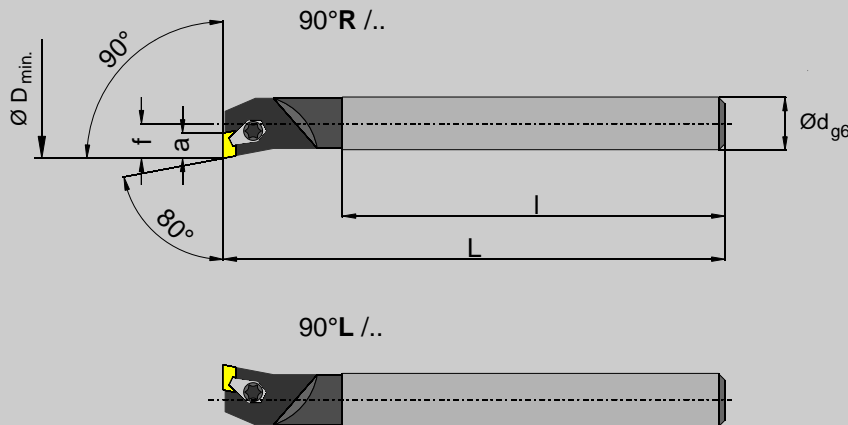




Innenbearbeitung ab 6mm Bohrungsdurchmesser, mit 3 Schneidplattengrößen für 6 verschiedene Bohrungsdurchmesser. Die 2. Schneide ist geschützt, wird durch den ablaufenden Span nicht berührt und bleibt scharf.

Internal-machining with a boring diameter of 6mm upwards, with 3 sizes of cutting inserts for 6 different boring bar diameters. The second cutting edge is protected and is therefore not affected by the boring and so remains sharp.



90° Einstellwinkel  
90° adjusting-angle

Lieferzeit / delivery time

- ab Lager lieferbar - Zwischenverkauf vorbehalten  
on stock, subject to prior sale
- mittelfristig lieferbar (~ 2 - 3 Wochen)  
middle term (~ 2 - 3 weeks)
- nicht lagerhaltig - Lieferzeit auf Anfrage  
not on stock, delivery time upon request

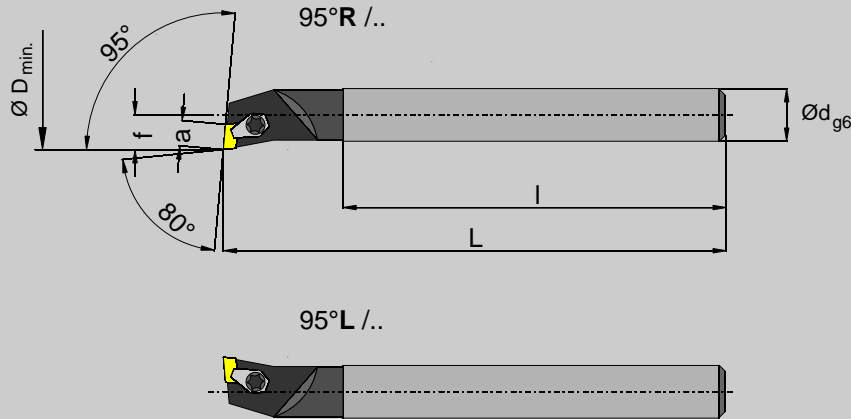
**Wendepplatten  Inserts**  
Seite/Page 06

