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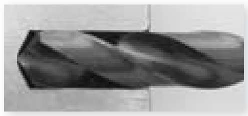
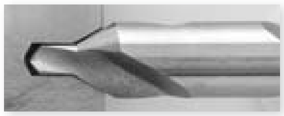


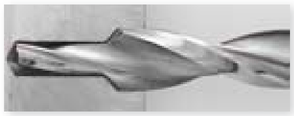
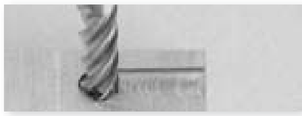

carmon

carmon

Da 40 anni, lasciamo
che siano i nostri clienti
a parlare di noi.
Preferiamo concentrarci
nel perfezionamento
dei nostri prodotti e servizi



For over 40 years, we have
left it to our customers
to talk about us,
while we have concentrated
on perfecting our product,
quality and service.

rpm
=(mt/min x 1000) / ( D x 3,14 )

mm/min
= mm/rev x rpm

= mt/min

= mm/rev (vedi tabella - see table page pag. 9)

| | | | | | PUNTE EXTRA CORTE TWIST DRILLS,STUB LENGHT | | | | | | | | PUNTE CORTE TWIST DRILLS,JOBBER LENGHT | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | CL100 | | CL101 | | CL101 QUARTZ | | CL101 TITANITE | | CL104 | | CL104R QUARTZ | | CL107 | | CL108 | | CL106 | | CL106 QUARTZ | | CL106 TITANITE | | CL105 | | CL105 QUARTZ | | CL105 TITANITE | |
| | | | | | DIN 1897 | | | | | | | | DIN 338 | | | | | | | | | | | | | | | | | | | |
| | | | | | HSS | | HSS+8%Co | | | | | | HSS | | | | | | | | HSS+5%Co | | | | | | HSS+8%Co | | | | | |
| | | | | Pagina Page | 10 | | 10 | | 10 | | 10 | | 14 | | 14 | | 14 | | 14 | | 20 | | 20 | | 20 | | 20 | | 20 | | 20 | |
| Pag. 228 | TIPO DI ACCIAIO TYPE OF STEEL | | N/mm² | HV | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev | mt/min | mm/rev |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel | 1 | 500 | 157 | 30 | b | 42 | d | 55 | c | 60 | c | 30 | b | 37 | c | | | | | 35 | c | 50 | c | 57 | c | 42 | d | 55 | c | 60 | c |
| | Acciai da costruzione Structural steel | 2 | 700 | 219 | 22 | c | 35 | c | 45 | b | 55 | b | 22 | c | 30 | b | | | | | 28 | b | 40 | b | 50 | b | 35 | c | 45 | b | 55 | b |
| | Acciai da tempra Hardening steel | 3 | 900 | 280 | 13 | c | | | 35 | b | 40 | b | 13 | c | 20 | b | | | | | 18 | b | 30 | b | 38 | b | | | 35 | b | 40 | b |
| | Acciaio automatico Automatic steel | 4 | 1200 | 373 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel | 3 | 850 | 265 | 17 | b | 26 | c | 32 | b | 36 | b | 17 | b | 22 | b | | | | | 20 | b | 28 | b | 34 | b | 26 | c | 32 | b | 36 | b |
| | Austenitico Austenitic | 3 | 850 | 265 | 8 | c | 18 | d | 18 | c | 22 | c | 8 | c | 12 | c | | | | | 10 | c | 15 | c | 20 | c | 18 | d | 18 | c | 22 | c |
| | Ferritico+austenitico Ferritic austenitic | 4 | 1000 | 311 | 10 | b | | | 22 | c | 26 | c | 10 | b | 15 | b | | | | | 13 | b | 18 | c | 24 | c | | | 22 | c | 26 | c |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb | 2 | 500 | 157 | 30 | d | 38 | d | 45 | c | 48 | d | 30 | d | 37 | d | | | | | 35 | d | 42 | c | 45 | d | 38 | d | 45 | c | 48 | d |
| | Ghisa oltre 180 hb Cast iron over 180hb | 3 | 700 | 219 | 20 | b | 28 | c | 32 | c | 35 | d | 20 | b | 25 | b | | | | | 23 | b | 30 | c | 32 | d | 28 | c | 32 | c | 35 | d |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium | 5 | 500 | 157 | 22 | b | 33 | d | 36 | d | 40 | d | 22 | b | 26 | b | | | | | 24 | b | 31 | c | 38 | d | 33 | d | 36 | d | 40 | d |
| | Leghe di titanio Titanium alloys | 5 | 900 | 280 | 10 | a | 24 | d | 27 | d | 30 | d | 10 | a | 14 | a | | | | | 12 | a | 21 | c | 28 | d | 24 | d | 27 | d | 30 | d |
| RAME COPPER | Rame Copper | 9 | 350 | 110 | 30 | c | 42 | d | | | | | 30 | c | 40 | c | | | 30 | c | 38 | c | | | | | 42 | d | | | | |
| | Ottone Brass | 9 | 700 | 219 | 33 | c | 45 | d | 55 | c | | | 33 | c | 43 | b | 33 | c | | | 41 | b | 50 | c | | | 45 | d | 55 | c | | |
| | Bronzo Bronze | 9 | 700 | 219 | 15 | c | 24 | d | 50 | c | | | 15 | c | 23 | b | 15 | c | | | 20 | b | 45 | c | | | 24 | d | 50 | c | | |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel | 6 | 700 | 219 | 10 | b | 18 | c | 22 | c | 26 | d | 10 | b | 16 | c | | | | | 14 | c | 20 | c | 24 | d | 18 | c | 22 | c | 26 | d |
| | Leghe di nichel Nichel alloys | 6 | 900 | 280 | 5 | a | 15 | c | 12 | c | 16 | d | 5 | a | 11 | b | | | | | 9 | b | 10 | c | 14 | d | 15 | c | 12 | c | 16 | d |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium | 7 | 350 | 110 | 35 | d | 40 | d | 70 | d | | | 35 | d | 39 | d | | | 35 | d | 37 | d | 60 | d | | | 40 | d | 70 | d | | |
| | Alluminio con leghe Alloyed aluminium | 7 | 400 | 125 | 30 | d | 35 | d | 60 | d | | | 30 | d | 34 | d | | | 30 | d | 32 | d | 55 | d | | | 35 | d | 60 | d | | |
| | Alluminio con leghe Alloyed aluminium | 7 | 500 | 157 | 25 | c | 30 | c | 45 | c | | | 25 | c | 29 | c | | | 25 | c | 27 | c | 40 | c | | | 30 | c | 45 | c | | |

| | | | PUNTE LUNGHE<br>TWIST DRILLS,LONG SERIES | | | | PUNTE EXTRA LUNGHE<br>TWIST DRILLS,EXTRA LONG SERIES | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | QUARTZ | TITANITE | | | QUARTZ | TITANITE | | | QUARTZ | TITANITE | | | QUARTZ | TITANITE | | | QUARTZ | TITANITE |
| CL109 | | | CL200 | CL230 | | | CL111 | CL110 | | | CL111/2 | CL110/2 | | | CL111/3 | CL110/3 | | |
| DIN 338 | | | DIN 340 | | | | DIN 1869 | | | | DIN 1869/2 | | | | DIN 1869/3 | | | |
| HSS+5%Co | | | HSS | HSS+5%Co | | | HSS | HSS+5%Co | | | HSS | HSS+5%Co | | | HSS | HSS+5%Co | | |
| 24 | 24 | 24 | 26 | 26 | 26 | 26 | 30 | 30 | 30 | 30 | 31 | 31 | 31 | 31 | 32 | 32 | 32 | 32 |
| mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev |
| 38 c | 50 c | 57 c | 30 b | 38 c | 50 c | 57 c | 30 b | 38 c | 50 c | 57 c | 30 b | 38 c | 50 c | 57 c | 30 b | 38 c | 50 c | 57 c |
| 30 c | 40 b | 50 b | 22 c | 30 c | 40 b | 50 b | 22 c | 30 c | 40 b | 50 b | 22 c | 30 c | 40 b | 50 b | 22 c | 30 c | 40 b | 50 b |
| | 30 b | 38 b | 13 c | | 30 b | 38 b | 13 c | | 30 b | 38 b | 13 c | | 30 b | 38 b | 13 c | | 30 b | 38 b |
| | | | | | | | | | | | | | | | | | | |
| 22 b | 28 b | 34 b | 17 b | 22 b | 28 b | 34 b | 17 b | 22 b | 28 b | 34 b | 17 b | 22 b | 28 b | 34 b | 17 b | 22 b | 28 b | 34 b |
| 12 c | 15 c | 20 c | 8 c | 12 c | 15 c | 20 c | 8 c | 12 c | 15 c | 20 c | 8 c | 12 c | 15 c | 20 c | 8 c | 12 c | 15 c | 20 c |
| 15 b | 18 c | 24 c | 10 b | 15 b | 18 c | 24 c | 10 b | 15 b | 18 c | 24 c | 10 b | 15 b | 18 c | 24 c | 10 b | 15 b | 18 c | 24 c |
| 36 d | 42 c | 45 d | 30 d | 36 d | 42 c | 45 d | 30 d | 36 d | 42 c | 45 d | 30 d | 36 d | 42 c | 45 d | 30 d | 36 d | 42 c | 45 d |
| 26 b | 30 c | 32 d | 20 b | 26 b | 30 c | 32 d | 20 b | 26 b | 30 c | 32 d | 20 b | 26 b | 30 c | 32 d | 20 b | 26 b | 30 c | 32 d |
| 28 c | 31 c | 38 d | 22 b | 28 c | 31 c | 38 d | 22 b | 28 c | 31 c | 38 d | 22 b | 28 c | 31 c | 38 d | 22 b | 28 c | 31 c | 38 d |
| 18 c | 21 c | 28 d | 10 a | 18 c | 21 c | 28 d | 10 a | 18 c | 21 c | 28 d | 10 a | 18 c | 21 c | 28 d | 10 a | 18 c | 21 c | 28 d |
| 40 c | | | 30 c | 40 c | | | 30 c | 40 c | | | 30 c | 40 c | | | 30 c | 40 c | | |
| 43 b | 50 c | | 33 c | 43 b | 50 c | | 33 c | 43 b | 50 c | | 33 c | 43 b | 50 c | | 33 c | 43 b | 50 c | |
| 22 b | 45 c | | 15 c | 22 b | 45 c | | 15 c | 22 b | 45 c | | 15 c | 22 b | 45 c | | 15 c | 22 b | 45 c | |
| 16 c | 20 c | 24 d | 10 b | 16 c | 20 c | 24 d | 10 b | 16 c | 20 c | 24 d | 10 b | 16 c | 20 c | 24 d | 10 b | 16 c | 20 c | 24 d |
| 12 b | 10 c | 14 d | 5 a | 12 b | 10 c | 14 d | 5 a | 12 b | 10 c | 14 d | 5 a | 12 b | 10 c | 14 d | 5 a | 12 b | 10 c | 14 d |
| 38 d | 60 d | | 35 d | 38 d | 60 d | | 35 d | 38 d | 60 d | | 35 d | 38 d | 60 d | | 35 d | 38 d | 60 d | |
| 33 d | 55 d | | 30 d | 33 d | 55 d | | 30 d | 33 d | 55 d | | 30 d | 33 d | 55 d | | 30 d | 33 d | 55 d | |
| 28 c | 40 c | | 25 c | 28 c | 40 c | | 25 c | 28 c | 40 c | | 25 c | 28 c | 40 c | | 25 c | 28 c | 40 c | |

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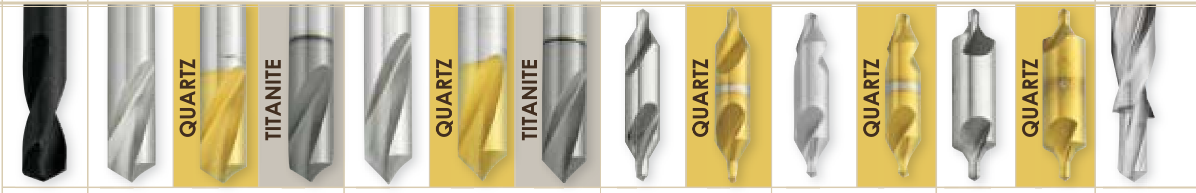
rpm
=(mt/min x 1000) / ( D x 3,14 )

mm/min
= mm/rev x rpm

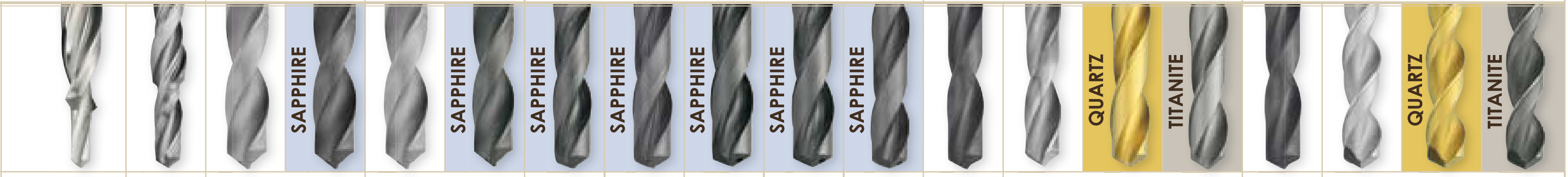
= mt/min

= mm/rev (vedi tabella - see table page pag. 9)




| | PUNTE DOPPIE DOUBLE TWIST DRILLS | PUNTE PER CENTRI NC NC-SPOTTING DRILLS | | | | | | PUNTE DA CENTRO CENTRE DRILLS | | | | | | PUNTE A ELICHE DRILLS WITH |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | CL150 | CL102 | CL102 QUARTZ | CL102 TITANITE | CL103 | CL103 QUARTZ | CL103 TITANITE | CL910 | CL910 QUARTZ | CL920 | CL920 QUARTZ | CL930 | CL930 QUARTZ | CL270 |
| | CARMON NORM. | CARMON NORM. | | | | | | DIN 333/A | | DIN 333/R | | DIN 333/B | | DIN 8376 |
| | HSS | HSS+8% Co | | | | | | HSS | | | | | | |
| | | | | | | | | 60° | | 60° | | 60° 120° | | 180° |
| Pagina Page | 33 | 34 | 34 | 34 | 34 | 34 | 35 | 35 | 35 | 35 | 36 | 36 | 37 | 37 |

| Pag. 228 | TIPO DI ACCIAIO TYPE OF STEEL | | N/mm² | HV | CL150 mt/min mm/rev | CL102 mt/min mm/rev | CL102 QUARTZ mt/min mm/rev | CL102 TITANITE mt/min mm/rev | CL103 mt/min mm/rev | CL103 QUARTZ mt/min mm/rev | CL103 TITANITE mt/min mm/rev | CL910 mt/min mm/rev | CL910 QUARTZ mt/min mm/rev | CL920 mt/min mm/rev | CL920 QUARTZ mt/min mm/rev | CL930 mt/min mm/rev | CL930 QUARTZ mt/min mm/rev | CL270 mt/min mm/rev |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel | 1 | 500 | 157 | | 35 c | 50 c | 57 c | 35 c | 50 c | 57 c | 30 b | 37 c | 30 b | 37 c | 30 b | 37 c | 30 b |
| | Acciai da costruzione Structural steel | 2 | 700 | 219 | | 28 b | 40 b | 50 b | 28 b | 40 b | 50 b | 22 c | 30 b | 22 c | 30 b | 22 c | 30 b | 22 c |
| | Acciai da tempra Hardening steel | 3 | 900 | 280 | | 18 b | 30 b | 38 b | 18 b | 30 b | 38 b | 13 c | 20 b | 13 c | 20 b | 13 c | 20 b | 13 c |
| | Acciaio automatico Automatic steel | 4 | 1200 | 373 | | | | | | | | | | | | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel | 3 | 850 | 265 | | 20 b | 28 b | 34 b | 20 b | 28 b | 34 b | 17 b | 22 b | 17 b | 22 b | 17 b | 22 b | 17 b |
| | Austenitico Austenitic | 3 | 850 | 265 | | 10 c | 15 c | 20 c | 10 c | 15 c | 20 c | 8 c | 12 c | 8 c | 12 c | 8 c | 12 c | 8 c |
| | Ferritico+austenitico Ferritic austenitic | 4 | 1000 | 311 | | 13 b | 18 c | 24 c | 13 b | 18 c | 24 c | 10 b | 15 b | 10 b | 15 b | 10 b | 15 b | 10 b |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb | 2 | 500 | 157 | | 35 d | 42 c | 45 d | 35 d | 42 c | 45 d | 30 d | 37 d | 30 d | 37 d | 30 d | 37 d | 30 d |
| | Ghisa oltre 180 hb Cast iron over 180hb | 3 | 700 | 219 | | 23 b | 30 c | 32 d | 23 b | 30 c | 32 d | 20 b | 25 b | 20 b | 25 b | 20 b | 25 b | 20 b |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium | 5 | 500 | 157 | | 24 b | 31 c | 38 d | 24 b | 31 c | 38 d | 22 b | 26 b | 22 b | 26 b | 22 b | 26 b | 22 b |
| | Leghe di titanio Titanium alloys | 5 | 900 | 280 | | 12 a | 21 c | 28 d | 12 a | 21 c | 28 d | 10 a | 14 a | 10 a | 14 a | 10 a | 14 a | 10 a |
| RAME COPPER | Rame Copper | 9 | 350 | 110 | | 38 c | | | 38 c | | | 30 c | 40 c | 30 c | 40 c | 30 c | 40 c | 30 c |
| | Ottone Brass | 9 | 700 | 219 | | 41 b | 50 c | | 41 b | 50 c | | 33 c | 43 b | 33 c | 43 b | 33 c | 43 b | 33 c |
| | Bronzo Bronze | 9 | 700 | 219 | | 20 b | 45 c | | 20 b | 45 c | | 15 c | 23 b | 15 c | 23 b | 15 c | 23 b | 15 c |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel | 6 | 700 | 219 | | 14 c | 20 c | 24 d | 14 c | 20 c | 24 d | 10 b | 16 c | 10 b | 16 c | 10 b | 16 c | 10 b |
| | Leghe di nichel Nichel alloys | 6 | 900 | 280 | | 9 b | 10 c | 14 d | 9 b | 10 c | 14 d | 5 a | 11 b | 5 a | 11 b | 5 a | 11 b | 5 a |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium | 7 | 350 | 110 | | 37 d | 60 d | | 37 d | 60 d | | 35 d | 39 d | 35 d | 39 d | 35 d | 39 d | 35 d |
| | Alluminio con leghe Alloyed aluminium | 7 | 400 | 125 | | 32 d | 55 d | | 32 d | 55 d | | 30 d | 34 d | 30 d | 34 d | 30 d | 34 d | 30 d |
| | Alluminio con leghe Alloyed aluminium | 7 | 500 | 157 | | 27 c | 40 c | | 27 c | 40 c | | 25 c | 29 c | 25 c | 29 c | 25 c | 29 c | 25 c |




| GRADINO CON INDIPENDENTI SUBLAND INDIPENDENT SPIRAL | | PUNTE EXTRA CORTE TWIST DRILLS, STUB LENGHT | | PUNTE CORTE TWIST DRILLS, JOBBER LENGHT | | PUNTE CON CODOLO RINFORZATO TWIST DRILLS WITH REINFORCED SHANK | | | | | PUNTE CODOLO CONICO TAPER SHANK TWIST DRILLS | | | | PUNTE LUNGHE CODOLO CONICO TAPER SHANK DRILLS, LONG SERIES | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | SAPPHIRE | | SAPPHIRE | SAPPHIRE | SAPPHIRE | SAPPHIRE | SAPPHIRE | SAPPHIRE | | | QUARTZ | TITANITE | | | QUARTZ | TITANITE |
| CL271 | CL272 | CL400 | | CL410 | | CL415 | CL420 | CL425 | CL430 | CL435 | CM300 | CM303 | | | CM301 | CM302 | | |
| DIN 8374 | DIN 8378 | DIN 6539 | | DIN 338 | | DIN 6537K | DIN 6537L | DIN 6537K | DIN 6537L | CARMON NORM. | | DIN 345 | | | | DIN 341 | | |
| HSS | | HM | | HM | | HM | | | | | HSS | HSS+5% Co | | | HSS | HSS+5% Co | | |
| 90° | | | | | | | | | | | | | | | | | | |
| 37 | 38 | 39 | 39 | 41 | 41 | 42 | 45 | 42 | 45 | 48 | 50 | 50 | 50 | 50 | 56 | 56 | 56 | 56 |
| mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev | mt/min mm/rev |
| 30 b | 30 b | 85 a | 120 f | 85 a | 120 f | 120 c | 120 c | 150 c | 150 c | 150 c | 30 c | 35 c | 50 c | 57 c | 30 c | 38 c | 50 c | 57 c |
| 22 c | 22 c | 70 a | 115 f | 70 a | 115 f | 100 b | 100 b | 120 b | 120 b | 120 b | 22 b | 28 b | 40 b | 50 b | 22 b | 30 c | 40 b | 50 b |
| 13 c | 13 c | 45 a | 90 f | 45 a | 90 f | 80 b | 80 b | 100 b | 100 b | 100 b | 13 b | 18 b | 30 b | 38 b | 13 b | | 30 b | 38 b |
| | | 40 a | 50 f | 40 a | 50 f | 60 a | 60 a | 70 a | 70 a | 70 a | | | | | | | | |
| 17 b | 17 b | 50 g | 55 f | 50 g | 55 f | 70 c | 70 c | 80 c | 80 c | 80 c | 17 b | 20 b | 28 b | 34 b | 17 b | 22 b | 28 b | 34 b |
| 8 c | 8 c | 45 g | 50 f | 45 g | 50 f | 60 c | 60 c | 70 c | 70 c | 70 c | 8 c | 10 c | 15 c | 20 c | 8 c | 12 c | 15 c | 20 c |
| 10 b | 10 b | | | | | 40 e | 40 e | 50 e | 50 e | 50 e | 10 b | 13 b | 18 c | 24 c | 10 b | 15 b | 18 c | 24 c |
| 30 d | 30 d | 75 b | 90 f | 75 b | 90 f | 75 c | 80 c | 75 c | 80 c | 80 c | 30 d | 35 d | 42 c | 45 d | 30 d | 36 d | 42 c | 45 d |
| 20 b | 20 b | 55 b | 70 f | 55 b | 70 f | 65 b | 65 b | 65 b | 65 b | 65 b | 20 b | 23 b | 30 c | 32 d | 20 b | 26 b | 30 c | 32 d |
| 22 b | 22 b | 45 a | 55 a | 45 a | 55 a | 55 c | 55 c | 65 c | 65 c | 65 c | 22 b | 24 b | 31 c | 38 d | 22 b | 28 c | 31 c | 38 d |
| 10 a | 10 a | 30 a | 40 a | 30 a | 40 a | 45 b | 45 b | 55 b | 55 b | 55 b | 10 a | 12 a | 21 c | 28 d | 10 a | 18 c | 21 c | 28 d |
| 30 c | 30 c | 300 f | | 300 f | | | | | | | 18 c | 30 c | 40 c | | 18 c | 38 c | 40 c | |
| 33 c | 33 c | 300 f | | 300 f | | | | | | | 20 c | 33 c | 43 b | 50 c | 20 c | 41 b | 43 b | 50 c |
| 15 c | 15 c | 300 f | | 300 f | | | | | | | 12 c | 15 c | 22 b | 45 c | 12 c | 20 b | 22 b | 45 c |
| 10 b | 10 b | 45 a | 55 f | 45 a | 55 f | 40 b | 40 b | 50 b | 50 b | 50 b | 10 b | 14 c | 20 c | 24 d | 10 b | 16 c | 20 c | 24 d |
| 5 a | 5 a | 30 a | 45 f | 30 a | 45 f | 30 a | 30 a | 40 a | 40 a | 40 a | 5 a | 9 b | 10 c | 14 d | 5 a | 12 b | 10 c | 14 d |
| 35 d | 35 d | | | | | | | | | | 35 d | 37 d | 60 d | | 35 d | 38 d | 60 d | |
| 30 d | 30 d | | | | | | | | | | 30 d | 32 d | 55 d | | 30 d | 33 d | 55 d | |
| 25 c | 25 c | | | | | | | | | | 25 c | 27 c | 40 c | | 25 c | 28 c | 40 c | |

rpm
=(mt/min x 1000) / ( D x 3,14 )

