the use of diamond tools.

Thanks to the development of synthetic diamond synthesis (1955), the majority of diamond grinding wheels are now made from synthetic diamonds. However, for many applications, natural diamond is still used.

Due to the grit sizes used in grinding wheels, diamond powder is also considered. Diamond powder can differ in various properties such as grit shape and size, breaking strength or subsequent refinement, e.g. a coating.



CBN

Cubic crystalline boron nitride (CBN) is a synthetically manufactured material, which is the second hardest of all known materials, after diamond.

CBN has a temperature resistance of up to approx. 1300 °C and shows a slight tendency to react with metals. These properties make CBN useful when processing steels and other materials.

Similarly to diamond powder, the CBN powder used in grinding wheels may vary in grit shape and size, breaking strength or subsequent refinement, such as a coating.

Grit size

The grit size plays an important role in determining the grinding performance and the achievable surface finish. The grit size should always be considered together with the grinding wheel's concentration. With a consistent concentration, when the grit size is smaller, the number of grit tips on the surface is increased, and the grinding wheel has a subjectively harsher grinding action and lower grinding efficiency. A larger grit size results in more chip space and a higher material removal rate. The grit size should therefore always be as large as possible and as small as necessary.

The grit size between 1181 and 46 is determined by the mesh size of the sieve used for sorting. We use the standard of the Fédération Européenne des Fabricants de Produits Abrasifs (FEPA) as a basis. Grit sizes below 46 are considered microgrits and are specified in tolerance widths for the grit size.

FEPA Diamond	FEPA CBN	Nominal mesh size in µm to ISO 6106 DIN 848
D 1181	B 1181	1180/1000
D 1001	B 1001	1000/580
D 852	B 852	850/710
D 711	B 711	710/600
D 601	B 601	600/500
D 501	B 501	500/425
D 426	B 426	425/355
D 356	B 356	355/300
D 301	B 301	300/250
D 252	B 252	250/212
D 213	B 213	212/180
D 181	B 181	180/150
D 151	B 151	150/125
D 126	B 126	125/106
D 107	B 107	106/90
D 91	B 91	90/75
D 76	B 76	75/63
D 64	B 64	63/53
D 54	B 54	53/45
D 46	B 46	45/38

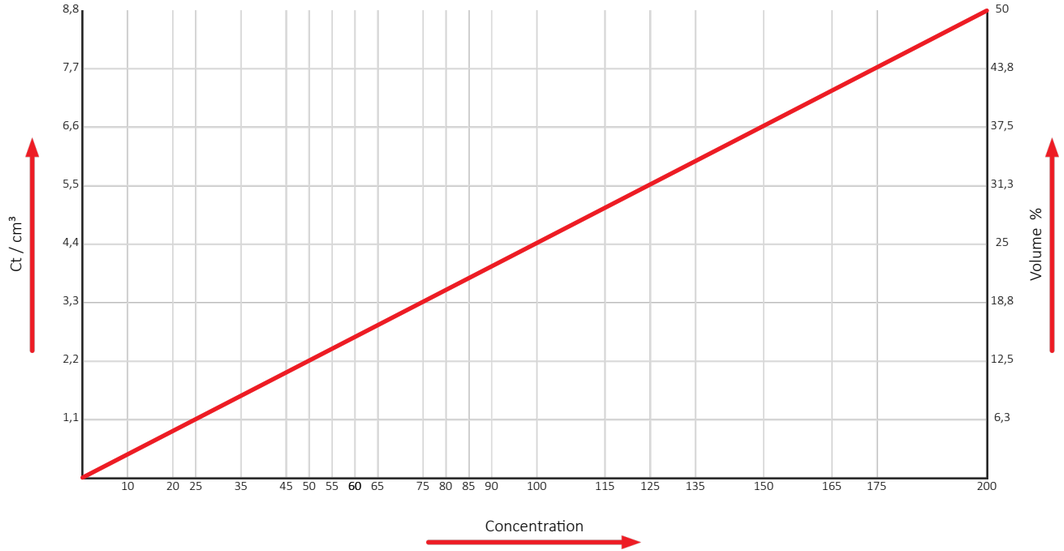
Diamond	CBN	Grit size in µm
D 35	B 35	40-30
D30	B30	30-54
D 25	B 25	30-40
D 20	B 20	20-30
D 15	B 15	12-25
D 12	B 12	8-15
D 9	B 9	6-12
D 7	B 7	5-10
D 3	B 3	2-5
D 1	B 1	1-3

Finer class gradations are available on request.

Concentration

The concentration (C) of a grinding wheel is the proportion of abrasive grit contained in the abrasive layer. By international agreement, a 25 % grit volume percentage is specified with the concentration 100. This means that a 1 cm³ abrasive layer contains abrasive grit of 4.4 carats (0.88 g).

The grit concentration affects the performance behaviour of diamond and CBN grinding tools. It also influences the service life of the grinding tool, its stock removal rate, profile retention, dimensional stability and achievable workpiece finish.



Bond systems

In the case of diamond and CBN grinding wheels, the following bond types are used:

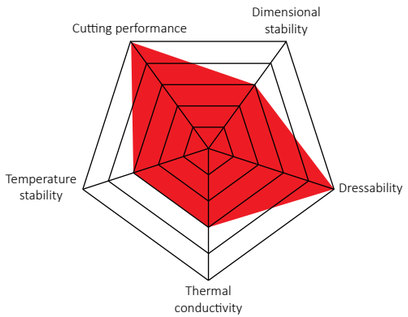
Synthetic resin, metal, hybrid, vitrified and electroplated bonds.

The bond holds the abrasive grit in the abrasive layer and impacts the grinding behaviour and the service life of the grinding wheel. The bond must hold the abrasive grit as long as possible, but also wear in such a way that the tips of the grit can continuously cut unimpeded.

The interaction of bond and grit plays a crucial role in determining the self-sharpening properties of the grinding wheel. This occurs when, due to the dulling of the grit, the grinding pressure increases to such an extent that the bond can no longer hold the grit in the abrasive layer and the grit breaks away. This should happen at the optimum grit wear time. A bond with a low holding ability results in excessive wheel wear and a rough workpiece surface. A bond that holds the abrasive too tightly increases the grinding pressure and temperature, resulting in clogging of the grinding wheel and a reduced stock removal rate.

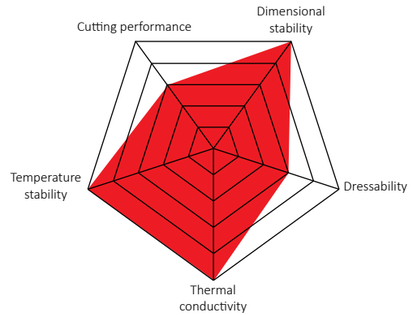
Synthetic resin bonds

Synthetic resin bonds are based on synthetic materials as a bonding agent to hold the grit in the abrasive layer. Both phenolic and polyamide resins are used. It is possible to modify them and add other substances to them to specifically achieve the grinding properties of the bond. This provides flexibility for synthetic resin bonds to be used in many grinding applications. Resin bonds allow soft grinding with low heat generation at large cutting volumes. We produce grinding wheels with synthetic resin bonds up to Ø 610 mm. The following wheel body types can be used in this case: 0,1,2,3



Metal bonds

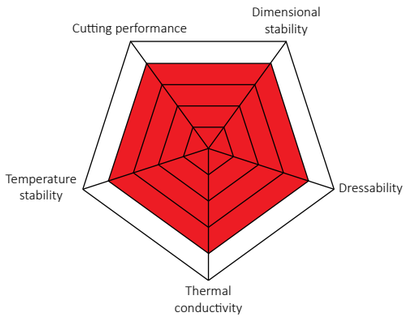
Metal bonds use metals and their alloys to hold the grit in the abrasive layer. They have a high mechanical strength and thermal resilience. They are also more wear-resistant than other bond systems and have a high grit holding ability. Their electrical conductivity enables metal bonds to be profiled and sharpened through erosion. We produce grinding wheels with metal bonds up to Ø 400 mm. The following wheel body types can be used in this case: 0,1,3[1]



[1] directly sintered

Hybrid bonds

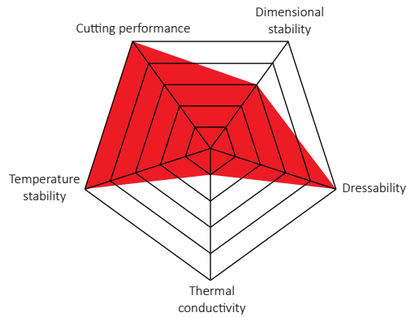
Hybrid bonds are a combination of two bond materials, in most cases metal and synthetic resin. They unite the positive characteristics of each of the respective bond types. This results in good wear resistance at a high material removal rate with low heat generation. We produce grinding wheels with hybrid bonds up to Ø 450 mm. The following wheel body types can be used in this case: 0,1,3,4[1]



[1] Wheel body type 4 up to Ø 150 mm

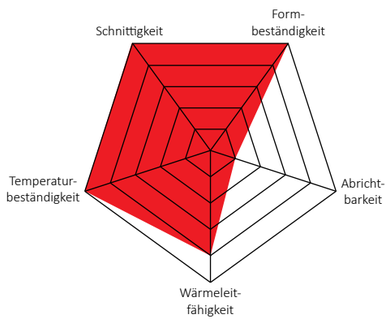
Vitrified bonds

Vitrified bonds bind the grits using vitreous material in the abrasive layer. The properties of the vitreous material used and the addition of other substances can influence the properties of the bond. When ceramic grinding wheels are used, high bond porosity can be achieved. This results in low heat generation and outstanding profiling capability of the abrasive layer. We produce grinding wheels with vitrified bonds up to Ø 300 mm. The following wheel body types can be used in this case: 0,1,3,5