| Ø D <sub>min.</sub> | Ausführung<br>execution | Bestellnummer<br>part number | Lieferstatus • stock | Type<br>typ | f    | a   | l  | L   | Ø d <sub>h6</sub> | Wendepplatten<br>inserts |
|---------------------|-------------------------|------------------------------|----------------------|-------------|------|-----|----|-----|-------------------|--------------------------|
| 6                   | 90°/R                   | <b>463.06831</b>             | ◆                    | 90 / R6     | 3.25 | 3.0 | 44 | 60  | 6                 | MBSL - 3 - ..            |
| 8                   | 90°/R                   | <b>463.08651</b>             | ◆                    | 90 / R8     | 4.50 | 4.5 | 44 | 60  | 6                 | MBSL - 5 - ..            |
| 10                  | 90°/R                   | <b>463.10851</b>             | ◆                    | 90 / R10    | 5.50 | 4.5 | 60 | 80  | 8                 | MBSL - 5 - ..            |
| 12                  | 90°/R                   | <b>463.12151</b>             | ◆                    | 90 / R12    | 6.50 | 4.5 | 76 | 100 | 10                | MBSL - 5 - ..            |
| 6                   | 90°/L                   | <b>463.06832</b>             | ◆                    | 90 / L6     | 3.25 | 3.0 | 44 | 60  | 6                 | MBSR - 3 - ..            |
| 8                   | 90°/L                   | <b>463.08652</b>             | ◆                    | 90 / L8     | 4.50 | 4.5 | 44 | 60  | 6                 | MBSR - 5 - ..            |
| 10                  | 90°/L                   | <b>463.10852</b>             | ◆                    | 90 / L10    | 5.50 | 4.5 | 60 | 80  | 8                 | MBSR - 5 - ..            |
| 12                  | 90°/L                   | <b>463.12152</b>             | ◆                    | 90 / L12    | 6.50 | 4.5 | 76 | 100 | 10                | MBSR - 5 - ..            |

### Ersatzteile spare parts

|  | Bestellnummer<br>part number | Bestellnummer<br>part number  | Lieferstatus • stock | TORX (TX)<br>Größe |
|--|------------------------------|-------------------------------|----------------------|--------------------|
|  | Bohrstange<br>Boring bar     | Spannsatz (S)<br>Clamping-set |                      |                    |
|  | 463.06831                    | <b>945.11031</b>              | ◆                    | 6                  |
|  | 463.08651                    | <b>945.11014</b>              | ◆                    | 8                  |
|  | 463.10851                    | <b>945.11014</b>              | ◆                    | 8                  |
|  | 463.12151                    | <b>945.11014</b>              | ◆                    | 8                  |
|  | 463.06832                    | <b>945.11031</b>              | ◆                    | 6                  |
|  | 463.08652                    | <b>945.11014</b>              | ◆                    | 8                  |
|  | 463.10852                    | <b>945.11014</b>              | ◆                    | 8                  |
|  | 463.12152                    | <b>945.11014</b>              | ◆                    | 8                  |

# Bohrstangen mit Stahlschaft Boring bars with steel shank



95° Einstellwinkel  
95° adjusting-angle

Lieferzeit / delivery time

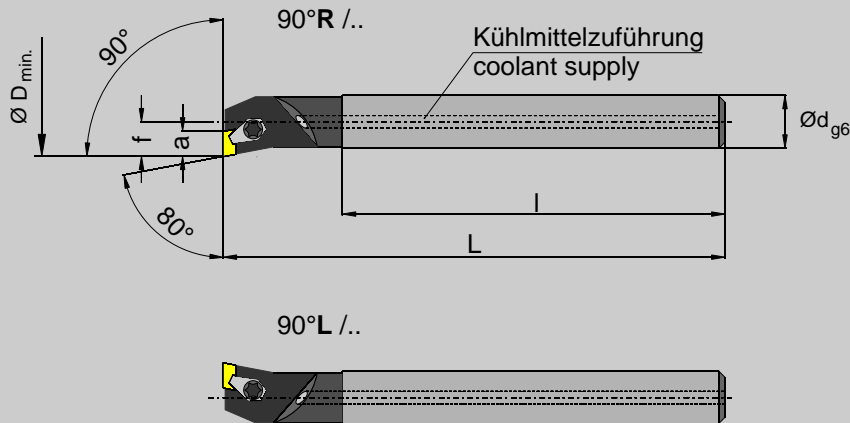
- ab Lager lieferbar - Zwischenverkauf vorbehalten  
□ on stock, subject to prior sale
- ▣ mittelfristig lieferbar (~ 2 - 3 Wochen)  
▣ middle term (~ 2 - 3 weeks)
- ◇ nicht lagerhaltig - Lieferzeit auf Anfrage  
◇ not on stock, delivery time upon request

