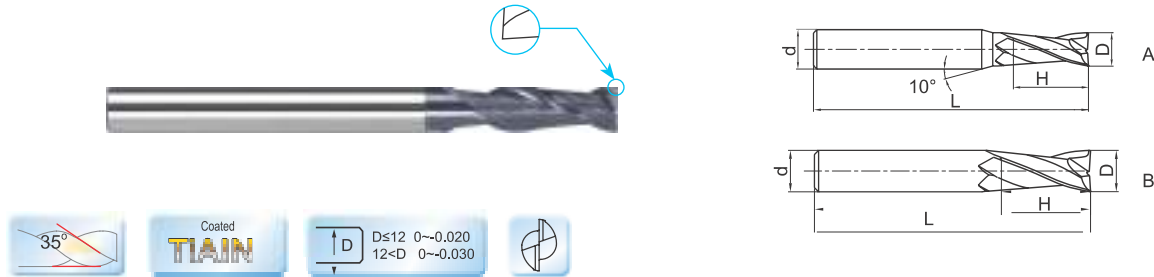


# Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

## GM-2FL

2-flute end mills with straight shank and long cutting edge and long neck  
2-Schneiden Eckfräser mit langer Schneide und Zylinderschaft



| Type<br>Typ  | Dimension(mm)<br>Abmessungen |    |    |     | Teeth<br>Zähne<br>Z | Geometry<br>Ausführung | Grade<br>Sorte<br>KMG 303 |
|--------------|------------------------------|----|----|-----|---------------------|------------------------|---------------------------|
|              | D                            | d  | H  | L   |                     |                        |                           |
| GM-2FL-D3.0  | 3.0                          | 6  | 12 | 75  | 2                   | A                      | ○                         |
| GM-2FL-D4.0  | 4.0                          | 6  | 15 | 75  | 2                   | A                      | ○                         |
| GM-2FL-D5.0  | 5.0                          | 6  | 20 | 75  | 2                   | A                      | ○                         |
| GM-2FL-D6.0  | 6.0                          | 6  | 20 | 75  | 2                   | B                      | ○                         |
| GM-2FL-D8.0  | 8.0                          | 8  | 25 | 100 | 2                   | B                      | ○                         |
| GM-2FL-D10.0 | 10.0                         | 10 | 30 | 100 | 2                   | B                      | ○                         |
| GM-2FL-D12.0 | 12.0                         | 12 | 35 | 100 | 2                   | B                      | ○                         |
| GM-2FL-D14.0 | 14.0                         | 14 | 40 | 100 | 2                   | B                      | ○                         |
| GM-2FL-D16.0 | 16.0                         | 16 | 50 | 150 | 2                   | B                      | ○                         |
| GM-2FL-D20.0 | 20.0                         | 20 | 55 | 150 | 2                   | B                      | ○                         |

## Material Overview · Material Übersicht

✓ = Very suitable · Sehr empfohlen  
✓ = Suitable · Empfohlen

KMG303

| Workpiece material<br>Werkstückstoff |                                   |                                                      |        |                                      |        |                                             |                                                       |                               |                              |                                |                                          |
|--------------------------------------|-----------------------------------|------------------------------------------------------|--------|--------------------------------------|--------|---------------------------------------------|-------------------------------------------------------|-------------------------------|------------------------------|--------------------------------|------------------------------------------|
| Carbon steel<br>Kohlenstoff<br>Stahl | Alloy steel<br>Legierter<br>Stahl | Quenched and<br>tempered steel ·<br>Vergüteter Stahl |        | Hardened steel ·<br>Gehärteter Stahl |        | Stainless<br>steel ·<br>Rostfreier<br>Stahl | Cast iron,<br>Nodular<br>cast iron<br>Grauguss<br>GGG | Copper<br>alloy<br>Kupfer Leg | Aluminum<br>alloy<br>Alu Leg | Titanium<br>alloy<br>Titan Leg | Heat resist<br>alloy<br>warmfeste<br>Leg |
|                                      |                                   | ~40HRC                                               | ~50HRC | ~55HRC                               | ~68HRC |                                             |                                                       |                               |                              |                                |                                          |
| ✓                                    | ✓                                 | ✓                                                    | ✓      |                                      |        | ✓                                           | ✓                                                     |                               |                              |                                |                                          |

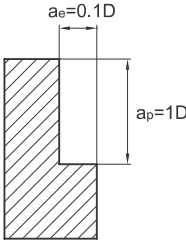
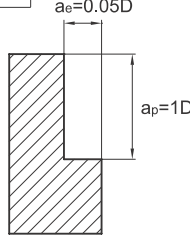
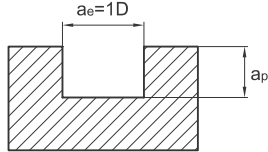
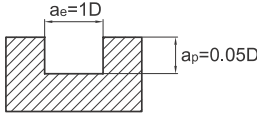
● Ex Stock / ab Lager ○ On demand / auf Anfrage