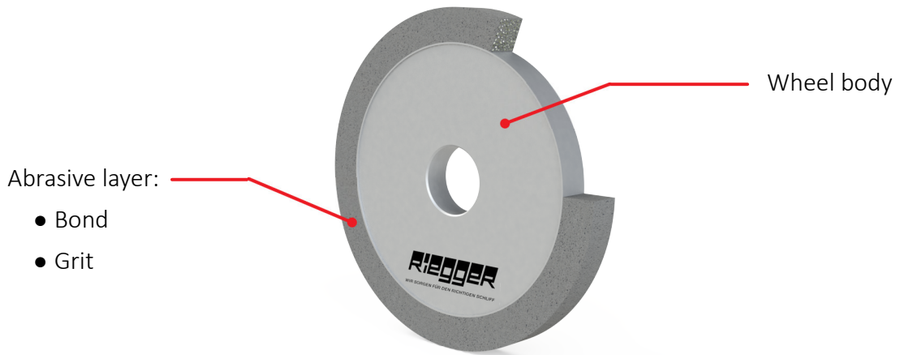
Electroplated bond

In the case of an electroplated bond, the abrasive grit is embedded on a substrate by means of metallic deposit in an electroplating bath. This generally involves a single layer, but multiple layers are also possible, where practical. With the electroplated bond, approx. 1/3 of grit protrudes out of the abrasive layer. This results in exceptional abrasiveness. This, in turn, leads to a high removal rate. As a result of the manufacturing process, complicated profiles and extremely small tool dimensions are possible. We produce grinding wheels with electroplated bond up to Ø 900 mm. The following wheel body types can be used in this case: 1[1],3



[1] Wheel body type 1 without guarantee

Structure of a grinding wheel



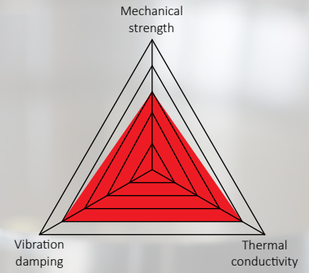
Wheel body

The choice of wheel body can also affect the properties of the grinding wheel. It is not possible to use any wheel body for any bond type and wheel shape.

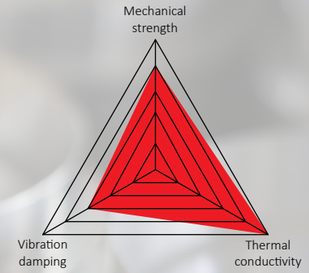
Riegger offers the following wheel body types:

Code 0	Aluminium compact
Code 1	Aluminium
Code 2	Synthetic resin bond
Code 3	Steel
Code 4	Copper compact
Code 5	Ceramic

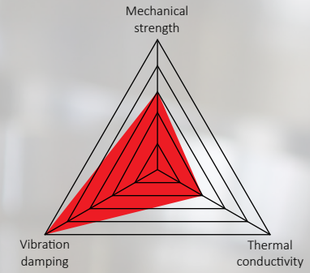
Aluminium compact



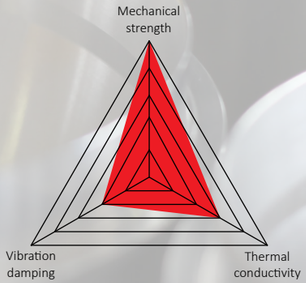
Aluminium



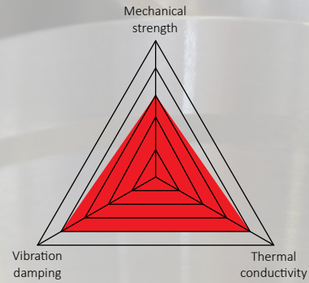
Synthetic resin bond



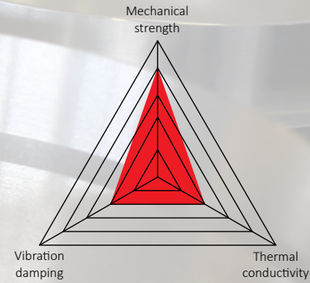
Steel



Copper compact

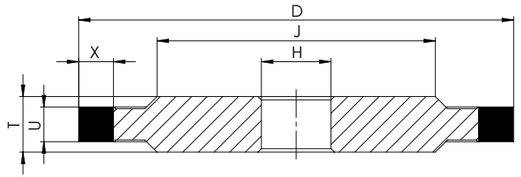


Ceramic



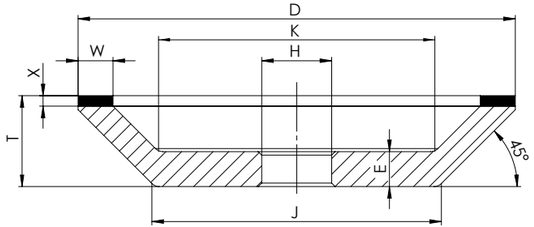
Shapes according to FEPA

Straight grinding wheel

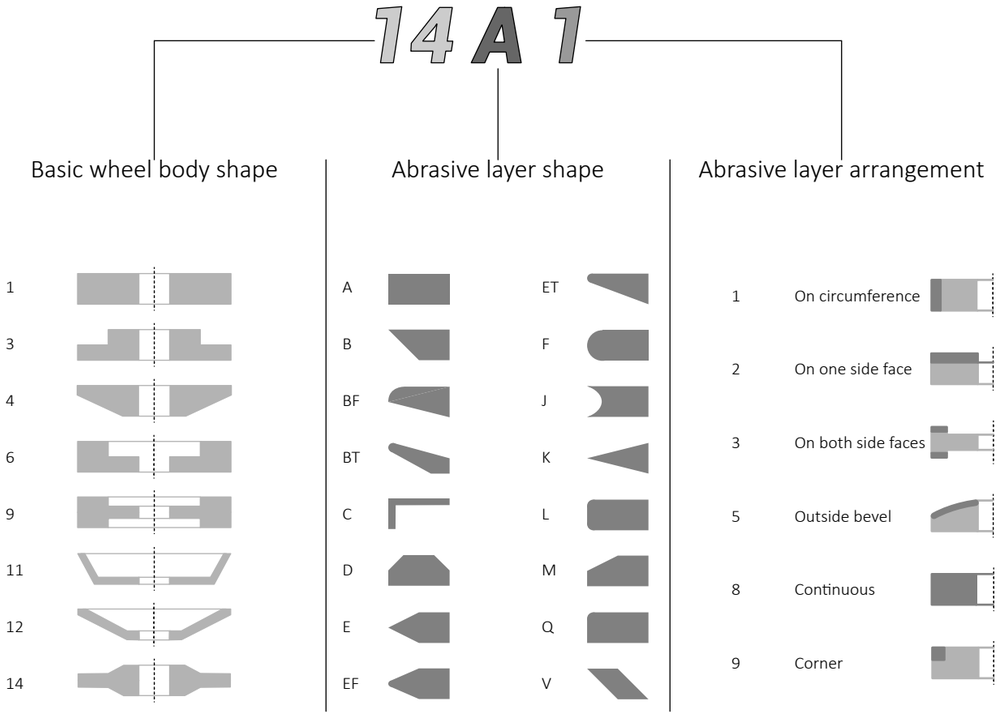


D = grinding wheel diameter
T = grinding wheel width
J = reinforcement diameter
H = hole diameter
U = abrasive layer width
X = abrasive layer thickness
R = abrasive layer radius
V = abrasive layer angle

Cup grinding wheel

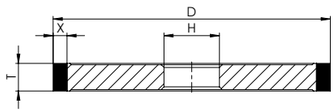


D = grinding wheel diameter
T = grinding wheel width
K = wheel body inner diameter
H = hole diameter
X = abrasive layer height
W = abrasive layer width
E = wheel body thickness
J = wheel body outer diameter

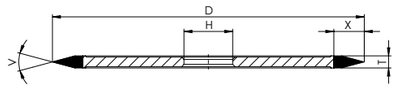


Straight grinding wheels

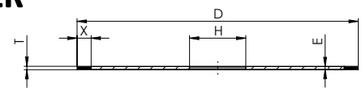
1A1



1E1



1A1R



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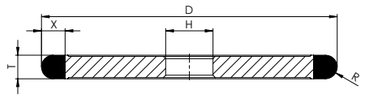

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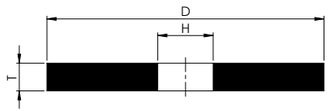

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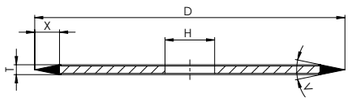

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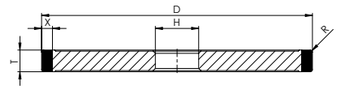

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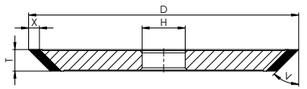

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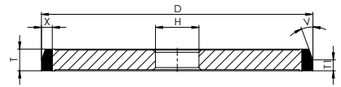

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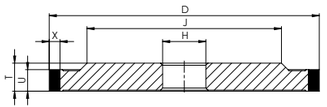

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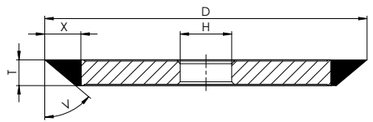

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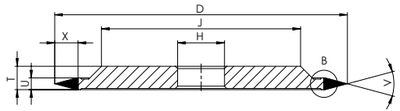
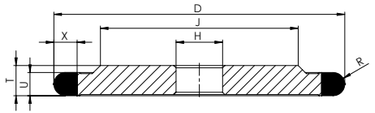


Straight grinding wheels

3F1



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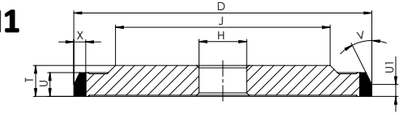

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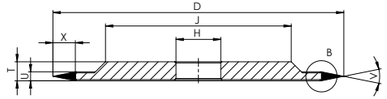

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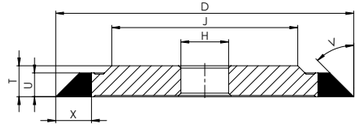

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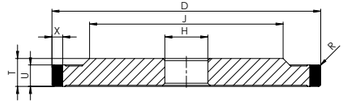

