



SCHOTT

Diamantwerkzeuge GmbH

Diamond Tools

for Ultrasonic Machines



Why We Are the Adequate Partner for You:

Company history:

As a grandson of the wellknown Dr. Otto Schott (the inventor of the heatresistant borosilicate glass 1887 or better known as "Jenaer Glas") Klaus Schott already had a familiar relationship with the glass industry. His father, his brothers and he were working for the internationally wellknown SCHOTT Glaswerke AG.

In 1975 Klaus Schott set up his own business and delivered diamond tools for the glass industry. Besides dealing with products of the application in the glass industry, Klaus Schott started manufacturing his own diamond tools in order to meet more adequately the requirements of his national customers and the glass industry. After many years of working for the company, Burghard Lein became owner and managing director in 2000.

Competences:

The company SCHOTT Diamantwerkzeuge GmbH provides only state-of-the-art quality products manufactured according to its customers' specific requirements for processing of glass, ceramics, stone, metal and synthetic materials as well as for the optical industry.

Besides the series production of standard tools the main competence is focussed on producing individually electroplated and sintered diamond tools for conventional and ultrasonic-based application.

The company's main focus and strength is the area of research and development of innovative technologies for developing tools and their application. Especially in the field of manufacturing and testing diamond tools, which qualify for ultrasonic application, SCHOTT Diamantwerkzeuge is one of the leading companies.

Orientation:

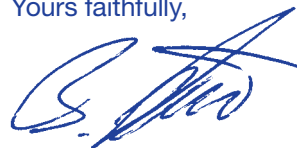
The continuous increase of international customers made SCHOTT Diamantwerkzeuge GmbH set up local service centers for customer support. Prestigious selling agencies were put up in Bulgaria, Siberia, USA and Asia. Establishment of other agencies is in progress in order to be able to react to the growing requirements of the global market.

Guarantee:

The company SCHOTT offers state-of-the-art-quality at a favorable price within the shortest delivery time possible.

You can take us up on that!

Yours faithfully,



Burghard Lein
Managing Director

Product Range

	Diamond Hollow Drills Corebits	drilling	M Ø 3 - 598 mm full coating and segmented GVD Ø 0,5 - 75 mm
	Chamfering Tools	counter-sinking and bordering	M SB 0,1 - 125 mm GVB SB 0,1 - 150 mm
	Combined Diamond Tools	drilling and countersink	M Ø 3 - 150 mm
	Milling Cutters	milling grinding	M Ø 10 - 22 mm GVB Ø 5 - 40 mm full coating, sintered, profiled according to FEPA, with/without integrated cooling
	Grinding Wheels	pre-cut mid-cut fine cut	M Ø 24 - 200 mm GVB Ø 24 - 250 mm Vollfull coating, sintered, profiled according to FEPA, with/without integrated cooling
	Cutting Wheels	cutting	M, GVB, GVD Ø 50 - 800 mm full coating and segmented
	Accessories	cooling grinding custom-made tools	various editions
	Ultrasonic Tools	drilling milling grinding	M, GVD, GVB, KSI, MN ultrasonic proofed

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These tools have been checked to be suited for the ultrasonic procedure.



The replication of the tool holder is protected by patent law.



The max time of delivery for these tools is 14 working days.



The company SCHOTT 24 hours a day, 7 days a week and 365 days a year available for you!

Ultrasonic Tools

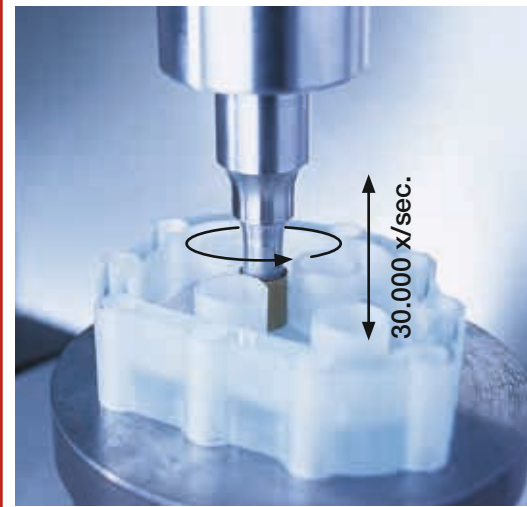


Ultrasonic tools are qualified to withstand additionally generated oscillating motion kinematics (ultrasonic frequency range: 16,5 –30,5 kHz) in axial direction due to their technical characteristics such as binding hardness, material of binding matrix, grain quality and diamond concentration.