Wendepplatten □ Inserts  
Seite/Page 06

| Ø D <sub>min.</sub> | Ausführung<br>execution | Bestellnummer<br>part number | Lieferstatus • stock | Type<br>typ | f    | a   | l  | L   | Ø d h <sub>6</sub> | Wendepplatten<br>inserts |
|---------------------|-------------------------|------------------------------|----------------------|-------------|------|-----|----|-----|--------------------|--------------------------|
| 6                   | 95°/R                   | <b>464.06831</b>             | ◇                    | 95 / R6     | 3.25 | 3.0 | 44 | 60  | 6                  | MBSL - 3 - ..            |
| 8                   | 95°/R                   | <b>464.08651</b>             | ◇                    | 95 / R8     | 4.50 | 4.5 | 44 | 60  | 6                  | MBSL - 5 - ..            |
| 10                  | 95°/R                   | <b>464.10851</b>             | ◇                    | 95 / R10    | 5.50 | 4.5 | 60 | 80  | 8                  | MBSL - 5 - ..            |
| 12                  | 95°/R                   | <b>464.12151</b>             | ◇                    | 95 / R12    | 6.50 | 4.5 | 76 | 100 | 10                 | MBSL - 5 - ..            |
| 6                   | 95°/L                   | <b>464.06832</b>             | ◇                    | 95 / L6     | 3.25 | 3.0 | 44 | 60  | 6                  | MBSR - 3 - ..            |
| 8                   | 95°/L                   | <b>464.08652</b>             | ◇                    | 95 / L8     | 4.50 | 4.5 | 44 | 60  | 6                  | MBSR - 5 - ..            |
| 10                  | 95°/L                   | <b>464.10852</b>             | ◇                    | 95 / L10    | 5.50 | 4.5 | 60 | 80  | 8                  | MBSR - 5 - ..            |
| 12                  | 95°/L                   | <b>464.12152</b>             | ◇                    | 95 / L12    | 6.50 | 4.5 | 76 | 100 | 10                 | MBSR - 5 - ..            |

## Ersatzteile spare parts

|  | Bestellnummer<br>part number | Bestellnummer<br>part number | Lieferstatus • stock | TORX (TX)<br>Größe |
|--|------------------------------|------------------------------|----------------------|--------------------|
|  | Bohrstange<br>Boring bar     | Spannsatz (S)<br>Claming-set |                      |                    |
|  | 463.06831                    | <b>945.11031</b>             | ◇                    | 6                  |
|  | 463.08651                    | <b>945.11014</b>             | ◇                    | 8                  |
|  | 463.10851                    | <b>945.11014</b>             | ◇                    | 8                  |
|  | 463.12151                    | <b>945.11014</b>             | ◇                    | 8                  |
|  | 463.06832                    | <b>945.11031</b>             | ◇                    | 6                  |
|  | 463.08652                    | <b>945.11014</b>             | ◇                    | 8                  |
|  | 463.10852                    | <b>945.11014</b>             | ◇                    | 8                  |
|  | 463.12152                    | <b>945.11014</b>             | ◇                    | 8                  |



