pdtools
SUPERABRASIVES

GRINDING WHEELS

FOR CIRCULAR BLADES AND BAND SAWS PROCESSING

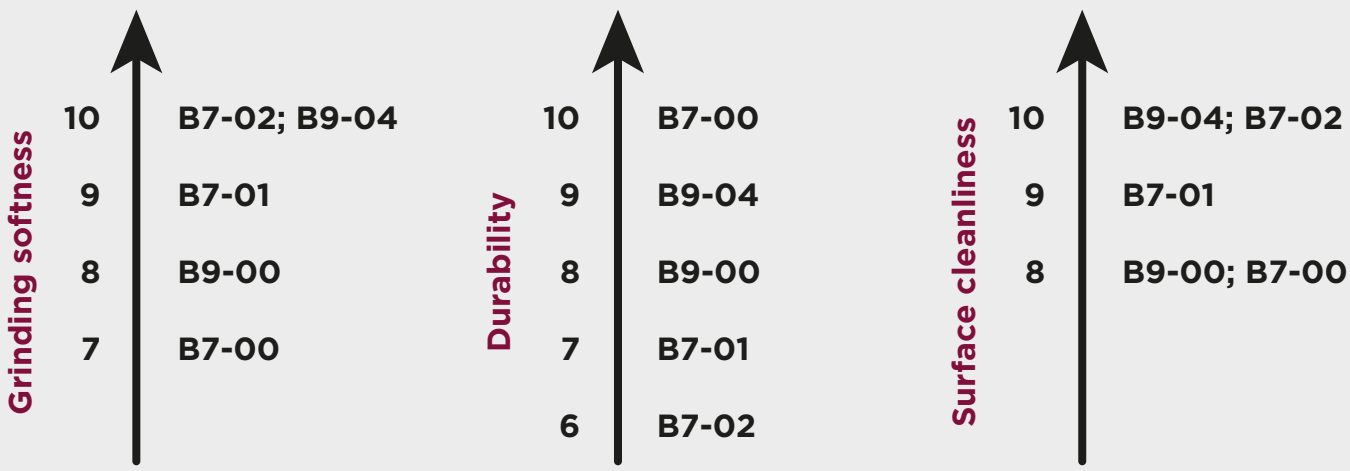
CATALOG CONTENT

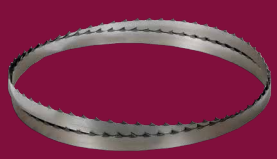
DIAMOND GRINDING WHEELS FOR SHARPENING SAWS

BOND DESCRIPTION

Bond	Recommendations for use	Cooling
B9-00	For face and backside grinding of circular saws with carbide tips.	Oil-based coolant required, water-based coolant is permissible
B7-00	For face and backside grinding of circular saws with carbide tips.	Oil-based coolant required, water-based coolant is permissible
B7-01	For backside grinding of circular saws on the back surface.	Oil-based coolant
B7-02	For face and backside grinding of circular saws with carbide tips.	Oil-based coolant required, water-based coolant is permissible
B9-04	For face grinding of circular saws.	Oil-based coolant

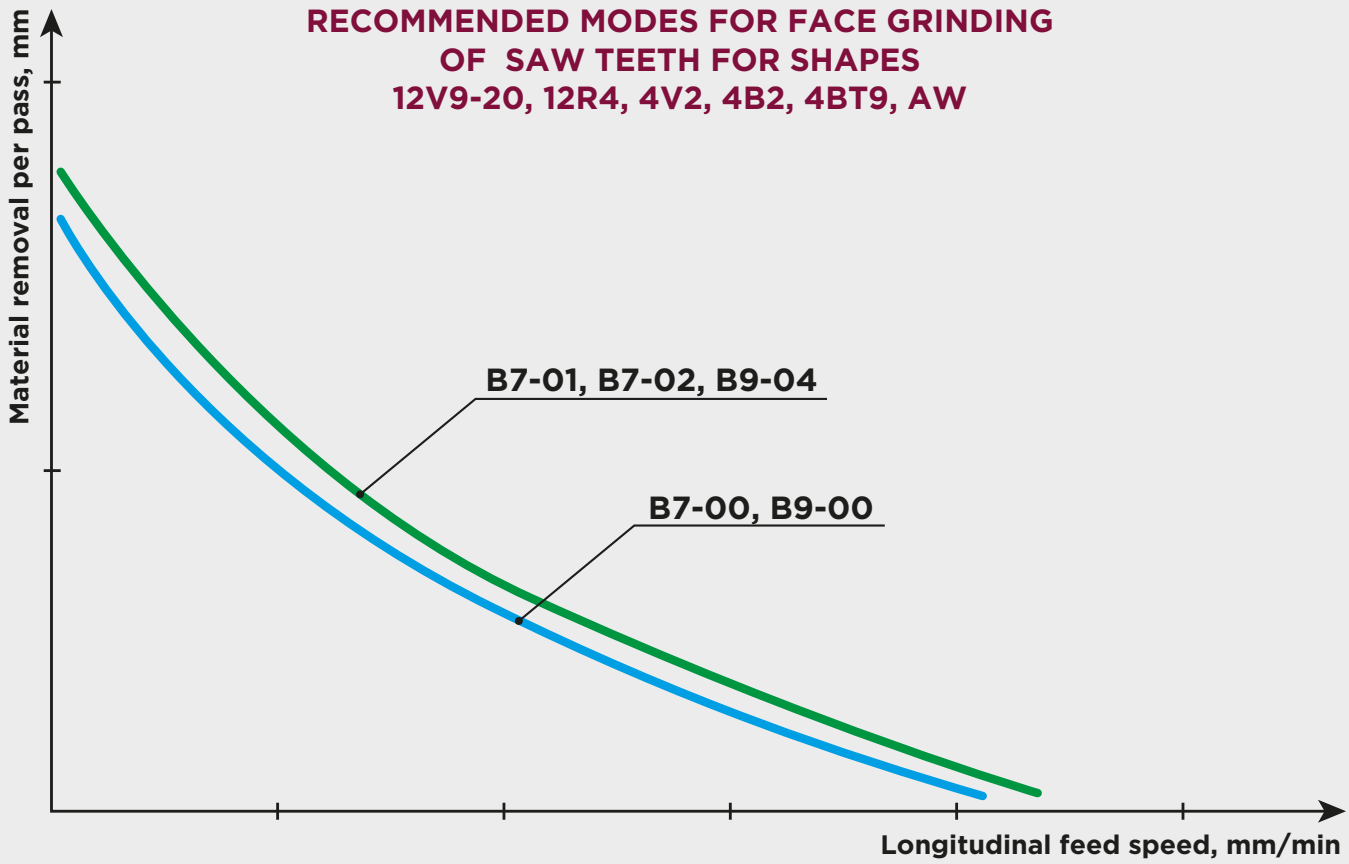
Operational properties of bonds





We recommend using the tool in accordance with these recommendations. Consumers may use the tool with their own settings, but failure to adhere to these recommendations may result in premature wear or damage to the tool.