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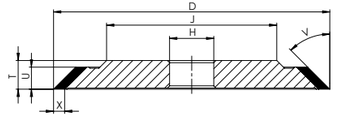

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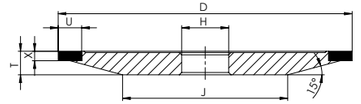

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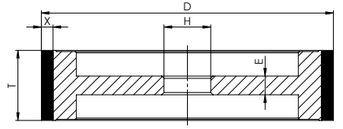

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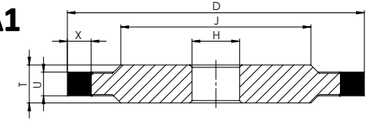
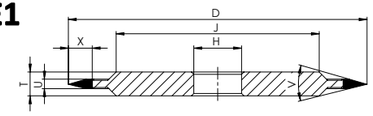
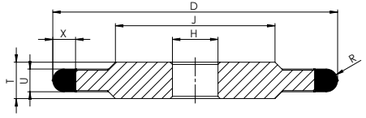


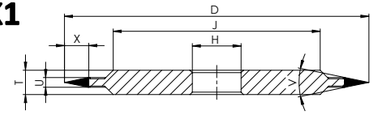
14E1



14F1

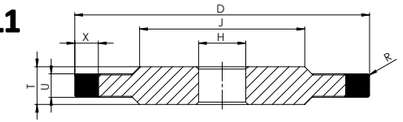


14K1

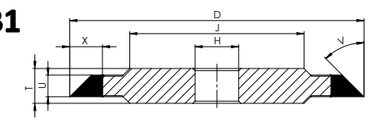


Straight grinding wheels

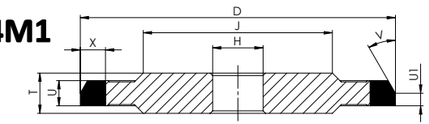
14L1



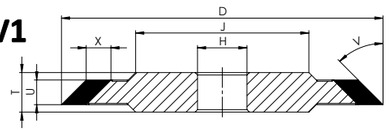
14B1



14M1

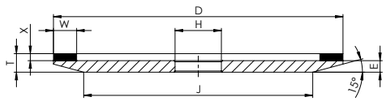


14V1

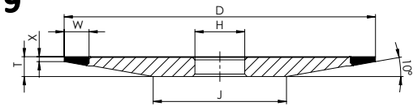


Cup grinding wheels

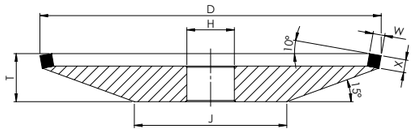
4A2



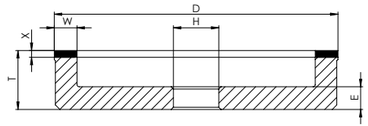
4ET9



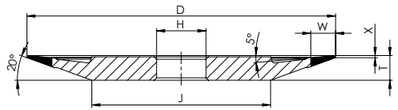
4A5



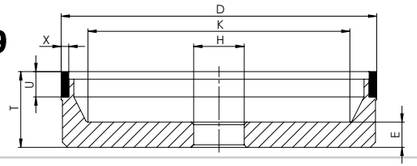
6A2



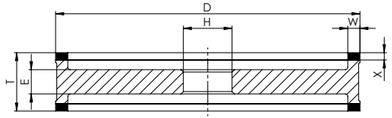
4BT9



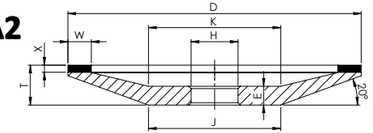
6A9



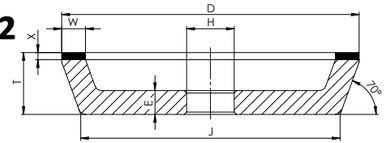
9A3



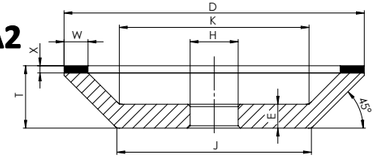
12A2 20°



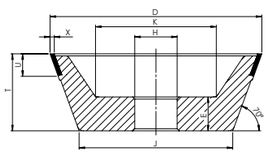
11A2



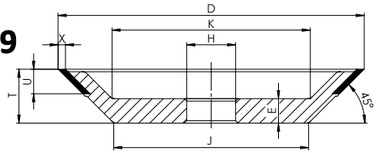
12A2 45°



11V9

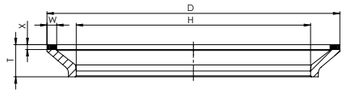


12V9

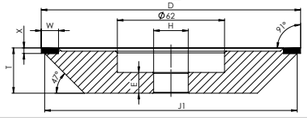


Special shapes

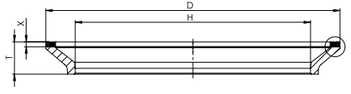
Agathon



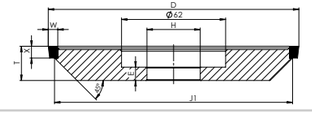
Rollomatic finishing wheel



Agathon double layer

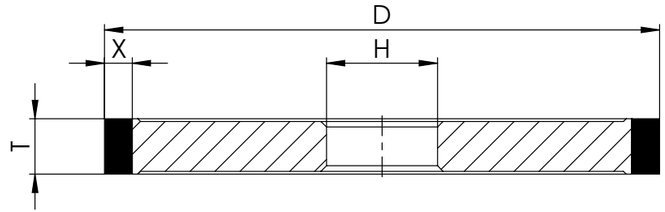


Rollomatic roughing wheel



Straight grinding wheels

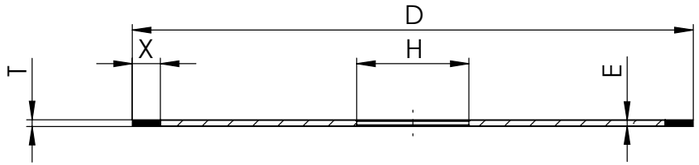
1A1



D	T	X								
20- 30	6- 20	5								
35- 50	6- 20	5	10							
75- 200	6- 20	4	6	8	10	12	14	16	18	20
225- 350	6- 40	4	6	8	10	12	14	16		
400- 500	6- 40	5	10							
604	6- 30	5								
610	6- 30	10								
750	20- 30	3								
900	20- 30	3								

All lengths are given in millimetres; all angles are given in degrees.

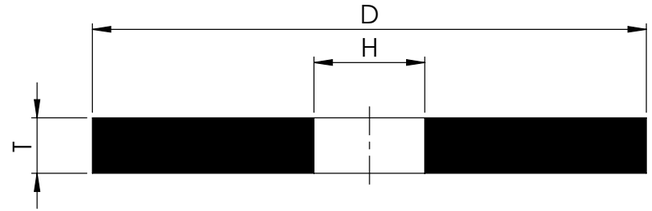
1A1R



D	T	X	
50- 75	0,8- 1,5	5	10
100- 125	0,8- 2	5	10
150- 250	1- 2	5	10

All lengths are given in millimetres; all angles are given in degrees.

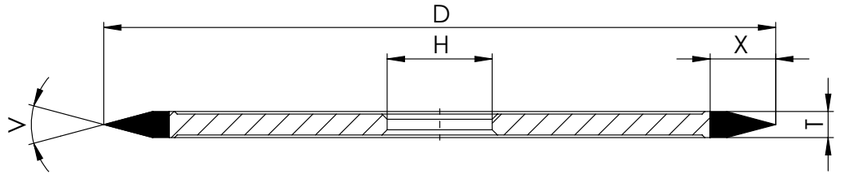
1A8



D	T	X
20- 75	6- 20	According to customer spec. (X = (D-H)/2)

All lengths are given in millimetres; all angles are given in degrees.

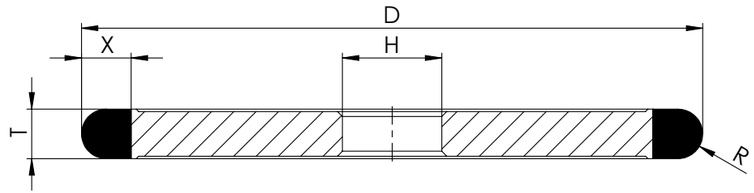
1E1



D	T	X									V°
20- 30	6- 20	5									According to customer spec.
35- 50	6- 20	5	10								
75- 200	6- 20	4	6	8	10	12	14	16	18	20	
225- 350	6- 40	4	6	8	10	12	14	16			
400- 500	6- 40	5	10								

All lengths are given in millimetres; all angles are given in degrees.

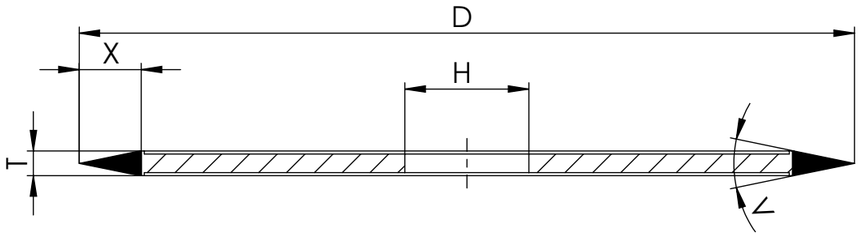
1F1



D	T	X									R
20- 30	6- 20	5									According to customer spec. (R = T/2)
35- 50	6- 20	5	10								
75- 200	6- 20	4	6	8	10	12	14	16	18	20	
225- 350	6- 40	4	6	8	10	12	14	16			
400- 500	6- 40	5	10								

All lengths are given in millimetres; all angles are given in degrees.

