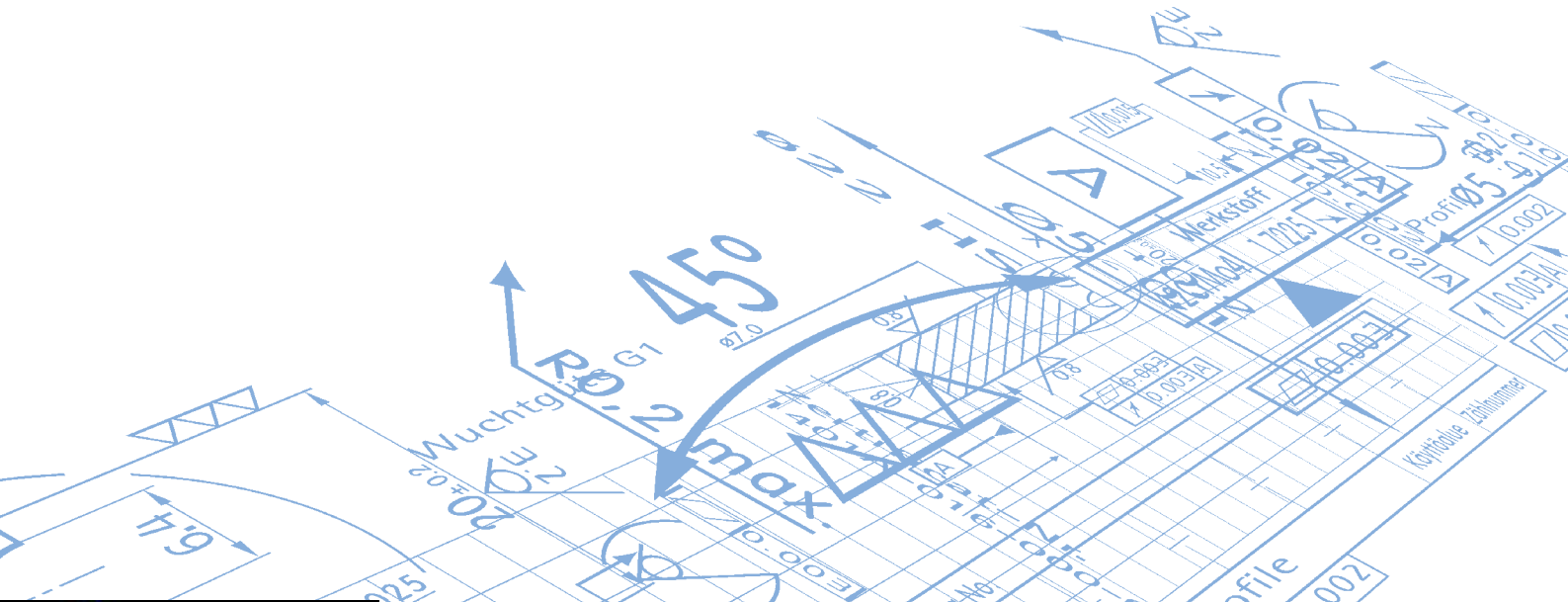


# WINTER

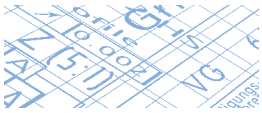
Precision Engineering Solutions



Diamond and CBN grinding wheels  
for application on CNC tool grinding machines

Stock programme





# Notes

This stock programme catalogue contains all standard SAINT-GOBAIN Abrasives diamond and CBN grinding wheels for use on CNC tool grinding machines.

The selection of grinding wheels and their application is dependent on application and software of the machine manufacturer.

Some examples of grinding wheel combinations, mounted as spindle sets, are illustrated on page 3.

Indications on application of each shape are given at the foot of the table in the respective section.

SAINT-GOBAIN Abrasives CNC diamond and CBN grinding wheels are suitable both for grinding with oil and emulsion cutting fluids.

SAINT-GOBAIN Abrasives diamond and CBN grinding wheels are available ex stock, i.e. with a short delivery lead time.

In addition to this specific CNC grinding wheel range, SAINT-GOBAIN Abrasives has further catalogues of stock programmes:

- Grinding tool programme for the wood and plastics working industry (wood-working catalogues)
- Superstandard programme for tool making
- ID grinding catalogue.

If you have further questions on our grinding wheel programme, please contact us.

## Contents

## Page

Notes

2

Examples of possible grinding wheel combinations

3

### Diamond grinding wheels for carbide tools

11V9

4

12V9

5

1A1

6

1V1/14V1

7

700 (Hertel SE-Drill)

