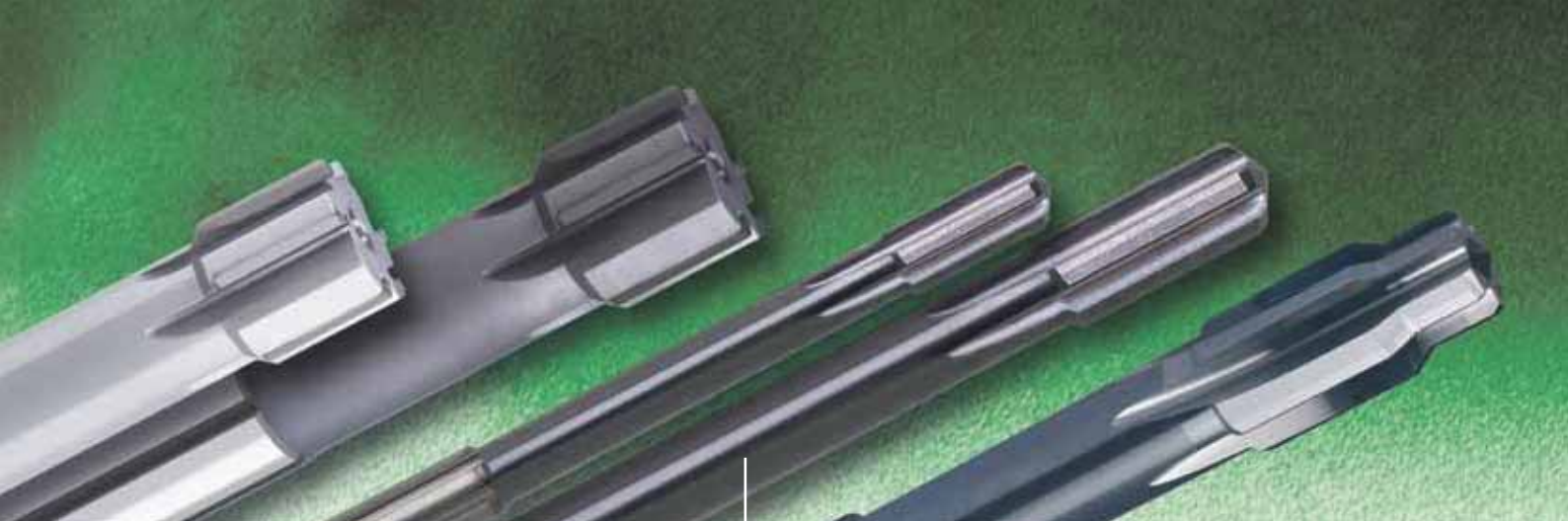




# HR 500

## HR 500

Solid carbide high-performance reamers  
up to Ø 20 mm

## HR 500 G

Carbide- or cermet-tipped  
high-performance reamers  
from Ø 20 mm up to 40 mm

## HR 500 Alu

Solid carbide high-performance reamers for  
the machining of aluminium and AlSi-  
alloys

## HR 500 ACTIVE

Special range of solid carbide  
high-performance reamers

**Extended  
program  
Edition 2011**

### VADZA

ООО «Вадза»  
196128, Россия, Санкт-Петербург,  
ул. Варшавская, д. 5-а, лит. Б  
Тел./Факс: +7 (812) 369 08 14  
E-mail: info@vadza.com  
www.vadza.com

# EXCLUSIVELINE®

Made by Guhring

## HR 500 high-performance reamers Technology and advantages

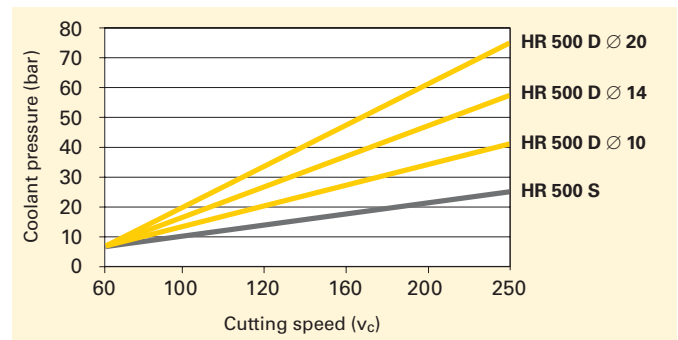
### Dramatic time reduction

#### up to factor 50

With the comprehensive HR 500 range Guhring provides high-performance reamers for virtually any application task. Countless technical innovations give HR 500 high-performance reamers their exceptional properties, from which the user benefits from maximum cutting rates and therefore shortest machining times as well as optimum hole qualities.

The user gains multiple benefits with the new Guhring HR 500 reamer:

- extremely high cutting rates,
- maximal process reliability,
- absolutely constant hole diameters,
- considerable time saving and therefore cost saving in the production
- broad range of application
- a standard program with favourable prices as well as excellent stock availability
- intermediate dimensions, that can be produced quickly and cost-effectively at any time.
- HR 500 ACTIVE special range with 4 weeks delivery for intermediate sizes and stepped tools.



Coolant pressure - cutting speed  
valid for standard dimensions

### Tool selection for optimal economy and quality

| Tool selection for optimal economy and quality |   |                  | Ø ≤ 20 mm               |      |                            | Ø > 20 mm               |                        |
|------------------------------------------------|---|------------------|-------------------------|------|----------------------------|-------------------------|------------------------|
|                                                |   |                  | Solid carbide<br>HR 500 |      | Solid carbide<br>HR500 Alu | Carbide tipped<br>HR500 | Cermet tipped<br>HR500 |
|                                                |   |                  | 1675                    | 1676 | 1678                       | 1680                    | 1682                   |
|                                                |   |                  | 1685                    | 1686 | 1679                       | 1681                    | 1683                   |
| Steel                                          | P | up to 1200 N/mm² | ●                       | ●    |                            | ○                       | ●                      |
| Stainless steel                                | M |                  | ●                       | ●    |                            | ●                       |                        |
| Cast iron                                      | K | GG               | ●                       | ●    |                            | ●                       |                        |
|                                                |   | GGG 40/50        | ●                       | ●    |                            | ○                       | ●                      |
|                                                |   | GGG 60/70        | ●                       | ●    |                            | ●                       |                        |
| Aluminium                                      | N |                  |                         |      | ●                          |                         |                        |
| Ti-<br>special alloys                          | S | Ti-Basis         | ●                       | ●    |                            | ●                       |                        |
|                                                |   | Ni-Basis         | ●                       | ●    |                            | ●                       |                        |
| Hardened steel                                 | H | up to 48 HRC     | ●                       | ●    |                            | ○                       |                        |
|                                                |   | up to 62 HRC     | ●                       | ●    |                            |                         |                        |

● optimal suitability      ○ limited suitability

### Diameters of pre-drilled holes

#### Recommended stock allowance, in mm

|                |   |              | up to Ø6    | up to Ø10 | up to Ø16   | up to Ø25 | up to Ø40   | above Ø40   |
|----------------|---|--------------|-------------|-----------|-------------|-----------|-------------|-------------|
| all materials  |   |              | Ø 0.1 - 0.2 | Ø 0.2     | Ø 0.2 - 0.3 | Ø 0.3     | Ø 0.3 - 0.4 | Ø 0.4 - 0.5 |
| Hardened steel | H | up to 48 HRC | Ø 0.1 - 0.2 | Ø 0.2     | Ø 0.2       | Ø 0.2     | Ø 0.3       | Ø 0.3       |
|                |   | up to 62 HRC | Ø 0.1       | Ø 0.1     | Ø 0.1 - 0.2 | Ø 0.2     | Ø 0.2       | Ø 0.2       |

## HR 500 solid carbide high-performance reamers Program summary

| DIN                                                                                    | Type      | Shank form  | Tool illustration                                                                   | Tool material | Surface finish | Diameter range  | Guhring no. | Page |
|----------------------------------------------------------------------------------------|-----------|-------------|-------------------------------------------------------------------------------------|---------------|----------------|-----------------|-------------|------|
| <b>HR 500 S</b><br><b>for the machining of blind holes</b>                             |           |             |                                                                                     |               |                |                 |             |      |
| Guhring std.                                                                           | HR 500 S  | straight h6 |    | Solid carbide | TiAlN          | 3.000 - 20.000  | 1685        | 4    |
| Guhring std.                                                                           | HR 500 S  | straight h6 |    | Solid carbide | TiAlN          | 2.970 - 12.030  | 1675        | 6    |
| <b>HR 500 D</b><br><b>for the machining of through holes</b>                           |           |             |                                                                                     |               |                |                 |             |      |
| Guhring std.                                                                           | HR 500 D  | straight h6 |    | Solid carbide | TiAlN          | 3.000 - 20.000  | 1686        | 4    |
| Guhring std.                                                                           | HR 500 D  | straight h6 |   | Solid carbide | TiAlN          | 2.970 - 12.030  | 1676        | 6    |
| <b>HR 500 ALU S</b><br><b>for the machining of blind holes</b>                         |           |             |                                                                                     |               |                |                 |             |      |
| Guhring std.                                                                           | HR 500 S  | straight h6 |  | Solid carbide | Carbo          | 4.000 - 20.000  | 1678        | 5    |
| <b>HR 500 ALU D</b><br><b>for the machining of through holes</b>                       |           |             |                                                                                     |               |                |                 |             |      |
| Guhring std.                                                                           | HR 500 D  | straight h6 |  | Solid carbide | Carbo          | 4.000 - 20.000  | 1679        | 5    |
| <b>HR 500 GS</b><br><b>for the machining of blind holes</b>                            |           |             |                                                                                     |               |                |                 |             |      |
| Guhring std.                                                                           | HR 500 GS | straight h6 |  | Carbide       | TiAlN          | 22.000 - 40.000 | 1680        | 12   |
| Guhring std.                                                                           | HR 500 GS | straight h6 |  | Cermet        | bright         | 22.000 - 40.000 | 1682        | 13   |
| <b>HR 500 GD</b><br><b>for the machining of through holes</b>                          |           |             |                                                                                     |               |                |                 |             |      |
| Guhring std.                                                                           | HR 500 GD | straight h6 |  | Carbide       | TiAlN          | 22.000 - 40.000 | 1681        | 12   |
| Guhring std.                                                                           | HR 500 GD | straight h6 |  | Cermet        | bright         | 22.000 - 40.000 | 1683        | 13   |
| <b>HR 500 Active</b><br><b>Special range of solid carbide high-performance reamers</b> |           |             |                                                                                     |               |                |                 |             | 16   |