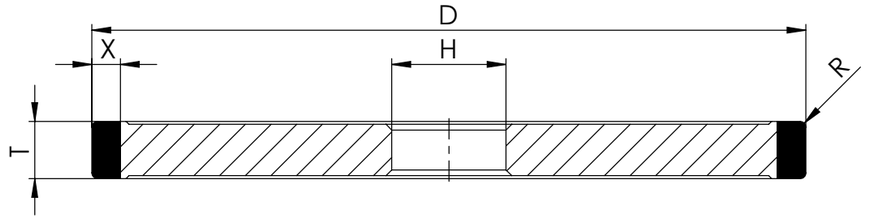
1K1



D	T	X									V°
20- 30	6- 20	5									According to customer spec.
35- 50	6- 20	5	10								
75- 200	6- 20	4	6	8	10	12	14	16	18	20	
225- 350	6- 40	4	6	8	10	12	14	16			
400- 500	6- 40	5	10								

All lengths are given in millimetres; all angles are given in degrees.

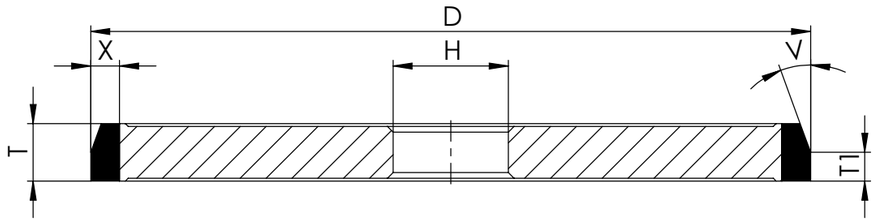
1L1



D	T	X									R
20- 30	6- 20	5									According to customer spec.
35- 50	6- 20	5	10								
75- 200	6- 20	4	6	8	10	12	14	16	18	20	
225- 350	6- 40	4	6	8	10	12	14	16			
400- 500	6- 40	5	10								

All lengths are given in millimetres; all angles are given in degrees.

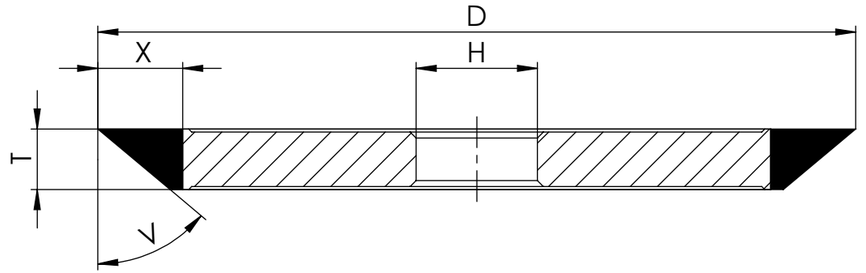
1M1



D	T	X									V°	T1
20- 30	6- 20	5									According to customer spec.	According to customer spec.
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18	20		
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

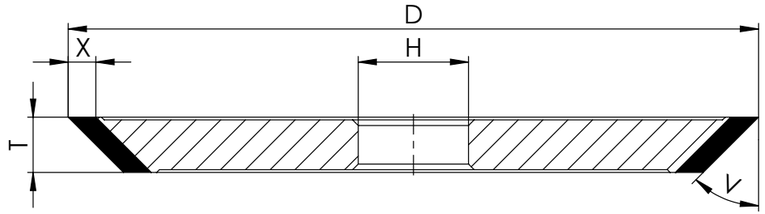
1B1



D	T	X									V°
20- 30	6- 20	5									According to customer spec.
35- 50	6- 20	5	10								
75- 200	6- 20	4	6	8	10	12	14	16	18	20	
225- 350	6- 40	4	6	8	10	12	14	16			
400- 500	6- 40	5	10								

All lengths are given in millimetres; all angles are given in degrees.

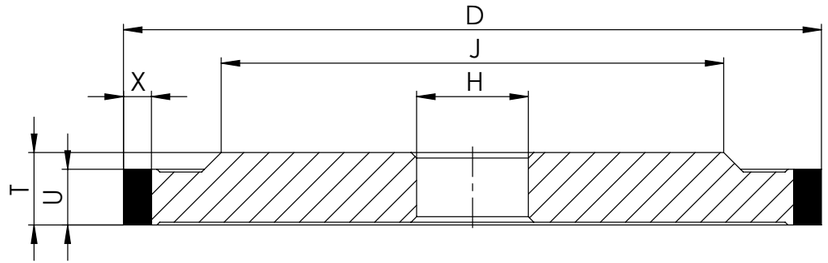
1V1



D	T		X			V°		
75- 150	10	12	6	8	10	20°	30°	45°

All lengths are given in millimetres; all angles are given in degrees.

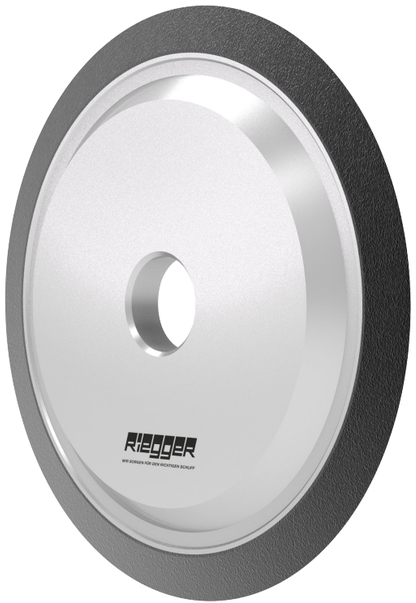
3A1

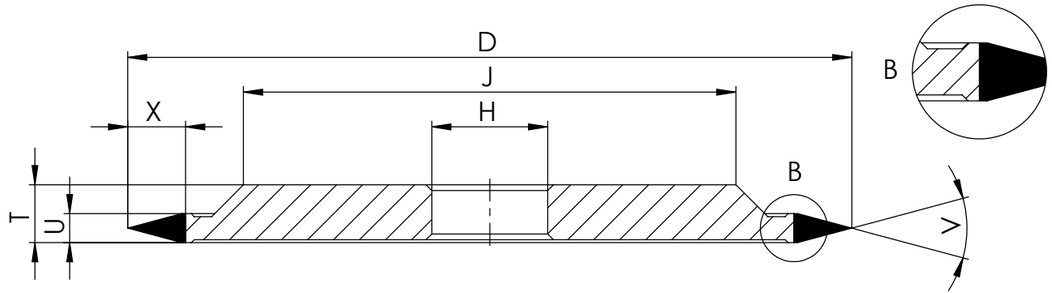


D	U	X									T	J
20- 30	6- 20	5									According to customer spec. (T = U+3)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18	20		
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

3E1

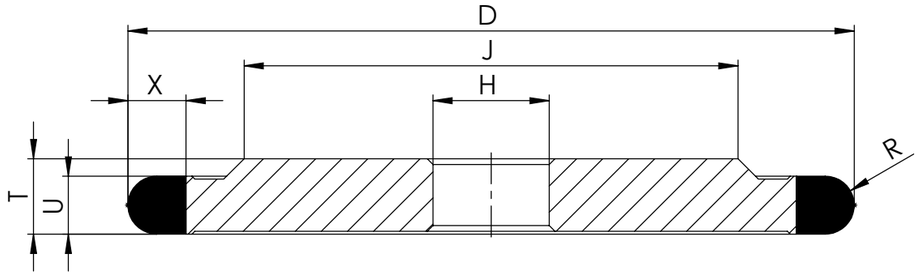




D	U	X								V°	T	J
20- 30	6- 20	5								According to customer spec.	According to customer spec. (T = U+3)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18			
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

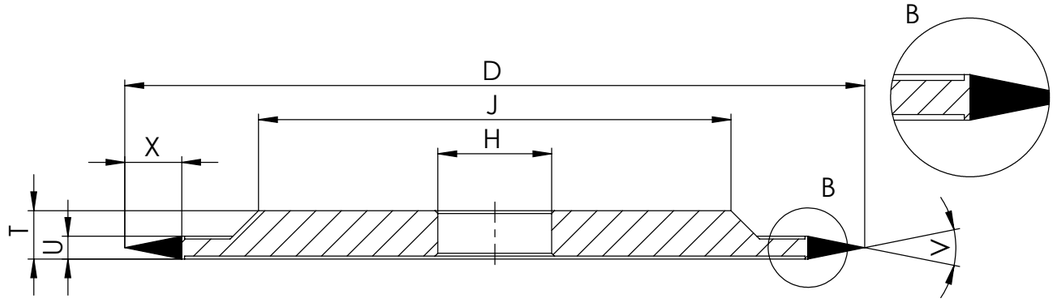
3F1



D	U	X								R	T	J
20- 30	6- 20	5								According to customer spec. (R = U/2)	According to customer spec. (T = U+3)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18			
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

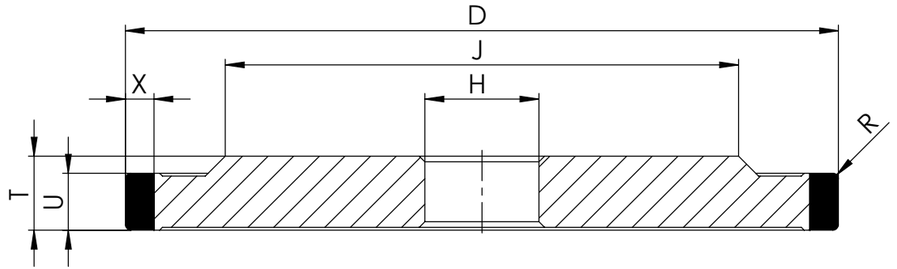
3K1



D	U	X								V°	T	J
20- 30	6- 20	5								According to customer spec.	According to customer spec. (T = U+3)	According to customer spec. (J = D-2X-17)
35-50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18			
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

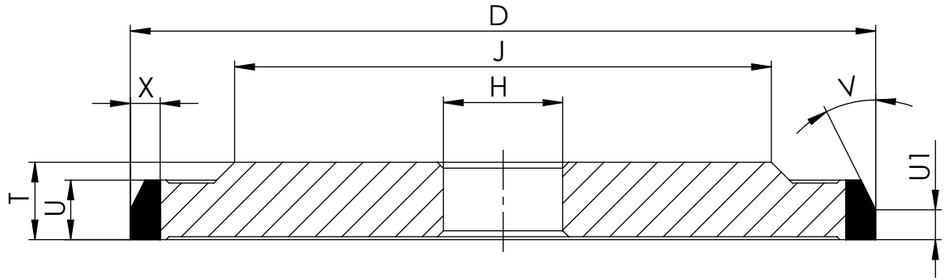
3L1



D	U	X								R	T	J
20- 30	6- 20	5								According to customer spec.	According to customer spec. (T = U+3)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18			
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