7

Q-Flute<sup>2</sup>

8,9

µmicro

10

14F1

11

6V5/12V5

12

12A2

12

6A9

13

4A2

13

### CBN grinding wheels for HSS tools

11V9

4

12V9

5

1A1

6

1V1 / 14V1

7

Q-Flute<sup>2</sup>

8

14F1

11

6V5/12V5

12

12A2

12

4A2 / 4BT9

13

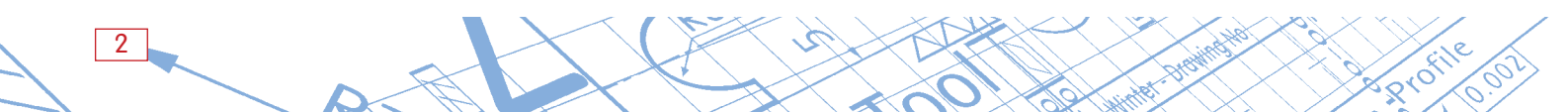
### Dressing grinding wheel

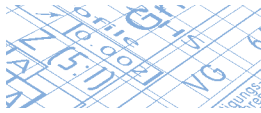
Cleaning and Sharpening Stones

14

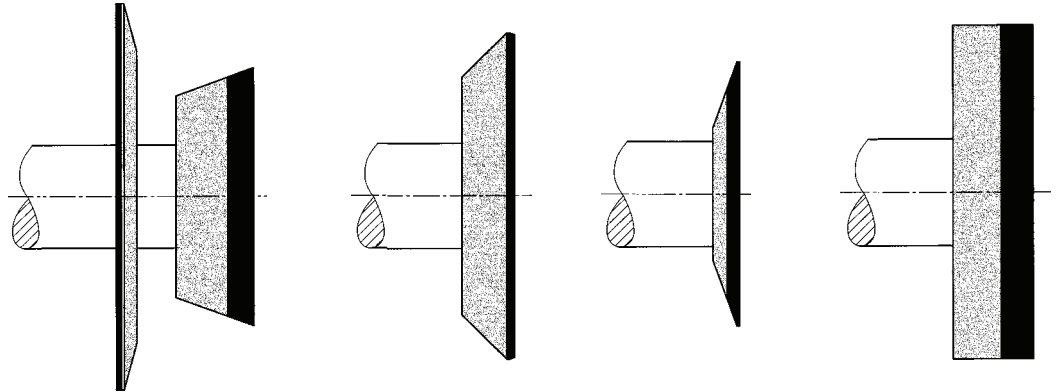
Dressing wheel Shape 1

14





## Examples of possible Grinding Wheel Combinations

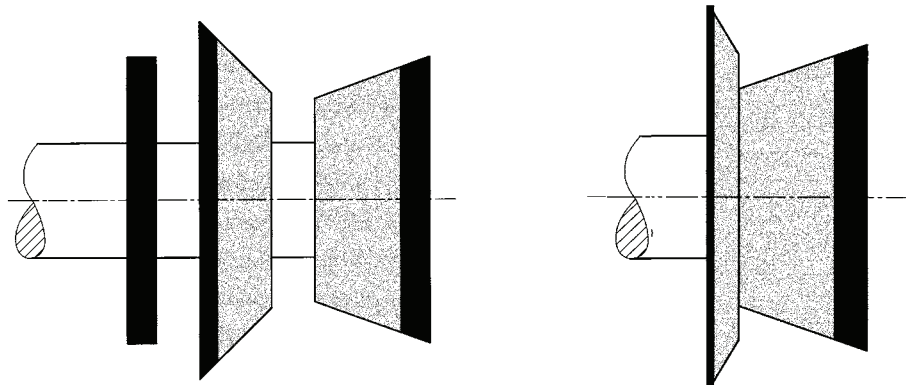


Shape 4A2 11V9

12A2

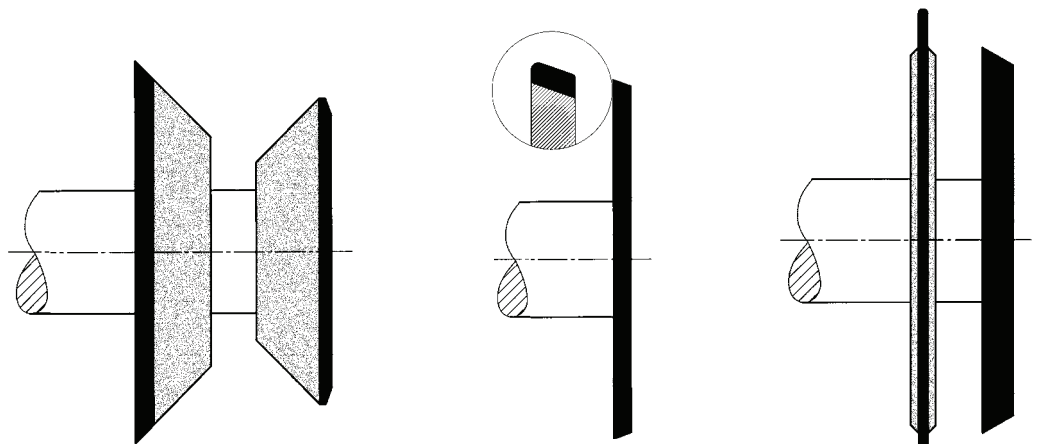
4BT9

6A9



Shape 1A1 12V9 11V9

4A9 11V9

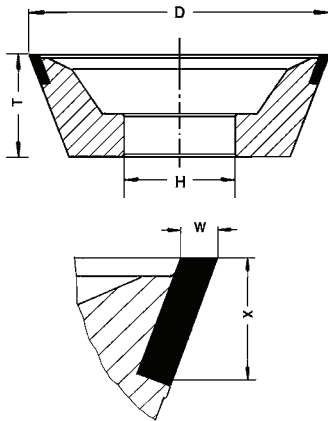


Shape 12V9 12V5

700

14F1 1V1

Grinding wheel  
shape according to  
FEPA **TIV9**



## WINTER

### For carbide tools

Shape	- D - W - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
7K TIV9	- 75 - 2 - 10 - 20	D64	K-plus 1421 R	C100H	66260338587	T = 30
		D64	K-plus 1410	C125H	60157685425	T = 30 <sup>1)</sup>
2K TIV9	- 75 - 3 - 10 - 20	D64	K-plus 1421 R	C100H	66260347304	T = 30
8K TIV9	- 100 - 2 - 10 - 20	D64	K-plus 1421 R	C100H	66260338586	T = 35
		D64	K-plus 1410	C125H	69014163728	T = 35 <sup>2)</sup>
		D64	K-plus 980-42	C125H	66260324844	T = 25
		D91	K-plus 921	C125H	66260383968	T = 35
		D91	K-plus 1410	C125H	66260336262	T = 35 <sup>2)</sup>
		D126	K-plus 888 R	C100H	66260344473	T = 35
10K TIV9	- 100 - 3 - 10 - 20	D46	K-plus 1421 R	C100H	66260346530	T = 35
		D64	K-plus 1421 R	C100H	66260334264	T = 35
11K TIV9	- 125 - 3 - 10 - 20	D64	K-plus 1421 R	C100H	66260338584	T = 40

Application depending on software of machine manufacturer:

For grinding 1<sup>st</sup> and 2<sup>nd</sup> relief, periphery, minor cutting edge, full radii and chamfered corners of drills and milling cutters.

<sup>1)</sup> Delivery within four weeks.

<sup>2)</sup> W = 0.8 mm possible by reworking.