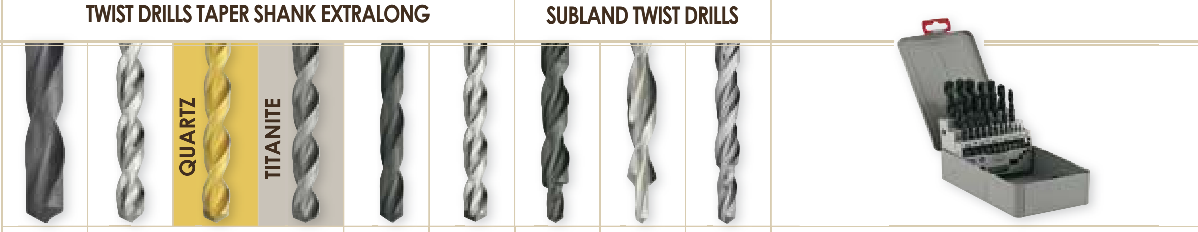
mm/min
= mm/rev x rpm

= mt/min

= mm/rev (*vedi tabella - see table page pag. 9*)

**PUNTE EXTRA LUNGHE CODOLO CONICO**
**TWIST DRILLS TAPER SHANK EXTRALONG**

**PUNTE A DUE DIAMETRI**
**SUBLAND TWIST DRILLS**




| | CM304 | CM306 | CM306 QUARTZ | CM306 TITANITE | CM305 | CM307 | CM370 | CM371 | CM372 | CL104 |
|---|---|---|---|---|---|---|---|---|---|---|
| DIN | | DIN 1870/1 | | | DIN 1870/2 | | DIN 8377 | DIN 8375 | DIN 8379 | DIN 338 |
| Material | HSS | HSS+5%Co | | | HSS | HSS+5%Co | HSS | | | HSS |
| Angle | | | | | | | 180° | 90° | 90° | |
| Pagina Page | 58 | 58 | 58 | 58 | 60 | 60 | 62 | 62 | 62 | 64 |

| Pag. 228 | TIPO DI ACCIAIO / TYPE OF STEEL | | N/mm² | HV | CM304 mt/min | CM304 mm/rev | CM306 mt/min | CM306 mm/rev | QUARTZ mt/min | QUARTZ mm/rev | TITANITE mt/min | TITANITE mm/rev | CM305 mt/min | CM305 mm/rev | CM307 mt/min | CM307 mm/rev | CM370 mt/min | CM370 mm/rev | CM371 mt/min | CM371 mm/rev | CM372 mt/min | CM372 mm/rev |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACCIAI COMUNI / COMMON STEEL | Acciai teneri / Soft steel | 1 | 500 | 157 | 30 | c | 38 | c | 50 | c | 57 | c | 30 | c | 38 | c | 30 | c | 30 | c | 30 | c |
| | Acciai da costruzione / Structural steel | 2 | 700 | 219 | 22 | b | 30 | c | 40 | b | 50 | b | 22 | b | 30 | c | 22 | b | 22 | b | 22 | b |
| | Acciai da tempra / Hardening steel | 3 | 900 | 280 | 13 | b | | | 30 | b | 38 | b | 13 | b | | | 13 | b | 13 | b | 13 | b |
| | Acciaio automatico / Automatic steel | 4 | 1200 | 373 | | | | | | | | | | | | | | | | | | |
| ACCIAI INOX / STAINLESS STEEL | Acciaio automatico / Automatic steel | 3 | 850 | 265 | 17 | b | 22 | b | 28 | b | 34 | b | 17 | b | 22 | b | 17 | b | 17 | b | 17 | b |
| | Austenitico / Austenitic | 3 | 850 | 265 | 8 | c | 12 | c | 15 | c | 20 | c | 8 | c | 12 | c | 8 | c | 8 | c | 8 | c |
| | Ferritico+austenitico / Ferritic austenitic | 4 | 1000 | 311 | 10 | b | 15 | b | 18 | c | 24 | c | 10 | b | 15 | b | 10 | b | 10 | b | 10 | b |
| GHISA / CAST IRON | Ghisa fino a 180 hb / Cast iron up to 180hb | 2 | 500 | 157 | 30 | d | 36 | d | 42 | c | 45 | d | 30 | d | 36 | d | 30 | d | 30 | d | 30 | d |
| | Ghisa oltre 180 hb / Cast iron over 180hb | 3 | 700 | 219 | 20 | b | 26 | b | 30 | c | 32 | d | 20 | b | 26 | b | 20 | b | 20 | b | 20 | b |
| TITANIO / TITANIUM | Titanio non legato / Unalloyed titanium | 5 | 500 | 157 | 22 | b | 28 | c | 31 | c | 38 | d | 22 | b | 28 | c | 22 | b | 22 | b | 22 | b |
| | Leghe di titanio / Titanium alloys | 5 | 900 | 280 | 10 | a | 18 | c | 21 | c | 28 | d | 10 | a | 18 | c | 10 | a | 10 | a | 10 | a |
| RAME / COPPER | Rame / Copper | 9 | 350 | 110 | 18 | c | 38 | c | 40 | c | | | 18 | c | 38 | c | 18 | c | 18 | c | 18 | c |
| | Ottone / Brass | 9 | 700 | 219 | 20 | c | 41 | b | 43 | b | 50 | c | 20 | c | 41 | b | 20 | c | 20 | c | 20 | c |
| | Bronzo / Bronze | 9 | 700 | 219 | 12 | c | 20 | b | 22 | b | 45 | c | 12 | c | 20 | b | 12 | c | 12 | c | 12 | c |
| NICHEL / NICKEL | Nichel non legato / Unalloyed nichel | 6 | 700 | 219 | 10 | b | 16 | c | 20 | c | 24 | d | 10 | b | 16 | c | 10 | b | 10 | b | 10 | b |
| | Leghe di nichel / Nichel alloys | 6 | 900 | 280 | 5 | a | 12 | b | 10 | c | 14 | d | 5 | a | 12 | b | 5 | a | 5 | a | 5 | a |
| ALLUMINIO / ALUMINIUM | Alluminio non legato / Unalloyed aluminium | 7 | 350 | 110 | 35 | d | 38 | d | 60 | d | | | 35 | d | 38 | d | 35 | d | 35 | d | 35 | d |
| | Alluminio con leghe / Alloyed aluminium | 7 | 400 | 125 | 30 | d | 33 | d | 55 | d | | | 30 | d | 33 | d | 30 | d | 30 | d | 30 | d |
| | Alluminio con leghe / Alloyed aluminium | 7 | 500 | 157 | 25 | c | 28 | c | 40 | c | | | 25 | c | 28 | c | 25 | c | 25 | c | 25 | c |

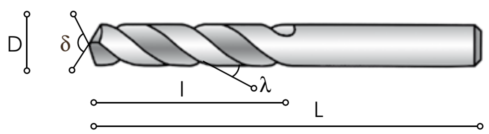
| KIT PUNTE CODOLO CILINDRICO<br>STRAIGHT SHANK<br>TWIST DRILLS IN SET | | |
|---|---|---|
|  |  |  |
| CL106 | CL105 | CL101 |
| DIN 338 | | DIN 1897 |
| HSS+5%Co | HSS+8%Co | |
| 64 | 65 | 65 |

| FORATURA<br>*DRILLING* | TABELLA PARAMETRI DI AVANZAMENTO mm/giro - *RECOMMENDED FEED DATA mm/rev.* | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DIAMETRO DELLA PUNTA<br>*DRILL DIAMETER* | | | | | | | | | | | | | | | | |
| LETTERA DI RIFERIMENTO<br>*REFERENCE LETTER* | D. 1 | D. 2 | D. 3 | D. 4 | D. 5 | D. 6 | D. 8 | D. 10 | D. 12 | D. 14 | D. 16 | D. 20 | D. 25 | D. 30 | D. 35 | D. 40 | D. 50 |
| a | 0,015 | 0,030 | 0,038 | 0,047 | 0,053 | 0,060 | 0,075 | 0,090 | 0,100 | 0,120 | 0,127 | 0,160 | 0,200 | 0,230 | 0,250 | 0,300 | 0,350 |
| b | 0,020 | 0,050 | 0,070 | 0,085 | 0,100 | 0,120 | 0,150 | 0,180 | 0,200 | 0,230 | 0,250 | 0,270 | 0,290 | 0,330 | 0,350 | 0,380 | 0,400 |
| c | 0,023 | 0,080 | 0,100 | 0,130 | 0,150 | 0,180 | 0,250 | 0,270 | 0,280 | 0,300 | 0,330 | 0,370 | 0,420 | 0,450 | 0,470 | 0,500 | 0,550 |
| d | 0,030 | 0,100 | 0,160 | 0,180 | 0,220 | 0,240 | 0,300 | 0,370 | 0,400 | 0,450 | 0,480 | 0,500 | 0,530 | 0,550 | 0,580 | 0,600 | 0,630 |
| e | 0,035 | 0,120 | 0,200 | 0,250 | 0,270 | 0,300 | 0,350 | 0,450 | 0,470 | 0,500 | 0,530 | 0,550 | 0,600 | 0,640 | 0,680 | 0,700 | 0,730 |
| f | 0,050 | 0,150 | 0,220 | 0,250 | 0,320 | 0,400 | 0,490 | 0,620 | 0,650 | 0,720 | 0,850 | 0,900 | 1,100 | 1,130 | 1,170 | 1,200 | 1,250 |
| g | 0,070 | 0,160 | 0,250 | 0,270 | 0,360 | 0,470 | 0,620 | 0,830 | 0,900 | 0,950 | 1,100 | 1,200 | 1,280 | 1,330 | 1,400 | 1,470 | 1,520 |
| h | 0,090 | 0,200 | 0,270 | 0,300 | 0,400 | 0,520 | 0,750 | 1,000 | 1,100 | 1,200 | 1,300 | 1,350 | 1,430 | 1,500 | 1,650 | 1,700 | 1,800 |

carmon

## PUNTE EXTRA CORTE TWIST DRILLS, STUB LENGTH EXTRA KURZE SPIRALBOHRER FORETS EXTRA COURTE BROCAS EXTRA CORTA

| | | | | | |
|---|---|---|---|---|---|
| **CL 100** | DIN 1897 | N | λ 25°-30° | δ 118° | STANDARD |
| **CL 101** | DIN 1897 | W | λ 35°-40° | δ 130° | DIN 1412 C |




**CL100** **CL101**

Dal ∅ 1 al ∅ 6 = **10 pz** Dal ∅ 6,1 al ∅ 13 = **5 pz** Dal ∅ 13,25 al ∅ 31 = **1 pz**

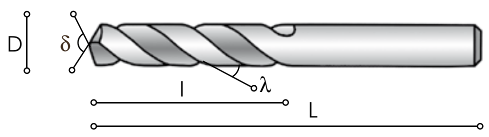
| D h8 | L | l | CODE | HSS 5100..... € | HSS+8%Co 5101..... € | HSS+8%Co 6101..... € QUARTZ | HSS+8%Co 7101..... € TITANITE |
|---|---|---|---|---|---|---|---|
| 1 | 26 | 6 | ....00100 | 1,30 | 2,26 | 3,77 | 4,75 |
| 1,1 | 28 | 7 | ....00110 | 1,42 | 2,26 | 3,77 | 4,75 |
| 1,2 | 30 | 8 | ....00120 | 1,42 | 2,26 | 3,77 | 4,75 |
| 1,25 | 30 | 8 | ....00125 | 1,30 | 2,26 | 3,77 | 4,75 |
| 1,3 | 30 | 8 | ....00130 | 1,42 | 2,26 | 3,77 | 4,75 |
| 1,4 | 32 | 9 | ....00140 | 1,42 | 2,26 | 3,77 | 4,75 |
| 1,5 | 32 | 9 | ....00150 | 1,05 | 1,81 | 3,27 | 4,26 |
| 1,6 | 34 | 9 | ....00160 | 1,24 | 2,01 | 3,49 | 4,47 |
| 1,7 | 34 | 10 | ....00170 | 1,24 | 2,01 | 3,49 | 4,47 |
| 1,75 | 36 | 11 | ....00175 | 1,11 | 2,01 | 3,49 | 4,47 |
| 1,8 | 36 | 11 | ....00180 | 1,24 | 2,01 | 3,49 | 4,47 |
| 1,9 | 36 | 11 | ....00190 | 1,24 | 2,01 | 3,49 | 4,47 |
| 2 | 38 | 12 | ....00200 | 1,10 | 1,35 | 2,77 | 3,75 |
| 2,1 | 38 | 12 | ....00210 | 1,11 | 1,67 | 3,35 | 4,50 |
| 2,2 | 40 | 13 | ....00220 | 1,11 | 1,67 | 3,35 | 4,50 |
| 2,25 | 40 | 13 | ....00225 | 1,11 | 1,84 | 3,55 | 4,69 |
| 2,3 | 40 | 13 | ....00230 | 1,24 | 1,84 | 3,55 | 4,69 |
| 2,4 | 43 | 14 | ....00240 | 1,30 | 1,97 | 3,69 | 4,84 |
| 2,5 | 43 | 14 | ....00250 | 1,17 | 1,87 | 3,58 | 4,72 |
| 2,6 | 43 | 14 | ....00260 | 1,30 | 1,97 | 3,69 | 4,84 |
| 2,7 | 46 | 16 | ....00270 | 1,30 | 1,97 | 3,69 | 4,84 |
| 2,75 | 46 | 16 | ....00275 | 1,24 | 1,97 | 3,69 | 4,84 |
| 2,8 | 46 | 16 | ....00280 | 1,30 | 1,97 | 3,69 | 4,84 |
| 2,9 | 46 | 16 | ....00290 | 1,30 | 1,97 | 3,69 | 4,84 |
| 3 | 46 | 16 | ....00300 | 1,17 | 1,78 | 3,48 | 4,63 |
| 3,1 | 49 | 18 | ....00310 | 1,24 | 1,84 | 3,55 | 4,69 |
| 3,2 | 49 | 18 | ....00320 | 1,24 | 1,78 | 3,48 | 4,63 |
| 3,25 | 49 | 18 | ....00325 | 1,17 | 1,84 | 3,55 | 4,69 |
| 3,3 | 49 | 18 | ....00330 | 1,24 | 1,84 | 3,55 | 4,69 |
| 3,4 | 52 | 20 | ....00340 | 1,42 | 2,15 | 3,89 | 5,03 |
| 3,5 | 52 | 20 | ....00350 | 1,24 | 1,97 | 3,69 | 4,84 |
| 3,6 | 52 | 20 | ....00360 | 1,42 | 2,15 | 3,89 | 5,03 |
| 3,7 | 52 | 20 | ....00370 | 1,42 | 2,15 | 3,89 | 5,03 |
| 3,75 | 52 | 20 | ....00375 | 1,60 | 2,15 | 3,89 | 5,03 |
| 3,8 | 55 | 22 | ....00380 | 1,50 | 2,15 | 3,89 | 5,03 |
| 3,9 | 55 | 22 | ....00390 | 1,50 | 2,15 | 3,89 | 5,03 |
| 4 | 55 | 22 | ....00400 | 1,37 | 2,15 | 3,89 | 5,03 |
| 4,1 | 55 | 22 | ....00410 | 1,50 | 2,15 | 4,43 | 6,02 |
| 4,2 | 55 | 22 | ....00420 | 1,50 | 2,15 | 4,43 | 6,02 |
| 4,25 | 55 | 22 | ....00425 | 1,50 | 2,46 | 4,77 | 6,36 |

| D h8 | L | l | CODE | HSS 5100..... € | HSS+8%Co 5101..... € | HSS+8%Co 6101..... € QUARTZ | HSS+8%Co 7101..... € TITANITE |
|---|---|---|---|---|---|---|---|
| 4,3 | 58 | 24 | ....00430 | 2,52 | 3,63 | 6,05 | 7,64 |
| 4,4 | 58 | 24 | ....00440 | 2,52 | 3,63 | 6,05 | 7,64 |
| 4,5 | 58 | 24 | ....00450 | 1,50 | 2,46 | 4,77 | 6,36 |
| 4,6 | 58 | 24 | ....00460 | 2,52 | 3,63 | 6,05 | 7,64 |
| 4,7 | 58 | 24 | ....00470 | 2,52 | 3,63 | 6,05 | 7,64 |
| 4,75 | 58 | 24 | ....00475 | 1,82 | 2,95 | 5,30 | 6,89 |
| 4,8 | 62 | 26 | ....00480 | 2,34 | 3,94 | 6,39 | 7,98 |
| 4,9 | 62 | 26 | ....00490 | 2,58 | 3,94 | 6,39 | 7,98 |
| 5 | 62 | 26 | ....00500 | 1,82 | 2,95 | 5,30 | 6,89 |
| 5,1 | 62 | 26 | ....00510 | 2,58 | 3,94 | 6,39 | 7,98 |
| 5,2 | 62 | 26 | ....00520 | 2,58 | 3,94 | 6,39 | 7,98 |
| 5,25 | 62 | 26 | ....00525 | 2,21 | 3,57 | 5,98 | 7,57 |
| 5,3 | 62 | 26 | ....00530 | 2,58 | 3,94 | 6,39 | 7,98 |
| 5,4 | 66 | 28 | ....00540 | 3,51 | 5,35 | 7,95 | 9,54 |
| 5,5 | 66 | 28 | ....00550 | 2,21 | 3,57 | 5,98 | 7,57 |
| 5,6 | 66 | 28 | ....00560 | 3,51 | 5,35 | 7,95 | 9,54 |
| 5,7 | 66 | 28 | ....00570 | 3,51 | 5,35 | 7,95 | 9,54 |
| 5,75 | 66 | 28 | ....00575 | 2,41 | 3,63 | 6,05 | 7,64 |
| 5,8 | 66 | 28 | ....00580 | 3,51 | 5,35 | 7,95 | 9,54 |
| 5,9 | 66 | 28 | ....00590 | 3,51 | 5,35 | 7,95 | 9,54 |
| 6 | 66 | 28 | ....00600 | 2,41 | 3,63 | 6,05 | 7,64 |
| 6,1 | 70 | 31 | ....00610 | 3,63 | 5,53 | 8,54 | 10,41 |
| 6,2 | 70 | 31 | ....00620 | 3,63 | 5,53 | 8,54 | 10,41 |
| 6,25 | 70 | 31 | ....00625 | 2,46 | 4,13 | 7,00 | 8,87 |
| 6,3 | 70 | 31 | ....00630 | 3,63 | 5,53 | 8,54 | 10,41 |
| 6,4 | 70 | 31 | ....00640 | 3,82 | 5,72 | 8,75 | 10,62 |
| 6,5 | 70 | 31 | ....00650 | 2,46 | 4,13 | 7,00 | 8,87 |
| 6,6 | 70 | 31 | ....00660 | 3,82 | 5,72 | 8,75 | 10,62 |
| 6,7 | 70 | 31 | ....00670 | 3,82 | 5,72 | 8,75 | 10,62 |
| 6,75 | 74 | 34 | ....00675 | 2,95 | 5,10 | 8,07 | 9,94 |
| 6,8 | 74 | 34 | ....00680 | 4,37 | 6,58 | 9,69 | 11,56 |
| 6,9 | 74 | 34 | ....00690 | 4,37 | 6,58 | 9,69 | 11,56 |
| 7 | 74 | 34 | ....00700 | 2,95 | 5,10 | 8,07 | 9,94 |
| 7,1 | 74 | 34 | ....00710 | 5,41 | 8,05 | 11,31 | 13,18 |
| 7,2 | 74 | 34 | ....00720 | 5,41 | 8,05 | 11,31 | 13,18 |
| 7,25 | 74 | 34 | ....00725 | 3,26 | 5,47 | 8,47 | 10,34 |
| 7,3 | 74 | 34 | ....00730 | 5,41 | 8,05 | 11,31 | 13,18 |
| 7,4 | 74 | 34 | ....00740 | 5,41 | 8,05 | 11,31 | 13,18 |
| 7,5 | 74 | 34 | ....00750 | 3,44 | 5,47 | 8,47 | 10,34 |
| 7,6 | 79 | 37 | ....00760 | 6,52 | 9,84 | 13,93 | 16,32 |
| 7,7 | 79 | 37 | ....00770 | 6,52 | 9,84 | 13,93 | 16,32 |
| 7,75 | 79 | 37 | ....00775 | 3,77 | 6,03 | 9,74 | 12,13 |
| 7,8 | 79 | 37 | ....00780 | 6,52 | 9,84 | 13,93 | 16,32 |
| 7,9 | 79 | 37 | ....00790 | 6,52 | 9,84 | 13,93 | 16,32 |
| 8 | 79 | 37 | ....00800 | 3,77 | 6,03 | 9,74 | 12,13 |
| 8,1 | 79 | 37 | ....00810 | 6,70 | 10,15 | 14,86 | 17,73 |
| 8,2 | 79 | 37 | ....00820 | 6,70 | 10,15 | 14,86 | 17,73 |
| 8,25 | 79 | 37 | ....00825 | 4,93 | 8,30 | 12,83 | 15,70 |
| 8,3 | 79 | 37 | ....00830 | 6,70 | 10,15 | 14,86 | 17,73 |
| 8,4 | 79 | 37 | ....00840 | 6,70 | 10,15 | 14,86 | 17,73 |
| 8,5 | 79 | 37 | ....00850 | 4,93 | 8,30 | 12,83 | 15,70 |
| 8,6 | 84 | 40 | ....00860 | 6,95 | 10,52 | 15,26 | 18,14 |
| 8,7 | 84 | 40 | ....00870 | 6,95 | 10,52 | 15,26 | 18,14 |
| 8,75 | 84 | 40 | ....00875 | 4,93 | 8,30 | 12,83 | 15,70 |
| 8,8 | 84 | 40 | ....00880 | 6,95 | 10,52 | 15,26 | 18,14 |
| 8,9 | 84 | 40 | ....00890 | 6,95 | 10,52 | 15,26 | 18,14 |
| 9 | 84 | 40 | ....00900 | 4,93 | 8,30 | 12,83 | 15,70 |
| 9,1 | 84 | 40 | ....00910 | 9,28 | 13,76 | 18,83 | 21,71 |
| 9,2 | 84 | 40 | ....00920 | 9,28 | 13,76 | 18,83 | 21,71 |
| 9,25 | 84 | 40 | ....00925 | 7,38 | 12,29 | 17,21 | 20,09 |
| 9,3 | 84 | 40 | ....00930 | 9,28 | 13,76 | 18,83 | 21,71 |
| 9,4 | 84 | 40 | ....00940 | 9,28 | 13,76 | 18,83 | 21,71 |
| 9,5 | 84 | 40 | ....00950 | 7,38 | 12,29 | 17,21 | 20,09 |

carmon

PUNTE EXTRA CORTE TWIST DRILLS, STUB LENGTH EXTRA KURZE SPIRALBOHRER FORETS EXTRA COURTE BROCAS EXTRA CORTA

| | | | | | | |
|---|---|---|---|---|---|---|
| **CL 100** | DIN 1897 | N | λ 25°-30° | δ 118° | STANDARD | |
| **CL 101** | DIN 1897 | W | λ 35°-40° | δ 130° | DIN 1412 C | |