RECOMMENDED MODES FOR FACE GRINDING OF SAW TEETH FOR SHAPES 12V9-20, 12R4, 4V2, 4B2, 4BT9, AW



Wheel speed V = 18...30 m/s

t, mm	S, mm/min															
	80	100	120	140	150	160	180	200	210	220	240	250	270	290	300	310
0,05																
0,08																
0,1																
0,15																
0,2																

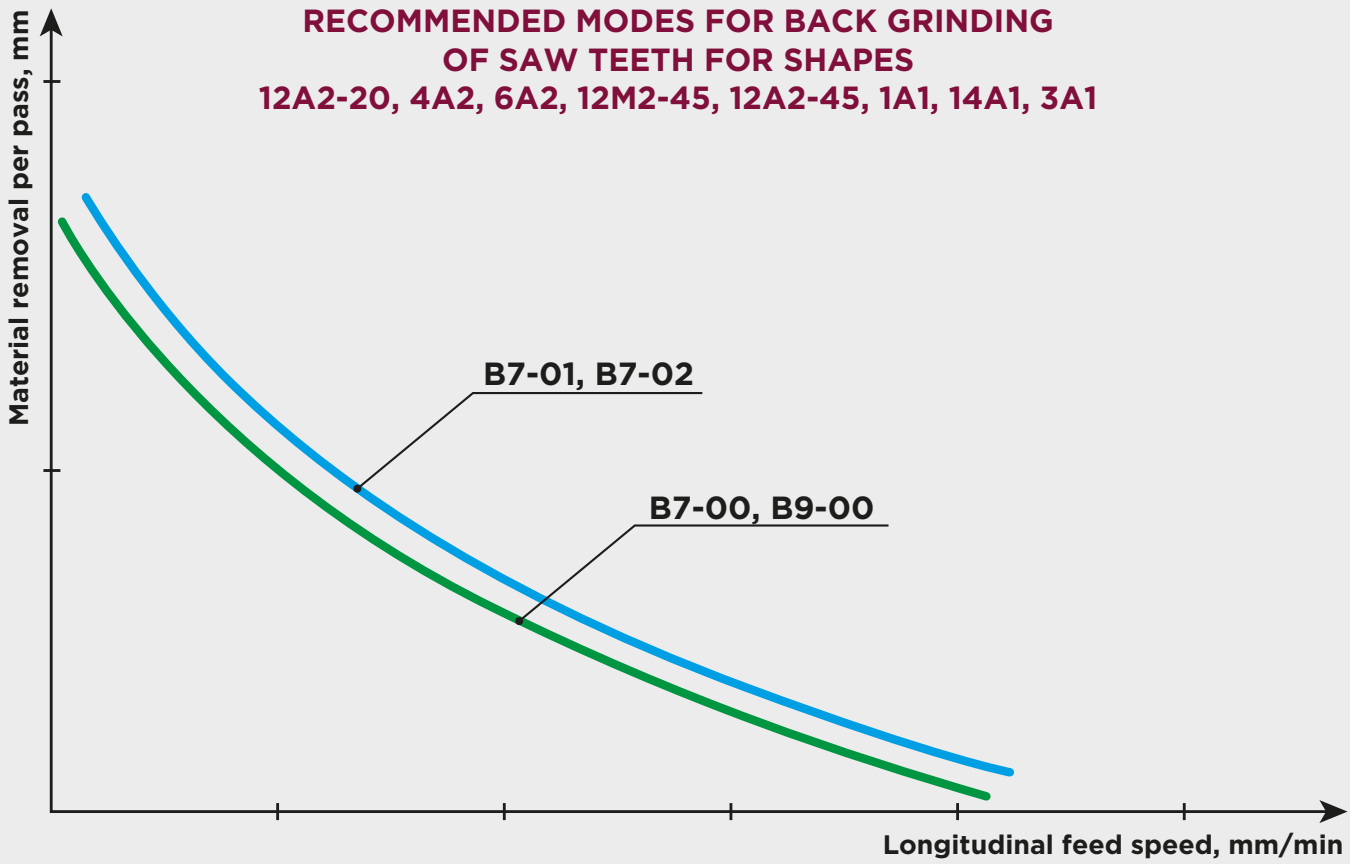
These recommendations are based on the performance of the B9-04 bond with a grit size of D64.

Best processing quality.
Used to achieve increased cleanliness and precision of the product.
Using the tool under these modes ensures maximum tool life and processing quality.

Optimal mode.
Provides good tool durability. Optimal processing quality.

Customers may use these modes in special cases after consultation with the equipment and tool manufacturer.

RECOMMENDED MODES FOR BACK GRINDING OF SAW TEETH FOR SHAPES 12A2-20, 4A2, 6A2, 12M2-45, 12A2-45, 1A1, 14A1, 3A1



Wheel speed V = 18...30 m/s

t, mm	S, mm/min																			
	180	210	240	270	300	330	360	390	450	480	510	540	600	630	720	1020	1080	1140	1200	1260
0,05																				
0,1																				
0,15																				
0,2																				
0,25																				
0,3																				

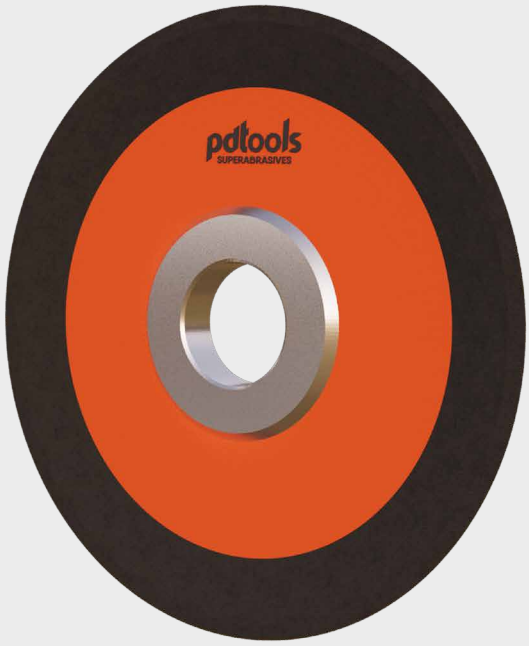
These recommendations are based on the performance of the B9-00 bond with a grit size of D126 / D46.

Best processing quality.
Used to achieve increased cleanliness and precision of the product.
Using the tool under these modes ensures maximum tool life and processing quality.

Optimal mode.
Provides good tool durability. Optimal processing quality.

Customers may use these modes in special cases after consultation with the equipment and tool manufacturer.

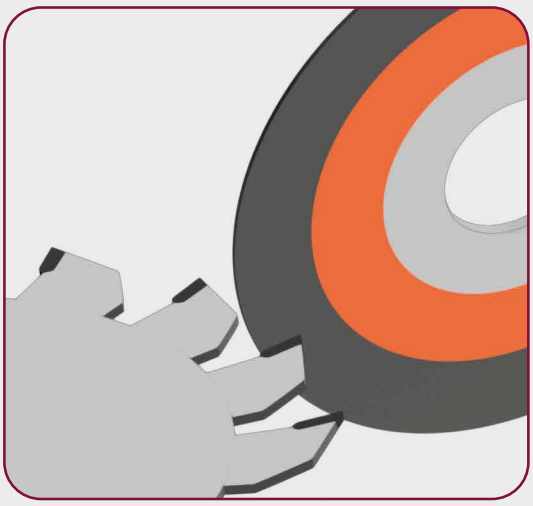
12V9-20



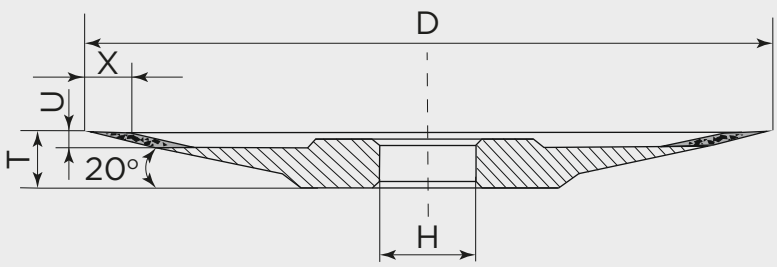
Application:

- Sharpening the front face of teeth

- Recommended grit size from M25 to D91



Face grinding of the tool



12V9-20 D×T×X×U×H

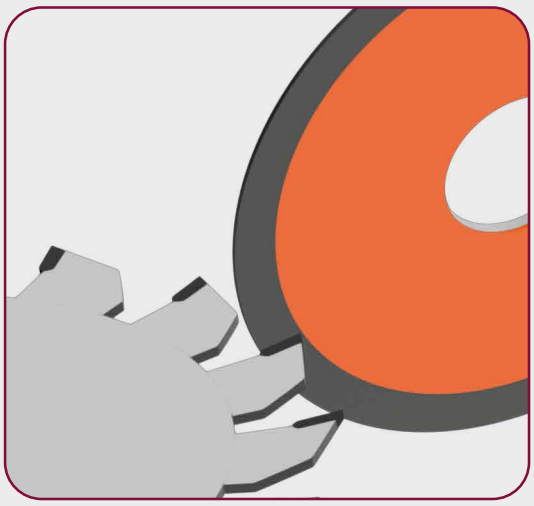
CODE	DIMENSIONS D×T×X×U×H	CODE	DIMENSIONS D×T×X×U×H
3G3042	100×10×2.3×4×20	3U3045	150×13×2.3×4×20
3-3042	100×10×2.3×4×25	3-3045	150×13×2.3×4×32
3C3042	100×10×2.3×4×32	3-3333	160×13×2.3×4×32
3D3048	125×13×2.5×4×20	3-3043	175×13×2.5×4×32
3M3048	125×13×2.5×4×25	3H3049	200×13×2.3×4×20
3-3048	125×13×2.5×4×32	3-3049	200×13×2.3×4×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

12R4

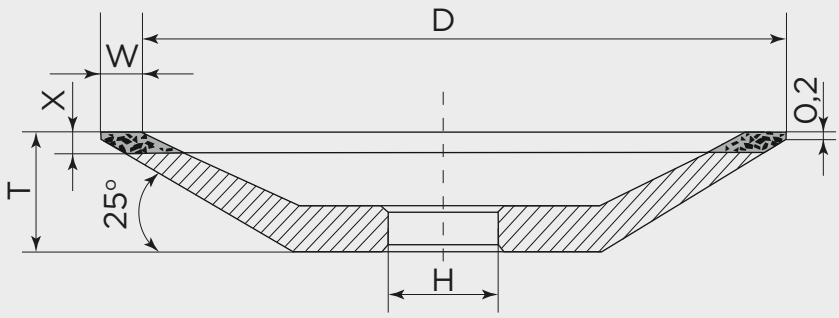
Application:

- Face grinding of teeth

- Recommended grit size from D46 to D126



Face grinding of the tool



12R4 D×W×X×T×H

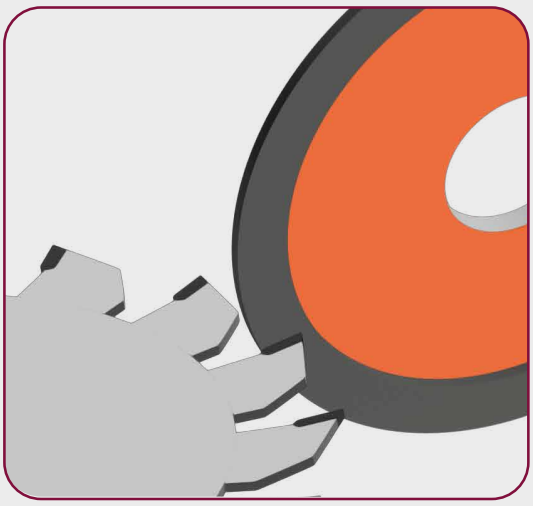
CODE	DIMENSIONS D×W×X×T×H	CODE	DIMENSIONS D×W×X×T×H
5-1032	100×3×2×10×20	5G1061	125×4×3×14×20
5N1031	100×3×2×10×25	5-1061	125×4×3×14×32
5-1031	100×3×2×10×32	5V1051	150×5×3×16×20
5E1041	125×3×2×13×20	5-1051	150×5×3×16×32
5M1041	125×3×2×13×25	9-3261	160×3×2×13.5×32
5-1041	125×3×2×13×32	3Y3047	200×2×4×13×20
5K1041	125×4×2×13×32	3L3047	200×2×4×13×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

12A2-20

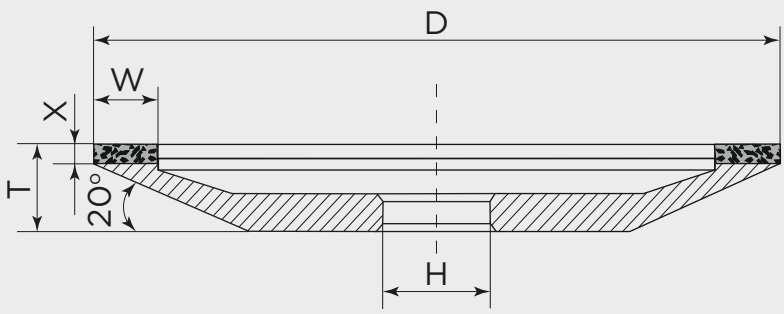
Application:

- Front and backside grinding of teeth

- Recommended grit size from D46 to D151



Face grinding of the tool



12A2-20 D×T×X×W×H

CODE	DIMENSIONS D×T×X×W×H	CODE	DIMENSIONS D×T×X×W×H
5-0007	100×12×2×3×20	5K0010	125×16×2×6×25
5D0007	100×12×2×3×25	5B0010	125×16×2×6×32
5E0007	100×12×2×3×32	5H0010	125×12.5×1.7×6×20
5-0008	100×12×2×6×20	5K2021	125×13×1.7×6×32
5D0008	100×12×2×6×25	5N0013	150×19×3×6×20
5V0008	100×12×2×6×32	5B0013	150×19×3×6×32
5E0009	125×16×2×3×20	5U0013	150×21×5×6×20
5D0009	125×16×2×3×25	5F0013	150×21×5×6×32
5-0009	125×16×2×3×32	5D0014	150×18×2×10×20
5D0010	125×16×2×6×20	5-0014	150×18×2×10×32

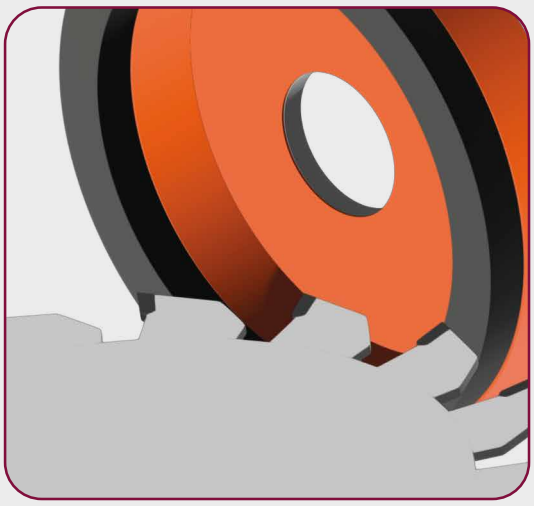
Tools can also be manufactured according to the customer's specific requirements upon request.

6A2

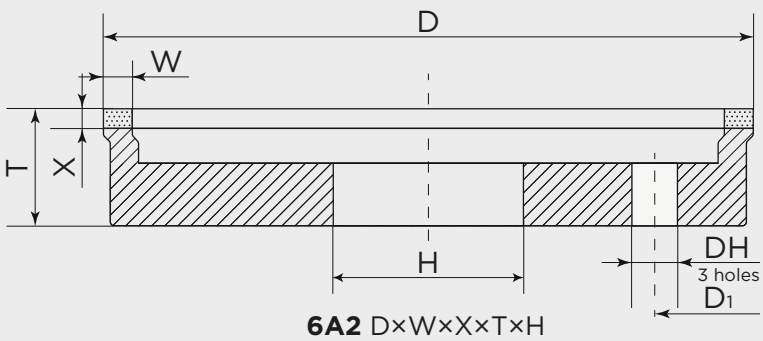
Application:

- **Sharpening the back and side faces of teeth**

- **Recommended grit size from M25 to D126**



Top sharpening of the tool



6A2 D×W×X×T×H

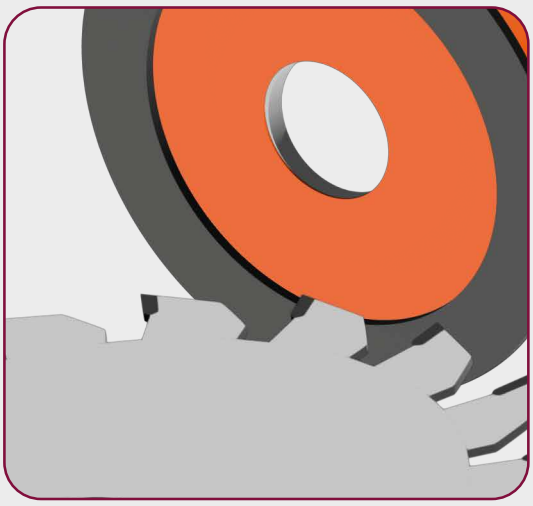
CODE	DIMENSIONS D×W×X×T×H	CODE	DIMENSIONS D×W×X×T×H
3-0088	125×5(2.5+2.5)×10×24×32	3F0023	125×6×4×24×20
3K0088	125×5(2.5+2.5)×10×22×32	3-0023	125×6×4×24×32
3D0088	125×5(2.5+2.5)×10×22×32	6D3153	125×6×6×18×20
3G0088	125×5(2.5+2.5)×10×22×32	6M3153	125×6×6×18×32
6E3153	125×6(2+2+2)×6×18×32		
Tools can also be manufactured according to the customer's specific requirements upon request.			

12M2-45

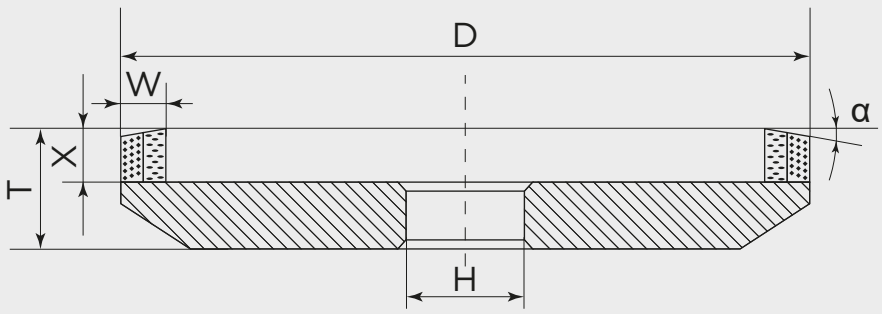
Application:

- Backside grinding of teeth

- Recommended grit size from M25 to D151



Backside grinding of the tool



12M2-45 D×T×X×W×H×α

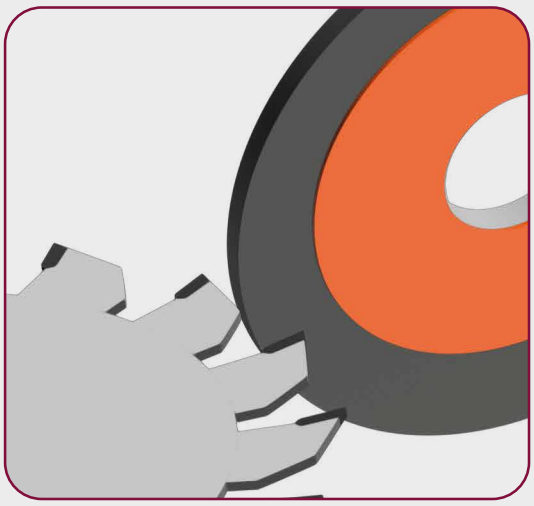
CODE	DIMENSIONS D×T×X×W×H×α	CODE	DIMENSIONS D×T×X×W×H×α
9C3153	125×18×6×5(2.5+2.5)×32×4	9X3153	125×24×6×5(2.5+2.5)×20×0
9R3153	125×18×6×5(2.5+2.5)×32×5	9M3153	125×24×6×5(2.5+2.5)×32×0
9W3153	125×18×6×5(2.5+2.5)×32×8	9K3153	125×24×6×5(2.5+2.5)×32×9
9-3153	125×18×6×5(2.5+2.5)×32×9		
Tools can also be manufactured according to the customer's specific requirements upon request.			

4A2

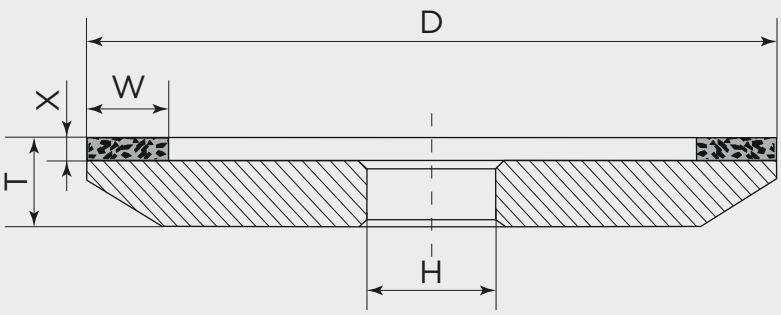
Application:

- **Sharpening the front and back sides of teeth**

- **Recommended grit size from D46 to D126**



Backside grinding of the tool



4A2 D×T×X×W×H

CODE	DIMENSIONS D×T×X×W×H	CODE	DIMENSIONS D×T×X×W×H
9-8151	100×10×2×3×20	5B2020	125×14×5×8(4+4)×20
9B8151	100×10×2×3×25	5-2020	125×14×5×8(4+4)×32
9P8151	100×10×2×3×32	9A3153	125×14×6×5(2.5+2.5)×32
9Y8159	100×10×2×6×20	9L3153	125×18×6×5×32
3D9165	125×10×2×8×32	9-9174	150×12×4×5×20
3N9166	125×10×3×6×20	9-9175	150×12×4×5×32
9Y9166	125×10×3×6×25	3-4009	150×13×2×6×32
3C3077	125×12×3×3×20	3G4009	150×14×3×6×32
3G3077	125×12×3×3×25	3F4009	150×15×4×6×32
3D3077	125×12×3×3×32	3R4009	150×16×5×6×32

Tools can also be manufactured according to the customer's specific requirements upon request.

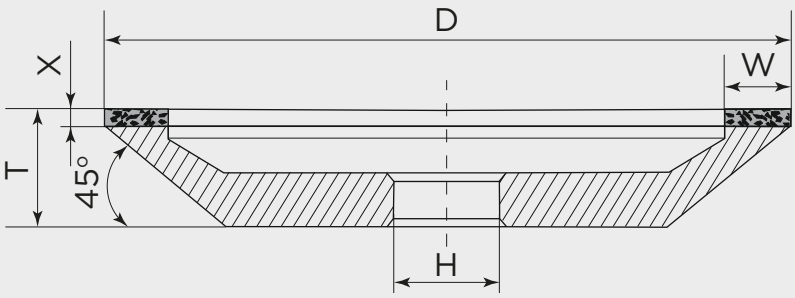
12A2-45

Application:

- **Universal grinding**

- **Recommended grit size from D46 to D126**

Backside grinding of the tool



12A2-45 D×W×X×T×H

CODE	DIMENSIONS D×W×X×T×H	CODE	DIMENSIONS D×W×X×T×H
4-0016	100×5×3×32×20	4-0020	100×10×5×34×20
4F0016	100×5×3×32×32	4-0025	125×6×5×28×20
4-0019	100×5×5×34×20	4S0025	125×6×5×28×32
4S0019	100×5×5×34×32	4-0022	125×10×3×26×20
4F0013	100×6×5×28×20	4D0022	125×10×3×26×32
4D0013	100×6×5×28×32	4-0024	125×10×4×27×20
4-0017	100×10×3×32×20	4S0029	125×10×3×40×20
4L0017	100×10×3×32×25	4-0029	125×10×3×40×32
4D0017	100×10×3×32×32	4-0026	125×10×5×28×20
4-0014	100×10×5×28×20	4S0026	125×10×5×28×32

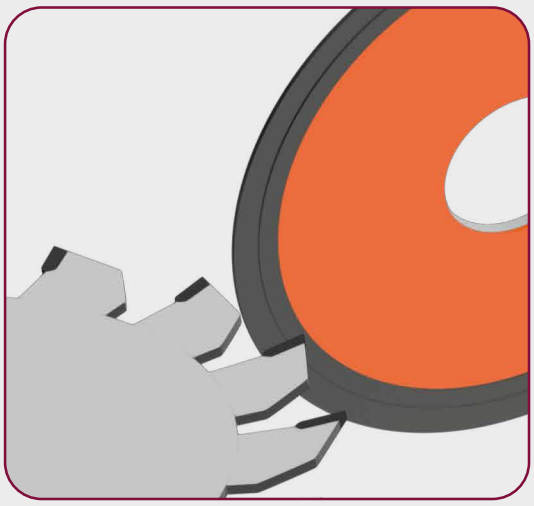
Tools can also be manufactured according to the customer's specific requirements upon request.