## WINTER

### For carbide tools

Shape	- D - W - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
2 SP TIV9	- 75 - 2 - 10 - 20	D46	W-plus 3060	C125H	66260118286	T = 30
2 SP TIV9	- 100 - 2 - 10 - 20	D46	W-plus 3060	C125H	66260346785	T = 35

Application depending on software of machine manufacturer:

For flute grinding, peripheral grinding, relief grinding, radius sharpening.

## WINTER

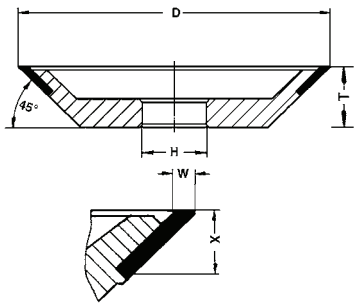
### For HSS tools

Shape	- D - W - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
7K TIV9	- 75 - 2 - 10 - 20	B107	KSS 12 N	V240H	66260352681	T = 30
		B107	KSS 980-60	V240H	60157685182	T = 30
2K TIV9	- 75 - 3 - 10 - 20	B107	KSS 12 N	V240H	66260352679	T = 30
8K TIV9	- 100 - 2 - 10 - 20	B107	KSS 12 N	V240H	66260352678	T = 35
		B107	KSS 980-60	V240H	69014163185	T = 35
		B151	KSS JY-63	V240H	66260128341	T = 35
10K TIV9	- 100 - 3 - 10 - 20	B107	KSS 12 N	V240H	66260352675	T = 35
11K TIV9	- 125 - 3 - 10 - 20	B107	KSS 12 N	V240H	66260352674	T = 40

Application depending on software of machine manufacturer:

For grinding 1<sup>st</sup> and 2<sup>nd</sup> relief, periphery, minor cutting edge, full radii and chamfered corners of drills and milling cutters.

Grinding wheel  
shape according to  
FEPA **12V9**



## WINTER

### For carbide tools

Shape	D	W	X	H	Grit size	Bond	Concentration	ORDER NO.	Remarks
2K 12V9	50	2	6	20	D64	K-plus 1421 R	C100A	66260128817	T = 19
3K 12V9	75	2	10	20	D64	K-plus 1421 R	C100H	66260338583	T = 20
2K 12V9	75	3	10	20	D64	K-plus 1421 R	C100H	66260352673	T = 20
6K 12V9	100	2	10	20	D64	K-plus 1421 R	C100H	66260344811	T = 20
					D64	K-plus 1410	C125H	69014163229	T = 20
3K 12V9	100	3	10	20	D64	K-plus 1421 R	C100H	66260339437	T = 20
					D126	K-plus 888 R	C100H	66260128545	T = 20
9K 12V9	125	2	10	20	D64	K-plus 1410	C125H	69014182731	T = 25
					D91	K-plus 921	C125H	66260383462	T = 25
					D64	K-plus 980-42	C125H	60157672850	T = 25
					D91	K-plus 1410	C125H	66260340845	T = 20
5K 12V9	125	3	10	20	D64	K-plus 1421 R	C100H	66260334260	T = 25 <sup>1)</sup>
5K 12V9	150	3	10	20	D64	K-plus 1421 R	C100H	66260117874	T = 25

<sup>2)</sup> W = 0.8 mm possible by reworking.

### For carbide tools

Shape	D	W	X	H	Grit size	Bond	Concentration	ORDER NO.	Remarks
SP 12V9	100	2	6	20	D46	W-plus 3060	C125H	66260348949	T = 20
2 SP 12V9	125	2	6	20	D46	W-plus 3060	C125H	66260350500	T = 20

Application depending on software of machine manufacturer:  
For flute grinding, peripheral grinding, relief grinding, radius sharpening.

## WINTER

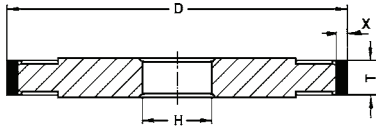
### For HSS tools

Shape	D	W	X	H	Grit size	Bond	Concentration	ORDER NO.	Remarks
3K 12V9	75	2	10	20	B107	KSS 12 N	V240H	66260352670	T = 20
6K 12V9	100	2	10	20	B107	KSS 12 N	V240H	66260352669	T = 20
					B107	KSS 980-60	V240H	60157685426	T = 20
9K 12V9	125	2	10	20	B107	KSS 980-60	V240H	60157685183	T = 25
1K 12V9	100	3	15	20	B107	KSS 12 N	V240H	66260352668	T = 20
					B151	KSS JY-77	V240H	60157642984	T = 20
6K 12V9	125	3	15	20	B107	KSS 12 N	V240H	66260352667	T = 25
					B151	KSS JY-77	V240H	66260128064	T = 25
5K 12V9	125	3	10	20	B107	KSS 12 N	V240H	66260354629	T = 25
5K 12V9	150	3	10	20	B107	KSS 12 N	V240H	66260128353	T = 25 <sup>1)</sup>

Application depending on software of machine manufacturer:  
For grinding relief, ball shapes of end mills, relief grinding of minor cutting edge, grinding 1<sup>st</sup> and 2<sup>nd</sup> relief.

<sup>1)</sup> Delivery within four weeks.

Grinding wheel  
shape according to  
FEPA **1A1**



## WINTER

### For carbide tools

Shape	- D - T - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
K 1A1	- 75 - 3 - 5 - 20	D46	K-plus 920	C100A	60157643388	
K 1A1	- 75 - 10 - 5 - 20	D64	K-plus 1421 R	C100H	66260339426	
K 1A1	- 100 - 10 - 5 - 20	D64	K-plus 1421 R	C100H	66260339422	
K 1A1	- 100 - 10 - 5 - 20	D91	K-plus 1421 J	C75A	66260356902	
K 1A1	- 100 - 12 - 5 - 20	D64	K-plus 1421 R	C100H	66260347629	
K 1A1	- 100 - 15 - 5 - 20	D64	K-plus 1421 R	C100H	66260339419	
K 1A1	- 100 - 15 - 5 - 20	D91	K-plus 1421 J	C75A	66260355621	
K14A1	- 125 - 5 - 5 - 20	D54	K-plus 4821	C100A	60157643037	
K 1A1	- 125 - 5 - 10 - 20	D64	K-plus 1421 R	C100A	66260350079	
K 1A1	- 125 - 5 - 15 - 20	D126	K-plus 921	C100A	66260131770	
K 1A1	- 125 - 6 - 15 - 20	D64	K-plus 921	C100A	66260132044	
K 1A1	- 125 - 8 - 15 - 20	D64	K-plus 921	C100A	66260131843	
K 1A1	- 125 - 8 - 15 - 20	D126	K-plus 921	C125A	66260130889	
K 1A1	- 125 - 10 - 10 - 20	D64	K-plus 1421 R	C100A	66260341750	
K 1A1	- 125 - 10 - 15 - 20	D64	K-plus 921	C100A	66260374178	
K 1A1	- 125 - 12 - 10 - 20	D64	K-plus 1421 R	C100A	66260352659	
K 1A1	- 125 - 16 - 10 - 20	D64	K-plus 1421 J	C100A	66260351497	
K 1A1	- 150 - 12 - 10 - 20	D64	K-plus 1421 R	C100A	66260352657	

