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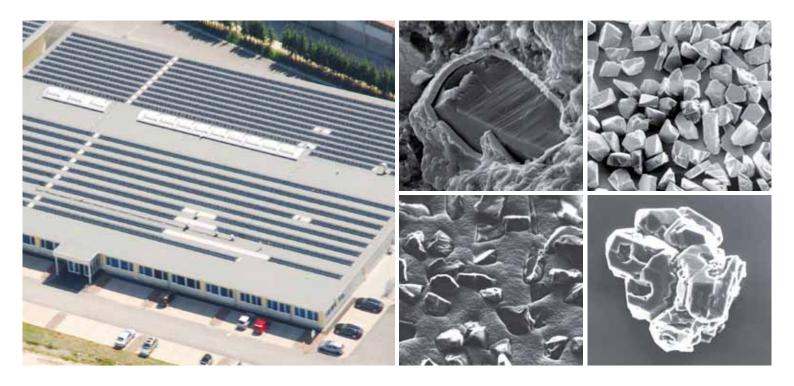
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GENERAL CATALOGUE DIAMOND- AND CBN-TOOLS



The company

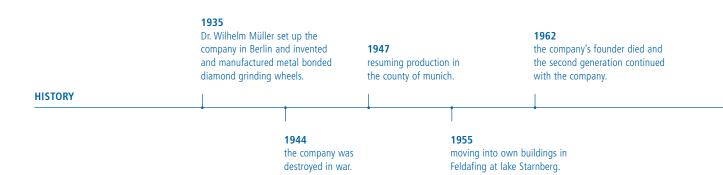
Dr. Müller DIAMANTMETALL[®] AG has a remarkable tradition. Its founder, Dr. Wilhelm Müller, invented the metal-bonded diamond grinding wheel in 1935, laying the foundation stone for the company, and to the present day Dr. Müller DIAMANTMETALL[®] AG remains an owner-operated enterprise, with the third generation of the family in charge of its operations.

At our level the continued success of a supplier of technical solutions stands and falls with the ability to understand and anticipate the specific requirements of a wide range of customers from different industries. Your requirements are our challenge – a challenge we have met from the very earliest days.

Know-How

Thanks to the use of cutting-edge database technology we are today able to draw on expert knowledge acquired over more than 75 years of diamond tool production. Our own R&D department develops innovative solutions to meet the most complex requirements, while countless innovations and patents highlight our creativity when it comes to developing ingenious technical solutions.

This extensive competence in the development of solutions for all application areas guarantees added value from close cooperation with the customer – ensuring the added value that leads to outstanding customer products.





Flexibility

Whether it's a matter of best possible quality or optimum technical reliability, productive processes, long product life, investment security you can rely on, outstanding grinding performance, continuous optimisation or fast new developments: your requirements are our challenge, regardless of batch size. And if needed we can provide you with support services on the spot.

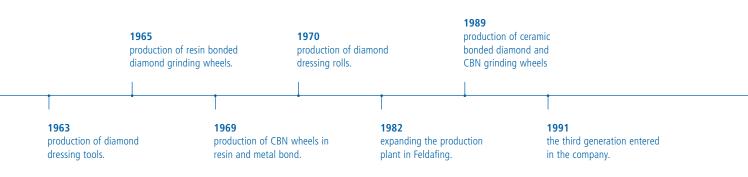
These support services range from training and operator instruction by our experts with experience of a range of industries, right down to backup in the launch phase for new products provided by our applications specialists in order to ensure trouble-free production.

Products

Our product portfolio contains more than 133,000 articles for precision grinding, supported by a powerful database which ensures that each individual series number can be traced back.

The ongoing development of our products by our R&D department ensures that our customers receive maximum efficiency in their grinding operations.

On the 'make or buy' principle we act as your partners not only for standard products but also for complete new developments with outstanding depth of production.





M 1.(

For more than 75 years now we have been guaranteeing our customers the Highest standards of quality and precision. Our expertise was confirmed in the year 2000 by the award of DIN EN ISO 9001 certification, with quality assurance all along the line ensuring the success of your products.

102

ZERTIFIKAT ISO 9001:2008



Dr. MÜLLER DIAMANTMETALL AG Bereiche: Entwicklung, Herstellung und Vertrieb von Diamant- und CBN-Schleifscheiben und Werkzeugen, Diamantwerkzeuge für die optische Industrie, Diamantabrichtrollen und Diamantabrichtwerkzeugen Standort: Leprosenweg 34 * D-82362 Weilheim I. Ob.

DEKR

sen genannten Norm (11/2008) e rde im Rahmen des Zertifizierung intifikat ist nur in Verbindung mit d indet. Der Nachweis wurde im R 004 erbracht. Dieses Zertifkal in A10011004 erbracht. o Alonnichen Durchführu 2000 Aclareit 30310164 19.03.2010

QMS-TGA-ZM-05-91-00

a 20 30.11.2012 10.03.2010



2002

expanding the company to a second plant in Weilheim.

2007

change of corporate form Dr. Wilh. Müller DIAMANTMETALL, Inh. M. Schulze e.K. to Dr. Müller DIAMANTMETALL AG.

2010 Dedication of the new logistic center.

2006

buying and continuation of the company by Michael Schulze. He is the grandchild from company's founder.

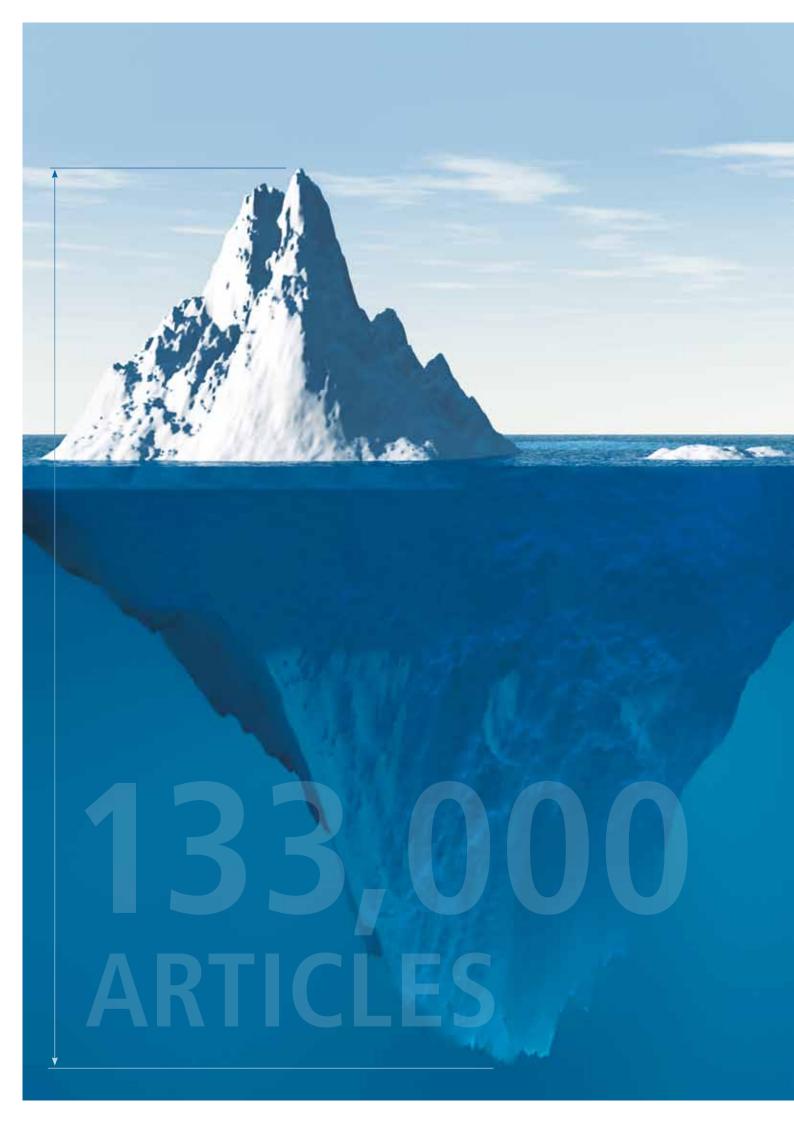
2008 Production and administration moved to the third plant in Weilheim/Obb.

2011

Expansion of the digital production control system and extension of the company management.

Contents

Table of wheel shapes	10	TABLE OF WHEE SHAPES
Diamond- and CBN-tools for general applications	19	GE NERAL APPLICATIONS
Diamond tools for the optical industry	32	OPTICAL INDUSTRY
Diamond- and CBN-tools for the woodworking and plastics industry	49	WOODWORKING AND OPTICAL INDUSTRY PLASTICS INDUSTRY
Diamond- and CBN-tools for internal grinding	54	INTERNAL GRINDING
Diamond files	57	DIAMOND FILES
Diamond profile rolls, Diamond shape rolls	59	DIAMOND PROFILE ROLLS, DIAMOND SHAPE ROLLS
Diamond dressing tools and -abrasives	60	DIAMOND DRESSING TOOLS AND -ABRASIVES
General Informations	65	GENERAL INFORMATIONS



added '-'value.

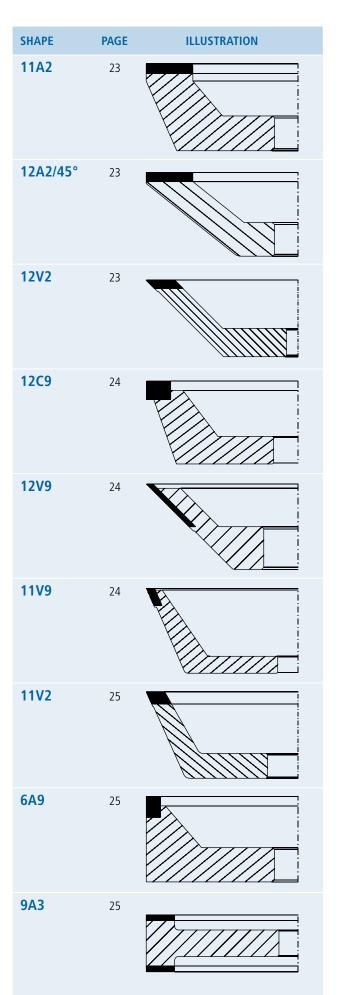
... by state of the art standard products

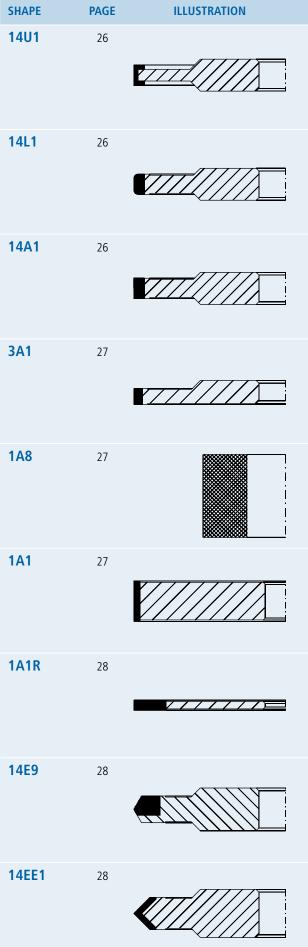
... by developing ingenious and customized technical solutions

Table of wheel shapes

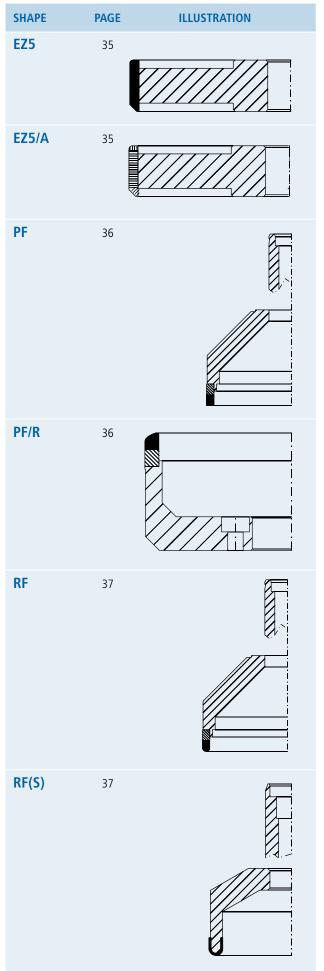
SHAPE	PAGE	ILLUSTRATION	SHAPE	PAGE	ILLUSTRATION
TABLE OF V DIAMOND- AN		HAPES LS FOR GENERAL APPLICATIONS	4BT9	21	
4A2	19		4F9	21	
12A2/20°	19		4ET9	21	
4A5	20		4F5	22	
4Y9	20		4V5	22	
4E9P	20		6A2	22	

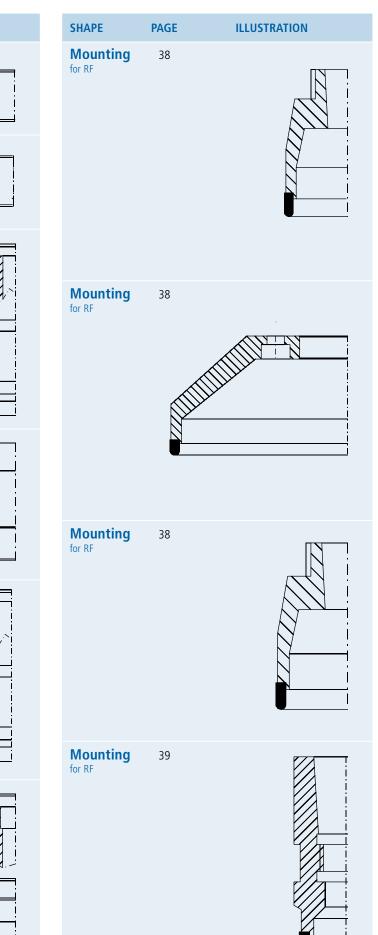




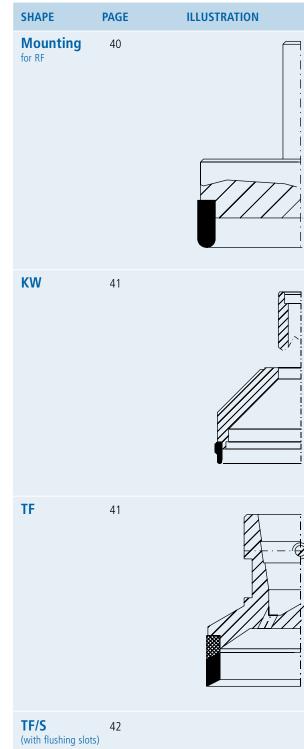


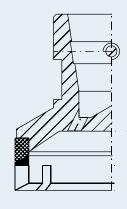
1FF1 29 14F1 29 4A9 29 14V1 30 11V1 30 4B9 30 4B4 31 14K1 31 14K1 31 29 29 20 29 20 29 20 20 21 20 22 20 23 20 24 31 25 21 26 21 27 21 28 21 29 21 20 21 21 21 21 21 21 21 21 21 21 21 21 21 21 21 21 21 22 21 21 21 22 21 23 24 24 25	SHAPE	PAGE	ILLUSTRATION	SHAPE	PAGE	ILLUSTRATION
$ \begin{array}{c} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	1FF1	29				
$\begin{array}{c} 4A9 \\ 29 \\ \hline \\ 14V1 \\ 30 \\ \hline \\ 1V1 \\ 30 \\ \hline \\ 489 \\ 30 \\ \hline \\ 484 \\ 31 \\ \hline \\ 14K1 \\ 31 \\ \hline \\ \\ 14K1 \\ 31 \\ \hline \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ $	14F1	29		E		
14V1 30 1V1 30 4B9 30 4B4 31 14K1 31 4K1 31 4K1 31	4A9	29		F	32	
$1V1 30 \qquad \qquad 1F1 33 \qquad \qquad 1F1 33 \qquad \qquad 1F1 33 \qquad \qquad 1F2 34 \qquad \qquad 1F2 34 \qquad \qquad 1F2 34 \qquad 1F2 3F2 3F2 3F2 3F2 3F2 1F2 3F2 3F2 1F2 1F2$	14V1	30		D	33	
$4B9 \qquad 30$ $4B4 \qquad 31$ $14K1 \qquad 31$ $COUPDENT OF COUPERATION OF COU$	4144			1A1R(S)		
4B4 31 14K1 31 14K1 31	1V1	30		1F1		
14K1 31 EZ3/A 34 EZ4 34	4B9	30		EZ3	34	
14K1 31 EZ3/A 34 EZ4 34	404	24				
EZ4 34	404	31		EZ3/A	34	
4K9 31 EZ4/A 35	14K1	31		EZ4	34	
	4K9	31		EZ4/A	35	

