



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 well-known 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 7 working days.



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



You can reach us 24/7, all year!

Ultrasonic Tools

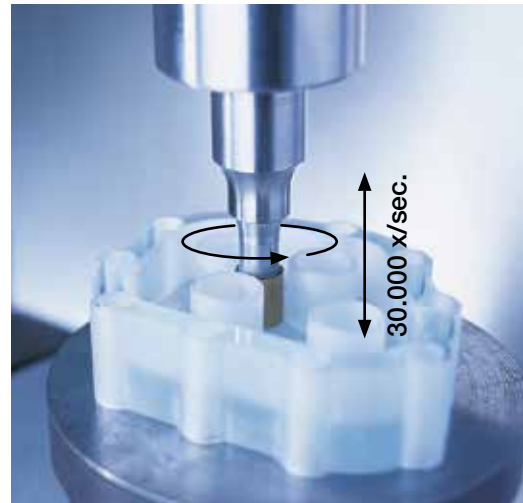


Ultrasonic tools are qualified to withstand additionally generated oscillating motion kinematics (ultrasonic frequency range: 16,5 –30,5 kHz) in axial direction due to their technical characteristics such as binding hardness, material of binding matrix, grain quality and diamond concentration.

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 hard-brittle 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.



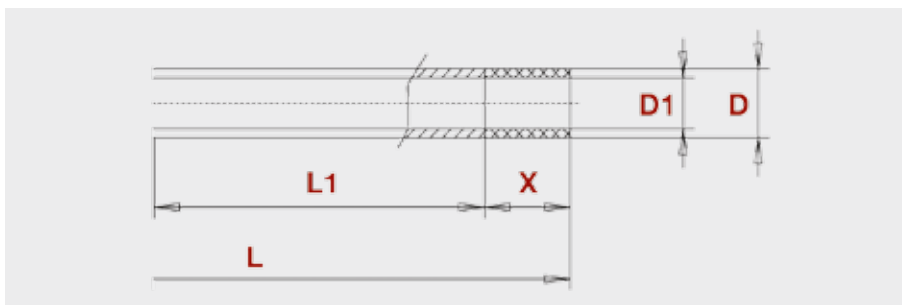
Standard Tools

Diamond Hollow Drills



No. S0501

electroplated and sintered



| Ø 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 | |

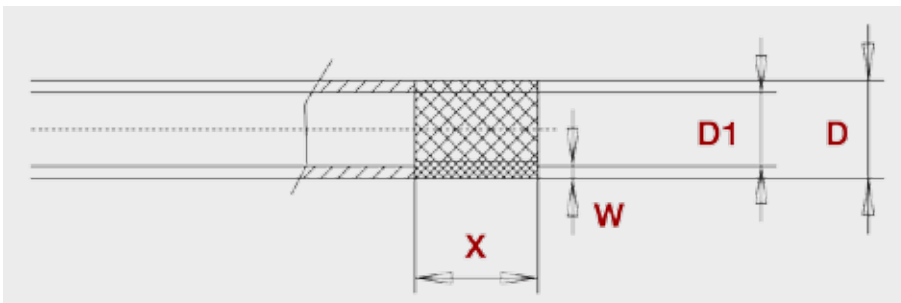
Standard Tools

Milling Cutters



electroplated and sintered

No. S0502



| Ø 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 | |

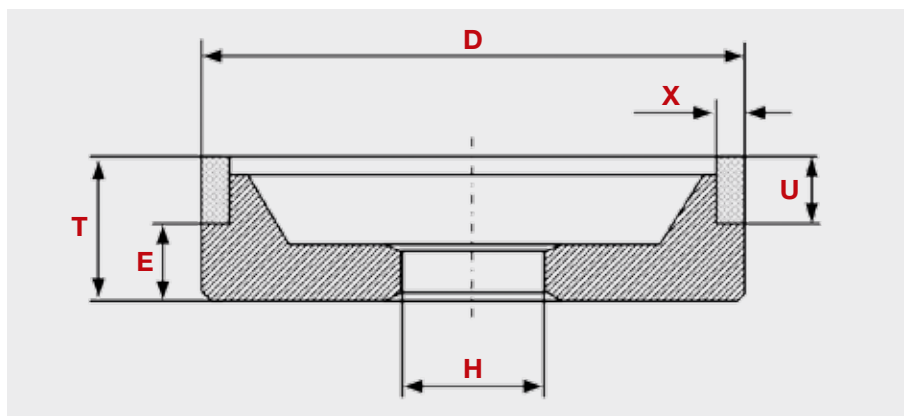
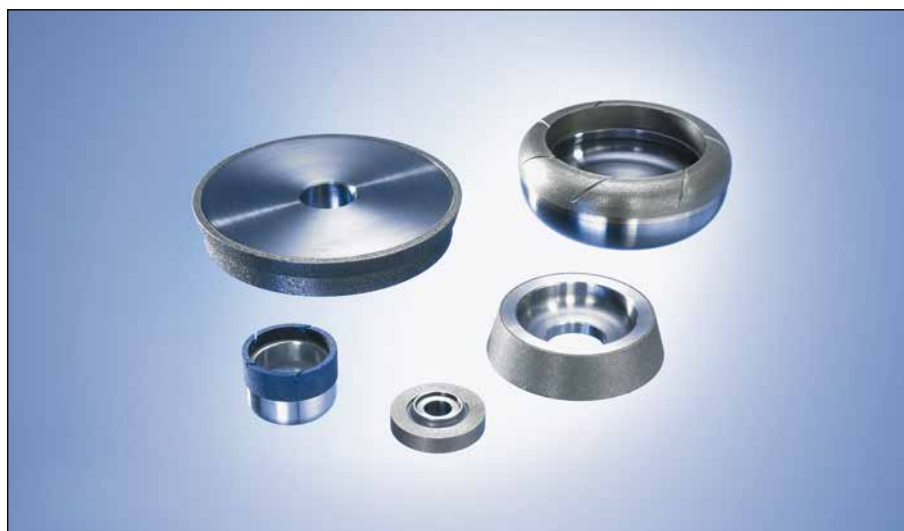
Standard Tools

