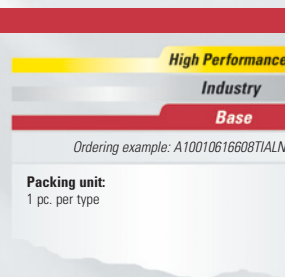




### Content

| Description                          | Page |
|--------------------------------------|------|
| • A summary of available shapes      | 25   |
| • Technical Information              | 26   |
| • Choosing the appropriate Burr      | 27   |
| • Types of cut and their application | 28   |
| • Tungsten Carbide Burrs             | 30   |

### Product line marking



The product lines are additionally marked on the table with the product line heading.

*Further information on page 14 and 15.*

## A summary of available shapes

| Shape   | Type   | Shape (DIN 8033) | Shape (LUKAS) | Page |
|---|--|------------------|---------------|------|
|    | Cylindrical                                  | ZYA              | <b>A</b>      | 30   |
|    | Cylindrical round nose                       | WRC              | <b>C</b>      | 33   |
|    | Spherical                                    | KUD              | <b>D</b>      | 34   |
|    | Oval   | TRE              | <b>E</b>      | 36   |
|    | Arch round nose                              | RBF              | <b>F</b>      | 37   |
|    | Arch pointed nose                            | SPG              | <b>G</b>      | 38   |
|    | Flame  | –                | <b>H</b>      | 39   |
|    | Internal                                     | –                | <b>I</b>      | 40   |
|   | Counter sink                                 | KSJ              | <b>J</b>      | 40   |
|  | Conical round nose                           | KEL              | <b>L</b>      | 41   |
|  | Conical pointed nose                         | SKM              | <b>M</b>      | 42   |
|  | Inverted cone                                | WKN              | <b>N</b>      | 43   |
|  | Burrs for the machining of plastic           | –                | <b>P</b>      | 44   |
|  | Engraving Cutters                            | –                | –             | 45   |
|  | Burrs for radius trimming (external)         | –                | <b>R</b>      | 46   |
|  | Burrs for radius trimming (internal)         | –                | <b>S</b>      | 46   |
|  | Miniature Burrs                              | –                | –             | 47   |
|  | Small Burrs                                  | –                | –             | 48   |
|  | Tool-Set                                     | –                | –             | 50   |
|   | Burrs with TiAlN-coating                     | –                | –             | 51   |
|   | Burrs for machining of non-ferrous metals    | –                | –             | 52   |
|   | Burrs with extended shank length             | –                | –             | 53   |
|   | Some examples of our competitive performance | –                | –             | 54   |
|  | Power Tools                                  | –                | –             | 354  |

## Technical Information

### Quality

LUKAS carbide burrs are manufactured using high quality types of carbide and modern CNC automatic grinding machines in order to guarantee precision and repeatability of angle, profile and twist. Carbide burrs manufactured to your drawings or details assist in solving your particular stock removal problem.

### Application

The best results are obtained by selecting the recommended cut and speed. Please refer to the cutting speeds in the table on page 27 or according to the table illustrating the various cuts on page 28.

### Power tools

Electric and pneumatic power tools are used; the bearings should be in good condition and the collets running true. Vibration and chatter will cause premature wear and tooth breakage. High pressure will reduce tool life and decreases tool efficiency.

### Shanks

We recommend that the largest shank diameter possible is selected from the appropriate list; this provides maximum safety. Other shank diameters and lengths are available on request. A selection of burrs with extra long shanks appears on page 53.

### Robot application

LUKAS tungsten carbide burrs are precision tools, and have produced excellent results when used in conjunction with industrial robots. We can also develop the optimal burr for your particular application.

### Coated

The reasons for producing cutting tools with hard coatings such as TiN, TiCN, TiALN and LTE are as follows:

- to increase tool life
- to reduce machining forces
- to improve chip removal

The increase in tool life is mainly the result of the considerably higher surface hardness of the coating in comparison to the base material of the tool itself. In addition, due to the high chemical stability, it minimizes the reaction between the cutting edge of the tool and the chip to be removed.

The reduction of machining forces and the improvement in chip removal are achieved through a reduction in the friction between the free cutting zone of the tool and workpiece on the one hand, and the cutting edge of the tool and the chip removed on the other. The reduction in friction depends on the coating improving the surface finish and as previously described by largely avoiding any chemical reaction.

Our technicians would be pleased to help you in the selection of the correct coating. Please note the different possibilities on page 29.

### Special tools

Tungsten carbide burrs manufactured to your design or drawing guarantee the LUKAS high quality standard, and can therefore assist in solving your particular machining problem.

### Packaging

We use plastics-packaging; please select the respective packing unit from our product lists.

### Recommendations for use

Select the cut to suit the material to be machined. Please kindly follow the principle: **The harder the material, the finer the cut!**

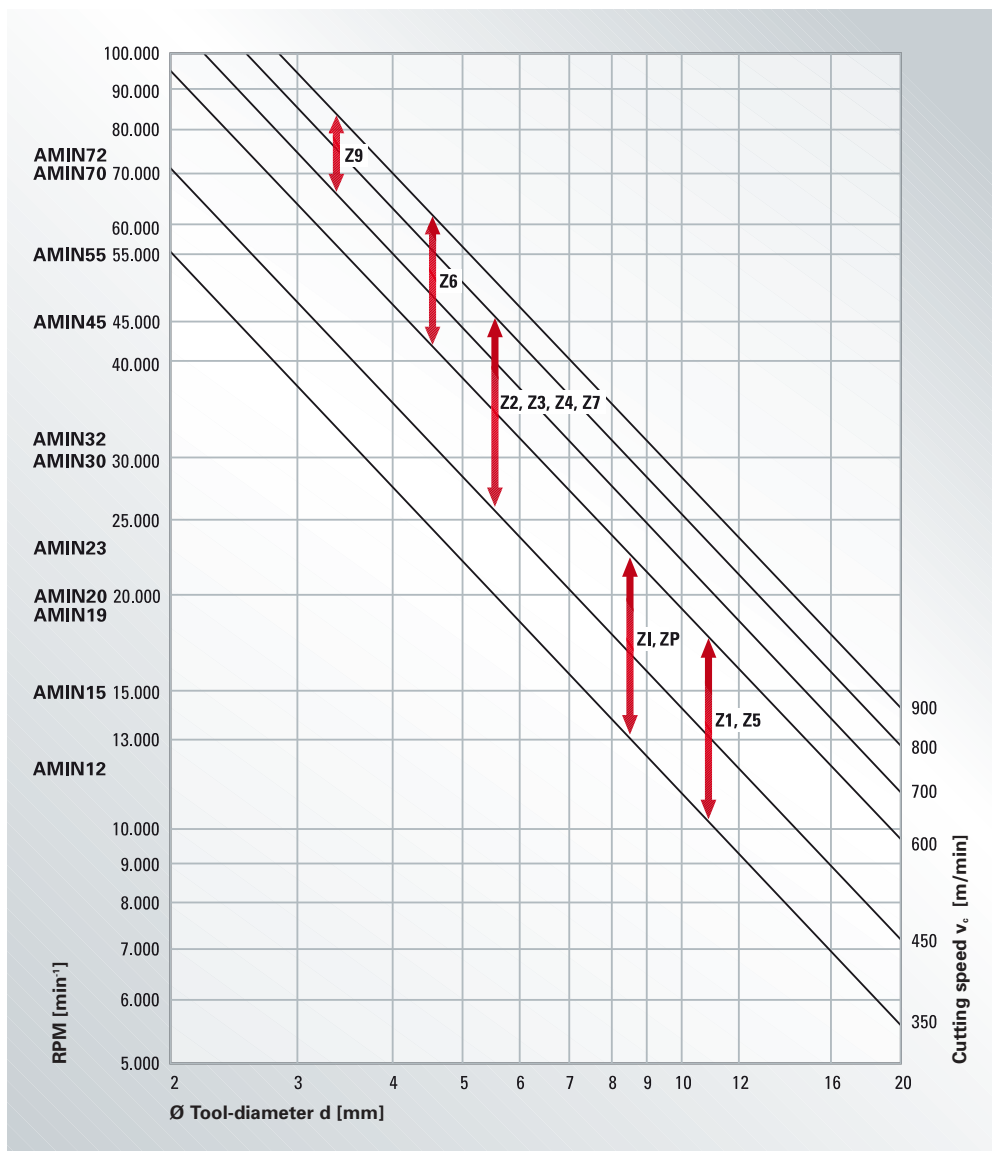
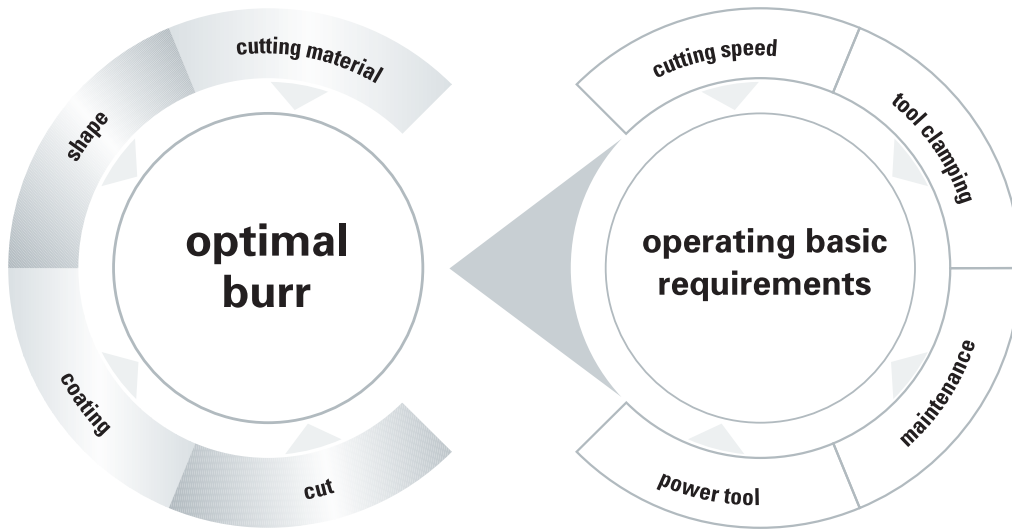
The correct selection of speed is the basis of achieving optimum machining results and long tool-life; please refer to the adjoining table. Use the highest possible speed within the indicated area. Too low a speed results in vibration, chipping and premature wear! Reduce the speed of the burrs only when using in large arc angles or when used on low heat conducting materials. Never let the shank and head become discoloured blue. For safety reasons, extended shanks should also be run at low speed.

The power of your machine should be compatible with the machining process. A reduction in RPM due to lack of power – particularly common with pneumatic tools – should be avoided. Collets must run true. Run-out and vibration will result in chipping and premature wear.






For the same reasons, take care that the machine bearings are in perfect condition.

To avoid vibrations and shank breakage, select the shortest shank overhang as possible.






### Choosing the appropriate Burr







## Types of cut and their application

| The following types are available for specific applications<br><b>Single cut</b>    | <b>Specification (LUKAS)</b> | <b>Recommended application</b>                            | <b>Recommended cutting speed</b><br>low      high |
|---|------------------------------|---|---|
|    | <b>Z 1</b>                   | Light metals, plastic, hard rubber, pressed and hard wood | v = 400 – 600 m/min<br>v = 720 – 900 m/min        |
|    | <b>Z 2</b>                   | Cast iron, non-ferrous metals, tough materials, plastics  | v = 450 – 800 m/min                               |
|    | <b>Z 3</b>                   | Cast steel, welds, hardened and soft high tensile steels  | v = 450 – 800 m/min                               |
|    | <b>Z 5</b>                   | Application like Z 3, but to obtain finer surface finish  | v = 350 – 600 m/min                               |
|  | <b>Z 9</b>                   | Aluminium alloys, soft non-ferrous metals, plastics       | v = 700 – 900 m/min                               |

Burrs from head diameter 6 mm and larger, cut Z1, 2, 3 and 5 can be supplied with chip breaker to produce a short chip form. The burrs can be TiN, TiCN, TiAlN or LTE coated on request (page 29).

| <b>Cross cuts</b><br>produce higher cutting capacity on tough materials             | <b>Specification (LUKAS)</b> | <b>Recommended application</b>   | <b>Recommended cutting speed</b><br>low      high |
|---|------------------------------|--|---|
|  | <b>Z 4</b>                   | High alloy steels, stainless, acid and heat resistant castings, plastics             | v = 450 – 800 m/min                               |
|  | <b>Z 6</b>                   | Application like Z 4 but higher rate of stock removal                                | v = 540 – 900 m/min                               |
|  | <b>Z 7</b>                   | Cast steel, welds, hardened and soft steels (universal higher performance cut)       | v = 450 – 800 m/min                               |
|  | <b>Z1</b> (see page 40)      | Internal machining of bores, finish machining, cast steel, hardened and soft steels. | v = 450 – 800 m/min                               |
|  | <b>ZP</b> (see page 44)      | Workpiece material made from fibre reinforced plastics (GRP, CRP)                    | v = 450 – 800 m/min<br>v = 350 – 600 m/min        |

| Coatings   | Specification (LUKAS)   | Friction on steel (dry)  | Friction on steel (dry) |
|--|---|--|-------------------------|
|   | <b>TiN</b><br>(Titanium nitride)                              | general purpose coating for steel and cast iron, high toughness  | 0,65 – 0,70 µm          |
|   | <b>TiCN</b><br>(Titanium carbon nitride)                      | wear resisting coating for fine deburring process; suited to applications with higher thermal and shock loads  | 0,10 – 0,20 µm          |
|   | <b>TiAlN</b><br>(Titanium aluminium nitride)<br>(see page 51) | high performance coating with a high degree of hardness and low heat conductivity; therefore suitable for high thermal and mechanical applications                                       | 0,30 – 0,35 µm          |
|  | <b>LTE</b><br>(hard coating carbon-based)                     | Special coating with lotus-effect for long chip and smearing non-ferrous metals, particularly aluminium alloys. Excellent sliding friction properties reducing loading on cutting edges. | 0,10 – 0,20 µm          |

**The reasons for producing cutting tools with hard coatings are as follows:**

- to increase tool life
- to reduce machining forces
- to improve chip removal

**Take advantage of our regrind service**

LUKAS tungsten carbide burrs can be resharpened several times when blunted by normal working conditions. Burrs with severe damage to the cutting edges are priced accordingly. We can offer this service providing the tools are delivered to us carriage paid.



