

DIAMETAL®

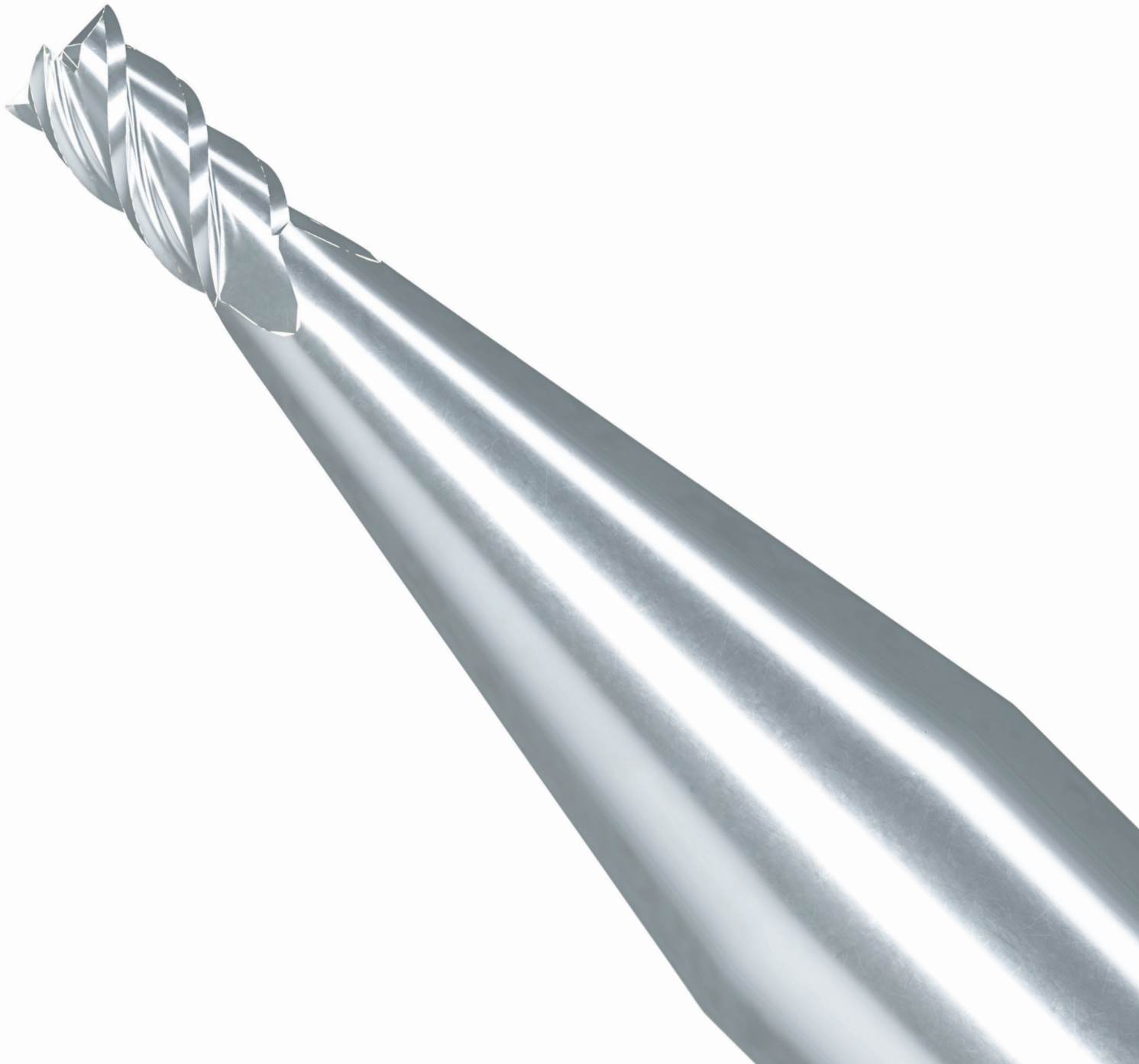
DIAmi 11

DE·EN

# DIAm11

Komplettlösungen  
für die Fräs-Bearbeitung

*Complete solutions  
for milling machining*



# DIAmill

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                                                                                 | ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| N3                                  | Messing, Bronze<br>Brass, Bronze                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                                                                                 | ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| N4                                  | Messing bleifrei<br>Lead-free brass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                                                                                 | ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| N5                                  | Kupfer<br>Copper                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                                                                                 | ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| N6                                  | Edelmetalle<br>Precious metals                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                                                                                                                                                                                                                                                                    |
| N7                                  | Platin, Palladium<br>Platinum, Palladium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                 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                                                                                                                                                                                                                                                                    |
| N8                                  | Kunststoffe<br>Plastics                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ▶                                                                                                                                                                                                              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                                                                                                                                                                                                                                                                    |
| S1                                  | Titan rein<br>Pure Titanium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | ▶ ▶ ▶                                                                                                                                                                                                          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| S2                                  | Titan Legierungen<br>Titanium alloys                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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                                                                                 | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| S3                                  | Super Legierungen (Cr, Co, Ni)<br>Superalloys (Cr, Co, Ni)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | ▶ ▶ ▶                                                                                                                                                                                                          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                                                                                 | ▶ ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| H1                                  | Gehärteter Stahl (< 55 HRC)<br>Hardened steel (< 55 HRC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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                                                                                 | ▶ ▶                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| H2                                  | Gehärteter Stahl (> 55 HRC)<br>Hardened steel (> 55 HRC)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       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# MI0627-NR01101

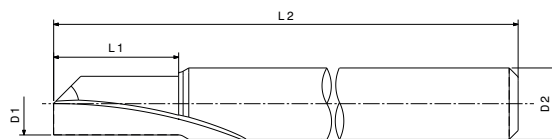
Gerade genutete Mikrofräser Z1 3/4  
Micro end mill with Straight flute Z1 3/4



|     |    |    |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|----|----|
| DWS | P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
|     | N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |

|     |    |    |    |    |    |    |  |  |    |    |    |
|-----|----|----|----|----|----|----|--|--|----|----|----|
| DWT |    |    |    |    |    |    |  |  | K1 | N1 | N2 |
|     | N3 | N4 | N5 | N6 | N7 | N8 |  |  |    |    |    |

|     |  |  |  |  |  |
|-----|--|--|--|--|--|
| VHM |  |  |  |  |  |
|-----|--|--|--|--|--|

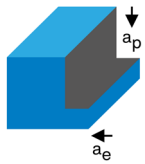
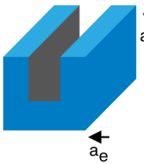


| D1<br>+0.005 / -0.01 | L1    | D2 | L2 | Z | DWS<br>Art. N° | DWT<br>Art. N° |
|----------------------|-------|----|----|---|----------------|----------------|
| 0.20                 | 0.40  | 3  | 39 | 1 | 452673         | 452708         |
| 0.30                 | 0.60  | 3  | 39 | 1 | 452674         | 452709         |
| 0.40                 | 0.80  | 3  | 39 | 1 | 452675         | 452710         |
| 0.50                 | 1.00  | 3  | 39 | 1 | 452676         | 452711         |
| 0.60                 | 1.20  | 3  | 39 | 1 | 452677         | 452712         |
| 0.70                 | 1.40  | 3  | 39 | 1 | 452678         | 452713         |
| 0.80                 | 1.60  | 3  | 39 | 1 | 452679         | 452714         |
| 0.90                 | 1.80  | 3  | 39 | 1 | 452680         | 452715         |
| 1.00                 | 2.00  | 3  | 39 | 1 | 452681         | 452716         |
| 1.10                 | 2.20  | 3  | 39 | 1 | 452682         | 452717         |
| 1.20                 | 2.40  | 3  | 39 | 1 | 452683         | 452718         |
| 1.30                 | 2.60  | 3  | 39 | 1 | 452684         | 452719         |
| 1.40                 | 2.80  | 3  | 39 | 1 | 452685         | 452720         |
| 1.50                 | 3.00  | 3  | 39 | 1 | 452686         | 452721         |
| 1.60                 | 3.20  | 3  | 39 | 1 | 452687         | 452722         |
| 1.70                 | 3.40  | 3  | 39 | 1 | 452688         | 452723         |
| 1.80                 | 3.60  | 3  | 39 | 1 | 452689         | 452724         |
| 1.90                 | 3.80  | 3  | 39 | 1 | 452690         | 452725         |
| 2.00                 | 4.00  | 3  | 39 | 1 | 452691         | 452726         |
| 2.10                 | 4.20  | 3  | 39 | 1 | 452692         | 452727         |
| 2.20                 | 4.40  | 3  | 39 | 1 | 452693         | 452728         |
| 2.30                 | 4.60  | 3  | 39 | 1 | 452694         | 452729         |
| 2.40                 | 4.80  | 3  | 39 | 1 | 452695         | 452730         |
| 2.50                 | 5.00  | 3  | 39 | 1 | 452696         | 452731         |
| 2.60                 | 5.20  | 3  | 39 | 1 | 452697         | 452732         |
| 2.70                 | 5.40  | 3  | 39 | 1 | 452698         | 452733         |
| 2.80                 | 5.60  | 3  | 39 | 1 | 452699         | 452734         |
| 2.90                 | 5.80  | 3  | 39 | 1 | 452700         | 452735         |
| 3.00                 | 6.00  | 4  | 40 | 1 | 452701         | 452736         |
| 3.50                 | 7.00  | 4  | 40 | 1 | 452702         | 452737         |
| 4.00                 | 8.00  | 6  | 51 | 1 | 452703         | 452738         |
| 4.50                 | 9.00  | 6  | 51 | 1 | 452704         | 452739         |
| 5.00                 | 10.00 | 6  | 51 | 1 | 452705         | 452740         |
| 5.50                 | 11.00 | 6  | 51 | 1 | 452706         | 452741         |
| 6.00                 | 12.00 | 8  | 59 | 1 | 452707         | 452742         |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0627-NR01101

Schnittparameter  
Cutting parameters

| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |
|                          | $a_p \leq 1 \times D_1$                                                           | $a_p \leq 0.5 \times D_1$                                                         |
|                          | $a_e \leq 0.4 \times D_1$                                                         | $a_e 1 \times D_1$                                                                |
|                          | $V_c \times 1$                                                                    | $V_c \times 0.7$                                                                  |
|                          | $f_z \times 1$                                                                    | $f_z \times 0.6$                                                                  |

| ISO | $V_c$ [m/min] | $f_z$ [mm]    |               |               |               |
|-----|---------------|---------------|---------------|---------------|---------------|
|     |               | Ø 0.20 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 2.90 | Ø 3.00 - 6.00 |
| P1  | 60 - 90       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P2  | 60 - 90       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P3  | 40 - 60       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P4  | 30 - 50       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P5  | 30 - 50       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M2  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M3  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| K1  | 90 - 120      | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N1  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N2  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N3  | 140 - 180     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N4  | 140 - 180     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N5  | 110 - 160     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N6  | 100 - 200     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N7  | 100 - 200     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N8  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S2  | 25 - 35       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| H1  | 25 - 35       | 0.002 - 0.004 | 0.003 - 0.005 | 0.004 - 0.006 | 0.005 - 0.008 |
| H2  |               |               |               |               |               |