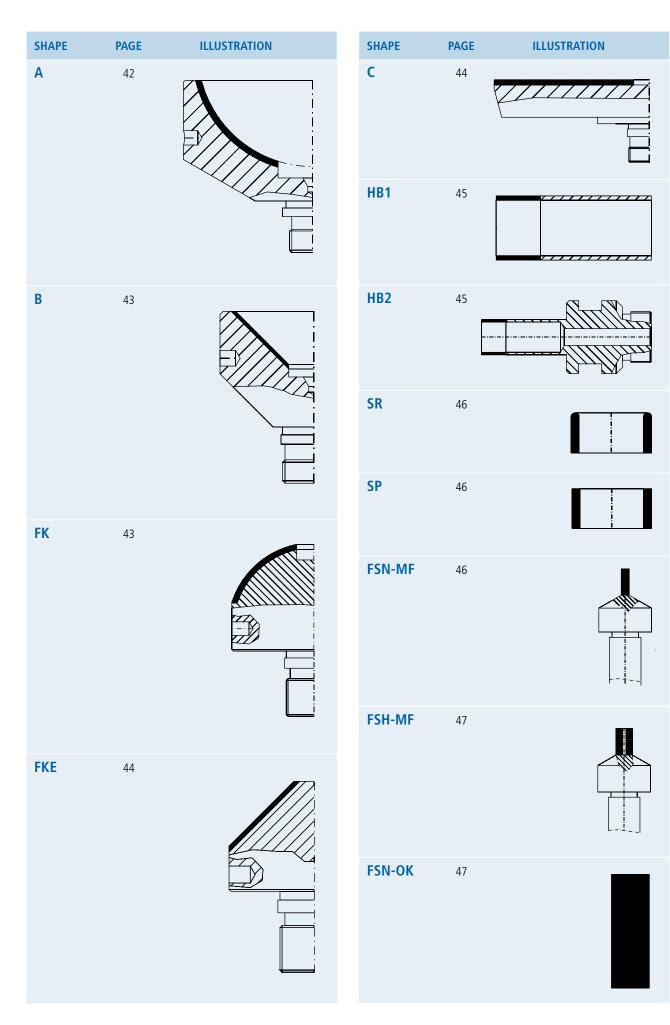


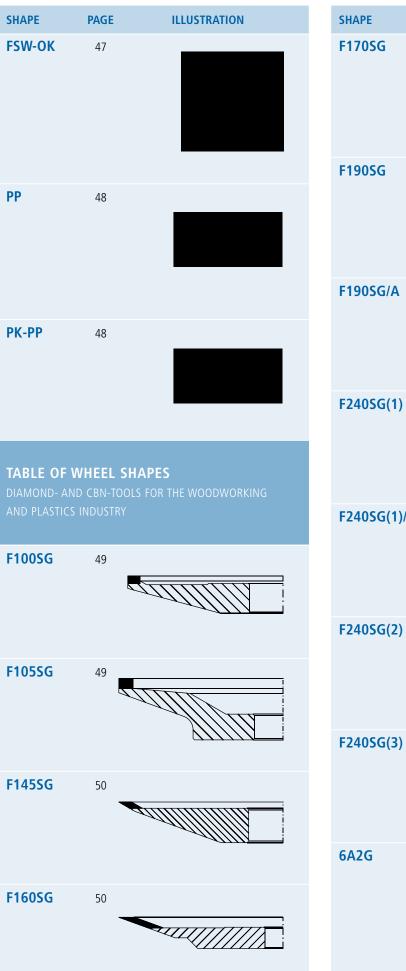


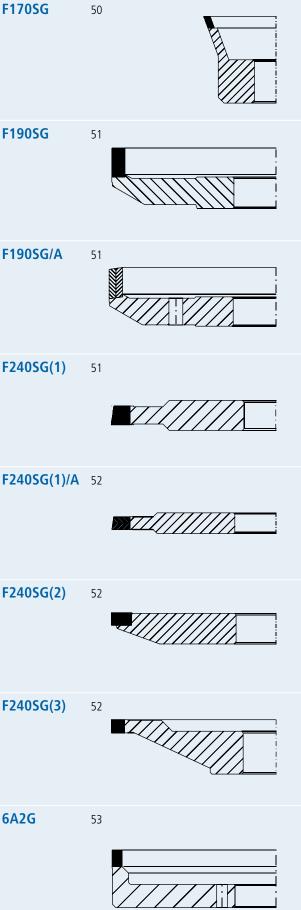
SHAPE	PAGE	ILLUSTRATION
Mounting for RF	39	
Mounting for RF (with bayor	39 net-type fitting)	
Mounting for RF (steep cone	40	
Mounting for RF	40	







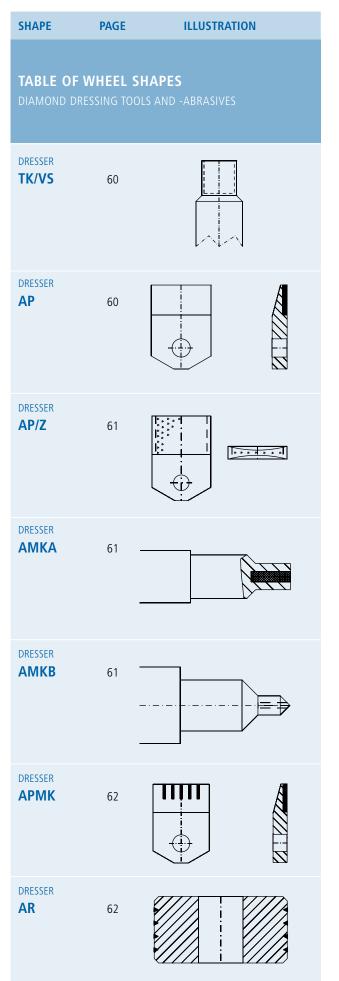


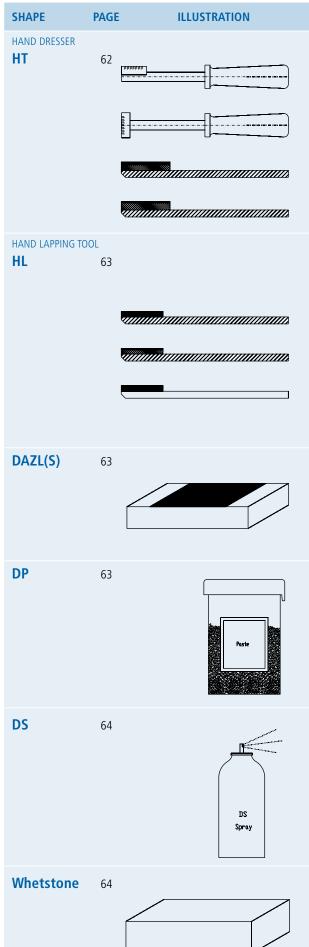


PAGE

ILLUSTRATION

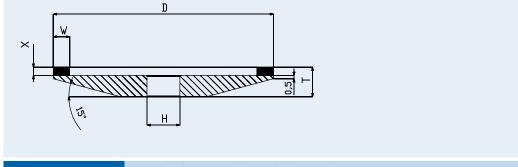
SHAPE	PAGE	ILLUSTRATION	SHAPE	PAGE	ILLUSTRATION
	VHEEL SHAP	ES DR INTERNAL GRINDING	TABLE O	F WHEEL SH A	APES
1A1W	54	///	diamond n NF	EEDLE FILES	
1A1W-1(S)	54		diamond m MF	ACHINE FILES	
1A1W-2(S)	55]	diamond h. HF	AND FILES	
1A1W-ZR(S)	55 •		diamond ri RF	FFLING FILES	► ~
1A1W-PS(S)	55			P F WHEEL SH A PROFILE ROLLS, E	APES DIAMOND SHAPE ROLLS
1A1W-R(S)	56		PRORO	59	
1A1W-S(S)	56		FORO	59	
1A1W-PSU(S) 56				¥////i





TOOLS

For general applications

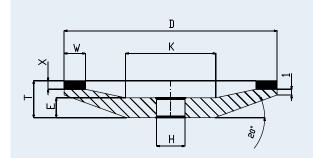


SPECIFICATIONS	DIMENSION BONDS: COOLING:	BONDS: MDT (Resin bond), MDX (Metal bond), MDR (Ceramic bond)										
ORDERING EXAMPLE	SHAPE	D	W	Х	т	Н	BOND	GRIT	CONCENTRATION			
	4A2	125	5	2	7	20	MDT	D64	C75			

Individual tool configuration on request

12A2/20°

4A2



SPECIFICATIONS	DIMENSIO BONDS: COOLING		MDT (Re	D 50-300mm; W 2-20mm; X 1-10mm MDT (Resin bond), MDX (Metal bond), MDR (Ceramic bond) D (Dry), O (Oil), E (Emulsion)									
ORDERING EXAMPLE	SHAPE	D	W	х	т	Н	E	К	BOND	GRIT	CONCENTRATION		
ORDERING EXAMPLE	12A2/20°	200	6	2	10	32	5	64	MDT	D64	C75		

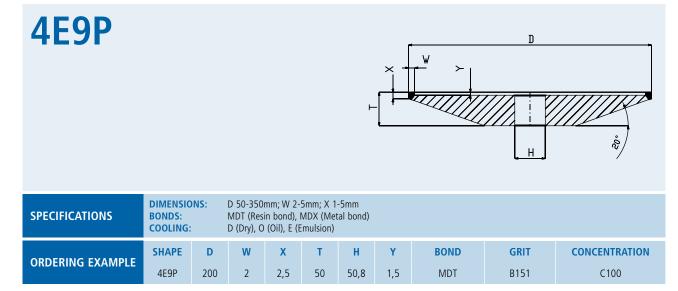
Individual tool configuration on request

GENERAL APPLICATIONS

4A5									-		D J H K	
SPECIFICATIONS D IMENSIONS: BONDS: COOLING: D 50-250mm; W 4-34mm; X 1-6mm MDT (Resin bond), MDX (Metal bond), MDR (Ceramic bond) MDT (Resin bond), MDX (Metal bond), MDR (Ceramic bond)												
ORDERING EXAMPLE	SHAPE	D	W	X	T	H	K	J	Y	BOND	GRIT	CONCENTRATION
	4A5	200	15	1	20	50,8	180	160	I	MDT	B151	C100

4Y9								۲					2
SPECIFICATIONS	DIMENS BONDS: COOLIN		MDT	(Resin	bond), N		tal bond	nm; X 1- d), MDR		c bond)			
ORDERING EXAMPLE	SHAPE 4Y9	D 250	W 30	U 1,5	X 1	т 20	н 20	K 200	J 160	Y 1	BOND MDT	GRIT B151	CONCENTRATION C100

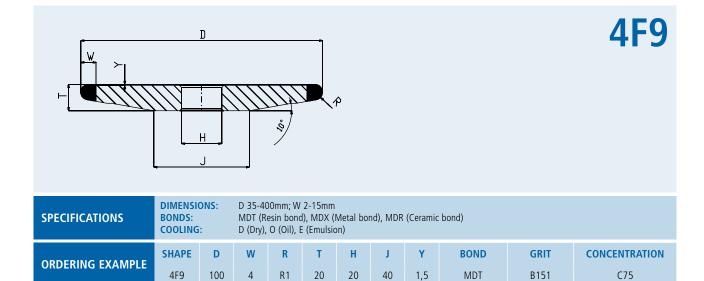
Individual tool configuration on request



4BT9

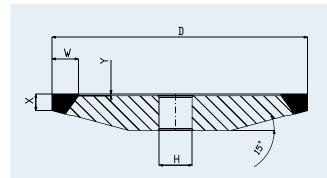
SPECIFICATIONS	DIMENSIC BONDS: COOLING:		D 30-250mm; W 4-15mm; X 0,2-10mm MDT (Resin bond), MDX (Metal bond) D (Dry), O (Oil), E (Emulsion)									
ORDERING EXAMPLE	SHAPE	D	W	Х	т	н	- J -	BOND	GRIT	CONCENTRATION		
	4BT9	100	10	1	20	32	50	MDT	B151	C100		

Individual tool configuration on request



Individual	tool	configuration	on	request

4ET9

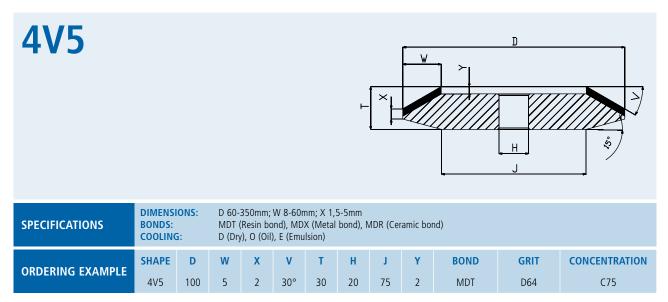


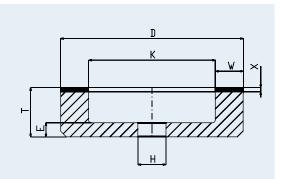
SPECIFICATIONS	DIMENSION BONDS: COOLING:	Ν	50-200mr 1DT (Resin (Dry), O (0	bond), MD	X (Metal b				
ORDERING EXAMPLE	SHAPE	D	W	X	Н	Y	BOND	GRIT	CONCENTRATION
	4ET9	125	5	2	20	1	MDT	D64	C75

Individual tool configuration on request

GENERAL APPLICATIONS

4F5							F				D H J	
SPECIFICATIONS	DIMENS BONDS: COOLING		MDT	(Resin bo	W 3-6m ond), MD), E (Emu	X (Metal	bond), I	MDR (Cer	ramic bor	nd)		
ORDERING EXAMPLE	SHAPE	D	W	R	T	H	J	Y	LY	BOND	GRIT	CONCENTRATION
	4F5	100	5	R2	15	20	75	1,5	2	MDT	D126 Individual t	C75 ool configuration on request