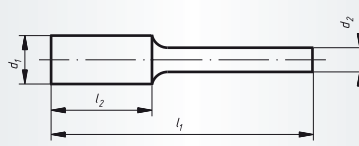
*The symbol denotes burrs which can be reground against enquiry.*





### Shape A, Cylindrical

Ordering example: A10010210305



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Ⓢ regrind service, please enquire

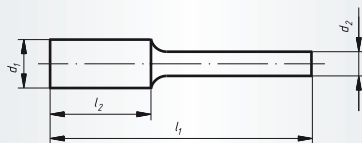
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |     |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------------|-----------------|---|---|---|---|---|---|---|-----------|-----|
|             |     |                     |                      |                      |                      |                      |                | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |     |
| HFA 0210.03 | Z5  | ZYA 0210            | 2                    | 10                   | 3                    | 40                   | A10010210305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFA 0313.03 | Z3  | ZYA 0313            | 3                    | 13                   | 3                    | 40                   | A10010313303   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFA 0313.03 | Z4  | ZYA 0313            | 3                    | 13                   | 3                    | 40                   | A10010313304   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■   |
| HFA 0313.03 | Z5  | ZYA 0313            | 3                    | 13                   | 3                    | 40                   | A10010313305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFA 0313.03 | Z7  | ZYA 0313            | 3                    | 13                   | 3                    | 40                   | A10010313308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■   |
| HFA 0413.06 | Z3  | ZYA 0413            | 4                    | 13                   | 6                    | 50                   | A10010413603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 0413.06 | Z7  | ZYA 0413            | 4                    | 13                   | 6                    | 50                   | A10010413608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 0607.03 | Z5  | ZYA 0607            | 6                    | 7                    | 3                    | 37                   | A10010607305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 0613.03 | Z5  | ZYA 0613            | 6                    | 13                   | 3                    | 43                   | A10010613305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 0613.03 | Z7  | ZYA 0613            | 6                    | 13                   | 3                    | 43                   | A10010613308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 0616.06 | Z2  | ZYA 0616            | 6                    | 16                   | 6                    | 50                   | A10010616602   | 1               |   |   |   | 5 | 6 |   | 8 |           | ■ Ⓢ |
| HFA 0616.06 | Z3  | ZYA 0616            | 6                    | 16                   | 6                    | 50                   | A10010616603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 0616.06 | Z4  | ZYA 0616            | 6                    | 16                   | 6                    | 50                   | A10010616604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFA 0616.06 | Z5  | ZYA 0616            | 6                    | 16                   | 6                    | 50                   | A10010616605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 0616.06 | Z7  | ZYA 0616            | 6                    | 16                   | 6                    | 50                   | A10010616608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 0616.06 | Z9  | ZYA 0616            | 6                    | 16                   | 6                    | 50                   | A10010616609   |                 |   |   |   |   | 6 |   | 8 |           | ■   |
| HFA 0820.06 | Z3  | ZYA 0820            | 8                    | 20                   | 6                    | 60                   | A10010820603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 0820.06 | Z4  | ZYA 0820            | 8                    | 20                   | 6                    | 60                   | A10010820604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFA 0820.06 | Z5  | ZYA 0820            | 8                    | 20                   | 6                    | 60                   | A10010820605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 0820.06 | Z7  | ZYA 0820            | 8                    | 20                   | 6                    | 60                   | A10010820608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 1013.06 | Z3  | ZYA 1013            | 10                   | 13                   | 6                    | 53                   | A10011013603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1013.06 | Z7  | ZYA 1013            | 10                   | 13                   | 6                    | 53                   | A10011013608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 1013.08 | Z3  | ZYA 1013            | 10                   | 13                   | 8                    | 53                   | A10011013803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1020.06 | Z3  | ZYA 1020            | 10                   | 20                   | 6                    | 60                   | A10011020603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1020.06 | Z4  | ZYA 1020            | 10                   | 20                   | 6                    | 60                   | A10011020604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFA 1020.06 | Z7  | ZYA 1020            | 10                   | 20                   | 6                    | 60                   | A10011020608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 1020.08 | Z3  | ZYA 1020            | 10                   | 20                   | 8                    | 60                   | A10011020803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1025.06 | Z4  | ZYA 1025            | 10                   | 25                   | 6                    | 65                   | A10011025604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFA 1025.06 | Z7  | ZYA 1025            | 10                   | 25                   | 6                    | 65                   | A10011025608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 1025.08 | Z3  | ZYA 1025            | 10                   | 25                   | 8                    | 65                   | A10011025803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1225.06 | Z3  | ZYA 1225            | 12                   | 25                   | 6                    | 65                   | A10011225603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1225.06 | Z4  | ZYA 1225            | 12                   | 25                   | 6                    | 65                   | A10011225604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFA 1225.06 | Z5  | ZYA 1225            | 12                   | 25                   | 6                    | 65                   | A10011225605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1225.06 | Z7  | ZYA 1225            | 12                   | 25                   | 6                    | 65                   | A10011225608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFA 1225.06 | Z9  | ZYA 1225            | 12                   | 25                   | 6                    | 65                   | A10011225609   |                 |   |   |   |   | 6 |   | 8 |           | ■   |
| HFA 1225.08 | Z3  | ZYA 1225            | 12                   | 25                   | 8                    | 65                   | A10011225803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFA 1225.08 | Z4  | ZYA 1225            | 12                   | 25                   | 8                    | 65                   | A10011225804   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFA 1225.08 | Z9  | ZYA 1225            | 12                   | 25                   | 8                    | 65                   | A10011225809   |                 |   |   |   |   | 6 |   | 8 |           | ■   |



Industry

Shape A, Cylindrical

Ordering example:A10011625603



**Packing unit:**

1 pc. per type


Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

| Description | Cut | similar DIN 8033 | d <sub>1</sub> mm | l <sub>2</sub> mm | d <sub>2</sub> mm | l <sub>1</sub> mm | Product-Number | recommended for | New burrs |
|-------------|-----|------------------|-------------------|-------------------|-------------------|-------------------|----------------|-----------------|-----------|
| HFA 1625.06 | Z3  | ZYA 1625         | 16                | 25                | 6                 | 65                | A10011625603   |                 | ■         |
| HFA 1625.06 | Z7  | ZYA 1625         | 16                | 25                | 6                 | 65                | A10011625608   |                 | ■         |
| HFA 1625.06 | Z9  | ZYA 1625         | 16                | 25                | 6                 | 65                | A10011625609   |                 | ■         |
| HFA 1625.08 | Z9  | ZYA 1625         | 16                | 25                | 8                 | 65                | A10011625809   |                 | ■         |



## Always the right tool



**Mounted points and polishing points:**  
 11,000 specially produced items according to customers' requests reflect the big variety of these products.

**Martin Reif**  
Sales Department

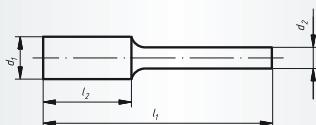
[www.lukas-erzett.com](http://www.lukas-erzett.com)





### Shape A, Cylindrical, with end-cut

Ordering example: A100102103050001



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

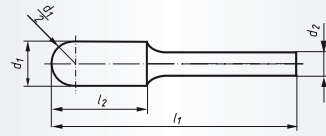
| Description  | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number   | recommended for |   |   |   |   |   |   |   | New burrs |   |    |   |
|--------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|------------------|-----------------|---|---|---|---|---|---|---|-----------|---|----|---|
|              |     |                     |                      |                      |                      |                      |                  | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           | 9 | 10 |   |
| HFAS 0210.03 | Z5  | ZYA-S 0210          | 2                    | 10                   | 3                    | 40                   | A100102103050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0313.03 | Z3  | ZYA-S 0313          | 3                    | 13                   | 3                    | 40                   | A100103133030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0313.03 | Z4  | ZYA-S 0313          | 3                    | 13                   | 3                    | 40                   | A100103133040001 |                 | 2 | 3 | 4 |   |   |   | 7 | 8         |   |    | ■ |
| HFAS 0313.03 | Z5  | ZYA-S 0313          | 3                    | 13                   | 3                    | 40                   | A100103133050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0313.03 | Z7  | ZYA-S 0313          | 3                    | 13                   | 3                    | 40                   | A100103133080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 0413.06 | Z3  | ZYA-S 0413          | 4                    | 13                   | 6                    | 50                   | A100104136030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0413.06 | Z7  | ZYA-S 0413          | 4                    | 13                   | 6                    | 50                   | A100104136080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 0607.03 | Z5  | ZYA-S 0607          | 6                    | 7                    | 3                    | 37                   | A100106073050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0613.03 | Z5  | ZYA-S 0613          | 6                    | 13                   | 3                    | 43                   | A100106133050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0613.03 | Z7  | ZYA-S 0613          | 6                    | 13                   | 3                    | 43                   | A100106133080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 0616.06 | Z3  | ZYA-S 0616          | 6                    | 16                   | 6                    | 50                   | A100106166030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0616.06 | Z4  | ZYA-S 0616          | 6                    | 16                   | 6                    | 50                   | A100106166040001 |                 | 2 | 3 | 4 |   |   |   | 7 | 8         |   |    | ■ |
| HFAS 0616.06 | Z5  | ZYA-S 0616          | 6                    | 16                   | 6                    | 50                   | A100106166050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0616.06 | Z7  | ZYA-S 0616          | 6                    | 16                   | 6                    | 50                   | A100106166080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 0820.06 | Z3  | ZYA-S 0820          | 8                    | 20                   | 6                    | 60                   | A100108206030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0820.06 | Z4  | ZYA-S 0820          | 8                    | 20                   | 6                    | 60                   | A100108206040001 |                 | 2 | 3 | 4 |   |   |   | 7 | 8         |   |    | ■ |
| HFAS 0820.06 | Z5  | ZYA-S 0820          | 8                    | 20                   | 6                    | 60                   | A100108206050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 0820.06 | Z7  | ZYA-S 0820          | 8                    | 20                   | 6                    | 60                   | A100108206080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 1013.06 | Z3  | ZYA-S 1013          | 10                   | 13                   | 6                    | 53                   | A100110136030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 1013.06 | Z7  | ZYA-S 1013          | 10                   | 13                   | 6                    | 53                   | A100110136080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 1020.06 | Z3  | ZYA-S 1020          | 10                   | 20                   | 6                    | 60                   | A100110206030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 1020.06 | Z4  | ZYA-S 1020          | 10                   | 20                   | 6                    | 60                   | A100110206040001 |                 | 2 | 3 | 4 |   |   |   | 7 | 8         |   |    | ■ |
| HFAS 1020.06 | Z7  | ZYA-S 1020          | 10                   | 20                   | 6                    | 60                   | A100110206080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 1025.06 | Z4  | ZYA-S 1025          | 10                   | 25                   | 6                    | 65                   | A100110256040001 |                 | 2 | 3 | 4 |   |   |   | 7 | 8         |   |    | ■ |
| HFAS 1025.06 | Z7  | ZYA-S 1025          | 10                   | 25                   | 6                    | 65                   | A100110256080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 1225.06 | Z3  | ZYA-S 1225          | 12                   | 25                   | 6                    | 65                   | A100112256030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 1225.06 | Z4  | ZYA-S 1225          | 12                   | 25                   | 6                    | 65                   | A100112256040001 |                 | 2 | 3 | 4 |   |   |   | 7 | 8         |   |    | ■ |
| HFAS 1225.06 | Z5  | ZYA-S 1225          | 12                   | 25                   | 6                    | 65                   | A100112256050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 1225.06 | Z7  | ZYA-S 1225          | 12                   | 25                   | 6                    | 65                   | A100112256080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 1225.08 | Z4  | ZYA-S 1225          | 12                   | 25                   | 8                    | 65                   | A100112258040001 |                 | 2 | 3 | 4 |   |   |   | 7 | 8         |   |    | ■ |
| HFAS 1225.08 | Z7  | ZYA-S 1225          | 12                   | 25                   | 8                    | 65                   | A100112258080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |
| HFAS 1625.06 | Z3  | ZYA-S 1625          | 16                   | 25                   | 6                    | 65                   | A100116256030001 | 1               | 2 | 3 | 4 |   |   |   | 7 |           |   |    | ■ |
| HFAS 1625.06 | Z7  | ZYA-S 1625          | 16                   | 25                   | 6                    | 65                   | A100116256080001 | 1               | 2 | 3 |   | 5 |   |   | 7 |           |   |    | ■ |



Industry

Shape C, Cylindrical Round nose

Ordering example: A10020210305



Packing unit:

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Ⓢ regrind service, please enquire