Application depending on software of machine manufacturer:  
For flute grinding, peripheral grinding, relief grinding, radius sharpening.

## WINTER

### For carbide tools

Shape	- D - T - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
1 SP 1A1	- 100 - 6 - 5 - 20	D46	W-plus 3060	C125A	66260134471	
1 SP 1A1	- 100 - 8 - 10 - 20	D46	W-plus 3060	C125A	66260134472	
1 SP 1A1	- 100 - 10 - 15 - 20	D46	W-plus 3060	C125A	60157643656	
1 SP 1A1	- 125 - 10 - 10 - 20	D46	W-plus 3060	C125A	66260112833	

Application depending on software of machine manufacturer:  
For flute grinding, peripheral grinding, relief grinding, radius sharpening.

## WINTER

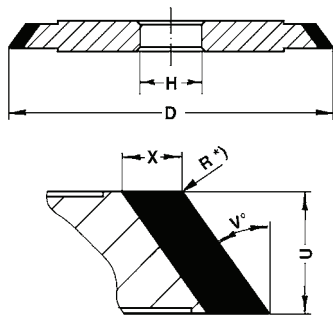
### For HSS tools

Shape	- D - T - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
K 1A1	- 75 - 10 - 5 - 20	B107	KSS 12 N	V240H	66260352656	)
K 1A1	- 100 - 10 - 5 - 20	B107	KSS 12 N	V240H	66260352654	
K 1A1	- 100 - 15 - 5 - 20	B107	KSS 12 N	V240H	66260347909	
K 1A1	- 125 - 6 - 5 - 20	B107	KSS 12 N	V240A	66260118167	)
K 1A1	- 125 - 10 - 5 - 20	B107	KSS 12 N	V240A	66260352653	
K 1A1	- 150 - 12 - 5 - 20	B107	KSS 12 N	V240A	66260352652	

Application depending on software of machine manufacturer:  
For flute grinding, peripheral grinding, relief grinding, radius sharpening.

) Delivery within four weeks.

## Grinding wheel shape according to FEPA **TV1 / 14V1**



## WINTER

### For carbide tools

Shape	- D	- U	- X	- V°	- H	Grit size	Bond	Concentration	ORDER NO.	Remarks
1K TV1	- 75	- 10	- 5	- 10	- 20	D64	K-plus1421 R	C100H	66260339433	
1K TV1	- 100	- 10	- 5	- 10	- 20	D64	K-plus1421 R	C100H	66260339432	
1K TV1	- 100	- 15	- 5	- 10	- 20	D64	K-plus1421 R	C100H	66260339431	)
K TV1	- 100	- 15	- 5	- 20	- 20	D64	K-plus1421 R	C100H	66260347907	
K TV1	- 100	- 15	- 5	- 30	- 20	D64	K-plus1421 R	C100H	66260342813	
K TV1	- 100	- 15	- 5	- 45	- 20	D64	K-plus1421 R	C100H	66260352665	
1K 14V1	- 125	- 4	- 6	- 45	- 20	D64	K-plus921	C100A	66260352637	
1K TV1	- 125	- 6	- 5	- 20	- 20	D64	K-plus1421 R	C100A	66260117593	Hertel SE-Drill R = 0,2 )
1K TV1	- 125	- 10	- 5	- 10	- 20	D64	K-plus1421 R	C100A	66260352633	
3K TV1	- 125	- 10	- 5	- 20	- 20	D64	K-plus1421 R	C100A	66260346267	Hertel SE-Drill R = 0,5
1K TV1	- 125	- 10	- 5	- 30	- 20	D64	K-plus1421 R	C100A	66260115545	
1K TV1	- 125	- 10	- 5	- 45	- 20	D64	K-plus1421 R	C100A	66260352664	
1K TV1	- 125	- 15	- 5	- 10	- 20	D64	K-plus1421 R	C100A	66260352641	
1K TV1	- 125	- 15	- 5	- 20	- 20	D64	K-plus1421 R	C100A	66260345983	Hertel SE-Drill R = 0,9
K TV1	- 125	- 15	- 5	- 30	- 20	D64	K-plus1421 R	C100A	66260352640	)
K TV1	- 125	- 15	- 5	- 45	- 20	D64	K-plus1421 R	C100A	66260352639	
1K 14V1	- 150	- 4	- 5	- 45	- 20	D91	K-plus921	C100A	66260131709	)
K TV1	- 150	- 12	- 5	- 15	- 20	D64	K-plus1421 R	C100A	66260119886	)

Application depending on software of machine manufacturer:  
For flute grinding, end and end relief thinning, drill sharpening  
(in some cases Hertel SE drill).

) Delivery within four weeks.

