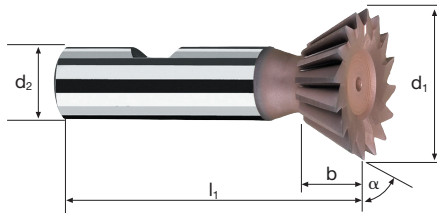


Winkelfräser

HSS

HSS-E λ 0°
Co8 γ 0°

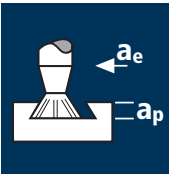


| | | | | | | | | | |
|-------------|----------------|-----------------|--|--|--|--|-------------------|----------------|------------------------------|
| Rm < 850 | Rm 850-1100 | Rm 1100-1300 | | | | | Inox Stainless | Ti Titanium | GG(G) Aluminium Copper |
|-------------|----------------|-----------------|--|--|--|--|-------------------|----------------|------------------------------|

| Beispiel: Bestell-Nr. | | | | | | | UNICUT-4X U0890 | |
|--------------------------|------------|----------|----|------|---------------------------|----|--------------------|--|
| | | | | | | | U | |
| | | | | | | | 0890 | |
| | | | | | | | 100 | |
| \emptyset Code | d1 js12 | d2 h6 | l1 | b | α ($\pm 20'$) | z | | |
| 100 | 12 | 10 | 54 | 3.0 | 45° | 8 | ● | |
| 120 | 16 | 12 | 60 | 4.0 | 45° | 10 | ● | |
| 140 | 20 | 12 | 63 | 5.0 | 45° | 12 | ● | |
| 160 | 25 | 12 | 67 | 6.3 | 45° | 14 | ● | |
| 180 | 32 | 16 | 71 | 8.0 | 45° | 16 | ● | |
| 300 | 8 | 6 | 49 | 3.0 | 60° | 7 | ● | |
| 320 | 12 | 10 | 54 | 4.0 | 60° | 8 | ● | |
| 340 | 16 | 12 | 60 | 6.3 | 60° | 10 | ● | |
| 360 | 20 | 12 | 63 | 8.0 | 60° | 12 | ● | |
| 380 | 25 | 12 | 67 | 10.0 | 60° | 14 | ● | |
| 400 | 32 | 16 | 71 | 12.5 | 60° | 16 | ● | |
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VI

Anwendung



Werkstoff

Stahl
< 850 N/mm²



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 55 | 0.005 | 2.5 | 1.5 | 2190 | 75 |
| 12 | 8 | 55 | 0.010 | 3.0 | 2.0 | 1460 | 115 |
| 16 | 10 | 55 | 0.015 | 4.0 | 2.2 | 1095 | 165 |
| 20 | 12 | 55 | 0.018 | 6.0 | 2.4 | 875 | 190 |
| 25 | 14 | 55 | 0.020 | 8.0 | 2.6 | 700 | 195 |
| 32 | 16 | 55 | 0.025 | 10.0 | 3.0 | 545 | 220 |

Stahl
850 - 1100 N/mm²



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 45 | 0.005 | 2.5 | 1.5 | 1790 | 65 |
| 12 | 8 | 45 | 0.010 | 3.0 | 2.0 | 1195 | 95 |
| 16 | 10 | 45 | 0.015 | 4.0 | 2.2 | 895 | 135 |
| 20 | 12 | 45 | 0.018 | 6.0 | 2.4 | 715 | 155 |
| 25 | 14 | 45 | 0.020 | 8.0 | 2.6 | 575 | 160 |
| 32 | 16 | 45 | 0.025 | 10.0 | 3.0 | 450 | 180 |