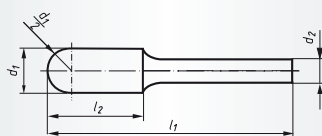
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------------|-----------------|---|---|---|---|---|---|---|-----------|
|             |     |                     |                      |                      |                      |                      |                | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |
| HFC 0210.03 | Z5  | WRC 0210            | 2                    | 10                   | 3                    | 40                   | A10020210305   | 1               | 2 | 3 | 4 |   | 7 |   |   | ■         |
| HFC 0210.03 | Z7  | WRC 0210            | 2                    | 10                   | 3                    | 40                   | A10020210308   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■         |
| HFC 0313.03 | Z2  | WRC 0313            | 3                    | 13                   | 3                    | 40                   | A10020313302   | 1               |   |   |   | 5 | 6 |   | 8 | ■         |
| HFC 0313.03 | Z3  | WRC 0313            | 3                    | 13                   | 3                    | 40                   | A10020313303   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■         |
| HFC 0313.03 | Z4  | WRC 0313            | 3                    | 13                   | 3                    | 40                   | A10020313304   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■         |
| HFC 0313.03 | Z5  | WRC 0313            | 3                    | 13                   | 3                    | 40                   | A10020313305   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■         |
| HFC 0313.03 | Z7  | WRC 0313            | 3                    | 13                   | 3                    | 40                   | A10020313308   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■         |
| HFC 0413.06 | Z3  | WRC 0413            | 4                    | 13                   | 6                    | 50                   | A10020413603   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 0413.06 | Z4  | WRC 0413            | 4                    | 13                   | 6                    | 50                   | A10020413604   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 0413.06 | Z7  | WRC 0413            | 4                    | 13                   | 6                    | 50                   | A10020413608   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |
| HFC 0613.03 | Z5  | WRC 0613            | 6                    | 13                   | 3                    | 43                   | A10020613305   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 0613.03 | Z7  | WRC 0613            | 6                    | 13                   | 3                    | 43                   | A10020613308   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |
| HFC 0616.06 | Z1  | WRC 0616            | 6                    | 16                   | 6                    | 50                   | A10020616601   |                 |   |   |   |   | 6 |   | 8 | ■         |
| HFC 0616.06 | Z2  | WRC 0616            | 6                    | 16                   | 6                    | 50                   | A10020616602   | 1               |   |   |   | 5 | 6 |   | 8 | ■ Ⓢ       |
| HFC 0616.06 | Z3  | WRC 0616            | 6                    | 16                   | 6                    | 50                   | A10020616603   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 0616.06 | Z4  | WRC 0616            | 6                    | 16                   | 6                    | 50                   | A10020616604   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 0616.06 | Z5  | WRC 0616            | 6                    | 16                   | 6                    | 50                   | A10020616605   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 0616.06 | Z7  | WRC 0616            | 6                    | 16                   | 6                    | 50                   | A10020616608   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |
| HFC 0616.06 | Z9  | WRC 0616            | 6                    | 16                   | 6                    | 50                   | A10020616609   |                 |   |   |   |   | 6 |   | 8 | ■         |
| HFC 0820.06 | Z3  | WRC 0820            | 8                    | 20                   | 6                    | 60                   | A10020820603   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 0820.06 | Z4  | WRC 0820            | 8                    | 20                   | 6                    | 60                   | A10020820604   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 0820.06 | Z5  | WRC 0820            | 8                    | 20                   | 6                    | 60                   | A10020820605   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 0820.06 | Z6  | WRC 0820            | 8                    | 20                   | 6                    | 60                   | A10020820606   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 0820.06 | Z7  | WRC 0820            | 8                    | 20                   | 6                    | 60                   | A10020820608   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |
| HFC 0820.06 | Z9  | WRC 0820            | 8                    | 20                   | 6                    | 60                   | A10020820609   |                 |   |   |   |   | 6 |   | 8 | ■         |
| HFC 1020.06 | Z3  | WRC 1020            | 10                   | 20                   | 6                    | 60                   | A10021020603   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 1020.06 | Z4  | WRC 1020            | 10                   | 20                   | 6                    | 60                   | A10021020604   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 1020.06 | Z5  | WRC 1020            | 10                   | 20                   | 6                    | 60                   | A10021020605   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 1020.06 | Z6  | WRC 1020            | 10                   | 20                   | 6                    | 60                   | A10021020606   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 1020.06 | Z7  | WRC 1020            | 10                   | 20                   | 6                    | 60                   | A10021020608   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |
| HFC 1020.08 | Z4  | WRC 1020            | 10                   | 20                   | 8                    | 60                   | A10021020804   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 1020.08 | Z7  | WRC 1020            | 10                   | 20                   | 8                    | 60                   | A10021020808   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |
| HFC 1025.06 | Z7  | WRC 1025            | 10                   | 25                   | 6                    | 65                   | A10021025608   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |
| HFC 1225.06 | Z1  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225601   |                 |   |   |   |   | 6 |   | 8 | ■ Ⓢ       |
| HFC 1225.06 | Z2  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225602   | 1               |   |   |   | 5 | 6 |   | 8 | ■ Ⓢ       |
| HFC 1225.06 | Z3  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225603   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 1225.06 | Z4  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225604   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 1225.06 | Z5  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225605   | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |
| HFC 1225.06 | Z6  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225606   |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |
| HFC 1225.06 | Z7  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225608   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |



Industry

## Shape C, Cylindrical Round nose

Ordering example: A10021225609



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Ⓢ regrind service, please enquire

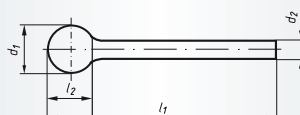
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |     |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------------|-----------------|---|---|---|---|---|---|---|-----------|-----|
|             |     |                     |                      |                      |                      |                      |                | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |     |
| HFC 1225.06 | Z9  | WRC 1225            | 12                   | 25                   | 6                    | 65                   | A10021225609   |                 |   |   |   |   | 6 |   | 8 |           | ■   |
| HFC 1225.08 | Z3  | WRC 1225            | 12                   | 25                   | 8                    | 65                   | A10021225803   | 1               | 2 | 3 | 4 |   |   |   | 7 |           | ■ Ⓢ |
| HFC 1225.08 | Z4  | WRC 1225            | 12                   | 25                   | 8                    | 65                   | A10021225804   |                 | 2 | 3 | 4 |   |   |   | 7 | 8         | ■ Ⓢ |
| HFC 1225.08 | Z7  | WRC 1225            | 12                   | 25                   | 8                    | 65                   | A10021225808   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |     |
| HFC 1225.08 | Z9  | WRC 1225            | 12                   | 25                   | 8                    | 65                   | A10021225809   |                 |   |   |   |   | 6 |   | 8 | ■         |     |
| HFC 1625.06 | Z3  | WRC 1625            | 16                   | 25                   | 6                    | 65                   | A10021625603   | 1               | 2 | 3 | 4 |   |   |   | 7 |           | ■ Ⓢ |
| HFC 1625.06 | Z7  | WRC 1625            | 16                   | 25                   | 6                    | 65                   | A10021625608   | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |     |
| HFC 1625.06 | Z9  | WRC 1625            | 16                   | 25                   | 6                    | 65                   | A10021625609   |                 |   |   |   |   | 6 |   | 8 | ■ Ⓢ       |     |
| HFC 1625.08 | Z3  | WRC 1625            | 16                   | 25                   | 8                    | 65                   | A10021625803   | 1               | 2 | 3 | 4 |   |   |   | 7 |           | ■ Ⓢ |
| HFC 1625.08 | Z9  | WRC 1625            | 16                   | 25                   | 8                    | 65                   | A10021625809   |                 |   |   |   |   | 6 |   | 8 | ■ Ⓢ       |     |



Industry

## Shape D, Spherical

Ordering example: A10030303302



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Ⓢ regrind service, please enquire

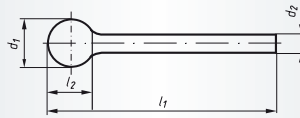
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number   | recommended for |   |   |   |   |   |   |   | New burrs |   |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|------------------|-----------------|---|---|---|---|---|---|---|-----------|---|
|             |     |                     |                      |                      |                      |                      |                  | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |   |
| HFD 0302.03 | Z2  | KUD 0302            | 3                    | 2                    | 3                    | 40                   | A10030303302     | 1               |   |   |   | 5 | 6 |   | 8 |           | ■ |
| HFD 0302.03 | Z3  | KUD 0302            | 3                    | 2                    | 3                    | 40                   | A10030303303     | 1               | 2 | 3 | 4 |   |   |   | 7 |           | ■ |
| HFD 0302.03 | Z4  | KUD 0302            | 3                    | 2                    | 3                    | 40                   | A10030303304     |                 | 2 | 3 | 4 |   |   |   | 7 | 8         | ■ |
| HFD 0302.03 | Z5  | KUD 0302            | 3                    | 2                    | 3                    | 40                   | A10030303305     | 1               | 2 | 3 | 4 |   |   | 7 |   | ■         |   |
| HFD 0302.03 | Z7  | KUD 0302            | 3                    | 2                    | 3                    | 40                   | A10030303308     | 1               | 2 | 3 |   | 5 |   | 7 |   | ■         |   |
| HFD 0403.03 | Z5  | KUD 0403            | 4                    | 3                    | 3                    | 34                   | A100304043050001 | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |   |
| HFD 0403.03 | Z7  | KUD 0403            | 4                    | 3                    | 3                    | 34                   | A100304043080001 | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |   |
| HFD 0403.06 | Z3  | KUD 0403            | 4                    | 3                    | 6                    | 50                   | A10030404603     | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |   |
| HFD 0403.06 | Z4  | KUD 0403            | 4                    | 3                    | 6                    | 50                   | A10030404604     |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |   |
| HFD 0403.06 | Z7  | KUD 0403            | 4                    | 3                    | 6                    | 50                   | A10030404608     | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |   |
| HFD 0605.03 | Z5  | KUD 0605            | 6                    | 5                    | 3                    | 35                   | A10030606305     | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |   |
| HFD 0605.03 | Z7  | KUD 0605            | 6                    | 5                    | 3                    | 35                   | A10030606308     | 1               | 2 | 3 |   | 5 |   | 7 |   | ■ Ⓢ       |   |
| HFD 0605.06 | Z3  | KUD 0605            | 6                    | 5                    | 6                    | 50                   | A10030606603     | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |   |
| HFD 0605.06 | Z4  | KUD 0605            | 6                    | 5                    | 6                    | 50                   | A10030606604     |                 | 2 | 3 | 4 |   |   | 7 | 8 | ■ Ⓢ       |   |
| HFD 0605.06 | Z5  | KUD 0605            | 6                    | 5                    | 6                    | 50                   | A10030606605     | 1               | 2 | 3 | 4 |   |   | 7 |   | ■ Ⓢ       |   |



Industry

Shape D, Spherical

Ordering example: A10030606608



Packing unit:

1 pc. per type

Further dimensions, cuts and shank lengths on request.

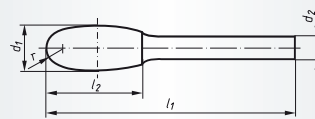
regrind service, please enquire

| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number | recommended for |   |   |   |   |   |  |  | New burrs |  |   |  |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------------|-----------------|---|---|---|---|---|--|--|-----------|--|---|--|
|             |     |                     |                      |                      |                      |                      |                |                 |   |   |   |   |   |  |  |           |  |   |  |
| HFD 0605.06 | Z7  | KUD 0605            | 6                    | 5                    | 6                    | 50                   | A10030606608   | 1               | 2 | 3 | 5 | 7 |   |  |  |           |  | ■ |  |
| HFD 0807.06 | Z3  | KUD 0807            | 8                    | 7                    | 6                    | 47                   | A10030808603   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 0807.06 | Z4  | KUD 0807            | 8                    | 7                    | 6                    | 47                   | A10030808604   |                 | 2 | 3 | 4 | 7 | 8 |  |  |           |  | ■ |  |
| HFD 0807.06 | Z5  | KUD 0807            | 8                    | 7                    | 6                    | 47                   | A10030808605   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 0807.06 | Z7  | KUD 0807            | 8                    | 7                    | 6                    | 47                   | A10030808608   | 1               | 2 | 3 | 5 | 7 |   |  |  |           |  | ■ |  |
| HFD 1009.06 | Z3  | KUD 1009            | 10                   | 9                    | 6                    | 49                   | A10031010603   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 1009.06 | Z4  | KUD 1009            | 10                   | 9                    | 6                    | 49                   | A10031010604   |                 | 2 | 3 | 4 | 7 | 8 |  |  |           |  | ■ |  |
| HFD 1009.06 | Z5  | KUD 1009            | 10                   | 9                    | 6                    | 49                   | A10031010605   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 1009.06 | Z7  | KUD 1009            | 10                   | 9                    | 6                    | 49                   | A10031010608   | 1               | 2 | 3 | 5 | 7 |   |  |  |           |  | ■ |  |
| HFD 1210.06 | Z3  | KUD 1210            | 12                   | 10                   | 6                    | 51                   | A10031212603   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 1210.06 | Z4  | KUD 1210            | 12                   | 10                   | 6                    | 51                   | A10031212604   |                 | 2 | 3 | 4 | 7 | 8 |  |  |           |  | ■ |  |
| HFD 1210.06 | Z5  | KUD 1210            | 12                   | 10                   | 6                    | 51                   | A10031212605   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 1210.06 | Z7  | KUD 1210            | 12                   | 10                   | 6                    | 51                   | A10031212608   | 1               | 2 | 3 | 5 | 7 |   |  |  |           |  | ■ |  |
| HFD 1210.06 | Z9  | KUD 1210            | 12                   | 10                   | 6                    | 50                   | A10031212609   |                 |   |   | 6 | 8 |   |  |  |           |  | ■ |  |
| HFD 1210.08 | Z3  | KUD 1210            | 12                   | 10                   | 8                    | 51                   | A10031212803   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 1210.08 | Z4  | KUD 1210            | 12                   | 10                   | 8                    | 51                   | A10031212804   |                 | 2 | 3 | 4 | 7 | 8 |  |  |           |  | ■ |  |
| HFD 1210.08 | Z7  | KUD 1210            | 12                   | 10                   | 8                    | 51                   | A10031210808   | 1               | 2 | 3 | 5 | 7 |   |  |  |           |  | ■ |  |
| HFD 1210.08 | Z9  | KUD 1210            | 12                   | 10                   | 8                    | 50                   | A10031212809   |                 |   |   | 6 | 8 |   |  |  |           |  | ■ |  |
| HFD 1614.06 | Z3  | KUD 1614            | 16                   | 14                   | 6                    | 54                   | A10031616603   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 1614.06 | Z4  | KUD 1614            | 16                   | 14                   | 6                    | 54                   | A10031616604   |                 | 2 | 3 | 4 | 7 | 8 |  |  |           |  | ■ |  |
| HFD 1614.06 | Z7  | KUD 1614            | 16                   | 14                   | 6                    | 54                   | A10031616608   | 1               | 2 | 3 | 5 | 7 |   |  |  |           |  | ■ |  |
| HFD 1614.06 | Z9  | KUD 1614            | 16                   | 14                   | 6                    | 54                   | A10031616609   |                 |   |   | 6 | 8 |   |  |  |           |  | ■ |  |
| HFD 1614.08 | Z3  | KUD 1614            | 16                   | 14                   | 8                    | 54                   | A10031616803   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 1614.08 | Z9  | KUD 1614            | 16                   | 14                   | 8                    | 54                   | A10031616809   |                 |   |   | 6 | 8 |   |  |  |           |  | ■ |  |
| HFD 2018.06 | Z3  | KUD 2018            | 20                   | 18                   | 6                    | 58                   | A10032020603   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |
| HFD 2018.06 | Z7  | KUD 2018            | 20                   | 18                   | 6                    | 58                   | A10032020608   | 1               | 2 | 3 | 5 | 7 |   |  |  |           |  | ■ |  |
| HFD 2018.08 | Z3  | KUD 2018            | 20                   | 18                   | 8                    | 58                   | A10032020803   | 1               | 2 | 3 | 4 | 7 |   |  |  |           |  | ■ |  |



