# Fresas integrales

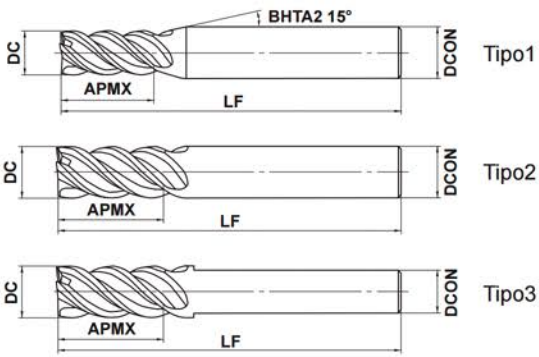
## MSMHD
(Alto rendimiento, Longitud media, 4 hélices)

| | DC≤12 | DC>12 | | |
|---|---|---|---|---|
| | 0<br>- 0.020 | 0<br>- 0.030 | | |
| | 4≤DCON≤6 | 8≤DCON≤10 | 12≤DCON≤16 | 20≤DCON≤25 |
| h6 | 0<br>- 0.008 | 0<br>- 0.009 | 0<br>- 0.011 | 0<br>- 0.013 |

## MSMHDD0520

| Diámetro (Unit) | |
|---|---|
| Existencia | ● |
| Unidad de longitud | M |
| Diámetro de corte | 5.2 |
| Diámetro de conexión con la máquina | 6 |
| Ángulo de la mitad cónica del cuerpo | 15° |
| Longitud | 50 |
| Profundidad de corte máxima | 13 |
| Ángulo de la hélice | 45° |
| Peripheral effective cutting edge count: ZEFP | 4 |
| Tolerancia máx. de diámetro de filo de corte | 0 |
| Tolerancia mín. de diámetro de filo de corte | -0.02 |
| Recubrimiento | MS |

Fresa frontal de alto rendimiento con 4 hélices.




### CONDICIONES DE CORTE RECOMENDADAS

**■Fresado lateral**

| Material | P | | | | M S | | H | | S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Acero Carbono, Fundición, Acero aleado (～30HRC)<br>Cf53, GG25 | | Acero aleado, Acero para herramientas, Acero Pre-endurecido<br>X40CrMoV51 | | Austenítico Acero inoxidable, Aleación de Titanio<br>X5CrNi1810, X5CrNiMo17122, Ti6Al4V | | Acero endurecido (45～55HRC)<br>X40CrMoV51 | | Aleaciones altamente resistentes<br>Inconel718 | |
| Diámetro DC (mm) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) |
| 2 | 15000 | 550 | 10000 | 340 | 10000 | 320 | 6400 | 160 | 4800 | 100 |
| 3 | 11000 | 800 | 7400 | 500 | 7400 | 480 | 4800 | 250 | 4000 | 170 |
| 4 | 8000 | 900 | 5600 | 540 | 5600 | 520 | 3600 | 270 | 3200 | 240 |
| 5 | 6400 | 1000 | 4500 | 600 | 4500 | 580 | 2900 | 300 | 2600 | 240 |
| 6 | 5800 | 1100 | 3700 | 640 | 3700 | 600 | 2400 | 320 | 2100 | 230 |
| 8 | 4400 | 1100 | 2800 | 660 | 2800 | 600 | 1800 | 330 | 1600 | 220 |
| 10 | 3500 | 1000 | 2200 | 640 | 2200 | 560 | 1400 | 320 | 1300 | 200 |
| 12 | 2900 | 1000 | 1900 | 640 | 1900 | 530 | 1200 | 320 | 1100 | 170 |
| 16 | 2200 | 800 | 1400 | 500 | 1400 | 450 | 900 | 250 | 800 | 130 |
| 20 | 1800 | 750 | 1100 | 460 | 1100 | 440 | 720 | 230 | 640 | 100 |
| 25 | 1400 | 600 | 900 | 400 | 900 | 380 | 570 | 200 | 510 | 80 |
| Profundidad de corte | ≤0.2DC<br>≤1.5DC | | | | ≤0.1DC<br>≤1.5DC | | ≤0.05DC<br>≤1.5DC | | | |