## HR 500 solid carbide high-performance reamers Standard range and dimensions

### HR 500 solid carbide high-performance reamers

#### Product information

- right-hand cutting
- extremely unequal flute spacing
- straight-fluted
- straight shank tolerance h6 for hydraulic or shrink fit chucks

The solid carbide HPC reamer HR 500 operates with highest cutting rates (see GuhringNavigator) and produces extremely high-quality holes. Therefore, it enables considerable savings in production costs. In addition, it provides very high process reliability. The coolant supply ensures an optimal chip evacuation and an optimal cooling.

Tool material/carbide grade

Surface finish

Discount group

**Guhring no.**

Type

DIN

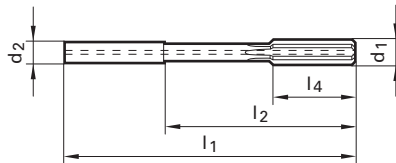
Tolerance

**Guhring std.**

**hole tolerance zone H7**

#### HR 500 ACTIVE

Intermediate sizes and stepped reamers  
see inquiry form, page 18!



| Solid carbide     | Solid carbide       |
|-------------------|---------------------|
| TiAlN             | TiAlN               |
| 166               | 166                 |
| <b>1685</b>       | <b>1686</b>         |
| S for blind holes | D for through holes |
|                   |                     |

| Nom.-Ø<br>d <sub>1</sub> | Shank-Ø<br>d <sub>2</sub> h6 | Total<br>length l <sub>1</sub> | Effective<br>length l <sub>2</sub> | Cutting edge<br>length l <sub>4</sub> | No. of<br>flutes | Standard range |   |
|--------------------------|------------------------------|--------------------------------|------------------------------------|---------------------------------------|------------------|----------------|---|
| 3.00                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.50                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 4.00                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 4.50                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.00                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.50                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 6.00                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 6.50                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 7.00                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 7.50                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 8.00                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 8.50                     | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 9.00                     | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 9.50                     | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 10.00                    | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 10.50                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 11.00                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 11.50                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 12.00                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 13.00                    | 14.00                        | 130                            | 85                                 | 22                                    | 6                | •              | • |
| 14.00                    | 14.00                        | 130                            | 85                                 | 22                                    | 6                | •              | • |
| 15.00                    | 16.00                        | 150                            | 102                                | 22                                    | 6                | •              | • |
| 16.00                    | 16.00                        | 150                            | 102                                | 22                                    | 6                | •              | • |
| 17.00                    | 18.00                        | 150                            | 102                                | 25                                    | 6                | •              | • |
| 18.00                    | 18.00                        | 150                            | 102                                | 25                                    | 6                | •              | • |
| 19.00                    | 20.00                        | 150                            | 100                                | 25                                    | 6                | •              | • |
| 20.00                    | 20.00                        | 150                            | 100                                | 25                                    | 6                | •              | • |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |

## HR 500 solid carbide high-performance reamers Standard range and dimensions

### HR 500 Alu solid carbide high-performance reamers

#### Product information

- right-hand cutting
- extremely unequal flute spacing
- straight-fluted
- straight shank tolerance h6 for hydraulic or shrink fit chucks

The HR 500 Alu solid carbide high-performance reamer makes reaming qualities and tool life on a level between a conventional solid carbide reamer and a PCD reamer possible. Furthermore, feed rates even superior to PCD levels can be achieved (see Guhring-Navigator).

With optimal cutting rates and rigid conditions there is no formation of built-up edges!

Therefore, they enable considerable savings in production costs. In addition, it provides very high reliability.

Tool material/carbide grade

Surface finish

Discount group

**Guhring no.**

Type

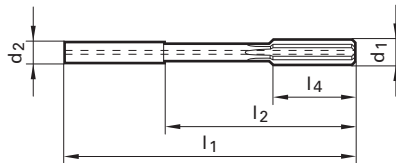
DIN

Tolerance

**Guhring std.**

**hole tolerance zone H7**

Intermediate sizes on request.



| Solid carbide     | Solid carbide       |
|-------------------|---------------------|
| Carbo             | Carbo               |
| 166               | 166                 |
| <b>1678</b>       | <b>1679</b>         |
| S for blind holes | D for through holes |
|                   |                     |

| Nom.-Ø<br>d <sub>1</sub> | Shank-Ø<br>d <sub>2</sub> h6 | Total<br>length l <sub>1</sub> | Effective<br>length l <sub>2</sub> | Cutting edge<br>length l <sub>4</sub> | No. of<br>flutes | Standard range |   |
|--------------------------|------------------------------|--------------------------------|------------------------------------|---------------------------------------|------------------|----------------|---|
| 4.00                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 5.00                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 6.00                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 7.00                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 8.00                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 10.00                    | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 12.00                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 14.00                    | 14.00                        | 130                            | 85                                 | 22                                    | 6                | •              | • |
| 16.00                    | 16.00                        | 150                            | 102                                | 22                                    | 6                | •              | • |
| 18.00                    | 18.00                        | 150                            | 102                                | 25                                    | 6                | •              | • |
| 20.00                    | 20.00                        | 150                            | 100                                | 25                                    | 6                | •              | • |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |

## HR 500 solid carbide high-performance reamers Standard range and dimensions

### HR 500 solid carbide high-performance reamers

#### Product information

- right-hand cutting
- extremely unequal flute spacing
- straight-fluted
- straight shank tolerance h6 for hydraulic or shrink fit chucks

The solid carbide HPC reamer HR 500 operates with highest cutting rates (see GuhringNavigator) and produces extremely high-quality holes. Therefore, it often enables considerable savings in production costs. In addition, it provides very high process reliability. The coolant supply ensures an optimal chip evacuation and an optimal cooling.

Tool material/carbide grade

Surface finish

Discount group

**Guhring no.**

Type

DIN

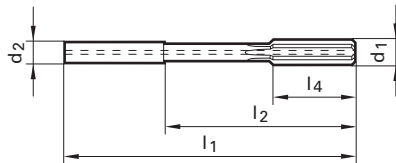
**Guhring std.**

Tolerance

**+ 0.005**

#### HR 500 ACTIVE

Intermediate sizes and stepped reamers  
see inquiry form, page 18!



| Solid carbide     | Solid carbide       |
|-------------------|---------------------|
| TiAlN             | TiAlN               |
| 166               | 166                 |
| <b>1675</b>       | <b>1676</b>         |
| S for blind holes | D for through holes |
|                   |                     |

| Nom.-Ø<br>d <sub>1</sub> | Shank-Ø<br>d <sub>2</sub> h6 | Total<br>length l <sub>1</sub> | Effective<br>length l <sub>2</sub> | Cutting edge<br>length l <sub>4</sub> | No. of<br>flutes | Standard range |   |
|--------------------------|------------------------------|--------------------------------|------------------------------------|---------------------------------------|------------------|----------------|---|
| 2.97                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 2.98                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 2.99                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.00                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.01                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.02                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.03                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.97                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.98                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 3.99                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 4.00                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 4.01                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 4.02                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 4.03                     | 4.00                         | 68                             | 40                                 | 12                                    | 4                | •              | • |
| 4.97                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 4.98                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 4.99                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.00                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.01                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.02                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.03                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.97                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.98                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 5.99                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 6.00                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 6.01                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 6.02                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 6.03                     | 6.00                         | 76                             | 40                                 | 12                                    | 4                | •              | • |
| 7.00                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 7.97                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 7.98                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 7.99                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 8.00                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |

## HR 500 solid carbide high-performance reamers Standard range and dimensions

### HR 500 solid carbide high-performance reamers

#### Product information

- right-hand cutting
- extremely unequal flute spacing
- straight-fluted
- straight shank tolerance h6 for hydraulic or shrink fit chucks

The solid carbide HPC reamer HR 500 operates with highest cutting rates (see GuhringNavigator) and produces extremely high-quality holes. Therefore, it often enables considerable savings in production costs. In addition, it provides very high process reliability. The coolant supply ensures an optimal chip evacuation and an optimal cooling.