### Shape E, Oval

Ordering example: A10060307303



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

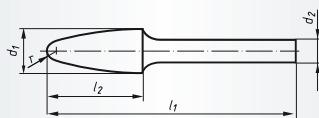
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | r≈<br>mm | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |   |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------|----------------|-----------------|---|---|---|---|---|---|---|-----------|---|
|             |     |                     |                      |                      |                      |                      |          |                | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |   |
| HFE 0307.03 | Z3  | TRE 0307            | 3                    | 7                    | 3                    | 40                   | 1,2      | A10060307303   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 0307.03 | Z5  | TRE 0307            | 3                    | 7                    | 3                    | 40                   | 1,2      | A10060307305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 0307.03 | Z7  | TRE 0307            | 3                    | 7                    | 3                    | 40                   | 1,2      | A10060307308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |
| HFE 0610.03 | Z5  | TRE 0610            | 6                    | 10                   | 3                    | 40                   | 2,8      | A10060610305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 0610.03 | Z7  | TRE 0610            | 6                    | 10                   | 3                    | 40                   | 2,8      | A10060610308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |
| HFE 0610.06 | Z3  | TRE 0610            | 6                    | 10                   | 6                    | 50                   | 2,8      | A10060610603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 0610.06 | Z4  | TRE 0610            | 6                    | 10                   | 6                    | 50                   | 2,8      | A10060610604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ |
| HFE 0610.06 | Z7  | TRE 0610            | 6                    | 10                   | 6                    | 50                   | 2,8      | A10060610608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |
| HFE 0813.06 | Z3  | TRE 0813            | 8                    | 13                   | 6                    | 53                   | 3,7      | A10060813603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 0813.06 | Z4  | TRE 0813            | 8                    | 13                   | 6                    | 53                   | 3,7      | A10060813604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ |
| HFE 0813.06 | Z7  | TRE 0813            | 8                    | 13                   | 6                    | 53                   | 3,7      | A10060813608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |
| HFE 1220.06 | Z3  | TRE 1220            | 12                   | 20                   | 6                    | 60                   | 5,0      | A10061220603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 1220.06 | Z4  | TRE 1220            | 12                   | 20                   | 6                    | 60                   | 5,0      | A10061220604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ |
| HFE 1220.06 | Z5  | TRE 1220            | 12                   | 20                   | 6                    | 60                   | 5,0      | A10061220605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 1220.06 | Z7  | TRE 1220            | 12                   | 20                   | 6                    | 60                   | 5,0      | A10061220608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |
| HFE 1225.08 | Z3  | TRE 1225            | 12                   | 25                   | 8                    | 65                   | 5,0      | A10061225803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 1225.08 | Z9  | TRE 1225            | 12                   | 25                   | 8                    | 65                   | 5,0      | A10061225809   |                 |   |   |   |   | 6 |   | 8 |           | ■ |
| HFE 1625.06 | Z7  | TRE 1625            | 16                   | 25                   | 6                    | 65                   | 7,1      | A10061625608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |
| HFE 1625.08 | Z3  | TRE 1625            | 16                   | 25                   | 8                    | 65                   | 7,1      | A10061625803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |
| HFE 1625.08 | Z9  | TRE 1625            | 16                   | 25                   | 8                    | 65                   | 7,1      | A10061625809   |                 |   |   |   |   | 6 |   | 8 |           | ■ |
| HFE 2035.08 | Z3  | TRE 2035            | 20                   | 35                   | 8                    | 75                   | 8,0      | A10062035803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |



Industry

Shape F, Arch round nose

Ordering example: A10100307303



Packing unit:

1 pc. per type

Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

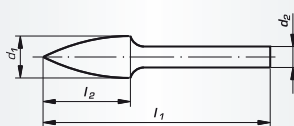
| Description | Cut | similar<br>DIN 8033 | d1<br>mm | l2<br>mm | d2<br>mm | l1<br>mm | r≈<br>mm | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |  |   |
|-------------|-----|---------------------|----------|----------|----------|----------|----------|----------------|-----------------|---|---|---|---|---|---|---|-----------|--|---|
|             |     |                     |          |          |          |          |          |                |                 |   |   |   |   |   |   |   |           |  |   |
| HFF 0307.03 | Z3  | RBF 0307            | 3        | 7        | 3        | 40       | 0,75     | A10100307303   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 0307.03 | Z4  | RBF 0307            | 3        | 7        | 3        | 40       | 0,75     | A10100307304   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           |  | ■ |
| HFF 0307.03 | Z5  | RBF 0307            | 3        | 7        | 3        | 40       | 0,75     | A10100307305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 0313.03 | Z5  | RBF 0313            | 3        | 13       | 3        | 40       | 0,75     | A10100313305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 0313.03 | Z7  | RBF 0313            | 3        | 13       | 3        | 40       | 0,75     | A10100313308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 0613.03 | Z5  | RBF 0613            | 6        | 13       | 3        | 43       | 1,4      | A10100613305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 0613.03 | Z7  | RBF 0613            | 6        | 13       | 3        | 43       | 1,4      | A10100613308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 0618.06 | Z3  | RBF 0618            | 6        | 18       | 6        | 50       | 1,5      | A10100618603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 0618.06 | Z4  | RBF 0618            | 6        | 18       | 6        | 50       | 1,5      | A10100618604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           |  | ■ |
| HFF 0618.06 | Z5  | RBF 0618            | 6        | 18       | 6        | 50       | 1,5      | A10100618605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 0618.06 | Z7  | RBF 0618            | 6        | 18       | 6        | 50       | 1,5      | A10100618608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 0820.06 | Z3  | ---                 | 8        | 20       | 6        | 60       | 1,8      | A10100820603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 0820.06 | Z7  | ---                 | 8        | 20       | 6        | 60       | 1,8      | A10100820608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 1020.06 | Z3  | RBF 1020            | 10       | 20       | 6        | 60       | 2,5      | A10101020603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 1020.06 | Z4  | RBF 1020            | 10       | 20       | 6        | 60       | 2,5      | A10101020604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           |  | ■ |
| HFF 1020.06 | Z6  | RBF 1020            | 10       | 20       | 6        | 60       | 2,5      | A10101020606   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           |  | ■ |
| HFF 1020.06 | Z7  | RBF 1020            | 10       | 20       | 6        | 60       | 2,5      | A10101020608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 1225.06 | Z1  | RBF 1225            | 12       | 25       | 6        | 65       | 2,5      | A10101225601   |                 |   |   |   |   |   | 6 |   | 8         |  | ■ |
| HFF 1225.06 | Z3  | RBF 1225            | 12       | 25       | 6        | 65       | 2,5      | A10101225603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 1225.06 | Z4  | RBF 1225            | 12       | 25       | 6        | 65       | 2,5      | A10101225604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           |  | ■ |
| HFF 1225.06 | Z7  | RBF 1225            | 12       | 25       | 6        | 65       | 2,5      | A10101225608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 1225.06 | Z9  | RBF 1225            | 12       | 25       | 6        | 65       | 2,5      | A10101225609   |                 |   |   |   |   | 6 |   | 8 |           |  | ■ |
| HFF 1225.08 | Z3  | RBF 1225            | 12       | 25       | 8        | 65       | 2,5      | A10101225803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 1225.08 | Z7  | RBF 1225            | 12       | 25       | 8        | 65       | 2,5      | A10101225808   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 1225.08 | Z9  | RBF 1225            | 12       | 25       | 8        | 65       | 2,5      | A10101225809   |                 |   |   |   |   | 6 |   | 8 |           |  | ■ |
| HFF 1230.06 | Z3  | RBF 1230            | 12       | 30       | 6        | 70       | 2,7      | A10101230603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 1230.06 | Z7  | RBF 1230            | 12       | 30       | 6        | 70       | 2,7      | A10101230608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 1230.08 | Z3  | RBF 1230            | 12       | 30       | 8        | 70       | 2,7      | A10101230803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 1630.06 | Z7  | RBF 1630            | 16       | 30       | 6        | 70       | 3,6      | A10101630608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           |  | ■ |
| HFF 1630.06 | Z9  | RBF 1630            | 16       | 30       | 6        | 70       | 3,6      | A10101630609   |                 |   |   |   |   | 6 |   | 8 |           |  | ■ |
| HFF 1630.08 | Z3  | RBF 1630            | 16       | 30       | 8        | 70       | 3,6      | A10101630803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           |  | ■ |
| HFF 1630.08 | Z9  | RBF 1630            | 16       | 30       | 8        | 70       | 3,6      | A10101630809   |                 |   |   |   |   | 6 |   | 8 |           |  | ■ |





### Shape G, Arch pointed nose

Ordering example: A10040307305



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Ⓢ regrind service, please enquire

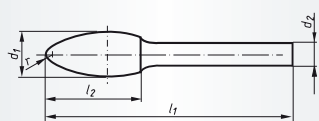
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |     |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------------|-----------------|---|---|---|---|---|---|---|-----------|-----|
|             |     |                     |                      |                      |                      |                      |                | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |     |
| HFG 0307.03 | Z5  | SPG 0307            | 3                    | 7                    | 3                    | 40                   | A10040307305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFG 0307.03 | Z7  | SPG 0307            | 3                    | 7                    | 3                    | 40                   | A10040307308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■   |
| HFG 0313.03 | Z3  | SPG 0313            | 3                    | 13                   | 3                    | 40                   | A10040313303   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFG 0313.03 | Z4  | SPG 0313            | 3                    | 13                   | 3                    | 40                   | A10040313304   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■   |
| HFG 0313.03 | Z5  | SPG 0313            | 3                    | 13                   | 3                    | 40                   | A10040313305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFG 0313.03 | Z7  | SPG 0313            | 3                    | 13                   | 3                    | 40                   | A10040313308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■   |
| HFG 0613.03 | Z5  | SPG 0613            | 6                    | 13                   | 3                    | 43                   | A10040613305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 0613.03 | Z7  | SPG 0613            | 6                    | 13                   | 3                    | 43                   | A10040613308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 0618.06 | Z1  | SPG 0618            | 6                    | 18                   | 6                    | 50                   | A10040618601   |                 |   |   |   |   | 6 |   | 8 |           | ■   |
| HFG 0618.06 | Z2  | SPG 0618            | 6                    | 18                   | 6                    | 50                   | A10040618602   | 1               |   |   |   | 5 | 6 |   | 8 |           | ■ Ⓢ |
| HFG 0618.06 | Z3  | SPG 0618            | 6                    | 18                   | 6                    | 50                   | A10040618603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 0618.06 | Z4  | SPG 0618            | 6                    | 18                   | 6                    | 50                   | A10040618604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFG 0618.06 | Z5  | SPG 0618            | 6                    | 18                   | 6                    | 50                   | A10040618605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 0618.06 | Z7  | SPG 0618            | 6                    | 18                   | 6                    | 50                   | A10040618608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 0820.06 | Z3  | ---                 | 8                    | 20                   | 6                    | 60                   | A10040820603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 0820.06 | Z7  | ---                 | 8                    | 20                   | 6                    | 60                   | A10040820608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 1020.06 | Z3  | SPG 1020            | 10                   | 20                   | 6                    | 60                   | A10041020603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1020.06 | Z4  | SPG 1020            | 10                   | 20                   | 6                    | 60                   | A10041020604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFG 1020.06 | Z5  | SPG 1020            | 10                   | 20                   | 6                    | 60                   | A10041020605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1020.06 | Z7  | SPG 1020            | 10                   | 20                   | 6                    | 60                   | A10041020608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 1220.06 | Z3  | SPG 1220            | 12                   | 20                   | 6                    | 60                   | A10041220603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1220.06 | Z7  | SPG 1220            | 12                   | 20                   | 6                    | 60                   | A10041220608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 1225.06 | Z2  | SPG 1225            | 12                   | 25                   | 6                    | 65                   | A10041225602   | 1               |   |   |   | 5 | 6 |   | 8 |           | ■ Ⓢ |
| HFG 1225.06 | Z3  | SPG 1225            | 12                   | 25                   | 6                    | 65                   | A10041225603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1225.06 | Z4  | SPG 1225            | 12                   | 25                   | 6                    | 65                   | A10041225604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFG 1225.06 | Z7  | SPG 1225            | 12                   | 25                   | 6                    | 65                   | A10041225608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 1225.08 | Z3  | SPG 1225            | 12                   | 25                   | 8                    | 65                   | A10041225803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1230.06 | Z2  | SPG 1230            | 12                   | 30                   | 6                    | 70                   | A10041230602   | 1               |   |   |   | 5 | 6 |   | 8 |           | ■ Ⓢ |
| HFG 1230.06 | Z3  | SPG 1230            | 12                   | 30                   | 6                    | 70                   | A10041230603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1230.06 | Z4  | SPG 1230            | 12                   | 30                   | 6                    | 70                   | A10041230604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFG 1230.06 | Z5  | SPG 1230            | 12                   | 30                   | 6                    | 70                   | A10041230605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1230.06 | Z7  | SPG 1230            | 12                   | 30                   | 6                    | 70                   | A10041230608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 1230.08 | Z3  | SPG 1230            | 12                   | 30                   | 8                    | 70                   | A10041230803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1630.06 | Z3  | SPG 1630            | 16                   | 30                   | 6                    | 70                   | A10041630603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFG 1630.06 | Z4  | SPG 1630            | 16                   | 30                   | 6                    | 70                   | A10041630604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFG 1630.06 | Z7  | SPG 1630            | 16                   | 30                   | 6                    | 70                   | A10041630608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ Ⓢ |
| HFG 1630.08 | Z3  | SPG 1630            | 16                   | 30                   | 8                    | 70                   | A10041630803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |



Industry

Shape H, Flame

Ordering example: A10090307305



Packing unit:

1 pc. per type

Further dimensions, cuts and shank lengths on request.

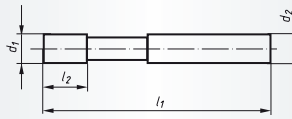
regrind service, please enquire

| Description | Cut | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | r ≈<br>mm | Product-Number | recommended for | New burrs |
|-------------|-----|----------------------|----------------------|----------------------|----------------------|-----------|----------------|-----------------|-----------|
| HFH 0307.03 | Z5  | 3                    | 7                    | 3                    | 40                   | 0,8       | A10090307305   |                 | ■         |
| HFH 0613.03 | Z1  | 6                    | 13                   | 3                    | 43                   | 1,0       | A10090613301   |                 | ■         |
| HFH 0613.03 | Z2  | 6                    | 13                   | 3                    | 43                   | 1,0       | A10090613302   |                 | ■         |
| HFH 0613.03 | Z3  | 6                    | 13                   | 3                    | 43                   | 1,0       | A10090613303   |                 | ■         |
| HFH 0613.03 | Z4  | 6                    | 13                   | 3                    | 43                   | 1,0       | A10090613304   |                 | ■         |
| HFH 0613.03 | Z5  | 6                    | 13                   | 3                    | 43                   | 1,0       | A10090613305   |                 | ■         |
| HFH 0613.03 | Z7  | 6                    | 13                   | 3                    | 43                   | 1,0       | A10090613308   |                 | ■         |
| HFH 0820.06 | Z3  | 8                    | 20                   | 6                    | 60                   | 1,6       | A10090820603   |                 | ■         |
| HFH 0820.06 | Z4  | 8                    | 20                   | 6                    | 60                   | 1,6       | A10090820604   |                 | ■         |
| HFH 0820.06 | Z7  | 8                    | 20                   | 6                    | 60                   | 1,6       | A10090820608   |                 | ■         |
| HFH 1230.06 | Z3  | 12                   | 30                   | 6                    | 70                   | 2,0       | A10091230603   |                 | ■         |
| HFH 1230.06 | Z4  | 12                   | 30                   | 6                    | 70                   | 2,0       | A10091230604   |                 | ■         |
| HFH 1230.06 | Z7  | 12                   | 30                   | 6                    | 70                   | 2,0       | A10091230608   |                 | ■         |
| HFH 1230.08 | Z3  | 12                   | 30                   | 8                    | 70                   | 2,0       | A10091230803   |                 | ■         |
| HFH 1635.06 | Z7  | 16                   | 35                   | 6                    | 75                   | 2,5       | A10091635608   |                 | ■         |
| HFH 1635.08 | Z3  | 16                   | 35                   | 8                    | 75                   | 2,5       | A10091635803   |                 | ■         |



### Shape I, Internal burr with multi purpose cut

Ordering example: A10010204300



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

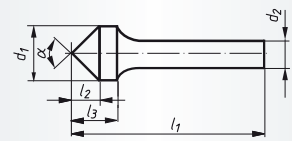
regrind service, please enquire

| Description | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number | recommended for   | New burrs |
|-------------|----------------------|----------------------|----------------------|----------------------|----------------|---|-----------|
| HFI 0204.03 | 2,5                  | 4                    | 3                    | 40                   | A10010204300   | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFI 0408.03 | 4                    | 8                    | 3                    | 50                   | A10010408300   | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFI 0610.06 | 6                    | 10                   | 6                    | 65                   | A10010610600   | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFI 0810.06 | 8                    | 10                   | 6                    | 65                   | A10010810600   | <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |



### Shape J, Pointed nose

Ordering example: A10080660603



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

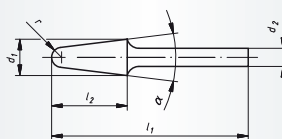
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | l <sub>3</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | α   | Product-Number | recommended for   | New burrs |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|----------------------|-----|----------------|---|-----------|
| HFJ 0605.06 | Z3  | KSJ 0605            | 6                    | 5                    | -                    | 6                    | 50                   | 60° | A10080660603   | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFJ 1010.06 | Z3  | KSK 1005            | 10                   | 5                    | 10                   | 6                    | 50                   | 90° | A10081090603   | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFJ 1013.06 | Z3  | KSJ 1008            | 10                   | 9                    | 13                   | 6                    | 53                   | 60° | A10081060603   | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFJ 1613.06 | Z3  | KSK 1608            | 16                   | 8                    | 13                   | 6                    | 53                   | 90° | A10081690603   | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFJ 1613.08 | Z3  | KSK 1608            | 16                   | 8                    | 13                   | 8                    | 53                   | 90° | A10081690803   | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFJ 1616.06 | Z3  | KSJ 1613            | 16                   | 14                   | 16                   | 6                    | 56                   | 60° | A10081660603   | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |
| HFJ 1616.08 | Z3  | KSJ 1613            | 16                   | 14                   | 16                   | 8                    | 56                   | 60° | A10081660803   | <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input checked="" type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input checked="" type="checkbox"/> | ■         |



Industry

Shape L, Conical Round nose

Ordering example: A10070820603



Packing unit:

1 pc. per type

Further dimensions, cuts and shank lengths on request.

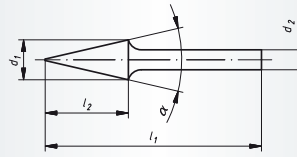
regrind service, please enquire

| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | r<br>mm | α    | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |   |  |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|---------|------|----------------|-----------------|---|---|---|---|---|---|---|-----------|---|--|
|             |     |                     |                      |                      |                      |                      |         |      |                | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |   |  |
| HFL 0820.06 | Z3  | ---                 | 8                    | 20                   | 6                    | 60                   | 1,5     | 14 ° | A10070820603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 0820.06 | Z7  | ---                 | 8                    | 20                   | 6                    | 60                   | 1,5     | 14 ° | A10070820608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |  |
| HFL 0820.06 | Z9  | ---                 | 8                    | 20                   | 6                    | 60                   | 1,5     | 14 ° | A10070820609   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |
| HFL 1015.06 | Z3  | ---                 | 10                   | 15                   | 6                    | 55                   | 3,6     | 14 ° | A10071015603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1020.06 | Z3  | KEL 1020            | 10                   | 20                   | 6                    | 60                   | 2,9     | 14 ° | A10071020603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1020.06 | Z7  | KEL 1020            | 10                   | 20                   | 6                    | 60                   | 2,9     | 14 ° | A10071020608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |  |
| HFL 1020.06 | Z9  | KEL 1020            | 10                   | 20                   | 6                    | 60                   | 2,9     | 14 ° | A10071020609   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |
| HFL 1225.06 | Z3  | KEL 1225            | 12                   | 25                   | 6                    | 65                   | 3,3     | 14 ° | A10071225603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1225.06 | Z4  | KEL 1225            | 12                   | 25                   | 6                    | 65                   | 3,3     | 14 ° | A10071225604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ |  |
| HFL 1225.06 | Z7  | KEL 1225            | 12                   | 25                   | 6                    | 65                   | 3,3     | 14 ° | A10071225608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |  |
| HFL 1225.06 | Z9  | KEL 1225            | 12                   | 25                   | 6                    | 65                   | 3,3     | 14 ° | A10071225609   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |
| HFL 1225.08 | Z3  | KEL 1225            | 12                   | 25                   | 8                    | 65                   | 3,3     | 14 ° | A10071225803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1225.08 | Z7  | KEL 1225            | 12                   | 25                   | 8                    | 65                   | 3,3     | 14 ° | A10071225808   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |  |
| HFL 1230.06 | Z1  | KEL 1230            | 12                   | 30                   | 6                    | 70                   | 2,6     | 14 ° | A10071230601   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |
| HFL 1230.06 | Z3  | KEL 1230            | 12                   | 30                   | 6                    | 70                   | 2,6     | 14 ° | A10071230603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1230.06 | Z4  | KEL 1230            | 12                   | 30                   | 6                    | 70                   | 2,6     | 14 ° | A10071230604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ |  |
| HFL 1230.06 | Z5  | KEL 1230            | 12                   | 30                   | 6                    | 70                   | 2,6     | 14 ° | A10071230605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1230.06 | Z7  | KEL 1230            | 12                   | 30                   | 6                    | 70                   | 2,6     | 14 ° | A10071230608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |  |
| HFL 1230.06 | Z9  | KEL 1230            | 12                   | 30                   | 6                    | 70                   | 2,6     | 14 ° | A10071230609   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |
| HFL 1230.08 | Z4  | KEL 1230            | 12                   | 30                   | 8                    | 70                   | 2,6     | 14 ° | A10071230804   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ |  |
| HFL 1230.08 | Z9  | KEL 1230            | 12                   | 30                   | 8                    | 70                   | 2,6     | 14 ° | A10071230809   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |
| HFL 1630.06 | Z3  | KEL 1630            | 16                   | 30                   | 6                    | 70                   | 4,8     | 14 ° | A10071630603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1630.06 | Z7  | KEL 1630            | 16                   | 30                   | 6                    | 70                   | 4,8     | 14 ° | A10071630608   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■ |  |
| HFL 1630.08 | Z3  | KEL 1630            | 16                   | 30                   | 8                    | 70                   | 4,8     | 14 ° | A10071630803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ |  |
| HFL 1630.08 | Z9  | KEL 1630            | 16                   | 30                   | 8                    | 70                   | 4,8     | 14 ° | A10071630809   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |
| HFL 2040.08 | Z9  | KEL 2040            | 20                   | 40                   | 8                    | 80                   | 5,5     | 14 ° | A10072040809   |                 |   |   |   |   | 6 |   | 8 |           | ■ |  |