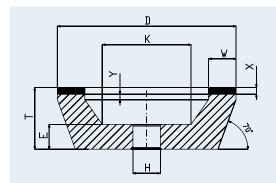


SPECIFICATIONS	DIMENSI BONDS: COOLING		MDT (R	esin bonc				(Ceramic	bond)		
ORDERING EXAMPLE	SHAPE	D	W	X	т	н	E	К	Bond	GRIT	CONCENTRATION
	6A2	150	6	2	40	20	6	138	MDT	D126	C50

Individual tool configuration on request

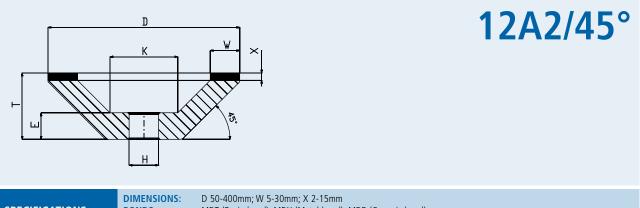
6A2

11A2



SPECIFICATIONS	DIMENS BONDS: COOLING		MDT (Resin bo				/IDR (Cer	amic bor	ıd)		
ORDERING EXAMPLE	SHAPE	D	W	X	т	н	E	К	Y	BOND	GRIT	CONCENTRATION
	11A2	125	12,5	2	60	20	20	62	1,5	MDT	D64	C50

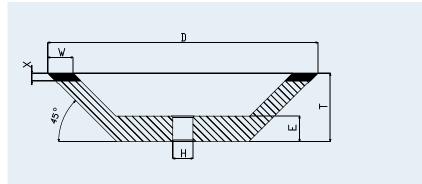
Individual tool configuration on request



SPECIFICATIONS	BONDS: COOLING:	NS:	D 50-400 MDT (Re D (Dry), 0	sin bond)	, MDX (N	letal bon		(Ceramic	bond)		
ORDERING EXAMPLE	SHAPE	D	W	х	т	Н	E	К	BOND	GRIT	CONCENTRATION
	12A2/45°	125	10	2	50	20	20	40	MDT	D126	C75

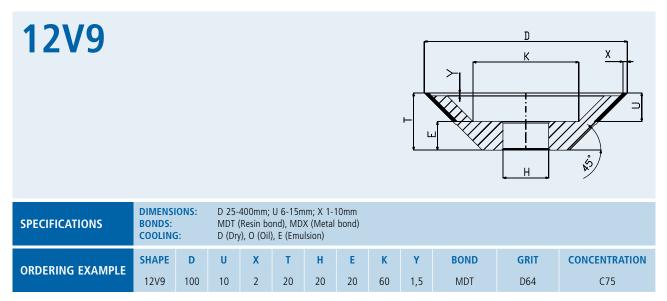
Individual tool configuration on request

12V2

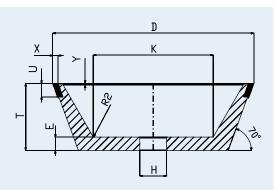


SPECIFICATIONS	DIMENSIO BONDS: COOLING:		D 30-250 MDT (Res D (Dry), O	in bond), I	, MDX (Met		MDR (Cer	amic bond)		
ORDERING EXAMPLE	SHAPE	D	W	Х	Т	н	E	BOND	GRIT	CONCENTRATION
	12V2	100	7	2	40	20	20	MDT	D46	C50

12C9										<u>р</u> К	
SPECIFICATIONS	DIMENSI BONDS: COOLING		MDT (R	esin bonc		Metal boi	nm; X 1-2 nd), MDR		bond)		
ORDERING EXAMPLE	SHAPE 12C9	D 125	W 10	U 4	X 2	V 70	Н 20	К 60	BOND MDT	GRIT D91	CONCENTRATION
	1203	125	10	-1	2	70	20	00	WDI	001	



Individual tool configuration on request

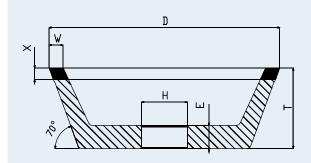


SPECIFICATIONS	DIMENS BONDS: COOLING		MDT (Resin bo		X (Metal	5-10mm bond), N	/IDR (Cei	amic bor	ıd)		
ORDERING EXAMPLE	SHAPE	D	U	X	Т	н	Е	К	Y	BOND	GRIT	CONCENTRATION
	11V9	125	6	3	60	20	20	60	1,5	MDT	D64	C75

Individual tool configuration on request

11V9

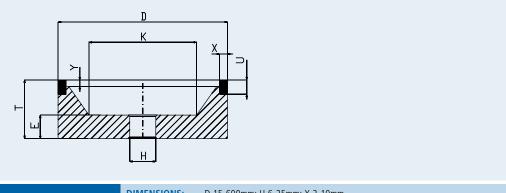
11V2



SPECIFICATIONS	DIMENSIO BONDS: COOLING:		D 15-250 MDT (Res D (Dry), C	in bond),	MDX (Met	tal bond),		amic bond)		
ORDERING EXAMPLE	SHAPE	D	W	X	T	Н	E	BOND	GRIT	CONCENTRATION
	11V2	75	4	3	40	20	10	MDT	D126	C75

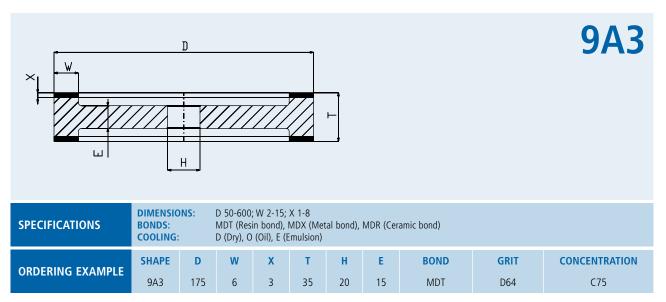
Individual tool configuration on request

6A9

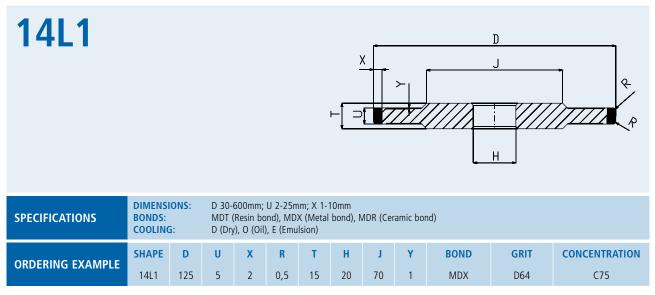


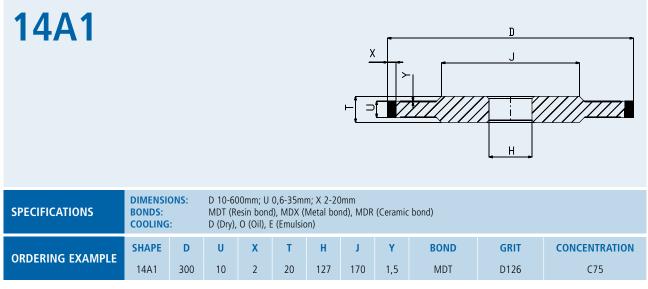
SPECIFICATIONS	DIMENS BONDS: COOLING		D 15-600mm; U 6-25mm; X 2-10mm MDT (Resin bond), MDX (Metal bond), MDR (Ceramic bond) D (Dry), O (Oil), E (Emulsion)												
ORDERING EXAMPLE	SHAPE	D	U	Х	т	н	E	К	Y	BOND	GRIT	CONCENTRATION			
	6A9	125	10	2	60	20	10	75	1,5	MDT	D126	C100			

Individual tool configuration on request

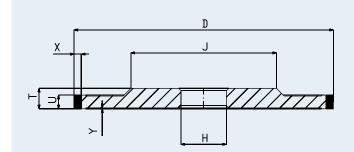


14U1							<u>~</u>]⊂]⊣		<u></u>	D J	×
SPECIFICATIONS	DIMENSI BONDS: COOLING		MDT (R		l), MDX (omm (Ceramic	bond)		
ORDERING EXAMPLE	SHAPE	D	W	U	Х	Т	Н	J	BOND	GRIT	CONCENTRATION
	14U1	125	6	8	2	15	20	70	MDT	D91	C75
										Individual	tool configuration on request





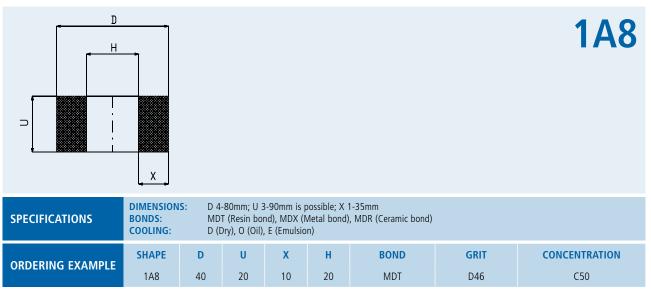
3A1



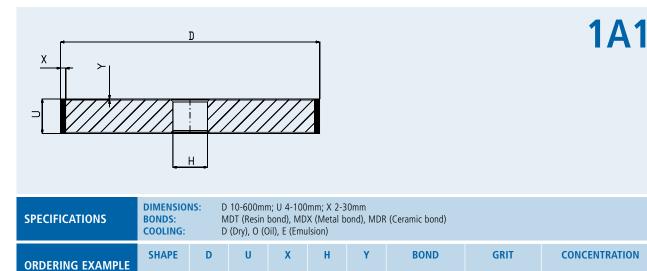
SPECIFICATIONS	DIMENSI BONDS: COOLING		MDT (R		d), MDX ((Ceramic	bond)		
ORDERING EXAMPLE	SHAPE	D	U	X	т	Н	J	Y	BOND	GRIT	CONCENTRATION
	3A1	300	10	2	20	127	170	1,5	MDT	D126	C75

Individual tool configuration on request

GENERAL APPLICATIONS



Individual tool configuration on request



1A1

300

20

2

127

1,5

MDT

D126

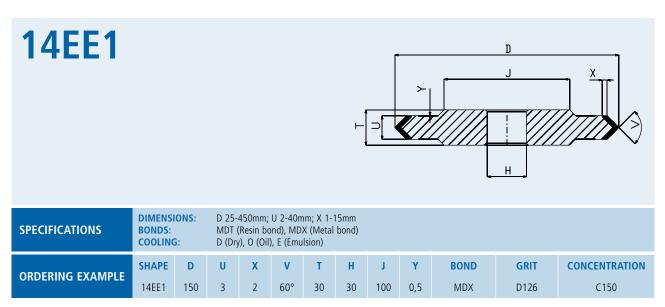
C75

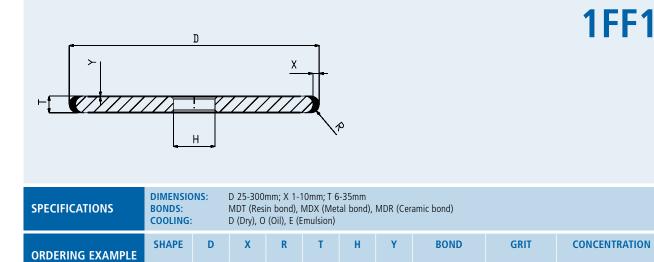
27

1A1R					F	- I									
SPECIFICATIONS	DIMENSIONS:D 75-350mm; X 5-10mm; T 0,8-2,5mmBONDS:MDT (Resin bond), MDX (Metal bond)COOLING:D (Dry), O (Oil), E (Emulsion)														
ORDERING EXAMPLE	SHAPE 1A1R	D 150	X 8	т 1	Н 20	Е 1	Bond Mdt	GRIT D126	CONCENTRATION C75						

14E9							⊢[-				U J H	
SPECIFICATIONS	DIMENS BONDS: COOLING		MDT (350mm; (Resin bo y), O (Oil)	ond), MD	X (Metal						
ORDERING EXAMPLE	SHAPE 14E9	D 75	U 1	X 6	V 60°	T 15	Н 20	J 45	Y 0,5	BOND MDX	GRIT D91	CONCENTRATION C125

Individual tool configuration on request





8

20

0,5

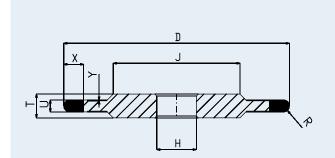
MDT

D126

Individual tool configuration on request

C75

14F1



1FF1

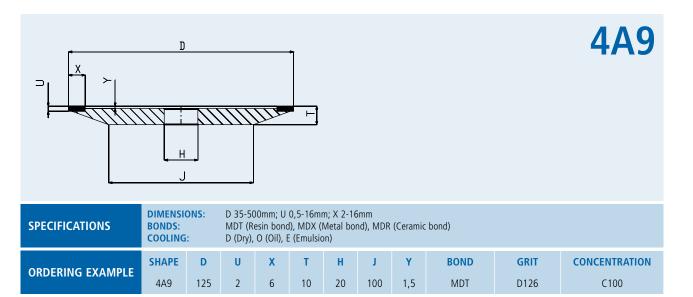
125

2

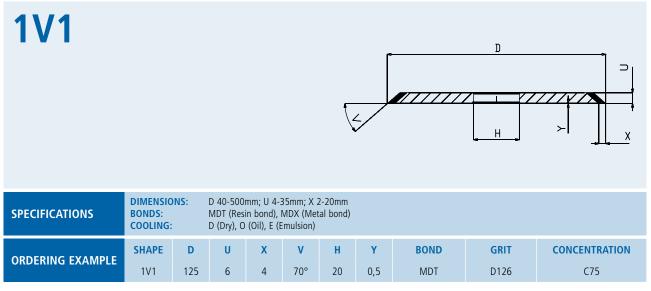
R4

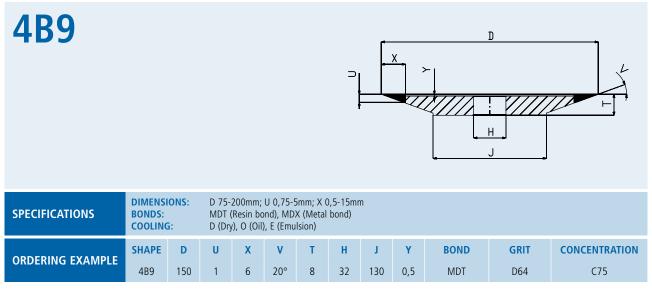
SPECIFICATIONS	DIMENS BONDS: COOLING		MDT (Resin bo	U 0,6-30 ond), MD), E (Emu	X (Metal		/IDR (Cer	ramic bor	ıd)		
ORDERING EXAMPLE	SHAPE	D	U	X	R	т	н	J	Y	BOND	GRIT	CONCENTRATION
	14F1	100	2	3	R1	4	10	75	0,5	MDT	D91	C100

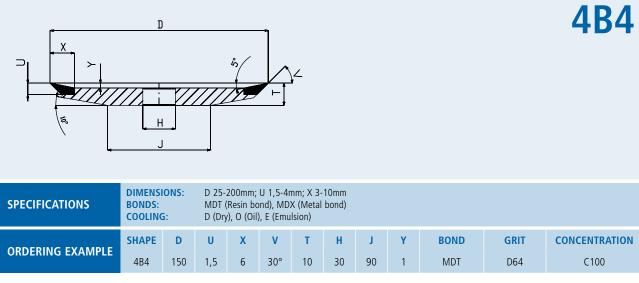
Individual tool configuration on request