These tools stand out because of their unique chemical and galvanic composition. This ensures that the diamond grains are being kept within the binding matrix during the process of highest stress by ultrasonic hard processing.

Advantages for Tools in Ultrasonic Processing

- up to three times higher productivity due to ultrasonic overlay of the rotating tool versus conventional proceedings
- up to two times longer durability: Ultrasonic achieves a remarkable reduction of the cutting pressure as well as thermal stress and spares the tool
- the continuing oscillation impedes a possible clogging of the tools when treating hardbrittle material
- ultrasonic achieves a remarkably higher automatic re edging effect on the diamond tools
- up to three times higher productivity in the area of drilling application: bit of diamond hollow drills with low wall thickness, reduced cutting pressure and higher cutting rates due to additional motion in Z



- outstanding surface qualities of $\leq Ra 0,2 \mu m$
- use of rougher diamond grain versus conventional processing while simultaneously achieving the same surface quality in a shorter processing cycle

The transmitting carrier for grinding wheels has a special design to guarantee an ideal oscillation transfer.



Patent Protection

The marked tool sockets are subject to patent protection.

The ultrasonic tools must not be rebuilt without any written approval by SCHOTT Diamantwerkzeuge GmbH.

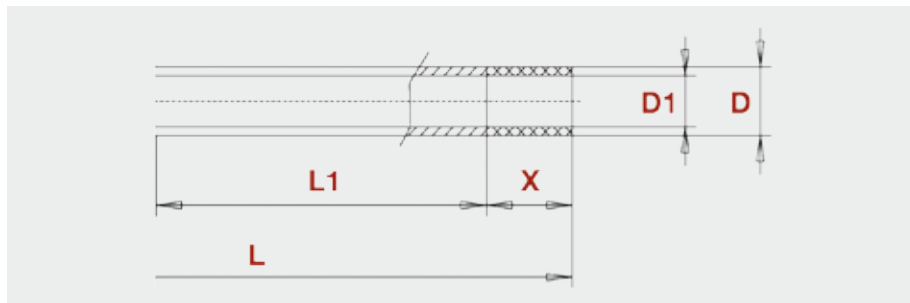
Standard Tools

Diamond Hollow Drills



No. S0501

electroplated and sintered



$\varnothing D$ outside mm	W wall thickness mm	X depth of diamond section mm	$L1$ drilling depth mm	grain size	binding
4	0,4 (1,0)	depending on diameter	depending on diameter	D54	GVD, M
5	0,5 (1,0)			D64	
6	0,5 (1,0)			D76	
8	0,6 (1,0)			D91	
10	0,6 (1,0)			D126	
12	0,6 (1,0)			D126	
14	0,6 (1,0)			D126	
18	0,6 (1,0)			D126	
22	0,6 (1,0)			D126	
26	0,6 (1,0)			D126	

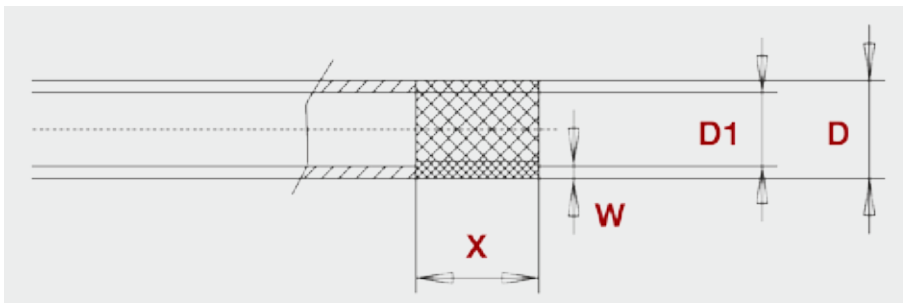
Standard Tools

Milling Cutters



electroplated and sintered

No. S0502



$\varnothing D$ outside mm	W wall thickness mm	X depth of diamond section mm	grain size	binding
6	1,0 (1,0)	8 (6)	D126	GVD, GVB, M
8	1,0 (1,0)	8 (6)	D126	
10	1,0 (1,5)	10 (6)	D126	
12	1,0 (1,5)	10 (6)	D151	
14	1,0 (1,5)	10 (8)	D151	
18	1,0 (1,5)	10 (8)	D151	
22	1,0 (2,0)	10 (8)	D151	
26	1,0 (2,0)	10 (10)	D151	