Stahl
1100 - 1300 N/mm²



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 34 | 0.005 | 2.5 | 1.5 | 1355 | 45 |
| 12 | 8 | 34 | 0.010 | 3.0 | 2.0 | 900 | 70 |
| 16 | 10 | 34 | 0.015 | 4.0 | 2.2 | 675 | 100 |
| 20 | 12 | 34 | 0.018 | 6.0 | 2.4 | 540 | 115 |
| 25 | 14 | 34 | 0.020 | 8.0 | 2.6 | 435 | 120 |
| 32 | 16 | 34 | 0.025 | 10.0 | 3.0 | 340 | 135 |

Nichtrostender Stahl
[Cr-Ni/1.4301]



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 21 | 0.005 | 2.5 | 1.5 | 835 | 30 |
| 12 | 8 | 21 | 0.010 | 3.0 | 2.0 | 555 | 45 |
| 16 | 10 | 21 | 0.015 | 4.0 | 2.2 | 420 | 65 |
| 20 | 12 | 21 | 0.018 | 6.0 | 2.4 | 335 | 70 |
| 25 | 14 | 21 | 0.020 | 8.0 | 2.6 | 265 | 75 |
| 32 | 16 | 21 | 0.025 | 10.0 | 3.0 | 210 | 85 |

Werkstoff

Gusseisen
GG(G)



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 42 | 0.005 | 2.5 | 1.5 | 1670 | 60 |
| 12 | 8 | 42 | 0.010 | 3.0 | 2.0 | 1115 | 90 |
| 16 | 10 | 42 | 0.015 | 4.0 | 2.2 | 835 | 125 |
| 20 | 12 | 42 | 0.018 | 6.0 | 2.4 | 670 | 145 |
| 25 | 14 | 42 | 0.020 | 8.0 | 2.6 | 535 | 150 |
| 32 | 16 | 42 | 0.025 | 10.0 | 3.0 | 420 | 170 |

Reinkupfer



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 65 | 0.005 | 2.5 | 1.5 | 2585 | 90 |
| 12 | 8 | 65 | 0.010 | 3.0 | 2.0 | 1725 | 140 |
| 16 | 10 | 65 | 0.015 | 4.0 | 2.2 | 1295 | 195 |
| 20 | 12 | 65 | 0.018 | 6.0 | 2.4 | 1035 | 225 |
| 25 | 14 | 65 | 0.020 | 8.0 | 2.6 | 830 | 230 |
| 32 | 16 | 65 | 0.025 | 10.0 | 3.0 | 645 | 260 |

Titanlegierungen
bis 300 HB
[Ti5Al2.5Sn]



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 23 | 0.005 | 2.5 | 1.5 | 915 | 30 |
| 12 | 8 | 23 | 0.010 | 3.0 | 2.0 | 610 | 50 |
| 16 | 10 | 23 | 0.015 | 4.0 | 2.2 | 460 | 70 |
| 20 | 12 | 23 | 0.018 | 6.0 | 2.4 | 365 | 80 |
| 25 | 14 | 23 | 0.020 | 8.0 | 2.6 | 295 | 85 |
| 32 | 16 | 23 | 0.025 | 10.0 | 3.0 | 230 | 90 |

Al-Knetlegierung
Si < 6%



| d1 [mm] | z | v _c [m/min] | f _z [mm] | a _p [mm] | a _e [mm] | n [min ⁻¹] | v _f [mm/min] |
|---------|----|------------------------|---------------------|---------------------|---------------------|------------------------|-------------------------|
| 8 | 7 | 80 | 0.005 | 2.5 | 1.5 | 3185 | 110 |
| 12 | 8 | 80 | 0.010 | 3.0 | 2.0 | 2120 | 170 |
| 16 | 10 | 80 | 0.015 | 4.0 | 2.2 | 1590 | 240 |
| 20 | 12 | 80 | 0.018 | 6.0 | 2.4 | 1275 | 275 |
| 25 | 14 | 80 | 0.020 | 8.0 | 2.6 | 1020 | 285 |
| 32 | 16 | 80 | 0.025 | 10.0 | 3.0 | 795 | 320 |