Tool material/carbide grade

Surface finish

Discount group

**Guhring no.**

Type

DIN

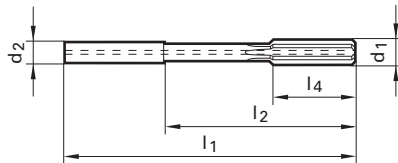
**Guhring std.**

Tolerance

**+ 0.005**

#### HR 500 ACTIVE

Intermediate sizes and stepped reamers  
see inquiry form, page 18!



| Solid carbide                                                                        | Solid carbide                                                                        |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| TiAlN                                                                                | TiAlN                                                                                |
| 166                                                                                  | 166                                                                                  |
| <b>1675</b>                                                                          | <b>1676</b>                                                                          |
| S for blind holes                                                                    | D for through holes                                                                  |
|  |  |

| Nom.-Ø<br>d <sub>1</sub> | Shank-Ø<br>d <sub>2</sub> h6 | Total<br>length l <sub>1</sub> | Effective<br>length l <sub>2</sub> | Cutting edge<br>length l <sub>4</sub> | No. of<br>flutes | Standard range |   |
|--------------------------|------------------------------|--------------------------------|------------------------------------|---------------------------------------|------------------|----------------|---|
| 8.01                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 8.02                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 8.03                     | 8.00                         | 101                            | 65                                 | 16                                    | 6                | •              | • |
| 9.00                     | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 9.97                     | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 9.98                     | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 9.99                     | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 10.00                    | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 10.01                    | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 10.02                    | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 10.03                    | 10.00                        | 101                            | 61                                 | 19                                    | 6                | •              | • |
| 11.00                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 11.97                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 11.98                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 11.99                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 12.00                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 12.01                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 12.02                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
| 12.03                    | 12.00                        | 130                            | 85                                 | 19                                    | 6                | •              | • |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |
|                          |                              |                                |                                    |                                       |                  |                |   |

## HR 500 solid carbide high-performance reamers GuhringNavigator

### HR 500 reamers up to 20.00 mm

Tools with **bold** feed column no.  
are preferred choice.

| Tool material/Carbide grade | Carb./K10 |
|-----------------------------|-----------|
| Surface finish              | TiAlN     |
| Guhring no.                 | 1685 1686 |
| Guhring no.                 | 1675 1676 |

| Reamer-<br>Ø<br>mm | Feed column no. |       |       |       |       |       |       |
|--------------------|-----------------|-------|-------|-------|-------|-------|-------|
|                    | 71              | 72    | 73    | 74    | 75    | 76    | 77    |
|                    | f (mm/rev.)     |       |       |       |       |       |       |
| < 4.00             | 0.080           | 0.100 | 0.125 | 0.300 | 0.500 | 0.800 | 1.000 |
| 4.00               | 0.100           | 0.125 | 0.160 | 0.300 | 0.500 | 1.000 | 1.200 |
| 5.00               | 0.100           | 0.125 | 0.160 | 0.400 | 0.600 | 1.000 | 1.400 |
| 6.30               | 0.125           | 0.160 | 0.200 | 0.400 | 0.700 | 1.200 | 1.600 |
| 8.00               | 0.160           | 0.200 | 0.250 | 0.600 | 1.000 | 1.800 | 2.400 |
| 10.00              | 0.200           | 0.250 | 0.315 | 0.600 | 1.200 | 1.800 | 2.400 |
| 12.50              | 0.200           | 0.250 | 0.315 | 0.800 | 1.200 | 2.000 | 2.500 |
| 16.00              | 0.250           | 0.315 | 0.400 | 0.800 | 1.400 | 2.200 | 2.600 |
| 20.00              | 0.315           | 0.400 | 0.500 | 0.800 | 1.400 | 2.200 | 2.600 |
| 25.00              | 0.400           | 0.500 | 0.630 | 1.000 | 1.600 | 2.500 | 3.000 |
| 31.50              | 0.400           | 0.500 | 0.630 | 1.000 | 2.000 | 3.000 | 3.600 |
| 40.00              | 0.500           | 0.630 | 0.800 | 1.200 | 2.000 | 3.000 | 3.600 |
| 50.00              | 0.630           | 0.800 | 1.000 | 1.400 | 2.200 | 3.200 | 3.600 |
| > 50.00            | 0.800           | 1.000 | 1.250 | 1.600 | 2.200 | 3.200 | 3.600 |

For an optimal cooling lubricant supply to  
HR 500 type D reamer cutting edges for through  
holes we recommend clamping in hydraulic or  
shrink fit chucks to the maximum clamping depth.

Coolant:  
● soluble oil  
● neat oil  
○ air

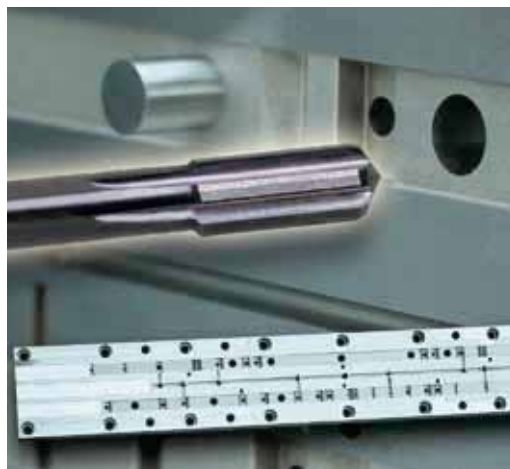


| Material group                              | Material examples<br><i>Figures in bold = material no. to DIN EN 10 027</i>                                                                                        | Tensile strength<br>N/mm <sup>2</sup> | Cool-<br>ant | v <sub>c</sub><br>m/min       | Feed column<br>no.                           |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------|-------------------------------|----------------------------------------------|
| Common structural steels                    | <b>1.0035</b> S185, <b>1.0486</b> StE P275N, <b>1.0345</b> P235GH, <b>1.0425</b> P265GH<br><b>1.0050</b> E295, <b>1.0070</b> E360, <b>1.8937</b> P500NH            | ≤500<br>>500-850                      | ●<br>●       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Free-cutting steels                         | <b>1.0718</b> 11SMnPb30, <b>1.0736</b> 115Mn37<br><b>1.0727</b> 46 S20, <b>1.0728</b> 60 S20, <b>1.0757</b> 46SPb20                                                | ≤850<br>850-1000                      | ●<br>●       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Unalloyed heat-treatable steels             | <b>1.0402</b> C22, <b>1.1178</b> C30E<br><b>1.0503</b> C45, <b>1.1191</b> C45E<br><b>1.0601</b> C60, <b>1.1221</b> C60E                                            | ≤ 700<br>700-850<br>850-1000          | ●<br>●<br>●  | 120-250<br>120-250<br>120-250 | <b>75-76</b><br><b>75-76</b><br><b>75-76</b> |
| Alloyed heat-treatable steels               | <b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4<br><b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4                               | 850-1000<br>1000-1200                 | ●<br>●       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Unalloyed case hardened steels              | <b>1.0301</b> C10, <b>1.1121</b> C10E                                                                                                                              | ≤750                                  | ●            | 120-250                       | <b>75-76</b>                                 |
| Alloyed case hardened steels                | <b>1.7043</b> 38Cr4<br><b>1.5752</b> 14NiCr14, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5                                                                        | 850-1000<br>1000-1200                 | ●<br>●       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Nitriding steels                            | <b>1.8504</b> 34CrAl6<br><b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7                                                                                           | ≥850-1000<br>1000-1200                | ●<br>●       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Tool steels                                 | <b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9<br><b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4 | ≤850<br>850-1000                      | ●<br>●       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| High speed steels                           | <b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> 61CrV4                                                                                               | ≥650-1000                             | ●            | 60-120                        | <b>75-76</b>                                 |
| Spring steels                               | <b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4                                                                                                     | ≥330 HB                               | ●            | 30-60                         | <b>73-74</b>                                 |
| Stainless steels, sulphured                 | <b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b>                                                                           | ≤850                                  | ●            | 60-120                        | <b>74-75</b>                                 |
| austenitic                                  | <b>1.4301</b> X5CrNi18 10, <b>1.4541</b> X6CrNiTi18 10, <b>1.4571</b> X6CrNiMoTi 17 12 2                                                                           | ≤850                                  | ●            | 40-80                         | <b>74-75</b>                                 |
| martensitic                                 | <b>1.4057</b> X17CrNi16-1, <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18 2                                                                                   | ≤850                                  | ●            | 60-120                        | <b>74-75</b>                                 |
| Hardened steels                             | -                                                                                                                                                                  | ≤40-48 HRC<br>>48-62 HRC              | ●<br>●       | 40-60<br>30-60                | <b>73-74</b><br><b>73-74</b>                 |
| Special alloys                              | Nimonic, Inconel, Monel, Hastelloy                                                                                                                                 | ≤1200                                 | ●            | 40-60                         | <b>74-75</b>                                 |
| Cast iron                                   | <b>0.6010</b> EN-GJL-100 (GG10) <b>0.6020</b> EN-GJL-200 (GG20)<br><b>0.6025</b> EN-GJL-250 (GG25) <b>0.6035</b> EN-GJL-350 (GG35)                                 | ≤240 HB<br><300 HB                    | ● ○<br>● ○   | 60-140<br>60-140              | <b>75-76</b><br><b>75-76</b>                 |
| Spheroidal graphite and malleable cast iron | <b>0.7050</b> EN-GJS-500-7 (GGG50) <b>0.8035</b> EN-GJMW-350-4 (GTW5)<br><b>0.7060</b> EN-GJS-600-3 (GGG60) <b>0.7070</b> EN-GJS-700-2 (GGG70)                     | ≤240 HB<br><300 HB                    | ●<br>●       | 120-250<br>60-120             | <b>75-76</b><br><b>75-76</b>                 |
| Chilled cast iron                           | -                                                                                                                                                                  | ≤350 HB                               | ●            | 30-50                         | <b>74-75</b>                                 |
| Ti and Ti-alloys                            | <b>3.7024</b> Ti99.5, <b>3.7114</b> TiAl5Sn2.5, <b>3.7124</b> TiCu2<br><b>3.7154</b> TiAl6Zr5, <b>3.7164</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2.5, -TiAl8Mo1V1     | ≤850<br>850-1200                      | ●<br>●       | 40-80<br>40-80                | <b>74-75</b><br><b>74-75</b>                 |
| Aluminium and Al-alloys                     | <b>3.0255</b> Al99.5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1                                                                                                   | ≤400                                  | ●            |                               |                                              |
| Al wrought alloys                           |                                                                                                                                                                    | ≤450                                  | ●            |                               |                                              |
| Al cast iron ≤ 10 % Si                      | <b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9                                                                                          | ≤600                                  | ●            |                               |                                              |
| > 10 % Si                                   | <b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg                                                                                                 | ≤600                                  | ●            |                               |                                              |
| Magnesium alloys                            | MgMn2, G-MgAl8Zn1, G-MgAl6Zn3                                                                                                                                      | ≤450                                  | ○            | 80-160                        | <b>75-76</b>                                 |
| Copper, low-alloyed                         | <b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb                                                                                                | ≤400                                  | ●            |                               |                                              |
| Brass, short-chipping                       | <b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2                                                                                          | ≤600                                  | ●            | 100-250                       | <b>75-76</b>                                 |
| long-chipping                               | <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0.5                                                                                              | ≤600                                  | ●            |                               |                                              |
| Bronze, short-chipping                      | <b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn                                                                                            | ≤600                                  | ● ●          | 100-250                       | <b>75-76</b>                                 |
|                                             | <b>2.0790</b> CuNi18Zn19Pb                                                                                                                                         | >600-850                              | ●            | 100-250                       | <b>75-76</b>                                 |
| Bronze, long-chipping                       | <b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10<br><b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2                                                    | ≤850<br>850-1000                      | ●<br>●       |                               |                                              |
| Duroplastics                                | Bakelit, Resopal, Pertinax, Moltopren                                                                                                                              |                                       | ○            | 80-200                        | <b>75-76</b>                                 |
| Thermoplastics                              | Plexiglass, Hostalen, Novodur, Makralon                                                                                                                            |                                       | ● ○          | 80-200                        | <b>75-76</b>                                 |
| Kevlar                                      | Kevlar                                                                                                                                                             |                                       | ○            | 80-200                        | <b>75-76</b>                                 |
| Glass/carbon fibre reinf. plastics          | GFP/CFP                                                                                                                                                            |                                       | ○            | 80-200                        | <b>75-76</b>                                 |