Richtwerte  
Indicative values

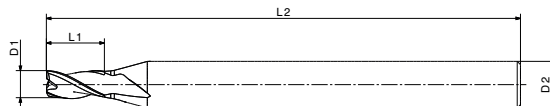
# MIO110-NR01101

Mikrofräser  
Micro end mill



|     |    |    |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|----|----|
| DWS | P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
|     | N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |

|     |    |    |    |    |    |    |  |  |    |    |    |
|-----|----|----|----|----|----|----|--|--|----|----|----|
| DWT |    |    |    |    |    |    |  |  | K1 | N1 | N2 |
|     | N3 | N4 | N5 | N6 | N7 | N8 |  |  |    |    |    |



|     |  |    |  |     |     |     |
|-----|--|----|--|-----|-----|-----|
| VHM |  | h5 |  | 30° | 2xD | 90° |
|-----|--|----|--|-----|-----|-----|

| D1<br>+0.005 / -0.01 | L1    | D2<br>h5 | L2 | Z | DWS<br>Art. N° | DWT<br>Art. N° |
|----------------------|-------|----------|----|---|----------------|----------------|
| 0.30                 | 0.60  | 3        | 39 | 3 | 443445         | 443479         |
| 0.40                 | 0.80  | 3        | 39 | 3 | 443446         | 443480         |
| 0.50                 | 1.00  | 3        | 39 | 3 | 443447         | 443481         |
| 0.60                 | 1.20  | 3        | 39 | 3 | 443448         | 443482         |
| 0.70                 | 1.40  | 3        | 39 | 3 | 443449         | 443484         |
| 0.75                 | 1.50  | 3        | 39 | 3 | 443450         | 443485         |
| 0.80                 | 1.60  | 3        | 39 | 3 | 443451         | 443486         |
| 0.90                 | 1.80  | 3        | 39 | 3 | 443452         | 443487         |
| 1.00                 | 2.00  | 3        | 39 | 3 | 443453         | 443488         |
| 1.10                 | 2.20  | 3        | 39 | 3 | 443454         | 443489         |
| 1.20                 | 2.40  | 3        | 39 | 3 | 443455         | 443490         |
| 1.30                 | 2.60  | 3        | 39 | 3 | 443456         | 443491         |
| 1.40                 | 2.80  | 3        | 39 | 3 | 443457         | 443492         |
| 1.50                 | 3.00  | 3        | 39 | 3 | 443458         | 443493         |
| 1.60                 | 3.20  | 3        | 39 | 3 | 443459         | 443494         |
| 1.70                 | 3.40  | 3        | 39 | 3 | 443460         | 443495         |
| 1.80                 | 3.60  | 3        | 39 | 3 | 443461         | 443496         |
| 1.90                 | 3.80  | 3        | 39 | 3 | 443462         | 443497         |
| 2.00                 | 4.00  | 3        | 39 | 3 | 443463         | 443499         |
| 2.10                 | 4.20  | 3        | 39 | 3 | 443464         | 443500         |
| 2.20                 | 4.40  | 3        | 39 | 3 | 443465         | 443501         |
| 2.30                 | 4.60  | 3        | 39 | 3 | 443466         | 443502         |
| 2.40                 | 4.80  | 3        | 39 | 3 | 443467         | 443503         |
| 2.50                 | 5.00  | 3        | 39 | 3 | 443468         | 443504         |
| 2.60                 | 5.20  | 3        | 39 | 3 | 443469         | 443505         |
| 2.70                 | 5.40  | 3        | 39 | 3 | 443470         | 443506         |
| 2.80                 | 5.60  | 3        | 39 | 3 | 443471         | 443507         |
| 2.90                 | 5.80  | 3        | 39 | 3 | 443472         | 443508         |
| 3.00                 | 6.00  | 5        | 51 | 3 | 443475         | 443509         |
| 4.00                 | 8.00  | 5        | 51 | 3 | 443476         | 443510         |
| 5.00                 | 10.00 | 6        | 58 | 3 | 443477         | 443511         |
| 6.00                 | 12.00 | 6        | 58 | 3 | 443478         | 443512         |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0110-NR01101

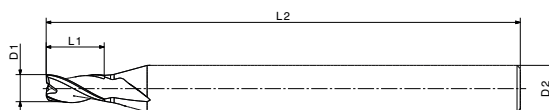
Mikrofräser  
Micro end mill



|     |    |    |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|----|----|
| DWS | P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
|     | N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |

|     |    |    |    |    |    |    |  |  |    |    |    |
|-----|----|----|----|----|----|----|--|--|----|----|----|
| DWT |    |    |    |    |    |    |  |  | K1 | N1 | N2 |
|     | N3 | N4 | N5 | N6 | N7 | N8 |  |  |    |    |    |

|     |  |  |  |  |  |  |
|-----|--|--|--|--|--|--|
| VHM |  |  |  |  |  |  |
|-----|--|--|--|--|--|--|

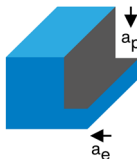
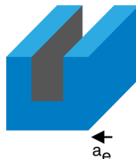
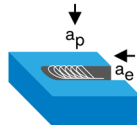
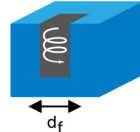


| D1<br>+0.005 / -0.01 | L1    | D2 | L2 | Z | DWS<br>Art. N° | DWT<br>Art. N° |
|----------------------|-------|----|----|---|----------------|----------------|
| 0.30                 | 0.90  | 3  | 39 | 3 | 443516         | 443573         |
| 0.40                 | 1.20  | 3  | 39 | 3 | 443517         | 443574         |
| 0.50                 | 1.50  | 3  | 39 | 3 | 443518         | 443575         |
| 0.60                 | 1.80  | 3  | 39 | 3 | 443519         | 443576         |
| 0.70                 | 2.10  | 3  | 39 | 3 | 443520         | 443577         |
| 0.75                 | 2.30  | 3  | 39 | 3 | 443521         | 443578         |
| 0.80                 | 2.40  | 3  | 39 | 3 | 443522         | 443579         |
| 0.90                 | 2.70  | 3  | 39 | 3 | 443523         | 443580         |
| 1.00                 | 3.00  | 3  | 39 | 3 | 443524         | 443581         |
| 1.10                 | 3.30  | 3  | 39 | 3 | 443525         | 443582         |
| 1.20                 | 3.60  | 3  | 39 | 3 | 443526         | 443583         |
| 1.30                 | 3.90  | 3  | 39 | 3 | 443539         | 443584         |
| 1.40                 | 4.20  | 3  | 39 | 3 | 443540         | 443585         |
| 1.50                 | 4.50  | 3  | 39 | 3 | 443541         | 443586         |
| 1.60                 | 4.80  | 3  | 39 | 3 | 443542         | 443587         |
| 1.70                 | 5.10  | 3  | 39 | 3 | 443543         | 443588         |
| 1.80                 | 5.40  | 3  | 39 | 3 | 443544         | 443589         |
| 1.90                 | 5.70  | 3  | 39 | 3 | 443545         | 443590         |
| 2.00                 | 6.00  | 3  | 39 | 3 | 443546         | 443591         |
| 2.10                 | 6.30  | 3  | 39 | 3 | 443547         | 443592         |
| 2.20                 | 6.60  | 3  | 39 | 3 | 443548         | 443593         |
| 2.30                 | 6.90  | 3  | 39 | 3 | 443549         | 443594         |
| 2.40                 | 7.20  | 3  | 39 | 3 | 443550         | 443595         |
| 2.50                 | 7.50  | 3  | 39 | 3 | 443551         | 443596         |
| 2.60                 | 7.80  | 3  | 39 | 3 | 443552         | 443597         |
| 2.70                 | 8.10  | 3  | 39 | 3 | 443553         | 443598         |
| 2.80                 | 8.40  | 3  | 39 | 3 | 443554         | 443599         |
| 2.90                 | 8.70  | 3  | 39 | 3 | 443555         | 443600         |
| 3.00                 | 9.00  | 5  | 51 | 3 | 443556         | 443601         |
| 4.00                 | 12.00 | 5  | 51 | 3 | 443557         | 443602         |
| 5.00                 | 15.00 | 6  | 58 | 3 | 443558         | 443603         |
| 6.00                 | 18.00 | 6  | 58 | 3 | 443559         | 443604         |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MIO110-NR01101

Schnittparameter  
Cutting parameters

| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           | Trochoidalfräsen<br>Trochoidal milling                                            | Rampenfräsen<br>Diagonal plunging                                                   | Helixinterpolation<br>Helical interpolation                                         |       |                     |       |                  |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------|---------------------|-------|------------------|
| Funktion<br>Function     |  |  |  |  |  |       |                     |       |                  |
| $a_p$                    | $\leq 1 \times D_1$                                                               | $a_p$                                                                             | $\leq 0.5 \times D_1$                                                             | $a_p$                                                                               | $\leq 1.5 \times D_1$                                                               | Angle | $8^\circ$           | Angle | $8^\circ$        |
| $a_e$                    | $\leq 0.4 \times D_1$                                                             | $a_e$                                                                             | $1 \times D_1$                                                                    | $a_e$                                                                               | $\leq 0.2 \times D_1$                                                               | $a_p$ | $\leq 1 \times D_1$ | $D_f$ | $1.7 \times D_1$ |
| $V_c$                    | x1                                                                                | $V_c$                                                                             | x0.7                                                                              | $V_c$                                                                               | x1.2                                                                                | $f_z$ | x0.7                |       |                  |
| $f_z$                    | x1                                                                                | $f_z$                                                                             | x0.6                                                                              | $f_z$                                                                               | x1.2                                                                                |       |                     |       |                  |

|     |               | $f_z$ [mm]    |               |               |               |
|-----|---------------|---------------|---------------|---------------|---------------|
| ISO | $V_c$ [m/min] | Ø 0.30 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 2.90 | Ø 3.00 - 6.00 |
| P1  | 60 - 90       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P2  | 60 - 90       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P3  | 40 - 60       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P4  | 30 - 50       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P5  | 30 - 50       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M2  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M3  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| K1  | 90 - 120      | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N1  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N2  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N3  | 140 - 180     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N4  | 140 - 180     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N5  | 110 - 160     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N6  | 100 - 200     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N7  | 100 - 200     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N8  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S2  | 25 - 35       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| H1  | 25 - 35       | 0.002 - 0.004 | 0.003 - 0.005 | 0.004 - 0.006 | 0.005 - 0.008 |
| H2  |               |               |               |               |               |