90° Einstellwinkel  
90° adjusting-angle

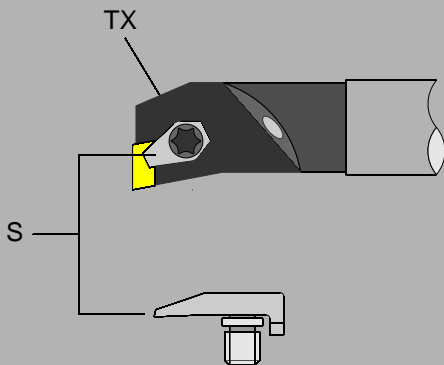
Lieferzeit / delivery time

- ab Lager lieferbar - Zwischenverkauf vorbehalten  
□ on stock, subject to prior sale
- ▣ mittelfristig lieferbar (~ 2 - 3 Wochen)  
▣ middle term (~ 2 - 3 weeks)
- ◆ nicht lagerhaltig - Lieferzeit auf Anfrage  
◆ not on stock, delivery time upon request

**Wendepplatten □ Inserts**  
**Seite/Page 06**

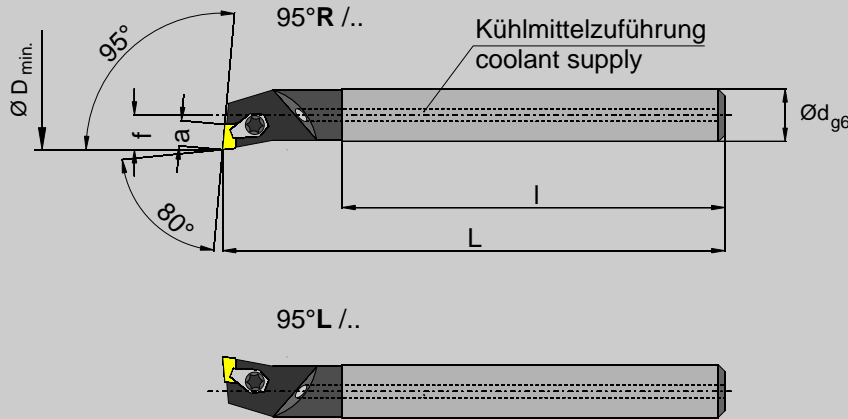
| Ø D min. | Ausführung execution | Bestellnummer part number | Lieferstatus • stock | Type typ   | f     | a   | l   | L   | Ø d h6 | Wendepplatten inserts |
|----------|----------------------|---------------------------|----------------------|------------|-------|-----|-----|-----|--------|-----------------------|
| 6        | 90°/R                | <b>461.06831</b>          | ◆                    | 90 / R6 H  | 3.25  | 3.0 | 70  | 100 | 6      | MBSL - 3 - ..         |
| 8        | 90°/R                | <b>461.08651</b>          | ◆                    | 90 / R8 H  | 4.50  | 4.5 | 84  | 100 | 6      | MBSL - 5 - ..         |
| 10       | 90°/R                | <b>461.10851</b>          | ◆                    | 90 / R10 H | 5.50  | 4.5 | 105 | 125 | 8      | MBSL - 5 - ..         |
| 12       | 90°/R                | <b>461.12151</b>          | ◆                    | 90 / R12 H | 6.50  | 4.5 | 126 | 150 | 10     | MBSL - 5 - ..         |
| 15       | 90°/R                | <b>461.15281</b>          | ◆                    | 90 / R15 H | 8.50  | 7.4 | 150 | 180 | 12     | MBSL - 8 - ..         |
| 20       | 90°/R                | <b>461.20681</b>          | ◆                    | 90 / R20 H | 11.00 | 7.4 | 160 | 200 | 16     | MBSL - 8 - ..         |
| 6        | 90°/L                | <b>461.06832</b>          | ◆                    | 90 / L6 H  | 3.25  | 3.0 | 70  | 100 | 6      | MBSR - 3 - ..         |
| 8        | 90°/L                | <b>461.08652</b>          | ◆                    | 90 / L8 H  | 4.50  | 4.5 | 84  | 100 | 6      | MBSR - 5 - ..         |
| 10       | 90°/L                | <b>461.10852</b>          | ◆                    | 90 / L10 H | 5.50  | 4.5 | 105 | 125 | 8      | MBSR - 5 - ..         |
| 12       | 90°/L                | <b>461.12152</b>          | ◆                    | 90 / L12 H | 6.50  | 4.5 | 126 | 150 | 10     | MBSR - 5 - ..         |
| 15       | 90°/L                | <b>461.15282</b>          | ◆                    | 90 / L15 H | 8.50  | 7.4 | 150 | 180 | 12     | MBSR - 8 - ..         |
| 20       | 90°/L                | <b>461.20682</b>          | ◆                    | 90 / L20 H | 11.00 | 7.4 | 160 | 200 | 16     | MBSR - 8 - ..         |