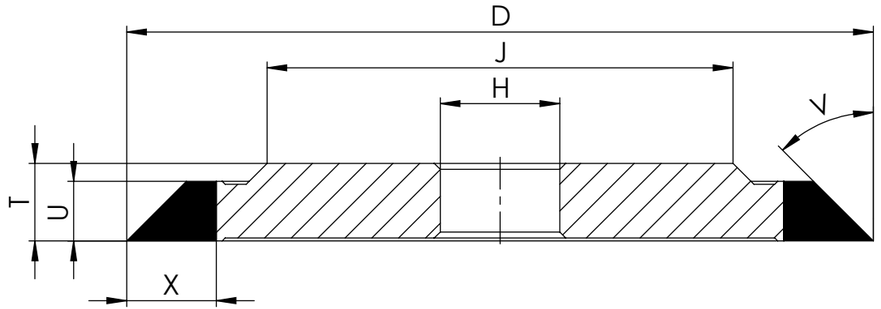
3M1



D	U	X								R	U1	T	J
20- 30	6- 20	5								According to customer spec.	According to customer spec.	According to customer spec. (T = U+3)	According to customer spec. (J = D-2X-17)
35 -50	6- 20	5	10										
75- 200	6- 20	4	6	8	10	12	14	16	18				
225- 350	6- 40	4	6	8	10	12	14	16					
400- 500	6- 40	5	10										

All lengths are given in millimetres; all angles are given in degrees.

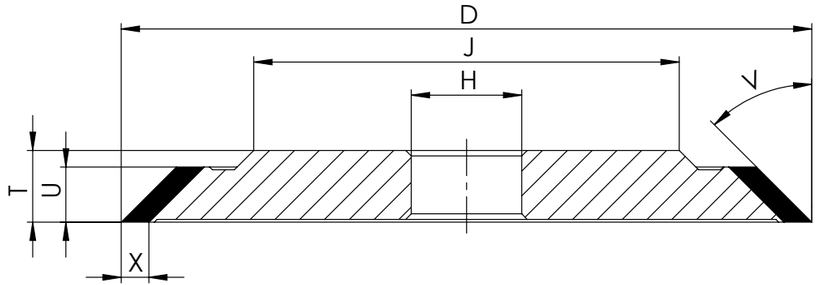
3B1



D	U	X									V°	T
20- 30	6- 20	5									According to customer spec.	According to customer spec. (T = U+3)
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18	20		
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

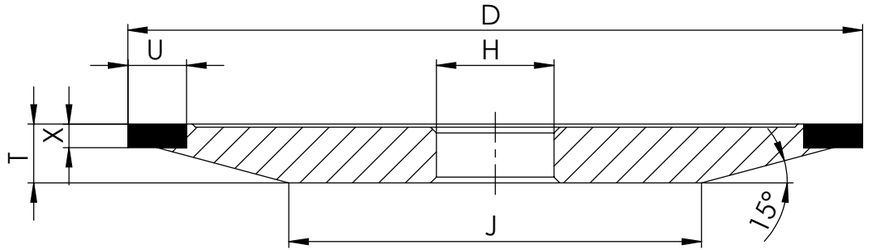
3V1



D	U		X			V°			T
75-150	10	12	6	8	10	20°	30°	45°	According to customer spec. (T = U+3)

All lengths are given in millimetres; all angles are given in degrees.

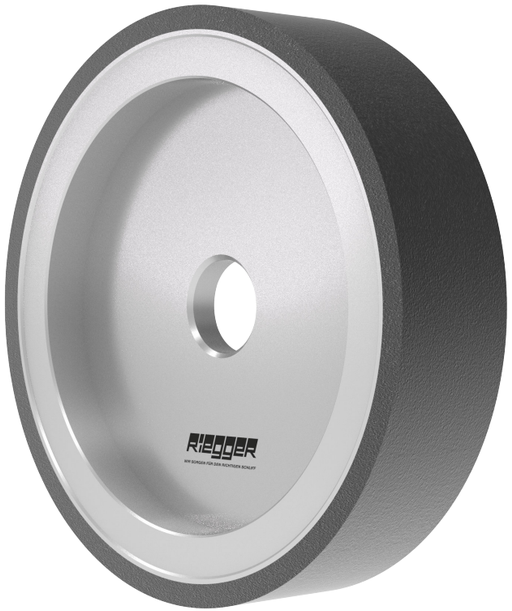
4A9

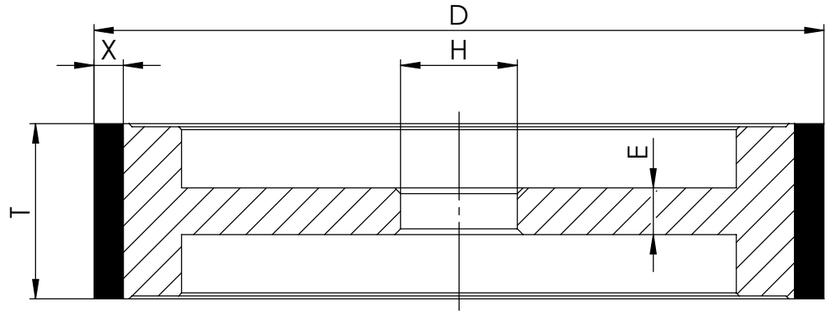


D	X									U	T
75- 200	4	6	8	10	12	14	16	18	20	1,5- 15	According to customer spec. (From Ø75 T = U+5) (From Ø100 T = U+6) (From Ø125 T = U+7) (From Ø150 T = U+9)

All lengths are given in millimetres; all angles are given in degrees.

9A1

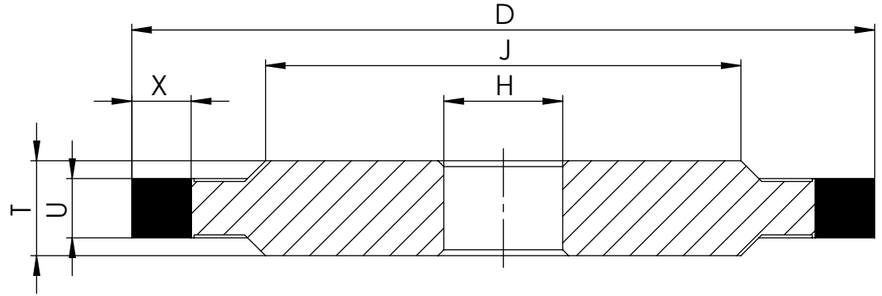




D	T	X									E
75- 200	10 - 200	4	6	8	10	12	14	16	18	20	According to customer spec.
225- 350	20- 200	4	6	8	10	12	14	16			
400- 500	20- 200	5	10								
604	20- 200	5									
610	20- 200	10									

All lengths are given in millimetres; all angles are given in degrees.

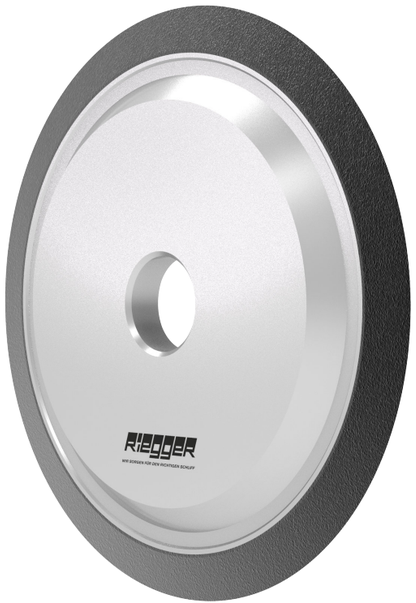
14A1

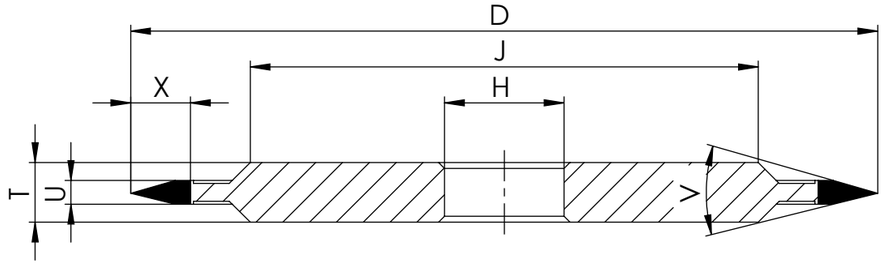


D	U	X									T	J
20- 30	6- 20	5									According to customer spec. (T = U+6)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18	20		
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

14E1

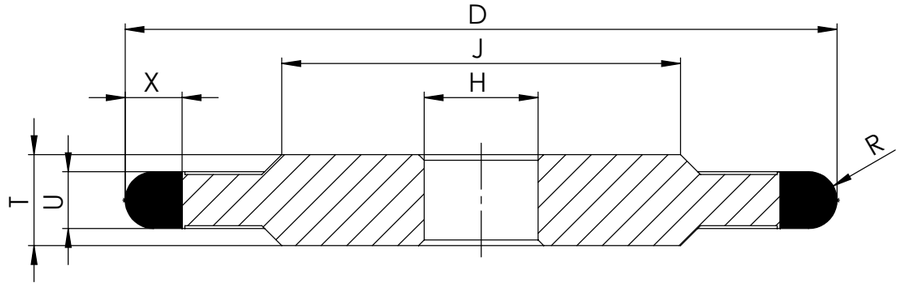




D	U	X									V°	T	J
20- 30	6- 20	5									According to customer spec.	According to customer spec. (T = U+6)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10										
75- 200	6- 20	4	6	8	10	12	14	16	18	20			
225- 350	6- 40	4	6	8	10	12	14	16					
400- 500	6- 40	5	10										

All lengths are given in millimetres; all angles are given in degrees.