Richtwerte  
Indicative values



# MI0110-NR01102

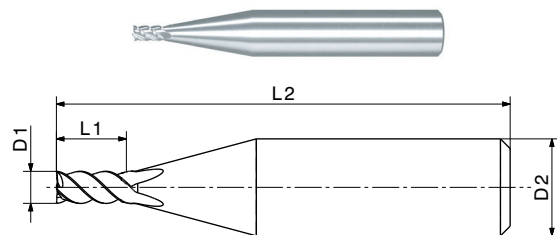
Schlicht Mikrofräser  
Finishing Micro end mill



|     |    |    |    |    |    |    |    |    |    |    |    |
|-----|----|----|----|----|----|----|----|----|----|----|----|
| DWS | P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
|     | N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |

|     |    |    |    |    |    |    |  |  |  |  |  |
|-----|----|----|----|----|----|----|--|--|--|--|--|
| DWT |    |    |    |    |    |    |  |  |  |  |  |
|     | N3 | N4 | N5 | N6 | N7 | N8 |  |  |  |  |  |

|     |  |  |  |  |  |
|-----|--|--|--|--|--|
| VHM |  |  |  |  |  |
|-----|--|--|--|--|--|

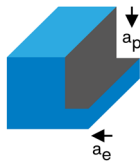
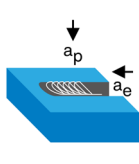
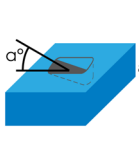
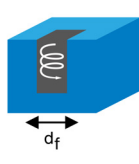


| D1<br>h10 | L1    | D2 | L2 | Z | DWS<br>Art. N° | DWT<br>Art. N° |
|-----------|-------|----|----|---|----------------|----------------|
| 0.50      | 1.00  | 6  | 40 | 4 | 452743         | 452774         |
| 0.60      | 1.20  | 6  | 40 | 4 | 452744         | 452775         |
| 0.70      | 1.40  | 6  | 40 | 4 | 452745         | 452776         |
| 0.80      | 1.60  | 6  | 40 | 4 | 452746         | 452777         |
| 0.90      | 1.80  | 6  | 40 | 4 | 452747         | 452778         |
| 1.00      | 2.00  | 6  | 40 | 4 | 452748         | 452779         |
| 1.10      | 2.20  | 6  | 40 | 4 | 452749         | 452780         |
| 1.20      | 2.40  | 6  | 40 | 4 | 452750         | 452781         |
| 1.30      | 2.60  | 6  | 40 | 4 | 452751         | 452782         |
| 1.40      | 2.80  | 6  | 40 | 4 | 452752         | 452783         |
| 1.50      | 3.00  | 6  | 40 | 4 | 452753         | 452784         |
| 1.60      | 3.20  | 6  | 40 | 4 | 452754         | 452785         |
| 1.70      | 3.40  | 6  | 40 | 4 | 452755         | 452786         |
| 1.80      | 3.60  | 6  | 40 | 4 | 452756         | 452787         |
| 1.90      | 3.80  | 6  | 40 | 4 | 452757         | 452788         |
| 2.00      | 4.00  | 6  | 40 | 4 | 452758         | 452789         |
| 2.10      | 4.20  | 6  | 40 | 4 | 452759         | 452790         |
| 2.20      | 4.40  | 6  | 40 | 4 | 452760         | 452791         |
| 2.30      | 4.60  | 6  | 40 | 4 | 452761         | 452792         |
| 2.40      | 4.80  | 6  | 40 | 4 | 452762         | 452793         |
| 2.50      | 5.00  | 6  | 40 | 4 | 452763         | 452794         |
| 2.60      | 5.20  | 6  | 40 | 4 | 452764         | 452795         |
| 2.70      | 5.40  | 6  | 40 | 4 | 452765         | 452796         |
| 2.80      | 5.60  | 6  | 40 | 4 | 452766         | 452797         |
| 2.90      | 5.80  | 6  | 40 | 4 | 452767         | 452798         |
| 3.00      | 6.00  | 6  | 40 | 4 | 452768         | 452799         |
| 3.50      | 7.00  | 6  | 40 | 4 | 452769         | 452800         |
| 4.00      | 8.00  | 6  | 40 | 4 | 452770         | 452801         |
| 4.50      | 9.00  | 6  | 40 | 4 | 452771         | 452802         |
| 5.00      | 10.00 | 6  | 40 | 4 | 452772         | 452803         |
| 6.00      | 12.00 | 6  | 40 | 4 | 452773         | 452804         |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0110-NR01102

Schnittparameter  
Cutting parameters

| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           | Trochoidalfräsen<br>Trochoidal milling                                             | Rampenfräsen<br>Diagonal plunging                                                   | Helixinterpolation<br>Helical interpolation                                         |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |  |  |  |
|                          | $a_p$                                                                             | $a_p$                                                                             | $a_p$                                                                              | Angle                                                                               | Angle                                                                               |
|                          | $\leq 1 \times D_1$                                                               | $\leq 0.5 \times D_1$                                                             | $\leq 1.5 \times D_1$                                                              | $8^\circ$                                                                           | $8^\circ$                                                                           |
|                          | $a_e$                                                                             | $a_e$                                                                             | $a_e$                                                                              | $a_p$                                                                               | $D_f$                                                                               |
|                          | $\leq 0.4 \times D_1$                                                             | $1 \times D_1$                                                                    | $\leq 0.2 \times D_1$                                                              | $\leq 1 \times D_1$                                                                 | $\leq 1 \times D_1$                                                                 |
|                          | $V_c$                                                                             | $V_c$                                                                             | $V_c$                                                                              | $f_z$                                                                               |                                                                                     |
|                          | $\times 1$                                                                        | $\times 0.7$                                                                      | $\times 1.2$                                                                       | $\times 0.7$                                                                        |                                                                                     |
|                          | $f_z$                                                                             | $f_z$                                                                             | $f_z$                                                                              |                                                                                     |                                                                                     |
|                          | $\times 1$                                                                        | $\times 0.6$                                                                      | $\times 1.2$                                                                       |                                                                                     |                                                                                     |

|     |               | $f_z$ [mm]                |                           |                           |                           |
|-----|---------------|---------------------------|---------------------------|---------------------------|---------------------------|
| ISO | $V_c$ [m/min] | $\varnothing 0.50 - 0.80$ | $\varnothing 0.90 - 1.20$ | $\varnothing 1.30 - 2.90$ | $\varnothing 3.00 - 6.00$ |
| P1  | 60 - 90       | 0.004 - 0.009             | 0.008 - 0.020             | 0.015 - 0.030             | 0.020 - 0.040             |
| P2  | 60 - 90       | 0.004 - 0.009             | 0.008 - 0.020             | 0.015 - 0.030             | 0.020 - 0.040             |
| P3  | 40 - 60       | 0.004 - 0.009             | 0.008 - 0.020             | 0.015 - 0.030             | 0.020 - 0.040             |
| P4  | 30 - 50       | 0.004 - 0.009             | 0.008 - 0.020             | 0.015 - 0.030             | 0.020 - 0.040             |
| P5  | 30 - 50       | 0.004 - 0.009             | 0.008 - 0.020             | 0.015 - 0.030             | 0.020 - 0.040             |
| M1  | 50 - 70       | 0.003 - 0.008             | 0.007 - 0.015             | 0.010 - 0.030             | 0.015 - 0.035             |
| M2  | 50 - 70       | 0.003 - 0.008             | 0.007 - 0.015             | 0.010 - 0.030             | 0.015 - 0.035             |
| M3  | 50 - 70       | 0.003 - 0.008             | 0.007 - 0.015             | 0.010 - 0.030             | 0.015 - 0.035             |
| K1  | 90 - 120      | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N1  | 200 - 250     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N2  | 200 - 250     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N3  | 140 - 180     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N4  | 140 - 180     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N5  | 110 - 160     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N6  | 100 - 200     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N7  | 100 - 200     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N8  | 200 - 250     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| S1  | 30 - 50       | 0.003 - 0.008             | 0.008 - 0.015             | 0.015 - 0.030             | 0.025 - 0.045             |
| S2  | 25 - 35       | 0.003 - 0.008             | 0.008 - 0.015             | 0.015 - 0.030             | 0.025 - 0.045             |
| S3  | 30 - 50       | 0.003 - 0.008             | 0.008 - 0.015             | 0.015 - 0.030             | 0.025 - 0.045             |
| H1  | 25 - 35       | 0.002 - 0.004             | 0.003 - 0.005             | 0.004 - 0.006             | 0.005 - 0.008             |
| H2  |               |                           |                           |                           |                           |

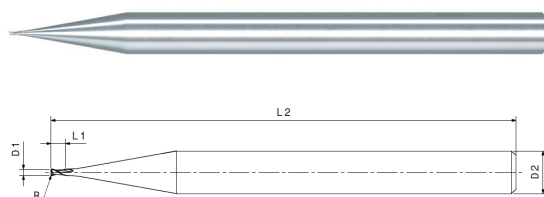
Richtwerte  
Indicative values

# MI0112-NR01119

Schaftfräser mit Eckenradius Z2  
Corner radius end mill Z2



|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
| N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |

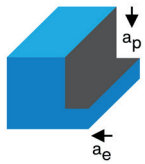
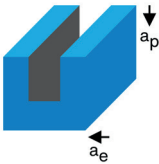