### Ersatzteile spare parts



| Bestellnummer part number | Bestellnummer part number  | Lieferstatus • stock | TORX (TX) Größe |
|---------------------------|----------------------------|----------------------|-----------------|
| Bohrstange Boring bar     | Spannsatz (S) Clamping-set |                      |                 |
| 461.06831                 | <b>945.11031</b>           | ◆                    | 6               |
| 461.08651                 | <b>945.11014</b>           | ◆                    | 8               |
| 461.10851                 | <b>945.11014</b>           | ◆                    | 8               |
| 461.12151                 | <b>945.11014</b>           | ◆                    | 8               |
| 461.15281                 | <b>945.11010</b>           | ◆                    | 8               |
| 461.20281                 | <b>945.11010</b>           | ◆                    | 8               |
| 461.06832                 | <b>945.11031</b>           | ◆                    | 6               |
| 461.08652                 | <b>945.11014</b>           | ◆                    | 8               |
| 461.10852                 | <b>945.11014</b>           | ◆                    | 8               |
| 461.12152                 | <b>945.11014</b>           | ◆                    | 8               |
| 461.15282                 | <b>945.11010</b>           | ◆                    | 8               |
| 461.20682                 | <b>945.11010</b>           | ◆                    | 8               |

**Bohrstangen mit Hartmetallschaft**  
**Boring bars with carbide shank**  
 mit innerer Kühlmittelzuführung  
 with inside coolant supply



95° Einstellwinkel  
 95° adjusting-angle

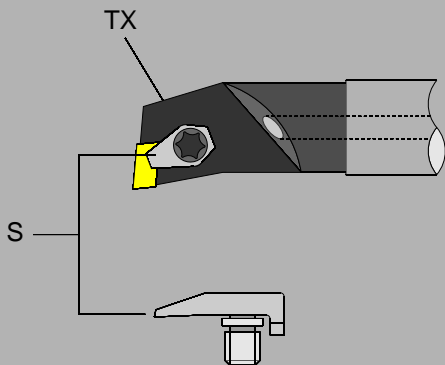
Lieferzeit / delivery time

- ab Lager lieferbar - Zwischenverkauf vorbehalten  
 □ on stock, subject to prior sale
- ▣ mittelfristig lieferbar (~ 2 - 3 Wochen)  
 ▣ middle term (~ 2 - 3 weeks)
- ◇ nicht lagerhaltig - Lieferzeit auf Anfrage  
 ◇ not on stock, delivery time upon request

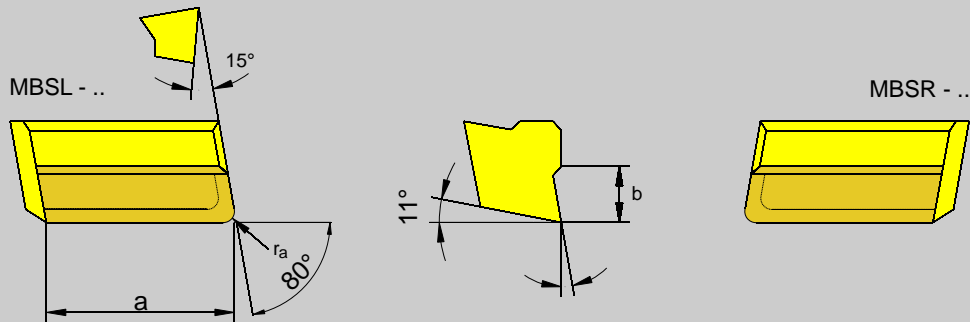
**Wendepplatten □ Inserts**  
**Seite/Page 06**