4V2

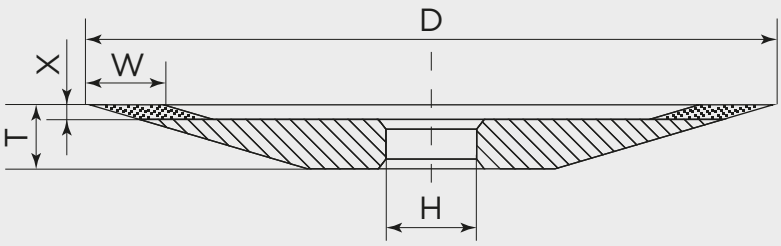
Application:

- Backside grinding of teeth

- Recommended grit size from D46 to D126



Backside grinding of the tool



4V2 D×W×X×T×H

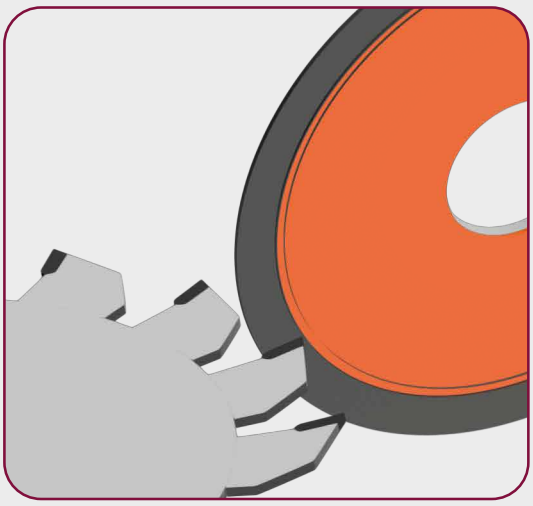
CODE	DIMENSIONS D×W×X×T×H	CODE	DIMENSIONS D×W×X×T×H
0C3001	100×4×2×13×20	0Q3002	125×4×2×13×32
0-3001	100×4×2×13×25	0-3004	125×4×3×14×32
0D3002	125×4×2×13×20	0B3003	150×4×2×14×20
0-3002	125×4×2×13×25	0-3003	150×4×2×14×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

4B2

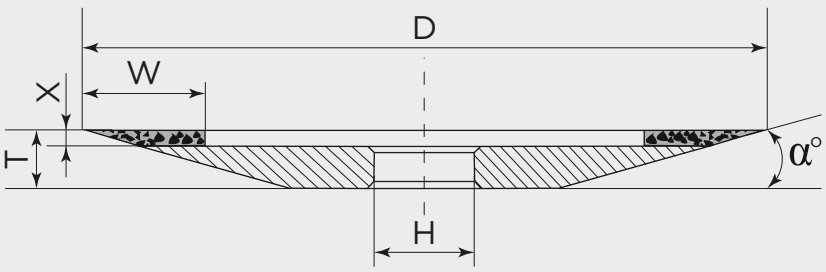
Application:

- Face grinding of the saw teeth

- Recommended grit size from D46 to D126



Face grinding of the tool



4B2 D×T×X×W×H

CODE	DIMENSIONS D×T×X×W×H	CODE	DIMENSIONS D×T×X×W×H
8L7010	100×10×1.5×6×20×20	8V7008	125×10×2×6×20×25
8D7010	100×10×1.5×6×20×25	8-7008	125×10×2×6×20×32
8-7010	100×10×1.5×6×20×32	8D7009	150×12×1.5×6×20×20
8D7008	125×10×2×6×20×20	8-7009	150×12×1.5×6×20×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

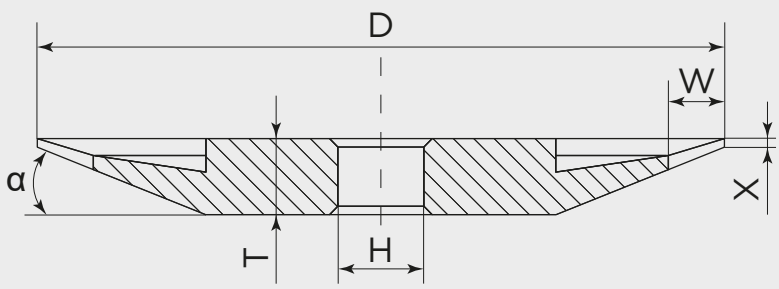
4BT9

Application:

- **Face grinding of the teeth, grinding of hobs**

- **Recommended grit size from D46 to D126**

Face grinding of the tool



4BT9 D×T×X×W×H

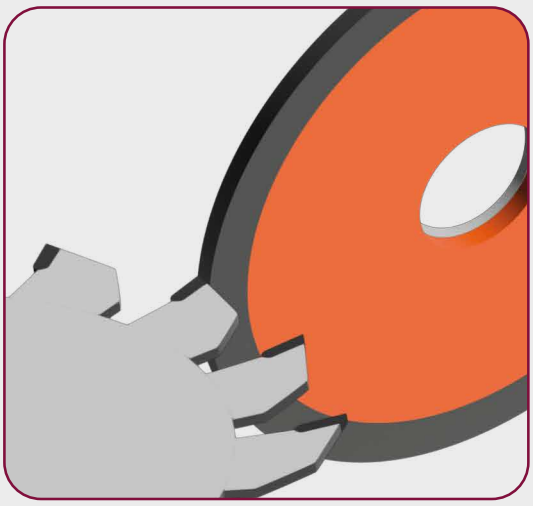
CODE	DIMENSIONS D×T×X×W×H	CODE	DIMENSIONS D×T×X×W×H
3-3035	125×12×1×10×20	3D3035	125×12×1×10×32
3N3035	125×12×1×10×25	3-3031	150×14×1×6×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

14M1

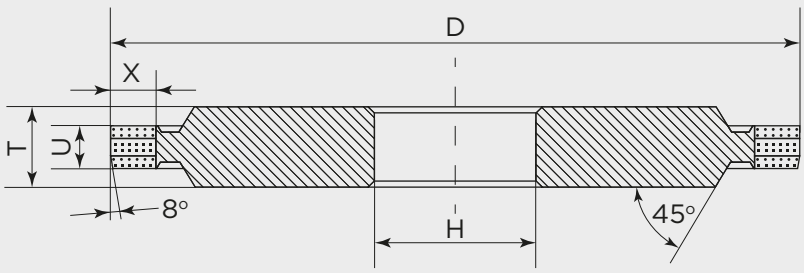
Application:

- Backside grinding of teeth

- Recommended grit size from M25 to D126



Backside grinding of the tool



14M1 D×T×U×X×H

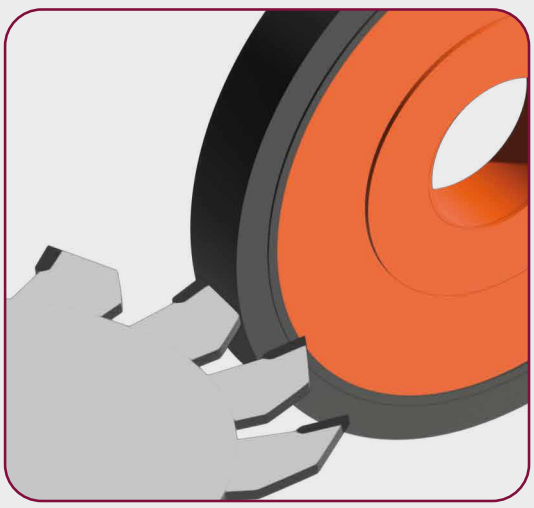
CODE	DIMENSIONS D×T×U×X×H	CODE	DIMENSIONS D×T×U×X×H
4-4008	125×10×5(1.7+1.7+1.7)×8×32	0K2083	150×10×5(1.7+1.7+1.7)×8×32
0-2083	150×10×5(2.5+2.5)×8×32	0-2103	190×10×5(2.5+2.5)×8×32
		9-8018	200×10×5(2.5+2.5)×8×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

1A1

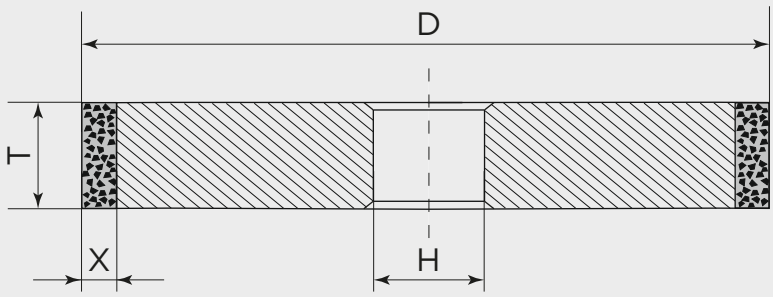
Application:

- **Grinding of the back and side surfaces of teeth**

- **Recommended grit size from D46 to D126**



Backside grinding of the tool



1A1 D×T×X×H

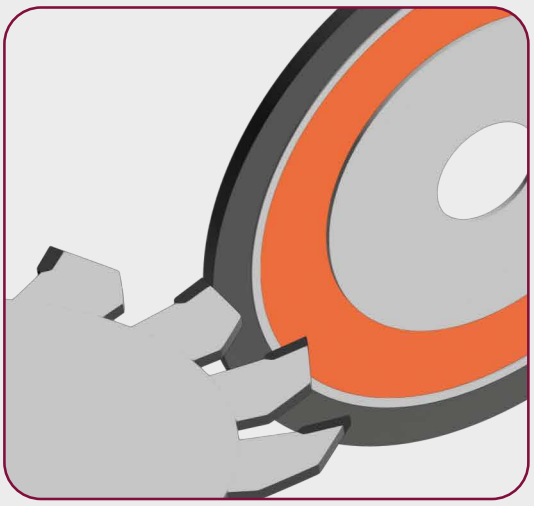
CODE	DIMENSIONS D×T×X×H	CODE	DIMENSIONS D×T×X×H
0-0063	100×6×3×20	0-0079	125×6×3×32
0D0063	100×6×3×32	0S0084	125×6×5×20
0-0069	100×6×5×20	0-0084	125×6×5×32
0F0069	100×6×5×32	0D0085	125×8×5×20
0G2079	100×6×10×20	0K0085	125×8×5×32
0-0064	100×8×3×20	0B0174	125×8×10×20
0D0064	100×8×3×32	0S0100	150×6×5×20
0-0070	100×8×5×20	0-0100	150×6×5×32
9-6960	100×8(4+4)×5×32	0B0100	150×6(2+2+2)×5×32
0K0071	100×8×5×32	0-0095	150×8×3×32
0C2079	100×8×10×20	0D0101	150×8×5×20
0M0079	125×6×3×20	0-0101	150×8×5×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

14A1

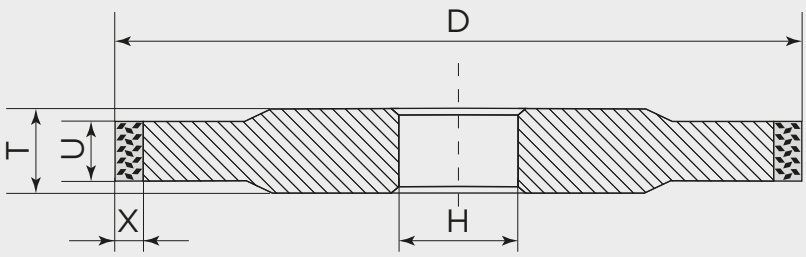
Application:

- **Grinding of the back and side surfaces of teeth**

- **Recommended grit size from D46 to D126**



Backside grinding of the tool



14A1 D×T×U×X×H

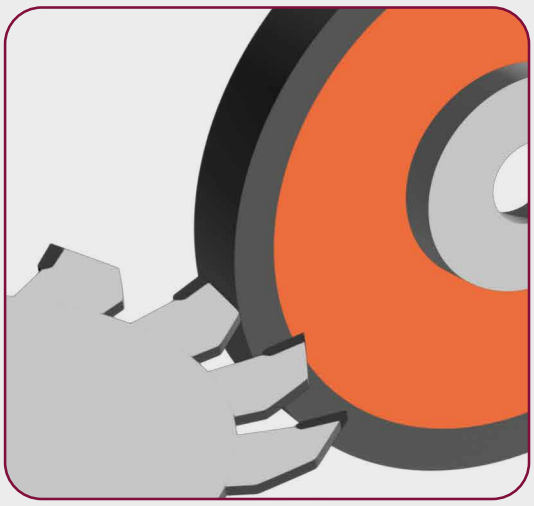
CODE	DIMENSIONS D×T×X×W×H	CODE	DIMENSIONS D×T×X×W×H
0-0303	100×6×3×5×20	0-0308	125×6×5×5×32
0D0304	100×6×5×5×20	0Б0311	150×8×3×5×20
0D0307	125×6×3×5×20	0-0311	150×8×3×5×32
0-0307	125×6×3×5×32	0G0312	150×8×5×5×20
0G0308	125×6×5×5×20	0-0312	150×8×5×5×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

3A1

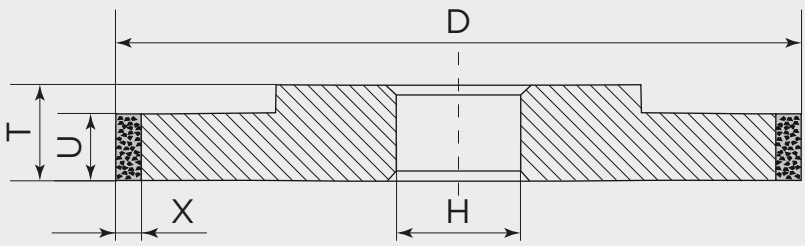
Application:

- **Grinding of the back and side surfaces of teeth**

- **Recommended grit size from D46 to D126**



Backside grinding of the tool



3A1 D×T×U×X×H

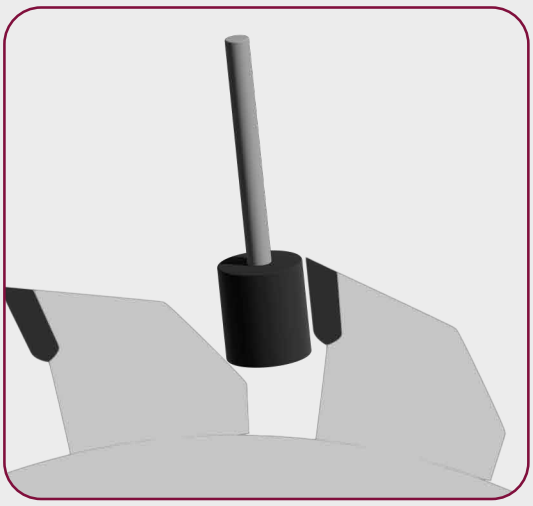
CODE	DIMENSIONS D×T×U×X×H	CODE	DIMENSIONS D×T×U×X×H
9-5663	100×10×4×5×20	9-5662	100×14×4×4.2×32
9B5662	100×10×4×4.2×32	0N0085	125×7×4×5×20
9C5662	100×14×4×4.2×20	3-2898	125×17×4×5×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