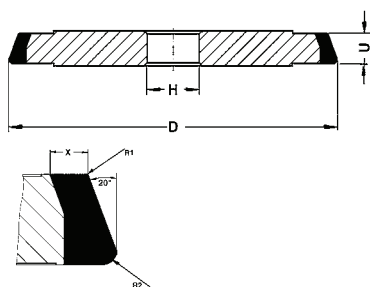
### For HSS tools

Shape	- D	- U	- X	- V°	- H	Grit size	Bond	Concentration	ORDER NO.	Remarks
1K TV1	- 100	- 10	- 5	- 10	- 20	B107	KSS 12 N	V240H	66260127891	)
1K TV1	- 100	- 15	- 5	- 10	- 20	B107	KSS 12 N	V240H	66260116353	
K TV1	- 100	- 15	- 5	- 20	- 20	B107	KSS 12 N	V240H	66260115554	)
K TV1	- 100	- 15	- 5	- 30	- 20	B107	KSS 12 N	V240H	66260115756	
K TV1	- 100	- 15	- 5	- 45	- 20	B107	KSS 12 N	V240H	66260352663	
1K TV1	- 125	- 12	- 5	- 10	- 20	B107	KSS 12 N	V240A	66260119462	)
1K TV1	- 125	- 12	- 5	- 45	- 20	B107	KSS 12 N	V240A	66260352661	
1K 14V1	- 150	- 4	- 5	- 45	- 20	B107	KSS 12 N	V240A	66260131441	)
K TV1	- 150	- 12	- 5	- 15	- 20	B107	KSS 12 N	V240A	66260127964	)

Application depending on software of machine manufacturer:  
For flute grinding, end and end relief thinning, drill sharpening.

) Delivery within four weeks.

## Grinding wheel shape **700** (no FEPA Standard)



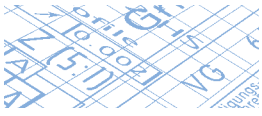
## WINTER

### For carbide tools

Shape	- D	- U	- X	- H	Grit size	Bond	Concentration	ORDER NO.	Remarks
2K 700	- 125	- 6	- 3	- 20	D46	K-plus 1421 R	C100H	66260119545	Drill Ø 3...6 mm )
2K 700	- 125	- 10	- 5	- 20	D46	K-plus 1421 R	C100A	66260384095	Drill Ø 6...8 mm )
1K 700	- 125	- 12	- 5	- 20	D46	K-plus 1421 R	C100A	66260352647	Drill Ø 8...11 mm )
1K 700	- 125	- 16	- 5	- 20	D46	K-plus 1421 R	C100H	66260384094	Drill Ø 11...15 mm )
1K 700	- 125	- 22	- 5	- 20	D46	K-plus 1421 R	C100A	66260127878	Drill Ø 15...20mm )

Application depending on software of machine manufacturer:  
Preferably Hertel SE drill

) Delivery within four weeks.



# Flute grinding perfection - Solutions for each geometry



As well as innovation in new materials and tool designs, the recent trend to miniturisation has become more important.

From Mini- and micro- down to nano-tools, today's tools with diameters under 0.1 mm are becoming commonplace. The production of these tools demands special grinding wheels with very small and sturdy edge radii.

The tools of the WINTER *micro+* series are specifically developed for these requirements characterised by their edge stability.

## Fields of application

Classic areas of application for WINTER *micro+* products are mini and micro drills and end mills for electronics and medical technology. In addition, WINTER *micro+* grinding wheels can be used for more traditional processes e.g. the production of burrs.

Work piece	Work piece material	Machine	Grinding wheel		Coolant
			Shape	Bond	
Mini end mills Micro drills Burrs Routers etc.	Tungsten carbide HSS	ANCA Kirner Rollomatic Schuette etc.	3A1, 4A9, 14V1 Ø 50...200 X 3...10 H (machine dependent)	WINTER <i>micro+</i>	Oil Emulsion

### Specification

D15A...D15C	micro+ 2013	C150
D20A...D25	micro+ 2012	C150
D46...D64	micro+ 2062	C135

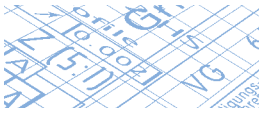
### Range of workpiece diameter

0,05 mm – 0,75 mm
0,75 mm – 2 mm
Rotary tools up to ½ "

### Ordering Example:

SP4A9 - 100 - 1,2 - 6 20\*D15C micro+2013 C150A





# Flute grinding perfection - Solutions for each geometry

## Q-Flute<sup>2</sup>



### Economical flute grinding through highest feed rates and reduced wheel wear

This specification is WINTER's newest flute grinding development. With Q-Flute<sup>2</sup>, clearly increased Material Removal Rates (MRR) are possible, whilst at the same time maintaining edge stability. Therefore, Q-Flute<sup>2</sup> delivers the optimum combination of lifetime and free grinding behaviour. In many cases dramatically increased feed rates with simultaneously longer dressing intervals have been achieved. The wheel wear per part is reduced accordingly.

### Fields of application:

The new Q-Flute<sup>2</sup> is the solution for all flute grinding applications in the diameter range  $\varnothing \geq 3$  mm. This bond system is applicable not only under oil but also under water and emulsion. It provides outstanding results for tungsten carbide tools as well as for HSS tools.

#### Specification

D54 Q-Flute<sup>2</sup>  
B64 Q-Flute<sup>2</sup>  
D54 Q-Flute<sup>2</sup> W

#### Application

Tungsten carbide, oil  
High speed steel, oil  
Tungsten carbide, water based coolant



D25...D107  
B35...B126

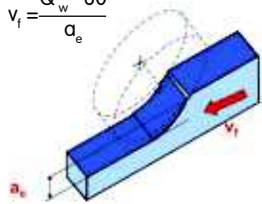
Q-Flute+Dress  
Q-Flute+Dress

(stock items see page 10)

## Application guide

### High Performance Grinding Wheels for Flute-Grinding.

$$v_f = \frac{Q'_w \cdot 60}{a_e}$$



Example: Q-Flute<sup>2</sup>  
( $Q'_w = 6 \text{ mm}^3 / \text{mm} \cdot \text{s}$ ),  $a_e = 4 \text{ mm}$   
 $v_f = \frac{6 \cdot 60}{4} = 90 \text{ mm/min}$

Test **start** with following parameter:

Q-Flute+ Dress  
< D46  $Q'_w = 4 \text{ mm}^3 / \text{mm} \cdot \text{s}$

Q-Flute+ Dress  
 $\geq$  D46  $Q'_w = 5 \text{ mm}^3 / \text{mm} \cdot \text{s}$

Q-Flute<sup>2</sup>  $Q'_w = 6 \text{ mm}^3 / \text{mm} \cdot \text{s}$

(If infeed <  $a_e = 3 \text{ mm}$ ,  
Start with approx.  
 $v_f = 80 \text{ mm/min}$ )  
 $v_c$  15...18 m/s if possible

#### Important:

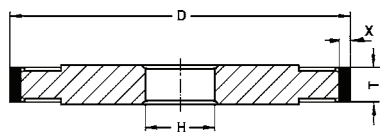
Condition diamond grinding wheel before first grinding.