| D1   | L1   | D2 | L2 | Z | R    | DWS Art. N° |
|------|------|----|----|---|------|-------------|
| 0.20 | 0.30 | 3  | 39 | 2 | 0.02 | 460371      |
| 0.20 | 0.60 | 3  | 39 | 2 | 0.02 | 460372      |
| 0.25 | 0.38 | 3  | 39 | 2 | 0.02 | 460373      |
| 0.25 | 0.75 | 3  | 39 | 2 | 0.02 | 460374      |
| 0.30 | 0.45 | 3  | 39 | 2 | 0.03 | 460375      |
| 0.30 | 0.90 | 3  | 39 | 2 | 0.03 | 460376      |
| 0.35 | 0.53 | 3  | 39 | 2 | 0.03 | 460377      |
| 0.35 | 1.05 | 3  | 39 | 2 | 0.03 | 460378      |
| 0.40 | 0.60 | 3  | 39 | 2 | 0.05 | 460379      |
| 0.40 | 1.20 | 3  | 39 | 2 | 0.05 | 460380      |
| 0.45 | 0.68 | 3  | 39 | 2 | 0.05 | 460381      |
| 0.45 | 1.35 | 3  | 39 | 2 | 0.05 | 460382      |
| 0.50 | 0.75 | 3  | 39 | 2 | 0.05 | 460383      |
| 0.50 | 1.50 | 3  | 39 | 2 | 0.05 | 460384      |
| 0.60 | 0.90 | 3  | 39 | 2 | 0.10 | 460385      |
| 0.60 | 1.80 | 3  | 39 | 2 | 0.10 | 460386      |
| 0.70 | 1.05 | 3  | 39 | 2 | 0.10 | 460387      |
| 0.70 | 2.10 | 3  | 39 | 2 | 0.10 | 460388      |
| 0.80 | 1.20 | 3  | 39 | 2 | 0.15 | 460389      |
| 0.80 | 2.40 | 3  | 39 | 2 | 0.15 | 460390      |
| 0.90 | 1.35 | 3  | 39 | 2 | 0.20 | 460391      |
| 0.90 | 2.70 | 3  | 39 | 2 | 0.20 | 460392      |
| 1.00 | 1.50 | 3  | 39 | 2 | 0.20 | 460393      |
| 1.00 | 3.00 | 3  | 39 | 2 | 0.20 | 460394      |
| 1.10 | 1.65 | 3  | 39 | 2 | 0.20 | 460395      |
| 1.10 | 3.30 | 3  | 39 | 2 | 0.20 | 460396      |
| 1.20 | 1.80 | 3  | 39 | 2 | 0.10 | 460397      |
| 1.20 | 3.60 | 3  | 39 | 2 | 0.10 | 460398      |
| 1.20 | 3.60 | 3  | 39 | 2 | 0.20 | 460399      |
| 1.30 | 2.60 | 3  | 39 | 2 | 0.20 | 460400      |
| 1.30 | 3.90 | 3  | 39 | 2 | 0.20 | 460401      |
| 1.40 | 2.80 | 3  | 39 | 2 | 0.20 | 460402      |
| 1.50 | 2.25 | 3  | 39 | 2 | 0.20 | 460403      |
| 1.50 | 4.50 | 3  | 39 | 2 | 0.50 | 460404      |
| 1.60 | 3.20 | 3  | 39 | 2 | 0.50 | 460405      |
| 1.70 | 3.70 | 3  | 39 | 2 | 0.50 | 460406      |
| 1.80 | 3.60 | 3  | 39 | 2 | 0.50 | 460407      |
| 1.90 | 3.80 | 3  | 39 | 2 | 0.50 | 460408      |
| 2.00 | 3.00 | 3  | 39 | 2 | 0.20 | 460409      |
| 2.00 | 6.00 | 3  | 39 | 2 | 0.50 | 460410      |
| 2.50 | 3.75 | 3  | 39 | 2 | 0.20 | 460411      |
| 2.50 | 7.50 | 3  | 39 | 2 | 0.50 | 460412      |
| 2.80 | 4.50 | 3  | 39 | 2 | 0.50 | 460413      |
| 3.00 | 4.50 | 3  | 39 | 2 | 0.50 | 460414      |
| 3.00 | 9.00 | 3  | 39 | 2 | 1.00 | 460415      |
| 3.00 | 8.00 | 3  | 39 | 2 | 0.30 | 460416      |
| 3.00 | 8.00 | 3  | 39 | 2 | 0.50 | 460417      |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0112-NR01119

Schnittparameter  
Cutting parameters

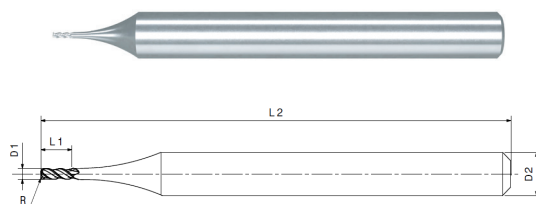
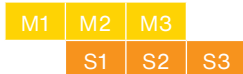
| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |
|                          | $a_p$                                                                             | $a_p$                                                                             |
|                          | $1 \times D_1$                                                                    | $0.5 \times D_1$                                                                  |
|                          | $a_e$                                                                             | $a_e$                                                                             |
|                          | $0.4 \times D_1$                                                                  | $1 \times D_1$                                                                    |
|                          |                                                                                   |                                                                                   |
|                          |                                                                                   |                                                                                   |

|     |               | $f_z$ [mm]    |               |               |
|-----|---------------|---------------|---------------|---------------|
| ISO | $V_c$ [m/min] | Ø 0.30 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 2.90 |
| P1  | 110 - 130     | 0,004 - 0,009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P2  | 100 - 120     | 0,004 - 0,009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P3  | 100 - 120     | 0,004 - 0,009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P4  | 80 - 110      | 0,004 - 0,009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P5  | 60 - 80       | 0,004 - 0,009 | 0.008 - 0.020 | 0.015 - 0.030 |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 |
| M2  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 |
| M3  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 |
| K1  | 140 - 170     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N1  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N2  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N3  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N4  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N5  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N6  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N7  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N8  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 |
| S2  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 |
| H1  | 30 - 50       | 0.002 - 0.004 | 0.003 - 0.005 | 0.004 - 0.006 |
| H2  |               |               |               |               |

Richtwerte  
Indicative values

# MI0112-AR01116

Schaftfräser mit Eckenradius Z3  
Corner radius end mill Z3

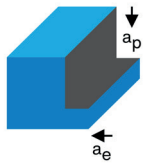
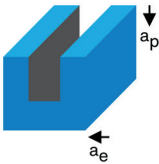


| D1  | L1    | D2 | L2 | Z | R    | DWX<br>Art. N° |
|-----|-------|----|----|---|------|----------------|
| 0.5 | 1.25  | 4  | 40 | 3 | 0.05 | <b>460341</b>  |
| 0.6 | 1.50  | 4  | 40 | 3 | 0.05 | <b>460342</b>  |
| 0.7 | 1.75  | 4  | 40 | 3 | 0.05 | <b>460343</b>  |
| 0.8 | 2.00  | 4  | 40 | 3 | 0.05 | <b>460344</b>  |
| 1.0 | 2.50  | 4  | 40 | 3 | 0.10 | <b>460345</b>  |
| 1.2 | 3.00  | 4  | 40 | 3 | 0.10 | <b>460346</b>  |
| 1.5 | 3.75  | 4  | 40 | 3 | 0.10 | <b>460347</b>  |
| 1.8 | 4.50  | 4  | 40 | 3 | 0.10 | <b>460348</b>  |
| 2.0 | 5.00  | 4  | 40 | 3 | 0.20 | <b>460349</b>  |
| 2.5 | 6.25  | 6  | 51 | 3 | 0.20 | <b>460350</b>  |
| 3.0 | 7.50  | 6  | 51 | 3 | 0.20 | <b>460351</b>  |
| 3.5 | 8.75  | 6  | 51 | 3 | 0.20 | <b>460352</b>  |
| 4.0 | 10.00 | 6  | 51 | 3 | 0.30 | <b>460353</b>  |
| 4.5 | 11.25 | 8  | 59 | 3 | 0.30 | <b>460354</b>  |
| 5.0 | 12.50 | 8  | 59 | 3 | 0.30 | <b>460355</b>  |
| 5.5 | 13.75 | 8  | 59 | 3 | 0.30 | <b>460356</b>  |
| 6.0 | 15.00 | 8  | 59 | 3 | 0.40 | <b>460357</b>  |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0112-AR01116

Schnittparameter  
Cutting parameters

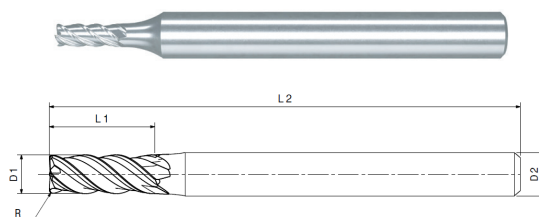
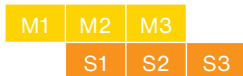
| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |
|                          | $a_p$                                                                             | $a_p$                                                                             |
|                          | $1 \times D_1$                                                                    | $0.5 \times D_1$                                                                  |
|                          | $a_e$                                                                             | $a_e$                                                                             |
|                          | $0.4 \times D_1$                                                                  | $1 \times D_1$                                                                    |
|                          |                                                                                   |                                                                                   |
|                          |                                                                                   |                                                                                   |

|     |               | $f_z$ [mm]    |               |               |               |
|-----|---------------|---------------|---------------|---------------|---------------|
| ISO | $V_c$ [m/min] | Ø 0.30 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 2.90 | Ø 3.00 - 6.00 |
| P1  |               |               |               |               |               |
| P2  |               |               |               |               |               |
| P3  |               |               |               |               |               |
| P4  |               |               |               |               |               |
| P5  |               |               |               |               |               |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M2  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M3  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| K1  |               |               |               |               |               |
| N1  |               |               |               |               |               |
| N2  |               |               |               |               |               |
| N3  |               |               |               |               |               |
| N4  |               |               |               |               |               |
| N5  |               |               |               |               |               |
| N6  |               |               |               |               |               |
| N7  |               |               |               |               |               |
| N8  |               |               |               |               |               |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S2  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| H1  |               |               |               |               |               |
| H2  |               |               |               |               |               |

Richtwerte  
Indicative values

# MI0112-AR01117

Schaftfräser mit Eckenradius Z4  
Corner radius end mill Z4

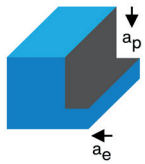
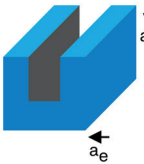


| D1  | L1    | D2 | L2 | Z | R    | DWX<br>Art. N° |
|-----|-------|----|----|---|------|----------------|
| 1.0 | 2.50  | 4  | 40 | 4 | 0.10 | <b>460358</b>  |
| 1.2 | 3.00  | 4  | 40 | 4 | 0.10 | <b>460359</b>  |
| 1.5 | 3.75  | 4  | 40 | 4 | 0.10 | <b>460360</b>  |
| 1.8 | 4.50  | 4  | 40 | 4 | 0.10 | <b>460361</b>  |
| 2.0 | 5.00  | 4  | 40 | 4 | 0.20 | <b>460362</b>  |
| 2.5 | 6.25  | 6  | 51 | 4 | 0.20 | <b>460363</b>  |
| 3.0 | 7.50  | 6  | 51 | 4 | 0.20 | <b>460364</b>  |
| 3.5 | 8.75  | 6  | 51 | 4 | 0.20 | <b>460365</b>  |
| 4.0 | 10.00 | 6  | 51 | 4 | 0.30 | <b>460366</b>  |
| 4.5 | 11.25 | 8  | 59 | 4 | 0.30 | <b>460367</b>  |
| 5.0 | 12.50 | 8  | 59 | 4 | 0.30 | <b>460368</b>  |
| 5.5 | 13.75 | 8  | 59 | 4 | 0.30 | <b>460369</b>  |
| 6.0 | 15.00 | 8  | 59 | 4 | 0.40 | <b>460370</b>  |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0112-AR01117

Schnittparameter  
Cutting parameters

| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |
|                          | $a_p$                                                                             | $a_p$                                                                             |
|                          | $1 \times D_1$                                                                    | $0.5 \times D_1$                                                                  |
|                          | $a_e$                                                                             | $a_e$                                                                             |
|                          | $0.4 \times D_1$                                                                  | $1 \times D_1$                                                                    |
|                          |                                                                                   |                                                                                   |
|                          |                                                                                   |                                                                                   |

| ISO | $V_c$ [m/min] | $f_z$ [mm]    |               |               |               |
|-----|---------------|---------------|---------------|---------------|---------------|
|     |               | Ø 0.30 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 2.90 | Ø 3.00 - 6.00 |
| P1  |               |               |               |               |               |
| P2  |               |               |               |               |               |
| P3  |               |               |               |               |               |
| P4  |               |               |               |               |               |
| P5  |               |               |               |               |               |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M2  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M3  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| K1  |               |               |               |               |               |
| N1  |               |               |               |               |               |
| N2  |               |               |               |               |               |
| N3  |               |               |               |               |               |
| N4  |               |               |               |               |               |
| N5  |               |               |               |               |               |
| N6  |               |               |               |               |               |
| N7  |               |               |               |               |               |
| N8  |               |               |               |               |               |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S2  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| H1  |               |               |               |               |               |
| H2  |               |               |               |               |               |