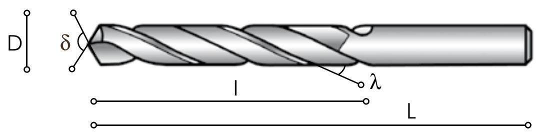


Dal ∅ 1 al ∅ 6 = **10 pz** Dal ∅ 6,1 al ∅ 13 = **5 pz** Dal ∅ 13,25 al ∅ 31 = **1 pz**

| D h8 | L | l | CODE | HSS 5100..... € | HSS+8%Co 5101..... € | HSS+8%Co 6101..... € QUARTZ | HSS+8%Co 7101..... € TITANITE |
|---|---|---|---|---|---|---|---|
| 9,6 | 89 | 43 | ....00960 | 11,74 | 16,41 | 21,74 | 24,61 |
| 9,7 | 89 | 43 | ....00970 | 11,74 | 16,41 | 21,74 | 24,61 |
| 9,75 | 89 | 43 | ....00975 | 7,38 | 14,32 | 19,45 | 22,32 |
| 9,8 | 89 | 43 | ....00980 | 11,74 | 16,41 | 21,74 | 24,61 |
| 9,9 | 89 | 43 | ....00990 | 11,74 | 16,41 | 21,74 | 24,61 |
| 10 | 89 | 43 | ....01000 | 5,90 | 10,02 | 14,71 | 17,59 |
| 10,25 | 89 | 43 | ....01025 | 9,72 | 15,98 | 21,27 | 24,14 |
| 10,5 | 89 | 43 | ....01050 | 9,72 | 15,98 | 21,27 | 24,14 |
| 10,75 | 95 | 47 | ....01075 | 9,72 | 15,98 | 21,27 | 24,14 |
| 11 | 95 | 47 | ....01100 | 9,72 | 15,98 | 21,27 | 24,14 |
| 11,25 | 95 | 47 | ....01125 | 10,02 | 16,66 | 22,01 | 24,89 |
| 11,5 | 95 | 47 | ....01150 | 10,02 | 16,66 | 22,01 | 24,89 |
| 11,75 | 95 | 47 | ....01175 | 13,22 | 20,28 | 26,01 | 28,88 |
| 12 | 102 | 51 | ....01200 | 13,22 | 20,28 | 27,06 | 30,73 |
| 12,25 | 102 | 51 | ....01225 | 13,47 | 20,71 | 28,02 | 32,06 |
| 12,5 | 102 | 51 | ....01250 | 13,47 | 20,71 | 28,02 | 32,06 |
| 12,75 | 102 | 51 | ....01275 | 13,47 | 20,71 | 28,02 | 32,06 |
| 13 | 102 | 51 | ....01300 | 13,47 | 20,71 | 28,02 | 32,06 |
| 13,25 | 107 | 54 | ....01325 | | 24,53 | 32,22 | 36,26 |
| 13,5 | 107 | 54 | ....01350 | | 23,41 | 30,99 | 35,03 |
| 13,75 | 107 | 54 | ....01375 | | 23,41 | 30,99 | 35,03 |
| 14 | 107 | 54 | ....01400 | | 23,41 | 30,99 | 35,03 |
| 14,25 | 111 | 56 | ....01425 | | 26,85 | 34,77 | 38,81 |
| 14,5 | 111 | 56 | ....01450 | | 25,63 | 33,42 | 37,47 |
| 14,75 | 111 | 56 | ....01475 | | 25,63 | 33,42 | 37,47 |
| 15 | 111 | 56 | ....01500 | | 25,63 | 33,42 | 37,47 |
| 15,25 | 115 | 58 | ....01525 | | 32,38 | 40,85 | 44,90 |
| 15,5 | 115 | 58 | ....01550 | | 30,91 | 39,23 | 43,28 |
| 15,75 | 115 | 58 | ....01575 | | 32,38 | 40,85 | 44,90 |
| 16 | 115 | 58 | ....01600 | | 30,91 | 39,23 | 43,28 |
| 16,25 | 119 | 60 | ....01625 | | 35,70 | 45,28 | 49,91 |
| 16,5 | 119 | 60 | ....01650 | | 35,70 | 45,28 | 49,91 |
| 16,75 | 119 | 60 | ....01675 | | 35,70 | 45,28 | 49,91 |
| 17 | 119 | 60 | ....01700 | | 35,15 | 44,68 | 49,31 |
| 17,25 | 123 | 62 | ....01725 | | 39,94 | 49,94 | 54,57 |
| 17,5 | 123 | 62 | ....01750 | | 39,94 | 49,94 | 54,57 |
| 17,75 | 123 | 62 | ....01775 | | 39,94 | 49,94 | 54,57 |

| D h8 | L | l | CODE | HSS 5100….. € | HSS+8%Co 5101….. € | HSS+8%Co 6101….. € QUARTZ | HSS+8%Co 7101….. € TITANITE |
|---|---|---|---|---|---|---|---|
| 18 | 123 | 62 | ….01800 | | 38,34 | 48,18 | 52,81 |
| 18,25 | 127 | 64 | ….01825 | | 43,70 | 55,52 | 61,27 |
| 18,5 | 127 | 64 | ….01850 | | 43,70 | 55,52 | 61,27 |
| 18,75 | 127 | 64 | ….01875 | | 43,70 | 55,52 | 61,27 |
| 19 | 127 | 64 | ….01900 | | 42,52 | 54,23 | 59,98 |
| 19,25 | 131 | 66 | ….01925 | | 48,48 | 60,78 | 66,53 |
| 19,5 | 131 | 66 | ….01950 | | 48,48 | 60,78 | 66,53 |
| 19,75 | 131 | 66 | ….01975 | | 48,48 | 60,78 | 66,53 |
| 20 | 131 | 66 | ….02000 | | 44,67 | 56,60 | 62,35 |
| 20,5 | 136 | 68 | ….02050 | | 58,07 | 71,33 | 77,08 |
| 21 | 136 | 68 | ….02100 | | 55,17 | 68,15 | 73,90 |
| 21,5 | 141 | 70 | ….02150 | | 58,07 | 75,02 | 83,62 |
| 22 | 141 | 70 | ….02200 | | 59,10 | 76,16 | 84,76 |
| 22,5 | 146 | 72 | ….02250 | | 71,39 | 97,51 | 112,05 |
| 23 | 146 | 72 | ….02300 | | 71,00 | 97,08 | 111,62 |
| 23,5 | 146 | 72 | ….02350 | | 80,34 | 107,35 | 121,89 |
| 24 | 151 | 75 | ….02400 | | 65,08 | 90,57 | 105,11 |
| 24,5 | 151 | 75 | ….02450 | | 85,48 | 113,01 | 127,55 |
| 25 | 151 | 75 | ….02500 | | 76,98 | 103,66 | 118,20 |
| 26 | 156 | 78 | ….02600 | | 90,57 | 123,80 | 142,43 |
| 27 | 162 | 81 | ….02700 | | 106,80 | 141,64 | 160,27 |
| 28 | 162 | 81 | ….02800 | | 106,80 | 141,64 | 160,27 |
| 29 | 168 | 84 | ….02900 | | 116,50 | 152,32 | 170,95 |
| 30 | 168 | 84 | ….03000 | | 116,50 | 152,32 | 170,95 |
| 31 | 174 | 87 | ….03100 | | 155,33 | 197,72 | 218,45 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **CL 104** | DIN 338 | N | λ 25°-30° | δ 118° | STANDARD | | |
| **CL 104R** | DIN 338 | N | λ 25°-30° | δ 130° | DIN 1412 C | | |
| **CL 107** OTTONE-BRONZO BRASS-BRONZE | DIN 338 | H | λ 12°-15° | δ 118° | STANDARD | | |
| **CL 108** ALLUMINIO ALLUMINIUM | DIN 338 | W | λ 35°-40° | δ 130° | STANDARD | | |




**CL104** NEW **CL104R** **CL107** **CL108**

**Dal** ∅ 0,3 **al** ∅ 6 = **10 pz** **Dal** ∅ 6,1 **al** ∅ 13 = **5 pz** **Dal** ∅ 13,25 **al** ∅ 20 = **1 pz**

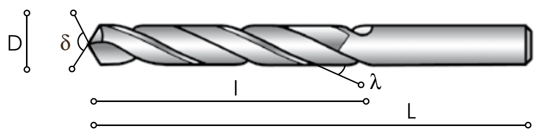
| D h8 | L | l | CODE | HSS 5104..... € | HSS 6104..... € QUARTZ | HSS 5107..... € | HSS 5108..... € |
|---|---|---|---|---|---|---|---|
| 0,3 | 19 | 3 | ....00030 | 3,63 | | | |
| 0,35 | 19 | 4 | ....00035 | 3,02 | | | |
| 0,4 | 20 | 5 | ....00040 | 2,52 | | | |
| 0,45 | 20 | 5 | ....00045 | 2,52 | | | |
| 0,5 | 22 | 6 | ....00050 | 2,52 | | | |
| 0,55 | 24 | 7 | ....00055 | 2,52 | | | |
| 0,6 | 24 | 7 | ....00060 | 2,52 | | | |
| 0,65 | 26 | 8 | ....00065 | 2,09 | | | |
| 0,7 | 28 | 9 | ....00070 | 2,03 | | | |
| 0,75 | 28 | 9 | ....00075 | 2,03 | | | |
| 0,8 | 30 | 10 | ....00080 | 1,92 | | | |
| 0,85 | 30 | 10 | ....00085 | 1,92 | | | |
| 0,9 | 32 | 11 | ....00090 | 1,92 | | | |
| 0,95 | 32 | 11 | ....00095 | 1,92 | | | |
| 1 | 34 | 12 | ....00100 | 1,24 | 1,43 | | |
| 1,05 | 34 | 12 | ....00105 | 1,24 | | | |
| 1,1 | 36 | 14 | ....00110 | 1,24 | 1,43 | | |
| 1,15 | 36 | 14 | ....00115 | 1,30 | | | |
| 1,2 | 38 | 16 | ....00120 | 1,36 | 1,48 | | |
| 1,25 | 38 | 16 | ....00125 | 0,99 | 1,48 | | |
| 1,3 | 38 | 16 | ....00130 | 1,11 | 1,48 | | |
| 1,35 | 40 | 18 | ....00135 | 1,18 | | | |
| 1,4 | 40 | 18 | ....00140 | 1,11 | 1,48 | | |
| 1,45 | 40 | 18 | ....00145 | 1,18 | | | |
| 1,5 | 40 | 18 | ....00150 | 0,99 | 1,43 | 2,71 | 2,71 |
| 1,55 | 43 | 20 | ....00155 | 1,18 | | | |
| 1,6 | 43 | 20 | ....00160 | 1,05 | 1,54 | 2,71 | 2,71 |
| 1,65 | 43 | 20 | ....00165 | 1,18 | | | |
| 1,7 | 43 | 20 | ....00170 | 1,05 | 1,54 | 2,71 | 2,71 |
| 1,75 | 46 | 22 | ....00175 | 0,87 | 1,54 | | |

| D h8 | L | l | CODE | HSS 5104..... € | HSS 6104..... € QUARTZ | HSS 5107..... € | HSS 5108..... € |
|---|---|---|---|---|---|---|---|
| 1,8 | 46 | 22 | ....00180 | 0,99 | 1,45 | 2,71 | 2,71 |
| 1,85 | 46 | 22 | ....00185 | 1,05 | | | |
| 1,9 | 46 | 22 | ....00190 | 0,99 | 1,45 | 2,71 | 2,71 |
| 1,95 | 49 | 24 | ....00195 | 1,05 | | | |
| 2 | 49 | 24 | ....00200 | 0,87 | 1,33 | 2,58 | 2,58 |
| 2,05 | 49 | 24 | ....00205 | 1,11 | | | |
| 2,1 | 49 | 24 | ....00210 | 0,99 | 1,48 | 2,58 | 2,58 |
| 2,15 | 53 | 27 | ....00215 | 1,18 | | | |
| 2,2 | 53 | 27 | ....00220 | 0,99 | 1,48 | 2,58 | 2,58 |
| 2,25 | 53 | 27 | ....00225 | 1,11 | 1,48 | | |
| 2,3 | 53 | 27 | ....00230 | 0,99 | 1,48 | 2,58 | 2,58 |
| 2,35 | 53 | 27 | ....00235 | 1,11 | | | |
| 2,4 | 57 | 30 | ....00240 | 1,11 | 1,48 | 2,83 | 2,83 |
| 2,45 | 57 | 30 | ....00245 | 1,30 | | | |
| 2,5 | 57 | 30 | ....00250 | 1,11 | 1,48 | 2,65 | 2,65 |
| 2,55 | 57 | 30 | ....00255 | 1,30 | | | |
| 2,6 | 57 | 30 | ....00260 | 1,18 | 1,68 | 2,83 | 2,83 |
| 2,65 | 57 | 30 | ....00265 | 1,30 | | | |
| 2,7 | 61 | 33 | ....00270 | 1,11 | 1,68 | 2,95 | 2,95 |
| 2,75 | 61 | 33 | ....00275 | 1,11 | 1,58 | | |
| 2,8 | 61 | 33 | ....00280 | 1,11 | 1,68 | 2,95 | 2,95 |
| 2,85 | 61 | 33 | ....00285 | 1,36 | | | |
| 2,9 | 61 | 33 | ....00290 | 1,11 | 1,68 | 2,95 | 2,95 |
| 2,95 | 61 | 33 | ....00295 | 1,30 | | | |
| 3 | 61 | 33 | ....00300 | 1,11 | 1,50 | 2,95 | 2,95 |
| 3,05 | 65 | 36 | ....00305 | 1,42 | | | |
| 3,1 | 65 | 36 | ....00310 | 1,30 | 2,04 | 3,08 | 3,08 |
| 3,15 | 65 | 36 | ....00315 | 1,42 | | | |
| 3,2 | 65 | 36 | ....00320 | 1,15 | 2,04 | 3,08 | 3,08 |
| 3,25 | 65 | 36 | ....00325 | 1,24 | 2,04 | | |
| 3,3 | 65 | 36 | ....00330 | 1,30 | 2,04 | 3,08 | 3,08 |
| 3,35 | 65 | 36 | ....00335 | 1,42 | | | |
| 3,4 | 70 | 39 | ....00340 | 1,30 | 2,04 | 3,26 | 3,26 |
| 3,45 | 70 | 39 | ....00345 | 1,55 | | | |
| 3,5 | 70 | 39 | ....00350 | 1,30 | 1,80 | 3,26 | 3,26 |
| 3,55 | 70 | 39 | ....00355 | 1,55 | | | |
| 3,6 | 70 | 39 | ....00360 | 1,36 | 2,21 | 3,32 | 3,32 |
| 3,65 | 70 | 39 | ....00365 | 1,55 | | | |
| 3,7 | 70 | 39 | ....00370 | 1,36 | 2,21 | 3,32 | 3,32 |
| 3,75 | 70 | 39 | ....00375 | 1,48 | 2,25 | | |
| 3,8 | 75 | 43 | ....00380 | 1,36 | 2,33 | 3,51 | 3,51 |
| 3,85 | 75 | 43 | ....00385 | 1,72 | | | |
| 3,9 | 75 | 43 | ....00390 | 1,55 | 2,33 | 3,51 | 3,51 |
| 3,95 | 75 | 43 | ....00395 | 1,72 | | | |
| 4 | 75 | 43 | ....00400 | 1,48 | 2,04 | 3,51 | 3,51 |
| 4,05 | 75 | 43 | ....00405 | 1,72 | | | |
| 4,1 | 75 | 43 | ....00410 | 1,61 | 2,45 | 3,57 | 3,57 |
| 4,15 | 75 | 43 | ....00415 | 1,72 | | | |
| 4,2 | 75 | 43 | ....00420 | 1,67 | 2,45 | 3,57 | 3,57 |
| 4,25 | 75 | 43 | ....00425 | 1,67 | 2,42 | | |
| 4,3 | 80 | 47 | ....00430 | 1,67 | 2,61 | 4,31 | 4,31 |
| 4,35 | 80 | 47 | ....00435 | 2,03 | | | |
| 4,4 | 80 | 47 | ....00440 | 1,67 | 2,67 | 4,31 | 4,31 |
| 4,45 | 80 | 47 | ....00445 | 2,03 | | | |
| 4,5 | 80 | 47 | ....00450 | 1,61 | 2,30 | 4,31 | 4,31 |
| 4,55 | 80 | 47 | ....00455 | 2,03 | | | |
| 4,6 | 80 | 47 | ....00460 | 1,72 | 2,72 | 4,31 | 4,43 |
| 4,65 | 80 | 47 | ....00465 | 2,03 | | | |
| 4,7 | 80 | 47 | ....00470 | 1,72 | 2,72 | 4,31 | 4,43 |
| 4,75 | 80 | 47 | ....00475 | 1,78 | 2,72 | | |
| 4,8 | 86 | 52 | ....00480 | 1,78 | 2,72 | 4,31 | 4,43 |
| 4,85 | 86 | 52 | ....00485 | 2,65 | | | |
| 4,9 | 86 | 52 | ....00490 | 1,78 | 2,72 | 4,31 | 4,43 |

carmon

PUNTE CORTE TWIST DRILLS, JOBBER LENGTH KURZE SPIRALBOHRER FORETS COURTE BROCAS CORTA

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CL 104** | DIN 338 | N | λ | 25°-30° | δ | 118° | | STANDARD | |
| **CL 104R** | DIN 338 | N | λ | 25°-30° | δ | 130° | | DIN 1412 C | |
| **CL 107** OTTONE-BRONZO BRASS-BRONZE | DIN 338 | H | λ | 12°-15° | δ | 118° | | STANDARD | |
| **CL 108** ALLUMINIO ALLUMINIUM | DIN 338 | W | λ | 35°-40° | δ | 130° | | STANDARD | |





**Dal** ∅ 0,3 **al** ∅ 6 = **10 pz** **Dal** ∅ 6,1 **al** ∅ 13 = **5 pz** **Dal** ∅ 13,25 **al** ∅ 20 = **1 pz**

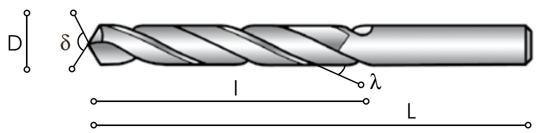
| D h8 | L | l | CODE | HSS 5104..... € | HSS 6104..... € QUARTZ | HSS 5107..... € | HSS 5108..... € |
|---|---|---|---|---|---|---|---|
| 4,95 | 86 | 52 | ....00495 | 2,65 | | | |
| 5 | 86 | 52 | ....00500 | 1,72 | 2,55 | 4,31 | 4,43 |
| 5,05 | 86 | 52 | ....00505 | 2,65 | | | |
| 5,1 | 86 | 52 | ....00510 | 1,97 | 3,55 | 4,68 | 4,68 |
| 5,15 | 86 | 52 | ....00515 | 3,20 | | | |
| 5,2 | 86 | 52 | ....00520 | 1,97 | 3,55 | 4,68 | 4,68 |
| 5,25 | 86 | 52 | ....00525 | 2,34 | 3,47 | | |
| 5,3 | 86 | 52 | ....00530 | 2,05 | 3,55 | 4,68 | 4,68 |
| 5,35 | 93 | 57 | ....00535 | 3,20 | | | |
| 5,4 | 93 | 57 | ....00540 | 2,34 | 3,55 | 5,84 | 5,84 |
| 5,45 | 93 | 57 | ....00545 | 3,20 | | | |
| 5,5 | 93 | 57 | ....00550 | 2,34 | 3,29 | 5,59 | 5,59 |
| 5,55 | 93 | 57 | ....00555 | 3,32 | | | |
| 5,6 | 93 | 57 | ....00560 | 2,34 | 3,69 | 6,03 | 6,03 |
| 5,65 | 93 | 57 | ....00565 | 3,32 | | | |
| 5,7 | 93 | 57 | ....00570 | 2,34 | 3,69 | 6,03 | 6,03 |
| 5,75 | 93 | 57 | ....00575 | 2,34 | 3,69 | | |
| 5,8 | 93 | 57 | ....00580 | 2,34 | 3,69 | 6,03 | 6,03 |
| 5,85 | 93 | 57 | ....00585 | 3,32 | | | |
| 5,9 | 93 | 57 | ....00590 | 2,34 | 3,69 | 6,03 | 6,03 |
| 5,95 | 93 | 57 | ....00595 | 2,34 | | | |
| 6 | 93 | 57 | ....00600 | 2,34 | 3,30 | 5,72 | 5,72 |
| 6,05 | 101 | 63 | ....00605 | 3,45 | | | |
| 6,1 | 101 | 63 | ....00610 | 2,71 | 4,35 | 6,46 | 6,46 |
| 6,15 | 101 | 63 | ....00615 | 3,45 | | | |
| 6,2 | 101 | 63 | ....00620 | 2,71 | 4,35 | 6,46 | 6,46 |
| 6,25 | 101 | 63 | ....00625 | 2,89 | 4,35 | | |
| 6,3 | 101 | 63 | ....00630 | 2,71 | 4,35 | 6,46 | 6,46 |
| 6,35 | 101 | 63 | ....00635 | 2,71 | | | |
| 6,4 | 101 | 63 | ....00640 | 2,89 | 4,35 | 6,89 | 6,89 |