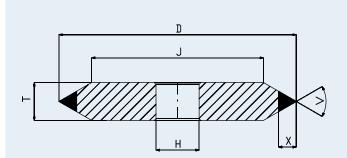
14V1							Ę				D 	
SPECIFICATIONS	DIMENS BONDS: COOLING		MDT (500mm; (Resin bo /), O (Oil)	nd), MD	X (Metal						
ORDERING EXAMPLE	SHAPE 14V1	D 175	U 6	X 2	V 60°	T 10	Н 32	ј 140	Y 0,5	BOND MDT	GRIT B126	CONCENTRATION C100
											Individual t	ool configuration on request







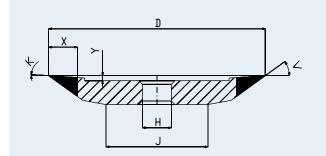
14K1



SPECIFICATIONS	DIMENSIO BONDS: COOLING:		D 35-300 MDT (Res D (Dry), C	in bond),	MDX (Met	al bond)				
ORDERING EXAMPLE	SHAPE	D	X	V	Т	Н	J	BOND	GRIT	CONCENTRATION
	14K1	150	4	30°	8	30	120	MDT	D164	C100

Individual tool configuration on request

4K9



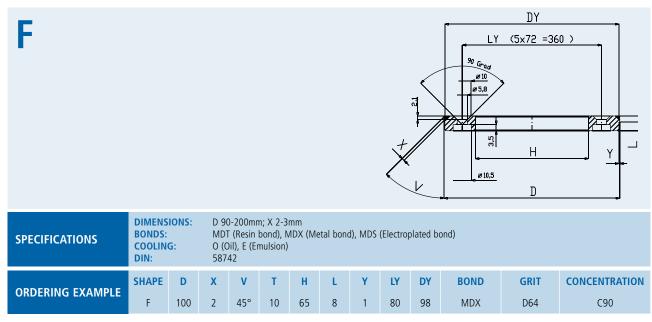
SPECIFICATIONS	DIMENSI BONDS: COOLING		MDT (R	esin bonc	2-20mm I), MDX (I E (Emulsic	Metal bor	nd)				
ORDERING EXAMPLE	SHAPE	D	Х	v	н	К	J	Y	BOND	GRIT	CONCENTRATION
	4K9	150	7	20°	30	5°	95	2,5	MDT	D64	C100

TOOLS

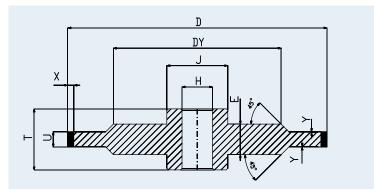
For the optical industry

SPECIFICATIONS D 60-210mm; U 4-60mm; X 1-4mm MDT (Resin bond), MDX (Metal bond), MDS (Electroplated bond) O (Oil), E (Emulsion) ORDERING EXAMPLE SHAPE D U X T H E J Y DY BOND GRIT CONCENTRATION	E								=					
ORDERING EXAMPLE	SPECIFICATIONS	BONDS: COOLIN		MDT O (C	「 (Resin Dil), E (Ei	bond), N	1DX (Me			(Electrop	plated bo	ond)		
	ORDERING EXAMPLE	SHAPE E	D 100	U 8	X 1	T 25	н 25	E 15	J 45	Y 20	DY 55	BOND MDX	GRIT D64	CONCENTRATION

Individual tool configuration on request



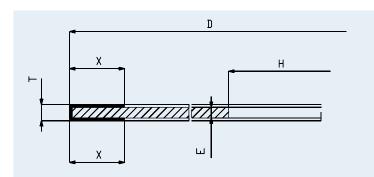
D



SPECIFICATIONS	DIMENS BONDS: COOLIN DIN:		MD	Г (Resin Dil), Е (Е	m; U 2-5 bond), N mulsion)	1DX (Me			(Electro	olated bo	ond)		
ORDERING EXAMPLE	SHAPE	D	U	X	т	Н	E	J	Y	DY	BOND	GRIT	CONCENTRATION
	D	160	8	2	35	20	20	30	1	90	MDX	D64	C90

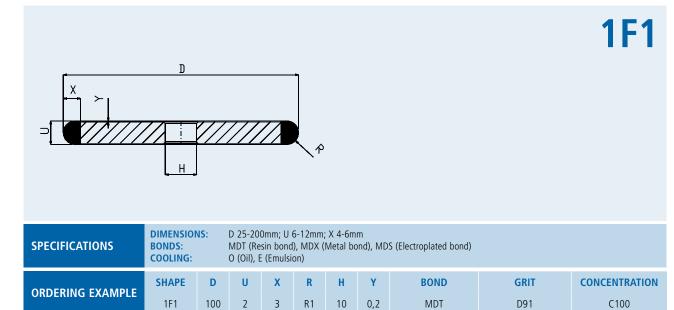
Individual tool configuration on request

1A1R(S)



SPECIFICATIONS	DIMENSION BONDS: COOLING:	N	IDS (Electro	nm; X 5-10 oplated bo Dil), E (Emu	nd)			
ORDERING EXAMPLE	SHAPE	D	Х	т	Н	E	BOND	GRIT
	1A1R(S)	150	10	0,8	20	0,65	MDS	D126

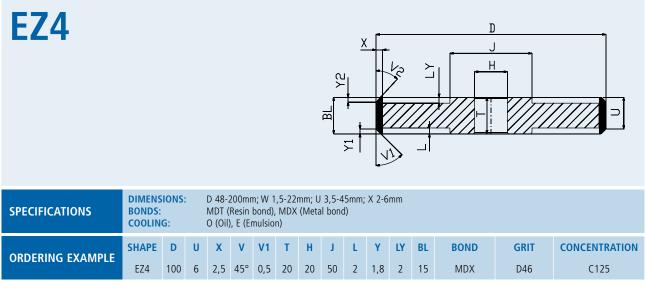
Individual tool configuration on request

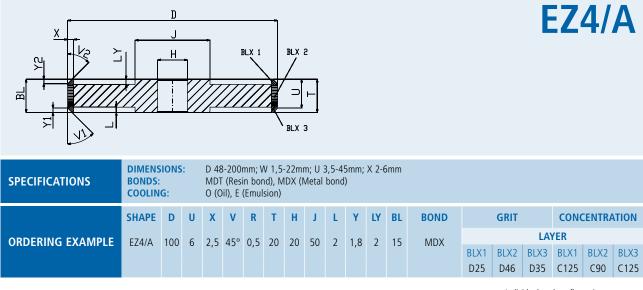


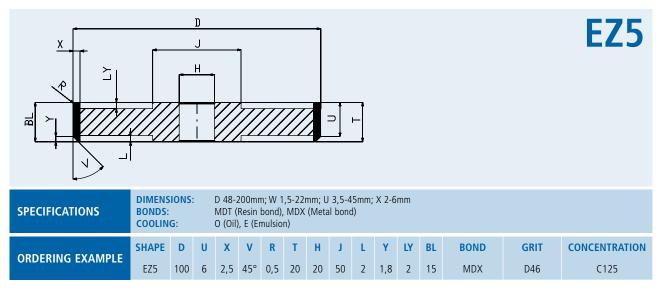
EZ3									H	> _	<					
SPECIFICATIONS	DIMENS BONDS COOLIN			D 48-2 MDT (F O (Oil),	Resin	bond),	MDX						ated bo	ond)		
ORDERING EXAMPLE	SHAPE EZ3	D 100	W 5	U 15	X 1	V 45°	T 20	н 20	ј 50	L 2	Y 5	LY 1	BL 20	BOND MDX	GRIT D46	CONCENTRATION C125

EZ3/A									Ē		×							BLX 1		LX 2 LX 3
SPECIFICATIONS	DIMENS BONDS: COOLIN	:	:	MDT	(Res	mm; V in bor (Emul:	nd), N					X 1-6	Smm							
	SHAPE	D	W	U	X	v	Т	H	J	L	Y	LY	BL	BOND		GRIT			ENTR/	TION
ORDERING EXAMPLE	EZ3/A	100	5	15	1	45°	20	20	50	2	5	1	20	MDX	BLX1	BLX2	BLX3	YER BLX1	BLX2	BLX3
															D25	D46	D35	C125	C90	C125

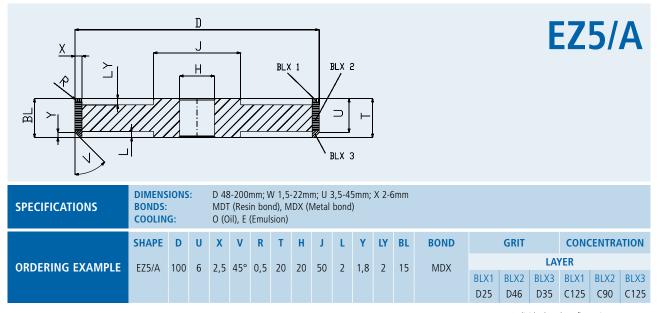
Individual tool configuration on request

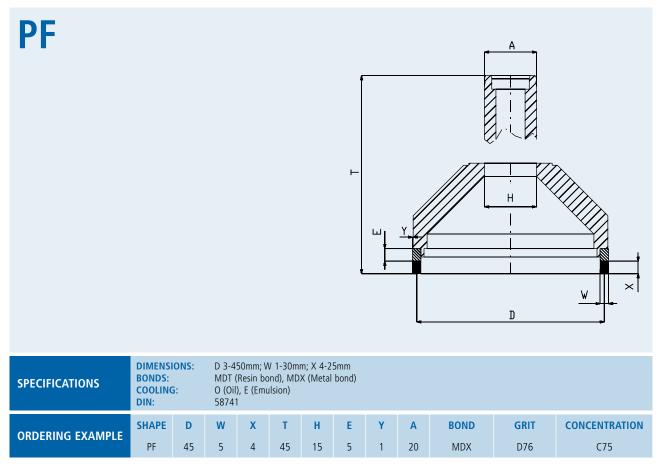


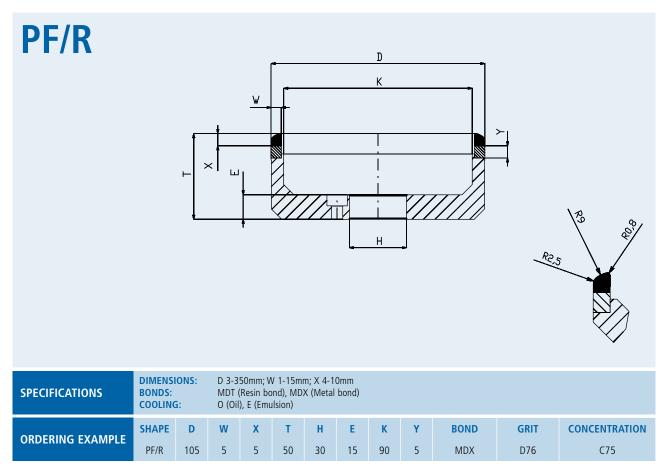




Individual tool configuration on request







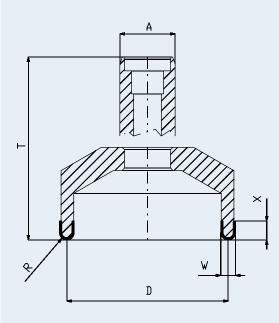
RF

SPECIFICATIONS	DIMENS BONDS: COOLINE DIN:		MDT O (C	D 3-350mm; W 1-10mm; X 4-10mm MDT (Resin bond), MDX (Metal bond) O (Oil), E (Emulsion) 58741										
ORDERING EXAMPLE	Shape RF	D 20	W 5											

Individual tool configuration on request

RF(S)

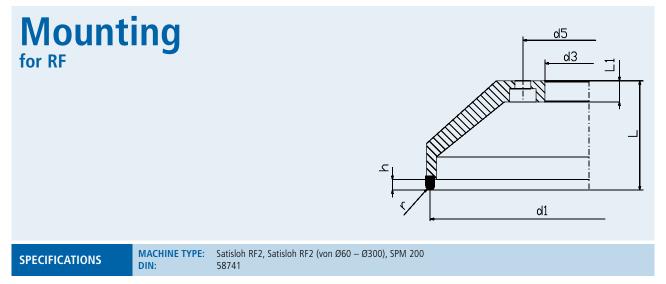
OPTICAL INDUSTRY



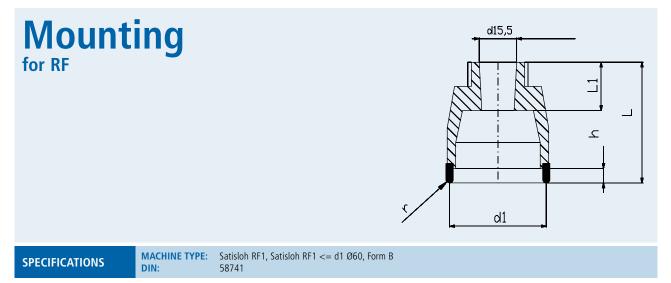
SPECIFICATIONS	DIMENSIO BONDS: COOLING:		D 3-300mm; W 1-10mm; X 2-4mm MDS (Electroplated bond) O (Oil), E (Emulsion)											
ORDERING EXAMPLE	SHAPE	D	W	Х	R	т	Α	BOND	GRIT					
	RF(S)	20	5 4 2,5 30 10 MDS D64											

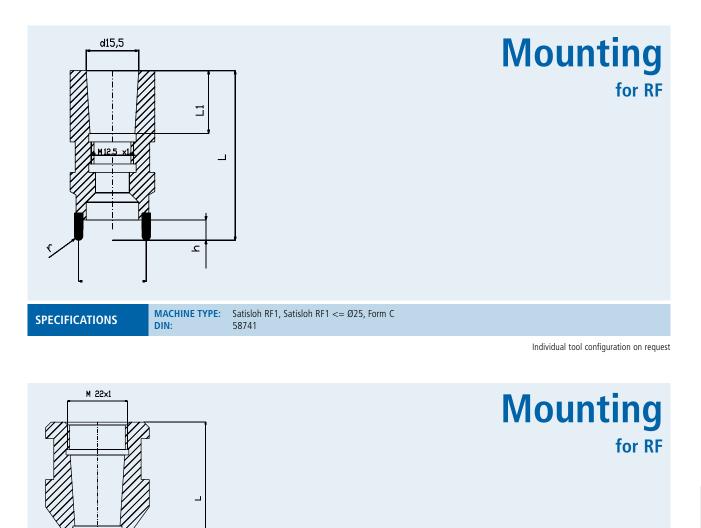
Ø 15,5 20 27,67	L1 22 27 37	ting		
SPECIFICAT	IONS	MACHINE TYPE: DIN:	CMV, FS3, FSK 200, FSK 300 58741	Individual tool configuration on request

5 .