The new HR 500 S and HR 500 D solid carbide high-performance reamers have shown their performance in several applications, see following table:

## Hard reaming instead of eroding: Enormous savings thanks to HR 500

Guhring's HR 500 high performance reamers are not only first choice for volume production. They are also the ideal solution for especially demanding machining tasks. They replace the expensive eroding operation of highly accurate ejector bores in hardened steel. Advantage for the customer: The machining time of in excess of 30 minutes per bore for eroding is reduced to less than 1 second with hard reaming.



## Special solution HR 500 G carbide- or cermet-tipped high-performance reamers - technology and advantages

On the strength of the excellent results that solid carbide high-performance reamers HR 500 achieve in the diameter range up to 20 mm, Guhring has carried over this successful concept to the new HR 500 G high-performance reamers for diameters above 20.00 mm. HR 500 G brazed carbide- or cermet-tipped high-performance reamers offer particularly economical advantages for these large diameters in comparison with solid carbide high-performance reamers with comparable performance figures. In comparison with conventional interchangeable head systems the brazed HR 500 G high-performance reamers are convincing thanks to the following advantages:

- considerably higher rigidity thanks to monoblock-design.
- additional errors in concentricity through additional interface are avoided.
- no restriction of coolant delivery by avoiding an additional interface
- installation errors are impossible.
- very simple handling.
- higher rigidity against torsional and radial forces.
- reduced tendency to chattering.
- long tool life thanks to single interface installation

In order to offer the optimal tool material tip for every application range, tipped HR 500 G high-performance reamers are available with carbide inserts and TiAlN-coating for the machining of cast iron and special steels or with cermet inserts for the machining of steels and GGG materials. Detailed information regarding optimal application can be found in the GuhringNavigator for these tools.

The geometry of tipped HR 500 high-performance reamers corresponds to those in solid carbide. Therefore, there is a choice of four different tipped designs:

- cermet or carbide-tipped HR 500 GS for the machining of blind holes.
- cermet or carbide-tipped HR 500 GD for the machining of through holes.

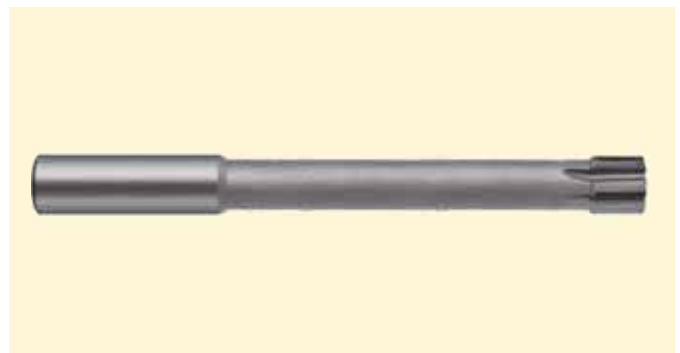
**Now  
standard range**



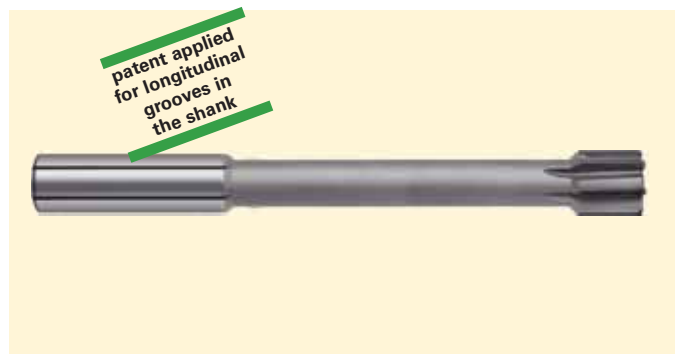
Carbide-tipped HR 500 GSTiAlN-coated high-performance reamers for the machining of blind holes, Guhring no. 1680



Carbide-tipped HR 500 GDTiAlN-coated high-performance reamers for the machining of through holes, Guhring no. 1681



Cermet-tipped high-performance reamers HR 500 GS the machining of blind holes, Guhring no. 1682



Cermet-tipped high-performance reamers HR 500 GD the machining of through holes, Guhring no. 1683

# EXCLUSIVE<sup>®</sup>LINE

Special solution HR 500 G carbide- or cermet-tipped high-performance reamers - special designs



Even for diameters above 40 mm Guhring's HR 500 technology is the first choice for high-performance reaming. The secure clamping of the tool head with HA shank in hydraulic chucks ensures maximum precision and quality, handling is easy and flexible.

For application in deep holes the clamping is possible in elongated hydraulic chucks, for short reaming depths use standard chucks.

Carbide- or cermet-tipped HR 500 high-performance reamers are available in preferred sizes as standard range. In addition we manufacture special tools to customer specifications on request.

## Product information

- right-hand cutting
- extremely unequal flute spacing
- straight-fluted
- straight shank tolerance h6 for hydraulic or shrink fit chucks

The carbide-tipped HPC reamer HR 500 G operates at highest cutting rates (see GuhringNavigator) and produces extremely high-quality holes. Therefore, it often enables considerable savings in production costs. In addition, it provides very high process reliability. The coolant supply ensures an optimal chip evacuation and an optimal cooling.

Tool material/carbide grade

### Surface finish

Discount group

**Guhring no.**

Type

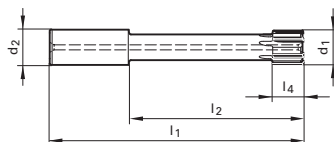
DIN

**Guhring std.**

## Tolerance

**hole tolerance zone H7**

Intermediate sizes from Ø 20.1 mm  
available for fast delivery.



| Carbide                                                                              | Carbide                                                                              |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| TiAlN                                                                                | TiAlN                                                                                |
| 166                                                                                  | 166                                                                                  |
| <b>1680</b>                                                                          | <b>1681</b>                                                                          |
| S for blind holes                                                                    | D for through holes                                                                  |
|  |  |

12 | **GUHRING** HR 500

## HR 500 G high-performance reamers Standard range and dimensions

### HR 500 G cermet-tipped high-performance reamers

#### Product information

- right-hand cutting
- extremely unequal flute spacing
- straight-fluted
- straight shank tolerance h6 for hydraulic or shrink fit chucks

The HR 500 G cermet-tipped HPC reamer operates at highest cutting rates (see GuhringNavigator) and produces extremely high-quality holes. Therefore, it often enables considerable savings in production costs. In addition, it provides very high process reliability. The coolant supply ensures an optimal chip evacuation and an optimal cooling.