| Ø D <sub>min.</sub> | Ausführung<br>execution | Bestellnummer<br>part number | Lieferstatus • stock | Type<br>typ | f     | a   | l   | L   | Ø d h6 | Wendepplatten<br>inserts |
|---------------------|-------------------------|------------------------------|----------------------|-------------|-------|-----|-----|-----|--------|--------------------------|
| 6                   | 95°/R                   | <b>462.06831</b>             | ◇                    | 95 / R6 H   | 3.25  | 3.0 | 70  | 100 | 6      | MBSL - 3 - ..            |
| 8                   | 95°/R                   | <b>462.08651</b>             | ◇                    | 95 / R8 H   | 4.50  | 4.5 | 84  | 100 | 6      | MBSL - 5 - ..            |
| 10                  | 95°/R                   | <b>462.10851</b>             | ◇                    | 95 / R10 H  | 5.50  | 4.5 | 105 | 125 | 8      | MBSL - 5 - ..            |
| 12                  | 95°/R                   | <b>462.12151</b>             | ◇                    | 95 / R12 H  | 6.50  | 4.5 | 126 | 150 | 10     | MBSL - 5 - ..            |
| 15                  | 95°/R                   | <b>462.15281</b>             | ◇                    | 95 / R15 H  | 8.50  | 7.4 | 150 | 180 | 12     | MBSL - 8 - ..            |
| 20                  | 95°/R                   | <b>462.20681</b>             | ◇                    | 95 / R20 H  | 11.00 | 7.4 | 160 | 200 | 16     | MBSL - 8 - ..            |
| 6                   | 95°/L                   | <b>462.06832</b>             | ◇                    | 95 / L6 H   | 3.25  | 3.0 | 70  | 100 | 6      | MBSR - 3 - ..            |
| 8                   | 95°/L                   | <b>462.08652</b>             | ◇                    | 95 / L8 H   | 4.50  | 4.5 | 84  | 100 | 6      | MBSR - 5 - ..            |
| 10                  | 95°/L                   | <b>462.10852</b>             | ◇                    | 95 / L10 H  | 5.50  | 4.5 | 105 | 125 | 8      | MBSR - 5 - ..            |
| 12                  | 95°/L                   | <b>462.12152</b>             | ◇                    | 95 / L12 H  | 6.50  | 4.5 | 126 | 150 | 10     | MBSR - 5 - ..            |
| 15                  | 95°/L                   | <b>462.15282</b>             | ◇                    | 95 / L15 H  | 8.50  | 7.4 | 150 | 180 | 12     | MBSR - 8 - ..            |
| 20                  | 95°/L                   | <b>462.20682</b>             | ◇                    | 95 / L20 H  | 11.00 | 7.4 | 160 | 200 | 16     | MBSR - 8 - ..            |

**Ersatzteile**  
**spare parts**



| Bestellnummer<br>part number | Bestellnummer<br>part number  | Lieferstatus • stock | TORX (TX)<br>Größe |
|------------------------------|-------------------------------|----------------------|--------------------|
| Bohrstange<br>Boring bar     | Spannsatz (S)<br>Clamping-set |                      |                    |
| 462.06831                    | <b>945.11031</b>              | ◇                    | 6                  |
| 462.08651                    | <b>945.11014</b>              | ◇                    | 8                  |
| 462.10851                    | <b>945.11014</b>              | ◇                    | 8                  |
| 462.12151                    | <b>945.11014</b>              | ◇                    | 8                  |
| 462.15281                    | <b>945.11010</b>              | ◇                    | 8                  |
| 462.20281                    | <b>945.11010</b>              | ◇                    | 8                  |
| 462.06832                    | <b>945.11031</b>              | ◇                    | 6                  |
| 462.08652                    | <b>945.11014</b>              | ◇                    | 8                  |
| 462.10852                    | <b>945.11014</b>              | ◇                    | 8                  |
| 462.12152                    | <b>945.11014</b>              | ◇                    | 8                  |
| 462.15282                    | <b>945.11010</b>              | ◇                    | 8                  |
| 462.20682                    | <b>945.11010</b>              | ◇                    | 8                  |