Individual tool configuration on request



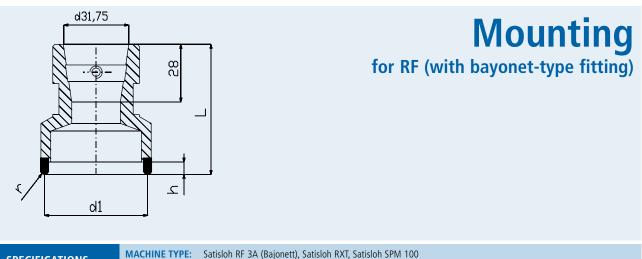


MACHINE TYPE: Satisloh RF1S, RX-SPH SPECIFICATIONS DIN: 58741

أع

d1

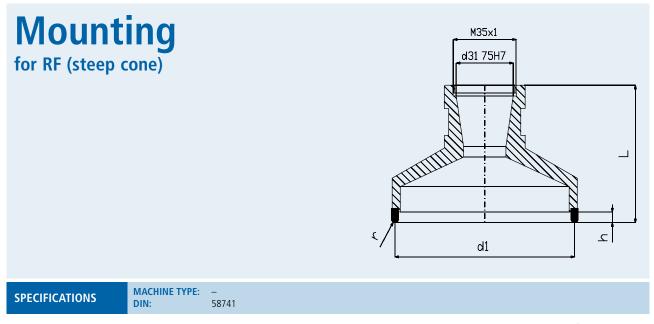
Individual tool configuration on request



SPECIFICATIONS

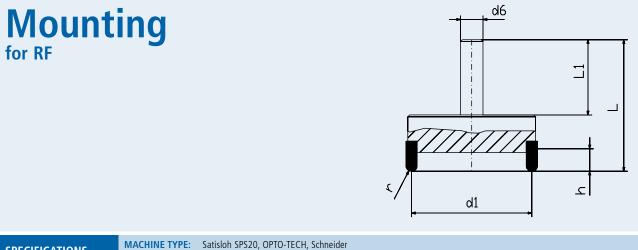
DIN:

Satisloh RF 3A (Bajonett), Satisloh RXT, Satisloh SPM 100 58741





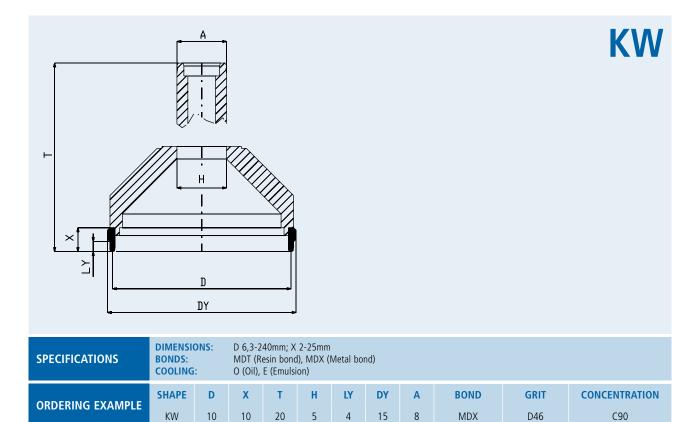
Individual tool configuration on request



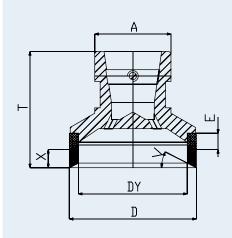
SPECIFICATIONS

DIN:

58741



TF



SPECIFICATIONS	DIMENSI BONDS: COOLING		D 60-112mm; X 8-10mm MDT (Resin bond), MDX (Metal bond), MDS (Electroplated bond) O (Oil), E (Emulsion)											
ORDERING EXAMPLE	SHAPE	D	X	V	т	E	DY	Α	BOND	GRIT	CONCENTRATION			
	TF	103	8	30°	100	8	90	80	MDX	D181	C35			

ORDERING EXAMPLE

TF/S

103

8

30°

100

8

90

80

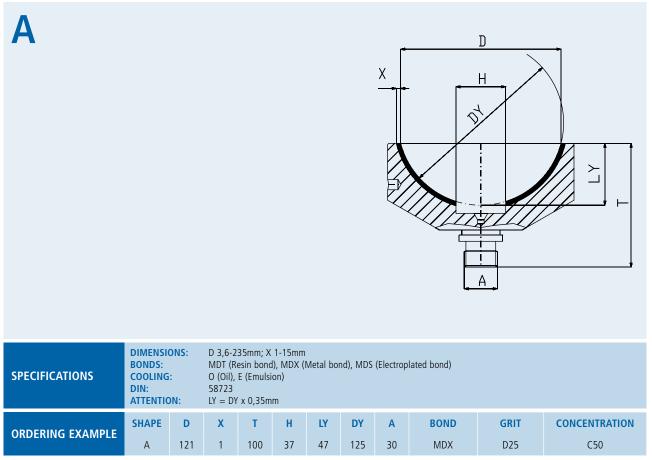
MDX

D181

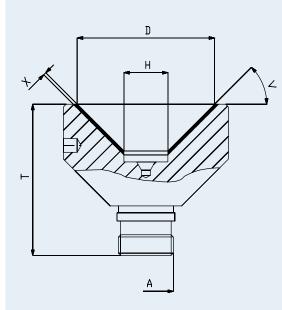
TF/S with flushing s	lots	F	×								
SPECIFICATIONS	DIMENSIO BONDS: COOLING		MDT (Re	2mm; X a esin bond E (Emulsi	I), MDX (I	Metal boi	nd), MDS	(Electrop	lated bond)		
	SHAPE	D	Х	V	т	E	DY	Α	BOND	GRIT	CONCENTRATION

Individual tool configuration on request

C35

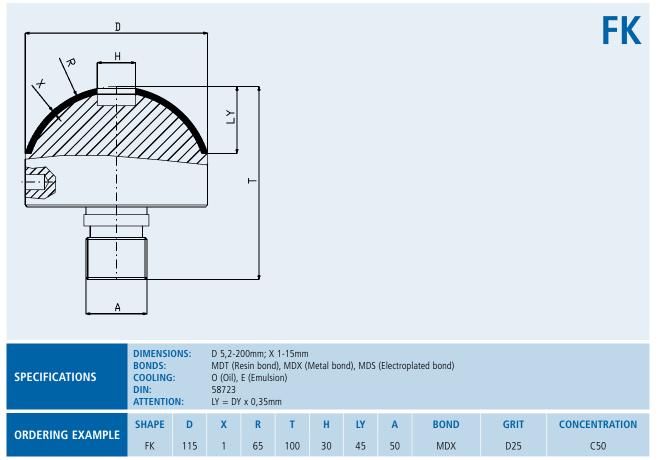


B



SPECIFICATIONS	DIMENSIO BONDS: COOLING: DIN:		D 10-200mm; X 1-1,5mm MDT (Resin bond), MDX (Metal bond), MDS (Electroplated bond) O (Oil), E (Emulsion) 58723										
ORDERING EXAMPLE	SHAPE B	D 25	X V T H A BOND GRIT CONCENTRATION 1 45° 40 8 20 MDX D15 C50										

Individual tool configuration on request



ORDERING EXAMPLE

FKE

70

1

90°

90

40

60

MDX

D15

FKE							F			
SPECIFICATIONS	DIMENSIC BONDS: COOLING: DIN:		MDT (Res	nm; X 1-61 sin bond), (Emulsion	MDX (Met	tal bond),	MDS (Elec	ctroplated bond)		
	SHAPE	D	Х	V	т	н	А	BOND	GRIT	CONCENTRATION

Individual tool configuration on request

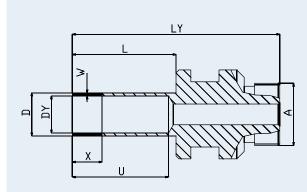
C50

C							۲			
SPECIFICATIONS	DIMENSIO BONDS: COOLING: DIN:		D 35-410 MDT (Resi D (trocken 58723	n bond),	MDX (Met	tal bond),		troplated bond)		
ORDERING EXAMPLE	SHAPE	D	W	X	т	Н	А	BOND	GRIT	CONCENTRATION
	С	75	27,5	2	40	20	30	MDX	D15	C50

									HB1
SPECIFICATIONS	DIMENSIO BONDS: COOLING:	Ν) 2,5-100m /IDX (Metal) (Oil), E (Ei	bond), MI	nm; X 5-10 DS (Electro	mm plated bon	d)		
ORDERING EXAMPLE	SHAPE	D	W	х	L	DY	BOND	GRIT	CONCENTRATION
	HB1	20	1	10	40	18	MDX	D126	C50
								La alta d	dual tool configuration on request

HB2

OPTICAL INDUSTRY



SPECIFICATIONS	DIMENSIO BONDS: COOLING		D 2,5-100; W 1-2mm; X 5-10mm MDX (Metal bond), MDS (Electroplated bond) O (Oil), E (Emulsion)										
ORDERING EXAMPLE	SHAPE HB2	D 30	W 1	W U X L LY DY BOND GRIT CONCENTRATION 1 30 10 25 50 28 MDX D126 C50									

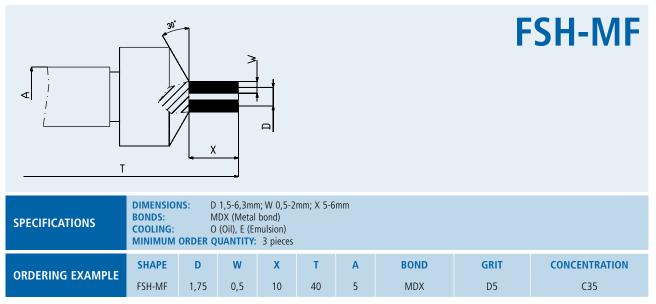
SR							×	D V
SPECIFICATIONS	DIMENSION BONDS: COOLING: D AFTER DI	MD 0 (0	T (Resin bo Dil), E (Emu	/ 1-20mm;) nd), MDX (I Ision)				
ORDERING EXAMPLE	SHAPE SR	D 10	W 2	X 6	R 1	BOND MDX	GRIT D46	CONCENTRATION C75
	511	10	2	0	•	DA		di idual taal aa firmatian an marat

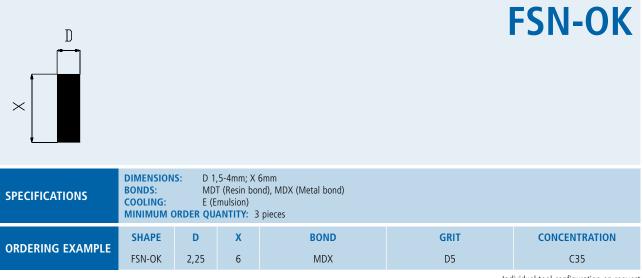
Individual tool configuration on request

SP						×							
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING: D AFTER DIN:	MDT (O (Oil)	D 3-200mm; W 1-20mm; X 6-15mm MDT (Resin bond), MDX (Metal bond) O (Oil), E (Emulsion) 58741										
ORDERING EXAMPLE	SHAPE SP	D 50	W 3	X 6	BOND MDX	GRIT D46	CONCENTRATION C75						

Individual tool configuration on request

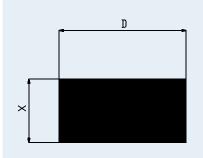
FSN-M	F							
SPECIFICATIONS	DIMENSION BONDS: COOLING: MINIMUM (MD 0 (0	Dil), E (Emu	nd), MDX (I Ision)	vletal bond)			
ORDERING EXAMPLE	SHAPE FSN-MF	D 2,25	X 6	т 30	A 10	BOND MDX	GRIT D5	CONCENTRATION C35





Individual tool configuration on request

FSW-OK



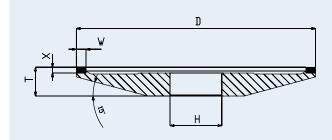
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING: MINIMUM ORD	MDT (Re O (Oil), E	D 4-125mm; X 2-35mm MDT (Resin bond), MDX (Metal bond) O (Oil), E (Emulsion) QUANTITY: 5 pieces								
ORDERING EXAMPLE	SHAPE	D	x	BOND	GRIT	CONCENTRATION					
	FSW-OK	10	10	MDX	D5	C35					

PP					×	D
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING: MINIMUM ORI DIN:	MDT (Re D (Dry), (D (Oil), E (Emu		imic bond)	
ORDERING EXAMPLE	SHAPE PP	D 8	X 3	BOND MDX	GRIT D10	CONCENTRATION C35

PK-PP					×	D
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING: MINIMUM ORE DIN:	MDX (M O (Oil), E	ım; X 2-6mm etal bond) E (Emulsion) I TY: 50 piece	S		
ORDERING EXAMPLE	SHAPE PP-PK	D 8	X 3	BOND MDX	GRIT D10	CONCENTRATION C35

TOOLS

For the woodworking and plastics industry

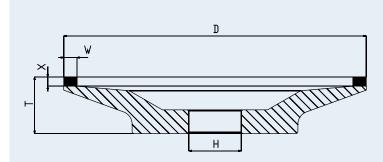


SPECIFICATIONS	DIMENSION BONDS: COOLING: RECOMMEN	N	9 50-200mr /IDT (Resin 9 (Dry), O (0 1 MACHIN	bond) Dil), E (Emu	ilsion)		/ollmer-Biberach, Volli	mer-Dornhan, WIDM <i>i</i>	4	
ORDERING EXAMPLE	SHAPE	D	W	х	т	н	BOND	GRIT	CONCENTRATION	
	F100SG 100 5 2 10 20 MDT D46 C50									

Individual tool configuration on request

F100SG

F105SG

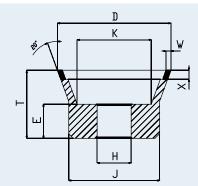


SPECIFICATIONS	DIMENSION BONDS: COOLING: RECOMME	N D	75-200mr IDT (Resin (Dry), O (C MACHINI	bond) Dil), E (Emu	ilsion)		iversal-Werkzeugschl	eifmaschinen	
ORDERING EXAMPLE	SHAPE	D	W	Х	т	н	BOND	GRIT	CONCENTRATION
	F105SG	125	5	4	23	20	MDT	D64	C75

F145S0	G			, T				D H	300°			
SPECIFICATIONS	SPECIFICATIONS D 75-200mm; W 2-8mm; X 2-4mm BONDS: MDT (Resin bond) COOLING: D (Dry), O (Oil), E (Emulsion) RECOMMENDATION MACHINE TYPE: WIDMA, Akemat, Vollmer-Biberach, Vollmer-Dornhan, WIDMA											
ORDERING EXAMPLE	SHAPE F145SG	D 125	W 8	X 4	Т 26	н 20	BOND MDT	GRIT D64	CONCENTRATION C75			

F160S	G						×				L H
SPECIFICATIONS	DIMENSI BONDS: COOLING RECOMM	i:	MDT (R D (Dry),	00mm; X esin bond O (Oil), I CHINE TY	d) E (Emulsi	on)		′ollmer-Bil	berach, Vollmer-Do	rnhan, Universal-	Werkzeugschleifmaschinen
ORDERING EXAMPLE	SHAPE F160SG	D 75	W 7,1	X 2,3	V 25°	Т 26	н 20	E 19	BOND MDT	GRIT D64	CONCENTRATION C75