| D h8 | L | l | CODE | HSS 5104..... € | HSS 6104..... € QUARTZ | HSS 5107..... € | HSS 5108..... € |
|---|---|---|---|---|---|---|---|
| 6,45 | 101 | 63 | ....00645 | 4,43 | | | |
| 6,5 | 101 | 63 | ....00650 | 2,83 | 4,03 | 6,77 | 6,77 |
| 6,55 | 101 | 63 | ....00655 | 4,43 | | | |
| 6,6 | 101 | 63 | ....00660 | 2,89 | 4,99 | 7,07 | 7,07 |
| 6,65 | 101 | 63 | ....00665 | 4,43 | | | |
| 6,7 | 101 | 63 | ....00670 | 2,89 | 4,99 | 7,07 | 7,07 |
| 6,75 | 109 | 69 | ....00675 | 3,45 | 4,99 | | |
| 6,8 | 109 | 69 | ....00680 | 3,26 | 4,99 | 7,07 | 7,07 |
| 6,85 | 109 | 69 | ....00685 | 5,29 | | | |
| 6,9 | 109 | 69 | ....00690 | 3,63 | 4,99 | 7,07 | 7,07 |
| 6,95 | 109 | 69 | ....00695 | 5,29 | | | |
| 7 | 109 | 69 | ....00700 | 3,39 | 4,80 | 6,95 | 6,95 |
| 7,05 | 109 | 69 | ....00705 | 5,66 | | | |
| 7,1 | 109 | 69 | ....00710 | 3,76 | 5,69 | 10,02 | 10,02 |
| 7,15 | 109 | 69 | ....00715 | 5,66 | | | |
| 7,2 | 109 | 69 | ....00720 | 3,88 | 5,69 | 10,02 | 10,02 |
| 7,25 | 109 | 69 | ....00725 | 3,57 | 5,47 | | |
| 7,3 | 109 | 69 | ....00730 | 3,88 | 5,73 | 10,02 | 10,02 |
| 7,35 | 109 | 69 | ....00735 | 5,66 | | | |
| 7,4 | 109 | 69 | ....00740 | 3,88 | 5,73 | 10,02 | 10,02 |
| 7,45 | 109 | 69 | ....00745 | 4,68 | | | |
| 7,5 | 109 | 69 | ....00750 | 3,51 | 5,04 | 8,17 | 8,17 |
| 7,55 | 117 | 75 | ....00755 | 6,70 | | | |
| 7,6 | 117 | 75 | ....00760 | 4,19 | 6,39 | 11,18 | 11,18 |
| 7,65 | 117 | 75 | ....00765 | 6,70 | | | |
| 7,7 | 117 | 75 | ....00770 | 4,19 | 6,39 | 11,18 | 11,18 |
| 7,75 | 117 | 75 | ....00775 | 4,19 | 6,39 | | |
| 7,8 | 117 | 75 | ....00780 | 4,19 | 6,39 | 11,18 | 11,18 |
| 7,85 | 117 | 75 | ....00785 | 6,70 | | | |
| 7,9 | 117 | 75 | ....00790 | 4,19 | 6,39 | 11,18 | 11,18 |
| 7,95 | 117 | 75 | ....00795 | 6,70 | | | |
| 8 | 117 | 75 | ....00800 | 3,76 | 5,65 | 8,61 | 8,61 |
| 8,1 | 117 | 75 | ....00810 | 4,50 | 6,82 | 11,74 | 11,74 |
| 8,2 | 117 | 75 | ....00820 | 4,50 | 6,82 | 11,74 | 11,74 |
| 8,25 | 117 | 75 | ....00825 | 4,37 | 6,65 | | |
| 8,3 | 117 | 75 | ....00830 | 4,50 | 6,82 | 11,74 | 11,74 |
| 8,4 | 117 | 75 | ....00840 | 4,50 | 6,82 | 11,74 | 11,74 |
| 8,5 | 117 | 75 | ....00850 | 4,31 | 6,13 | 9,1 | 9,1 |
| 8,6 | 125 | 81 | ....00860 | 5,41 | 8,29 | 13,76 | 13,76 |
| 8,7 | 125 | 81 | ....00870 | 5,41 | 8,29 | 13,76 | 13,76 |
| 8,75 | 125 | 81 | ....00875 | 5,41 | 8,33 | | |
| 8,8 | 125 | 81 | ....00880 | 5,41 | 8,29 | 13,76 | 13,76 |
| 8,9 | 125 | 81 | ....00890 | 5,41 | 8,29 | 13,76 | 13,76 |
| 9 | 125 | 81 | ....00900 | 5,29 | 7,61 | 9,84 | 9,84 |
| 9,1 | 125 | 81 | ....00910 | 5,47 | 9,18 | 15,61 | 15,61 |
| 9,2 | 125 | 81 | ....00920 | 5,47 | 9,18 | 15,61 | 15,61 |
| 9,25 | 125 | 81 | ....00925 | 5,84 | 8,90 | | |
| 9,3 | 125 | 81 | ....00930 | 5,84 | 9,18 | 15,61 | 15,61 |
| 9,4 | 125 | 81 | ....00940 | 5,84 | 9,18 | 15,61 | 15,61 |
| 9,5 | 125 | 81 | ....00950 | 5,78 | 8,34 | 10,89 | 10,89 |
| 9,6 | 133 | 87 | ....00960 | 6,15 | 9,99 | 17,45 | 17,45 |
| 9,7 | 133 | 87 | ....00970 | 6,15 | 9,99 | 17,45 | 17,45 |
| 9,75 | 133 | 87 | ....00975 | 6,40 | 9,96 | | |
| 9,8 | 133 | 87 | ....00980 | 6,40 | 9,99 | 17,45 | 17,45 |
| 9,9 | 133 | 87 | ....00990 | 6,40 | 9,99 | 17,45 | 17,45 |
| 10 | 133 | 87 | ....01000 | 6,27 | 8,95 | 12,36 | 12,36 |
| 10,1 | 133 | 87 | ....01010 | 6,70 | 12,27 | | |
| 10,2 | 133 | 87 | ....01020 | 6,70 | 12,27 | | |
| 10,25 | 133 | 87 | ....01025 | 8,05 | 13,27 | | |
| 10,3 | 133 | 87 | ....01030 | 9,16 | 13,27 | | |
| 10,4 | 133 | 87 | ....01040 | 9,16 | 13,27 | | |
| 10,5 | 133 | 87 | ....01050 | 7,99 | 11,24 | 16,66 | 16,66 |
| 10,6 | 133 | 87 | ....01060 | 9,16 | 14,16 | | |

carmon

# PUNTE CORTE TWIST DRILLS, JOBBER LENGTH KURZE SPIRALBOHRER FORETS COURTE BROCAS CORTA

| | | | | | | |
|---|---|---|---|---|---|---|
| **CL 104** | DIN 338 | N | λ 25°-30° | δ 118° | STANDARD | |
| **CL 104R** | DIN 338 | N | λ 25°-30° | δ 130° | DIN 1412 C | |
| **CL 107** OTTONE-BRONZO BRASS-BRONZE | DIN 338 | H | λ 12°-15° | δ 118° | STANDARD | |
| **CL 108** ALLUMINIO ALLUMINIUM | DIN 338 | W | λ 35°-40° | δ 130° | STANDARD | |





**Dal** ∅ 0,3 **al** ∅ 6 = **10 pz** **Dal** ∅ 6,1 **al** ∅ 13 = **5 pz** **Dal** ∅ 13,25 **al** ∅ 20 = **1 pz**

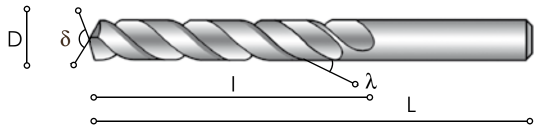
| D h8 | L | l | CODE | HSS 5104..... € | HSS 6104..... € QUARTZ | HSS 5107..... € | HSS 5108..... € |
|---|---|---|---|---|---|---|---|
| 10,7 | 142 | 94 | ....01070 | 11,18 | 14,16 | | |
| 10,75 | 142 | 94 | ....01075 | 10,39 | 13,50 | | |
| 10,8 | 142 | 94 | ....01080 | 11,18 | 15,03 | | |
| 10,9 | 142 | 94 | ....01090 | 11,18 | 15,03 | | |
| 11 | 142 | 94 | ....01100 | 9,28 | 13,01 | 17,51 | 17,51 |
| 11,1 | 142 | 94 | ....01110 | 11,92 | 15,74 | | |
| 11,2 | 142 | 94 | ....01120 | 11,80 | 15,74 | | |
| 11,25 | 142 | 94 | ....01125 | 10,89 | 14,51 | | |
| 11,3 | 142 | 94 | ....01130 | 11,92 | 15,74 | | |
| 11,4 | 142 | 94 | ....01140 | 11,92 | 15,74 | | |
| 11,5 | 142 | 94 | ....01150 | 9,72 | 13,68 | 19,78 | 19,78 |
| 11,6 | 142 | 94 | ....01160 | 11,92 | 17,21 | | |
| 11,7 | 142 | 94 | ....01170 | 11,92 | 17,21 | | |
| 11,75 | 142 | 94 | ....01175 | 11,00 | 16,88 | | |
| 11,8 | 142 | 94 | ....01180 | 11,92 | 17,21 | | |
| 11,9 | 151 | 101 | ....01190 | 13,47 | 17,21 | | |
| 12 | 151 | 101 | ....01200 | 10,69 | 15,10 | 20,46 | 20,46 |
| 12,1 | 151 | 101 | ....01210 | 13,40 | 18,85 | | |
| 12,2 | 151 | 101 | ....01220 | 14,38 | 18,85 | | |
| 12,25 | 151 | 101 | ....01225 | 11,99 | 18,80 | | |
| 12,3 | 151 | 101 | ....01230 | 11,99 | 18,85 | | |
| 12,4 | 151 | 101 | ....01240 | 14,38 | 18,85 | | |
| 12,5 | 151 | 101 | ....01250 | 11,80 | 16,24 | 22,73 | 23,35 |
| 12,6 | 151 | 101 | ....01260 | 14,38 | 19,78 | | |
| 12,7 | 151 | 101 | ....01270 | 12,17 | 19,78 | | |
| 12,75 | 151 | 101 | ....01275 | 12,17 | 18,88 | | |
| 12,8 | 151 | 101 | ....01280 | 14,13 | 19,78 | | |
| 12,9 | 151 | 101 | ....01290 | 17,08 | 19,78 | | |
| 13 | 151 | 101 | ....01300 | 11,49 | 17,15 | 22,19 | 22,73 |
| 13,25 | 160 | 108 | ....01325 | 18,56 | | | |

| D h8 | L | l | CODE | HSS 5104..... € | HSS 6104..... € QUARTZ | HSS 5107..... € | HSS 5108..... € |
|---|---|---|---|---|---|---|---|
| 13,5 | 160 | 108 | ....01350 | 15,12 | | | |
| 13,75 | 160 | 108 | ....01375 | 18,56 | | | |
| 14 | 160 | 108 | ....01400 | 15,12 | | | |
| 14,25 | 169 | 114 | ....01425 | 20,28 | | | |
| 14,5 | 169 | 114 | ....01450 | 17,58 | | | |
| 14,75 | 169 | 114 | ....01475 | 20,28 | | | |
| 15 | 169 | 114 | ....01500 | 17,58 | | | |
| 15,25 | 178 | 120 | ....01525 | 29,00 | | | |
| 15,5 | 178 | 120 | ....01550 | 20,71 | | | |
| 15,75 | 178 | 120 | ....01575 | 29,00 | | | |
| 16 | 178 | 120 | ....01600 | 22,00 | | | |
| 16,25 | 184 | 125 | ....01625 | 41,29 | | | |
| 16,5 | 184 | 125 | ....01650 | 24,09 | | | |
| 16,75 | 184 | 125 | ....01675 | 42,71 | | | |
| 17 | 184 | 125 | ....01700 | 24,09 | | | |
| 17,25 | 191 | 130 | ....01725 | 45,84 | | | |
| 17,5 | 191 | 130 | ....01750 | 27,22 | | | |
| 17,75 | 191 | 130 | ....01775 | 45,84 | | | |
| 18 | 191 | 130 | ....01800 | 27,22 | | | |
| 18,25 | 198 | 135 | ....01825 | 48,55 | | | |
| 18,5 | 198 | 135 | ....01850 | 31,64 | | | |
| 18,75 | 198 | 135 | ....01875 | 48,55 | | | |
| 19 | 198 | 135 | ....01900 | 31,64 | | | |
| 19,25 | 205 | 140 | ....01925 | 62,30 | | | |
| 19,5 | 205 | 140 | ....01950 | 34,42 | | | |
| 19,75 | 205 | 140 | ....01975 | 62,30 | | | |
| 20 | 205 | 140 | ....02000 | 37,43 | | | |

carmon

PUNTE CORTE AD ALTO RENDIMENTO HEAVY DUTY JOBBER DRILLS SPIRALBOHRER FÜR HOHE LEISTUNGEN
FORETS COURTES A HAUT RENDEMENT BROCAS CORTAS DE ALTO REMDIMIENTO

| | | | | | |
|---|---|---|---|---|---|
| **CL 106** | DIN 338 | W | λ 35°-40° | δ 130° | DIN 1412 C |
| **CL 105** | DIN 338 | W | λ 35°-40° | δ 130° | DIN 1412 C |





Dal ∅ 0,3 al ∅ 6 = **10 pz** Dal ∅ 6,1 al ∅ 13 = **5 pz** Dal ∅ 13,25 al ∅ 20 = **1 pz**

| D h8 | L | l | CODE | HSS+5%Co 5106..... € | HSS+5%Co 6106..... € QUARTZ | HSS+5%Co 7106..... € TITANITE | HSS+8%Co 5105..... € | HSS+8%Co 6105..... € QUARTZ | HSS+8%Co 7105..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| 0,3 | 19 | 3 | ....00030 | 4,13 | 5,83 | 6,81 | | | |
| 0,4 | 20 | 5 | ....00040 | 3,14 | 4,74 | 5,72 | | | |
| 0,5 | 22 | 6 | ....00050 | 3,14 | 4,74 | 5,72 | | | |
| 0,6 | 24 | 7 | ....00060 | 3,02 | 4,61 | 5,59 | | | |
| 0,7 | 28 | 9 | ....00070 | 2,58 | 4,13 | 5,11 | | | |
| 0,75 | 28 | 9 | ....00075 | 2,58 | 4,13 | 5,11 | | | |
| 0,8 | 30 | 10 | ....00080 | 2,34 | 3,86 | 4,85 | | | |
| 0,9 | 32 | 11 | ....00090 | 2,34 | 3,86 | 4,85 | | | |
| 1 | 34 | 12 | ....00100 | 1,61 | 3,05 | 4,03 | | | |
| 1,1 | 36 | 14 | ....00110 | 1,61 | 3,05 | 4,03 | | | |
| 1,2 | 38 | 16 | ....00120 | 1,61 | 3,05 | 4,03 | | | |
| 1,25 | 38 | 16 | ....00125 | 1,78 | 3,25 | 4,23 | | | |
| 1,3 | 38 | 16 | ....00130 | 1,78 | 3,25 | 4,23 | | | |
| 1,4 | 40 | 18 | ....00140 | 1,78 | 3,25 | 4,23 | | | |
| 1,5 | 40 | 18 | ....00150 | 1,78 | 3,25 | 4,23 | | | |
| 1,6 | 43 | 20 | ....00160 | 1,92 | 3,39 | 4,37 | | | |
| 1,7 | 43 | 20 | ....00170 | 1,92 | 3,39 | 4,37 | | | |
| 1,75 | 46 | 22 | ....00175 | 1,90 | 3,38 | 4,36 | | | |
| 1,8 | 46 | 22 | ....00180 | 1,92 | 3,39 | 4,37 | | | |
| 1,9 | 46 | 22 | ....00190 | 1,92 | 3,39 | 4,37 | | | |
| 2 | 49 | 24 | ....00200 | 1,55 | 2,99 | 3,97 | 2,77 | 4,33 | 5,32 |
| 2,05 | 49 | 24 | ....00205 | | | | 2,95 | 4,76 | 5,91 |
| 2,1 | 49 | 24 | ....00210 | 1,92 | 3,63 | 4,77 | 2,95 | 4,76 | 5,91 |
| 2,2 | 53 | 27 | ....00220 | 1,92 | 3,63 | 4,77 | 2,95 | 4,76 | 5,91 |
| 2,25 | 53 | 27 | ....00225 | 1,92 | 3,63 | 4,77 | 3,08 | 4,91 | 6,05 |
| 2,3 | 53 | 27 | ....00230 | 1,92 | 3,63 | 4,77 | 2,95 | 4,76 | 5,91 |
| 2,4 | 57 | 30 | ....00240 | 1,92 | 3,63 | 4,77 | 3,02 | 4,84 | 5,99 |
| 2,5 | 57 | 30 | ....00250 | 1,67 | 3,35 | 4,50 | 2,95 | 4,76 | 5,91 |
| 2,6 | 57 | 30 | ....00260 | 1,92 | 3,63 | 4,77 | 3,14 | 4,97 | 6,12 |
| 2,7 | 61 | 33 | ....00270 | 1,92 | 3,63 | 4,77 | 3,14 | 4,97 | 6,12 |
| 2,75 | 61 | 33 | ....00275 | 1,92 | 3,63 | 4,77 | 3,32 | 5,17 | 6,32 |
| 2,8 | 61 | 33 | ....00280 | 1,92 | 3,63 | 4,77 | 3,20 | 5,04 | 6,18 |
| 2,9 | 61 | 33 | ....00290 | 1,92 | 3,63 | 4,77 | 3,20 | 5,04 | 6,18 |
| 3 | 61 | 33 | ....00300 | 1,67 | 3,35 | 4,50 | 2,65 | 4,44 | 5,58 |
| 3,1 | 65 | 36 | ....00310 | 2,21 | 3,95 | 5,10 | 3,20 | 5,04 | 6,18 |
| 3,2 | 65 | 36 | ....00320 | 2,21 | 3,95 | 5,10 | 3,20 | 5,04 | 6,18 |
| 3,25 | 65 | 36 | ....00325 | 2,21 | 3,95 | 5,10 | 3,32 | 5,17 | 6,32 |
| 3,3 | 65 | 36 | ....00330 | 2,21 | 3,95 | 5,10 | 3,39 | 5,25 | 6,39 |
| 3,4 | 70 | 39 | ....00340 | 2,21 | 3,95 | 5,10 | 3,51 | 5,38 | 6,53 |
| 3,5 | 70 | 39 | ....00350 | 1,97 | 3,69 | 4,84 | 3,26 | 5,10 | 6,25 |

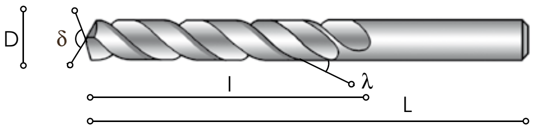
| D h8 | L | l | CODE | HSS+5%Co 5106..... € | HSS+5%Co 6106..... € QUARTZ | HSS+5%Co 7106..... € TITANITE | HSS+8%Co 5105..... € | HSS+8%Co 6105..... € QUARTZ | HSS+8%Co 7105..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| 3,6 | 70 | 39 | ....00360 | 2,46 | 4,23 | 5,37 | 3,51 | 5,38 | 6,53 |
| 3,7 | 70 | 39 | ....00370 | 2,46 | 4,23 | 5,37 | 3,57 | 5,45 | 6,59 |
| 3,75 | 70 | 39 | ....00375 | 2,46 | 4,23 | 5,37 | 3,94 | 5,85 | 7,00 |
| 3,8 | 75 | 43 | ....00380 | 2,52 | 4,29 | 5,44 | 3,63 | 5,51 | 6,66 |
| 3,9 | 75 | 43 | ....00390 | 2,52 | 4,29 | 5,44 | 3,76 | 5,65 | 6,80 |
| 4 | 75 | 43 | ....00400 | 2,21 | 4,49 | 6,08 | 3,51 | 5,38 | 6,53 |
| 4,1 | 75 | 43 | ....00410 | 2,71 | 5,04 | 6,63 | 3,82 | 6,26 | 7,85 |
| 4,2 | 75 | 43 | ....00420 | 2,71 | 5,04 | 6,63 | 3,82 | 6,26 | 7,85 |
| 4,25 | 75 | 43 | ....00425 | 2,71 | 5,60 | 7,61 | 3,76 | 6,19 | 7,78 |
| 4,3 | 80 | 47 | ....00430 | 2,83 | 5,73 | 7,74 | 4,06 | 7,08 | 9,09 |
| 4,4 | 80 | 47 | ....00440 | 2,83 | 5,73 | 7,74 | 4,13 | 7,16 | 9,17 |
| 4,5 | 80 | 47 | ....00450 | 2,46 | 5,33 | 7,34 | 3,88 | 6,88 | 8,89 |
| 4,6 | 80 | 47 | ....00460 | 2,95 | 5,86 | 7,87 | 4,25 | 7,29 | 9,30 |
| 4,7 | 80 | 47 | ....00470 | 2,95 | 5,86 | 7,87 | 4,37 | 7,42 | 9,43 |
| 4,75 | 80 | 47 | ....00475 | 2,95 | 5,86 | 7,87 | 4,31 | 7,36 | 9,37 |
| 4,8 | 86 | 52 | ....00480 | 2,95 | 5,86 | 7,87 | 4,37 | 7,42 | 9,43 |
| 4,9 | 86 | 52 | ....00490 | 2,95 | 5,86 | 7,87 | 4,50 | 7,56 | 9,57 |
| 5 | 86 | 52 | ....00500 | 2,65 | 5,54 | 7,55 | 4,19 | 7,22 | 9,23 |
| 5,1 | 86 | 52 | ....00510 | 4,00 | 7,01 | 9,03 | 4,56 | 7,63 | 9,64 |
| 5,2 | 86 | 52 | ....00520 | 4,00 | 7,01 | 9,03 | 4,62 | 7,70 | 9,71 |
| 5,25 | 86 | 52 | ....00525 | 4,00 | 7,01 | 9,03 | 4,62 | 7,70 | 9,71 |
| 5,3 | 86 | 52 | ....00530 | 4,00 | 7,01 | 9,03 | 4,62 | 7,70 | 9,71 |
| 5,4 | 93 | 57 | ....00540 | 4,00 | 7,01 | 9,03 | 5,41 | 8,57 | 10,58 |
| 5,5 | 93 | 57 | ....00550 | 3,63 | 6,61 | 8,62 | 5,35 | 8,51 | 10,52 |
| 5,6 | 93 | 57 | ....00560 | 4,00 | 7,01 | 9,03 | 5,84 | 9,04 | 11,05 |
| 5,7 | 93 | 57 | ....00570 | 4,00 | 7,01 | 9,03 | 5,84 | 9,04 | 11,05 |
| 5,75 | 93 | 57 | ....00575 | 4,22 | 7,26 | 9,27 | 5,84 | 9,04 | 11,05 |
| 5,8 | 93 | 57 | ....00580 | 4,25 | 7,29 | 9,30 | 5,84 | 9,04 | 11,05 |
| 5,9 | 93 | 57 | ....00590 | 4,25 | 7,29 | 9,30 | 5,84 | 9,04 | 11,05 |
| 6 | 93 | 57 | ....00600 | 3,63 | 7,82 | 10,79 | 5,53 | 8,70 | 10,71 |
| 6,1 | 101 | 63 | ....00610 | 4,87 | 9,19 | 12,15 | 6,03 | 10,47 | 13,44 |
| 6,2 | 101 | 63 | ....00620 | 4,87 | 9,19 | 12,15 | 6,58 | 11,07 | 14,04 |
| 6,25 | 101 | 63 | ....00625 | 4,87 | 9,19 | 12,15 | 6,58 | 11,07 | 14,04 |
| 6,3 | 101 | 63 | ....00630 | 5,04 | 9,38 | 12,35 | 6,58 | 11,07 | 14,04 |
| 6,4 | 101 | 63 | ....00640 | 5,04 | 9,38 | 12,35 | 7,14 | 11,69 | 14,65 |
| 6,5 | 101 | 63 | ....00650 | 4,37 | 8,64 | 11,60 | 6,52 | 11,00 | 13,97 |
| 6,6 | 101 | 63 | ....00660 | 5,84 | 10,26 | 13,23 | 7,14 | 11,69 | 14,65 |
| 6,7 | 101 | 63 | ....00670 | 5,84 | 10,26 | 13,23 | 7,14 | 11,69 | 14,65 |
| 6,75 | 109 | 69 | ....00675 | 5,84 | 10,26 | 13,23 | 7,63 | 12,22 | 15,19 |
| 6,8 | 109 | 69 | ....00680 | 5,84 | 10,26 | 13,23 | 7,63 | 12,22 | 15,19 |
| 6,9 | 109 | 69 | ....00690 | 5,84 | 10,26 | 13,23 | 7,63 | 12,22 | 15,19 |
| 7 | 109 | 69 | ....00700 | 5,22 | 9,58 | 12,55 | 6,89 | 11,41 | 14,38 |
| 7,1 | 109 | 69 | ....00710 | 6,21 | 10,66 | 13,63 | 9,28 | 14,04 | 17,01 |
| 7,2 | 109 | 69 | ....00720 | 6,21 | 10,66 | 13,63 | 9,28 | 14,04 | 17,01 |
| 7,25 | 109 | 69 | ....00725 | 6,03 | 10,47 | 13,44 | 9,28 | 14,04 | 17,01 |
| 7,3 | 109 | 69 | ....00730 | 6,33 | 10,80 | 13,76 | 9,28 | 14,04 | 17,01 |
| 7,4 | 109 | 69 | ....00740 | 6,33 | 10,80 | 13,76 | 9,28 | 14,04 | 17,01 |
| 7,5 | 109 | 69 | ....00750 | 5,35 | 9,72 | 12,69 | 7,26 | 11,82 | 14,78 |
| 7,6 | 117 | 75 | ....00760 | 7,07 | 11,61 | 14,58 | 11,25 | 16,21 | 19,18 |
| 7,7 | 117 | 75 | ....00770 | 7,07 | 11,61 | 14,58 | 11,25 | 16,21 | 19,18 |
| 7,75 | 117 | 75 | ....00775 | 7,01 | 11,54 | 14,51 | 11,25 | 16,21 | 19,18 |
| 7,8 | 117 | 75 | ....00780 | 7,07 | 11,61 | 14,58 | 11,25 | 16,21 | 19,18 |
| 7,9 | 117 | 75 | ....00790 | 7,07 | 11,61 | 14,58 | 11,25 | 16,21 | 19,18 |
| 8 | 117 | 75 | ....00800 | 6,27 | 11,64 | 15,31 | 8,54 | 13,23 | 16,20 |
| 8,1 | 117 | 75 | ....00810 | 7,63 | 13,13 | 16,80 | 11,25 | 17,12 | 20,79 |
| 8,2 | 117 | 75 | ....00820 | 7,63 | 13,13 | 16,80 | 11,25 | 17,12 | 20,79 |
| 8,25 | 117 | 75 | ....00825 | 7,38 | 12,86 | 16,53 | 10,75 | 16,58 | 20,24 |
| 8,3 | 117 | 75 | ....00830 | 7,74 | 13,26 | 16,93 | 11,25 | 17,12 | 20,79 |
| 8,4 | 117 | 75 | ....00840 | 7,74 | 13,26 | 16,93 | 11,25 | 17,12 | 20,79 |
| 8,5 | 117 | 75 | ....00850 | 6,64 | 12,05 | 15,72 | 8,85 | 14,48 | 18,15 |
| 8,6 | 125 | 81 | ....00860 | 9,16 | 14,82 | 18,49 | 13,22 | 19,28 | 22,95 |
| 8,7 | 125 | 81 | ....00870 | 9,16 | 14,82 | 18,49 | 13,22 | 19,28 | 22,95 |
| 8,75 | 125 | 81 | ....00875 | 9,10 | 14,76 | 18,43 | 13,65 | 19,75 | 23,42 |