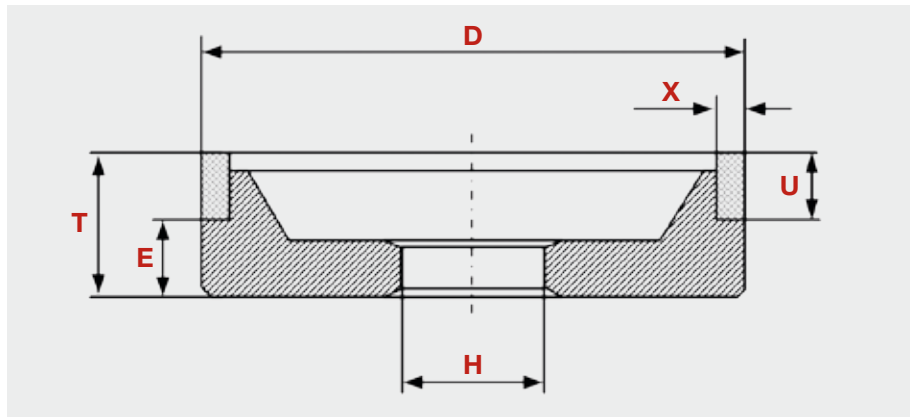
Standard Tools

Grinding Wheels



No. S0503

electroplated and sintered



type	Ø D outside mm	W wall thickness mm	X depth of diamond section mm	T grinding depth mm	grain size	binding
TS 6A9	30	3	6	20	D126	GVB, M
TS 6A9	50	3	6	25		
SS 1A1	30	8	3	8		
SS 1A1	50	10	3	10		

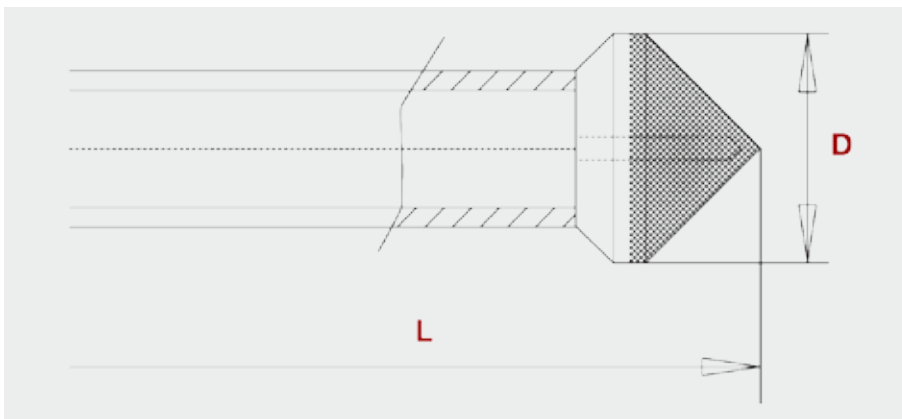
Standard Tools

Chamfering Tools and Finger Milling Cutters



electroplated

No. S0504



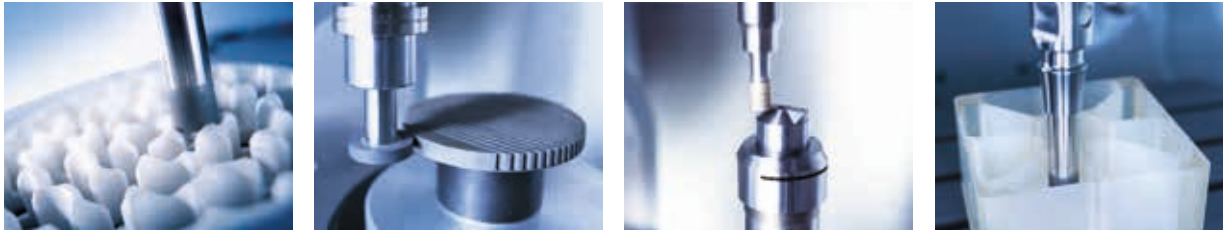
type	$\varnothing D$ outside mm	L length mm	angle degree	grain size	grain concentration	binding
finger milling cutters	4 – 10	75	90	D126	HH	GVB
chamfering tools	4 – 10	75	90	D126	HH	GVB