# Milling · Fräsen

Solid Carbide end mills · Vollhartmetallschaftfräser

## Recommended cutting data · Empfohlene Schnittdaten

### GM-2Fi GM-2FL

| Workpiece material<br>Werkstück-material | Cast iron,<br>Nodular cast iron<br>Grauguss<br>GGG                                    |                              | Carbon steel, Alloy<br>steel<br>Kohlenstoffstahl<br>Leg. Stahl<br>~750N/mm <sup>2</sup> |                              | Carbon steel, Alloy<br>steel<br>Kohlenstoffstahl<br>Leg. Stahl<br>~30HRC |                              | Pre-hardened steel,<br>Quenched and<br>tempered steel<br>Vergüteter Stahl<br>~40HRC                                                                                          |                              | Stainless steel<br>Rostfreier Stahl          |                              | Pre-hardened steel,<br>Quenched and<br>tempered steel<br>Vergüteter Stahl<br>~50HRC |                              |         |       |      |      |                                                                                       |  |  |
|------------------------------------------|---------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------|------------------------------|--------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------------|------------------------------|-------------------------------------------------------------------------------------|------------------------------|---------|-------|------|------|---------------------------------------------------------------------------------------|--|--|
| Diameter Ø<br>Durchmesser<br>(mm)        | Rotating<br>Drehzahl<br>(min <sup>-1</sup> )                                          | Feed<br>Vorschub<br>(mm/min) | Rotating<br>Drehzahl<br>(min <sup>-1</sup> )                                            | Feed<br>Vorschub<br>(mm/min) | Rotating<br>Drehzahl<br>(min <sup>-1</sup> )                             | Feed<br>Vorschub<br>(mm/min) | Rotating<br>Drehzahl<br>(min <sup>-1</sup> )                                                                                                                                 | Feed<br>Vorschub<br>(mm/min) | Rotating<br>Drehzahl<br>(min <sup>-1</sup> ) | Feed<br>Vorschub<br>(mm/min) | Rotating<br>Drehzahl<br>(min <sup>-1</sup> )                                        | Feed<br>Vorschub<br>(mm/min) |         |       |      |      |                                                                                       |  |  |
| 1                                        | 20000                                                                                 | 115                          | 20000                                                                                   | 115                          | 20000                                                                    | 95                           | 20000                                                                                                                                                                        | 95                           | 20000                                        | 35                           | 20000                                                                               | 70                           |         |       |      |      |                                                                                       |  |  |
| 2                                        | 15000                                                                                 | 185                          | 15000                                                                                   | 185                          | 15000                                                                    | 170                          | 15000                                                                                                                                                                        | 165                          | 11150                                        | 50                           | 13000                                                                               | 105                          |         |       |      |      |                                                                                       |  |  |
| 3                                        | 14000                                                                                 | 320                          | 14000                                                                                   | 320                          | 13000                                                                    | 295                          | 10600                                                                                                                                                                        | 245                          | 7500                                         | 70                           | 8500                                                                                | 190                          |         |       |      |      |                                                                                       |  |  |
| 4                                        | 10800                                                                                 | 325                          | 10800                                                                                   | 325                          | 10000                                                                    | 300                          | 8000                                                                                                                                                                         | 250                          | 5500                                         | 80                           | 6500                                                                                | 195                          |         |       |      |      |                                                                                       |  |  |
| 5                                        | 8200                                                                                  | 340                          | 8200                                                                                    | 340                          | 7600                                                                     | 315                          | 6400                                                                                                                                                                         | 260                          | 4500                                         | 80                           | 5000                                                                                | 205                          |         |       |      |      |                                                                                       |  |  |
| 6                                        | 7000                                                                                  | 350                          | 7000                                                                                    | 350                          | 6400                                                                     | 320                          | 5300                                                                                                                                                                         | 270                          | 3700                                         | 80                           | 4200                                                                                | 210                          |         |       |      |      |                                                                                       |  |  |
| 8                                        | 5200                                                                                  | 345                          | 5200                                                                                    | 345                          | 4800                                                                     | 320                          | 4000                                                                                                                                                                         | 265                          | 2800                                         | 80                           | 3200                                                                                | 210                          |         |       |      |      |                                                                                       |  |  |
| 10                                       | 4200                                                                                  | 340                          | 4200                                                                                    | 340                          | 3800                                                                     | 315                          | 3200                                                                                                                                                                         | 260                          | 2200                                         | 80                           | 2500                                                                                | 200                          |         |       |      |      |                                                                                       |  |  |
| 12                                       | 3500                                                                                  | 340                          | 3500                                                                                    | 340                          | 3200                                                                     | 315                          | 2650                                                                                                                                                                         | 260                          | 1850                                         | 80                           | 2100                                                                                | 200                          |         |       |      |      |                                                                                       |  |  |