AW

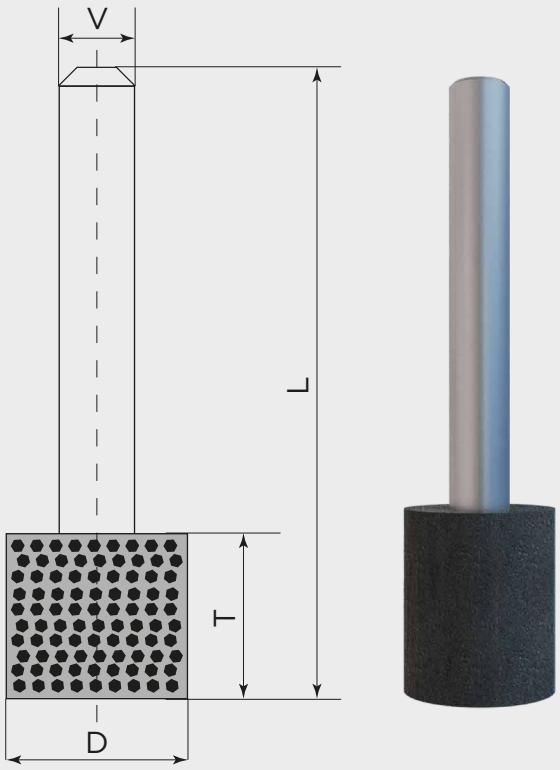
Application:

- Face grinding of teeth

- Recommended grit size from M25 to D151



Face ginding of the tool

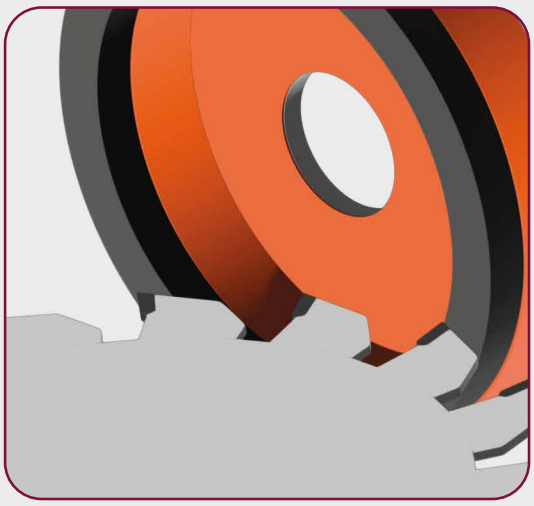


AW D×T×V×L

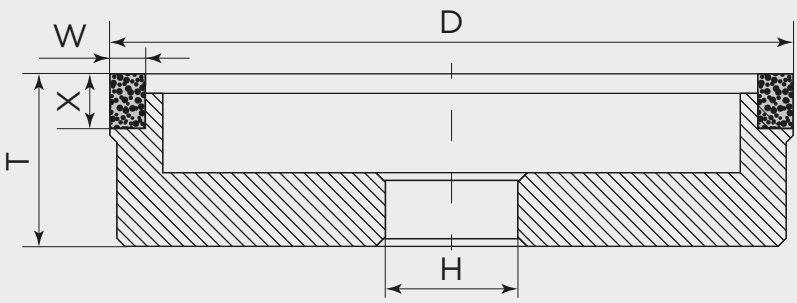
CODE	DIMENSIONS D×T×V×L	CODE	DIMENSIONS D×T×V×L
6D3051	6.5×6×6×40	6-3051	7×6×6×56.4
6F3051	7×3×6×40	8-1024	8×8×3×60
8H1023	7×6×6×45	8D1033	8×10×6×60
Tools can also be manufactured according to the customer's specific requirements upon request.			

6A9

Application:
- **Grinding of the back and side surfaces of teeth**
- **Recommended grit size**
  - **diamond from M25 to D126**
  - **CBN for Stellite tipped teeth from B151 to B213**



Backside grinding of the tool



6A9 D×T×X×W×H

CODE	DIMENSIONS D×T×X×W×H	CODE	DIMENSIONS D×T×X×W×H
3-3154	125×20×8×5(2.5+2.5)×32	9-8170	100×40×12×3×20
3-2843	125×20×6×5(2.5+2.5)×32	9E8150	100×30×6×3×20
9K3421	125×18×6.5×3×32	3M0059	250×32×12×6×50
Tools can also be manufactured according to the customer's specific requirements upon request.			

14FF1, 1FF1

High-performance electroplated CBN tool that ensures precise sharpening of band saw teeth.

Application:

- Sharpening of tooth profile

- Recommended grit size from B107 to B251

Product Characteristics:

**The company produces wheels 14FF1, 1FF1 in various sizes.
In stock, there are standard profile wheels with diameters of 127mm, 150mm, 203mm, and custom wheels can also be produced based on customer drawings.**

Advantages:

- **CBN with a double-layer coating provides high tool durability (up to 20-25 km of sawing).**
- **High-quality nickel plating of the body ensures additional adhesion of the CBN coating.**
- **Stable geometry profile due to manufacturing on CNC machines.**
- **High balancing grade.**
- **Preservation during packaging allows for long-term storage of the tool.**
- **The quality of the wheels is confirmed by consistent deliveries to the European market.**

Considerations for Order Coordination:

To ensure the sharpening quality and longlife of the tool, it is necessary to match the profile of the 14FF1, 1FF1 wheel to the profile of the sharpened band saw.

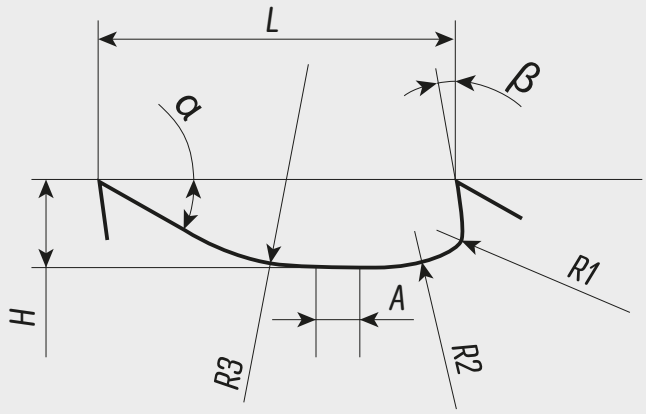
This can be achieved by fulfilling one of the following conditions:

a) Provide a sample saw (100-200mm length) to the manufacturing plant, indicating the outer diameter of the wheel, the diameter of the mounting hole, and the angle of inclination during installation.

b) Conduct precise measurements (with an accuracy of up to 0.02mm) of the profile of the used band saw, determining all dimensions according to the provided sketch, namely:

- **L, H, R1, R2, R3, A and the angles α, β.**
- **Also, specify the outer diameter of the wheel, the diameter of the mounting hole, and the angle of inclination during installation.**

In case of partial mismatch between the tool profile and the saw profile, uneven wear marks will be observed on the working part of the wheel.



RECOMMENDED GRINDINGPARAMETERS FOR SHARPENING HSS BAND SAWS

Coolant - mineral oil or water-based emulsions.
Wheel speed V = 20...45 m/s.

Grit size	t, mm							
	0,05	0,1	0,12	0,15	0,17	0,2	0,25	0,3
B251 - B213								
B181 - B151								
B126 - B107								

Best processing quality.
Used to achieve increased cleanliness and precision of the product.
Using the tool under these modes ensures maximum tool life and processing quality.

Optimal mode.
Provides good tool durability. Optimal processing quality.

Customers may use these modes in special cases after consultation with the equipment and tool manufacturer.