carmon

PUNTE CORTE AD ALTO RENDIMENTO HEAVY DUTY JOBBER DRILLS SPIRALBOHRER FÜR HOHE LEISTUNGEN
FORETS COURTES A HAUT RENDEMENT BROCAS CORTAS DE ALTO REMDIMIENTO

**CL 106** DIN 338 W λ 35°-40° δ 130° DIN 1412 C

**CL 105** DIN 338 W λ 35°-40° δ 130° DIN 1412 C





**Dal ∅ 0,3 al ∅ 6 = 10 pz** **Dal ∅ 6,1 al ∅ 13 = 5 pz** **Dal ∅ 13,25 al ∅ 20 = 1 pz**

| D h8 | L | l | CODE | HSS+5%Co 5106….. € | HSS+5%Co 6106….. € QUARTZ | HSS+5%Co 7106….. € TITANITE | HSS+8%Co 5105….. € | HSS+8%Co 6105….. € QUARTZ | HSS+8%Co 7105….. € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| 8,8 | 125 | 81 | ….00880 | 9,16 | 14,82 | 18,49 | 13,65 | 19,75 | 23,42 |
| 8,9 | 125 | 81 | ….00890 | 9,16 | 14,82 | 18,49 | 13,65 | 19,75 | 23,42 |
| 9 | 125 | 81 | ….00900 | 8,11 | 13,67 | 17,34 | 11,37 | 17,26 | 20,93 |
| 9,1 | 125 | 81 | ….00910 | 10,15 | 15,91 | 19,58 | 14,69 | 20,91 | 24,58 |
| 9,2 | 125 | 81 | ….00920 | 10,15 | 15,91 | 19,58 | 14,69 | 20,91 | 24,58 |
| 9,25 | 125 | 81 | ….00925 | 9,84 | 15,57 | 19,24 | 15,18 | 21,44 | 25,11 |
| 9,3 | 125 | 81 | ….00930 | 10,33 | 16,10 | 19,77 | 16,11 | 22,46 | 26,13 |
| 9,4 | 125 | 81 | ….00940 | 10,91 | 16,74 | 20,41 | 16,11 | 22,46 | 26,13 |
| 9,5 | 125 | 81 | ….00950 | 8,98 | 14,63 | 18,30 | 11,68 | 17,60 | 21,27 |
| 9,6 | 133 | 87 | ….00960 | 11,12 | 16,98 | 20,65 | 18,07 | 24,62 | 28,29 |
| 9,7 | 133 | 87 | ….00970 | 11,12 | 16,98 | 20,65 | 18,50 | 25,09 | 28,76 |
| 9,75 | 133 | 87 | ….00975 | 11,00 | 16,85 | 20,52 | 17,82 | 24,35 | 28,02 |
| 9,8 | 133 | 87 | ….00980 | 11,12 | 16,98 | 20,65 | 18,56 | 25,16 | 28,83 |
| 9,9 | 133 | 87 | ….00990 | 11,12 | 16,98 | 20,65 | 18,56 | 25,16 | 28,83 |
| 10 | 133 | 87 | ….01000 | 9,84 | 15,57 | 19,24 | 12,97 | 19,01 | 22,68 |
| 10,1 | 133 | 87 | ….01010 | 14,38 | 20,57 | 24,24 | | | |
| 10,2 | 133 | 87 | ….01020 | 14,38 | 20,57 | 24,24 | 24,58 | 31,78 | 35,45 |
| 10,25 | 133 | 87 | ….01025 | 15,98 | 22,32 | 25,99 | 24,58 | 31,78 | 35,45 |
| 10,3 | 133 | 87 | ….01030 | 14,38 | 20,57 | 24,24 | | | |
| 10,4 | 133 | 87 | ….01040 | 14,38 | 20,57 | 24,24 | | | |
| 10,5 | 133 | 87 | ….01050 | 12,42 | 18,41 | 22,08 | 19,30 | 25,98 | 29,65 |
| 10,6 | 133 | 87 | ….01060 | 16,29 | 23,64 | 28,08 | | | |
| 10,7 | 142 | 94 | ….01070 | 16,29 | 23,64 | 28,08 | | | |
| 10,75 | 142 | 94 | ….01075 | 18,13 | 25,67 | 30,11 | 23,23 | 31,28 | 35,72 |
| 10,8 | 142 | 94 | ….01080 | 17,20 | 24,65 | 29,09 | | | |
| 10,9 | 142 | 94 | ….01090 | 17,20 | 24,65 | 29,09 | | | |
| 11 | 142 | 94 | ….01100 | 14,44 | 21,61 | 26,05 | 23,23 | 31,28 | 35,72 |
| 11,1 | 142 | 94 | ….01110 | 17,98 | 25,51 | 29,95 | | | |
| 11,2 | 142 | 94 | ….01120 | 17,98 | 25,51 | 29,95 | | | |
| 11,25 | 142 | 94 | ….01125 | 19,99 | 27,72 | 32,16 | 27,35 | 35,81 | 40,25 |
| 11,3 | 142 | 94 | ….01130 | 17,98 | 25,51 | 29,95 | | | |
| 11,4 | 142 | 94 | ….01140 | 17,98 | 25,51 | 29,95 | | | |
| 11,5 | 142 | 94 | ….01150 | 15,12 | 22,36 | 26,80 | 27,35 | 35,81 | 40,25 |
| 11,6 | 142 | 94 | ….01160 | 20,06 | 27,79 | 32,23 | | | |
| 11,7 | 142 | 94 | ….01170 | 20,06 | 27,79 | 32,23 | | | |
| 11,75 | 142 | 94 | ….01175 | 22,27 | 30,22 | 34,66 | 29,13 | 37,77 | 42,21 |
| 11,8 | 142 | 94 | ….01180 | 20,06 | 27,79 | 32,23 | | | |
| 11,9 | 151 | 101 | ….01190 | 20,06 | 27,79 | 32,23 | | | |
| 12 | 151 | 101 | ….01200 | 16,85 | 25,03 | 30,03 | 29,13 | 37,77 | 42,21 |
| 12,1 | 151 | 101 | ….01210 | 21,81 | 30,49 | 35,50 | | | |

| D h8 | L | l | CODE | HSS+5%Co 5106..... € | HSS+5%Co 6106..... € QUARTZ | HSS+5%Co 7106..... € TITANITE | HSS+8%Co 5105..... € | HSS+8%Co 6105..... € QUARTZ | HSS+8%Co 7105..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| 12,2 | 151 | 101 | ....01220 | 21,81 | 30,49 | 35,50 | | | |
| 12,25 | 151 | 101 | ....01225 | 24,21 | 33,13 | 38,14 | 36,56 | 46,71 | 51,72 |
| 12,3 | 151 | 101 | ....01230 | 21,81 | 30,49 | 35,50 | | | |
| 12,4 | 151 | 101 | ....01240 | 21,81 | 30,49 | 35,50 | | | |
| 12,5 | 151 | 101 | ....01250 | 18,32 | 26,65 | 31,65 | 36,56 | 46,71 | 51,72 |
| 12,6 | 151 | 101 | ....01260 | 22,20 | 30,92 | 35,93 | | | |
| 12,7 | 151 | 101 | ....01270 | 21,02 | 29,62 | 34,62 | | | |
| 12,75 | 151 | 101 | ....01275 | 24,67 | 33,63 | 38,63 | 39,51 | 49,96 | 54,96 |
| 12,8 | 151 | 101 | ....01280 | 22,20 | 30,92 | 35,93 | | | |
| 12,9 | 151 | 101 | ....01290 | 22,20 | 30,92 | 35,93 | | | |
| 13 | 151 | 101 | ....01300 | 19,74 | 28,21 | 33,22 | 39,51 | 49,96 | 54,96 |
| 13,25 | 160 | 108 | ....01325 | | | | 42,58 | 53,34 | 58,34 |
| 13,5 | 160 | 108 | ....01350 | | | | 42,58 | 53,34 | 58,34 |
| 13,75 | 160 | 108 | ....01375 | | | | 41,86 | 52,54 | 57,54 |
| 14 | 160 | 108 | ....01400 | | | | 41,86 | 52,54 | 57,54 |
| 14,25 | 169 | 114 | ....01425 | | | | 59,79 | 72,27 | 77,27 |
| 14,5 | 169 | 114 | ....01450 | | | | 59,79 | 72,27 | 77,27 |
| 14,75 | 169 | 114 | ....01475 | | | | 58,13 | 70,44 | 75,44 |
| 15 | 169 | 114 | ....01500 | | | | 58,13 | 70,44 | 75,44 |
| 15,25 | 178 | 120 | ....01525 | | | | 67,23 | 80,45 | 85,46 |
| 15,5 | 178 | 120 | ....01550 | | | | 67,23 | 80,45 | 85,46 |
| 15,75 | 178 | 120 | ....01575 | | | | 69,74 | 83,21 | 88,21 |
| 16 | 178 | 120 | ....01600 | | | | 69,74 | 83,21 | 88,21 |
| 16,25 | 184 | 125 | ....01625 | | | | 76,44 | 96,14 | 105,47 |
| 16,5 | 184 | 125 | ....01650 | | | | 76,44 | 96,14 | 105,47 |
| 16,75 | 184 | 125 | ....01675 | | | | 79,70 | 99,73 | 109,05 |
| 17 | 184 | 125 | ....01700 | | | | 79,70 | 99,73 | 109,05 |
| 17,25 | 191 | 130 | ....01725 | | | | 86,28 | 106,97 | 116,29 |
| 17,5 | 191 | 130 | ....01750 | | | | 86,28 | 106,97 | 116,29 |
| 17,75 | 191 | 130 | ....01775 | | | | 96,15 | 117,83 | 127,16 |
| 18 | 191 | 130 | ....01800 | | | | 96,15 | 117,83 | 127,16 |
| 18,25 | 198 | 135 | ....01825 | | | | 100,33 | 129,16 | 143,68 |
| 18,5 | 198 | 135 | ....01850 | | | | 100,33 | 129,16 | 143,68 |
| 18,75 | 198 | 135 | ....01875 | | | | 106,18 | 135,59 | 150,11 |
| 19 | 198 | 135 | ....01900 | | | | 106,18 | 135,59 | 150,11 |
| 19,25 | 205 | 140 | ....01925 | | | | 109,07 | 138,77 | 153,28 |
| 19,5 | 205 | 140 | ....01950 | | | | 109,07 | 138,77 | 153,28 |
| 19,75 | 205 | 140 | ....01975 | | | | 136,04 | 168,43 | 182,95 |
| 20 | 205 | 140 | ....02000 | | | | 136,04 | 168,43 | 182,95 |

carmon

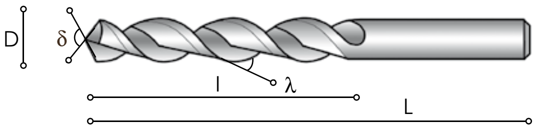
PUNTE CORTE PER FORI PROFONDI
DEEP HOLE JOBBER DRILLS
TIEFLOCH-SPIRALBOHRER
FORETS COURTES POUR TROUS PROFONDS
BROCAS CORTAS PARA AGUJEROS PROFUNDOS

# CL 109

FORI PROFONDI
DEEP HOLE

DIN 338 · S · λ 35°-40° · δ 135° · DIN 1412 C

CL109




Dal ∅ 2 al ∅ 6 = **10 pz** Dal ∅ 6,1 al ∅ 13 = **5 pz**

| D h8 | L | l | CODE | HSS+5%Co 5109..... € | HSS+5%Co 6109..... € QUARTZ | HSS+5%Co 7109..... € TITANITE |
|---|---|---|---|---|---|---|
| 2 | 49 | 24 | ....00200 | 2,52 | 4,06 | 5,04 |
| 2,1 | 49 | 24 | ....00210 | 2,52 | 4,29 | 5,44 |
| 2,2 | 53 | 27 | ....00220 | 2,52 | 4,29 | 5,44 |
| 2,3 | 53 | 27 | ....00230 | 2,52 | 4,29 | 5,44 |
| 2,4 | 57 | 30 | ....00240 | 2,77 | 4,57 | 5,71 |
| 2,5 | 57 | 30 | ....00250 | 2,52 | 4,29 | 5,44 |
| 2,6 | 57 | 30 | ....00260 | 2,77 | 4,57 | 5,71 |
| 2,7 | 61 | 33 | ....00270 | 2,83 | 4,63 | 5,78 |
| 2,8 | 61 | 33 | ....00280 | 2,83 | 4,63 | 5,78 |
| 2,9 | 61 | 33 | ....00290 | 2,83 | 4,63 | 5,78 |
| 3 | 61 | 33 | ....00300 | 2,77 | 4,57 | 5,71 |
| 3,1 | 65 | 36 | ....00310 | 2,95 | 4,76 | 5,91 |
| 3,2 | 65 | 36 | ....00320 | 2,95 | 4,76 | 5,91 |
| 3,3 | 65 | 36 | ....00330 | 2,95 | 4,76 | 5,91 |
| 3,4 | 70 | 39 | ....00340 | 3,14 | 4,97 | 6,12 |
| 3,5 | 70 | 39 | ....00350 | 3,14 | 4,97 | 6,12 |
| 3,6 | 70 | 39 | ....00360 | 3,32 | 5,17 | 6,32 |
| 3,7 | 70 | 39 | ....00370 | 3,32 | 5,17 | 6,32 |
| 3,8 | 75 | 43 | ....00380 | 3,32 | 5,17 | 6,32 |
| 3,9 | 75 | 43 | ....00390 | 3,32 | 5,17 | 6,32 |
| 4 | 75 | 43 | ....00400 | 3,32 | 5,17 | 6,32 |
| 4,1 | 75 | 43 | ....00410 | 3,45 | 5,85 | 7,44 |
| 4,2 | 75 | 43 | ....00420 | 3,45 | 5,85 | 7,44 |
| 4,3 | 80 | 47 | ....00430 | 4,19 | 7,22 | 9,23 |
| 4,4 | 80 | 47 | ....00440 | 4,19 | 7,22 | 9,23 |
| 4,5 | 80 | 47 | ....00450 | 4,19 | 7,22 | 9,23 |
| 4,6 | 80 | 47 | ....00460 | 4,19 | 7,22 | 9,23 |
| 4,7 | 80 | 47 | ....00470 | 4,19 | 7,22 | 9,23 |
| 4,8 | 86 | 52 | ....00480 | 4,19 | 7,22 | 9,23 |
| 4,9 | 86 | 52 | ....00490 | 4,19 | 7,22 | 9,23 |
| 5 | 86 | 52 | ....00500 | 4,19 | 7,22 | 9,23 |
| 5,1 | 86 | 52 | ....00510 | 4,56 | 7,63 | 9,64 |
| 5,2 | 86 | 52 | ....00520 | 4,56 | 7,63 | 9,64 |
| 5,3 | 86 | 52 | ....00530 | 4,56 | 7,63 | 9,64 |
| 5,4 | 93 | 57 | ....00540 | 5,78 | 8,98 | 10,99 |
| 5,5 | 93 | 57 | ....00550 | 5,47 | 8,64 | 10,65 |
| 5,6 | 93 | 57 | ....00560 | 5,84 | 9,04 | 11,05 |
| 5,7 | 93 | 57 | ....00570 | 5,84 | 9,04 | 11,05 |
| 5,8 | 93 | 57 | ....00580 | 5,84 | 9,04 | 11,05 |
| 5,9 | 93 | 57 | ....00590 | 5,84 | 9,04 | 11,05 |

| D h8 | L | l | CODE | HSS+5%Co 5109..... € | HSS+5%Co 6109..... € QUARTZ | HSS+5%Co 7109..... € TITANITE |
|---|---|---|---|---|---|---|
| 6 | 93 | 57 | ....00600 | 5,53 | 8,70 | 10,71 |
| 6,1 | 101 | 63 | ....00610 | 6,27 | 10,73 | 13,70 |
| 6,2 | 101 | 63 | ....00620 | 6,27 | 10,73 | 13,70 |
| 6,5 | 101 | 63 | ....00650 | 6,52 | 11,00 | 13,97 |
| 6,8 | 109 | 69 | ....00680 | 6,89 | 11,41 | 14,38 |
| 7 | 109 | 69 | ....00700 | 6,70 | 11,20 | 14,17 |
| 7,2 | 109 | 69 | ....00720 | 9,84 | 14,66 | 17,62 |
| 7,5 | 109 | 69 | ....00750 | 7,99 | 12,63 | 15,60 |
| 7,8 | 117 | 75 | ....00780 | 11,00 | 15,94 | 18,91 |
| 8 | 117 | 75 | ....00800 | 8,36 | 13,03 | 16,00 |
| 8,2 | 117 | 75 | ....00820 | 11,62 | 17,53 | 21,20 |
| 8,5 | 117 | 75 | ....00850 | 9,04 | 14,69 | 18,36 |
| 8,8 | 125 | 81 | ....00880 | 13,59 | 19,69 | 23,36 |
| 9 | 125 | 81 | ....00900 | 10,30 | 16,08 | 19,75 |
| 9,2 | 125 | 81 | ....00920 | 15,30 | 21,57 | 25,24 |
| 9,5 | 125 | 81 | ....00950 | 11,65 | 17,56 | 21,23 |
| 9,8 | 133 | 87 | ....00980 | 16,96 | 23,41 | 27,08 |
| 10 | 133 | 87 | ....01000 | 12,48 | 18,47 | 22,14 |
| 10,5 | 133 | 87 | ....01050 | 17,88 | 24,41 | 28,08 |
| 11 | 142 | 94 | ....01100 | 19,06 | 26,69 | 29,38 |
| 11,5 | 142 | 94 | ....01150 | 22,07 | 30,00 | 32,69 |
| 12 | 151 | 101 | ....01200 | 22,87 | 30,88 | 35,32 |
| 12,5 | 151 | 101 | ....01250 | 26,48 | 35,63 | 40,63 |
| 13 | 151 | 101 | ....01300 | 26,73 | 35,90 | 40,91 |

