

## Einsatzwerte Bohrnutenfräser (Art.-Nr. 1016105 101-125)



| ae x D | ap x D | Faktor |
|--------|--------|--------|
| 0.1    | 2      | 1      |
| 0.5    | 1      | 0.8    |
| 1      | 1      | 0.5    |

| Materialgruppen für<br>Schnittwerte | Festigkeit<br>[N/mm <sup>2</sup> ]     | Bezeichnung<br>nach DIN | Vc<br>[m/min]       | fz [mm/Z] bei Durchmesser |            |             |            |           |           |           |           |
|-------------------------------------|--|-------------------------|---------------------|---------------------------|------------|-------------|------------|-----------|-----------|-----------|-----------|
|                                     |  |                         |                     | 2-4                       | 4-8        | 8-12        | 12-16      | 16-20     | 20-32     | 32-50     |           |
| <b>1. Stähle</b>                    |  |                         |                     |                           |            |             |            |           |           |           |           |
| 1.1                                 | Automatenstahl                         | < 900                   | 9 S 20              | 40-45                     | 0.01-0.016 | 0.016-0.05  | 0.05-0.07  | 0.07-0.08 | 0.08-0.09 | 0.09-0.1  | 0.1-0.12  |
| 1.2                                 | Baustahl                               | < 500                   | ST 37-2             | 40-45                     | 0.01-0.016 | 0.016-0.05  | 0.05-0.07  | 0.07-0.08 | 0.08-0.09 | 0.09-0.1  | 0.1-0.12  |
| 1.3                                 | Baustahl                               | > 500                   | ST 60-2             | 32-36                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 1.4                                 | Vergütungsstahl                        | < 1000                  | 42 CrMo 4           | 32-36                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 1.5                                 | Stahlguss                              | < 1000                  | GS-45               | 20-25                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 1.6                                 | Einsatzstahl                           | < 1200                  | 16 MnCr 5           | 35-45                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 1.7                                 | Edelstahl ferritisch/<br>martensitisch | < 1100                  | X 10 Cr 13          | 18-20                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 1.8                                 | Vergütungsstahl                        | > 1000                  | 43 CrMo 4           | 20-25                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 1.9                                 | Nitrierstahl                           | < 1300                  | 31 CrMoV 9          | 14-16                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 1.10                                | Werkzeugstahl                          | < 1300                  | X 38 CrMoV 5 1      | 14-16                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| <b>2. Rostfreie Stähle</b>          |  |                         |                     |                           |            |             |            |           |           |           |           |
| 2.1                                 | Edelstahl, austenitisch                | < 1100                  | G-X 2 CrNiMo 18 15  | 20-28                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| <b>3. NE-Metalle</b>                |  |                         |                     |                           |            |             |            |           |           |           |           |
| 3.1                                 | Aluminium,<br>langspanend              | < 500                   | Al99.9              | 180-350                   | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.2                                 | Aluminium,<br>kurzspanend              | < 500                   | G-AlSi12            | 80-90                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.3                                 | Kupferleg. Bronze<br>langspanend       | < 1200                  | CuSn4               | 30-40                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.4                                 | Kupferleg. Bronze<br>kurzspanend       | < 850                   | CuNi12Zn24          | 40-50                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 3.5                                 | Kupferleg. Messing<br>langspanend      | < 600                   | Cu Zn 20            | 40-45                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.6                                 | Kupferleg. Messing<br>kurzspanend      | < 600                   | Cu Zn 39 Pb 3       | 45-55                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.7                                 | Thermoplastic                          | < 100                   | PVC, Acrylglas      | 120-150                   | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.8                                 | Duroplast                              | < 150                   | Bakelit,<br>Melamin | 80-90                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.9                                 | Faserverstärkte<br>Kunststoffe         | < 1500                  | CFK, GFK            | 80-90                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.12 |
| 3.10                                | Graphite                               | < 60                    | C8000               |                           |            |             |            |           |           |           |           |
| 3.11                                | Verbundwerkstoffe                      |                         |                     |                           |            |             |            |           |           |           |           |
| <b>4. Guss</b>                      |  |                         |                     |                           |            |             |            |           |           |           |           |
| 4.1                                 | Grauguss                               | < 260 HB                | GG10                | 30-50                     | 0.01-0.016 | 0.016-0.05  | 0.05-0.07  | 0.07-0.08 | 0.08-0.1  | 0.1-0.12  | 0.12-0.18 |
| 4.2                                 | Sphäroguss                             | < 310 HB                | GGG 40              | 30-50                     | 0.01-0.016 | 0.016-0.05  | 0.05-0.07  | 0.07-0.08 | 0.08-0.1  | 0.1-0.12  | 0.12-0.18 |
| 4.3                                 | Gusseisen mit<br>Kugelgraphit          | < 280 HB                | GTW-55              | 30-50                     | 0.01-0.016 | 0.016-0.05  | 0.05-0.07  | 0.07-0.08 | 0.08-0.1  | 0.1-0.12  | 0.12-0.18 |
| <b>5. Sonderlegierungen</b>         |  |                         |                     |                           |            |             |            |           |           |           |           |
| 5.1                                 | Titanlegierung                         | < 1200                  | TiAl5Sn2,5          | 10-20                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 5.2                                 | Nickelbasislegierung                   | < 1400                  | NiCr21Mo            | 10-20                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |
| 5.3                                 | Superlegierungen                       | < 1400                  | X45CrSi 9 3         | 10-20                     | 0.01-0.014 | 0.014-0.045 | 0.045-0.06 | 0.06-0.07 | 0.07-0.08 | 0.08-0.09 | 0.09-0.11 |