Richtwerte  
Indicative values

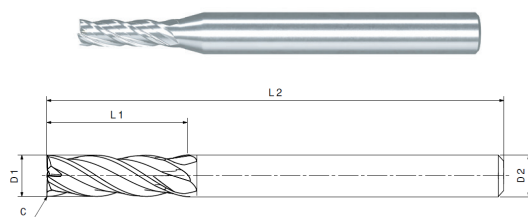
# MI0114-NR01120

Schaftfräser mit Fase  
Corner chamfer end mill



|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
| N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |

|     |  |    |  |  |       |     |
|-----|--|----|--|--|-------|-----|
| VHM |  | h5 |  |  | 2.5xD | 45° |
|-----|--|----|--|--|-------|-----|

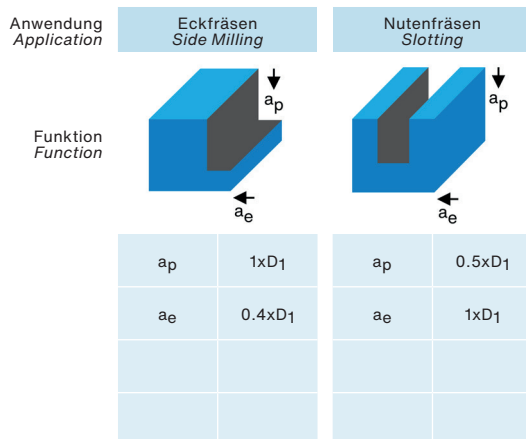


| D1  | L1    | D2 | L2 | Z | C        | DWS Art. N° |
|-----|-------|----|----|---|----------|-------------|
| 0.3 | 0.75  | 3  | 39 | 3 | 0.01x45° | 460501      |
| 0.4 | 1.00  | 3  | 39 | 4 | 0.01x45° | 460502      |
| 0.5 | 1.25  | 3  | 39 | 4 | 0.01x45° | 460503      |
| 0.6 | 1.50  | 3  | 39 | 4 | 0.01x45° | 460504      |
| 0.8 | 2.00  | 3  | 39 | 4 | 0.01x45° | 460505      |
| 1.0 | 2.50  | 3  | 39 | 4 | 0.01x45° | 460506      |
| 1.5 | 3.75  | 3  | 39 | 4 | 0.01x45° | 460507      |
| 2.0 | 5.00  | 3  | 39 | 4 | 0.01x45° | 460508      |
| 2.5 | 6.25  | 3  | 39 | 4 | 0.01x45° | 460509      |
| 3.0 | 7.50  | 4  | 51 | 4 | 0.01x45° | 460510      |
| 3.5 | 8.75  | 4  | 51 | 4 | 0.02x45° | 460511      |
| 4.0 | 10.00 | 5  | 51 | 4 | 0.02x45° | 460512      |
| 4.5 | 11.25 | 5  | 51 | 4 | 0.02x45° | 460513      |
| 5.0 | 12.50 | 6  | 58 | 4 | 0.02x45° | 460514      |
| 5.5 | 13.75 | 6  | 58 | 4 | 0.02x45° | 460515      |
| 6.0 | 15.00 | 8  | 64 | 4 | 0.02x45° | 460516      |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MIO114-NR01120

Schnittparameter  
Cutting parameters



|     |               | $f_z$ [mm]    |               |               |               |
|-----|---------------|---------------|---------------|---------------|---------------|
| ISO | $V_c$ [m/min] | Ø 0.30 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 2.90 | Ø 3.00 - 6.00 |
| P1  | 140 - 170     | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P2  | 140 - 170     | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P3  | 140 - 170     | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P4  | 120 - 150     | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| P5  | 90 - 120      | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 | 0.020 - 0.040 |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M2  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| M3  | 40 - 60       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.015 - 0.035 |
| K1  | 140 - 170     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N1  | 300 - 400     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N2  | 300 - 400     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N3  | 300 - 400     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N4  | 300 - 400     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N5  | 300 - 400     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N6  | 200 - 300     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N7  | 200 - 300     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| N8  | 300 - 400     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 | 0.030 - 0.060 |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S2  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.045 |
| H1  | 30 - 50       | 0.002 - 0.004 | 0.003 - 0.005 | 0.004 - 0.006 | 0.005 - 0.008 |
| H2  |               |               |               |               |               |

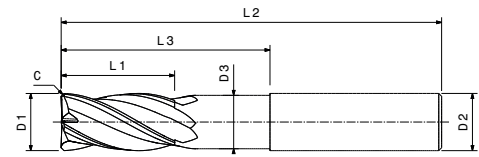
Richtwerte  
Indicative values

# MI0114-NR01103

Hochleistungsfräser  
High performance end mill



|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
| N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |



| D1<br>h10 | L1    | D2<br>h6 | L2 | D3 | L3 | C        | Z | DWS<br>Art. N° |
|-----------|-------|----------|----|----|----|----------|---|----------------|
| 3.00      | 8.00  | 6        | 58 | -  | -  | 0.05x45° | 4 | <b>443702</b>  |
| 4.00      | 11.00 | 6        | 58 | -  | -  | 0.05x45° | 4 | <b>443704</b>  |
| 5.00      | 13.00 | 6        | 58 | -  | -  | 0.05x45° | 4 | <b>443706</b>  |

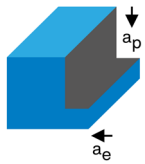
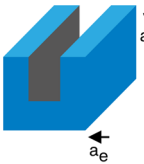
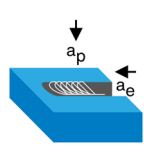
# MI0115-NR01103

| D1<br>h10 | L1    | D2<br>h6 | L2 | D3   | L3    | C        | Z | DWS<br>Art. N° |
|-----------|-------|----------|----|------|-------|----------|---|----------------|
| 4.00      | 11.00 | 4        | 51 | 3.80 | 16.00 | 0.05x45° | 4 | <b>443703</b>  |
| 5.00      | 13.00 | 5        | 51 | 4.80 | 18.00 | 0.05x45° | 4 | <b>443705</b>  |
| 6.00      | 13.00 | 6        | 58 | 5.70 | 20.00 | 0.05x45° | 4 | <b>443707</b>  |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0114-NR01103 / MI0115-NR01103

Schnittparameter  
Cutting parameters

| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           | Trochoidalfräsen<br>Trochoidal milling                                             |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |  |
|                          | $a_p$                                                                             | $a_p$                                                                             | $a_p$                                                                              |
|                          | $\leq 2 \times D_1$                                                               | $\leq 1.5 \times D_1$                                                             | $\leq 2 \times D_1$                                                                |
|                          | $a_e$                                                                             | $a_e$                                                                             | $a_e$                                                                              |
|                          | $\leq 0.5 \times D_1$                                                             | $1 \times D_1$                                                                    | $\leq 0.1 \times D_1$                                                              |
|                          | $V_c$                                                                             | $V_c$                                                                             | $V_c$                                                                              |
|                          | $\times 1$                                                                        | $\times 0.9$                                                                      | $\times 1.2$                                                                       |
|                          | $f_z$                                                                             | $f_z$                                                                             | $f_z$                                                                              |
|                          | $\times 1$                                                                        | $\times 0.8$                                                                      | $\times 1.2$                                                                       |

|     |               | $f_z$ [mm] |        |        |        |
|-----|---------------|------------|--------|--------|--------|
| ISO | $V_c$ [m/min] | Ø 3.00     | Ø 4.00 | Ø 5.00 | Ø 6.00 |
| P1  | 140 - 170     | 0.015      | 0.020  | 0.030  | 0.045  |
| P2  | 140 - 170     | 0.015      | 0.020  | 0.030  | 0.045  |
| P3  | 140 - 170     | 0.015      | 0.020  | 0.030  | 0.045  |
| P4  | 120 - 150     | 0.015      | 0.020  | 0.030  | 0.045  |
| P5  | 90 - 120      | 0.010      | 0.020  | 0.030  | 0.040  |
| M1  | 50 - 70       | 0.010      | 0.020  | 0.030  | 0.040  |
| M2  | 40 - 60       | 0.010      | 0.020  | 0.030  | 0.040  |
| M3  | 40 - 60       | 0.010      | 0.020  | 0.030  | 0.040  |
| K1  | 140 - 170     | 0.015      | 0.020  | 0.030  | 0.045  |
| N1  | 600 - 800     | 0.015      | 0.020  | 0.035  | 0.050  |
| N2  | 600 - 800     | 0.015      | 0.020  | 0.035  | 0.050  |
| N3  | 400 - 500     | 0.015      | 0.020  | 0.035  | 0.050  |
| N4  | 400 - 500     | 0.015      | 0.020  | 0.035  | 0.050  |
| N5  | 350 - 450     | 0.015      | 0.020  | 0.035  | 0.050  |
| N6  | 200 - 300     | 0.015      | 0.020  | 0.035  | 0.050  |
| N7  | 200 - 300     | 0.015      | 0.020  | 0.035  | 0.050  |
| N8  | 500 - 600     | 0.015      | 0.020  | 0.035  | 0.050  |
| S1  | 30 - 50       | 0.010      | 0.012  | 0.015  | 0.020  |
| S2  | 30 - 50       | 0.010      | 0.012  | 0.015  | 0.020  |
| S3  | 30 - 50       | 0.010      | 0.012  | 0.015  | 0.020  |
| H1  | 30 - 50       | 0.010      | 0.012  | 0.015  | 0.020  |
| H2  |               |            |        |        |        |

Richtwerte  
Indicative values

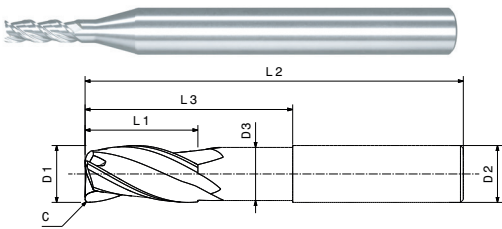
# MI0114-SR01104

Hochleistungsfräser  
High performance end mill



K1 N1 N2

N3 N4 N5 N6 N7 N8



| D1<br>h10 | L1    | D2<br>h6 | L2 | D3 | L3 | C        | Z | DWT<br>Art. N° |
|-----------|-------|----------|----|----|----|----------|---|----------------|
| 3.00      | 8.00  | 6        | 58 | -  | -  | 0.05x45° | 3 | 443708         |
| 4.00      | 11.00 | 6        | 58 | -  | -  | 0.05x45° | 3 | 443709         |
| 5.00      | 13.00 | 6        | 58 | -  | -  | 0.10X45° | 3 | 443710         |