Individual tool configuration on request

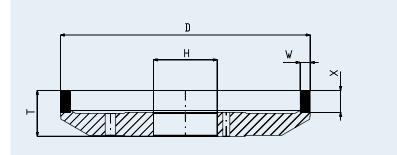


SPECIFICATIONS	DIMENSIONS: D 40mm; W 2mm; X 5mm BONDS: MDT (Resin bond) COOLING: D (Dry), O (Oil), E (Emulsion) RECOMMENDATION MACHINE TYPE: Universal-Werkzeugschleifmaschinen											
ORDERING EXAMPLE	SHAPE	D	W	X	т	н	E	к	ј	BOND	GRIT	CONCENTRATION
	F170SG	40	2	5	22	10	10	24	32	MDT	D64	C75

Individual tool configuration on request

F170SG

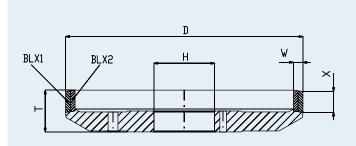
F190SG



SPECIFICATIONS	DIMENSION BONDS: COOLING: RECOMMEN	N D	75-125mr IDT (Resin (Dry), O (0 MACHIN	bond) Dil), E (Emu	llsion)		lmar-Dornhan, WIDM	IA	
ORDERING EXAMPLE	SHAPE	D	U	Х	т	Н	BOND	GRIT	CONCENTRATION
	F190SG	125	6,5	3	18	32	MDT	D54	C100

Individual tool configuration on request

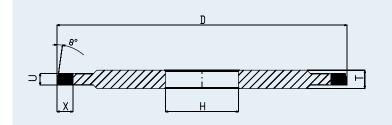
F190SG/A



SPECIFICATIONS	DIMENSIONS: BONDS: COOLING: RECOMMEND	MD ⁻ D ([T (Resin Dry), O (C	, bond))il), E (Em			, Vollmar-Dornhan, WIDI	MA			
	SHAPE	D U X T H BOND GRIT CONCENTRA									TRATION
ORDERING EXAMPLE	F190SG/A	125	5 6	5	18	32	MDX	LA		YER	
	115050/11	123	Ū	5	10	52	mbx	BLX1	BLX2	BLX1	BLX2
	D46 D126 C75 C100										

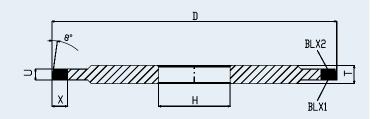
Individual tool configuration on request

F240SG(1)



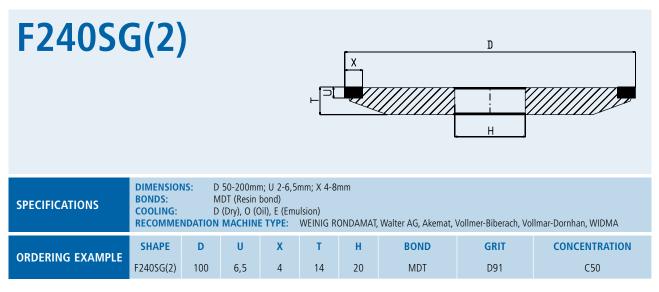
SPECIFICATIONS	DIMENSION BONDS: COOLING: RECOMMEN	N D	D 50-200mm; U 2-6,5mm; X 4-8mm MDT (Resin bond) D (Dry), O (Oil), E (Emulsion) TION MACHINE TYPE: WEINIG RONDAMAT, Walter AG, Akemat, Vollmer-Biberach, Vollmar-Dornhan, WIDMA								
ORDERING EXAMPLE	SHAPE	D	U	Х	т	Н	BOND	GRIT	CONCENTRATION		
	F240SG(1)	127	7	5	8	32	MDT	D54	C125		

F240SG(1)/A

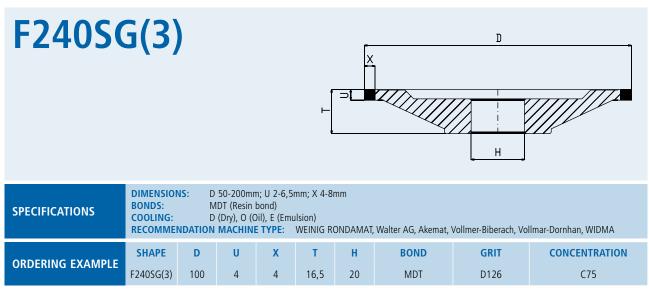


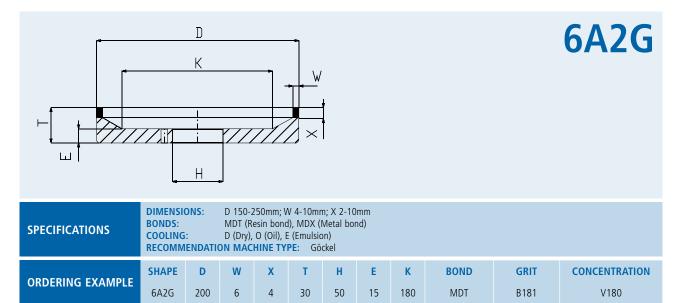
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING: RECOMMENDA	BONDS: MDT (Resin bond)									
	SHAPE	D	U	Х	т	Н	BOND	GF	RIT	CONCEN	TRATION
ORDERING EXAMPLE	F240SG(1)/A	127	7	5	8	32	MDX		LA	YER	
	121030(1)//	121	,	5	5	52	mbA	BLX1	BLX2	BLX1	BLX2
								D46	D107	C75	C100

Individual tool configuration on request



Individual tool configuration on request



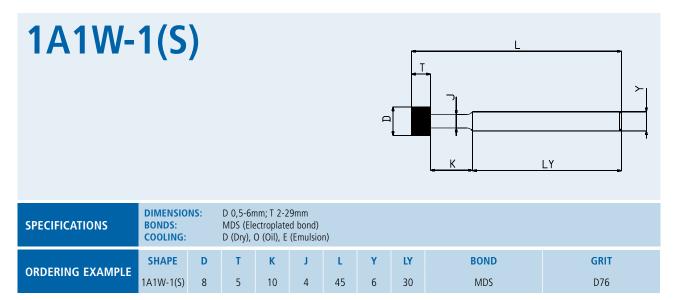


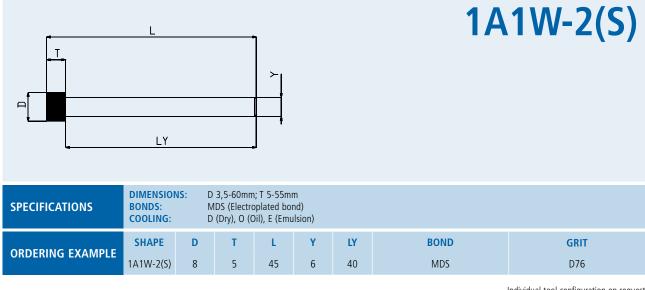
DIAMOND- AND CBN-TOOLS

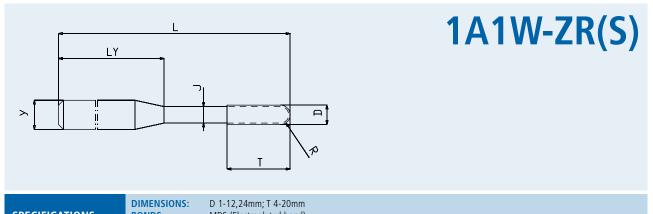
For internal grinding

1A1W									× J			л к	L E LY	
SPECIFICATIONS	DIMENS BONDS: COOLIN		ME	DX (Met	tal bon		R (Cerar	6-200n nic bon						
ORDERING EXAMPLE	SHAPE 1A1W	D 6,5	X 1,75	T 3	E 30	К 7	ј 4	L 45	Y 6	LY 35	DY 3	BOND MDT	GRIT D76	CONCENTRATION C125

Individual tool configuration on request



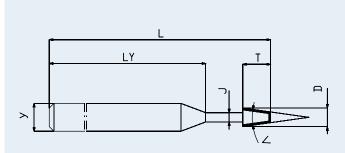




SPECIFICATIONS	BONDS: COOLING:	MDS (Electroplated bond) D (Dry), O (Oil), E (Emulsion)									
ORDERING EXAMPLE	SHAPE	D	R	т	J	L	Y	LY	BOND	GRIT	
	1A1W-ZR(S)	4	2	20	3,5	60	6	30	MDS	D126	

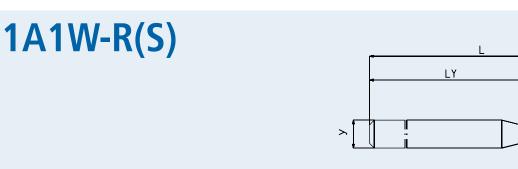
Individual tool configuration on request

1A1W-PS(S)



SPECIFICATIONS	DIMENSIONS: BONDS: COOLING:	MD	D 2,8-38mm; T 3-16mm MDS (Electroplated bond) D (Dry), O (Oil), E (Emulsion)								
ORDERING EXAMPLE	SHAPE	D	V	Т	J	L	Y	LY	BOND	GRIT	
	1A1W-PS(S)	4	10°	10	3	50	6	30	MDS	D126	

1A1W-PSU(S)



SPECIFICATIONS	DIMENSIONS: BONDS: COOLING:	MD	-25,3mm; T S (Electropla Dry), O (Oil),	ated bond)						
ORDERING EXAMPLE	SHAPE	D	R	Т	J	L	Y	LY	BOND	GRIT
	1A1W-R(S)	4	2	3,5	3	50	6	30	MDS	D126

Individual tool configuration on request

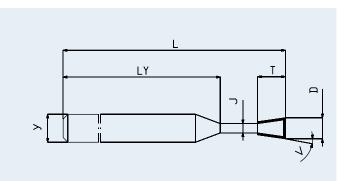
Т

Р

7

1A1W-	S(S)				>		LY			
SPECIFICATIONS	DIMENSIONS BONDS: COOLING:	MD	S (Electrop)	,75-100mm ated bond) , E (Emulsio						
ORDERING EXAMPLE	SHAPE 1A1W-S(S)	D 4	V 30°	Т 8	J 3	L 50	Y 6	LY 30	BOND MDS	GRIT D126

Individual tool configuration on request



SPECIFICATIONS	DIMENSIONS: BONDS: COOLING:	MDS	50mm; T 6- (Electropla ry), O (Oil),)					
ORDERING EXAMPLE	SHAPE	D	V	т	J	L	Y	LY	BOND	GRIT
	1A1W-PSU(S)	4	8°	8	3	50	6	35	MDS	D126

DIAMOND FILES

DIAMOND NEEDLE FILES (S)



SPECIFICATIONS	GRITS: PROFILE SHAPE:	D91; D126; D151 Flat, square, triangular, round, half round, oval, sword, beret, cutting edge,
		flat and rounded, flat / pointed

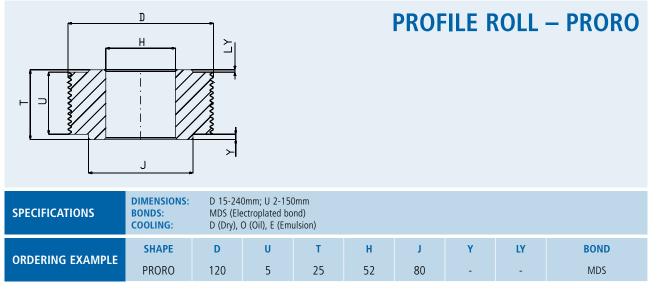
Individual tool configuration on request

DIAMOND MACHINE FILES (S)

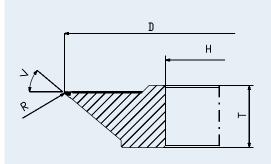
D91; D126; D151 **GRITS**: SPECIFICATIONS PROFILE SHAPE: Flat, square, triangular, round, half round

DIAMOND	HAND I	FILES (S)	
SPECIFICATIONS	GRITS: PROFILE SHAPE:	D91; D126; D151 Flat one side, flat both sides, flat all sides, triangular, square, round, cutting edge	
		1	ndividual tool configuration on request
DIAMOND	RIFFLE		
SPECIFICATIONS	GRITS: PROFILE SHAPE:	D91; D126; D151 Flat blunt, triangular, square, oval/straight, oval/bent, round/straight, round/be	nt

DIAMOND PROFILE ROLLS, DIAMOND SHAPE ROLLS



Individual tool configuration on request



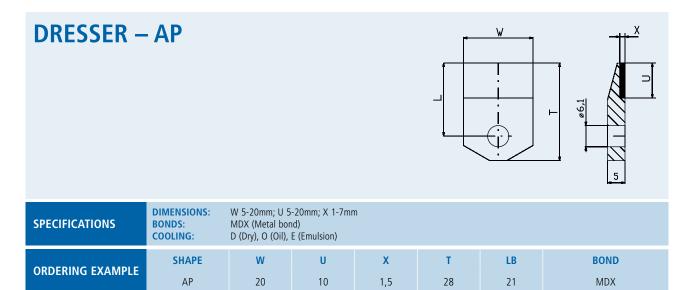
SHAPE ROLL – FORO

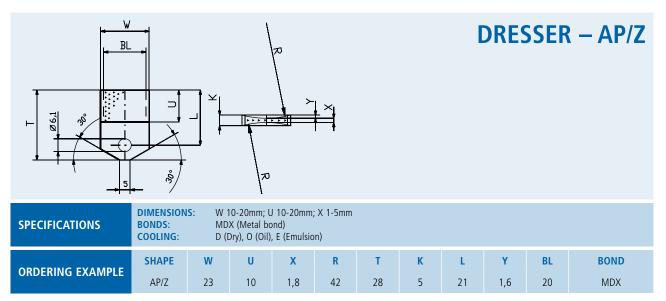
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING:	D 30-400mm MDS (Electroplat D (Dry), O (Oil),					
ORDERING EXAMPLE	Shape	D	V	R	т	н	BOND
	Foro	130	30	0,25	10	40	MDS

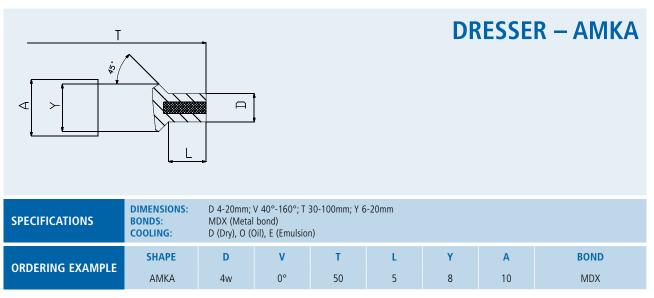
DRESSING TOOLS AND DIAMOND ABRASIVES

DRESSER –	TK/VS			F		×
SPECIFICATIONS	BONDS:	D 4-16mm; X 4-14mr MDX (Metal bond) D (Dry), O (Oil), E (Em				
ORDERING EXAMPLE	SHAPE TK/VS	D 8	X 8	т 200	Y 12	BOND MDX