Tool material/carbide grade

Surface finish

Discount group

**Guhring no.**

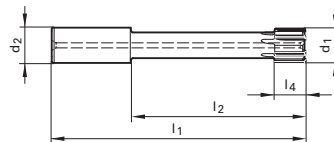
Type

DIN

**Guhring std.**

Tolerance **hole tolerance zone H7**

Intermediate sizes from Ø 20.1 mm available for fast delivery.



| Cermet                                                                               | Cermet                                                                               |
|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| bright                                                                               | bright                                                                               |
| 166                                                                                  | 166                                                                                  |
| <b>1682</b>                                                                          | <b>1683</b>                                                                          |
| S for blind holes                                                                    | D for through holes                                                                  |
|  |  |

| Nom.-Ø<br>d <sub>1</sub> H7 | Shank-Ø<br>d <sub>2</sub> | Total length<br>l <sub>1</sub> | Effective length<br>l <sub>2</sub> | Cutting edge<br>length l <sub>4</sub> | z | Standard range |   |
|-----------------------------|---------------------------|--------------------------------|------------------------------------|---------------------------------------|---|----------------|---|
| <b>22.00</b>                | 20                        | 160                            | 110                                | 22                                    | 6 | •              | • |
| <b>24.00</b>                | 25                        | 180                            | 124                                | 22                                    | 6 | •              | • |
| <b>25.00</b>                | 25                        | 180                            | 124                                | 22                                    | 6 | •              | • |
| <b>26.00</b>                | 25                        | 180                            | 124                                | 22                                    | 6 | •              | • |
| <b>28.00</b>                | 25                        | 180                            | 124                                | 25                                    | 6 | •              | • |
| <b>30.00</b>                | 25                        | 180                            | 124                                | 25                                    | 6 | •              | • |
| <b>32.00</b>                | 32                        | 200                            | 140                                | 25                                    | 6 | •              | • |
| <b>34.00</b>                | 32                        | 200                            | 140                                | 25                                    | 6 | •              | • |
| <b>36.00</b>                | 32                        | 200                            | 140                                | 25                                    | 8 | •              | • |
| <b>38.00</b>                | 32                        | 200                            | 140                                | 25                                    | 8 | •              | • |
| <b>40.00</b>                | 32                        | 200                            | 140                                | 25                                    | 8 | •              | • |
|                             |                           |                                |                                    |                                       |   |                |   |
|                             |                           |                                |                                    |                                       |   |                |   |
|                             |                           |                                |                                    |                                       |   |                |   |
|                             |                           |                                |                                    |                                       |   |                |   |
|                             |                           |                                |                                    |                                       |   |                |   |
|                             |                           |                                |                                    |                                       |   |                |   |
|                             |                           |                                |                                    |                                       |   |                |   |
|                             |                           |                                |                                    |                                       |   |                |   |

## HR 500 G high performance reamers GuhringNavigator and application examples

### HR 500 Reamers from Ø 20.00 mm up to 40.00 mm

Tools with **bold** feed column no.  
are preferred choice.

| Tool material/Carbide grade | Carb./K10 |
|-----------------------------|-----------|
| Surface finish              | TiAlN     |
| Guhring no.                 | 1680      |
| Guhring no.                 | 1681      |

| Reamer-<br>Ø<br>mm | Feed column no. |       |       |       |       |       |       |
|--------------------|-----------------|-------|-------|-------|-------|-------|-------|
|                    | 71              | 72    | 73    | 74    | 75    | 76    | 77    |
|                    | f (mm/rev.)     |       |       |       |       |       |       |
| < 4.00             | 0.080           | 0.100 | 0.125 | 0.300 | 0.500 | 0.800 | 1.000 |
| 4.00               | 0.100           | 0.125 | 0.160 | 0.300 | 0.500 | 1.000 | 1.200 |
| 5.00               | 0.100           | 0.125 | 0.160 | 0.400 | 0.600 | 1.000 | 1.400 |
| 6.30               | 0.125           | 0.160 | 0.200 | 0.400 | 0.700 | 1.200 | 1.600 |
| 8.00               | 0.160           | 0.200 | 0.250 | 0.600 | 1.000 | 1.800 | 2.400 |
| 10.00              | 0.200           | 0.250 | 0.315 | 0.600 | 1.200 | 1.800 | 2.400 |
| 12.50              | 0.200           | 0.250 | 0.315 | 0.800 | 1.200 | 2.000 | 2.500 |
| 16.00              | 0.250           | 0.315 | 0.400 | 0.800 | 1.400 | 2.200 | 2.600 |
| 20.00              | 0.315           | 0.400 | 0.500 | 0.800 | 1.400 | 2.200 | 2.600 |
| 25.00              | 0.400           | 0.500 | 0.630 | 1.000 | 1.600 | 2.500 | 3.000 |
| 31.50              | 0.400           | 0.500 | 0.630 | 1.000 | 2.000 | 3.000 | 3.600 |
| 40.00              | 0.500           | 0.630 | 0.800 | 1.200 | 2.000 | 3.000 | 3.600 |
| 50.00              | 0.630           | 0.800 | 1.000 | 1.400 | 2.200 | 3.200 | 3.600 |
| > 50.00            | 0.800           | 1.000 | 1.250 | 1.600 | 2.200 | 3.200 | 3.600 |

For an optimal cooling lubricant supply to  
HR 500 type D reamer cutting edges for through  
holes we recommend clamping in hydraulic or  
shrink fit chucks to the maximum clamping depth.

Coolant:  
● soluble oil  
● neat oil  
○ air



| Material group                              | Material examples<br><i>Figures in bold = material no. to DIN EN 10 027</i>                                                                                        | Tensile strength<br>N/mm <sup>2</sup> | Cool-<br>ant | v <sub>c</sub><br>m/min | Feed column<br>no.      |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------|-------------------------|-------------------------|
| Common structural steels                    | <b>1.0035</b> S185, <b>1.0486</b> StE P275N, <b>1.0345</b> P235GH, <b>1.0425</b> P265GH<br><b>1.0050</b> E295, <b>1.0070</b> E360, <b>1.8937</b> P500NH            | ≤500<br>>500-850                      | ●<br>●       | 25-40<br>25-40          | 74-75<br>74-75          |
| Free-cutting steels                         | <b>1.0718</b> 11SMnPb30, <b>1.0736</b> 115Mn37<br><b>1.0727</b> 46 S20, <b>1.0728</b> 60 S20, <b>1.0757</b> 46SPb20                                                | ≤850<br>850-1000                      | ●<br>●       | 25-40<br>25-40          | 74-75<br>74-75          |
| Unalloyed heat-treatable steels             | <b>1.0402</b> C22, <b>1.1178</b> C30E<br><b>1.0503</b> C45, <b>1.1191</b> C45E<br><b>1.0601</b> C60, <b>1.1221</b> C60E                                            | ≤ 700<br>700-850<br>850-1000          | ●<br>●<br>●  | 25-40<br>25-40<br>25-40 | 74-75<br>74-75<br>74-75 |
| Alloyed heat-treatable steels               | <b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4<br><b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4                               | 850-1000<br>1000-1200                 | ●<br>●       | 25-40<br>25-40          | 74-75<br>74-75          |
| Unalloyed case hardened steels              | <b>1.0301</b> C10, <b>1.1121</b> C10E                                                                                                                              | ≤750                                  | ●            | 25-40                   | 74-75                   |
| Alloyed case hardened steels                | <b>1.7043</b> 38Cr4<br><b>1.5752</b> 14NiCr14, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5                                                                        | 850-1000<br>1000-1200                 | ●<br>●       | 25-40<br>25-40          | 74-75<br>74-75          |
| Nitriding steels                            | <b>1.8504</b> 34CrAl6<br><b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7                                                                                           | ≥850-1000<br>1000-1200                | ●<br>●       | 25-40<br>25-40          | 74-75<br>74-75          |
| Tool steels                                 | <b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9<br><b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4 | ≤850<br>850-1000                      | ●<br>●       | 25-40<br>25-40          | 74-75<br>74-75          |
| High speed steels                           | <b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> 61CrV4                                                                                               | ≥650-1000                             | ●            | 20-30                   | 74-75                   |
| Spring steels                               | <b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4                                                                                                     | ≥330 HB                               | ●            | 20-30                   | 74-75                   |
| Stainless steels, sulphured                 | <b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b>                                                                           | ≤850                                  | ●            | 30-60                   | 74-75                   |
| austenitic                                  | <b>1.4301</b> X5CrNi18 10, <b>1.4541</b> X6CrNiTi18 10, <b>1.4571</b> X6CrNiMoTi 17 12 2                                                                           | ≤850                                  | ●            | 20-30                   | 74-75                   |
| martensitic                                 | <b>1.4057</b> X17CrNi16-1, <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18 2                                                                                   | ≤850                                  | ●            | 20-30                   | 74-75                   |
| Hardened steels                             | -                                                                                                                                                                  | ≤40-48 HRC<br>>48-62 HRC              | ●<br>●       | 10-20                   | 72-73                   |
| Special alloys                              | Nimonic, Inconel, Monel, Hastelloy                                                                                                                                 | ≤1200                                 | ●            | 20-30                   | 73-74                   |
| Cast iron                                   | <b>0.6010</b> EN-GJL-100 (GG10) <b>0.6020</b> EN-GJL-200 (GG20)<br><b>0.6025</b> EN-GJL-250 (GG25) <b>0.6035</b> EN-GJL-350 (GG35)                                 | ≤240 HB<br><300 HB                    | ●○<br>●○     | 40-100<br>40-100        | 75-76<br>75-76          |
| Spheroidal graphite and malleable cast iron | <b>0.7050</b> EN-GJS-500-7 (GGG50) <b>0.8035</b> EN-GJMW-350-4 (GTW5)<br><b>0.7060</b> EN-GJS-600-3 (GGG60) <b>0.7070</b> EN-GJS-700-2 (GGG70)                     | ≤240 HB<br><300 HB                    | ●<br>●       | 50-120<br>50-100        | 75-76<br>75-76          |
| Chilled cast iron                           | -                                                                                                                                                                  | ≤350 HB                               | ●            | 20-40                   | 74-75                   |
| Ti and Ti-alloys                            | <b>3.7024</b> Ti99.5, <b>3.7114</b> TiAl5Sn2.5, <b>3.7124</b> TiCu2<br><b>3.7154</b> TiAl6Zr5, <b>3.7164</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2.5, -TiAl8Mo1V1     | ≤850<br>850-1200                      | ●<br>●       | 20-40<br>20-40          | 73-74<br>73-74          |
| Aluminium and Al-alloys                     | <b>3.0255</b> Al99.5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1                                                                                                   | ≤400                                  | ●            |                         |                         |
| Al wrought alloys                           |                                                                                                                                                                    | ≤450                                  | ●            |                         |                         |
| Al cast iron ≤ 10 % Si                      | <b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9                                                                                          | ≤600                                  | ●            |                         |                         |
| > 10 % Si                                   | <b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg                                                                                                 | ≤600                                  | ●            |                         |                         |
| Magnesium alloys                            | MgMn2, G-MgAl8Zn1, G-MgAl6Zn3                                                                                                                                      | ≤450                                  | ○            | 80-160                  | 75-76                   |
| Copper, low-alloyed                         | <b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5ZnPb                                                                                                | ≤400                                  | ●            |                         |                         |
| Brass, short-chipping                       | <b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2                                                                                          | ≤600                                  | ●            | 40-120                  | 74-75                   |
| long-chipping                               | <b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0.5                                                                                              | ≤600                                  | ●            | 40-120                  | 74-75                   |
| Bronze, short-chipping                      | <b>2.1090</b> CuSn7ZnPb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn                                                                                            | ≤600                                  | ●●           | 50-120                  | 74-75                   |
|                                             | <b>2.0790</b> CuNi18Zn19Pb                                                                                                                                         | >600-850                              | ●            | 50-120                  | 74-75                   |
| Bronze, long-chipping                       | <b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10<br><b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2                                                    | ≤850<br>850-1000                      | ●<br>●       | 50-120<br>50-120        | 74-75<br>74-75          |
| Duroplastics                                | Bakelit, Resopal, Pertinax, Moltopren                                                                                                                              |                                       | ○            | 40-120                  | 74-75                   |
| Thermoplastics                              | Plexiglass, Hostalen, Novodur, Makralon                                                                                                                            |                                       | ●○           | 40-120                  | 74-75                   |
| Kevlar                                      | Kevlar                                                                                                                                                             |                                       | ○            | 40-120                  | 74-75                   |
| Glass/carbon fibre reinf. plastics          | GFP/CFP                                                                                                                                                            |                                       | ○            | 40-120                  | 74-75                   |