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 | | |

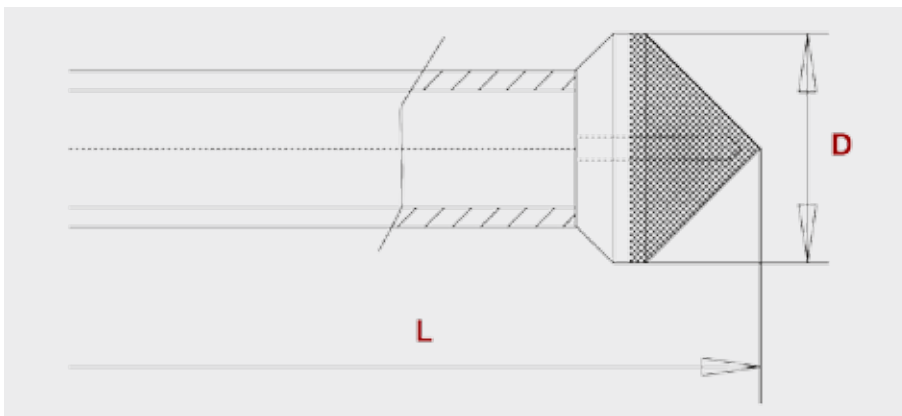
Standard Tools

Chamfering Tools and Finger Milling Cutters



electroplated

No. S0504



| type | Ø 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 |

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_2O_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_3N_4 | water, oil | H | | X | X |
| carbide metal | | | | | |
| G10 – G30 | water, Em, oil | H | | X | X |
| G40 – G60 | water, Em, oil | H | | X | X |

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

Custom-built tools:
delivery time upon request



Ultrasonic Tools Product Range

Diamond Hollow Drills

| Ø 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 – 350 | 1,0 – 2,5 | 10 | 3 – 200* | D25 – D301* | E, N, H, HH | M |

* depending on diameter

Milling Cutters

| Ø D outside mm | W wall thickness mm | X depth of diamond section mm | L1 milling depth mm | grain size | grain concentration | binding |
|----------------------|---------------------------|-------------------------------------|---------------------------|-------------|------------------------|----------|
| 0,5 – 80 | 0,15 – 1,5 | * | 3 – 200* | D25 – D301* | HH | GVD, GVB |
| 6 – 100 | 1 – 5 | * | 3 – 200* | D25 – D301* | E, N, H, HH | M |

* depending on diameter

Grinding Wheels

| mould | Ø D outside mm | U wall thickness mm | X depth of diamond section mm | T processing depth mm | grain size | grain concentration | binding |
|------------|----------------------|---------------------------|-------------------------------------|-----------------------------|------------|------------------------|---------|
| FEPA total | 24 – 250 | 3 – 12 | 3 – 6 | 8 – 30 | D25 – D501 | HH | GVB |
| FEPA total | 24 – 175 | 3 – 12 | 3 – 6 | 8 – 30 | D25 – D501 | E, N, H, HH | M |

Cutting Wheels

| Ø 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 – 10 | 0,4 – 2,0 | D46 – D181 | E, N, H, HH | M |

Chamfering Tools and Finger Milling Cutters

| | Ø D outside mm | L total length mm | angle degree | grain size | grain concentration | binding |
|------------------------|----------------------|-------------------------|-----------------|------------|------------------------|---------|
| chamfering tools | 6 – 250 | 25 – 125 | 1 – 180 | D25 – D301 | HH | GVB, M |
| finger milling cutters | 4 – 25 | 25 – 75 | 1 – 180 | D25 – D301 | HH | GVB |

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

Ultrasonic Tool Holder

K-system: Holders and Adapters

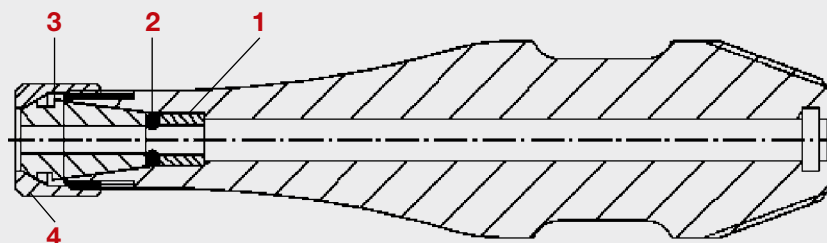


No. S0505

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 |
|---------------------|---------------------|
| 0,5 – 2,0 | 2,0 x 3,0 |
| 2,0 – 2,5 | 2,4 x 2,8 |
| 2,5 – 3,5 | 3,0 x 2,4 |
| 3,5 – 4,5 | 4,0 x 2,0 |
| 4,5 – 5,5 | 5,0 x 1,5 |
| 5,5 – 7,0 | 6,0 x 1,0 |






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

Ultrasonic Tool Holders

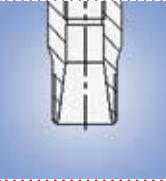
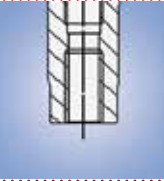





Actuator not provided by
SCHOTT Diamantwerkzeuge GmbH



| 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



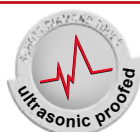
No. S0506



| 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 |



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