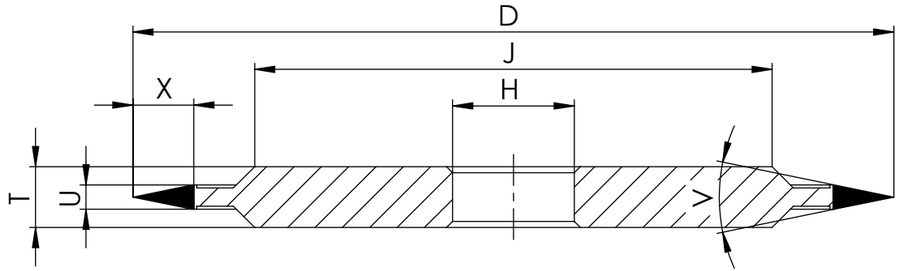
14F1



D	U	X									R	T	J
20- 30	6- 20	5									According to customer spec. (R = U/2)	According to customer spec. (T = U+6)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10										
75- 200	6- 20	4	6	8	10	12	14	16	18	20			
225- 350	6- 40	4	6	8	10	12	14	16					
400- 500	6- 40	5	10										

All lengths are given in millimetres; all angles are given in degrees.

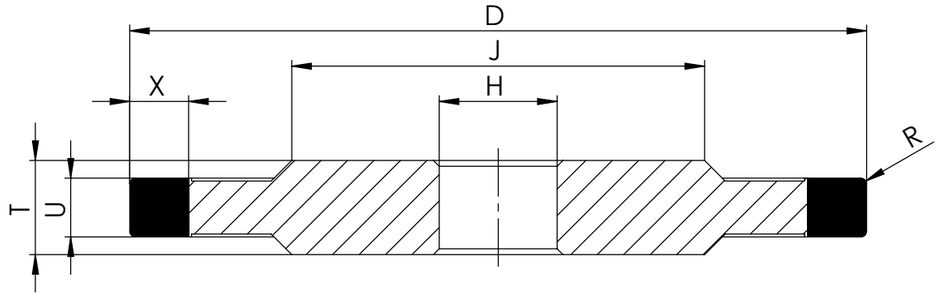
14K1



D	U	X									V°	T	J
20- 30	6- 20	5									According to customer spec.	According to customer spec. (T = U+6)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10										
75- 200	6- 20	4	6	8	10	12	14	16	18	20			
225- 350	6- 40	4	6	8	10	12	14	16					
400- 500	6- 40	5	10										

All lengths are given in millimetres; all angles are given in degrees.

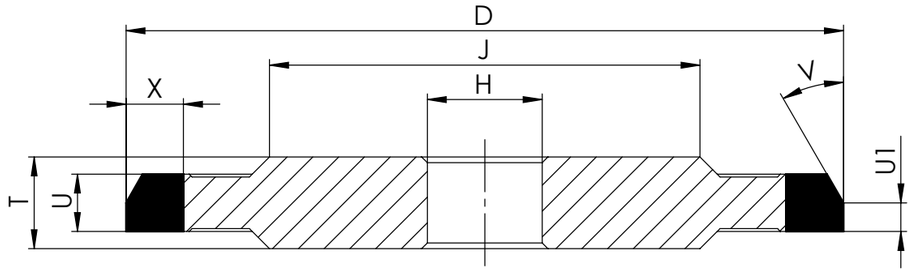
14L1



D	U	X									R	T	J
20- 30	6- 20	5									According to customer spec.	According to customer spec. (T = U+6)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10										
75- 200	6- 20	4	6	8	10	12	14	16	18	20			
225- 350	6- 40	4	6	8	10	12	14	16					
400- 500	6- 40	5	10										

All lengths are given in millimetres; all angles are given in degrees.

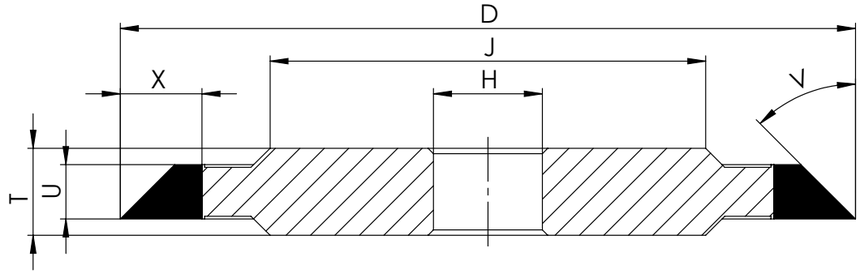
14M1



D	U	X									V°	U1	T	J
20- 30	6- 20	5									According to customer spec.	According to customer spec.	According to customer spec. (T = U+6)	According to customer spec. (J = D-2X-17)
35- 50	6- 20	5	10											
75- 200	6- 20	4	6	8	10	12	14	16	18	20				
225- 350	6- 40	4	6	8	10	12	14	16						
400- 500	6- 40	5	10											

All lengths are given in millimetres; all angles are given in degrees.

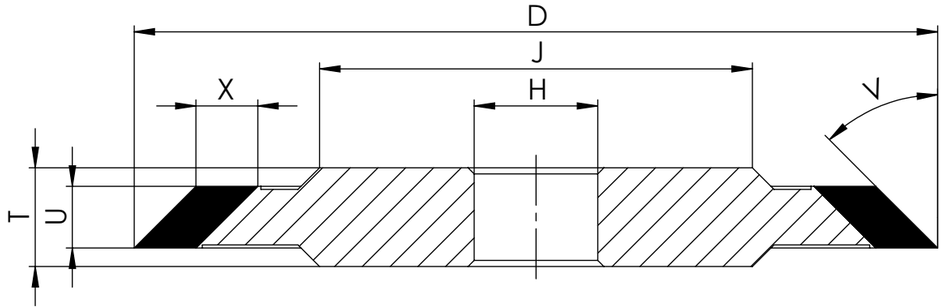
14B1



D	U	X									V°	T
20- 30	6- 20	5									According to customer spec.	According to customer spec. (T = U+6)
35- 50	6- 20	5	10									
75- 200	6- 20	4	6	8	10	12	14	16	18	20		
225- 350	6- 40	4	6	8	10	12	14	16				
400- 500	6- 40	5	10									

All lengths are given in millimetres; all angles are given in degrees.

14V1

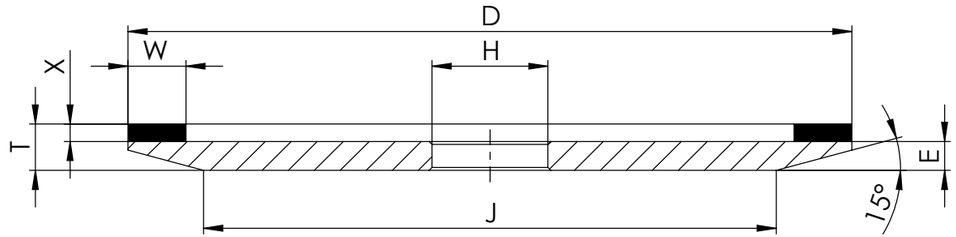


D	U		X			V°			T
75 - 150	10	12	6	8	10	20°	30°	45°	According to customer spec. (T = U+6)

All lengths are given in millimetres; all angles are given in degrees.

Cup grinding wheels

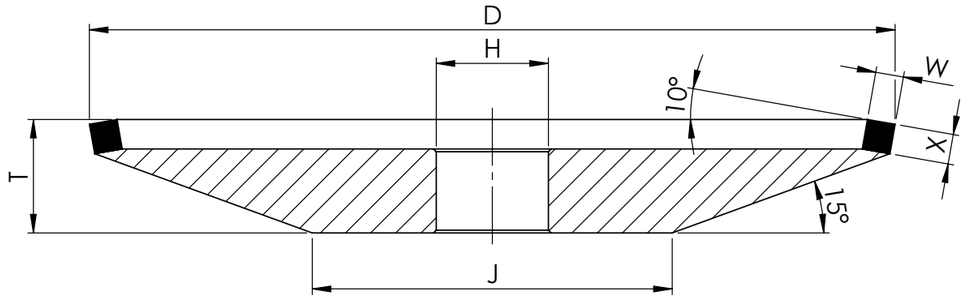
4A2



D	W									X	T
75-150	4	6	8	10	12	14	16	18	20	3- 15	According to customer spec. (From Ø75 T = X+5) (From Ø100 T = X+6) (From Ø125 T = X+7) (From Ø150 T = X+9)

All lengths are given in millimetres; all angles are given in degrees.

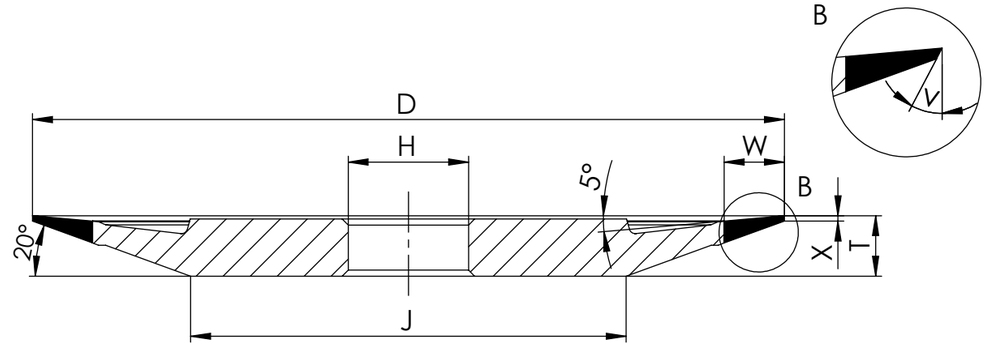
4A5



D	W									X	T
75- 150	4	6	8	10	12	14	16	18	20	3- 15	According to customer spec. (From Ø75 T = X+8) (From Ø100 T = X+16) (From Ø150 T = X+20)

All lengths are given in millimetres; all angles are given in degrees.