Carbide- or cermet-tipped special high-performance reamers HR 500 GS and HR 500 GD have already been able to demonstrate their efficiency in numerous applications. The following table contains some examples.

[illegible]

| Tool type             | HR 500 GD        | HR 500 GD       | HR 500 GD            |
|-----------------------|------------------|-----------------|----------------------|
| Guhring no.           | 1683 (shortened) | 1681            | 1683                 |
| tool material/coating | cermet           | carbide + TiAlN | cermet               |
| component machined    | universal joint  | wheel flange    | differential housing |
| workpiece material    | steel            | cast iron       | cast iron            |
| hole diameter (mm)    | 25               | 22              | 32                   |
| hole tolerance        | F7               | H8              | H7                   |
| reaming depth (mm)    | 18               | 20              | 50                   |
| <b>Cutting speed</b>  |                  |                 |                      |
| Vc (m/min)            | 130              | 120             | 120                  |
| <b>Feed rate</b>      |                  |                 |                      |
| Vf (mm/min)           | 2000             | 2600            | 3000                 |
| tool life (m)         | 175              | 120             | 160                  |

## HR 500 ACTIVE

### Special range of HR 500 solid carbide high-performance reamers

Ever since their introduction, Guhring's solid carbide high-performance reamers HR 500 D for through holes and HR 500 S for blind holes have impressed customers with their outstanding performance. Even under difficult machining conditions such as interrupted cutting or unstable machines they ream holes at cutting rates higher than cermet levels with maximum tool life and optimal quality in almost all materials.

So the user can also fully utilise

the advantages of HR 500 high-performance reamers for the machining of the special applications Guhring has developed the HR 500 ACTIVE range:

#### **Special tools based on HR 500 technology for cylindrical and stepped holes**

There is a choice of four HR 500 ACTIVE types:

- for cylindrical blind holes
- for cylindrical through holes
- for stepped blind holes
- for stepped through holes

The four HR 500 ACTIVE types are

available in the following designs:

- with or without internal cooling
- short or long version
- with TiAlN coating or bright finish
- to hole tolerance or reamer manufacturing tolerance

You have the choice of designing the optimal HR 500 reamer for your specific application! Simply complete the questionnaire and send or fax it to the address or fax number respectively.

#### **Your ACTIVE advantages:**

**Quotation within 72hrs!**

**Tool dispatch maximum 4 weeks!**

- + perfect adaptation of tool material, geometry and coating to workpiece material and hole
- + with internal cooling: central coolant duct for blind holes, longitudinal grooves in shank for through holes
- + nominal diameter from 2.95 up to 20.1 mm
- + shank to DIN 6535 HA
- + tolerances to requirements for the perfect finish
- + available in long or short version
- + highest quality
- + best cost-performance ratio
- + delivery time: maximum 3 weeks for TiAlN-coated tools and maximum 2 weeks for bright finish tools

#### **Perfect finish thanks to closest tolerances!**

It's your choice! We produce perfect quality for you in the shortest time possible:

- + we produce your required hole tolerance to DIN 1420.
- + reamers with manufacturing tolerances according to your requirements!

The minimum manufacturing tolerance is 0.005 mm, applies to both diameters with step reamers!

#### **General conditions for HR 500 ACTIVE step reamers**

With HR 500 ACTIVE step reamers please note the following pre-requisites:

- + the minimum step differential is 0.2 mm.
  - + the countersink angle W1 can be chosen between 40° and 180° ( $\pm 1^\circ$ ).
- With 180° countersink angle the outer cutting edge has a corner chamfer 0.1+0.1x45°.

Optimal clamping holders from our current GM 300 range:

- + hydraulic chucks
- + shrink fit chucks



# EXCLUSIVELINE®

## HR 500 ACTIVE

### Cutting rates on the highest level

Tools with **bold** feed column no.  
are preferred choice.

Tool material/carbide grade

Carb./K10

Form

| Reamer-<br>Ø<br>mm | Feed column no. |       |       |       |       |       |       |
|--------------------|-----------------|-------|-------|-------|-------|-------|-------|
|                    | 71              | 72    | 73    | 74    | 75    | 76    | 77    |
|                    | f (mm/rev.)     |       |       |       |       |       |       |
| < 4.00             | 0.080           | 0.100 | 0.125 | 0.300 | 0.500 | 0.800 | 1.000 |
| 4.00               | 0.100           | 0.125 | 0.160 | 0.300 | 0.500 | 1.000 | 1.200 |
| 5.00               | 0.100           | 0.125 | 0.160 | 0.400 | 0.600 | 1.000 | 1.400 |
| 6.30               | 0.125           | 0.160 | 0.200 | 0.400 | 0.700 | 1.200 | 1.600 |
| 8.00               | 0.160           | 0.200 | 0.250 | 0.600 | 1.000 | 1.800 | 2.400 |
| 10.00              | 0.200           | 0.250 | 0.315 | 0.600 | 1.200 | 1.800 | 2.400 |
| 12.50              | 0.200           | 0.250 | 0.315 | 0.800 | 1.200 | 2.000 | 2.500 |
| 16.00              | 0.250           | 0.315 | 0.400 | 0.800 | 1.400 | 2.200 | 2.600 |
| 20.00              | 0.315           | 0.400 | 0.500 | 0.800 | 1.400 | 2.200 | 2.600 |
| 25.00              | 0.400           | 0.500 | 0.630 | 1.000 | 1.600 | 2.500 | 3.000 |
| 31.50              | 0.400           | 0.500 | 0.630 | 1.000 | 2.000 | 3.000 | 3.600 |
| 40.00              | 0.500           | 0.630 | 0.800 | 1.200 | 2.000 | 3.000 | 3.600 |
| 50.00              | 0.630           | 0.800 | 1.000 | 1.400 | 2.200 | 3.200 | 3.600 |
| > 50.00            | 0.800           | 1.000 | 1.250 | 1.600 | 2.200 | 3.200 | 3.600 |

For an optimal cooling lubricant supply to  
HR 500 type D reamer cutting edges for through  
holes we recommend clamping in hydraulic or  
shrink fit chucks to the maximum clamping depth.