GVB: galvanic layer

Standard Tools



Binding, Material, Recommendation for Use



binding and material	recommendation for use				
	coolant	grain	M	GVD	GVB
glass					
flat glas	Em	N	X	X	X
optical glass	Em	N	X	X	X
quartz glass/silica	Em	N	X	X	X
glass ceramic					
zerodur "SCHOTT"		N	X	X	X
ceramic					
aluminium oxide Al ₂ O ₃	Em	N	X	X	X
zirconia ZrO ₂	Em	N	X	X	X
zirconia Yttrium stabilized	Em	H	X	X	X
silicon carbide SiC	water, oil	H		X	X
silicon nitride Si ₃ N ₄	water, oil	H		X	X
carbide metal					
G10 – G30	water, Em, oil	H		X	X
G40 – G60	water, Em, oil	H		X	X

Custom-built tools:
delivery time upon request



Ultrasonic Tools Product Range

Diamond Hollow Drills

$\varnothing D$ outside mm	W wall thickness mm	X depth of diamond section mm	L1 drilling depth mm	grain size	grain concentration	binding
0,5 – 75	0,11 – 1,0	–	2 – 200*	D25 – D301*	HH	GVD
3,0 – 350	1,0 – 2,5	10	3 – 200*	D25 – D301*	E, N, H, HH	M

* depending on diameter

Milling Cutters

$\varnothing D$ outside mm	W wall thickness mm	X depth of diamond section mm	L1 milling depth mm	grain size	grain concentration	binding
0,5 – 75	0,15 – 1,5	–	2 – 200*	D25 – D301*	HH	GVD, GVB
3,0 – 350	1,0 – 5,0	10	3 – 200*	D25 – D301*	E, N, H, HH	M

* depending on diameter

Grinding Wheels

mould	$\varnothing D$ outside mm	U wall thickness mm	X depth of diamond section mm	T processing depth mm	grain size	grain concentration	binding
FEPA total	0,5 – 75	0,11 – 1,0	–	2 – 200*	D25 – D301*	HH	GVB
FEPA total	3,0 – 350	1,0 – 2,5	10	3 – 200*	D25 – D301*	E, N, H, HH	M

Cutting Wheels

$\varnothing D$ outside mm	H socket	X depth of diamond section mm	T breadth of diamond section mm	grain size	grain concentration	binding
50 – 300	as required	5,0 – 10	0,4 – 2,0	D46 – D181	E, N, H, HH	M

Chamfering Tools and Finger Milling Cutters

	$\varnothing D$ outside mm	L total length mm	angle degree	grain size	grain concentration	binding
chamfering tools	6,0 – 250	25 – 125	1 – 180	D25 – D301	HH	GVB, M
finger milling cutters	3,0 – 350	25 – 75	1 – 180	D25 – D301	E, N, H, HH	GVB

GVB: galvanic layer • GVD: galvanic coated • M: sintered

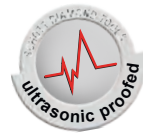
Ultrasonic Tool Holder

K-system: Holders and Adapters

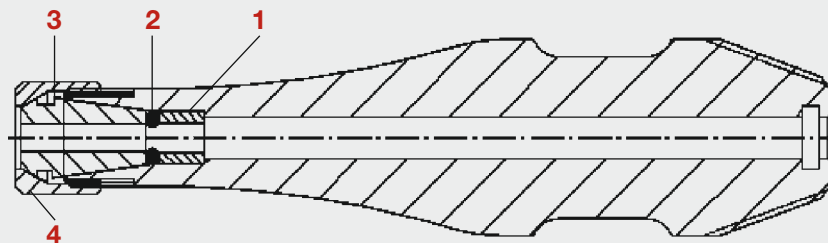


No. S0505

conical connection



Accessories for internal feed of cooling agent



- 1 distance sleeve for K30-ER11
- 2 distance sleeve for K30-ER11



- 3 collet ER11
- 4 cup nut








3 collet Ø mm	2 o-ring Ø mm	3 collet Ø mm	1 D outside Ø mm	1 D1 inside Ø mm	height mm
0,5 – 2,0	2,0 x 3,0	0,5 – 1,5	7,5	1,8	4,20
2,0 – 2,5	2,4 x 2,8	1,5 – 2,5	7,5	2,8	5,70
2,5 – 3,5	3,0 x 2,4	2,5 – 3,5	7,5	3,2	5,80
3,5 – 4,5	4,0 x 2,0	3,5 – 4,5	7,5	4,2	5,80
4,5 – 5,5	5,0 x 1,5	4,5 – 5,5	7,5	5,2	4,55
5,5 – 7,0	6,0 x 1,0	5,5 – 7,0	7,5	6,2	4,90