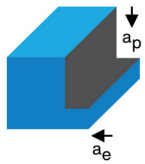
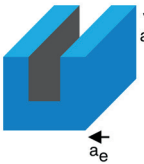
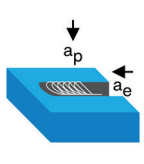
# MI0115-SR01104

| D1<br>h10 | L1    | D2<br>h6 | L2 | D3   | L3    | C        | Z | DWT<br>Art. N° |
|-----------|-------|----------|----|------|-------|----------|---|----------------|
| 6.00      | 13.00 | 6        | 58 | 5.70 | 20.00 | 0.10X45° | 3 | 443711         |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0114-SR01104 / MI0115-SR01104

Schnittparameter  
Cutting parameters

| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           | Trochoidalfräsen<br>Trochoidal milling                                             |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |  |
|                          | $a_p$                                                                             | $a_p$                                                                             | $a_p$                                                                              |
|                          | $\leq 1.5 \times D_1$                                                             | $\leq 1 \times D_1$                                                               | $\leq 1.5 \times D_1$                                                              |
|                          | $a_e$                                                                             | $a_e$                                                                             | $a_e$                                                                              |
|                          | $\leq 0.25 \times D_1$                                                            | $1 \times D_1$                                                                    | $\leq 0.25 \times D_1$                                                             |
|                          | $V_c$                                                                             | $V_c$                                                                             | $V_c$                                                                              |
|                          | $\times 1$                                                                        | $\times 0.8$                                                                      | $\times 1$                                                                         |
|                          | $f_z$                                                                             | $f_z$                                                                             | $f_z$                                                                              |
|                          | $\times 1$                                                                        | $\times 1$                                                                        | $\times 1$                                                                         |

|     |               | $f_z$ [mm] |        |        |        |
|-----|---------------|------------|--------|--------|--------|
| ISO | $V_c$ [m/min] | Ø 3.00     | Ø 4.00 | Ø 5.00 | Ø 6.00 |
| P1  |               |            |        |        |        |
| P2  |               |            |        |        |        |
| P3  |               |            |        |        |        |
| P4  |               |            |        |        |        |
| P5  |               |            |        |        |        |
| M1  |               |            |        |        |        |
| M2  |               |            |        |        |        |
| M3  |               |            |        |        |        |
| K1  | 140 - 170     | 0.015      | 0.020  | 0.030  | 0.045  |
| N1  | 600 - 800     | 0.015      | 0.020  | 0.035  | 0.050  |
| N2  | 600 - 800     | 0.015      | 0.020  | 0.035  | 0.050  |
| N3  | 400 - 500     | 0.015      | 0.020  | 0.035  | 0.050  |
| N4  | 400 - 500     | 0.015      | 0.020  | 0.035  | 0.050  |
| N5  | 350 - 450     | 0.015      | 0.020  | 0.035  | 0.050  |
| N6  | 200 - 300     | 0.015      | 0.020  | 0.035  | 0.050  |
| N7  | 200 - 300     | 0.015      | 0.020  | 0.035  | 0.050  |
| N8  | 500 - 600     | 0.015      | 0.020  | 0.035  | 0.050  |
| S1  |               |            |        |        |        |
| S2  |               |            |        |        |        |
| S3  |               |            |        |        |        |
| H1  |               |            |        |        |        |
| H2  |               |            |        |        |        |

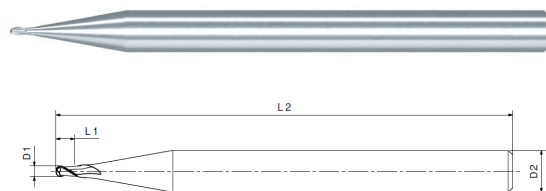
Richtwerte  
Indicative values

# MI0116-NR01102

Kugelfräser Z2  
Ball end mill Z2



|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
| N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |



| D1   | L1   | D2 | L2 | Z | DWS Art. N° |
|------|------|----|----|---|-------------|
| 0.20 | 0.30 | 3  | 39 | 2 | 460418      |
| 0.20 | 0.60 | 3  | 39 | 2 | 460419      |
| 0.25 | 0.38 | 3  | 39 | 2 | 460420      |
| 0.25 | 0.75 | 3  | 39 | 2 | 460421      |
| 0.30 | 0.45 | 3  | 39 | 2 | 460422      |
| 0.30 | 0.90 | 3  | 39 | 2 | 460423      |
| 0.35 | 0.53 | 3  | 39 | 2 | 460424      |
| 0.35 | 1.05 | 3  | 39 | 2 | 460425      |
| 0.40 | 0.60 | 3  | 39 | 2 | 460426      |
| 0.40 | 1.20 | 3  | 39 | 2 | 460427      |
| 0.45 | 0.68 | 3  | 39 | 2 | 460428      |
| 0.45 | 1.35 | 3  | 39 | 2 | 460429      |
| 0.50 | 0.75 | 3  | 39 | 2 | 460430      |
| 0.50 | 1.50 | 3  | 39 | 2 | 460431      |
| 0.60 | 0.90 | 3  | 39 | 2 | 460432      |
| 0.60 | 1.80 | 3  | 39 | 2 | 460433      |
| 0.70 | 1.05 | 3  | 39 | 2 | 460434      |
| 0.70 | 2.10 | 3  | 39 | 2 | 460435      |
| 0.80 | 1.20 | 3  | 39 | 2 | 460436      |
| 0.80 | 2.40 | 3  | 39 | 2 | 460437      |
| 0.90 | 1.35 | 3  | 39 | 2 | 460438      |
| 0.90 | 2.70 | 3  | 39 | 2 | 460439      |
| 1.00 | 1.50 | 3  | 39 | 2 | 460440      |
| 1.00 | 3.00 | 3  | 39 | 2 | 460441      |
| 1.10 | 1.65 | 3  | 39 | 2 | 460442      |
| 1.10 | 3.30 | 3  | 39 | 2 | 460443      |
| 1.20 | 1.80 | 3  | 39 | 2 | 460444      |
| 1.20 | 3.60 | 3  | 39 | 2 | 460445      |
| 1.30 | 1.95 | 3  | 39 | 2 | 460446      |
| 1.30 | 3.90 | 3  | 39 | 2 | 460447      |
| 1.40 | 2.10 | 3  | 39 | 2 | 460448      |
| 1.40 | 4.20 | 3  | 39 | 2 | 460449      |
| 1.50 | 2.25 | 3  | 39 | 2 | 460450      |
| 1.50 | 4.50 | 3  | 39 | 2 | 460451      |
| 1.60 | 2.40 | 3  | 39 | 2 | 460452      |
| 1.60 | 4.80 | 3  | 39 | 2 | 460453      |
| 1.70 | 2.50 | 3  | 39 | 2 | 460454      |
| 1.70 | 5.10 | 3  | 39 | 2 | 460455      |
| 1.80 | 2.70 | 3  | 39 | 2 | 460456      |
| 1.80 | 5.40 | 3  | 39 | 2 | 460457      |
| 1.90 | 2.85 | 3  | 39 | 2 | 460458      |
| 1.90 | 5.70 | 3  | 39 | 2 | 460459      |
| 2.00 | 3.00 | 3  | 39 | 2 | 460460      |
| 2.00 | 6.00 | 3  | 39 | 2 | 460461      |
| 2.50 | 3.75 | 3  | 39 | 2 | 460462      |
| 2.50 | 7.50 | 3  | 39 | 2 | 460463      |
| 3.00 | 4.50 | 3  | 39 | 2 | 460464      |
| 3.00 | 9.00 | 3  | 39 | 2 | 460465      |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

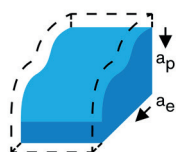
# MI0116-NR01102

Schnittparameter  
Cutting parameters

Anwendung  
Application

3D Kopie  
3D copy milling

Funktion  
Function



|       |                  |
|-------|------------------|
| $a_p$ | $0.1 \times D_1$ |
| $a_e$ | $0.3 \times D_1$ |
|       |                  |
|       |                  |

| ISO | $V_c$ [m/min] | $f_z$ [mm]    |               |               |
|-----|---------------|---------------|---------------|---------------|
|     |               | Ø 0.30 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 3.00 |
| P1  | 70 - 100      | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P2  | 70 - 100      | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P3  | 50 - 70       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P4  | 40 - 60       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 |
| P5  | 40 - 60       | 0.004 - 0.009 | 0.008 - 0.020 | 0.015 - 0.030 |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 |
| M2  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 |
| M3  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 |
| K1  | 90 - 120      | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N1  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N2  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N3  | 140 - 180     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N4  | 140 - 180     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N5  | 110 - 160     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N6  | 100 - 200     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N7  | 100 - 200     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| N8  | 200 - 250     | 0.004 - 0.009 | 0.008 - 0.025 | 0.020 - 0.040 |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 |
| S2  | 25 - 35       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 |
| H1  | 25 - 35       | 0.002 - 0.004 | 0.003 - 0.005 | 0.004 - 0.006 |
| H2  |               |               |               |               |

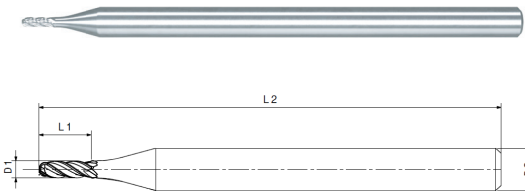
Richtwerte  
Indicative values

# MI0116-AR01101

Kugelfräser Z4  
Ball end mill Z4



|    |    |    |
|----|----|----|
| M1 | M2 | M3 |
| S1 | S2 | S3 |



| D1   | L1    | D2 | L2 | Z | DWX<br>Art. N° |
|------|-------|----|----|---|----------------|
| 1.00 | 3.00  | 3  | 51 | 4 | 460488         |
| 1.50 | 4.50  | 3  | 51 | 4 | 460489         |
| 2.00 | 6.00  | 3  | 51 | 4 | 460490         |
| 2.50 | 7.00  | 3  | 51 | 4 | 460491         |
| 3.00 | 8.00  | 6  | 58 | 4 | 460492         |
| 4.00 | 9.00  | 6  | 58 | 4 | 460493         |
| 5.00 | 11.00 | 6  | 58 | 4 | 460494         |
| 6.00 | 13.00 | 6  | 58 | 4 | 460495         |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