| 14                                       | 3000                                                                                  | 320                          | 3000                                                                                    | 320                          | 2700                                                                     | 295                          | 2300                                                                                                                                                                         | 245                          | 1600                                         | 80                           | 1800                                                                                | 190                          |         |       |      |      |                                                                                       |  |  |
| 16                                       | 2600                                                                                  | 320                          | 2600                                                                                    | 320                          | 2400                                                                     | 295                          | 2000                                                                                                                                                                         | 245                          | 1400                                         | 70                           | 1600                                                                                | 190                          |         |       |      |      |                                                                                       |  |  |
| 18                                       | 2300                                                                                  | 310                          | 2300                                                                                    | 310                          | 2100                                                                     | 290                          | 1800                                                                                                                                                                         | 240                          | 1250                                         | 70                           | 1400                                                                                | 190                          |         |       |      |      |                                                                                       |  |  |
| 20                                       | 2050                                                                                  | 310                          | 2050                                                                                    | 310                          | 1900                                                                     | 290                          | 1600                                                                                                                                                                         | 240                          | 1100                                         | 70                           | 1250                                                                                | 190                          |         |       |      |      |                                                                                       |  |  |
| Max. cutting depth<br>max Schnitttiefe   |    |                              |                                                                                         |                              |                                                                          |                              |                                                                                                                                                                              |                              |                                              |                              |                                                                                     |                              |         |       |      |      |                                                                                       |  |  |
|                                          |  |                              |                                                                                         |                              |                                                                          |                              |                                                                                                                                                                              |                              |                                              |                              |                                                                                     |                              |         |       |      |      |                                                                                       |  |  |
|                                          |    |                              |                                                                                         |                              |                                                                          |                              | <table><tr><th>Milling slot</th><th>Nutenfräsen</th></tr><tr><th>Ø</th><th>Ap</th></tr><tr><td>Ø1≤D&lt;Ø3</td><td>0.15D</td></tr><tr><td>Ø3≤D</td><td>0.3D</td></tr></table> |                              | Milling slot                                 | Nutenfräsen                  | Ø                                                                                   | Ap                           | Ø1≤D<Ø3 | 0.15D | Ø3≤D | 0.3D |  |  |  |
| Milling slot                             | Nutenfräsen                                                                           |                              |                                                                                         |                              |                                                                          |                              |                                                                                                                                                                              |                              |                                              |                              |                                                                                     |                              |         |       |      |      |                                                                                       |  |  |
| Ø                                        | Ap                                                                                    |                              |                                                                                         |                              |                                                                          |                              |                                                                                                                                                                              |                              |                                              |                              |                                                                                     |                              |         |       |      |      |                                                                                       |  |  |
| Ø1≤D<Ø3                                  | 0.15D                                                                                 |                              |                                                                                         |                              |                                                                          |                              |                                                                                                                                                                              |                              |                                              |                              |                                                                                     |                              |         |       |      |      |                                                                                       |  |  |
| Ø3≤D                                     | 0.3D                                                                                  |                              |                                                                                         |                              |                                                                          |                              |                                                                                                                                                                              |                              |                                              |                              |                                                                                     |                              |         |       |      |      |                                                                                       |  |  |

- The above table shows the standard value of side milling. When slot milling, of rotating speed 50%~70% and feed rate like mentioned above 40%~60%.
- Please select high precise machine and tool holder.
- Please use air blow or cutting liquid with high mist retardant property.
- Down milling is recommended in side milling.
- Vibration and unusual noise may be generated if the machine rigidity and workpiece fixture stability is low, please reduce the rotating speed and feed rate like mentioned above.
- Make overhang as short as possible if no interference.

- Die obige Tabelle zeigt Standard Werte für das Eckfräsen. Bei Nutenfräsen, Schnittgeschwindigkeit auf 50-70% und den Vorschub auf 40-60% reduzieren.
- Bitte präzise Maschinen und Werkzeughalter verwenden.
- Bitte Luftkühlung oder Schneidflüssigkeit benutzen.
- Empfohlene Fräsmethode: Gleichlaufräsen.
- Bei Vibrationen oder unüblichen Geräuschen reduzieren Sie die Schnittdaten (wie oben empfohlen) entsprechend.
- Werkzeugauskragung so kurz wie möglich wählen.