Ultrasonic Tool Holders

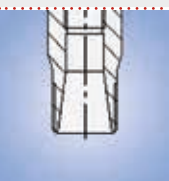
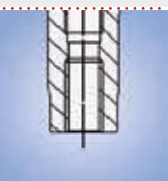
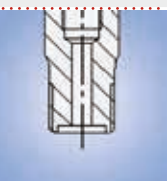




Actuator not provided by
SCHOTT Diamantwerkzeuge GmbH



Setting	ER16	ER20	ER25	20H7	Direct
					
concentricity run	very good	very good	very good	good	very good +
side load capacity	very good	very good	very good	very good	very good +
drilling performance axial load	good	good	good	–	very good +
repositioning of tool	very good	very good	very good	good	–
ultrasonic efficiency	good	good	good	good	very good +



Setting	ER11	14h6	PLK10	K30	belg. thread
					
concentricity run	very good	good	average	average	average
side load capacity	very good	very good	good	good	good
drilling performance axial load	average	–	very good	average	average
repositioning of tool	very good	good	good	average	good
ultrasonic efficiency	average	good	very good	good	good

Starter Kits for Ultrasonic Machines

Starter Kit 1 for HSK 32



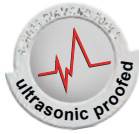
No. S0506



type	Ø D outside mm	W wall thickness mm	X depth of diamond section mm	FT/BT milling/ drilling depth mm	U breadth of diamond section mm	holder	grain size	binding
milling cutter	1,0	0,35	3	3		ER11-32 S	D46	GVD
milling cutter	1,0	0,35	3	3		ER11-32 S	D91	GVD
milling cutter	2,0	0,50	4	6		ER11	D46	GVD
milling cutter	2,0	0,50	4	6		ER11	D91	GVD
milling cutter	4,0	1,50	6	15		ER11-ETG	D46	M
milling cutter	4,0	1,50	6	15		ER11-ETG	D91	M
milling cutter	6,0	1,50	6	15		ER11-ETG	D64	M
milling cutter	6,0	1,50	6	15		ER11-ETG	D107	M
milling cutter	8,0	1,50	6	20		ER11-ETG	D64	M
milling cutter	8,0	1,50	6	20		ER11-ETG	D107	M
hollow drill	1,0	0,30	5	5		ER11-M4	D46	GVD
hollow drill	2,0	0,35	6	14		ER11-M4	D46	GVD
hollow drill	3,0	0,40	8	15		ER11-M4	D46	GVD
hollow drill	3,0	0,40	8	15		ER11-M4	D91	GVD
hollow drill	4,0	0,40	8	25		ER11	D64	GVD
hollow drill	4,0	0,40	8	25		ER11	D107	GVD
hollow drill	6,0	0,50	8	30		ER11	D64	GVD
hollow drill	6,0	0,50	8	30		ER11	D107	GVD
hollow drill	8,0	0,60	8	35		ER11	D64	GVD
hollow drill	8,0	0,60	8	35		ER11	D107	GVD
SS FEPA 1A1	30		3		5	14h6	D46	M
SS FEPA 1A1	30		3		5	14h6	D91	M
SS FEPA 1A1	30		3		5	14h6	D91	KSI
SS FEPA 1A1	30		3		5	14h6	D91	MN
TS FEPA 6A9	24		2		6	14h6	D46	M
TS FEPA 6A9	24		2		6	14h6	D91	M
TS FEPA 6A9	24		2		6	14h6	D91	KSI
TS FEPA 6A9	24		2		6	14h6	D91	MN