Individual tool configuration on request

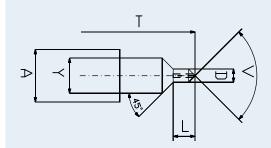






Individual tool configuration on request





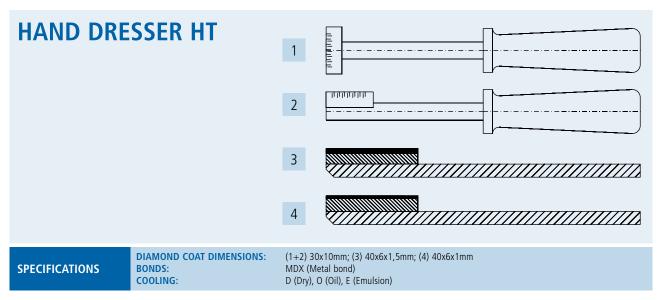
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING:	D 4-20mm; V 40°-160°; T 30-100mm; Y 6-20mm MDX (Metal bond) D (Dry), O (Oil), E (Emulsion)						
ORDERING EXAMPLE	SHAPE	D	V	т	L	Y	А	BOND
	АМКВ	4w	90°	50	5	8	10	MDX

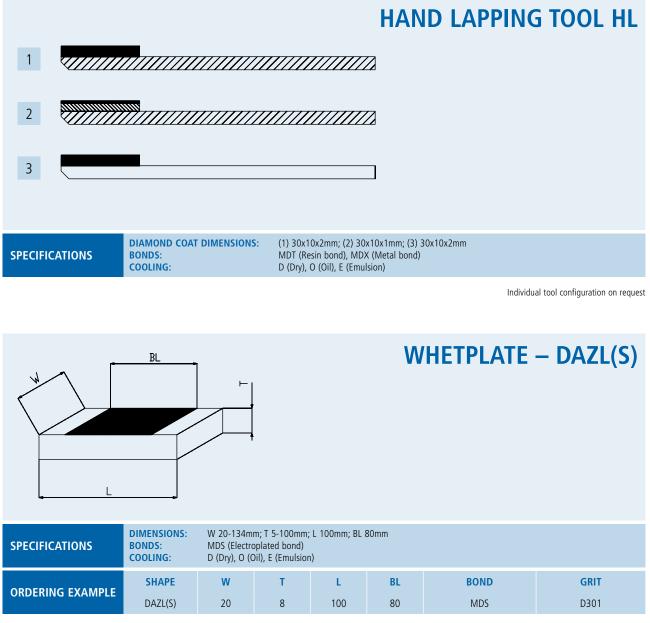
DIAMOND DRESSING TOOLS AND -ABRASIVES

DRESSER –							
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING:	W 10-20mm; U MDX (Metal bor D (Dry), O (Oil),	nd)	-5mm			
ORDERING EXAMPLE	SHAPE	w	U	х	т	L	BOND
	АРМК	20	10	1	28	21	MDX
						Ind	ividual tool configuration on request

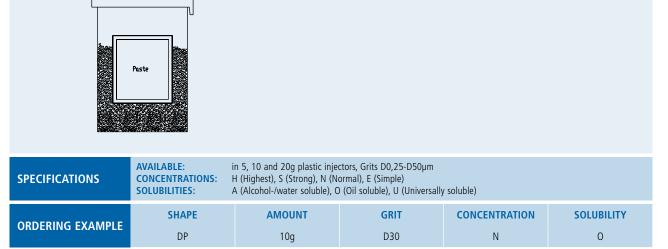
DRESSER –						
SPECIFICATIONS	DIMENSIONS: BONDS: COOLING:	MDX (25mm; X 8mm Metal bond)), O (Oil), E (Emulsion)			
ORDERING EXAMPLE	SHAPE AR		D 18	X 8	Н 6,4	BOND MDX

Individual tool configuration on request





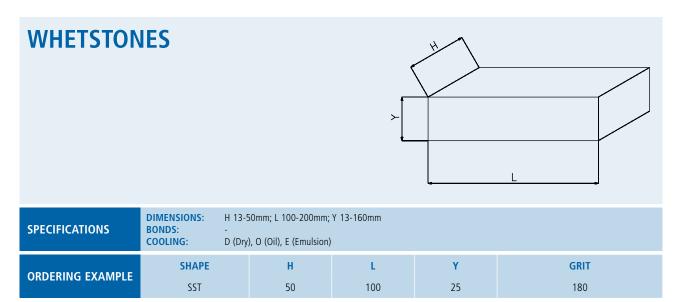
DIAMOND PASTES – DP



Individual tool configuration on request

DIAMOND DRESSING TOOLS AND -ABRASIVES

DIAMOND SPRAY – DS						
SPECIFICATIONS	AVAILABLE: GRIT SIZES: SOLUBILITIES:	in 165ml fin D0,25-D15µ A (Alcohol-/\	ble)			
ORDERING EXAMPLE	SHAPE DS		AMOUNT 165ml	GRIT D9	SOLUBILITY A	



GENERAL INFORMATIONS

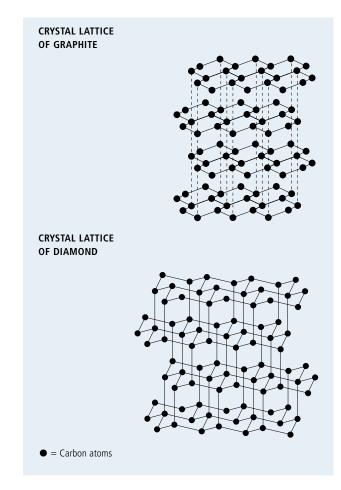
Diamond	66
CBN	66
Application range for diamond- and CBN-wheels	67
Selection criteria for diamond- and CBN-wheels	67
1. Shape	67
2. Dimensions	68
3. Diamond- and CBN- grit sizes	69
4. Bonds	70
5. Concentration	70
6. Ordering examples	71
7. Instructions for application of diamond and CBN wheels	73

Diamond

Due to its hardness, diamond is an ideal abrasive for very hard materials. Almost 90% of the diamonds nowadays used in grinding tools are manufactured synthetically. The basic material is graphite which is transformed into the crystal lattice of the diamond with the aid of pressure and temperature in the presence of catalysts. On account of the controlled synthesis it is possible to produce diamonds with specific grinding properties for the most diverse bonding systems and grinding operations.

Whilst in metal bonds the diamonds are usually employed without a covering, with resin bonds, diamonds coated in nickel and copper are used in the majority of cases. Mainly the uneven surface of these coats reinforce the fixation of the diamonds in the bonds and quicken the heat dissipation.

Synthetic diamonds are produced in diverse qualities and grit sizes.

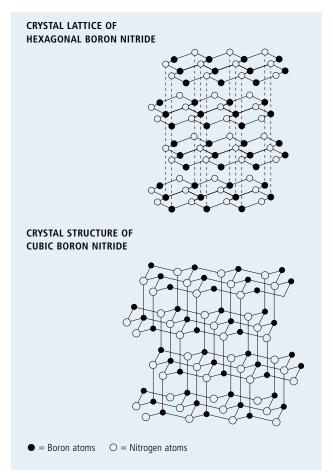


CBN

Cubic crystalline boron nitride presently is the second hardest material after diamonds.

It is synthesized from the hexagonal boron nitride (a nitrogen boron compound) under pressure and temperature in the presence of catalysts, similar as diamond is synthesized.

Also cubic crystalline boron nitride is available in diverse qualities and grit sizes, and nickel-coated. The preferred application of CBN is grinding HSS qualities and of hardened steels.



Application ranges for diamond- and CBN-wheels

DIAMOND WHEELS ARE EMPLOYED FOR GRINDING:

- hard metal
- cermet
- hard metal / steel combinations
- glass
- sapphire
- quartz
- ceramic materials of all kinds
- ferrotitanite
- carbide-based powder coatings
- graphite
- polycrystalline diamond and CBN blanks
- ceramic magnetic materials
- + glass- and carbon-fibre reinforced synthetic materials
- tungsten carbide

CBN WHEELS ARE EMPLOYED FOR GRINDING:

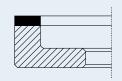
- hardened high-speed steels (HSS)
- high-alloyed tool steels with at least 55 HRC
- case-hardened steels
- iron-based powder coatings
- chill castings
- soft steels in certain applications
- stellite
- surgeon steel
- PM-steels

Selection criteria for diamond and CBN wheels

Below, we have compiled the most important selection criteria for diamond and CBN wheels:

1. SHAPE

The shape of the various diamond/CBN wheels is expressed by a combination of figures and letters (e.g.: 6 A 2).



As a rule, the shape is determined by the workpiece, the machine and the grinding method. It is advisable to use a wheel shape as stable as possible to avoid oscillations during grinding. The carrier for the grinding wheels are made of different materials, depending on the bonds.

BOND	BODY MATERIAL		
Resin bond (MDT)	Aluminium		
	Aluminium/resin		
	Graphite/resin		
Metal bond (MDX)	Steel		
	Bronze		
Ceramic bond (MDR)	Aluminium		
	Steel		
S-bond (MDS)	Aluminium		
	Steel		

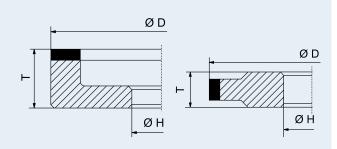
The basis for this designation system is the FEPA standard (Fédération Européenne des Fabricants de Produits Abrasifs / cf. also DIN standard 69800 and following). First choose the wheel shape suited for your grinding job. In the chart for wheel shapes on pages 10–17 the standard shapes are compiled; if you require different shapes, this can be done anytime. In that event, please let us have your sketch or drawing.

The selection of the suitable wheel carrier is done by us, corresponding to the wheel shape as well as to thermal stress and mechanical load.

2. DIMENSIONS

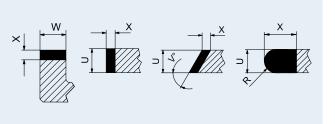
THE MOST RELEVANT DIMENSIONS FOR A DIAMOND/CBN WHEEL ARE:

- ${\mbox{\bullet}}$ the diameter ${\mbox{D}}$
- the total height T
- $\bullet\,$ the bore ${\bf H}$



AND THE DIMENSIONS OF THE DIAMOND/CBN LAYER:

- the width of the layer **W** or **U**
- the layer depth X
- the profile angle V°
- ${\mbox{\bullet}}$ the radius ${\mbox{\bf R}}$



2A. DIAMETER D

Determine the diameter in accordance with the grinding operation you have to perform, with your machine, and with our cutting speed operations on page 70. The larger the wheel diameter, the more economically you will grind, thanks to the then more favourable thermal and kinematic conditions. You will find the possible dimensions among the individual shapes.

2B. TOTAL HEIGHT T

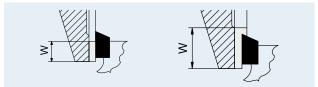
This dimension, in general, is determined in response to diameter and layer dimensions. Deviations are possible, however, for cases of limited space in the machine or of the workpiece. When placing your order, please point this out by providing exact space requirements.

2C. BORE H

We manufacture the bores of our diamond- and CBN wheels conforming to quality H6. Against extra charge, we are also prepared to deliver our wheels with individual bore dimensions.

2D. LAYER WIDTHS W AND U

The layer widths W for front end layers and U for peripheral layers depend on the grinding operation to be performed. On principle, when grinding with diamond or CBN wheels, the contact surfaces should be as small as possible. Small layers allow faster and cooler grinding with cup wheels and plate-shaped wheels. The chip flow is better, and the wheel gives a feeling of improved performance. A broader layer is preferable in off-hand grinding, as a better guidance is provided. The layer width should always be smaller than the workpiece to be ground.



If the layer width is larger than the workpiece to be ground, a shoulder is formed in the layer, which damages the cutting edges.

2E. LAYER DEPTHS X

Always choose a big X-dimension. The manufacturing costs are almost the same - whether the wheel has a layer depth of, e.g., X = 2 or 4 or 6 mm. The price difference then only results from the different diamond or CBN content. Bigger layer depths thus are considerably more economical.

2F. PROFILE ANGLE V°

Please consider the angle position with wheel type 1V1 respectively 14V1. The angle indication always relates to the angle formed – cf. drawing on page 29.

2G. RADIUS R

For the wheel shapes 1FF1 and 14F1 (p. 28) we have restricted ourselves to the most common radii. However, particularly with type 14F1 almost all wheel diameters and intermediate radius sizes can be manufactured.

3. DIAMOND AND CBN GRIT SIZES

In order to meet the various grinding requirements, there are available a great number of sizes. These sizes have been compiled in a standard by the FEPA (Fédération Européenne des Fabricants de Produits Abrasives).

For diamond and CBN the same grit sizes apply. Diamond grit is identified by a preceding D (e.g. D 126), CBN by a B (e.g. B 126).

The sizes shown in table are mesh sizes. For comparison, we have also included the American standard ASTM E11.

For finer grit sizes than D46/B46, the above range is continued by the fine grit sizes. Grading is essentially done by charging with water.

The grit size both determines the abrasive performance of diamond and CBN wheels as well as the surface quality achieved thereby on the workpiece. Higher abrasive performance is generally obtained with coarser grit sizes. With finer grit sizes the grinding quality is improved, but the abrading performance is reduced.

FEPA / DIN-STANDARD U.S.-STANDARD ASTM E11 (mesh) DIAMOND AND CBN NOMINAL MESH WIDTH µm ISO R565 - 1990 NARROW WIDE NARROW WIDE NARROW WIDE NARROW WIDE D1181 D1182 1180/1000 1180/850 16/18 16/20 D1001 18/20 1000/850 D851 D852 850/710 850/600 20/25 20/30 D711 D711 710/600 25/30 D601 D602 600/500 600/425 30/35 30/40 500/425 D501 35/40 D426 D427 B426 B427 425/355 425/300 40/45 40/50 B356 45/50 D356 355/300 B301 D301 300/250 50/60 D251 D252 B251 B252 250/212 250/180 60/70 60/80 D213 B213 212/180 70/80 B181 D181 180/150 80/100 D151 B151 150/125 100/120 D126 120/140 B126 125/106 D107 B107 106/90 140/170 B91 90/75 D91 170/200 D76 B76 75/63 200/230 D64 B64 63/53 230/270 D54 B54 53/45 270/325 D46 B46 45/38 325/400

MESH GRIT SIZES*)

FINE GRIT SIZES*)

DIAN	IOND	CBN			
DR. MÜLLER DESIGNATION	AVERAGE GRIT SIZE RANGE µm	DR. MÜLLER DESIGNATION	AVERAGE GRIT SIZE RANGE μm		
D35	30-40				
D20	15-25	B30	25-35		
D15	10-20	B15	10-20		
D9	6-12	В9	6 – 12		
D6	4-8				
D5	4-6				
D3	2-4				

*) Sometimes there is a deviation between the grit size ordered and the grit size confirmed caused by our IT system, which automatically calculates the grit size for the technical definition of the tool. Since the fine grit sizes consist of different grit size classes, our IT system calculates and confirms the average value of the corresponding grit size class. As a result, our confirmed grit sizes will sometimes deviate from your order. However, we assure you with 100% certainty that we will produce and supply your product with the grit sizes you have requested. Please consider, that not every grit size is available. And also, not every grit goodness is available for all of our bonds.

4. BONDS

The grinding behaviour of diamond and CBN wheels essentially depends on the bond. The bond is to keep the grinding grit at an optimal condition at the grinding temperatures and forces occurring, whilst simultaneously providing enough space for the chips so as to permit an easy discharge of the abraded material. In view of the great number of grinding problems occurring a large spectrum of bonds is required.