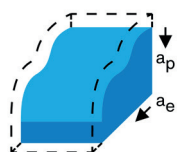
# MI0116-AR01101

Schnittparameter  
Cutting parameters

Anwendung  
Application

3D Kopie  
3D copy milling

Funktion  
Function



|       |                  |
|-------|------------------|
| $a_p$ | $0.1 \times D_1$ |
| $a_e$ | $0.3 \times D_1$ |
|       |                  |
|       |                  |

| ISO | $V_c$ [m/min] | $f_z$ [mm]    |               |               |               |
|-----|---------------|---------------|---------------|---------------|---------------|
|     |               | Ø 0.30 - 0.80 | Ø 0.90 - 1.20 | Ø 1.30 - 2.50 | Ø 3.00 - 6.00 |
| P1  |               |               |               |               |               |
| P2  |               |               |               |               |               |
| P3  |               |               |               |               |               |
| P4  |               |               |               |               |               |
| P5  |               |               |               |               |               |
| M1  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.025 - 0.040 |
| M2  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.025 - 0.040 |
| M3  | 50 - 70       | 0.003 - 0.008 | 0.007 - 0.015 | 0.010 - 0.030 | 0.025 - 0.040 |
| K1  |               |               |               |               |               |
| N1  |               |               |               |               |               |
| N2  |               |               |               |               |               |
| N3  |               |               |               |               |               |
| N4  |               |               |               |               |               |
| N5  |               |               |               |               |               |
| N6  |               |               |               |               |               |
| N7  |               |               |               |               |               |
| N8  |               |               |               |               |               |
| S1  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.040 |
| S2  | 25 - 35       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.040 |
| S3  | 30 - 50       | 0.003 - 0.008 | 0.008 - 0.015 | 0.015 - 0.030 | 0.025 - 0.040 |
| H1  |               |               |               |               |               |
| H2  |               |               |               |               |               |

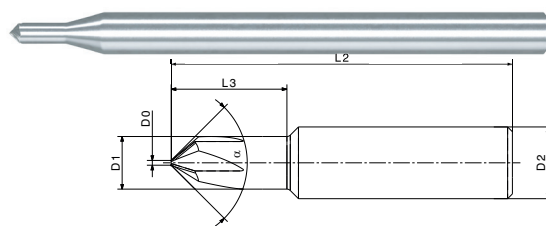
Richtwerte  
Indicative values

# MIO418-NR01101

Kantenfräser frontal 90°  
Front chamfer end mill 90°



|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
| N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |



| D1<br>±0.02 | L3   | D2 | L2 | D0   | α   | Z | DWS<br>Art. N° |
|-------------|------|----|----|------|-----|---|----------------|
| 1.00        | 3.00 | 3  | 39 | 0.30 | 90° | 4 | <b>452045</b>  |
| 2.00        | 6.00 | 3  | 39 | 0.60 | 90° | 4 | <b>452046</b>  |
| 3.00        | -    | 3  | 51 | 1.00 | 90° | 5 | <b>452047</b>  |
| 4.00        | -    | 4  | 51 | 1.50 | 90° | 6 | <b>452048</b>  |
| 6.00        | -    | 6  | 51 | 2.00 | 90° | 6 | <b>452049</b>  |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0418-NR01101

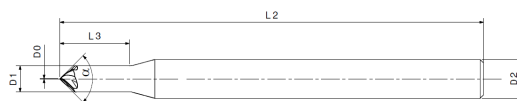
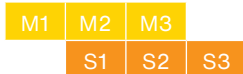
Schnittparameter  
Cutting parameters

| ISO | V <sub>c</sub> [m/min] | f <sub>z</sub> [mm] |               |
|-----|------------------------|---------------------|---------------|
|     |                        | Ø 1.00 - 2.00       | Ø 3.00 - 6.00 |
| P1  | 120                    | 0.010 - 0.040       | 0.030 - 0.050 |
| P2  | 120                    | 0.010 - 0.040       | 0.030 - 0.050 |
| P3  | 120                    | 0.010 - 0.040       | 0.030 - 0.050 |
| P4  | 100                    | 0.010 - 0.030       | 0.020 - 0.040 |
| P5  | 80                     | 0.010 - 0.020       | 0.010 - 0.020 |
| M1  | 50                     | 0.010 - 0.020       | 0.020 - 0.030 |
| M2  | 80                     | 0.010 - 0.020       | 0.010 - 0.030 |
| M3  | 50                     | 0.010 - 0.020       | 0.020 - 0.030 |
| K1  | 60                     | 0.010 - 0.020       | 0.010 - 0.030 |
| N1  | 200                    | 0.020 - 0.050       | 0.030 - 0.070 |
| N2  | 200                    | 0.020 - 0.050       | 0.030 - 0.070 |
| N3  | 200                    | 0.020 - 0.050       | 0.020 - 0.030 |
| N4  | 40                     | 0.010 - 0.020       | 0.030 - 0.070 |
| N5  | 40                     | 0.010 - 0.020       | 0.020 - 0.030 |
| N6  | 200                    | 0.020 - 0.050       | 0.030 - 0.070 |
| N7  | 200                    | 0.020 - 0.050       | 0.030 - 0.070 |
| N8  | 200                    | 0.020 - 0.050       | 0.030 - 0.070 |
| S1  | 40                     | 0.010 - 0.020       | 0.020 - 0.030 |
| S2  | 40                     | 0.010 - 0.020       | 0.020 - 0.030 |
| S3  | 50                     | 0.010 - 0.020       | 0.020 - 0.030 |
| H1  | 60                     | 0.010 - 0.020       | 0.010 - 0.030 |
| H2  |                        |                     |               |

Richtwerte  
Indicative values

# MI0418-AR01104

Kantenfräser frontal 90°  
Front chamfer end mill 90°



| D1   | L3   | D2 | L2 | L0   | α   | Z | DWX<br>Art. N° |
|------|------|----|----|------|-----|---|----------------|
| 0.30 | 0.60 | 3  | 39 | 0.05 | 90° | 4 | <b>460330</b>  |
| 0.50 | 1.00 | 3  | 39 | 0.05 | 90° | 4 | <b>460331</b>  |
| 0.80 | 1.60 | 3  | 39 | 0.05 | 90° | 4 | <b>460332</b>  |
| 1.00 | 2.00 | 3  | 39 | 0.05 | 90° | 4 | <b>460333</b>  |
| 1.50 | 3.00 | 3  | 39 | 0.05 | 90° | 4 | <b>460334</b>  |
| 2.00 | 4.00 | 3  | 39 | 0.05 | 90° | 4 | <b>460335</b>  |
| 2.50 | 5.00 | 3  | 39 | 0.05 | 90° | 4 | <b>460336</b>  |
| 3.00 |      | 3  | 39 | 0.05 | 90° | 4 | <b>460337</b>  |
| 3.00 |      | 3  | 39 | 0.45 | 90° | 5 | <b>460338</b>  |
| 4.00 |      | 4  | 51 | 0.60 | 90° | 5 | <b>460339</b>  |
| 6.00 |      | 6  | 58 | 0.90 | 90° | 5 | <b>460340</b>  |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0418-AR01104

Schnittparameter  
Cutting parameters

| ISO | V <sub>c</sub> [m/min] | f <sub>z</sub> [mm] |               |               |               |               |
|-----|------------------------|---------------------|---------------|---------------|---------------|---------------|
|     |                        | Ø 0.30 - 0.49       | Ø 0.50 - 0.99 | Ø 1.00 - 2.00 | Ø 2.10 - 2.50 | Ø 3.00 - 6.00 |
| P1  |                        |                     |               |               |               |               |
| P2  |                        |                     |               |               |               |               |
| P3  |                        |                     |               |               |               |               |
| P4  |                        |                     |               |               |               |               |
| P5  |                        |                     |               |               |               |               |
| M1  | 40 - 60                | 0.002 - 0.003       | 0.003 - 0.004 | 0.004 - 0.006 | 0.006 - 0.009 | 0.010 - 0.020 |
| M2  | 60 - 80                | 0.002 - 0.003       | 0.003 - 0.004 | 0.004 - 0.006 | 0.006 - 0.009 | 0.010 - 0.020 |
| M3  | 40 - 60                | 0.002 - 0.003       | 0.003 - 0.004 | 0.004 - 0.006 | 0.006 - 0.009 | 0.010 - 0.020 |
| K1  |                        |                     |               |               |               |               |
| N1  |                        |                     |               |               |               |               |
| N2  |                        |                     |               |               |               |               |
| N3  |                        |                     |               |               |               |               |
| N4  |                        |                     |               |               |               |               |
| N5  |                        |                     |               |               |               |               |
| N6  |                        |                     |               |               |               |               |
| N7  |                        |                     |               |               |               |               |
| N8  |                        |                     |               |               |               |               |
| S1  | 40 - 50                | 0.002 - 0.003       | 0.003 - 0.004 | 0.004 - 0.006 | 0.006 - 0.009 | 0.010 - 0.020 |
| S2  | 40 - 50                | 0.002 - 0.003       | 0.003 - 0.004 | 0.004 - 0.006 | 0.006 - 0.009 | 0.010 - 0.020 |
| S3  | 40 - 50                | 0.002 - 0.003       | 0.003 - 0.004 | 0.004 - 0.006 | 0.006 - 0.009 | 0.010 - 0.020 |
| H1  |                        |                     |               |               |               |               |
| H2  |                        |                     |               |               |               |               |

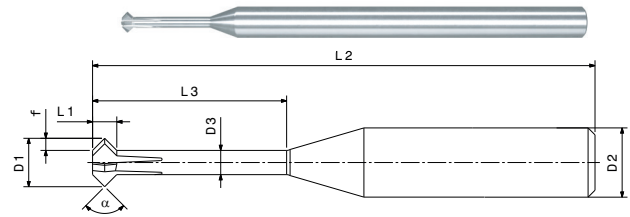
Richtwerte  
Indicative values

# MIO419-NR01101

Doppelkantenfräser 90°  
Double chamfer end mill 90°



|    |    |    |    |    |    |    |    |    |    |    |
|----|----|----|----|----|----|----|----|----|----|----|
| P1 | P2 | P3 | P4 | P5 | M1 | M2 | M3 | K1 | N1 | N2 |
| N3 | N4 | N5 | N6 | N7 | N8 | S1 | S2 | S3 | H1 |    |



| D1   | L1   | D2 | L2 | D3   | L3    | f    | $\alpha$ | Z | DWS Art. N° |
|------|------|----|----|------|-------|------|----------|---|-------------|
| 0.90 | 0.45 | 4  | 51 | 0.45 | 3.15  | 0.23 | 90°      | 4 | 452064      |
| 1.40 | 0.70 | 4  | 51 | 0.70 | 4.90  | 0.35 | 90°      | 5 | 452065      |
| 1.80 | 0.90 | 4  | 55 | 0.90 | 6.30  | 0.45 | 90°      | 5 | 452066      |
| 2.80 | 1.40 | 4  | 60 | 1.40 | 9.80  | 0.70 | 90°      | 5 | 452067      |
| 3.70 | 1.85 | 4  | 60 | 1.85 | 12.95 | 0.93 | 90°      | 5 | 452068      |
| 4.70 | 2.35 | 6  | 70 | 2.35 | 16.45 | 1.18 | 90°      | 5 | 452069      |
| 5.70 | 2.85 | 6  | 70 | 2.85 | 19.95 | 1.43 | 90°      | 6 | 452070      |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MIO419-NR01101