## Shape M, Conical Pointed nose

Ordering example: A10050307303



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

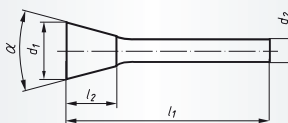
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | α   | Product-Number | recommended for |   |   |   |   |  |   |   | New burrs |   |   |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|-----|----------------|-----------------|---|---|---|---|--|---|---|-----------|---|---|
|             |     |                     |                      |                      |                      |                      |     |                |                 |   |   |   |   |  |   |   |           |   |   |
| HFM 0307.03 | Z3  | SKM 0307            | 3                    | 7                    | 3                    | 40                   | 22° | A10050307303   | 1               | 2 | 3 | 4 |   |  | 7 |   |           |   | ■ |
| HFM 0307.03 | Z5  | SKM 0307            | 3                    | 7                    | 3                    | 40                   | 22° | A10050307305   | 1               | 2 | 3 | 4 |   |  | 7 |   |           |   | ■ |
| HFM 0307.03 | Z7  | SKM 0307            | 3                    | 7                    | 3                    | 40                   | 22° | A10050307308   | 1               | 2 | 3 |   | 5 |  | 7 |   |           |   | ■ |
| HFM 0311.03 | Z5  | SKM 0311            | 3                    | 11                   | 3                    | 40                   | 14° | A10050311305   | 1               | 2 | 3 | 4 |   |  | 7 |   |           |   | ■ |
| HFM 0311.03 | Z7  | SKM 0311            | 3                    | 11                   | 3                    | 40                   | 14° | A10050311308   | 1               | 2 | 3 |   | 5 |  | 7 |   |           |   | ■ |
| HFM 0613.03 | Z5  | SKM 0613            | 6                    | 13                   | 3                    | 43                   | 25° | A10050613305   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |
| HFM 0613.03 | Z7  | SKM 0613            | 6                    | 13                   | 3                    | 43                   | 25° | A10050613308   | 1               | 2 | 3 |   | 5 |  | 7 |   |           | ■ |   |
| HFM 0618.06 | Z3  | SKM 0618            | 6                    | 18                   | 6                    | 50                   | 16° | A10050618603   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |
| HFM 0618.06 | Z4  | SKM 0618            | 6                    | 18                   | 6                    | 50                   | 16° | A10050618604   |                 | 2 | 3 | 4 |   |  | 7 | 8 |           | ■ |   |
| HFM 0618.06 | Z5  | SKM 0618            | 6                    | 18                   | 6                    | 50                   | 16° | A10050618605   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |
| HFM 0618.06 | Z7  | SKM 0618            | 6                    | 18                   | 6                    | 50                   | 16° | A10050618608   | 1               | 2 | 3 |   | 5 |  | 7 |   |           | ■ |   |
| HFM 0820.06 | Z3  | ---                 | 8                    | 20                   | 6                    | 60                   | 21° | A10050820603   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |
| HFM 0820.06 | Z7  | ---                 | 8                    | 20                   | 6                    | 60                   | 21° | A10050820608   | 1               | 2 | 3 |   | 5 |  | 7 |   |           | ■ |   |
| HFM 1020.06 | Z3  | SKM 1020            | 10                   | 20                   | 6                    | 60                   | 27° | A10051020603   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |
| HFM 1020.06 | Z4  | SKM 1020            | 10                   | 20                   | 6                    | 60                   | 27° | A10051020604   |                 | 2 | 3 | 4 |   |  | 7 | 8 |           | ■ |   |
| HFM 1020.06 | Z7  | SKM 1020            | 10                   | 20                   | 6                    | 60                   | 27° | A10051020608   | 1               | 2 | 3 |   | 5 |  | 7 |   |           | ■ |   |
| HFM 1020.08 | Z3  | ---                 | 10                   | 20                   | 8                    | 60                   | 27° | A10051020803   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |
| HFM 1225.06 | Z3  | SKM 1225            | 12                   | 25                   | 6                    | 65                   | 26° | A10051225603   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |
| HFM 1225.06 | Z4  | SKM 1225            | 12                   | 25                   | 6                    | 65                   | 26° | A10051225604   |                 | 2 | 3 | 4 |   |  | 7 | 8 |           | ■ |   |
| HFM 1225.06 | Z7  | SKM 1225            | 12                   | 25                   | 6                    | 65                   | 26° | A10051225608   | 1               | 2 | 3 |   | 5 |  | 7 |   |           | ■ |   |
| HFM 1225.08 | Z3  | SKM 1225            | 12                   | 25                   | 8                    | 65                   | 26° | A10051225803   | 1               | 2 | 3 | 4 |   |  | 7 |   |           | ■ |   |



Industry

**Shape N, Inverted cone**

Ordering example: A10120307305



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Ⓢ regrind service, please enquire

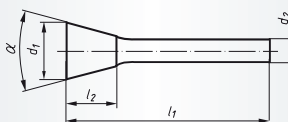
| Description | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | α   | Product-Number | recommended for |   |   |   |   |   |   |   | New burrs |     |
|-------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|-----|----------------|-----------------|---|---|---|---|---|---|---|-----------|-----|
|             |     |                     |                      |                      |                      |                      |     |                | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |     |
| HFN 0307.03 | Z5  | WKN 0307            | 3                    | 7                    | 3                    | 40                   | 10° | A10120307305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFN 0307.03 | Z7  | WKN 0307            | 3                    | 7                    | 3                    | 40                   | 10° | A10120307308   | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■   |
| HFN 0607.03 | Z5  | WKN 0607            | 6                    | 7                    | 3                    | 37                   | 10° | A10120607305   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFN 0607.06 | Z3  | WKN 0607            | 6                    | 7                    | 6                    | 50                   | 10° | A10120607603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFN 0607.06 | Z4  | WKN 0607            | 6                    | 7                    | 6                    | 50                   | 10° | A10120607604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFN 0607.06 | Z5  | WKN 0607            | 6                    | 7                    | 6                    | 50                   | 10° | A10120607605   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFN 1013.06 | Z3  | WKN 1013            | 10                   | 13                   | 6                    | 53                   | 10° | A10121013603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFN 1013.06 | Z4  | WKN 1013            | 10                   | 13                   | 6                    | 53                   | 10° | A10121013604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFN 1213.06 | Z3  | WKN 1213            | 12                   | 13                   | 6                    | 53                   | 20° | A10121213603   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFN 1213.06 | Z4  | WKN 1213            | 12                   | 13                   | 6                    | 53                   | 20° | A10121213604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFN 1613.08 | Z3  | WKN 1613            | 16                   | 13                   | 8                    | 53                   | 20° | A10121613803   | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFN 2013.06 | Z4  | ---                 | 20                   | 13                   | 6                    | 53                   | 30° | A10122013604   |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |



Industry

**Shape N, Inverted cone with end-cut**

Ordering example: A101203073050001



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Ⓢ regrind service, please enquire

| Description  | Cut | similar<br>DIN 8033 | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | α   | Product-Number   | recommended for |   |   |   |   |   |   |   | New burrs |     |
|--------------|-----|---------------------|----------------------|----------------------|----------------------|----------------------|-----|------------------|-----------------|---|---|---|---|---|---|---|-----------|-----|
|              |     |                     |                      |                      |                      |                      |     |                  | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 |           |     |
| HFNS 0307.03 | Z5  | WKN-S 0307          | 3                    | 7                    | 3                    | 40                   | 10° | A101203073050001 | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■   |
| HFNS 0307.03 | Z7  | WKN-S 0307          | 3                    | 7                    | 3                    | 40                   | 10° | A101203073080001 | 1               | 2 | 3 |   | 5 |   | 7 |   |           | ■   |
| HFNS 0607.03 | Z5  | WKN-S 0607          | 6                    | 7                    | 3                    | 37                   | 10° | A101206073050001 | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFNS 1013.06 | Z3  | WKN-S 1013          | 10                   | 13                   | 6                    | 53                   | 10° | A101210136030001 | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFNS 1013.06 | Z4  | WKN-S 1013          | 10                   | 13                   | 6                    | 53                   | 10° | A101210136040001 |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFNS 1213.06 | Z3  | WKN-S 1213          | 12                   | 13                   | 6                    | 53                   | 20° | A101212136030001 | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |
| HFNS 1213.06 | Z4  | WKN-S 1213          | 12                   | 13                   | 6                    | 53                   | 20° | A101212136040001 |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFNS 1613.06 | Z4  | WKN-S 1613          | 16                   | 13                   | 6                    | 53                   | 20° | A101216136040001 |                 | 2 | 3 | 4 |   |   | 7 | 8 |           | ■ Ⓢ |
| HFNS 1613.08 | Z3  | WKN-S 1613          | 16                   | 13                   | 8                    | 53                   | 20° | A101216138030001 | 1               | 2 | 3 | 4 |   |   | 7 |   |           | ■ Ⓢ |



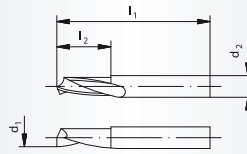




Industry

**Engraving cutters of solid carbide single flute type**

Ordering example: A13150030337102

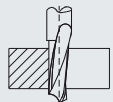


**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

Unless otherwise specified, the tolerances are as DIN 7468

| Description | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number  | recommended for   | New burrs |
|-------------|----------------------|----------------------|----------------------|----------------------|-----------------|---|-----------|
| HGE 0207.03 | 2                    | 7                    | 3                    | 40                   | A13150030337102 |  | ■         |
| HGE 0307.03 | 3                    | 7                    | 3                    | 40                   | A13150030337103 |   | ■         |

**Application:** Very well suited for the machining of light metals, non-ferrous metals, plastics and for high-speed-machining of aluminium parts.

Cutters with mirror finished flute to allow ideal chip removal and to avoid clogging.

**Recommended cutting speeds**

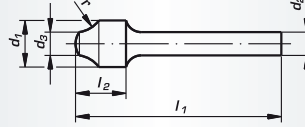
| Main group of materials | Sub-group                                   | Hardness (HB)  | Strength (N/mm <sup>2</sup> ) | Optimal cutting speed (m/min) |
|-------------------------|---|----------------|-------------------------------|-------------------------------|
| Aluminium, Magnesium    | Al, Mg non alloyed                          | ≤ 100          | ≤ 350                         | ≤ 400                         |
|                         | Al alloyed Si < 0,5%                        | ≤ 150          | ≤ 500                         | ≤ 400                         |
|                         | Al alloyed Si ≥ 0,5 < 10%                   | ≤ 120          | ≤ 400                         | ≤ 100                         |
|                         | Al alloyed Si ≥ 10%,<br>Mg-all., Al-Whisker | ≤ 120          | ≤ 400                         | ≤ 70                          |
|                         | Plastics                                    | Thermoplastics | –                             | –                             |
|                         | Thermo-setting plastics                     | –              | –                             | –                             |



Industry

## Shape R, Trimming burr (external)

Ordering example: A10140812603



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

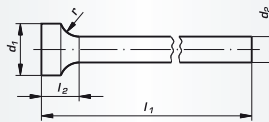
| Description | Cut | d <sub>1</sub><br>mm | d <sub>3</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | r ≈ | Product-Number | recommended for | New burrs |
|-------------|-----|----------------------|----------------------|----------------------|----------------------|----------------------|-----|----------------|-----------------|-----------|
| HFR 0812.06 | Z3  | 8                    | 3                    | 12                   | 6                    | 52                   | 2,5 | A10140812603   |                 | ■         |
| HFR 1015.06 | Z3  | 10                   | 2                    | 15                   | 6                    | 55                   | 8   | A10141015603   |                 | ■         |
| HFR 1215.06 | Z3  | 12                   | 6                    | 15                   | 6                    | 55                   | 8   | A10141215603   |                 | ■         |
| HFR 1215.08 | Z3  | 12                   | 6                    | 15                   | 8                    | 55                   | 8   | A10141215803   |                 | ■         |
| HFR 1315.06 | Z3  | 13                   | 3                    | 15                   | 6                    | 55                   | 10  | A10141315603   |                 | ■         |
| HFR 1315.06 | Z5  | 13                   | 3                    | 15                   | 6                    | 55                   | 10  | A10141315605   |                 | ■         |
| HFR 1315.08 | Z3  | 13                   | 3                    | 15                   | 8                    | 55                   | 10  | A10141315803   |                 | ■         |



Industry

## Shape S, Trimming burr (internal)

Ordering example: A10131618803



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

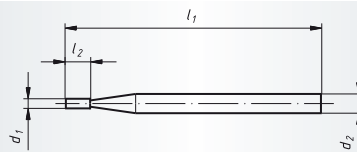
regrind service, please enquire

| Description | Cut | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | r ≈<br>mm | Product-Number | recommended for | New burrs |
|-------------|-----|----------------------|----------------------|----------------------|----------------------|-----------|----------------|-----------------|-----------|
| HFS 1618.08 | Z3  | 16                   | 18                   | 8                    | 120                  | 6         | A10131618803   |                 | ■         |
| HFS 1818.08 | Z3  | 18                   | 18                   | 8                    | 120                  | 8         | A10131818803   |                 | ■         |
| HFS 2218.08 | Z3  | 22                   | 18                   | 8                    | 120                  | 10        | A10132218803   |                 | ■         |



Miniature burrs with multi-purpose cut

Ordering example: A10010104312



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

| Description  | Shape | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number   | recommended for | New burrs |
|--------------|-------|----------------------|----------------------|----------------------|----------------------|------------------|-----------------|-----------|
| HFA 01004.03 |       | 1                    | 4                    | 3                    | 40                   | A10010104312     | 2 3 4 7         | ■         |
| HFA 01504.03 |       | 1,5                  | 4                    | 3                    | 40                   | A100101043120001 | 2 3 4 7         | ■         |
| HFA 02004.03 |       | 2                    | 4                    | 3                    | 40                   | A10010204312     | 2 3 4 7         | ■         |
| HFC 01004.03 |       | 1                    | 4                    | 3                    | 40                   | A10020104312     | 2 3 4 7         | ■         |
| HFC 01504.03 |       | 1,5                  | 4                    | 3                    | 40                   | A100201043120001 | 2 3 4 7         | ■         |
| HFC 02004.03 |       | 2                    | 4                    | 3                    | 40                   | A10020204312     | 2 3 4 7         | ■         |
| HFD 01001.03 |       | 1                    | 0,9                  | 3                    | 40                   | A10030101312     | 2 3 4 7         | ■         |
| HFD 01501.03 |       | 1,5                  | 1,35                 | 3                    | 40                   | A100301013120001 | 2 3 4 7         | ■         |
| HFD 02002.03 |       | 2                    | 1,8                  | 3                    | 40                   | A10030202312     | 2 3 4 7         | ■         |
| HFE 01504.03 |       | 1,5                  | 4                    | 3                    | 40                   | A10060104312     | 2 3 4 7         | ■         |
| HFF 01504.03 |       | 1,5                  | 4                    | 3                    | 40                   | A10100104312     | 2 3 4 7         | ■         |
| HFG 01504.03 |       | 1,5                  | 4                    | 3                    | 40                   | A10040104312     | 2 3 4 7         | ■         |
| HFM 01504.03 |       | 1,5                  | 4                    | 3                    | 40                   | A10050104312     | 2 3 4 7         | ■         |

**Application:**

- tool manufacture
- precision engineering
- jewellery industry
- turbine manufacture

**Power Tool:**

- We recommend our pneumatic grinder AMIN 72-013 GD, page 370

**Materials to be processed:**

- stainless steel
- CrNi alloys
- non-ferrous metals
- zinc diecasting
- soft ceramics
- titanium alloys