		Feed rate $v_f$ [mm/min]																	
		30	40	50	60	70	80	90	100	120	140	160	180	200	220	240	260	280	300
Infeed $a_e$ [mm]	3	1,5	2	2,5	3	3,5	4	4,5	5	6	7	8	9	10	11	12	13	14	15
	3,2	1,6	2,1	2,7	3,2	3,7	4,3	4,8	5,3	6,4	7,5	8,5	9,6	11	12	13	14	15	16
	3,4	1,7	2,3	2,8	3,4	4	4,5	5,1	5,7	6,8	7,9	9,1	10	11	12	14	15	16	17
	3,6	1,8	2,4	3	3,6	4,2	4,8	5,4	6	7,2	8,4	9,6	11	12	13	14	16	17	18
	3,8	1,9	2,5	3,2	3,8	4,4	5,1	5,7	6,3	7,6	8,9	10	11	13	14	15	16	18	19
	4	2	2,7	3,3	4	4,7	5,3	6	6,7	8	9,3	11	12	13	15	16	17	19	20
	4,2	2,1	2,8	3,5	4,2	4,9	5,6	6,3	7	8,4	9,8	11	13	14	15	17	18	20	21
	4,4	2,2	2,9	3,7	4,4	5,1	5,9	6,6	7,3	8,8	10	12	13	15	16	18	19	21	22
	4,6	2,3	3,1	3,8	4,6	5,4	6,1	6,9	7,7	9,2	11	12	14	15	17	18	20	21	23
	4,8	2,4	3,2	4	4,8	5,6	6,4	7,2	8	9,6	11	13	14	16	18	19	21	22	24
	5	2,5	3,3	4,2	5	5,8	6,7	7,5	8,3	10	12	13	15	17	18	20	22	23	25
	5,2	2,6	3,5	4,3	5,2	6,1	6,9	7,8	8,7	10	12	14	16	17	19	21	23	24	26
	5,4	2,7	3,6	4,5	5,4	6,3	7,2	8,1	9	11	13	14	16	18	20	22	23	25	27
	5,6	2,8	3,7	4,7	5,6	6,5	7,5	8,4	9,3	11	13	15	17	19	21	22	24	26	28
	5,8	2,9	3,9	4,8	5,8	6,8	7,7	8,7	9,7	12	14	15	17	19	21	23	25	27	29
	6	3	4	5	6	7	8	9	10	12	14	16	18	20	22	24	26	28	30

Increase potential →

For $a_e < 3 \text{ mm}$ : Start with ca. $v_f = 80 \text{ mm/min}$	Starting parameters for Q-Flute+ DRESS $\geq$ D46
Starting parameters for Q-Flute+ DRESS < D46	Starting parameters for Q-Flute <sup>2</sup>

## Grinding wheel shape according to FEPA 1A1



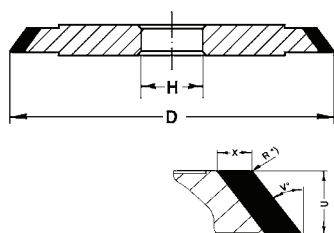
### For carbide tools, oil coolant

Shape	- D	- T	- X	- H	Grit size	Bond	Concentration	ORDER NO.	Remarks
SP 1A1	- 100	- 8	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	60157687140	
SP 1A1	- 100	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	60157680365	
SP 1A1	- 100	- 12	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	60157697235	
SP 1A1	- 100	- 15	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	60157680730	
SP 1A1	- 125	- 8	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	66260113945	
SP 1A1	- 125	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	60157688224	
SP 1A1	- 125	- 12	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	60157687848	
SP 1A1	- 125	- 15	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	66260117916	

More specifications: D54 Q-Flute<sup>2</sup> W for carbide tools, coolant on water base  
B64 Q-Flute<sup>2</sup> for HSS, oil coolant

NORTON dressing wheels see page 14

## Grinding wheel shape according to FEPA 1V1



### For carbide tools, oil coolant

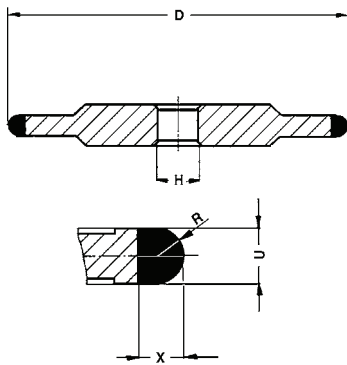
Shape	- D	- U	- X	- V°	- H	Grit size	Bond	Concentration	ORDER NO.	Remarks
SP 1V1	- 100	- 10	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	66260137553	<sup>1)</sup>
SP 1V1	- 100	- 10	- 10	- 15	- 20	D54	Q-Flute <sup>2</sup>	-	66260117361	<sup>1)</sup>
SP 1V1	- 100	- 10	- 10	- 20	- 20	D54	Q-Flute <sup>2</sup>	-	66260129994	<sup>1)</sup>
SP 1V1	- 100	- 10	- 10	- 45	- 20	D54	Q-Flute <sup>2</sup>	-	66260129991	<sup>1)</sup>
SP 1V1	- 100	- 12	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	66260113283	<sup>1)</sup>
SP 1V1	- 100	- 12	- 10	- 15	- 20	D54	Q-Flute <sup>2</sup>	-	66260113288	<sup>1)</sup>
SP 1V1	- 100	- 12	- 10	- 20	- 20	D54	Q-Flute <sup>2</sup>	-	66260134586	<sup>1)</sup>
SP 1V1	- 100	- 15	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	60157680737	<sup>1)</sup>
SP 1V1	- 100	- 15	- 10	- 15	- 20	D54	Q-Flute <sup>2</sup>	-	66260115978	<sup>1)</sup>
SP 1V1	- 100	- 15	- 10	- 20	- 20	D54	Q-Flute <sup>2</sup>	-	60157697875	<sup>1)</sup>
SP 1V1	- 125	- 10	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	66260129330	<sup>1)</sup>
SP 1V1	- 125	- 10	- 10	- 15	- 20	D54	Q-Flute <sup>2</sup>	-	66260117631	<sup>1)</sup>
SP 1V1	- 125	- 10	- 10	- 20	- 20	D54	Q-Flute <sup>2</sup>	-	66260320401	<sup>1)</sup>
SP 1V1	- 125	- 10	- 10	- 45	- 20	D54	Q-Flute <sup>2</sup>	-	66260115514	<sup>1)</sup>
SP 1V1	- 125	- 12	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	66260113290	<sup>1)</sup>
SP 1V1	- 125	- 12	- 10	- 15	- 20	D54	Q-Flute <sup>2</sup>	-	66260113296	<sup>1)</sup>
SP 1V1	- 125	- 12	- 10	- 20	- 20	D54	Q-Flute <sup>2</sup>	-	66260391300	<sup>1)</sup>
SP 1V1	- 125	- 15	- 10	- 10	- 20	D54	Q-Flute <sup>2</sup>	-	66260128867	<sup>1)</sup>
SP 1V1	- 125	- 15	- 10	- 15	- 20	D54	Q-Flute <sup>2</sup>	-	60157690276	<sup>1)</sup>
SP 1V1	- 125	- 15	- 10	- 20	- 20	D54	Q-Flute <sup>2</sup>	-	66260324379	<sup>1)</sup>