Schnittparameter  
Cutting parameters

| ISO | V <sub>c</sub> [m/min] | f <sub>z</sub> [mm] |               |
|-----|------------------------|---------------------|---------------|
|     |                        | Ø 0.90 - 1.20       | Ø 2.80 - 5.70 |
| P1  | 120                    | 0.030               | 0.040         |
| P2  | 120                    | 0.030               | 0.040         |
| P3  | 120                    | 0.030               | 0.040         |
| P4  | 100                    | 0.020               | 0.030         |
| P5  | 80                     | 0.050               | 0.030         |
| M1  | 50                     | 0.010               | 0.030         |
| M2  | 80                     | 0.015               | 0.030         |
| M3  | 50                     | 0.015               | 0.030         |
| K1  | 60                     | 0.015               | 0.030         |
| N1  | 200                    | 0.030               | 0.040         |
| N2  | 200                    | 0.030               | 0.040         |
| N3  | 200                    | 0.030               | 0.040         |
| N4  | 40                     | 0.020               | 0.040         |
| N5  | 40                     | 0.020               | 0.030         |
| N6  | 200                    | 0.030               | 0.040         |
| N7  | 200                    | 0.030               | 0.040         |
| N8  | 200                    | 0.030               | 0.040         |
| S1  | 40                     | 0.020               | 0.030         |
| S2  | 40                     | 0.020               | 0.030         |
| S3  | 50                     | 0.015               | 0.030         |
| H1  | 60                     | 0.015               | 0.020         |
| H2  |                        |                     |               |

Richtwerte  
Indicative values

# MIO420-NR01101

Sphärische Kantenfräser  
Spherical chamfer end mill

P1

P2

P3

P4

P5

M1

M2

M3

K1

N1

N2

N3

N4

N5

N6

N7

N8

S1

S2

S3

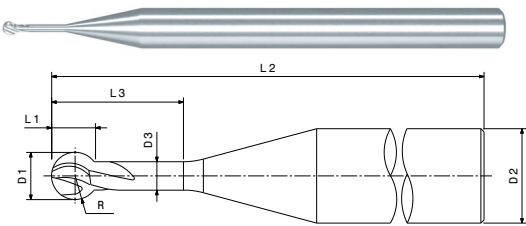
H1

VHM

10°

h5

3xD



| D1   | L1   | D2 | L2 | D3   | L3    | R    | Z | DWS<br>Art. N° |
|------|------|----|----|------|-------|------|---|----------------|
| 1.00 | 1.00 | 4  | 50 | 0.50 | 4.00  | 0.50 | 3 | 452085         |
| 1.50 | 1.50 | 4  | 50 | 0.75 | 6.00  | 0.75 | 3 | 452086         |
| 2.00 | 2.00 | 4  | 60 | 1.00 | 8.00  | 1.00 | 3 | 452087         |
| 2.50 | 2.50 | 4  | 60 | 1.25 | 10.00 | 1.25 | 3 | 452088         |
| 3.00 | 3.00 | 4  | 60 | 1.50 | 12.00 | 1.50 | 3 | 452089         |
| 4.00 | 4.00 | 6  | 70 | 2.00 | 16.00 | 2.00 | 3 | 452090         |
| 6.00 | 6.00 | 6  | 70 | 3.00 | 24.00 | 3.00 | 3 | 452091         |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MIO420-NR01101

Schnittparameter  
Cutting parameters

| ISO | V <sub>C</sub> [m/min] | f <sub>Z</sub> [mm] |               |
|-----|------------------------|---------------------|---------------|
|     |                        | Ø 1.00 - 2.00       | Ø 2.50 - 6.00 |
| P1  | 120                    | 0.030               | 0.040         |
| P2  | 120                    | 0.030               | 0.040         |
| P3  | 120                    | 0.030               | 0.040         |
| P4  | 100                    | 0.020               | 0.030         |
| P5  | 80                     | 0.050               | 0.030         |
| M1  | 50                     | 0.010               | 0.030         |
| M2  | 80                     | 0.015               | 0.030         |
| M3  | 50                     | 0.015               | 0.030         |
| K1  | 60                     | 0.015               | 0.030         |
| N1  | 200                    | 0.030               | 0.040         |
| N2  | 200                    | 0.030               | 0.040         |
| N3  | 200                    | 0.030               | 0.040         |
| N4  | 40                     | 0.020               | 0.040         |
| N5  | 40                     | 0.020               | 0.030         |
| N6  | 200                    | 0.030               | 0.040         |
| N7  | 200                    | 0.030               | 0.040         |
| N8  | 200                    | 0.030               | 0.040         |
| S1  | 40                     | 0.020               | 0.030         |
| S2  | 40                     | 0.020               | 0.030         |
| S3  | 50                     | 0.015               | 0.030         |
| H1  | 60                     | 0.015               | 0.020         |
| H2  |                        |                     |               |

Richtwerte  
Indicative values

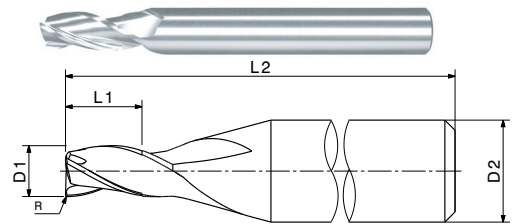
# MI0112-SR04105

Keramik Mikrofräser  
Ceramic micro end mill



K1 N1 N2

N3 N4 N5 N6 N7 N8



| D1<br>±0.01 | L1    | D2 | L2 | R    | Z | CER<br>Art. N° |
|-------------|-------|----|----|------|---|----------------|
| 1.00        | 2.00  | 3  | 39 | 0.03 | 3 | <b>443856</b>  |
| 1.50        | 3.00  | 3  | 39 | 0.04 | 3 | <b>443857</b>  |
| 2.00        | 4.00  | 3  | 39 | 0.05 | 3 | <b>443858</b>  |
| 3.00        | 6.00  | 5  | 39 | 0.08 | 3 | <b>443859</b>  |
| 4.00        | 8.00  | 5  | 51 | 0.10 | 3 | <b>443860</b>  |
| 5.00        | 10.00 | 6  | 51 | 0.13 | 3 | <b>443861</b>  |
| 6.00        | 12.00 | 6  | 51 | 0.15 | 3 | <b>443862</b>  |

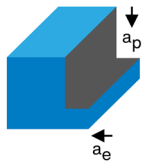
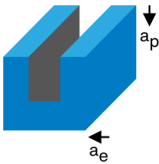
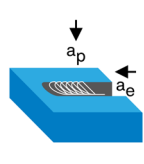
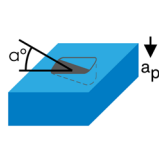
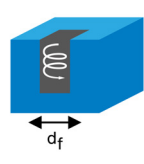


| D1<br>±0.01 | L1   | D2 | L2 | R    | Z | CER<br>Art. N° |
|-------------|------|----|----|------|---|----------------|
| 0.50        | 0.75 | 3  | 39 | 0.02 | 3 | <b>443850</b>  |
| 0.80        | 1.20 | 3  | 39 | 0.02 | 3 | <b>443851</b>  |
| 1.00        | 1.50 | 3  | 39 | 0.03 | 3 | <b>443852</b>  |
| 1.50        | 2.25 | 3  | 39 | 0.04 | 3 | <b>443853</b>  |
| 2.00        | 3.00 | 3  | 39 | 0.05 | 3 | <b>443854</b>  |
| 3.00        | 4.50 | 5  | 51 | 0.08 | 3 | <b>443855</b>  |

Weitere Beschichtungen oder kundenspezifische Lösungen auf Anfrage  
Other coatings or customized solutions are available on request

# MI0112-SR04105

Schnittparameter  
Cutting parameters

| Anwendung<br>Application | Eckfräsen<br>Side Milling                                                         | Nutenfräsen<br>Slotting                                                           | Trochoidalfräsen<br>Trochoidal milling                                             | Rampenfräsen<br>Diagonal plunging                                                   | Helixinterpolation<br>Helical interpolation                                         |
|--------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Funktion<br>Function     |  |  |  |  |  |
|                          | $a_p$                                                                             | $a_p$                                                                             | $a_p$                                                                              | Angle                                                                               | Angle                                                                               |
|                          | $\leq 1 \times D_1$                                                               | $\leq 0.5 \times D_1$                                                             | $\leq 1.5 \times D_1$                                                              | $8^\circ$                                                                           | $8^\circ$                                                                           |
|                          | $a_e$                                                                             | $a_e$                                                                             | $a_e$                                                                              | $a_p$                                                                               | $D_f$                                                                               |
|                          | $\leq 0.15 \times D_1$                                                            | $1 \times D_1$                                                                    | $\leq 0.1 \times D_1$                                                              | $\leq 1 \times D_1$                                                                 | $\leq 1 \times D_1$                                                                 |
|                          | $V_c$                                                                             | $V_c$                                                                             | $V_c$                                                                              | $f_z$                                                                               | $f_z$                                                                               |
|                          | $\times 1$                                                                        | $\times 0.7$                                                                      | $\times 1.2$                                                                       | $\times 0.7$                                                                        | $\times 0.7$                                                                        |
|                          | $f_z$                                                                             | $f_z$                                                                             | $f_z$                                                                              |                                                                                     |                                                                                     |
|                          | $\times 1$                                                                        | $\times 0.6$                                                                      | $\times 1.2$                                                                       |                                                                                     |                                                                                     |

|     |               | $f_z$ [mm]                |                           |                           |                           |
|-----|---------------|---------------------------|---------------------------|---------------------------|---------------------------|
| ISO | $V_c$ [m/min] | $\varnothing 0.30 - 0.80$ | $\varnothing 0.90 - 1.20$ | $\varnothing 1.30 - 2.90$ | $\varnothing 3.00 - 6.00$ |
| P1  |               |                           |                           |                           |                           |
| P2  |               |                           |                           |                           |                           |
| P3  |               |                           |                           |                           |                           |
| P4  |               |                           |                           |                           |                           |
| P5  |               |                           |                           |                           |                           |
| M1  |               |                           |                           |                           |                           |
| M2  |               |                           |                           |                           |                           |
| M3  |               |                           |                           |                           |                           |
| K1  | 90 - 120      | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N1  | 220 - 270     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N2  | 220 - 270     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N3  | 160 - 200     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N4  | 160 - 200     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N5  | 160 - 200     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N6  | 160 - 200     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N7  | 160 - 200     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| N8  | 250 - 300     | 0.004 - 0.009             | 0.008 - 0.025             | 0.020 - 0.040             | 0.030 - 0.060             |
| S1  |               |                           |                           |                           |                           |
| S2  |               |                           |                           |                           |                           |
| S3  |               |                           |                           |                           |                           |
| H1  |               |                           |                           |                           |                           |
| H2  |               |                           |                           |                           |                           |

Richtwerte  
Indicative values



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