carmon

PUNTE LUNGHE TWIST DRILLS, LONG SERIES LANGE SPIRALBOHRER FORETS LONGS BROCAS LARGA

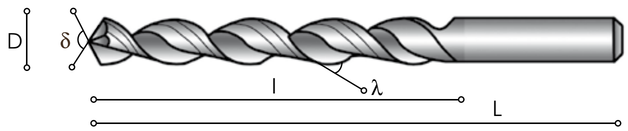
## CL 200

DIN 340 | N | λ 25°-30° | δ 118° | STANDARD

## CL 230

FORI PROFONDI
DEEP HOLE

DIN 340 | S | λ 35°-40° | δ 135° | DIN 1412 C




CL200 CL230

**Dal** ∅ 0,5 **al** ∅ 6 = **10 pz** **Dal** ∅ 6,1 **al** ∅ 13 = **5 pz**

| D h8 | L | l | CODE | HSS 5200..... € | HSS+5%Co 5230..... € | HSS+5%Co 6230..... € QUARTZ | HSS+5%Co 7230..... € TITANITE |
|---|---|---|---|---|---|---|---|
| 0,5 | 32 | 12 | ....00050 | 9,35 | | | |
| 0,6 | 35 | 15 | ....00060 | 7,57 | | | |
| 0,7 | 42 | 21 | ....00070 | 6,64 | | | |
| 0,8 | 46 | 25 | ....00080 | 6,21 | | | |
| 0,9 | 51 | 29 | ....00090 | 5,90 | | | |
| 1 | 56 | 33 | ....00100 | 3,76 | | | |
| 1,1 | 60 | 37 | ....00110 | 3,88 | | | |
| 1,2 | 65 | 41 | ....00120 | 3,32 | | | |
| 1,25 | 65 | 41 | ....00125 | 2,77 | | | |
| 1,3 | 65 | 41 | ....00130 | 3,32 | | | |
| 1,4 | 70 | 45 | ....00140 | 3,45 | | | |
| 1,5 | 70 | 45 | ....00150 | 2,77 | | | |
| 1,6 | 76 | 50 | ....00160 | 3,08 | | | |
| 1,7 | 76 | 50 | ....00170 | 3,02 | | | |
| 1,75 | 80 | 53 | ....00175 | 3,40 | | | |
| 1,8 | 80 | 53 | ....00180 | 3,02 | | | |
| 1,9 | 80 | 53 | ....00190 | 3,02 | | | |
| 2 | 85 | 56 | ....00200 | 2,21 | 4,62 | 6,74 | 8,02 |
| 2,1 | 85 | 56 | ....00210 | 2,34 | 4,62 | 7,02 | 8,54 |
| 2,2 | 90 | 59 | ....00220 | 2,34 | 4,87 | 7,29 | 8,81 |
| 2,25 | 90 | 59 | ....00225 | 2,89 | 5,56 | 8,06 | 9,58 |
| 2,3 | 90 | 59 | ....00230 | 2,34 | 4,87 | 7,29 | 8,81 |
| 2,4 | 95 | 62 | ....00240 | 2,34 | 4,87 | 7,29 | 8,81 |
| 2,5 | 95 | 62 | ....00250 | 2,34 | 4,87 | 7,29 | 8,81 |
| 2,6 | 95 | 62 | ....00260 | 2,52 | 4,87 | 7,29 | 8,81 |
| 2,7 | 100 | 66 | ....00270 | 2,52 | 4,87 | 7,29 | 8,81 |
| 2,75 | 100 | 66 | ....00275 | 3,20 | 5,56 | 8,06 | 9,58 |
| 2,8 | 100 | 66 | ....00280 | 2,71 | 4,87 | 7,29 | 8,81 |
| 2,9 | 100 | 66 | ....00290 | 2,95 | 4,87 | 7,29 | 8,81 |
| 3 | 100 | 66 | ....00300 | 2,21 | 4,87 | 7,29 | 8,81 |
| 3,1 | 106 | 69 | ....00310 | 2,65 | 5,96 | 9,13 | 11,09 |
| 3,2 | 106 | 69 | ....00320 | 2,65 | 5,72 | 8,87 | 10,83 |
| 3,25 | 106 | 69 | ....00325 | 3,40 | 6,58 | 9,80 | 11,77 |
| 3,3 | 106 | 69 | ....00330 | 2,83 | 5,72 | 8,87 | 10,83 |
| 3,4 | 112 | 73 | ....00340 | 2,83 | 6,09 | 9,27 | 11,23 |
| 3,5 | 112 | 73 | ....00350 | 2,65 | 5,16 | 8,25 | 10,21 |
| 3,6 | 112 | 73 | ....00360 | 2,83 | 6,40 | 9,61 | 11,58 |
| 3,7 | 112 | 73 | ....00370 | 2,95 | 6,40 | 9,61 | 11,58 |
| 3,75 | 112 | 73 | ....00375 | 3,63 | 7,01 | 10,28 | 12,24 |
| 3,8 | 119 | 78 | ....00380 | 3,02 | 6,89 | 10,15 | 12,11 |

| D h8 | L | l | CODE | HSS 5200….. € | HSS+5%Co 5230….. € | HSS+5%Co 6230….. € QUARTZ | HSS+5%Co 7230….. € TITANITE |
|---|---|---|---|---|---|---|---|
| 3,9 | 119 | 78 | ….00390 | 3,14 | 6,89 | 10,15 | 12,11 |
| 4 | 119 | 78 | ….00400 | 2,89 | 5,72 | 8,87 | 10,83 |
| 4,1 | 119 | 78 | ….00410 | 3,32 | 6,46 | 10,21 | 12,62 |
| 4,2 | 119 | 78 | ….00420 | 3,32 | 6,46 | 10,21 | 12,62 |
| 4,25 | 119 | 78 | ….00425 | 4,24 | 9,22 | 13,25 | 15,66 |
| 4,3 | 126 | 82 | ….00430 | 3,76 | 8,73 | 12,71 | 15,12 |
| 4,4 | 126 | 82 | ….00440 | 3,76 | 8,73 | 12,71 | 15,12 |
| 4,5 | 126 | 82 | ….00450 | 3,51 | 6,83 | 10,62 | 13,03 |
| 4,6 | 126 | 82 | ….00460 | 3,76 | 8,73 | 12,71 | 15,12 |
| 4,7 | 126 | 82 | ….00470 | 3,76 | 8,73 | 12,71 | 15,12 |
| 4,75 | 126 | 82 | ….00475 | 4,80 | 10,08 | 14,19 | 16,60 |
| 4,8 | 132 | 87 | ….00480 | 4,06 | 9,16 | 13,19 | 15,59 |
| 4,9 | 132 | 87 | ….00490 | 4,06 | 9,16 | 13,19 | 15,59 |
| 5 | 132 | 87 | ….00500 | 3,82 | 7,14 | 10,96 | 13,37 |
| 5,1 | 132 | 87 | ….00510 | 4,37 | 9,16 | 13,19 | 15,59 |
| 5,2 | 132 | 87 | ….00520 | 4,37 | 9,16 | 13,19 | 15,59 |
| 5,25 | 132 | 87 | ….00525 | 5,65 | 10,08 | 14,19 | 16,60 |
| 5,3 | 132 | 87 | ….00530 | 4,37 | 9,16 | 13,19 | 15,59 |
| 5,4 | 139 | 91 | ….00540 | 4,98 | 10,39 | 14,53 | 16,94 |
| 5,5 | 139 | 91 | ….00550 | 4,68 | 8,30 | 12,24 | 14,65 |
| 5,6 | 139 | 91 | ….00560 | 4,98 | 11,25 | 15,49 | 17,90 |
| 5,7 | 139 | 91 | ….00570 | 4,98 | 11,25 | 15,49 | 17,90 |
| 5,75 | 139 | 91 | ….00575 | 5,88 | 12,36 | 16,71 | 19,11 |
| 5,8 | 139 | 91 | ….00580 | 4,98 | 11,25 | 15,49 | 17,90 |
| 5,9 | 139 | 91 | ….00590 | 4,98 | 11,25 | 15,49 | 17,90 |
| 6 | 139 | 91 | ….00600 | 4,68 | 9,41 | 13,46 | 15,87 |
| 6,1 | 148 | 97 | ….00610 | 5,84 | | | |
| 6,2 | 148 | 97 | ….00620 | 5,84 | 14,38 | 20,84 | 24,72 |
| 6,25 | 148 | 97 | ….00625 | 6,32 | 15,86 | 22,47 | 26,35 |
| 6,3 | 148 | 97 | ….00630 | 5,84 | | | |
| 6,4 | 148 | 97 | ….00640 | 6,21 | | | |
| 6,5 | 148 | 97 | ….00650 | 5,84 | 14,38 | 20,84 | 24,72 |
| 6,6 | 148 | 97 | ….00660 | 6,21 | | | |
| 6,7 | 148 | 97 | ….00670 | 6,21 | | | |
| 6,75 | 156 | 102 | ….00675 | 6,83 | 15,86 | 22,47 | 26,35 |
| 6,8 | 156 | 102 | ….00680 | 7,20 | 16,23 | 22,88 | 26,76 |
| 6,9 | 156 | 102 | ….00690 | 7,20 | | | |
| 7 | 156 | 102 | ….00700 | 6,89 | 13,7 | 20,10 | 23,98 |
| 7,1 | 156 | 102 | ….00710 | 9,16 | | | |
| 7,2 | 156 | 102 | ….00720 | 9,16 | 17,76 | 24,56 | 28,44 |
| 7,25 | 156 | 102 | ….00725 | 8,19 | 19,55 | 26,53 | 30,41 |
| 7,3 | 156 | 102 | ….00730 | 9,16 | | | |
| 7,4 | 156 | 102 | ….00740 | 9,16 | | | |
| 7,5 | 156 | 102 | ….00750 | 7,26 | 15,49 | 22,06 | 25,94 |
| 7,6 | 165 | 109 | ….00760 | 9,53 | | | |
| 7,7 | 165 | 109 | ….00770 | 9,53 | | | |
| 7,75 | 165 | 109 | ….00775 | 8,99 | 20,96 | 28,08 | 31,96 |
| 7,8 | 165 | 109 | ….00780 | 9,59 | 18,99 | 25,91 | 29,79 |
| 7,9 | 165 | 109 | ….00790 | 9,53 | | | |
| 8 | 165 | 109 | ….00800 | 8,30 | 15,86 | 22,47 | 26,35 |
| 8,1 | 165 | 109 | ….00810 | 10,27 | | | |
| 8,2 | 165 | 109 | ….00820 | 10,27 | 19,12 | 26,76 | 31,20 |
| 8,25 | 165 | 109 | ….00825 | 9,28 | 21,08 | 28,91 | 33,36 |
| 8,3 | 165 | 109 | ….00830 | 10,27 | | | |
| 8,4 | 165 | 109 | ….00840 | 10,27 | | | |
| 8,5 | 165 | 109 | ….00850 | 9,22 | 17,76 | 25,26 | 29,70 |
| 8,6 | 175 | 115 | ….00860 | 12,60 | | | |
| 8,7 | 175 | 115 | ….00870 | 12,60 | | | |
| 8,75 | 175 | 115 | ….00875 | 11,11 | 21,56 | 29,34 | 33,88 |
| 8,8 | 175 | 115 | ….00880 | 12,60 | 19,61 | 27,30 | 31,74 |
| 8,9 | 175 | 115 | ….00890 | 12,60 | | | |
| 9 | 175 | 115 | ….00900 | 9,84 | 18,62 | 26,21 | 30,65 |
| 9,1 | 175 | 115 | ….00910 | 13,47 | | | |

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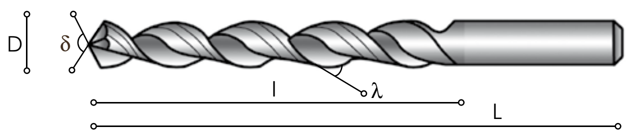
PUNTE LUNGHE TWIST DRILLS, LONG SERIES LANGE SPIRALBOHRER FORETS LONGS BROCAS LARGA

**CL 200** DIN 340 N λ 25°-30° δ 118° STANDARD

**CL 230** DIN 340 S λ 35°-40° δ 135° DIN 1412 C

FORI PROFONDI
DEEP HOLE





**Dal ∅ 0,5 al ∅ 6 = 10 pz** **Dal ∅ 6,1 al ∅ 13 = 5 pz**

| D h8 | L | l | CODE | HSS 5200….. € | HSS+5%Co 5230….. € | HSS+5%Co 6230….. € QUARTZ | HSS+5%Co 7230….. € TITANITE |
|---|---|---|---|---|---|---|---|
| 9,2 | 175 | 115 | ....00920 | 13,47 | 25,14 | 33,38 | 37,82 |
| 9,25 | 175 | 115 | ....00925 | 12,23 | 27,72 | 36,22 | 40,66 |
| 9,3 | 175 | 115 | ....00930 | 13,47 | | | |
| 9,4 | 175 | 115 | ....00940 | 13,47 | | | |
| 9,5 | 175 | 115 | ....00950 | 11,31 | 24,28 | 32,43 | 36,88 |
| 9,6 | 184 | 121 | ....00960 | 13,47 | | | |
| 9,7 | 184 | 121 | ....00970 | 13,22 | | | |
| 9,75 | 184 | 121 | ....00975 | 13,11 | 37,18 | 48,89 | 55,06 |
| 9,8 | 184 | 121 | ....00980 | 13,53 | 33,8 | 45,17 | 51,35 |
| 9,9 | 184 | 121 | ....00990 | 13,53 | | | |
| 10 | 184 | 121 | ....01000 | 11,37 | 25,57 | 36,12 | 42,29 |
| 10,1 | 184 | 121 | ....01010 | 14,69 | | | |
| 10,2 | 184 | 121 | ....01020 | 14,69 | | | |
| 10,25 | 184 | 121 | ....01025 | 14,93 | 43,26 | 55,58 | 61,75 |
| 10,3 | 184 | 121 | ....01030 | 14,69 | | | |
| 10,4 | 184 | 121 | ....01040 | 14,69 | | | |
| 10,5 | 184 | 121 | ....01050 | 14,93 | 39,33 | 51,26 | 57,43 |
| 10,6 | 195 | 128 | ....01060 | 14,69 | | | |
| 10,7 | 195 | 128 | ....01070 | 17,14 | | | |
| 10,75 | 195 | 128 | ....01075 | 17,51 | 49,41 | 62,35 | 68,52 |
| 10,8 | 195 | 128 | ....01080 | 17,14 | | | |
| 10,9 | 195 | 128 | ....01090 | 17,14 | | | |
| 11 | 195 | 128 | ....01100 | 16,41 | 36,93 | 48,62 | 54,79 |
| 11,1 | 195 | 128 | ....01110 | 16,11 | | | |
| 11,2 | 195 | 128 | ....01120 | 18,95 | | | |
| 11,25 | 195 | 128 | ....01125 | 19,35 | 54,38 | 67,81 | 73,98 |
| 11,3 | 195 | 128 | ....01130 | 18,95 | | | |
| 11,4 | 195 | 128 | ....01140 | 18,95 | | | |
| 11,5 | 195 | 128 | ....01150 | 16,77 | 49,41 | 62,35 | 68,52 |
| 11,6 | 195 | 128 | ....01160 | 18,34 | | | |
| 11,7 | 195 | 128 | ....01170 | 20,82 | | | |
| 11,75 | 195 | 128 | ....01175 | 21,22 | 58,8 | 72,67 | 78,85 |
| 11,8 | 205 | 134 | ....01180 | 19,24 | | | |
| 11,9 | 205 | 134 | ....01190 | 19,24 | | | |
| 12 | 205 | 134 | ....01200 | 18,62 | 50,26 | 63,28 | 69,45 |
| 12,1 | 205 | 134 | ....01210 | 20,58 | | | |
| 12,2 | 205 | 134 | ....01220 | 20,58 | | | |
| 12,25 | 205 | 134 | ....01225 | 22,35 | 59,48 | 74,85 | 82,12 |
| 12,3 | 205 | 134 | ....01230 | 20,28 | | | |
| 12,4 | 205 | 134 | ....01240 | 20,28 | | | |

| D h8 | L | l | CODE | HSS 5200..... € | HSS+5%Co 5230..... € | HSS+5%Co 6230..... € QUARTZ | HSS+5%Co 7230..... € TITANITE |
|---|---|---|---|---|---|---|---|
| 12,5 | 205 | 134 | ....01250 | 19,43 | 54,07 | 68,90 | 76,17 |
| 12,6 | 205 | 134 | ....01260 | 19,06 | | | |
| 12,7 | 205 | 134 | ....01270 | 31,10 | | | |
| 12,75 | 205 | 134 | ....01275 | 31,10 | 64,34 | 80,19 | 87,46 |
| 12,8 | 205 | 134 | ....01280 | 31,10 | | | |
| 12,9 | 205 | 134 | ....01290 | 33,66 | | | |
| 13 | 205 | 134 | ....01300 | 21,02 | 50,69 | 65,18 | 72,45 |
| 13,25 | 214 | 140 | ....01325 | 39,76 | | | |
| 13,5 | 214 | 140 | ....01350 | 25,01 | | | |
| 13,75 | 214 | 140 | ....01375 | 43,62 | | | |
| 14 | 214 | 140 | ....01400 | 24,58 | | | |
| 14,25 | 220 | 144 | ....01425 | 53,09 | | | |
| 14,5 | 220 | 144 | ....01450 | 30,05 | | | |
| 14,75 | 220 | 144 | ....01475 | 54,87 | | | |
| 15 | 220 | 144 | ....01500 | 28,21 | | | |
| 15,25 | 227 | 149 | ....01525 | 54,87 | | | |
| 15,5 | 227 | 149 | ....01550 | 41,85 | | | |
| 15,75 | 227 | 149 | ....01575 | 56,53 | | | |
| 16 | 227 | 149 | ....01600 | 34,54 | | | |
| 16,25 | 235 | 154 | ....01625 | 58,32 | | | |
| 16,5 | 235 | 154 | ....01650 | 54,81 | | | |
| 16,75 | 235 | 154 | ....01675 | 58,32 | | | |
| 17 | 235 | 154 | ....01700 | 42,96 | | | |
| 17,25 | 241 | 158 | ....01725 | 58,80 | | | |
| 17,5 | 241 | 158 | ....01750 | 55,24 | | | |
| 17,75 | 241 | 158 | ....01775 | 58,80 | | | |
| 18 | 241 | 158 | ....01800 | 46,20 | | | |
| 18,25 | 247 | 162 | ....01825 | 93,33 | | | |
| 18,5 | 247 | 162 | ....01850 | 87,68 | | | |
| 18,75 | 247 | 162 | ....01875 | 93,33 | | | |
| 19 | 247 | 162 | ....01900 | 56,53 | | | |
| 19,25 | 254 | 166 | ....01925 | 98,55 | | | |
| 19,5 | 254 | 166 | ....01950 | 92,53 | | | |
| 19,75 | 254 | 166 | ....01975 | 92,53 | | | |
| 20 | 254 | 166 | ....02000 | 67,34 | | | |

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**PUNTE EXTRA LUNGHE** TWIST DRILLS, EXTRA LONG SERIES **UBERLANGE SPIRALBOHRER** FORETS EXTRA LONGS **BROCAS EXTRA LARGA**

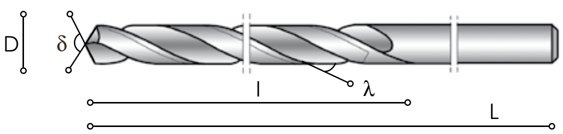
## CL 111-1

DIN 1869/1 — N — λ 25°-30° — δ 118° — STANDARD

## CL 110-1

FORI PROFONDI
DEEP HOLE

DIN 1869/1 — S — λ 35°-40° — δ 135° — DIN 1412 C




CL111-1 CL110-1

**Dal** ∅ 2 **al** ∅ 8 = **5 pz** **Dal** ∅ 8,25 **al** ∅ 13 = **1 pz**

| D h8 | L | l | CODE | HSS 5111..... € | HSS+5%Co 5110..... € | HSS+5%Co 6110..... € QUARTZ | HSS+5%Co 7110..... € TITANITE |
|---|---|---|---|---|---|---|---|
| 2 | 125 | 85 | ....00200 | 6,83 | 9,41 | 12,27 | 14,09 |
| 2,25 | 135 | 90 | ....00225 | 8,24 | 11,92 | 15,38 | 16,84 |
| 2,5 | 140 | 95 | ....00250 | 6,58 | 9,41 | 12,62 | 14,09 |
| 2,75 | 150 | 100 | ....00275 | 8,24 | 13,16 | 17,77 | 18,78 |
| 3 | 150 | 100 | ....00300 | 7,20 | 10,70 | 15,06 | 16,08 |
| 3,25 | 155 | 105 | ....00325 | 8,85 | 13,16 | 17,77 | 18,78 |
| 3,5 | 165 | 115 | ....00350 | 8,24 | 10,81 | 15,19 | 17,91 |
| 3,75 | 165 | 115 | ....00375 | 10,69 | 15,18 | 19,99 | 22,72 |
| 4 | 175 | 120 | ....00400 | 7,80 | 10,81 | 15,19 | 17,91 |
| 4,25 | 175 | 120 | ....00425 | 10,94 | 16,11 | 21,83 | 25,02 |
| 4,5 | 185 | 125 | ....00450 | 8,67 | 12,66 | 19,72 | 23,08 |
| 4,75 | 185 | 125 | ....00475 | 10,94 | 16,60 | 24,05 | 27,41 |
| 5 | 195 | 135 | ....00500 | 8,73 | 12,66 | 19,72 | 23,08 |
| 5,25 | 195 | 135 | ....00525 | 12,17 | 16,77 | 24,24 | 27,61 |
| 5,5 | 205 | 140 | ....00550 | 10,10 | 13,58 | 20,74 | 24,10 |
| 5,75 | 205 | 140 | ....00575 | 13,84 | 16,77 | 24,24 | 27,61 |
| 6 | 205 | 140 | ....00600 | 11,06 | 12,79 | 19,86 | 23,22 |
| 6,25 | 215 | 150 | ....00625 | 15,30 | 19,67 | 29,35 | 33,68 |
| 6,5 | 215 | 150 | ....00650 | 14,26 | 16,77 | 26,16 | 30,49 |
| 6,75 | 225 | 155 | ....00675 | 16,66 | 21,39 | 31,24 | 35,57 |
| 7 | 225 | 155 | ....00700 | 13,84 | 18,38 | 27,93 | 32,26 |
| 7,25 | 225 | 155 | ....00725 | 19,55 | 27,22 | 37,66 | 41,99 |
| 7,5 | 225 | 155 | ....00750 | 17,02 | 22,98 | 33,00 | 37,33 |
| 7,75 | 240 | 165 | ....00775 | 19,55 | 28,09 | 39,58 | 44,47 |
| 8 | 240 | 165 | ....00800 | 18,87 | 23,47 | 34,50 | 39,39 |
| 8,25 | 240 | 165 | ....00825 | 27,66 | 36,75 | 49,11 | 54,00 |
| 8,5 | 240 | 165 | ....00850 | 25,57 | 31,83 | 43,70 | 48,59 |
| 8,75 | 250 | 175 | ....00875 | 27,66 | 39,33 | 51,94 | 56,83 |
| 9 | 250 | 175 | ....00900 | 24,40 | 33,92 | 46,00 | 50,89 |
| 9,25 | 250 | 175 | ....00925 | 29,99 | 46,03 | 59,31 | 64,20 |
| 9,5 | 250 | 175 | ....00950 | 28,69 | 39,33 | 51,94 | 56,83 |
| 9,75 | 265 | 185 | ....00975 | 31,64 | 46,88 | 62,85 | 69,20 |
| 10 | 265 | 185 | ....01000 | 26,67 | 35,64 | 50,49 | 56,84 |
| 10,5 | 265 | 185 | ....01050 | 31,95 | 47,01 | 64,23 | 71,26 |
| 11 | 280 | 195 | ....01100 | 35,89 | 45,16 | 62,20 | 69,23 |
| 11,5 | 280 | 195 | ....01150 | 39,20 | 56,10 | 74,23 | 81,26 |
| 12 | 295 | 205 | ....01200 | 47,37 | 50,58 | 68,15 | 75,19 |
| 12,5 | 295 | 205 | ....01250 | 49,64 | 65,32 | 84,37 | 91,40 |
| 13 | 295 | 205 | ....01300 | 47,62 | 65,32 | 84,37 | 91,40 |