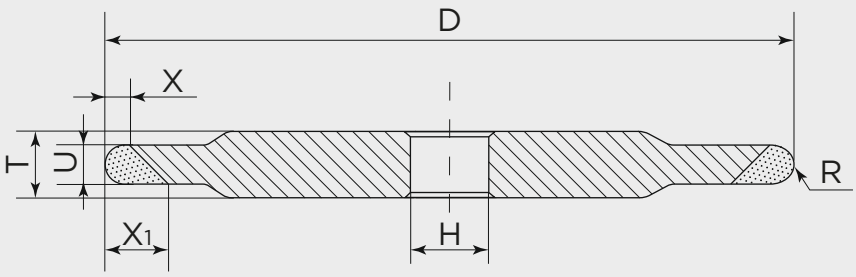
14F1 with HSS01 bond

Application:

- **Wheels for manufacturing, sharpening, and reprofiling of HSS circular saws**

- **Recommended grit size: B107**

Sharpening and reprofiling of HSS circular saws



14F1 D×T×U×X×X1×R×H

CODE	DIMENSIONS D×T×U×X×X1×R×H	CODE	DIMENSIONS D×T×U×X×X1×R×H
W-0100	150×8×1.2×4×7×0.6×32	W-0000	200×8×1.2×4×7×0.6×32
W-0101	150×8×1.3×4×7×0.65×32	W-0001	200×8×1.3×4×7×0.65×32
W-0102	150×8×1.5×4×7×0.75×32	W-0002	200×8×1.5×4×7×0.75×32
W-0103	150×8×1.6×5×8×0.8×32	W-0003	200×8×1.6×5×8×0.8×32
W-0104	150×8×1.8×5×8×0.9×32	W-0004	200×8×1.8×5×8×0.9×32
W-0105	150×8×2×5×8×1×32	W-0005	200×8×2×5×8×1×32
W-0106	150×8×2.5×8×12×1.25×32	W-0006	200×8×2.5×8×12×1.25×32
W-0107	150×8×3×8×12×1.5×32	W-0007	200×8×3×8×12×1.5×32
W-0108	150×8×3.5×8×12×1.75×32	W-0008	200×8×3.5×8×12×1.75×32
W-0109	150×8×4×10×15×2×32	W-0009	200×8×4×10×15×2×32
W-0110	150×8×5×10×15×2.5×32	W-0010	200×8×5×10×15×2.5×32
W-0111	150×8×5.5×10×15×2.75×32	W-0011	200×8×5.5×10×15×2.75×32
W-0112	150×8×6×10×15×3×32	W-0012	200×8×6×10×15×3×32
Tools can also be manufactured according to the customer's specific requirements upon request.			

RECOMMENDED GRINDING PARAMETERS FOR HSS CIRCULAR BLADES PROCESSING

Coolant – mineral oil or water-based emulsions.
Wheel speed V = 35...60 m/s.

t, mm	S, mm/min															
	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	160
0,2																
0,3																
1																
1,5																
2																
2,5																
3																
3,5																
4																

Best processing quality.
Used to achieve increased cleanliness and precision of the product.
Using the tool under these modes ensures maximum tool life and processing quality.

Optimal mode.
Provides good tool durability. Optimal processing quality.

Customers may use these modes in special cases after consultation with the equipment and tool manufacturer.

We recommend using the tool in accordance with these recommendations. Consumers may use the tool with their own settings, but failure to adhere to these recommendations may result in premature wear or damage to the tool.

RECOMMENDATIONS FOR APPLICATION OF PROFILING AND DRESSING WHEELS

When using diamond wheels, the following basic rules should be followed:

- **The wheels should be mounted on holders and should not be removed until they are fully worn out.**
- **The tool should be carefully prepared and securely fastened to the spindle of the machine, whose accuracy meets the requirements for diamond processing equipment.**
- **Profiling (restoring geometry) of the diamond layer is performed using abrasive wheels on a ceramic bond, based on the recommendations specified below.**
- **Dressing (cleaning) of the diamond layer surface is performed using abrasive stones on a ceramic bond.**

Profiling (restoring geometry) of the diamond layer of the wheels is carried out to restore shape accuracy, remove defects on the working surface, and form the required profile. Typically, profiling is done without coolant.

The most effective method of profiling is grinding the diamond-bearing layer with abrasive wheels. Profiling is performed using white electrocorundum wheels on a ceramic bond, with a grit size one or two grades higher than the grit size of the superabrazive wheel.

The hardness of the wheels K – H for tool profiling is selected according to the rule: the finer is the grit size of the superabrazive wheel, the softer the wheel used for profiling should be.

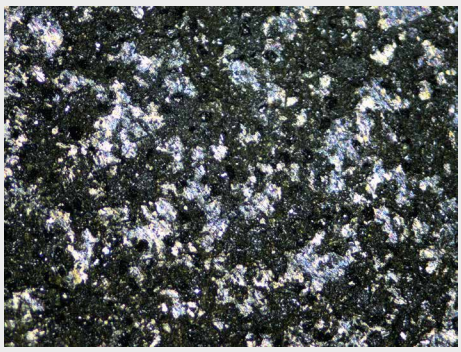
RECOMMENDED MODES FOR PROFILING THE DIAMOND LAYER WITH ABRASIVE WHEELS

Position of diamond wheel	Dressing mode			
	Peripheral speed, m/s		Longitudinal feed rate, m/min	Cross-feed rate, mm/stroke
	Abrasive wheel	Diamond wheel		
Diamond wheel mounted on a holder or spindle of a sharpening or CNC machine	25 - 35	2 - 5	1,0 – 2,0	0,02 – 0,04

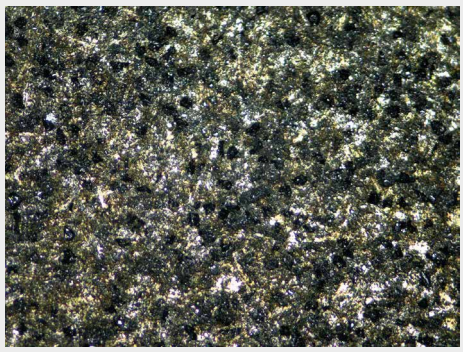
CHARACTERISTICS OF ABRASIVE WHEELS ON A CERAMIC BOND FOR DRESSING THE DIAMOND LAYER

Characteristic of the diamond layer		Characteristic of the dressing wheel		
Bond type	Diamond grit size	Abrasive type	Abrasive grit size	Hardness
B9-00, B7-00, B7-01, B7-02, B9-04	D151- D126	Aluminum oxide 22A, 23A, 15A, 16A	20; 16 ; 12	M – L
	D107-D76		12; 10; 8	L – K
	D64-D46		8; 6; 4	K – H
	M40-M25		M40; M28	J

Dressing (cleaning) of the diamond layer of the wheels is performed to remove contaminants from the working surface of the layer and restore the cutting ability of the wheel. Dressing is carried out using white electrocorundum stones on a ceramic bond with a grit size one or two grades higher than the grit size of the superabrasive wheel. The hardness of the stones, ranging from K to H, is selected for dressing according to the rule: the finer the grit size of the superabrasive wheel, the softer the stone used for dressing should be.



BEFORE DRESSING



AFTER DRESSING

CORRESPONDENCE OF POWDER PARTICLE SIZE BETWEEN INTERNATIONAL STANDARDS: GOST, FEPA, ANSI

FEPA DIAMOND CBN	ANSI B74-16 USA	GRIT	Standards system used in Ukraine and CIS: DSTU 3292-95 / GOST 9206-80	GRIT SIZE CLASS
microns	mesh	grit	мкм	
D251/B251	60/70	60	250/200	EXTRA COARSE
D213/B213	70/80	70	200/160	
D181/B181	80/100	80		
D151/B151	100/120	100	160/125	
D126/B126	120/140	140	125/100	COARSE
D107/B107	140/170	170	100/80	
D91/B91	170/200	200	80/63	
D76/B76	200/230	230		
D64/B64	230/270	270	63/50	MEDIUM
D54/B54	270/325	325	50/40	
D46/B46	325/400	400		
M63/B63	500	500	60/40	
M40/B40	550	550	40/28	FINE
M30/B30	500/600	600		
M25/B25	650	650	28/20	

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