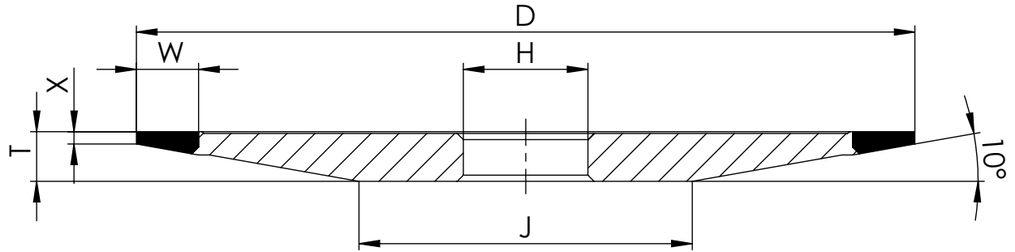
4BT9



D	W				X	T	V°
75- 100	4	6	8	10	1- 3	10	According to customer spec. (0° - 60°)
125	4	6	8	10	1- 3	12	
150- 175	4	6	8	10	1- 5	12	
200	4	6	8	10	1- 5	15	

All lengths are given in millimetres; all angles are given in degrees.

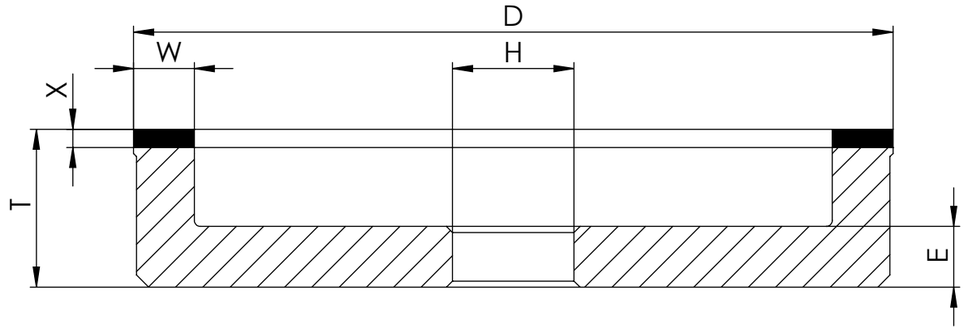
4ET9



D	W				X	T
75-100	4	6	8	10	1- 3	6
125	4	6	8	10	1- 3	8
150	4	6	8	10	1- 5	10
175	4	6	8	10	1- 5	13
200	4	6	8	10	1- 5	15

All lengths are given in millimetres; all angles are given in degrees.

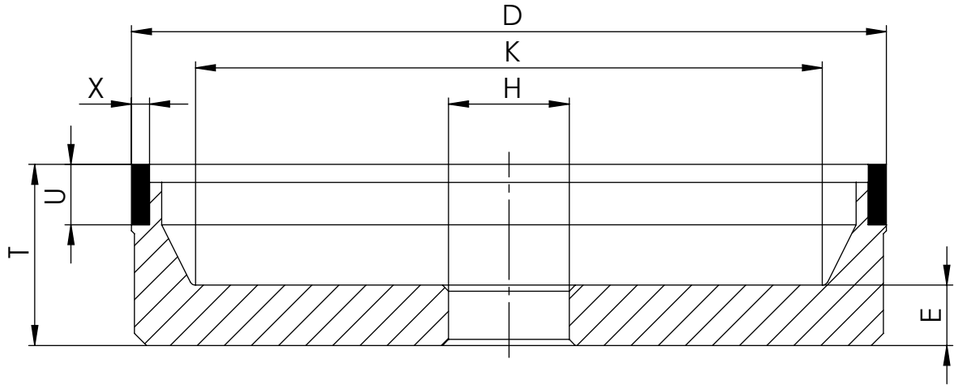
6A2



D	X	W									T	E
50	3- 15	5	10								X + 20	According to customer spec.
75- 200	3- 15	4	6	8	10	12	14	16	18	20	X + 23	
225- 350	3- 15	4	6	8	10	12	14	16	18		X + 25	

All lengths are given in millimetres; all angles are given in degrees.

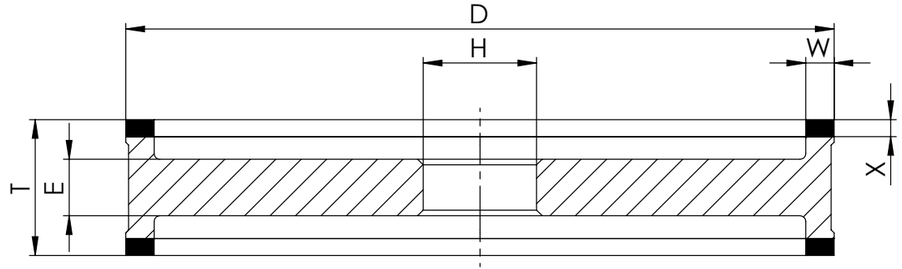
6A9



D	U	X										T	E	K
50	3- 15	5	10									U + 20	According to customer spec.	According to customer spec.
75- 150	3- 15	4	6	8	10	12	14	16	18	20	25	U + 20		
175- 200	3- 15	4	6	8	10	12	14	16	18	20		U + 25		
225- 350	3- 15	4	6	8	10	12	14	16				U + 25		

All lengths are given in millimetres; all angles are given in degrees.

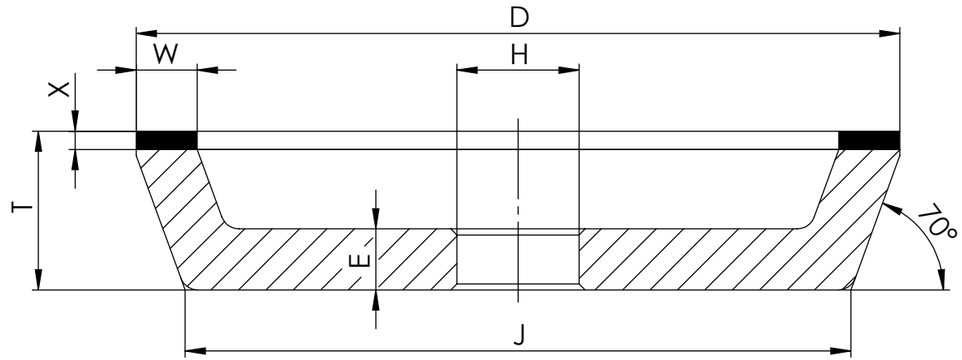
9A3



D	X	W									T	E
75- 200	6- 20	4	6	8	10	12	14	16	18	20	22	10

All lengths are given in millimetres; all angles are given in degrees.

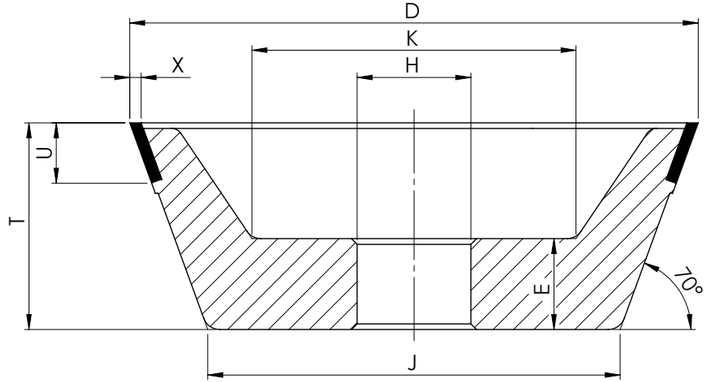
11A2



D	X	W									T
50	3- 15	5	10								20- 35
75- 200	3- 15	4	6	8	10	12	14	16	18	20	20- 35
225- 350	3- 15	4	6	8	10	12	14	16	18	20	20- 35

All lengths are given in millimetres; all angles are given in degrees.

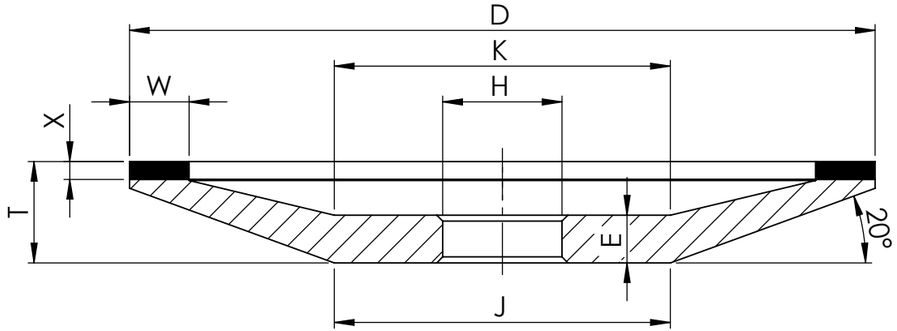
11V9



D	U	X			E			T
50	6	2	3		10	12	16	24
75	10	2	3		10	12	16	30
100	10	2	3	5	10	12	16	36
125	10	2	3	5	10	12	16	40
150	10	2	3	5	10	12	16	50

All lengths are given in millimetres; all angles are given in degrees.

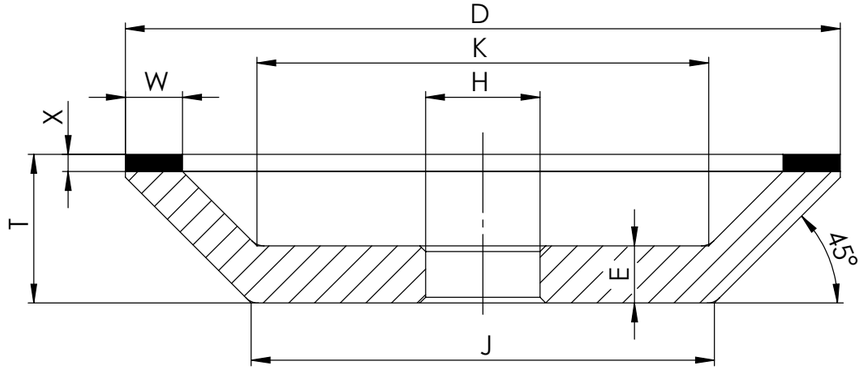
12A2 20°



D	X	W									E	T
50	3- 15	5	10								6	$T_{min} = E + X_{min} + 1$ $T_{max} = E + X_{max} + 1$
75	3- 15	4	6	8	10	12	14	16	18	20	6	
100- 125	3- 15	4	6	8	10	12	14	16	18	20	8	
150	3- 15	4	6	8	10	12	14	16	18	20	9	
175	3- 15	4	6	8	10	12	14	16	18	20	10	
200	3- 15	4	6	8	10	12	14	16	18	20	12	

All lengths are given in millimetres; all angles are given in degrees.