**PUNTE EXTRA LUNGHE** TWIST DRILLS, EXTRA LONG SERIES **UBERLANGE SPIRALBOHRER** FORETS EXTRA LONGS **BROCAS EXTRA LARGA**

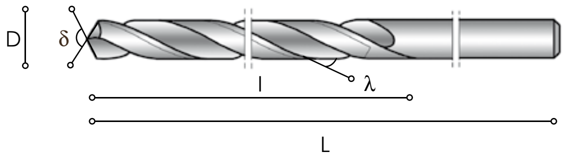
## CL 111-2

DIN 1869/2 — N — λ 25°-30° — δ 118° — STANDARD

## CL 110-2

FORI PROFONDI
DEEP HOLE

DIN 1869/2 — S — λ 35°-40° — δ 135° — DIN 1412 C




CL111-2 CL110-2

**Dal ∅ 3 al ∅ 8 = 5 pz** **Dal ∅ 8,25 al ∅ 13 = 1 pz**

| D h8 | L | l | CODE | HSS 5111..... € | HSS+5%Co 5110..... € | HSS+5%Co 6110..... € QUARTZ | HSS+5%Co 7110..... € TITANITE |
|---|---|---|---|---|---|---|---|
| 3 | 190 | 130 | ....20300 | 9,28 | 14,01 | 20,32 | 23,02 |
| 3,25 | 200 | 135 | ....20325 | 12,23 | 17,21 | 23,84 | 26,54 |
| 3,5 | 210 | 145 | ....20350 | 10,64 | 14,81 | 21,20 | 23,90 |
| 3,75 | 210 | 145 | ....20375 | 12,23 | 17,21 | 23,84 | 26,54 |
| 4 | 220 | 150 | ....20400 | 10,69 | 14,81 | 21,94 | 25,03 |
| 4,25 | 220 | 150 | ....20425 | 16,54 | 22,13 | 30,90 | 34,51 |
| 4,5 | 235 | 160 | ....20450 | 12,91 | 17,58 | 27,44 | 31,96 |
| 4,75 | 235 | 160 | ....20475 | 17,27 | 22,13 | 32,45 | 36,97 |
| 5 | 245 | 170 | ....20500 | 13,03 | 16,54 | 26,30 | 30,82 |
| 5,25 | 245 | 170 | ....20525 | 17,82 | 24,71 | 35,28 | 39,80 |
| 5,5 | 260 | 180 | ....20550 | 18,19 | 21,76 | 32,04 | 36,56 |
| 5,75 | 260 | 180 | ....20575 | 17,58 | 24,71 | 35,28 | 39,80 |
| 6 | 260 | 180 | ....20600 | 15,86 | 21,76 | 32,04 | 36,56 |
| 6,25 | 275 | 190 | ....20625 | 23,47 | 25,81 | 39,68 | 46,03 |
| 6,5 | 275 | 190 | ....20650 | 19,55 | 24,04 | 37,72 | 44,07 |
| 6,75 | 290 | 200 | ....20675 | 23,91 | 29,80 | 44,06 | 50,41 |
| 7 | 290 | 200 | ....20700 | 21,02 | 26,92 | 40,90 | 47,25 |
| 7,25 | 290 | 200 | ....20725 | 27,35 | 35,70 | 50,55 | 56,91 |
| 7,5 | 290 | 200 | ....20750 | 24,46 | 32,02 | 46,50 | 52,85 |
| 7,75 | 305 | 210 | ....20775 | 28,58 | 35,70 | 56,20 | 65,73 |
| 8 | 305 | 210 | ....20800 | 27,66 | 31,16 | 51,21 | 60,74 |
| 8,25 | 305 | 210 | ....20825 | 36,13 | 51,93 | 74,05 | 83,58 |
| 8,5 | 305 | 210 | ....20850 | 37,06 | 47,19 | 68,85 | 78,37 |
| 8,75 | 320 | 220 | ....20875 | 36,13 | 51,93 | 74,05 | 83,58 |
| 9 | 320 | 220 | ....20900 | 34,23 | 45,35 | 66,81 | 76,34 |
| 9,25 | 320 | 220 | ....20925 | 42,89 | 62,30 | 85,46 | 94,99 |
| 9,5 | 320 | 220 | ....20950 | 41,97 | 54,20 | 76,56 | 86,09 |
| 9,75 | 340 | 235 | ....20975 | 43,76 | 64,89 | 88,31 | 97,84 |
| 10 | 340 | 235 | ....21000 | 39,39 | 49,84 | 71,76 | 81,28 |
| 10,5 | 340 | 235 | ....21050 | 51,43 | 69,43 | 95,16 | 105,70 |
| 11 | 365 | 250 | ....21100 | 59,05 | 62,30 | 96,70 | 112,52 |
| 11,5 | 365 | 250 | ....21150 | 65,75 | 80,01 | 116,18 | 132,00 |
| 12 | 375 | 260 | ....21200 | 65,75 | 70,24 | 105,43 | 121,25 |
| 12,5 | 375 | 260 | ....21250 | 70,17 | 77,30 | 113,21 | 129,03 |
| 13 | 375 | 260 | ....21300 | 68,63 | 80,01 | 116,18 | 132,00 |

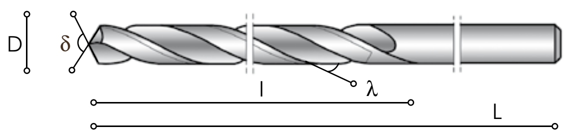
carmon

## PUNTE EXTRA LUNGHE TWIST DRILLS, EXTRA LONG SERIES ÜBERLANGE SPIRALBOHRER FORETS EXTRA LONGS BROCAS EXTRA LARGA

**CL 111-3** DIN 1869/3 N λ 25°-30° δ 118° STANDARD

**CL 110-3** DIN 1869/3 S λ 35°-40° δ 135° DIN 1412 C

FORI PROFONDI
DEEP HOLE





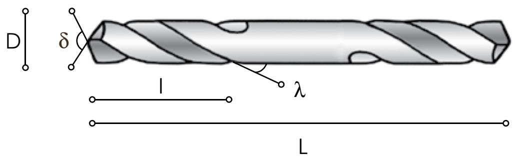
**Dal ∅ 3,5 al ∅ 8 = 5 pz** **Dal ∅ 8,25 al ∅ 13 = 1 pz**

| D h8 | L | l | CODE | HSS 5111….. € | HSS+5%Co 5110….. € | HSS+5%Co 6110….. € QUARTZ | HSS+5%Co 7110….. € TITANITE |
|---|---|---|---|---|---|---|---|
| 3,5 | 265 | 180 | ….30350 | 15,18 | 20,03 | 30,84 | 35,69 |
| 3,75 | 265 | 180 | ….30375 | 15,86 | 22,73 | 33,81 | 38,66 |
| 4 | 280 | 190 | ….30400 | 14,26 | 20,03 | 30,84 | 35,69 |
| 4,25 | 280 | 190 | ….30425 | 20,40 | 27,66 | 40,96 | 46,84 |
| 4,5 | 295 | 200 | ….30450 | 18,19 | 24,89 | 37,92 | 43,79 |
| 4,75 | 295 | 200 | ….30475 | 19,36 | 27,66 | 40,96 | 46,84 |
| 5 | 315 | 210 | ….30500 | 15,18 | 23,54 | 41,70 | 50,50 |
| 5,25 | 315 | 210 | ….30525 | 28,63 | 29,56 | 48,32 | 57,12 |
| 5,5 | 330 | 225 | ….30550 | 20,65 | 26,79 | 45,27 | 54,08 |
| 5,75 | 330 | 225 | ….30575 | 21,63 | 29,93 | 48,72 | 57,53 |
| 6 | 330 | 225 | ….30600 | 20,34 | 26,92 | 45,41 | 54,22 |
| 6,25 | 350 | 235 | ….30625 | 26,79 | 33,31 | 53,57 | 63,10 |
| 6,5 | 350 | 235 | ….30650 | 24,34 | 30,73 | 50,73 | 60,26 |
| 6,75 | 370 | 250 | ….30675 | 31,89 | 42,28 | 71,90 | 86,21 |
| 7 | 370 | 250 | ….30700 | 30,17 | 39,57 | 68,91 | 83,23 |
| 7,25 | 370 | 250 | ….30725 | 36,44 | 47,62 | 77,77 | 92,09 |
| 7,5 | 370 | 250 | ….30750 | 35,08 | 44,42 | 74,25 | 88,57 |
| 7,75 | 390 | 265 | ….30775 | 36,69 | 52,73 | 83,39 | 97,70 |
| 8 | 390 | 265 | ….30800 | 35,70 | 46,15 | 76,15 | 90,46 |
| 8,25 | 390 | 265 | ….30825 | 52,78 | 63,04 | 94,73 | 109,05 |
| 8,5 | 390 | 265 | ….30850 | 50,94 | 57,76 | 88,92 | 103,24 |
| 8,75 | 410 | 280 | ….30875 | 54,87 | 66,36 | 111,09 | 132,54 |
| 9 | 410 | 280 | ….30900 | 50,26 | 61,33 | 105,55 | 127,00 |
| 9,25 | 410 | 280 | ….30925 | 61,93 | 77,91 | 123,80 | 145,25 |
| 9,5 | 410 | 280 | ….30950 | 56,47 | 72,08 | 117,38 | 138,83 |
| 9,75 | 430 | 295 | ….30975 | 61,02 | 83,69 | 130,16 | 151,61 |
| 10 | 430 | 295 | ….31000 | 54,75 | 70,24 | 115,36 | 136,81 |
| 10,5 | 430 | 295 | ….31050 | 60,03 | 73,79 | 123,43 | 147,17 |
| 11 | 455 | 310 | ….31100 | 68,45 | 72,94 | 143,61 | 179,21 |
| 11,5 | 455 | 310 | ….31150 | 73,62 | 82,70 | 154,36 | 189,95 |
| 12 | 480 | 330 | ….31200 | 72,82 | 85,46 | 157,39 | 192,99 |
| 12,5 | 480 | 330 | ….31250 | 76,63 | 94,32 | 167,13 | 202,73 |
| 13 | 480 | 330 | ….31300 | 78,90 | 95,24 | 168,15 | 203,75 |

PUNTE EXTRA CORTE DOPPIE DOUBLE TWIST DRILLS, STUB LENGTH EXTRA KURZE SPIRALBOHRER, ZWEISEITIG
FORETS EXTRA COURTES DOUBLE TAILLE BROCAS EXTRA CORTA DOBLES

# CL 150

CARMON NORM. N λ 25°-30° δ 118° STANDARD

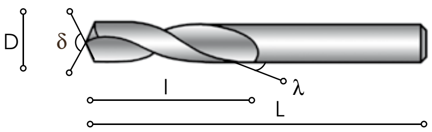



| D h8 | L | l | CODE | HSS 5150..... € |
|---|---|---|---|---|
| 2,2 | 40 | 13 | ....00220 | 2,46 |
| 2,4 | 43 | 14 | ....00240 | 2,46 |
| 2,5 | 43 | 14 | ....00250 | 2,46 |
| 2,8 | 46 | 16 | ....00280 | 2,46 |
| 3 | 46 | 16 | ....00300 | 2,46 |
| 3,1 | 49 | 18 | ....00310 | 2,34 |
| 3,2 | 49 | 18 | ....00320 | 2,34 |
| 3,4 | 52 | 20 | ....00340 | 2,34 |
| 3,5 | 52 | 20 | ....00350 | 2,46 |
| 3,7 | 52 | 20 | ....00370 | 2,46 |
| 3,8 | 55 | 22 | ....00380 | 2,46 |
| 4 | 55 | 22 | ....00400 | 2,46 |
| 4,1 | 55 | 22 | ....00410 | 2,46 |
| 4,2 | 55 | 22 | ....00420 | 2,46 |
| 4,3 | 58 | 24 | ....00430 | 5,53 |
| 4,4 | 58 | 24 | ....00440 | 5,53 |
| 4,5 | 58 | 24 | ....00450 | 3,51 |
| 4,6 | 58 | 24 | ....00460 | 5,41 |
| 4,9 | 62 | 26 | ....00490 | 5,41 |
| 5 | 62 | 26 | ....00500 | 3,94 |
| 5,2 | 62 | 26 | ....00520 | 5,53 |
| 5,3 | 62 | 26 | ....00530 | 5,53 |
| 5,5 | 66 | 28 | ....00550 | 4,73 |
| 5,6 | 66 | 28 | ....00560 | 7,38 |
| 5,8 | 66 | 28 | ....00580 | 7,38 |
| 6 | 66 | 28 | ....00600 | 5,22 |

## CL 102

CARMON NORM. N λ 25°-30° δ 120° DIN 1412 A

CL102

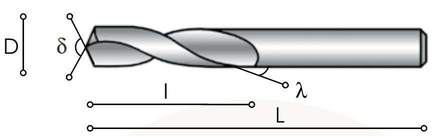


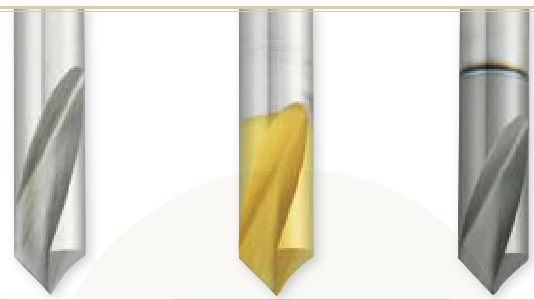

| D h6 | L | l | CODE | HSS+8%Co 5102..... € | HSS+8%Co 6102..... € QUARTZ | HSS+8%Co 7102..... € TITANITE |
|---|---|---|---|---|---|---|
| 6 | 66 | 20 | ....00060 | 14,32 | 17,81 | 19,40 |
| 8 | 79 | 25 | ....00080 | 16,35 | 21,09 | 23,47 |
| 10 | 89 | 25 | ....01000 | 16,35 | 21,67 | 24,55 |
| 12 | 102 | 30 | ....01200 | 22,50 | 29,49 | 33,16 |
| 16 | 115 | 35 | ....01600 | 31,10 | 39,44 | 43,49 |
| 20 | 131 | 40 | ....02000 | 60,83 | 74,37 | 80,12 |

## CL 103

CARMON NORM. N λ 25°-30° δ 90° DIN 1412 A

CL103



| D h6 | L | l | CODE | HSS+8%Co 5103..... € | HSS+8%Co 6103..... € QUARTZ | HSS+8%Co 7103..... € TITANITE |
|---|---|---|---|---|---|---|
| 6 | 66 | 20 | ....00060 | 14,32 | 17,81 | 19,40 |
| 8 | 79 | 25 | ....00080 | 16,35 | 21,09 | 23,47 |
| 10 | 89 | 25 | ....01000 | 16,35 | 21,67 | 24,55 |
| 12 | 102 | 30 | ....01200 | 22,50 | 29,49 | 33,16 |
| 16 | 115 | 35 | ....01600 | 31,10 | 39,44 | 43,49 |
| 20 | 131 | 40 | ....02000 | 60,83 | 74,37 | 80,12 |

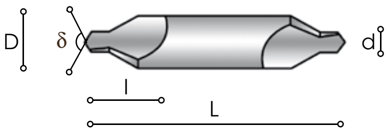
## CL 910

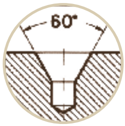
DIN 333/A

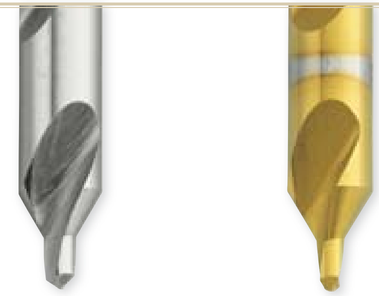
λ 25°-30°

δ 118°

CL910



| d k13 | D h9 | L | CODE | HSS 5910..... € | HSS 6910..... € QUARTZ |
|---|---|---|---|---|---|
| 1 | 3,15 | 31,5 | ....00100 | 5,29 | 7,34 |
| 1,25 | 3,15 | 31,5 | ....00125 | 5,10 | 7,13 |
| 1,6 | 4 | 35,5 | ....00160 | 4,87 | 6,87 |
| 2 | 5 | 40 | ....00200 | 5,35 | 7,95 |
| 2,5 | 6,3 | 45 | ....00250 | 6,03 | 9,09 |
| 3,15 | 8 | 50 | ....00315 | 7,16 | 10,33 |
| 4 | 10 | 56 | ....00400 | 12,05 | 16,25 |
| 5 | 12,5 | 63 | ....00500 | 17,27 | 22,25 |
| 6,3 | 16 | 71 | ....00630 | 24,77 | 30,49 |

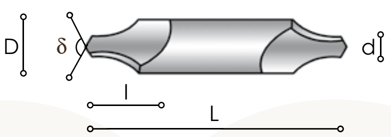
## CL 920

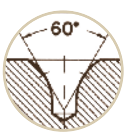
DIN 333/R

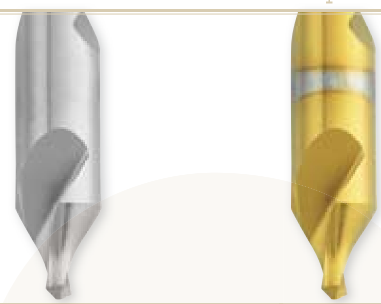
λ 25°-30°

δ 118°

CL920



| d k13 | D h9 | L | CODE | HSS 5920..... € | HSS 6920..... € QUARTZ |
|---|---|---|---|---|---|
| 1 | 3,15 | 31,5 | ....00100 | 5,41 | 7,47 |
| 1,25 | 3,15 | 31,5 | ....00125 | 5,22 | 7,26 |
| 1,6 | 4 | 35,5 | ....00160 | 4,19 | 6,13 |
| 2 | 5 | 40 | ....00200 | 6,83 | 9,57 |
| 2,5 | 6,3 | 45 | ....00250 | 7,28 | 10,46 |
| 3,15 | 8 | 50 | ....00315 | 7,80 | 11,03 |
| 4 | 10 | 56 | ....00400 | 12,42 | 16,65 |
| 5 | 12,5 | 63 | ....00500 | 18,25 | 23,32 |
| 6,3 | 16 | 71 | ....00630 | 26,05 | 31,91 |

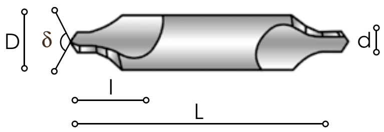
# CL 930

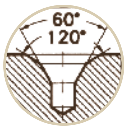
DIN 333/B

λ 25°-30°

δ 118°

CL930



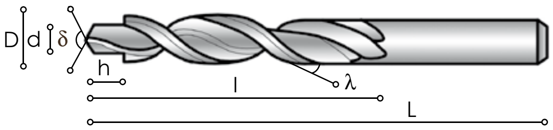



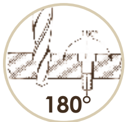

| d k13 | D h9 | L | CODE | HSS 5930..... € | HSS 6930..... € QUARTZ |
|---|---|---|---|---|---|
| 1 | 4 | 35,5 | ....00100 | 8,73 | 11,12 |
| 1,25 | 5 | 40 | ....00125 | 8,91 | 11,85 |
| 1,6 | 6,3 | 45 | ....00160 | 8,91 | 12,25 |
| 2 | 8 | 50 | ....00200 | 8,91 | 12,25 |
| 2,5 | 10 | 56 | ....00250 | 12,60 | 16,85 |
| 3,15 | 11,2 | 60 | ....00315 | 15,67 | 20,23 |
| 4 | 14 | 67 | ....00400 | 22,67 | 28,19 |
| 5 | 18 | 75 | ....00500 | 30,58 | 37,79 |
| 6,3 | 20 | 80 | ....00630 | 40,49 | 50,29 |

## CL 270

DIN 8376 · N · λ 25°-30° · δ 118° · DIN 1412 A

CL270



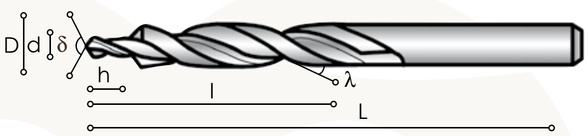



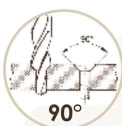

| VITE SCREW | D h8 | d h9 | L | l | h | CODE | HSS 5270..... € |
|---|---|---|---|---|---|---|---|
| M3 | 6 | 3,4 | 93 | 57 | 9 | ....00003 | 34,11 |
| M4 | 8 | 4,5 | 117 | 75 | 11 | ....00004 | 39,76 |
| M5 | 10 | 5,5 | 133 | 87 | 13 | ....00005 | 45,84 |
| M6 | 11 | 6,6 | 142 | 94 | 15 | ....00006 | 50,20 |
| M8 | 15 | 9 | 169 | 114 | 19 | ....00008 | 72,90 |
| M10 | 18 | 11 | 191 | 130 | 23 | ....00010 | 131,43 |

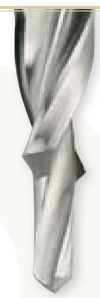
## CL 271

DIN 8374 · N · λ 25°-30° · δ 118° · DIN 1412 A

CL271



| VITE SCREW | D h8 | d h9 | L | l | h | CODE | HSS 5271..... € |
|---|---|---|---|---|---|---|---|
| M3 | 6 | 3,2 | 93 | 57 | 9 | ....00003 | 32,32 |
| M4 | 8 | 4,3 | 117 | 75 | 11 | ....00004 | 39,14 |
| M5 | 10 | 5,3 | 133 | 87 | 13 | ....00005 | 49,16 |
| M6 | 11,5 | 6,4 | 142 | 94 | 15 | ....00006 | 58,07 |
| M8 | 15 | 8,4 | 169 | 114 | 19 | ....00008 | 96,35 |

PUNTE A GRADINO CON ELICHE INDIPENDENTI SUBLAND DRILLS WITH INDIPENDENT SPIRAL MEHRFASEN-STUFENBOHRER FORETS A ETAGE AVEC HELICE INDEPENDANTE BROCAS BIDIAMETRALES