More specifications: D54 Q-Flute<sup>2</sup> W for carbide tools, coolant on water base  
B64 Q-Flute<sup>2</sup> for HSS, Oil coolant

<sup>1)</sup> Delivery within one week.

NORTON dressing wheels see page 14

Grinding wheel  
shape according to  
FEPA **14F1**



## WINTER

### For carbide tools

Shape	- D	- U	- X	- R	- H	Grit size	Bond	Concentration	ORDER NO.	Remarks
1K 14F1	- 100	- 4	- 6	- 2	- 20	D64	K-plus 1421 R	C100H	66260339416	
K 14F1	- 125	- 3	- 5	- 1,5	- 20	D64	K-plus 1421 R	C100H	66260114821	
K 14F1	- 150	- 1,2	- 5	- 0,6	- 20	D46	K-plus 888 R	C100A	66260351382	Hertel SE-Drill
K 14F1	- 150	- 2	- 5	- 1	- 20	D64	K-plus 888 R	C100A	66260348744	Hertel SE-Drill
1K 14F1	- 150	- 3	- 7	- 1,5	- 20	D126	K-plus 920	C100A	66260133404	
K 14F1	- 150	- 4	- 5	- 2	- 20	D64	K-plus 1421 R	C100A	66260351943	Hertel SE-Drill <sup>1)</sup>
K 14F1	- 150	- 5	- 7	- 2,5	- 20	D64	K-plus 1421 R	C100A	66260129473	)
17K 14F1	- 200	- 2	- 7	- 1	- 20	D64	K-plus 920	C100E	60157695294	
4K 14F1	- 200	- 3	- 7	- 1,5	- 20	D126	K-plus 920	C100E	66260381129	
2K 14F1	- 200	- 5	- 7	- 2,5	- 20	D126	K-plus 920	C100A	66260136115	
2K 14F1	- 200	- 5	- 7	- 2,5	- 20	D252	K-plus 920	C100A	66260132184	

<sup>1)</sup> Delivery within four weeks.

Application depending on software of machine manufacturer:

For point thinning of major cutting edges, for grinding end cutting edges and corner radii, Hertel SE drill, profile grinding.

## WINTER

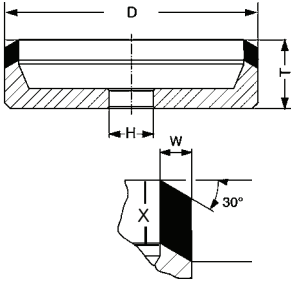
### For HSS tools

Shape	- D	- U	- X	- R	- H	Grit size	Bond	Concentration	ORDER NO.	Remarks
K 14F1	- 100	- 3	- 5	- 1,5	- 20	B107	KSS 12 N	V240A	66260340210	
K 14F1	- 100	- 4	- 5	- 2	- 20	B107	KSS 12 N	V240A	66260116260	
3K 14F1	- 125	- 4	- 5	- 2	- 20	B107	KSS 12 N	V240A	66260352649	
K 14F1	- 150	- 4	- 5	- 2	- 20	B107	KSS 12 N	V240A	66260352648	

Application depending on software of machine manufacturer:

For point thinning of major cutting edges, for grinding end cutting edges and corner radii, Hertel SE drill, profile grinding.

Grinding wheel shape according to FEPA **6V5**



**WINTER**

**For carbide tools**

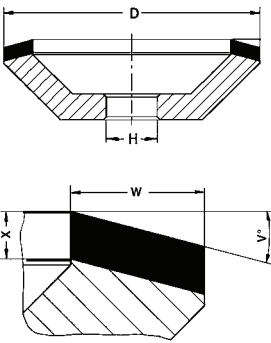
Shape	- D - W - X - V° - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
1K 6V5	- 100 - 4,5 - 10 - 30 - 20	D64	K-plus 1421 R	C100H	66260370517	T = 34

**For HSS tools**

Shape	- D - W - X - V° - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
1K 6V5	- 100 - 4,5 - 10 - 30 - 20	B107	KSS12 N	V240H	66260370513	T = 34

Application depending on software of machine manufacturer:  
For grinding end mills with corner radius.

Grinding wheel shape according to FEPA **12V5**



**WINTER**

**For carbide tools**

Shape	- D - W - X - V° - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
K 12V5	- 100 - 10 - 5 - 20 - 20	D46	K-plus 1421 R	C100H	66260352645	T = 28

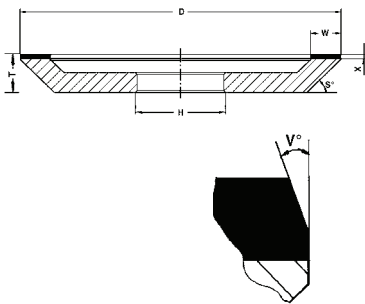
Application depending on software of machine manufacturer:  
For grinding radial relief, periphery, 1<sup>st</sup> relief and radius.