**Useful hints:**

- choose shortest overhang
- concentric running of the collett chuck is very important
- recommended speed: 70.000 rpm

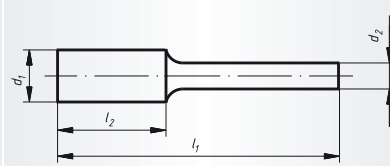
**Advantages:**

- high dimensional accuracy
- minimal runout
- multi-purpose cut
- micro grain carbide
- precision ground cutting edges



### Miniature burrs in cut 5, shank 3 mm

Ordering example: A10010210305



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

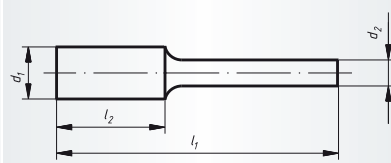
Ⓢ regrind service, please enquire

| Description  | Cut | Shape | similar DIN 8033 | Shank<br>H = solid carbide<br>S = Steel | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number   | recommended for | New burrs |
|--------------|-----|-------|------------------|---|----------------------|----------------------|----------------------|------------------|-----------------|-----------|
| HFA 0210.03  | Z5  |       | ZYA 0210         | H                                       | 2                    | 10                   | 40                   | A10010210305     | 1 2 3 4 7       | ■         |
| HFA 0313.03  | Z5  |       | ZYA 0313         | H                                       | 3                    | 13                   | 40                   | A10010313305     | 1 2 3 4 7       | ■         |
| HFA 0607.03  | Z5  |       | ZYA 0607         | S                                       | 6                    | 7                    | 37                   | A10010607305     | 1 2 3 4 7       | ■ Ⓢ       |
| HFA 0613.03  | Z5  |       | ZYA 0613         | S                                       | 6                    | 13                   | 43                   | A10010613305     | 1 2 3 4 7       | ■ Ⓢ       |
| HFAS 0210.03 | Z5  |       | ZYA-S 0210       | H                                       | 2                    | 10                   | 40                   | A100102103050001 | 1 2 3 4 7       | ■         |
| HFAS 0313.03 | Z5  |       | ZYA-S 0313       | H                                       | 3                    | 13                   | 40                   | A100103133050001 | 1 2 3 4 7       | ■         |
| HFAS 0607.03 | Z5  |       | ZYA-S 0607       | S                                       | 6                    | 7                    | 37                   | A100106073050001 | 1 2 3 4 7       | ■ Ⓢ       |
| HFAS 0613.03 | Z5  |       | ZYA-S 0613       | S                                       | 6                    | 13                   | 43                   | A100106133050001 | 1 2 3 4 7       | ■ Ⓢ       |
| HFC 0210.03  | Z5  |       | WRC 0210         | H                                       | 2                    | 10                   | 40                   | A10020210305     | 1 2 3 4 7       | ■         |
| HFC 0313.03  | Z5  |       | WRC 0313         | H                                       | 3                    | 13                   | 40                   | A10020313305     | 1 2 3 4 7       | ■         |
| HFC 0613.03  | Z5  |       | WRC 0613         | S                                       | 6                    | 13                   | 43                   | A10020613305     | 1 2 3 4 7       | ■ Ⓢ       |
| HFD 0302.03  | Z5  |       | KUD 0302         | H                                       | 3                    | 2                    | 40                   | A10030303305     | 1 2 3 4 7       | ■         |
| HFD 0403.03  | Z5  |       | KUD 0403         | H                                       | 4                    | 3                    | 34                   | A100304043050001 | 1 2 3 4 7       | ■ Ⓢ       |
| HFD 0605.03  | Z5  |       | KUD 0605         | S                                       | 6                    | 5                    | 35                   | A10030606305     | 1 2 3 4 7       | ■ Ⓢ       |
| HFE 0307.03  | Z5  |       | TRE 0307         | H                                       | 3                    | 7                    | 40                   | A10060307305     | 1 2 3 4 7       | ■         |
| HFE 0610.03  | Z5  |       | TRE 0610         | S                                       | 6                    | 10                   | 40                   | A10060610305     | 1 2 3 4 7       | ■ Ⓢ       |
| HFF 0307.03  | Z5  |       | RBF 0307         | H                                       | 3                    | 7                    | 40                   | A10100307305     | 1 2 3 4 7       | ■         |
| HFF 0313.03  | Z5  |       | RBF 0313         | H                                       | 3                    | 13                   | 40                   | A10100313305     | 1 2 3 4 7       | ■         |
| HFF 0613.03  | Z5  |       | RBF 0613         | S                                       | 6                    | 13                   | 43                   | A10100613305     | 1 2 3 4 7       | ■ Ⓢ       |
| HFG 0307.03  | Z5  |       | SPG 0307         | H                                       | 3                    | 7                    | 40                   | A10040307305     | 1 2 3 4 7       | ■         |
| HFG 0313.03  | Z5  |       | SPG 0313         | H                                       | 3                    | 13                   | 40                   | A10040313305     | 1 2 3 4 7       | ■         |
| HFG 0613.03  | Z5  |       | SPG 0613         | S                                       | 6                    | 13                   | 43                   | A10040613305     | 1 2 3 4 7       | ■ Ⓢ       |
| HFH 0307.03  | Z5  |       | ---              | H                                       | 3                    | 7                    | 40                   | A10090307305     | 1 2 3 4 7       | ■         |



Miniature burrs in cut 5, shank 3 mm

Ordering example: A10090613305



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

\* available only with fine cross-cut

Ⓢ regrind service, please enquire

| Description  | Cut | Shape | similar<br>DIN 8033 | Shank<br>H = solid carbide<br>S = Steel | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number   | recommended for |   |   |   |   |   |   |   |   |    | New burrs |    |    |   |   |   |
|--------------|-----|-------|---------------------|---|----------------------|----------------------|----------------------|------------------|-----------------|---|---|---|---|---|---|---|---|----|-----------|----|----|---|---|---|
|              |     |       |                     |   |                      |                      |                      |                  | 1               | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |           | 11 | 12 |   |   |   |
| HFH 0613.03  | Z5  |       | ---                 | S                                       | 6                    | 13                   | 43                   | A10090613305     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    | ■ | Ⓢ |   |
| HFI 0204.03  | *   |       | ---                 | H                                       | 2,5                  | 4                    | 40                   | A10010204300     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ |   |
| HFI 0408.03  | *   |       | ---                 | H                                       | 4                    | 8                    | 50                   | A10010408300     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ | Ⓢ |
| HFM 0307.03  | Z5  |       | SKM 0307            | H                                       | 3                    | 7                    | 40                   | A10050307305     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ |   |
| HFM 0311.03  | Z5  |       | SKM 0311            | H                                       | 3                    | 11                   | 40                   | A10050311305     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ |   |
| HFM 0613.03  | Z5  |       | SKM 0613            | S                                       | 6                    | 13                   | 43                   | A10050613305     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ | Ⓢ |
| HFN 0307.03  | Z5  |       | WKN 0307            | H                                       | 3                    | 7                    | 40                   | A10120307305     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ |   |
| HFN 0607.03  | Z5  |       | WKN 0607            | S                                       | 6                    | 7                    | 37                   | A10120607305     | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ | Ⓢ |
| HFNS 0307.03 | Z5  |       | WKN-S 0307          | H                                       | 3                    | 7                    | 40                   | A101203073050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ |   |
| HFNS 0607.03 | Z5  |       | WKN-S 0607          | S                                       | 6                    | 7                    | 37                   | A101206073050001 | 1               | 2 | 3 | 4 |   |   |   | 7 |   |    |           |    |    |   | ■ | Ⓢ |



# 50 Tungsten Carbide Burrs



Industry

## Tool-sets, cut 7, shank 3 mm

Ordering example: A10390010



**Packing unit:**  
1 pc. per type

| Description | Shank Ø mm | Cut | Contents  | 1 pc. each   | Product-Number | recommended for   |   |
|-------------|------------|-----|-----------|--|----------------|---|---|
| F10 S3      | 3          | Z7  | 10-pieces | HFA 0313, HFA 0613, HFC 0313, HFC 0613, HFD 0302, HFD 0605, HFG 0313, HFG 0613, HFM 0613, HFF 0313 | A10390010      | <div style="display: flex; justify-content: space-around;"> <span>1</span><span>2</span><span>3</span><span>5</span><span>7</span> </div> | ■ |



Industry

## Tool-sets, cut 7, shank 6 mm

Ordering example: A1039001006



**Packing unit:**  
1 pc. per type

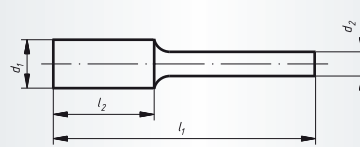
| Description | Shank Ø mm | Cut | Contents  | 1 pc. each   | Product-Number | recommended for   |   |
|-------------|------------|-----|-----------|--|----------------|---|---|
| F10 S6      | 6          | Z7  | 10-pieces | HFAS 0616, HFAS 1225, HFC 0616, HFC 1225, HFD 0605, HFD 1210, HFG 0618, HFG 1225, HFF 0820, HFF 1225 | A1039001006    | <div style="display: flex; justify-content: space-around;"> <span>1</span><span>2</span><span>3</span><span>5</span><span>7</span> </div> | ■ |



**High Performance**

**Tungsten Carbide Burrs with TiAlN-coating\***

Ordering example: A10010616608TIALN



**Packing unit:**

1 pc. per type

Further dimensions, cuts and shank lengths on request.

| Description           | Shape | Cut | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number    | recommended for |   |   |   |   |   |   | New burrs |    |
|-----------------------|-------|-----|----------------------|----------------------|----------------------|----------------------|-------------------|-----------------|---|---|---|---|---|---|-----------|----|
|                       |       |     |                      |                      |                      |                      |                   | 1               | 2 | 3 | 5 | 7 | 8 | 9 |           | 10 |
| HFA 0616.06 Z7 TIALN  |       | Z7  | 6                    | 16                   | 6                    | 50                   | A10010616608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFA 0820.06 Z7 TIALN  |       | Z7  | 8                    | 20                   | 6                    | 60                   | A10010820608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFAS 0616.06 Z7 TIALN |       | Z7  | 6                    | 16                   | 6                    | 50                   | A10010616608TIAL1 | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFAS 0820.06 Z7 TIALN |       | Z7  | 8                    | 20                   | 6                    | 60                   | A10010820608TIAL1 | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFC 0616.06 Z7 TIALN  |       | Z7  | 6                    | 16                   | 6                    | 50                   | A10020616608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFC 0820.06 Z7 TIALN  |       | Z7  | 8                    | 20                   | 6                    | 60                   | A10020820608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFC 1020.06 Z7 TIALN  |       | Z7  | 10                   | 20                   | 6                    | 60                   | A10021020608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFC 1225.06 Z7 TIALN  |       | Z7  | 12                   | 25                   | 6                    | 65                   | A10021225608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFD 0605.06 Z7 TIALN  |       | Z7  | 6                    | 5                    | 6                    | 50                   | A10030606608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFD 0807.06 Z7 TIALN  |       | Z7  | 8                    | 7                    | 6                    | 47                   | A10030808608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFD 1009.06 Z7 TIALN  |       | Z7  | 10                   | 9                    | 6                    | 49                   | A10031010608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFF 1225.06 Z7 TIALN  |       | Z7  | 12                   | 25                   | 6                    | 65                   | A10101225608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFG 0618.06 Z7 TIALN  |       | Z7  | 6                    | 18                   | 6                    | 50                   | A10040618608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFG 1020.06 Z7 TIALN  |       | Z7  | 10                   | 20                   | 6                    | 60                   | A10041020608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFG 1225.06 Z7 TIALN  |       | Z7  | 12                   | 25                   | 6                    | 65                   | A10041225608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFH 0820.06 Z7 TIALN  |       | Z7  | 8                    | 20                   | 6                    | 60                   | A10090820608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFH 1230.06 Z7 TIALN  |       | Z7  | 12                   | 30                   | 6                    | 70                   | A10091230608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |
| HFL 1020.06 Z7 TIALN  |       | Z7  | 10                   | 20                   | 6                    | 60                   | A10071020608TIALN | 1               | 2 | 3 | 5 | 7 |   |   |           | ■  |

\*High performance coating with a high degree of hardness and flow heat conductivity; therefore suitable for high thermal and mechanical applications; very low friction value

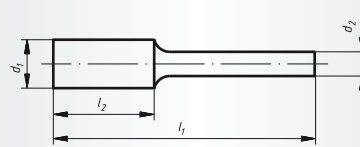
**The reasons for producing Tungsten Carbide Burrs with TiAlN-coating are as follows:**

- to increase tool life
- to reduce machining forces
- to improve chip removal



### Burrs for machining non-ferrous metals, cut 9

Ordering example: A10010616609



**Packing unit:**

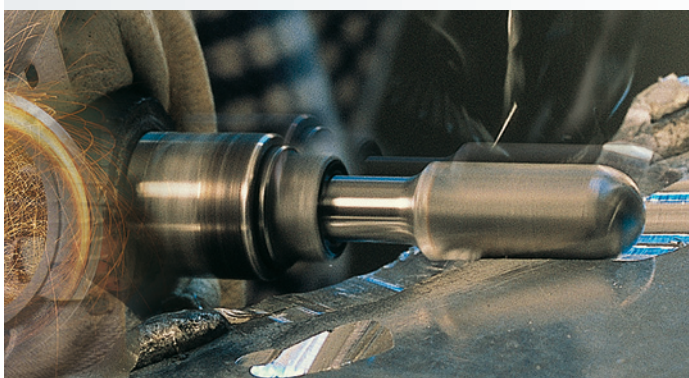
1 pc. per type

Further dimensions, cuts and shank lengths on request.