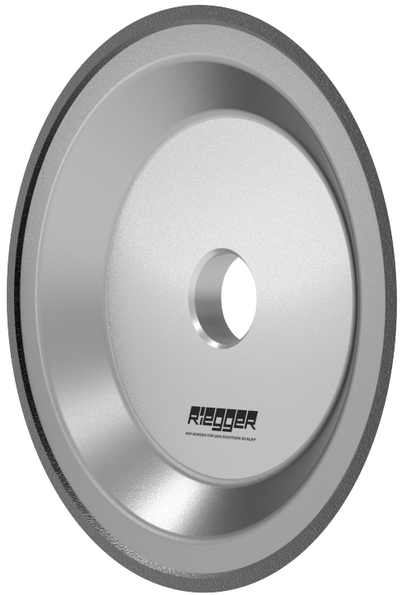
12A2 45°

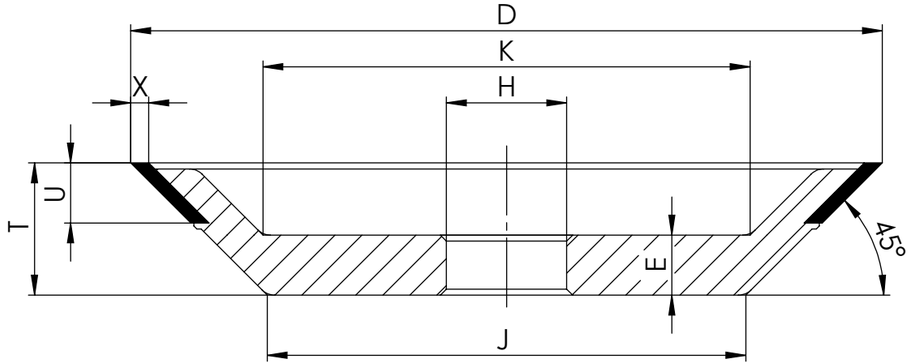


D	X	W									E	T
50	3- 15	5	10								10	From Ø50 T = X + 20
75- 200	3- 15	4	6	8	10	12	14	16	18	20	10	From Ø100 T = X + 23

All lengths are given in millimetres; all angles are given in degrees.

12V9



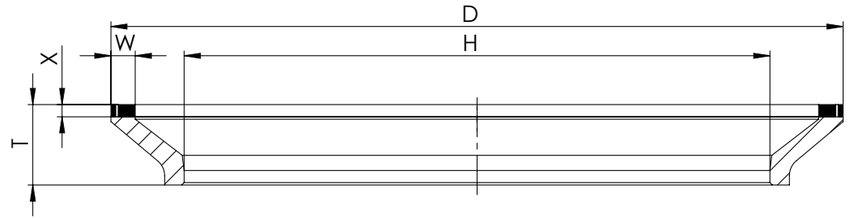


D	U	X		E	T
50- 150	10	2	3	10	22

All lengths are given in millimetres; all angles are given in degrees.

Special shapes

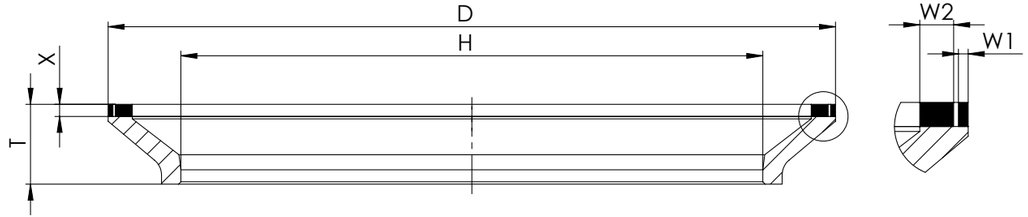
Agathon



D	W	X				T
350	4- 30	4	6	8	10	29- 31
400	4- 30	5	10			24- 39,5

All lengths are given in millimetres; all angles are given in degrees.

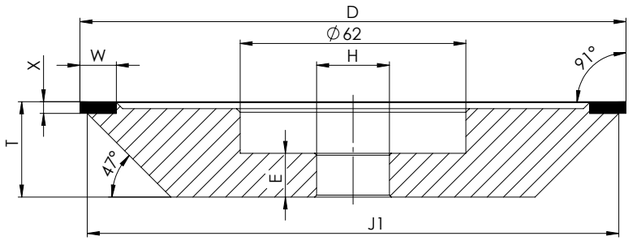
Agathon double layer



D	W1	W2	X				T
350	4- 30	4- 30	4	6	8	10	29- 31
400	4- 30	4- 30	5	10			24- 39,5

All lengths are given in millimetres; all angles are given in degrees.

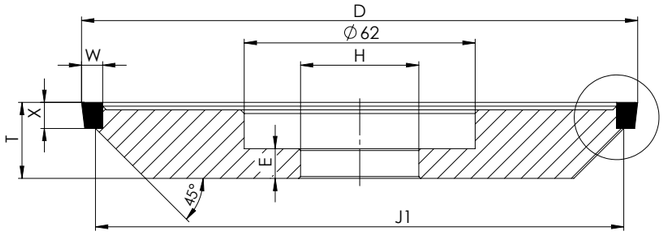
Rollomatic finishing

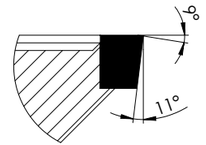


D	W			X	E	T
150	6	8	10	3- 6	12	24

All lengths are given in millimetres; all angles are given in degrees.

Rollomatic roughing





D	W									X	E	T	J
150	4	6	8	10	12	14	16	18	20	6- 20	12	20- 27	According to customer spec.
200	4	6	8	10	12	14	16	18	20	6- 20	12	20- 27	
250	4	6	8	10	12	14	16			6- 20	12	20- 27	

All lengths are given in millimetres; all angles are given in degrees.

Special dimensions

These shapes and tables with dimensions form the standard that we can produce for you. However, some grinding applications require tailored solutions.

We will be happy to help you by checking the feasibility of individual dimensions and shapes. The tools are then manufactured based on a drawing that has been agreed on by you to suit your grinding application.

Hole diameter

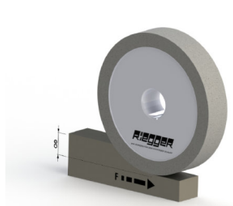
The hole diameter of each grinding wheel must match the grinding machine spindle. The standard tolerance is H6. We also offer wheels with a narrower tolerance on request.

If you provide us with your machine spindle, we will match the hole diameter accordingly and mount the wheel directly on to your spindle. Subsequent dressing and conditioning on your machine spindle minimise wheel concentricity faults.

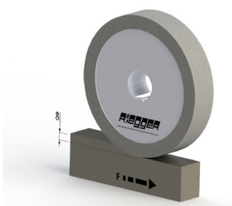
Please feel free to discuss it with us.

Fundamental application principles

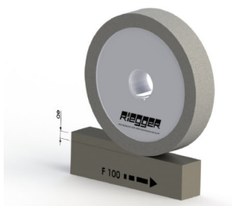
Process parameters and their impact



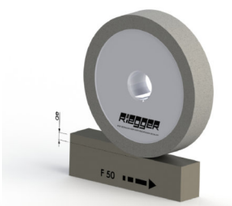
Increasing the grinding depth
Increases removal rate
Increases chip size
Increases load on individual grits
Increases likelihood of grit splintering
→ Gentler grinding action



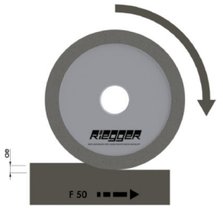
Reducing the grinding depth
Reduces removal rate
Reduces chip size
Reduces load on individual grits
Reduces likelihood of splintering
→ Harsher grinding action



Increasing the feed
Increases removal rate
Increases chip size
Increases load on individual grits
Increases likelihood of grit splintering
→ Gentler grinding action



Reducing the feed
Reduces removal rate
Reduces chip size
Reduces load on individual grits
Reduces likelihood of splintering
→ Harsher grinding action



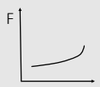
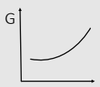
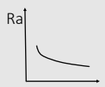
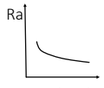
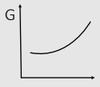
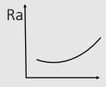
Increasing the wheel speed
More cutting edges are engaged per unit of time
Reduces chip size
Reduces load on individual grits
Reduces likelihood of grit splintering
→ Harsher grinding action

Reducing the wheel speed
Fewer cutting edges are engaged per unit of time
Increases chip size
Increases load on individual grits
Increases likelihood of splintering
→ Gentler grinding action

Larger wheel diameter
Contact surface Ak between wheel and workpiece increases
The grinding forces remain virtually unchanged
Reduces load on individual grits
Reduces likelihood of grit splintering
→ Harsher grinding action

Smaller wheel diameter
Contact surface Ak between wheel and workpiece decreases
The grinding forces remain virtually unchanged
Increases load on individual grits
Increases likelihood of splintering
→ Gentler grinding action

Influencing factors and their impact

Assessment criteria / Influencing factors	Material removal forces F	Grinding ratio G	Roughness Ra	Temperature T
Concentration				
Bonding hardness				
Grit size				

Services

We will be happy to help with any other queries relating to our products or grinding technology. In addition, we will support you on site with application technology.

Dressing service

We will also be happy to support you with our "ready-to-use" service for grinding wheel dressing. For more information feel free to contact us: info@riegger-diamant.de

We provide the right finish

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