Bohrstangen □ boring bars  
Seite/Page 02 - 05

| Type<br>typ      | Bestellnummer<br>part number | lieferbare Schneidstoffe<br>available grades |            |            |             | a   | r <sub>a</sub> | b   |     |
|------------------|------------------------------|--|------------|------------|-------------|-----|----------------|-----|-----|
|                  |                              | P15<br>-14                                   | P40<br>-02 | K10<br>-04 | Zg30<br>-07 |     |                |     |     |
| MBSR-3-H-RA-0.05 | <b>658.03001</b>             | ◆  | ◆          | ◆          | ◆           | 3.0 | 0.05           | 1.4 | 10° |
| MBSR-3-H-RA 0.2  | <b>658.03021</b>             | ◆  | ◆          | ◆          | ◆           | 3.0 | 0.20           | 1.4 | 10° |
| MBSR-5-H-RA 0.05 | <b>658.05001</b>             | ◆  | ◆          | ◆          | ◆           | 4.5 | 0.05           | 1.2 | 10° |
| MBSR-5-H-RA 0.2  | <b>658.05021</b>             | ◆  | ◆          | ◆          | ◆           | 4.5 | 0.20           | 1.2 | 10° |
| MBSR-5-H-RA 0.4  | <b>658.05041</b>             | ◆  | ◆          | ◆          | ◆           | 4.5 | 0.40           | 1.6 | 10° |
| MBSR-8-S-RA 0.2  | <b>658.08121</b>             | ◆  | ◆          | ◆          | ◆           | 7.4 | 0.20           | 1.8 | 10° |
| MBSR-8-S-RA 0.4  | <b>658.08141</b>             | ◆  | ◆          | ◆          | ◆           | 7.4 | 0.40           | 2.2 | 10° |
| MBSR-8-S-RA 0.8  | <b>658.08181</b>             | ◆  | ◆          | ◆          | ◆           | 7.4 | 0.80           | 2.6 | 10° |
| MBSL-3-H-RA-0.05 | <b>658.03002</b>             | ◆  | ◆          | ◆          | ◆           | 3.0 | 0.05           | 1.4 | 10° |
| MBSL-3-H-RA 0.2  | <b>658.03022</b>             | ◆  | ◆          | ◆          | ◆           | 3.0 | 0.20           | 1.4 | 10° |
| MBSL-5-H-RA 0.05 | <b>658.05002</b>             | ◆  | ◆          | ◆          | ◆           | 4.5 | 0.05           | 1.2 | 10° |
| MBSL-5-H-RA 0.2  | <b>658.05022</b>             | ◆  | ◆          | ◆          | ◆           | 4.5 | 0.20           | 1.2 | 10° |
| MBSL-5-H-RA 0.4  | <b>658.05042</b>             | ◆  | ◆          | ◆          | ◆           | 4.5 | 0.40           | 1.6 | 10° |
| MBSL-8-S-RA 0.2  | <b>658.08122</b>             | ◆  | ◆          | ◆          | ◆           | 7.4 | 0.20           | 1.8 | 10° |
| MBSL-8-S-RA 0.4  | <b>658.08142</b>             | ◆  | ◆          | ◆          | ◆           | 7.4 | 0.40           | 2.2 | 10° |
| MBSL-8-S-RA 0.8  | <b>658.08182</b>             | ◆  | ◆          | ◆          | ◆           | 7.4 | 0.80           | 2.6 | 10° |

### Lieferzeit

ab Lager lieferbar - Zwischenverkauf vorbehalten  
mittelfristig lieferbar (~ 2 - 3 Wochen)  
nicht lagerhaltig - Lieferzeit auf Anfrage