regrind service, please enquire

| Description | Cut | Shape | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number | recommended for |  |  |   | New burrs |   |   |
|-------------|-----|-------|----------------------|----------------------|----------------------|----------------------|----------------|-----------------|--|--|---|-----------|---|---|
|             |     |       |                      |                      |                      |                      |                |                 |  |  |   |           |   |   |
| HFA 0616.06 | Z9  |       | 6                    | 16                   | 6                    | 50                   | A10010616609   |                 |  |  |   | 6         | 8 | ■ |
| HFA 1225.06 | Z9  |       | 12                   | 25                   | 6                    | 65                   | A10011225609   |                 |  |  |   | 6         | 8 | ■ |
| HFA 1225.08 | Z9  |       | 12                   | 25                   | 8                    | 65                   | A10011225809   |                 |  |  |   | 6         | 8 | ■ |
| HFA 1625.06 | Z9  |       | 16                   | 25                   | 6                    | 65                   | A10011625609   |                 |  |  |   | 6         | 8 | ■ |
| HFA 1625.08 | Z9  | 16    | 25                   | 8                    | 65                   | A10011625809         |                |                 |  |  | 6 | 8         | ■ |   |
| HFC 0616.06 | Z9  |       | 6                    | 16                   | 6                    | 50                   | A10020616609   |                 |  |  |   | 6         | 8 | ■ |
| HFC 0820.06 | Z9  |       | 8                    | 20                   | 6                    | 60                   | A10020820609   |                 |  |  |   | 6         | 8 | ■ |
| HFC 1225.06 | Z9  |       | 12                   | 25                   | 6                    | 65                   | A10021225609   |                 |  |  |   | 6         | 8 | ■ |
| HFC 1225.08 | Z9  |       | 12                   | 25                   | 8                    | 65                   | A10021225809   |                 |  |  |   | 6         | 8 | ■ |
| HFC 1625.06 | Z9  | 16    | 25                   | 6                    | 65                   | A10021625609         |                |                 |  |  | 6 | 8         | ■ |   |
| HFC 1625.08 | Z9  | 16    | 25                   | 8                    | 65                   | A10021625809         |                |                 |  |  | 6 | 8         | ■ |   |
| HFD 1210.06 | Z9  |       | 12                   | 10                   | 6                    | 50                   | A10031212609   |                 |  |  |   | 6         | 8 | ■ |
| HFD 1210.08 | Z9  |       | 12                   | 10                   | 8                    | 50                   | A10031212809   |                 |  |  |   | 6         | 8 | ■ |
| HFD 1614.06 | Z9  |       | 16                   | 14                   | 6                    | 54                   | A10031616609   |                 |  |  |   | 6         | 8 | ■ |
| HFD 1614.08 | Z9  |       | 16                   | 14                   | 8                    | 54                   | A10031616809   |                 |  |  |   | 6         | 8 | ■ |
| HFE 1225.08 | Z9  |       | 12                   | 25                   | 8                    | 65                   | A10061225809   |                 |  |  |   | 6         | 8 | ■ |
| HFE 1625.08 | Z9  |       | 16                   | 25                   | 8                    | 65                   | A10061625809   |                 |  |  |   | 6         | 8 | ■ |
| HFF 1225.06 | Z9  |       | 12                   | 25                   | 6                    | 65                   | A10101225609   |                 |  |  |   | 6         | 8 | ■ |
| HFF 1225.08 | Z9  |       | 12                   | 25                   | 8                    | 65                   | A10101225809   |                 |  |  |   | 6         | 8 | ■ |
| HFF 1630.06 | Z9  |       | 16                   | 30                   | 6                    | 70                   | A10101630609   |                 |  |  |   | 6         | 8 | ■ |
| HFF 1630.08 | Z9  |       | 16                   | 30                   | 8                    | 70                   | A10101630809   |                 |  |  |   | 6         | 8 | ■ |
| HFL 0820.06 | Z9  |       | 8                    | 20                   | 6                    | 60                   | A10070820609   |                 |  |  |   | 6         | 8 | ■ |
| HFL 1020.06 | Z9  |       | 10                   | 20                   | 6                    | 60                   | A10071020609   |                 |  |  |   | 6         | 8 | ■ |
| HFL 1225.06 | Z9  |       | 12                   | 25                   | 6                    | 65                   | A10071225609   |                 |  |  |   | 6         | 8 | ■ |
| HFL 1230.06 | Z9  |       | 12                   | 30                   | 6                    | 70                   | A10071230609   |                 |  |  |   | 6         | 8 | ■ |
| HFL 1230.08 | Z9  |       | 12                   | 30                   | 8                    | 70                   | A10071230809   |                 |  |  |   | 6         | 8 | ■ |
| HFL 1630.08 | Z9  |       | 16                   | 30                   | 8                    | 70                   | A10071630809   |                 |  |  |   | 6         | 8 | ■ |
| HFL 2040.08 | Z9  |       | 20                   | 40                   | 8                    | 80                   | A10072040809   |                 |  |  |   | 6         | 8 | ■ |

Example using burr with Z9 cut

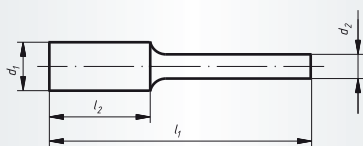




Industry

**Burrs with extended shank length (shank length 200 mm)**

Ordering example: A10011225603200



**Packing unit:**

1 pc. per type

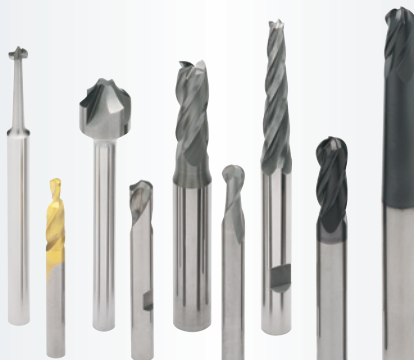
Further dimensions, cuts and shank lengths on request.

| Description   | Shape | Cut | d <sub>1</sub><br>mm | l <sub>2</sub><br>mm | d <sub>2</sub><br>mm | l <sub>1</sub><br>mm | Product-Number  | recommended for |   |   |   |   |   |  | New burrs |   |
|---------------|-------|-----|----------------------|----------------------|----------------------|----------------------|-----------------|-----------------|---|---|---|---|---|--|-----------|---|
| HFA 1225.06 L |       | Z3  | 12                   | 25                   | 6                    | 225                  | A10011225603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFA 1225.06 L |       | Z7  | 12                   | 25                   | 6                    | 225                  | A10011225608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFC 0616.06 L |       | Z3  | 6                    | 16                   | 6                    | 216                  | A10020616603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFC 0616.06 L |       | Z7  | 6                    | 16                   | 6                    | 216                  | A10020616608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFC 0820.06 L |       | Z3  | 8                    | 20                   | 6                    | 220                  | A10020820603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFC 0820.06 L |       | Z7  | 8                    | 20                   | 6                    | 220                  | A10020820608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFC 1225.06 L |       | Z7  | 12                   | 25                   | 6                    | 225                  | A10021225608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFD 0605.06 L |       | Z3  | 6                    | 5                    | 6                    | 205                  | A10030605603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFD 0605.06 L |       | Z7  | 6                    | 5                    | 6                    | 205                  | A10030605608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFD 0807.06 L |       | Z3  | 8                    | 7                    | 6                    | 207                  | A10030807603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFD 0807.06 L |       | Z7  | 8                    | 7                    | 6                    | 207                  | A10030807608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFD 1009.06 L |       | Z3  | 10                   | 9                    | 6                    | 209                  | A10031009603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFD 1009.06 L |       | Z7  | 10                   | 9                    | 6                    | 209                  | A10031009608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFD 1210.06 L |       | Z3  | 12                   | 10                   | 6                    | 210                  | A10031210603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFD 1210.06 L |       | Z7  | 12                   | 10                   | 6                    | 210                  | A10031210608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFD 1210.08 L |       | Z3  | 12                   | 10                   | 8                    | 210                  | A10031210803200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFD 1210.08 L |       | Z7  | 12                   | 10                   | 8                    | 210                  | A10031210808200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFE 1220.06 L |       | Z3  | 12                   | 20                   | 6                    | 220                  | A10061220603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFE 1220.06 L |       | Z7  | 12                   | 20                   | 6                    | 220                  | A10061220608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFE 1220.08 L |       | Z7  | 12                   | 20                   | 8                    | 220                  | A10061220808200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFF 0618.06 L |       | Z3  | 6                    | 18                   | 6                    | 218                  | A10100618603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFF 0618.06 L |       | Z7  | 6                    | 18                   | 6                    | 218                  | A10100618608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFF 1230.08 L |       | Z3  | 12                   | 30                   | 8                    | 230                  | A10101230803200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFF 1230.08 L |       | Z7  | 12                   | 30                   | 8                    | 230                  | A10101230808200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFG 0618.06 L |       | Z3  | 6                    | 18                   | 6                    | 218                  | A10040618603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFG 0618.06 L |       | Z7  | 6                    | 18                   | 6                    | 218                  | A10040618608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFG 1230.08 L |       | Z7  | 12                   | 30                   | 8                    | 230                  | A10041230808200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFH 1020.06 L |       | Z3  | 10                   | 20                   | 6                    | 220                  | A10091020603200 | 1               | 2 | 3 | 4 |   | 7 |  |           | ■ |
| HFH 1020.06 L |       | Z7  | 10                   | 20                   | 6                    | 220                  | A10091020608200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |
| HFH 1230.08 L |       | Z7  | 12                   | 30                   | 8                    | 230                  | A10091230808200 | 1               | 2 | 3 |   | 5 | 7 |  |           | ■ |

Due to the large shaft overhang and the ensuing safety considerations, it is essential that the tool is in contact with the workpiece or, if possible, placed in the groove or bore before the machine is activated.



Tools for stationary use


|   |   |  |
|---|---|--|
|  | <p><b>Range of application:</b></p> <ul style="list-style-type: none"> <li>• Tool construction</li> <li>• Turbine construction</li> <li>• Aircraft and space industry</li> <li>• general machine tool construction</li> </ul> | <p>In addition to rotary burrs, we also produce tungsten carbide milling tools in special shapes and sizes for stationary application.</p> <p>We supply these milling cutters with a diameter of <b>12 mm</b> maximum diameter and with a maximum length of <b>250 mm</b>; they differ from our extensive standard range by the shape, tool material and geometry (rake, relief and helix angles).</p> |
|---|---|--|

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|--|--|
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|  |                            |
|--|----------------------------|
| <p>Differential drill, radius mill, shank-end mill, die mill, profile mill</p> | <p>delivery on request</p> |
|--|----------------------------|



Tools for hand-held and floor-stand application

|   |   |  |
|---|---|--|
|  | <p><b>Range of application:</b></p> <ul style="list-style-type: none"> <li>• general machine tool construction</li> <li>• shipbuilding</li> </ul> |  |
|---|---|--|

|  |  |
|--|--|
|  |  |
|--|--|

|                      |                            |
|----------------------|----------------------------|
| <p>Trimming burr</p> | <p>delivery on request</p> |
|----------------------|----------------------------|

# Material classification

- 1 STEELS AND CAST STEELS**  
Rm up to 800 N/mm<sup>2</sup>
  - common structural steels
  - free cutting steels
  - case hardened steels
  - fine grained structural steels
  - extruded steels
  - toughened structural steels
  - boiler plate
  - nitrided steels
  - cast steels
  - heat treated steels
  - heat resistant structural steels
- 2 ALLOYED, TEMPERED STEELS**  
Rm 800 up to 1200 N/mm<sup>2</sup>
  - case hardened steels
  - spring steels
  - fine grained structural steels
  - nitrided steels
  - heat treated steels
  - wear resistant steels
  - bearing steels
- 3 TOOL STEELS** Rm up to 1300 N/mm<sup>2</sup>
  - 60 - 65 HRC
  - high-speed steels
  - non-alloyed tool steels
  - cold working tool steels
  - hot working tool steels
- 4 RUST, ACID AND HEAT RESISTANT STEELS AND CAST STEELS**
  - austenitic
  - ferritic
  - ferritic-austenitic
  - heat-resistant
  - martensitic
  - stainless, sulphurized

- 5 CAST IRON**
- 6 ALUMINIUM, MAGNESIUM AND COPPER ALLOYS**
  - over 300 HB
  - 200-300 HB
  - up to 200 HB
  - over 15% Si
  - 10-15% Si
  - 0,5-10% Si
  - below 0,5% Si
- 7 TITANIUM AND NICKEL ALLOYS**
  - Rm 900 up to 1500 N/mm<sup>2</sup>
  - Rm up to 900 N/mm<sup>2</sup>
- 8 PLASTICS, WOOD, RUBBER**
- 9 GLASS / CARBIDES**
- 10 STONE / TILES / GAS CEMENT**
- 11 CONCRETE / REINFORCED CONCRETE**
- 12 CERAMIC / FLOOR TILES**
- 13 MARBLE**
- 14 GRANITE**
- 15 FRESHLY POURED CONCRETE**
- 16 ASPHALT**

- best suitable
- suitable
- delivery ex-stock
- ▲ delivery on request
- Ⓢ regrind service, please enquire

## Safety Symbols

|  |   |   |   |
|--|---|---|---|
|  |  |  |  |
| Wear eye protection  | Wear hearing protection   | Wear a respirator   | Read the instructions   |
|  |  |   |   |
| Wear gloves  | Only permitted with a back-up pad   |   |   |
|  |  |  |  |
| Not permitted for wet grinding   | Not permitted for face grinding   | Do not use if damaged   | Do not use for freehand cutting   |