○ bright

● TiAlN

Coolant:

● soluble oil

● neat oil

○ air



| Material group                                           | Material examples, <b>new description</b> (old description in brackets)<br><i>Figures in bold = material no. to DIN EN 10 027</i>                                                                                                                                        | Tensile strength<br>N/mm <sup>2</sup> | Cool-<br>ant | Sur-<br>face | Vc<br>m/min                   | FC<br>no.                                    |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|--------------|--------------|-------------------------------|----------------------------------------------|
| Common structural steels                                 | <b>1.0035</b> S185, <b>1.0486</b> StE P275N, <b>1.0345</b> P235GH, <b>1.0425</b> P265GH<br><b>1.0050</b> E295, <b>1.0070</b> E360, <b>1.8937</b> P500NH                                                                                                                  | ≤500<br>>500-850                      | ○<br>●       | ○<br>●       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Free-cutting steels                                      | <b>1.0718</b> 11SMnPb30, <b>1.0736</b> 115Mn37<br><b>1.0727</b> 46 S20, <b>1.0728</b> 60 S20, <b>1.0757</b> 46SPb20                                                                                                                                                      | ≤850<br>850-1000                      | ○<br>○       | ○<br>○       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Unalloyed heat-treatable steels                          | <b>1.0402</b> C22, <b>1.1178</b> C30E<br><b>1.0503</b> C45, <b>1.1191</b> C45E<br><b>1.0601</b> C60, <b>1.1221</b> C60E                                                                                                                                                  | ≤ 700<br>700-850<br>850-1000          | ○<br>○<br>○  | ○<br>○<br>○  | 120-250<br>120-250<br>120-250 | <b>75-76</b><br><b>75-76</b><br><b>75-76</b> |
| Alloyed heat-treatable steels                            | <b>1.5131</b> 50MnSi4, <b>1.7003</b> 38Cr2, <b>1.7030</b> 28Cr4<br><b>1.5710</b> 36NiCr6, <b>1.7035</b> 41Cr4, <b>1.7225</b> 42CrMo4                                                                                                                                     | 850-1000<br>1000-1200                 | ○<br>○       | ○<br>○       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Unalloyed case hardened steels                           | <b>1.0301</b> C10, <b>1.1121</b> C10E                                                                                                                                                                                                                                    | ≤750                                  | ○            | ○            | 120-250                       | <b>75-76</b>                                 |
| Alloyed case hardened steels                             | <b>1.7043</b> 38Cr4<br><b>1.5752</b> 14NiCr14, <b>1.7131</b> 16MnCr5, <b>1.7264</b> 20CrMo5                                                                                                                                                                              | 850-1000<br>1000-1200                 | ●<br>●       | ○<br>○       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Nitriding steels                                         | <b>1.8504</b> 34CrAl6<br><b>1.8519</b> 31CrMoV9, <b>1.8550</b> 34CrAlNi7                                                                                                                                                                                                 | ≥850-1000<br>1000-1200                | ○<br>●       | ○<br>○       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| Tool steels                                              | <b>1.1750</b> C75W, <b>1.2067</b> 102Cr6, <b>1.2307</b> 29CrMoV9<br><b>1.2080</b> X210Cr12, <b>1.2083</b> X42Cr13, <b>1.2419</b> 105WCr6, <b>1.2767</b> X45NiCrMo4                                                                                                       | ≤850<br>850-1000                      | ○<br>●       | ○<br>○       | 120-250<br>120-250            | <b>75-76</b><br><b>75-76</b>                 |
| High speed steels                                        | <b>1.3243</b> S 6-5-2-5, <b>1.3343</b> S 6-5-2, <b>1.3344</b> 61CrV4                                                                                                                                                                                                     | ≥650-1000                             | ●            | ○            | 60-120                        | <b>75-76</b>                                 |
| Spring steels                                            | <b>1.5026</b> 55Si7, <b>1.7176</b> 55Cr3, <b>1.8159</b> 51CrV4                                                                                                                                                                                                           | ≥330 HB                               | ●            | ○            | 30-60                         | <b>73-74</b>                                 |
| Stainless steels, sulphured<br>austenitic<br>martensitic | <b>1.4005</b> X12CrS13, <b>1.4104</b> X14CrMoS17, <b>1.4105</b> X6CrMoS17, <b>1.4305</b><br><b>1.4301</b> X5CrNi18 10, <b>1.4541</b> X6CrNiTi18 10, <b>1.4571</b> X6CrNiMoTi 17 12 2<br><b>1.4057</b> X17CrNi16-1, <b>1.4122</b> X39CrMo17-1, <b>1.4521</b> X2CrMoTi18 2 | ≤850<br>≤850<br>≤850                  | ●<br>●<br>●  | ○<br>○<br>○  | 60-120<br>40-80<br>60-120     | <b>74-75</b><br><b>74-75</b><br><b>74-75</b> |
| Hardened steels                                          | –                                                                                                                                                                                                                                                                        | ≤40-48 HRC<br>>48-62 HRC              | ●<br>●       | ○<br>○       | 40-60<br>30-60                | <b>73-74</b><br><b>73-74</b>                 |
| Special alloys                                           | Nimonic, Inconel, Monel, Hastelloy                                                                                                                                                                                                                                       | ≤1200                                 | ●            | ○            | 40-60                         | <b>74-75</b>                                 |
| Cast iron                                                | <b>0.6010</b> EN-GJL-100 (GG10) <b>0.6020</b> EN-GJL-200 (GG20)<br><b>0.6025</b> EN-GJL-250 (GG25) <b>0.6035</b> EN-GJL-350 (GG35)                                                                                                                                       | ≤240 HB<br><300 HB                    | ○<br>○       | ○<br>○       | 60-140<br>60-140              | <b>75-76</b><br><b>75-76</b>                 |
| Spheroidal graphite and<br>malleable cast iron           | <b>0.7050</b> EN-GJS-500-7 (GGG50) <b>0.8035</b> EN-GJMW-350-4 (GTW5)<br><b>0.7070</b> EN-GJS-700-2 (GGG70) <b>0.8170</b> EN-GJMB-700-2 (GTS70)                                                                                                                          | ≤240 HB<br><300 HB                    | ○<br>○       | ○<br>○       | 120-250<br>60-120             | <b>75-76</b><br><b>75-76</b>                 |
| Chilled cast iron                                        | –                                                                                                                                                                                                                                                                        | ≤350 HB                               | ○            | ○            | 30-50                         | <b>74-75</b>                                 |
| Ti and Ti-alloys                                         | <b>3.7024</b> Ti99.5, <b>3.7114</b> TiAl5Sn2.5, <b>3.7124</b> TiCu2<br><b>3.7154</b> TiAl6Zr5, <b>3.7164</b> TiAl6V4, <b>3.7184</b> TiAl4Mo4Sn2.5, -TiAl8Mo1V1                                                                                                           | ≤850<br>850-1200                      | ●<br>●       | ○<br>○       | 30-80<br>30-80                | <b>74-75</b><br><b>74-75</b>                 |
| Aluminium and Al-alloys                                  | <b>3.0255</b> Al99.5, <b>3.2315</b> AlMgSi1, <b>3.3515</b> AlMg1                                                                                                                                                                                                         | ≤400                                  | ○            | ○            |                               |                                              |
| Al-wrought alloys                                        |                                                                                                                                                                                                                                                                          | ≤450                                  | ○            | ○            |                               |                                              |
| Al-cast alloys ≤ 10 % Si<br>> 10 % Si                    | <b>3.2131</b> G-AlSi5Cu1, <b>3.2153</b> G-AlSi7Cu3, <b>3.2573</b> G-AlSi9<br><b>3.2581</b> G-AlSi12, <b>3.2583</b> G-AlSi12Cu, - G-AlSi12CuNiMg                                                                                                                          | ≤600<br>≤600                          | ○<br>○       | ○<br>○       |                               |                                              |
| Magnesium-alloys                                         | MgMn2, G-MgAl8Zn1, G-MgAl6Zn3                                                                                                                                                                                                                                            | ≤450                                  | ○            | ○            | 80-160                        | <b>75-76</b>                                 |
| Copper, low-alloyed                                      | <b>2.0070</b> SE-Cu, <b>2.1020</b> CuSn6, <b>2.1096</b> G-CuSn5Zn5Pb                                                                                                                                                                                                     | ≤400                                  | ○            | ○            |                               |                                              |
| Brass, short-chipping<br>long-chipping                   | <b>2.0380</b> CuZn39Pb2, <b>2.0401</b> CuZn39Pb3, <b>2.0410</b> CuZn43Pb2<br><b>2.0250</b> CuZn20, <b>2.0280</b> CuZn33, <b>2.0332</b> CuZn37Pb0.5                                                                                                                       | ≤600<br>≤600                          | ○<br>○       | ○<br>○       | 100-250                       | <b>75-76</b>                                 |
| Bronze, short-chipping                                   | <b>2.1090</b> CuSn7Zn5Pb, <b>2.1170</b> CuPb5Sn5, <b>2.1176</b> CuPb10Sn<br><b>2.0790</b> CuNi18Zn19Pb                                                                                                                                                                   | ≤600<br>>600-850                      | ○<br>●       | ○<br>○       | 100-250<br>100-250            | <b>75-76</b><br><b>75-76</b>                 |
| Bronze, long-chipping                                    | <b>2.0916</b> CuAl5, <b>2.0960</b> CuAl9Mn, <b>2.1050</b> CuSn10<br><b>2.0980</b> CuAl11Ni, <b>2.1247</b> CuBe2                                                                                                                                                          | ≤850<br>850-1000                      | ●<br>●       | ○<br>○       |                               |                                              |
| Duroplastics<br>Thermoplastics                           | Bakelite, Resopal, Pertinax, Moltopren<br>Plexiglass, Hostalen, Novodur, Makralon                                                                                                                                                                                        |                                       | ○<br>○       | ○<br>○       | 80-200<br>80-200              | <b>75-76</b><br><b>75-76</b>                 |
| Kevlar                                                   |                                                                                                                                                                                                                                                                          |                                       | ○            | ○            | 80-200                        | <b>75-76</b>                                 |
| Glass/carbon fibre reinf. plastics                       | GFP/CFP                                                                                                                                                                                                                                                                  |                                       | ○            | ○            | 80-200                        | <b>75-76</b>                                 |

## HR 500 ACTIVE Reamers in special dimensions

|                                       |                                         |                       |
|---------------------------------------|-----------------------------------------|-----------------------|
| <input type="checkbox"/> <b>Order</b> | <input type="checkbox"/> <b>Inquiry</b> | <input type="text"/>  |
| <input type="text"/>                  |                                         | Contact for questions |
| Name/customer no. if available        | <input type="checkbox"/> New customer   | <input type="text"/>  |
| Street no.                            |                                         | Order no.             |
| Telephone                             |                                         | Town/post code        |
| Date                                  |                                         | Fax                   |
|                                       |                                         | Signature             |