### delivery time

on stock, subject to prior sale  
middle term (~ 2 - 3 weeks)  
not on stock, delivery time upon request

# Technische Informationen Technical information

Sortenübersicht - Verwendungszweck / Arbeitsrichtwerte  
Summary of carbide types - application purpose / Working reference values



| Sortenübersicht - Verwendungszweck<br>Summary of carbide types - application purpose |   |   |                     |
|--|---|---|---------------------|
| Type typ   | Schneidstoff cutting quality              | Werkstückstoff material                               | Eignung suitability |
| <b>P15</b><br>(-14)  | P15 (unbeschichtet)<br>(uncoated)         | Stahl<br>steel  | ☺                   |
| <b>P40</b><br>(-02)  | P40 (unbeschichtet)<br>(uncoated)         | Stahl<br>steel  | ☺                   |
| <b>K10</b><br>(-04)  | K10 (unbeschichtet)<br>(uncoated)         | GG / GGG<br>NE - Metalle<br>Titanlegierungen          | ☺<br>☺<br>☺         |
| <b>Zg30</b><br>(-07)   | P40 (TiN - beschichtet)<br>(TiN - coated) | Stahl / warmfeste Legierungen<br>Nichtrostende Stähle | ☺<br>☺              |

☺ sehr gut geeignet - ☺ geeignet

| Arbeitsrichtwerte<br>Working reference values |   |          |           |          |                               |           |           |
|---|---|----------|-----------|----------|-------------------------------|-----------|-----------|
| Werkstoff material                            | Schnittgeschwindigkeit m/min<br>speed m/min |          |           |          | Vorschub mm/U<br>feed mm/rev. |           |           |
|   | P15   | P40      | K10       | Zg30     | MBS-3                         | MBS-5     | MBS-8     |
| ST 37 / C 15                                  | 90 - 160                                    | 90 - 160 |           | 90 - 160 | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| ST 50 / C 50                                  | 80 - 150                                    | 80 - 150 |           | 80 - 150 | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| ST 60-70 / C 60                               | 70 - 140                                    | 70 - 140 |           | 70 - 140 | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| 16 MN Cr 5                                    | 70 - 140                                    | 70 - 140 |           | 70 - 140 | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| 42 Cr Mo 4 / 50 Cr V4                         | 60 - 120                                    | 60 - 120 |           | 60 - 120 | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| 100 Cr 6 / 90 Mn Cr V8                        | 50 - 100                                    | 50 - 100 |           | 50 - 100 | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Rostbeständige<br>X-Cr Ni-Stähle              |   |          |           | 40 - 70  | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| GG20 / GGG40                                  |   |          | 50 - 150  |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| GG30 / GGG50                                  |   |          | 50 - 120  |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| GG40 / GGG60                                  |   |          | 50 - 100  |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Alu rein / Alu Guss                           |   |          | 100 - 230 |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Knetlegierungen Al-Si                         |   |          | 70 - 120  |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Kupfer  |   |          | 70 - 120  |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Bronze  |   |          | 70 - 120  |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Messing                                       |   |          | 70 - 120  |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Titan   |   |          | 20 - 40   |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |
| Titanlegierungen                              |   |          | 20 - 30   |          | 0.02-0.08                     | 0.04-0.12 | 0.05-0.15 |

Die in der Arbeitsrichtwerttabelle angegebenen Schnittwerte sind Richtwerte.  
Diese werden unter anderem durch die Werkstück-, Vorrichtung-, sowie Maschinenstabilität beeinflusst.



# ZINNER GmbH

## Präzisions-Werkzeugfabrik

Postfach 84 01 53 - 90257 Nürnberg - Germany - Tel. (0911) 939 739-0 - Fax (0911) 3 26 23 89  
Internet: <http://www.zinner.com> - e-Mail: [info@zinner.com](mailto:info@zinner.com)