4A. RESIN BONDS (MDT)

More than 50% of all grinding operations can be carried out by means of resin bonds, as these allow many bonding variants and high abrading performance on the workpiece.

4B. METAL BONDS (MDX)

Metal bonds excel by very high grit holding forces. For the continuous self-sharpening of diamond tips that have become blunt, high infeed forces are required, generating an increased heat amount. Therefore, metal bonds always have to be used in wet grinding. Only for small contact areas and light cuts, Dry grinding is possible.

4C. CERAMIC BONDS (MDR)

These bonds excel by porosity and profiling. At present, we are manufacturing only a choice of the shapes and dimensions contained in this catalogue and will therefore appreciate your inquiry in case of need.

4D. ELECTROPLATED BONDS (MDS)

In the nickel bond deposited by electro-plating usually only one grit layer of diamond or CBN is held firm (2 or 3 layers are contingently possible). The electroplated S-bond with diamond as abradant is particularly suited for machining less hard materials which are subject to wear, however, such as graphite, mineral or glass-fibre reinforced synthetic materials, and the like. A special field of application of the S-bond with CBN as abrasive is the grinding of profiles in the construction of turbines.

5. CONCENTRATION

According to international agreement, the basis for indicating concentration is the value C100, corresponding to 25% by volume of pure diamond or CBN within the abrasive layer.

Thus, the following formula applies to diamond and CBN: C100 = 25%vol = 4,4 carats/cm3 of layer; 1 ct = 0,2 g.

We manufacture diamond and CBN wheels to the following common concentrations:

CONCENTRATION	PROCESSED CARAT WEIGHT/cm ³ GRINDING WHEEL LAYER	VOLUME %
C200	8,8 kt.	50,0
C175	7,7 kt.	43,75
C165	7,3 kt.	41,25
C150	6,6 kt.	37,5
C135	5,9 kt.	33,75
C125	5,5 kt.	31,75
C115	5,1 kt.	28,75
C100	4,4 kt.	25,0
C90	4,0 kt.	22,5
C85	3,7 kt.	21,25
C80	3,5 kt.	20,0
C75	3,3 kt.	18,75
C68	3,0 kt.	17,0
C65	2,8 kt.	16,25
C60	2,6 kt.	15,0
C55	2,4 kt.	13,75
C50	2,2 kt.	12,5
C45	2,0 kt.	11,25
C38	1,7 kt.	9,5
C35	1,5 kt.	8,75
C25	1,1 kt.	6,25
C20	0,9 kt.	5,0
C15	0,7 kt.	3,75
C10	0,4 kt.	2,5

CBN wheels with the following concentrations are available upon request:

CONCENTRATION	PROCESSED CARAT WEIGHT/cm ³ GRINDING WHEEL LAYER	VOLUME %
V360	6,26 kt.	35,6
V300	5,22 kt.	29,7
V240	4,17 kt.	23,7
V210	3,65 kt.	20,8
V180	3,13 kt.	18,0
V150	2,61 kt.	14,8
V120	2,09 kt.	11,9
V90	1,57 kt.	8,9

The concentration, on the one hand, definitely determines the price of the wheel, but on the other hand also the entire grinding behaviour thereof. Of decisive relevance is an optimal interaction between wheel dimension, grit size, bond and concentration. Higher concentrations (C100-C125-C150 / V240-V360) are suited if high profile stability is required, for narrow layer widths, for high bonding hardness, and in deep cutting. Average concentrations (C50-C75 / V120 - V180) are recommended with cup wheels and peripheral wheels having larger layer widths and finer grit sizes. Lower concentrations (C38-C50 / V120) primarily are used with very fine grit sizes.

6. ORDERING EXAMPLES

THE NEW LABEL FOR YOUR TOOL:

Since the introduction of our slogan, "We personalise your grinding tools!", on 1 August 2011, our focus has been on achieving improved safety, greater transparency and easier communication between you and Dr. Müller DIAMANTMETALL[®] AG. All of our tools now feature a new and unique label. The high level of quality of our grinding tools is not affected by this change.

- CLEAR TRANSPARENCY in the grinding wheel configuration
- CLEAR TRACEABILITY of technical improvements
- HIGH LEVEL OF SECURITY for your tool orders
- EASY COMMUNICATION through clear identification

MDR-319 ES / B126 / C150 / DOE

- "MD" stands for a genuine Dr. Müller DIAMANTMETALL[®] AG-grinding tool
- 2) The combination of numbers and letters stands for the type of bond and the mixture of grit goodness and grit guality
- 3 The combination of numbers and letters defines the cbn or diamond grit size*)
- 4) The combination of numbers and letters defines the concentration of the cbn or diamond grit*⁾
- 5 These letters defines the cooling for your grinding tool D (Dry), O (Oil), E (Emulsion)

COMBINATION OF LETTERS DEFINES A MIXTURE OF GRIT GOODNESS AND GRIT QUALITY

GRIT GOODNESS	GRIT QUALITY	COMBINATION
G (enius)	S(tandard) or P(rofessional)	GS or GP
C (uda)	S(tandard) or P(rofessional)	CS or CP
A(tlantis)	S(tandard) or P(rofessional)	AS or AP
T(esla)	S(tandard) or P(rofessional)	TS or TP
R(azor)	S(tandard) or P(rofessional)	RS or RP
E(dison)	S(tandard) or P(rofessional)	ES or EP

*) The new label, which is generated automatically and electronically, has also included the factors "grit goodness" and "grit quality" since 1 August 2011. Both of these factors can individually affect the grit size and concentration specified. This may result in a differing technical description of our tool, compared to your order or request. We can assure you with absolute certainty that you will receive your product with the desired configuration and our quality continues to be your success. The "Dr. Müller DIAMANTMETALL[®] AG CARD" provides an overview of the composition of the new label. Thanks to this practical card format, you always have the composition of the new label at hand!

YOU ARE WELCOME TO ORDER THE CARD FREE OF CHARGE!

Phone: +49 (0) 881 / 90 11 55-0 Fax: +49 (0) 881 / 90 11 55-100 vertrieb@muedia.de



THE BIOMETRY OF YOUR ORDER IS YOUR X-NUMBER.

The huge benefit of an X-number order is that it saves you time! Just how it saves you time is outlined below.

YOUR FIRST ORDER

On each of our grinding tools, we engrave your unique X-number in addition to the new label. All key technical details and manufacturing processes are stored behind this X-number. Our technicians have worked out these details when you order this tool for the first time.



YOUR SECOND ORDER WITH YOUR X-NUMBER

If you order the same grinding tool again with your X-number, your tool will be produced directly. The time-consuming processing procedure performed by our engineering department and the calculations done by our sales team are no longer required, thereby saving you time!



YOUR SIMULTANEOUS ORDER WITH AND WITHOUT YOUR X-NUMBER

And we have made improvements here too! Now when you place an order with and without X-number items, we will split this order with our new "Digital Splitting Sytem" to enable the fastest way to process your order. Therefore, we are able to deliver your requested X-number grinding tools much faster than new grinding tools for which the technical details must be calculated afresh. Saving you time once again!



7. GENERAL INSTRUCTIONS FOR APPLICATION OF DIAMOND AND CBN WHEELS

7A. MACHINE

All grinding machines for diamond and CBN wheels should be of highly sturdy design, be equipped with properly running grinding spindles and wheel mounts, and be set up for vibration-free operation. Diamond and CBN wheels operated without a proper peripheral and transversal concentricity only achieve a low abrading performance and a poor surface finish since only a portion of the diamond or CBN layer is in contact and this portion is soon overloaded. The motor output must be adjusted in such a way that also higher cutting speeds can be used and that no substantial loss of speed occurs, even when infeed is high. All guides of the machine must operate jerk-free. During deep grinding, so at low feed speed but high surface pressure, the bench must operate without jolt. The design of coolant pumps, inlet nozzle and coolant capacity must assure a strong coolant flow especially for deep grinding.

7B. MOUNTING OF DIAMOND AND CBN WHEELS

Diamond and CBN wheels should possess a proper concentricity and axial run-out to ensure a superior abrading performance and good quality surface finish. The wheels that are ground to a concentricity and axial run-out of 0,01 - 0,02 mm are supplied in balanced form, and they should be attached to the wheel mount as follows:

- Check wheel mount on the spindle with a dial gauge for true running in peripheral and transversal direction. Correct any errors.
- Slide diamond or CBN wheel on the mount. Tighten mount lightly and check wheel running with dial gauge.
- Eliminate any radial runout due to bore clearance with light blows on a piece of wood deposited on the mount. Tighten the mount firmly and recheck with dial gauge.

In case of large diamond and CBN wheels, and especially of profile wheels, kindly send us the mount and the matching grinding or balancing mandrel so that we can grind the wheels directly on the mount, keeping true running deviations within the tightest limits. All diamond and CBN wheels should remain on their mounts until completely worn to avoid errors in concentricity due to change of mounts.

7C. COOLING

Wet grinding:

Wet grinding is to be preferred for almost all grinding operations using diamond and CBN wheels. A sufficient amount of coolant should be fed to the grinding point directly and under pressure, thereby assuring dissipation of the cutting heat generated during grinding, flushing the debris away and increasing the lifetime of the wheel.

For diamond wheels the best abrading performances and lifetimes are achieved with Emulsions at a mixing ratio of 1:50 to 1:100. CBN wheels, in contrast thereto, yield the best values with low viscosity Oils (viscosity \sim 4).

Often the necessity arises to use both the diamond and the CBN wheel on one machine. In this case, a low viscosity grinding Oil is recommended, but it has to be reckoned with slightly lower infeed rates an short lifetime.

Special attention should be paid to optimal filtering of the coolant, which has quite an influence on the service life and the surface quality of the workpiece. Also, particularly with grinding Oils, attention should be paid to the temperature. If necessary, additional cooling should be provided, as the Oil not only is to have an lubricating effect, but also a cooling one.

It is worthwile to pay sufficient attention to the choice of the coolant, as considerable costs for the grinding wheel can be saved by a good coolant. Diamond and CBN wheels whose bond is designed for wet grinding should be used for Dry grinding only in exceptional cases, end then with reduced rotational speed and infeed.

Dry grinding:

Due to their characteristics, their grit quality and their bond composition, diamond and CBN wheels engage well and keep their soft grinding capacity also in Dry grinding. However, lower contact pressures and infeeds than in wet grinding should be applied. Those diamond and CBN wheels with bonds designed for Dry grinding may also be used for wet grinding.

7D. DRESSING AND SHARPENING OF DIAMOND AND CBN WHEELS

By dressing, the restoration of the running accuracy of a diamond or CBN wheel is to be undertaken.

THERE ARE THE FOLLOWING POSSIBILITIES:

Dressing of cup wheels

Pulverized silicon carbide of 80-120 mesh is strewn onto a steel plate, and the diamond or CBN wheel is moved over it under slight pressure, thereby partially removing the bond and releasing the grinding grit.

Dressing of peripheral wheels

There are several methods to this end:

- Dressing by centrifugal force braking device
- ST37 workpieces
- electro-plated diamond stripping tools.

Following application of the last-mentioned dressing methods it is indispensable that the diamond or CBN wheel still be sharpened, i.e. that the bond be retracted so as to release the grinding grit. The best way to do this in the case of resin-bonded wheels is:

- in the case of resin-bonded wheels is: by means of our whetstone No. 2 or No. 5
- and in the case of metal-bonded wheels: by means of our whetstone No. 6.
- For fine grit sizes stone No. 8 is recommended.

The wheels have reached an optimal degree of sharpness if the finger nail catches on the grinding grit ("finger nail test").

7E. CUTTING SPEEDS FOR DIAMOND AND CBN WHEELS

The cutting speeds indicated in the table below are values from practical experience which should be observed as far as possible. Please ask our field staff as to which methods are suited best for you. With special materials or grinding methods different cutting speeds may give optimal results. Thus, a variable speed adjustment is of advantage for obtaining a high grinding performance and a superior grinding quality.

7E. METAL REMOVAL RATE

The specific metal removal rate, also known as Qw', describes the removal capacity of a grinding wheel in cubic millimeters per millimeter of grinding rim width per second.

CUTTING SPEEDS

			R	.P.M. AT A CUT	TING SPEED O	F			
Ø MM	10 M/SEC.	15 M/SEC.	20 M/SEC.	25 M/SEC.	30 M/SEC.	35 M/SEC.	40 M/SEC.	45 M/SEC.	50 M/SEC.
20	9550	14725	19100	23875	28650	33440	38215	42990	47770
25	7640	11460	15280	19100	22920	26750	30570	34390	38215
30	6365	9550	12730	15915	19100	22290	25475	28660	31845
50	3820	5730	7640	9550	11460	13375	15285	17195	19105
75	2545	3820	5095	6370	7640	8915	10190	11465	12735
100	1910	2865	3820	4775	5730	6685	7640	8600	9550
125	1530	2290	3055	3820	4580	5350	6115	6880	7640
150	1275	1910	2545	3180	3820	4460	5095	5730	6370
175	1090	1640	2185	2730	3280	3820	4367	4910	5460
200	955	1435	1910	2390	2865	3340	3820	4300	4780
250	765	1146	1530	1910	2290	2675	3055	3440	3820
300	635	905	1275	1590	1910	2230	2545	2865	3185
350	545	820	1090	1365	1640	1910	2180	2455	2730
400	480	715	955	1194	1435	1670	1910	2150	2390
450	425	635	850	1060	1275	1485	1700	1910	2120
500	382	573	764	955	1146	1337	1528	1719	1918
550	347	521	694	868	1042	1215	1389	1563	1737
600	318	477	636	796	955	1114	1273	1433	1592

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WE PERSONALIZE YOUR GRINDING TOOLS!

Since the introduction of our slogan, on 1 August 2011, our focus has been on achieving improved safety, greater transparency and easier communication between you and Dr. Müller DIAMANTMETALL® AG. All of our tools now feature a new and unique label. The high level of quality of our grinding tools is not affected by this change.

THE NEW LABEL PROVIDES THE FOLLOWING BENEFITS FOR OUR CUSTOMERS:

+ CLEAR TRANSPARENCY in the grinding wheel configuration

+ CLEAR TRACEABILITY of technical improvements

+ HIGH LEVEL OF SECURITY for your tool orders

+ EASY COMMUNICATION through clear identification



THE BIOMETRY OF YOUR GRINDING TOOLS

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MDR-319 ES / B126 / C150 / DOE

"MD" stands for a genuine
Dr. Müller DIAMANTMETALL® AG-grinding tool
The combination of numbers and letters stands for the type of bond and the mixture of grit goodness and grit quality
The combination of numbers and letters defines the CBN or diamond grit size*)
The combination of numbers and letters defines the concentration of the CBN or diamond grit *)
These letters defines the cooling for your grinding tool
D (Dry) • O (Oil) • E (Emulsion)

(1)

2

3

4

5

MDT (Resin bond) • MDX (Metal bond) MDR (Ceramic bond) • MDS (Electroplated bond)



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*) The new label, which is generated automatically and electronically, has also included the factors "grit goodness" and "grit quality" since 1 August 2011. Both of these factors can individually affect the grit size and concentration specified. This may result in a differing technical description of our tool, compared to your order or request. We can assure you with absolute certainty that you will receive your product with the desired configuration and our quality continues to be your success.