Starter Kits for Ultrasonic Machines

Starter Kit 2 for HSK 63

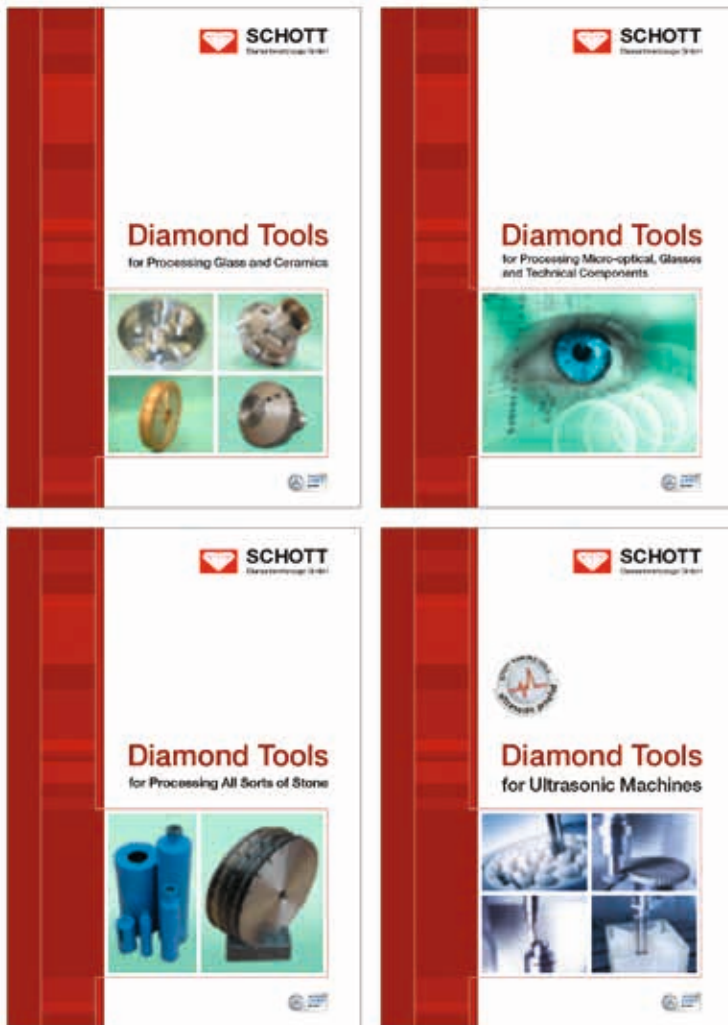


No. S0507



type	Ø D outside mm	W wall thickness mm	X depth of diamond section mm	FT/BT milling/ drilling depth mm	U breadth of diamond section mm	holder	grain size	binding
milling cutter	1,0	0,35	3	3		ER16	D46	GVD
milling cutter	1,0	0,35	3	3		ER16	D91	GVD
milling cutter	2,0	0,50	4	6		ER16	D46	GVD
milling cutter	2,0	0,50	4	6		ER16	D91	GVD
milling cutter	4,0	1,50	6	15		ER16	D46	M
milling cutter	4,0	1,50	6	15		ER16	D91	M
milling cutter	6,0	1,50	6	15		ER16	D64	M
milling cutter	6,0	1,50	6	15		ER16	D107	M
milling cutter	8,0	1,50	6	20		ER16	D64	M
milling cutter	8,0	1,50	6	20		ER16	D107	M
milling cutter	10,0	2,00	8	25		ER16	D64	M
milling cutter	10,0	2,00	8	25		ER16	D107	M
hollow drill	1,0	0,30	5	5		ER16	D46	GVD
hollow drill	2,0	0,35	6	14		ER16	D46	GVD
hollow drill	3,0	0,40	8	15		ER16	D46	GVD
hollow drill	3,0	0,40	8	15		ER16	D91	GVD
hollow drill	4,0	0,40	8	25		ER16	D64	GVD
hollow drill	4,0	0,40	8	25		ER16	D107	GVD
hollow drill	6,0	0,50	8	30		ER16	D64	GVD
hollow drill	6,0	0,50	8	30		ER16	D107	GVD
hollow drill	8,0	0,80	8	35		ER16	D64	GVD
hollow drill	8,0	0,80	8	35		ER16	D107	GVD
SS FEPA 1A1	50		5		12	20h7	D46	M
SS FEPA 1A1	50		5		12	20h7	D126	M
SS FEPA 1A1	50		5		12	20h7	D126	KSI
SS FEPA 1A1	50		5		12	20h7	D126	MN
TS FEPA 6A9	50		2		10	20h7	D46	M
TS FEPA 6A9	50		2		10	20h7	D126	M
TS FEPA 6A9	50		2		10	20h7	D126	KSI
TS FEPA 6A9	50		2		10	20h7	D126	MN

GVD: galvanic coated • M: sintered • KSI: synthetic material binding • MN: metallic • SS: grinding wheel • TS: cup wheel



Service hotline: +49 - 5532 - 50 1996-0



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