DC:Diámetro

**■Ranurado**

| Material | P | | | | M S | | H | | S | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Acero Carbono, Fundición, Acero aleado (～30HRC)<br>Cf53, GG25 | | Acero aleado, Acero para herramientas, Acero Pre-endurecido<br>X40CrMoV51 | | Austenítico Acero inoxidable, Aleación de Titanio<br>X5CrNi1810, X5CrNiMo17122, Ti6Al4V | | Acero endurecido (45～55HRC)<br>X40CrMoV51 | | Aleaciones altamente resistentes<br>Inconel718 | |
| Diámetro DC (mm) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) | Revoluciones (min⁻¹) | Avance (mm/min) |
| 2 | 12000 | 400 | 7000 | 200 | 7000 | 100 | 4200 | 80 | 2300 | 40 |
| 3 | 9000 | 600 | 5300 | 300 | 5300 | 150 | 3200 | 130 | 1900 | 70 |
| 4 | 7200 | 720 | 4000 | 360 | 4000 | 180 | 2400 | 140 | 1400 | 95 |
| 5 | 5800 | 720 | 3200 | 360 | 3200 | 180 | 1900 | 150 | 1100 | 95 |
| 6 | 5000 | 800 | 2700 | 400 | 2700 | 200 | 1600 | 160 | 950 | 95 |
| 8 | 3700 | 800 | 2000 | 400 | 2000 | 200 | 1200 | 170 | 720 | 90 |
| 10 | 3000 | 720 | 1600 | 360 | 1600 | 180 | 960 | 160 | 570 | 80 |
| 12 | 2500 | 720 | 1300 | 360 | 1300 | 180 | 800 | 160 | 480 | 70 |
| 16 | 2000 | 600 | 1000 | 280 | 1000 | 150 | 600 | 130 | 360 | 50 |
| 20 | 1600 | 540 | 800 | 250 | 800 | 130 | 480 | 120 | 290 | 40 |
| 25 | 1300 | 480 | 640 | 220 | 640 | 120 | 380 | 100 | 230 | 35 |
| Profundidad de corte | DC<br>≤1DC<br>(MAX. 12mm) | | | | DC<br>≤0.5DC | | DC<br>≤0.2DC | | | |

DC:Diámetro

Nota 1) Al cortar acero inoxidable austenítico, se recomienda encarecidamente el corte en fluido soluble en agua.
Nota 2) Si la profundidad de corte es poca, las revoluciones y el avance pueden ser incrementados.
Nota 3) Si la rigidez de la máquina o la fijación de los materiales de trabajo es insuficiente, o si se producen ruidos o vibraciones, reduzca proporcionalmente las revoluciones y la velocidad de avance.

| Diámetro (Unit) | | |
|---|---|---|
| FDC | flute design code | spiral (helical) chip flute |
| FHA | flute helix angle | 45 |
| FHH | flute helix hand | right hand flute |
| UST | unit system | M |
| CUB | connection unit basis | Metric |
| CSP | coolant supply property | 0 |
| FMT | form type | external |
| CZC | connection size code (deprecated) | 6000 |
| SIDE | side | machine side |
| UST | unit system | M |
| APMX | depth of cut maximum | 13 |
| HAND | hand | right hand |
| DC | cutting diameter | 5.2 |
| BHTA | body half taper angle 2 | 15 |
| NOF | flute count | 4 |
| TCDCON | general diameter TCDCON | h6 |
| OAL | overall length | 50 |
| ZEFF | face effective cutting edge count | 4 |
| DCON | connection diameter machine side | 6 |
| ZEFP | peripheral effective cutting edge count | 4 |
| NCE | cutting end count | 1 |
| CICT | cutting item count | 4 |
| LPR | protruding length | 32 |
| BMC | body material code | Solid Carbide |
| UST | unit system | M |
| LF | functional length | 50 |
| LH | head length | 14.2 |
| LS | shank length | 34.3 |
| LU | usable length | 13 |
| ZNC | cutting edge centre count | 2 |
| CPDF | cutting pitch differential | 0 |
| TSYC | tool style code | MSMHD |
| KAPR | tool cutting edge angle | 90 |
| CTP | coating property | 1 |

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