**For HSS tools**

Shape	- D - W - X - V° - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
K 12V5	- 100 - 10 - 5 - 20 - 20	B91	KSS 12 N	V240H	66260127380	T = 28

Application depending on software of machine manufacturer:  
For grinding radial relief, periphery, 1<sup>st</sup> relief and radius.

Grinding wheel shape according to FEPA **12A2**



**WINTER**

**For carbide tools**

Form	- D - W - X - S° - H	Grit size	Bond	Concentration	Order NO.	Remarks
2K 12A2	- 125 - 15 - 3 - 45 - 20	D46	K-plus 1421 R	C100H	66260352597	V=20°, T=26

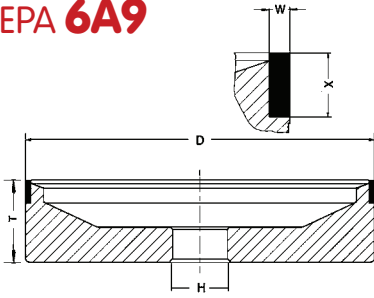
**For HSS tools**

Form	- D - W - X - S° - H	Grit size	Bond	Concentration	Order NO.	Remarks
2K 12A2	- 125 - 15 - 3 - 45 - 20	B91	KSS JY-63	V240H	66260352594	V=20°, T=26
		B91	KSS 12 N	V240H	66260352593	V=20°, T=26

Application depending on software of machine manufacturer:  
For grinding drills (e.g. Hertel SE drill), cone envelope grinding, major cutting edge sharpening.



Grinding wheel  
shape according to  
FEPA **6A9**



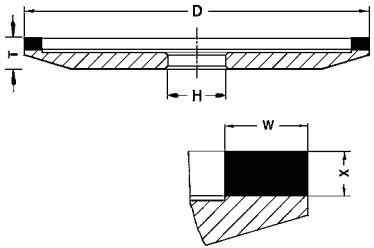
**WINTER**

**For carbide tools**

Shape	- D - W - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
<b>TK 6A9</b>	- 100 - 3 - 10 - 20	<b>D64</b>	<b>K-plus 1421 R</b>	<b>C100H</b>	<b>66260339412</b>	T=30
<b>IK 6A9</b>	- 125 - 3 - 10 - 20	<b>D126</b>	<b>K-plus 920</b>	<b>C100A</b>	<b>60157643461</b>	T=30

Application depending on software of machine manufacturer:  
For grinding 1<sup>st</sup> and 2<sup>nd</sup> relief, periphery, minor cutting edge, full radii corner chamfers of drills and milling cutters.

Grinding wheel  
shape according to  
FEPA **4A2**



**WINTER**

**For carbide tools**

Shape	- D - W - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
<b>K 4A2</b>	- 150 - 4 - 3 - 20	<b>D64</b>	<b>K-plus 1421 R</b>	<b>C100A</b>	<b>66260346957</b>	T=12 <sup>1)</sup>

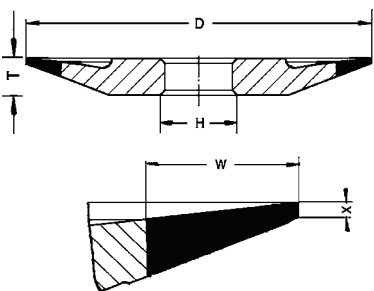
<sup>1)</sup> Delivery within four weeks.

**For HSS tools**

Shape	- D - W - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
<b>K 4A2</b>	- 150 - 4 - 3 - 20	<b>B91</b>	<b>KSS 12 N</b>	<b>V240A</b>	<b>66260127081</b>	T=12

Application depending on software of machine manufacturer:  
For relief grinding on woodworking cutters.

Grinding wheel  
shape according to  
FEPA **4BT9**



**WINTER**

**For HSS tools**

Shape	- D - W - X - H	Grit size	Bond	Concentration	ORDER NO.	Remarks
<b>K 4BT9</b>	- 100 - 10 - 1 - 20	<b>B126</b>	<b>KSS 12 N</b>	<b>V180A</b>	<b>66260132772</b>	T=10

Application depending on software of machine manufacturer:  
For point thinning of drills and milling cutters, relief grinding.

## WINTER cleaning and sharpening stones

### WINTER-Stone No. 1AW (100x20x20)

Cleaning for fine grit, < D46, K-plus bonds.

Order No. 66260395639

### WINTER-Stone No. 2 (100x24x13)

Universal sharpening stone.

Order No. 66260195816

### WINTER-Stone No. 5 (100x50x25)

Universal sharpening stone.

Order No. 66260389054

## flexovit cleaning and sharpening stones

### Stone WA 150 GV (25x25x150)

Cleaning and sharpening of vitrified and resin bond grinding wheels > D64  
Recommended for sharpening Q-Flute<sup>2</sup>

Order No. 69936621643

### Stone WA 220 GV (25x25x150)

Cleaning and sharpening of vitrified and resin bond grinding wheels

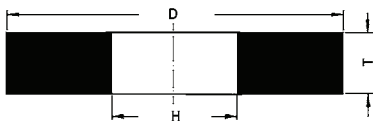
Order No. 69014165446

### Stone WA 320 GV (25x25x150)

Cleaning and sharpening of vitrified and resin bond grinding wheels < D46

Order No. 69936651380

## Grinding wheel 1 (following DIN 69100)



NORTON						
Dressing grinding wheels						
Shape	- D - T - X	Abrasive compound	Grit /Hardness / Bond	Bond	ORDER NO.	Remarks
1	- 250 - 10 - 51	31C	120 JOT 8	V500	66243571002	for Geiger
1	- 200 - 10 - 32	31C	120 JOT 8	V500	69210444752	for Cleveland

Application depending on software of machine manufacturer:  
Dressing grinding wheels for QFlute+ series and all others CNC grinding wheels.