### Quantity




Minimum order quantity 5 tools

### Hole Ø / tol.

or

### Reamers manufact. Ø / tol.



| Nom.-Ø d <sub>1</sub> | Tolerance            |
|-----------------------|----------------------|
| <input type="text"/>  | <input type="text"/> |

| Example |
|---------|
| Ø12 F8  |

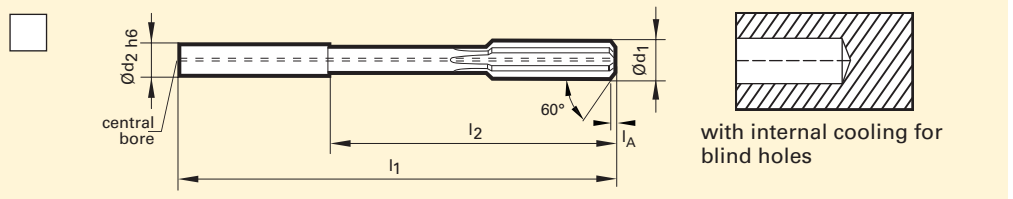
| Example                                          |
|--------------------------------------------------|
| Ø12 $\begin{matrix} +0.03 \\ +0.01 \end{matrix}$ |



| Nom.-Ø d <sub>1</sub> | upper/lower limit    |
|-----------------------|----------------------|
| <input type="text"/>  | <input type="text"/> |

| Example                                            |
|----------------------------------------------------|
| Ø12 $\begin{matrix} +0.008 \\ +0.002 \end{matrix}$ |

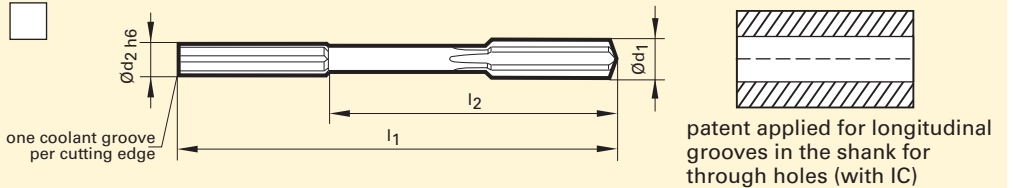
### Blind hole



### Through hole



- ☐ with internal cooling
- ☐ without internal cooling



### Dimensions



- ☐ long version
- ☐ short version

Further dimensions  
on request

| Nom.-Ø [mm]<br>from - to d <sub>1</sub> | long version   |                         | short version  |                         | Chamfer length l <sub>A</sub><br>(only blind holes) | Shank-Ø h6<br>DIN 6535 d <sub>2</sub> |
|-----------------------------------------|----------------|-------------------------|----------------|-------------------------|-----------------------------------------------------|---------------------------------------|
|                                         | l <sub>1</sub> | Reach<br>l <sub>2</sub> | l <sub>1</sub> | Reach<br>l <sub>2</sub> |                                                     |                                       |
| 2.950 - 4.1                             | 68             | 40                      | -              | -                       | 0.4                                                 | 4                                     |
| 4.101 - 6.1                             | 76             | 40                      | -              | -                       | 0.4                                                 | 6                                     |
| 6.101 - 8.1                             | 101            | 65                      | 76             | 40                      | 0.4                                                 | 8                                     |
| 8.101 - 10.1                            | 101            | 61                      | 76             | 36                      | 0.4                                                 | 10                                    |
| 10.101 - 12.1                           | 130            | 85                      | 80             | 35                      | 0.5                                                 | 12                                    |
| 12.101 - 14.1                           | 130            | 85                      | 90             | 45                      | 0.5                                                 | 14                                    |
| 14.101 - 16.1                           | 150            | 102                     | 90             | 42                      | 0.5                                                 | 16                                    |
| 16.101 - 18.1                           | 150            | 102                     | 100            | 52                      | 0.5                                                 | 18                                    |
| 18.101 - 20.1                           | 150            | 100                     | 100            | 50                      | 0.5                                                 | 20                                    |

### Coating



- TiAlN (optimal for machining  
cast iron and steel) ☐
- bright (optimal for machining titanium) ☐

### Material



- Steel/hardened steels/  
GGG/VA ☐
- GG ☐

## HR 500 ACTIVE

### Step reamers made to measure

**VADZA**

ООО «Вадза»  
196128, Россия, Санкт-Петербург,  
ул. Варшавская, д. 5-а, лит. Б  
Тел./Факс: +7 (812) 369 08 14  
E-mail: info@vadza.com  
www.vadza.com

### Order

Name/customer no. if available  New customer ☐

Street no.

Telephone

Date

### Inquiry

Contact for questions

Order no.

Town/post code

Fax

Signature

### Quantity




Minimum order quantity 5 tools

### Hole Ø / tol.

or

### Reamers manufact. Ø / tol.



| nom.-Ø d <sub>1</sub> | tol. d <sub>1</sub>  | step Ø d <sub>3</sub> | tol. d <sub>3</sub>  |
|-----------------------|----------------------|-----------------------|----------------------|
| <input type="text"/>  | <input type="text"/> | <input type="text"/>  | <input type="text"/> |

Example

|      |    |      |    |
|------|----|------|----|
| Ø 12 | F8 | Ø 10 | H7 |
|------|----|------|----|

Example

|      |                 |      |      |
|------|-----------------|------|------|
| Ø 12 | +0.02<br>-0.004 | Ø 10 | ±0.2 |
|------|-----------------|------|------|



| nom.-Ø d <sub>1</sub> | upper/lower limit    | step Ø d <sub>3</sub> | upper/lower limit    |
|-----------------------|----------------------|-----------------------|----------------------|
| <input type="text"/>  | <input type="text"/> | <input type="text"/>  | <input type="text"/> |

Example

|      |                 |      |                 |
|------|-----------------|------|-----------------|
| Ø 12 | +0.01<br>-0.004 | Ø 10 | +0.01<br>-0.004 |
|------|-----------------|------|-----------------|

### cyl. step length/ countersink angle



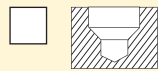
Step length l<sub>3</sub> ±0.1

Countersink angle W<sub>1</sub> ±1°

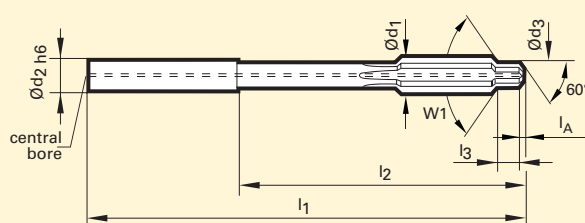
### Blind hole



Stepped hole



Hole and countersink



with internal  
cooling for  
blind holes

### Through hole



- ☐ with internal cooling
- ☐ without internal cooling



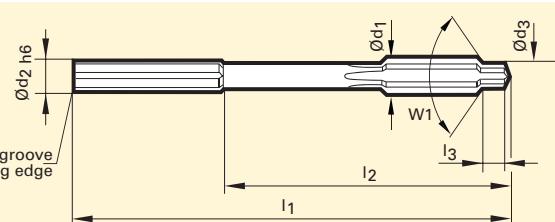
Stepped hole



Hole and countersink



one coolant groove  
per cutting edge



patent applied  
for longitudinal  
grooves in  
the shank for  
through holes  
(with IC)

### Dimensions



- ☐ long version
- ☐ short version

Further dimensions  
on request

| Nom.-Ø [mm]<br>from - to d <sub>1</sub> | smallest poss.<br>step-Ø d <sub>3</sub> | long version   |                         | short version  |                         | Chamfer length l <sub>A</sub><br>(only blind holes) | Shank-Ø h6<br>DIN 6535 d <sub>2</sub> |
|-----------------------------------------|-----------------------------------------|----------------|-------------------------|----------------|-------------------------|-----------------------------------------------------|---------------------------------------|
|                                         |                                         | l <sub>1</sub> | Reach<br>l <sub>2</sub> | l <sub>1</sub> | Reach<br>l <sub>2</sub> |                                                     |                                       |
| 2.950 - 4.1                             | d1x0.7 (min. Ø2.95)                     | 68             | 40                      | -              | -                       | 0.4                                                 | 4                                     |
| 4.101 - 6.1                             | d1x0.7 (min. Ø2.95)                     | 76             | 40                      | -              | -                       | 0.4                                                 | 6                                     |
| 6.101 - 8.1                             | d1 x 0.8                                | 101            | 65                      | 76             | 40                      | 0.4                                                 | 8                                     |
| 8.101 - 10.1                            | d1 x 0.8                                | 101            | 61                      | 76             | 36                      | 0.4                                                 | 10                                    |
| 10.101 - 12.1                           | d1 x 0.8                                | 130            | 85                      | 80             | 35                      | 0.5                                                 | 12                                    |
| 12.101 - 14.1                           | d1 x 0.8                                | 130            | 85                      | 90             | 45                      | 0.5                                                 | 14                                    |
| 14.101 - 16.1                           | d1 x 0.8                                | 150            | 102                     | 90             | 42                      | 0.5                                                 | 16                                    |
| 16.101 - 18.1                           | d1 x 0.8                                | 150            | 102                     | 100            | 52                      | 0.5                                                 | 18                                    |
| 18.101 - 20.1                           | d1 x 0.8                                | 150            | 100                     | 100            | 50                      | 0.5                                                 | 20                                    |

### Coating



TiAlN (optimal for machining  
cast iron and steel)

☐

bright (optimal for machining titanium)

☐

### Material



Steel/hardened steels/  
GGG/VA

☐

GG

☐