## CL 272

DIN 8378

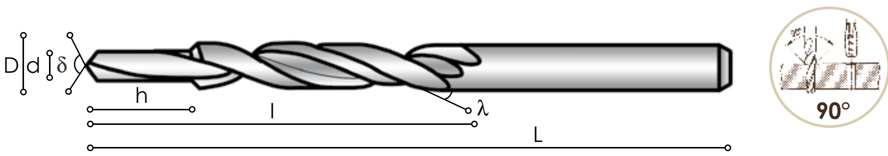
N

λ 25°-30°

δ 118°

DIN 1412 A

CL272

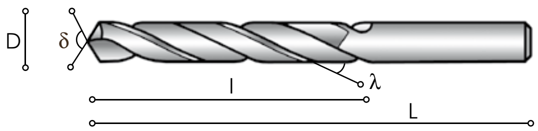



| VITE SCREW | D h8 | D h9 | L | l | h | CODE | HSS 5272..... € |
|---|---|---|---|---|---|---|---|
| M3 | 3,4 | 2,5 | 70 | 39 | 8,8 | ....00003 | 28,94 |
| M4 | 4,5 | 3,3 | 80 | 47 | 11,4 | ....00004 | 31,03 |
| M5 | 5,5 | 4,2 | 93 | 57 | 13,6 | ....00005 | 32,20 |
| M6 | 6,6 | 5 | 101 | 63 | 16,5 | ....00006 | 34,65 |
| M8 | 9 | 6,8 | 125 | 81 | 21 | ....00008 | 39,14 |
| M10 | 11 | 8,5 | 142 | 94 | 25,5 | ....00010 | 52,53 |
| M12 | 13,5 | 10,2 | 160 | 108 | 30 | ....00012 | 67,60 |

PUNTE ELICOIDALI EXTRA CORTE TWIST DRILLS, STUB LENGTH EXTRA KURZE SPIRALBOHRER FORETS EXTRA COURTE BROCAS EXTRA CORTA

# CL 400

DIN 6539 — N — λ 30° — δ 130° — A-GRIND — 3xD




CL400

| D h7 | L | l | CODE | Micrograin Carbide Co10 5400..... € | Micrograin Carbide Co10 7400..... € SAPPHIRE |
|---|---|---|---|---|---|
| 2 | 38 | 12 | ....00200 | 8,87 | 12,02 |
| 2,1 | 38 | 12 | ....00210 | 9,96 | 13,62 |
| 2,2 | 40 | 13 | ....00220 | 9,96 | 13,62 |
| 2,3 | 40 | 13 | ....00230 | 9,96 | 13,62 |
| 2,4 | 43 | 14 | ....00240 | 9,96 | 13,62 |
| 2,5 | 43 | 14 | ....00250 | 9,96 | 13,62 |
| 2,6 | 43 | 14 | ....00260 | 9,96 | 13,62 |
| 2,7 | 46 | 16 | ....00270 | 13,21 | 17,20 |
| 2,8 | 46 | 16 | ....00280 | 13,21 | 17,20 |
| 2,9 | 46 | 16 | ....00290 | 13,21 | 17,20 |
| 3 | 46 | 16 | ....00300 | 13,21 | 17,20 |
| 3,1 | 49 | 18 | ....00310 | 13,45 | 17,46 |
| 3,2 | 49 | 18 | ....00320 | 13,45 | 17,46 |
| 3,3 | 49 | 18 | ....00330 | 13,45 | 17,46 |
| 3,4 | 52 | 20 | ....00340 | 14,47 | 18,58 |
| 3,5 | 52 | 20 | ....00350 | 14,47 | 18,58 |
| 3,6 | 52 | 20 | ....00360 | 15,98 | 20,24 |
| 3,7 | 52 | 20 | ....00370 | 15,98 | 20,24 |
| 3,8 | 52 | 20 | ....00380 | 17,24 | 21,63 |
| 3,9 | 55 | 22 | ....00390 | 17,24 | 21,63 |
| 4 | 55 | 22 | ....00400 | 17,24 | 21,63 |
| 4,1 | 55 | 22 | ....00410 | 18,15 | 23,61 |
| 4,2 | 55 | 22 | ....00420 | 18,15 | 23,61 |
| 4,3 | 58 | 24 | ....00430 | 19,23 | 24,80 |
| 4,4 | 58 | 24 | ....00440 | 19,23 | 24,80 |
| 4,5 | 58 | 24 | ....00450 | 19,23 | 24,80 |
| 4,6 | 58 | 24 | ....00460 | 19,23 | 24,80 |
| 4,7 | 58 | 24 | ....00470 | 20,68 | 26,39 |
| 4,8 | 62 | 26 | ....00480 | 20,68 | 26,39 |
| 4,9 | 62 | 26 | ....00490 | 20,68 | 26,39 |
| 5 | 62 | 26 | ....00500 | 20,68 | 26,39 |
| 5,1 | 62 | 26 | ....00510 | 20,68 | 26,39 |
| 5,2 | 62 | 26 | ....00520 | 26,94 | 33,28 |
| 5,3 | 62 | 26 | ....00530 | 26,94 | 33,28 |
| 5,4 | 66 | 28 | ....00540 | 26,94 | 33,28 |
| 5,5 | 66 | 28 | ....00550 | 26,94 | 33,28 |
| 5,6 | 66 | 28 | ....00560 | 28,64 | 35,15 |
| 5,7 | 66 | 28 | ....00570 | 28,64 | 35,15 |
| 5,8 | 66 | 28 | ....00580 | 28,64 | 35,15 |
| 5,9 | 66 | 28 | ....00590 | 28,64 | 35,15 |

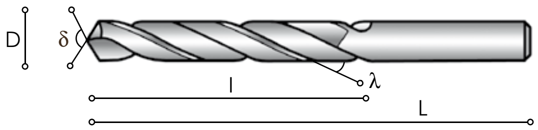
carmon

**PUNTE ELICOIDALI EXTRA CORTE** TWIST DRILLS, STUB LENGTH **EXTRA KURZE SPIRALBOHRER** FORETS EXTRA COURTE **BROCAS EXTRA CORTA**

## CL 400

DIN 6539 | N | λ 30° | δ 130° | A-GRIND | 3xD

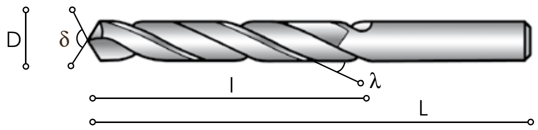
CL400




| D h7 | L | l | CODE | Micrograin Carbide Co10 | |
|---|---|---|---|---|---|
| | | | | 5400….. € | 7400….. € SAPPHIRE |
| 6 | 66 | 28 | ….00600 | 28,64 | 35,15 |
| 6,1 | 70 | 31 | ….00610 | 35,80 | 43,70 |
| 6,2 | 70 | 31 | ….00620 | 35,80 | 43,70 |
| 6,3 | 70 | 31 | ….00630 | 35,80 | 43,70 |
| 6,4 | 70 | 31 | ….00640 | 35,80 | 43,70 |
| 6,5 | 70 | 31 | ….00650 | 34,77 | 42,57 |
| 6,6 | 70 | 31 | ….00660 | 42,26 | 50,81 |
| 6,7 | 70 | 31 | ….00670 | 42,26 | 50,81 |
| 6,8 | 74 | 34 | ….00680 | 42,26 | 50,81 |
| 6,9 | 74 | 34 | ….00690 | 42,26 | 50,81 |
| 7 | 74 | 34 | ….00700 | 41,78 | 50,28 |
| 7,5 | 74 | 34 | ….00750 | 50,27 | 59,62 |
| 8 | 79 | 37 | ….00800 | 56,24 | 67,36 |
| 8,5 | 79 | 37 | ….00850 | 70,88 | 84,54 |
| 9 | 84 | 40 | ….00900 | 71,61 | 85,34 |
| 9,5 | 84 | 40 | ….00950 | 79,68 | 94,22 |
| 10 | 89 | 43 | ….01000 | 81,73 | 96,47 |
| 10,2 | 89 | 43 | ….01020 | 96,97 | 113,24 |
| 10,5 | 89 | 43 | ….01050 | 96,97 | 113,24 |
| 11 | 95 | 47 | ….01100 | 107,72 | 125,06 |
| 11,5 | 95 | 47 | ….01150 | 126,21 | 145,40 |
| 12 | 102 | 51 | ….01200 | 126,21 | 147,25 |
| 13 | 102 | 51 | ….01300 | 152,91 | 177,48 |

# CL 410

DIN 338 | N | λ 30° | δ 130° | A-GRIND | 5xD





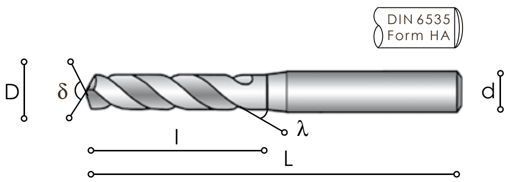
| D h7 | L | l | CODE | Micrograin Carbide Co10 | |
|---|---|---|---|---|---|
| | | | | 5410..... € | 7410..... € SAPPHIRE |
| 2 | 49 | 24 | ....00200 | 11,64 | 15,07 |
| 2,2 | 53 | 27 | ....00220 | 15,02 | 19,19 |
| 2,5 | 57 | 30 | ....00250 | 14,72 | 18,86 |
| 2,6 | 57 | 30 | ....00260 | 19,71 | 24,35 |
| 3 | 61 | 33 | ....00300 | 19,06 | 23,63 |
| 3,1 | 65 | 36 | ....00310 | 19,06 | 23,63 |
| 3,3 | 65 | 36 | ....00330 | 19,23 | 23,82 |
| 3,5 | 70 | 39 | ....00350 | 20,93 | 25,69 |
| 4 | 75 | 43 | ....00400 | 23,64 | 28,67 |
| 4,2 | 75 | 43 | ....00420 | 24,42 | 30,51 |
| 4,5 | 80 | 47 | ....00450 | 29,43 | 37,00 |
| 5 | 86 | 52 | ....00500 | 32,14 | 39,98 |
| 5,5 | 93 | 57 | ....00550 | 42,56 | 51,44 |
| 6 | 93 | 57 | ....00600 | 45,09 | 54,23 |
| 6,5 | 101 | 63 | ....00650 | 55,82 | 68,20 |
| 6,8 | 109 | 69 | ....00680 | 67,57 | 81,13 |
| 7 | 109 | 69 | ....00700 | 66,96 | 80,46 |
| 8 | 117 | 75 | ....00800 | 79,68 | 94,45 |
| 8,5 | 117 | 75 | ....00850 | 92,82 | 110,52 |
| 10 | 133 | 87 | ....01000 | 116,94 | 137,05 |

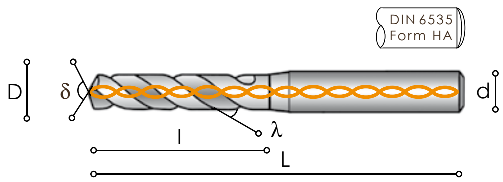
carmon

## PUNTE A DUE ELICHE CON CODOLO RINFORZATO TWO FLUTE TWIST DRILLS WITH REINFORCED SHANK SPIRALBOHRER-ZWEISCHNEIDER MIT VERSTÄRKTEM SHAFT FORETS HELICOIDAUX A DEUX DENTS BROCAS DE DOS LABIOS

**CL 415** DIN 6537K N λ 30° δ 140° S-GRIND 3xD

**CL 425** DIN 6537K N λ 30° δ 140° S-GRIND 3xD




CL415 CL425

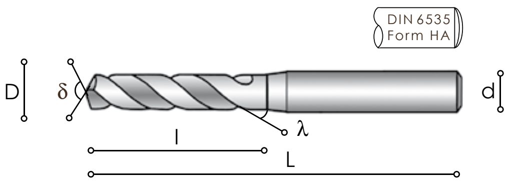
| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10 7415..... € SAPPHIRE | Micrograin Carbide Co10 7425..... € SAPPHIRE |
|---|---|---|---|---|---|---|
| 3 | 62 | 20 | 6 | ....00300 | 35,44 | 57,23 |
| 3,1 | 62 | 20 | 6 | ....00310 | 35,44 | 57,23 |
| 3,2 | 62 | 20 | 6 | ....00320 | 35,44 | 57,23 |
| 3,3 | 62 | 20 | 6 | ....00330 | 35,44 | 57,23 |
| 3,4 | 62 | 20 | 6 | ....00340 | 35,44 | 57,23 |
| 3,5 | 62 | 20 | 6 | ....00350 | 35,44 | 57,23 |
| 3,6 | 62 | 20 | 6 | ....00360 | 35,44 | 57,23 |
| 3,7 | 62 | 20 | 6 | ....00370 | 35,44 | 57,23 |
| 3,8 | 66 | 24 | 6 | ....00380 | 35,44 | 57,23 |
| 3,9 | 66 | 24 | 6 | ....00390 | 35,44 | 57,23 |
| 4 | 66 | 24 | 6 | ....00400 | 35,44 | 57,23 |
| 4,1 | 66 | 24 | 6 | ....00410 | 35,44 | 57,23 |
| 4,2 | 66 | 24 | 6 | ....00420 | 35,44 | 57,23 |
| 4,3 | 66 | 24 | 6 | ....00430 | 35,44 | 57,23 |
| 4,4 | 66 | 24 | 6 | ....00440 | 35,44 | 57,23 |
| 4,5 | 66 | 24 | 6 | ....00450 | 35,44 | 57,23 |
| 4,6 | 66 | 24 | 6 | ....00460 | 35,44 | 57,23 |
| 4,7 | 66 | 24 | 6 | ....00470 | 35,44 | 57,23 |
| 4,8 | 66 | 28 | 6 | ....00480 | 35,44 | 57,23 |
| 4,9 | 66 | 28 | 6 | ....00490 | 35,44 | 57,23 |
| 5 | 66 | 28 | 6 | ....00500 | 35,44 | 57,23 |
| 5,1 | 66 | 28 | 6 | ....00510 | 35,44 | 57,23 |
| 5,2 | 66 | 28 | 6 | ....00520 | 35,44 | 57,23 |
| 5,3 | 66 | 28 | 6 | ....00530 | 35,44 | 57,23 |
| 5,4 | 66 | 28 | 6 | ....00540 | 35,44 | 57,23 |
| 5,5 | 66 | 28 | 6 | ....00550 | 35,44 | 57,23 |
| 5,6 | 66 | 28 | 6 | ....00560 | 35,44 | 57,23 |
| 5,7 | 66 | 28 | 6 | ....00570 | 35,44 | 57,23 |
| 5,8 | 66 | 28 | 6 | ....00580 | 35,44 | 57,23 |
| 5,9 | 66 | 28 | 6 | ....00590 | 35,44 | 57,23 |
| 6 | 66 | 28 | 6 | ....00600 | 35,44 | 57,23 |
| 6,1 | 79 | 34 | 8 | ....00610 | 54,90 | 77,74 |
| 6,2 | 79 | 34 | 8 | ....00620 | 54,90 | 77,74 |
| 6,3 | 79 | 34 | 8 | ....00630 | 54,90 | 77,74 |
| 6,4 | 79 | 34 | 8 | ....00640 | 54,90 | 77,74 |
| 6,5 | 79 | 34 | 8 | ....00650 | 54,90 | 77,74 |
| 6,6 | 79 | 34 | 8 | ....00660 | 54,90 | 77,74 |
| 6,7 | 79 | 34 | 8 | ....00670 | 54,90 | 77,74 |
| 6,8 | 79 | 34 | 8 | ....00680 | 54,90 | 77,74 |
| 6,9 | 79 | 34 | 8 | ....00690 | 54,90 | 77,74 |

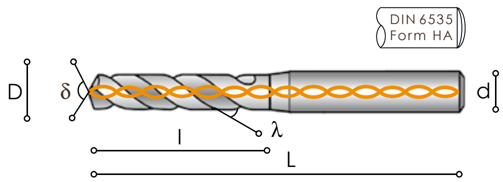
| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10 | |
|---|---|---|---|---|---|---|
| | | | | | 7415..... € SAPPHIRE | 7425..... € SAPPHIRE |
| 7 | 79 | 34 | 8 | ....00700 | 54,90 | 77,74 |
| 7,1 | 79 | 41 | 8 | ....00710 | 54,90 | 77,74 |
| 7,2 | 79 | 41 | 8 | ....00720 | 54,90 | 77,74 |
| 7,3 | 79 | 41 | 8 | ....00730 | 54,90 | 77,74 |
| 7,4 | 79 | 41 | 8 | ....00740 | 54,90 | 77,74 |
| 7,5 | 79 | 41 | 8 | ....00750 | 54,90 | 77,74 |
| 7,6 | 79 | 41 | 8 | ....00760 | 54,90 | 77,74 |
| 7,7 | 79 | 41 | 8 | ....00770 | 54,90 | 77,74 |
| 7,8 | 79 | 41 | 8 | ....00780 | 54,90 | 77,74 |
| 7,9 | 79 | 41 | 8 | ....00790 | 54,90 | 77,74 |
| 8 | 79 | 41 | 8 | ....00800 | 54,90 | 77,74 |
| 8,1 | 89 | 47 | 10 | ....00810 | 70,11 | 87,10 |
| 8,2 | 89 | 47 | 10 | ....00820 | 70,11 | 87,10 |
| 8,3 | 89 | 47 | 10 | ....00830 | 70,11 | 87,10 |
| 8,4 | 89 | 47 | 10 | ....00840 | 70,11 | 87,10 |
| 8,5 | 89 | 47 | 10 | ....00850 | 70,11 | 87,10 |
| 8,6 | 89 | 47 | 10 | ....00860 | 70,11 | 87,10 |
| 8,7 | 89 | 47 | 10 | ....00870 | 70,11 | 87,10 |
| 8,8 | 89 | 47 | 10 | ....00880 | 70,11 | 87,10 |
| 8,9 | 89 | 47 | 10 | ....00890 | 70,11 | 87,10 |
| 9 | 89 | 47 | 10 | ....00900 | 70,11 | 87,10 |
| 9,1 | 89 | 47 | 10 | ....00910 | 70,11 | 87,10 |
| 9,2 | 89 | 47 | 10 | ....00920 | 70,11 | 87,10 |
| 9,3 | 89 | 47 | 10 | ....00930 | 70,11 | 87,10 |
| 9,4 | 89 | 47 | 10 | ....00940 | 70,11 | 87,10 |
| 9,5 | 89 | 47 | 10 | ....00950 | 70,11 | 87,10 |
| 9,6 | 89 | 47 | 10 | ....00960 | 70,11 | 87,10 |
| 9,7 | 89 | 47 | 10 | ....00970 | 70,11 | 87,10 |
| 9,8 | 89 | 47 | 10 | ....00980 | 70,11 | 87,10 |
| 9,9 | 89 | 47 | 10 | ....00990 | 70,11 | 87,10 |
| 10 | 89 | 47 | 10 | ....01000 | 70,11 | 87,10 |
| 10,1 | 102 | 55 | 12 | ....01010 | 88,18 | 124,69 |
| 10,2 | 102 | 55 | 12 | ....01020 | 88,18 | 124,69 |
| 10,3 | 102 | 55 | 12 | ....01030 | 88,18 | 124,69 |
| 10,4 | 102 | 55 | 12 | ....01040 | 88,18 | 124,69 |
| 10,5 | 102 | 55 | 12 | ....01050 | 88,18 | 124,69 |
| 10,6 | 102 | 55 | 12 | ....01060 | 88,18 | 124,69 |
| 10,7 | 102 | 55 | 12 | ....01070 | 88,18 | 124,69 |
| 10,8 | 102 | 55 | 12 | ....01080 | 88,18 | 124,69 |
| 10,9 | 102 | 55 | 12 | ....01090 | 88,18 | 124,69 |
| 11 | 102 | 55 | 12 | ....01100 | 88,18 | 124,69 |
| 11,1 | 102 | 55 | 12 | ....01110 | 88,18 | 124,69 |
| 11,2 | 102 | 55 | 12 | ....01120 | 88,18 | 124,69 |
| 11,3 | 102 | 55 | 12 | ....01130 | 88,18 | 124,69 |
| 11,4 | 102 | 55 | 12 | ....01140 | 88,18 | 124,69 |
| 11,5 | 102 | 55 | 12 | ....01150 | 88,18 | 124,69 |
| 11,6 | 102 | 55 | 12 | ....01160 | 88,18 | 124,69 |
| 11,7 | 102 | 55 | 12 | ....01170 | 88,18 | 124,69 |
| 11,8 | 102 | 55 | 12 | ....01180 | 88,18 | 124,69 |
| 11,9 | 102 | 55 | 12 | ....01190 | 88,18 | 124,69 |
| 12 | 102 | 55 | 12 | ....01200 | 88,18 | 124,69 |
| 12,3 | 107 | 60 | 14 | ....01230 | 131,49 | |
| 12,5 | 107 | 60 | 14 | ....01250 | 131,49 | 174,25 |
| 12,8 | 107 | 60 | 14 | ....01280 | 131,49 | |
| 13 | 107 | 60 | 14 | ....01300 | 131,49 | 174,25 |
| 13,5 | 107 | 60 | 14 | ....01350 | 131,49 | 174,25 |
| 13,8 | 107 | 60 | 14 | ....01380 | 131,49 | |
| 14 | 107 | 60 | 14 | ....01400 | 131,49 | 174,25 |
| 14,5 | 115 | 65 | 16 | ....01450 | 161,30 | 212,67 |
| 14,8 | 115 | 65 | 16 | ....01480 | 161,30 | |
| 15 | 115 | 65 | 16 | ....01500 | 161,30 | 212,67 |
| 15,5 | 115 | 65 | 16 | ....01550 | 161,30 | 212,67 |
| 15,8 | 115 | 65 | 16 | ....01580 | 161,30 | |

PUNTE A DUE ELICHE CON CODOLO RINFORZATO TWO FLUTE TWIST DRILLS WITH REINFORCED SHANK
SPIRALBOHRER-ZWEISCHNEIDER MIT VERSTÄRKTEM SHAFT FORETS HELICOIDAUX A DEUX DENTS BROCAS DE DOS LABIOS

**CL 415** DIN 6537K N λ 30° δ 140° S-GRIND 3xD

**CL 425** DIN 6537K N λ 30° δ 140° S-GRIND 3xD



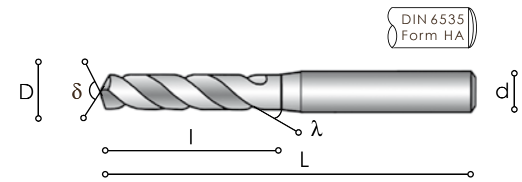



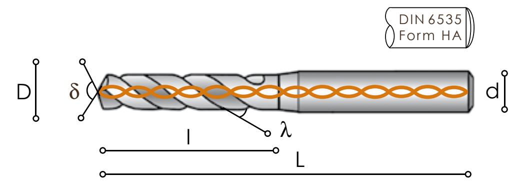

CL415 CL425

| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10 7415..... € SAPPHIRE | Micrograin Carbide Co10 7425..... € SAPPHIRE |
|---|---|---|---|---|---|---|
| 16 | 115 | 65 | 16 | ....01600 | 161,30 | 212,67 |
| 16,5 | 123 | 73 | 18 | ....01650 | 197,38 | 341,65 |
| 16,8 | 123 | 73 | 18 | ....01680 | 197,38 | |
| 17 | 123 | 73 | 18 | ....01700 | 197,38 | 341,65 |
| 17,5 | 123 | 73 | 18 | ....01750 | 197,38 | 341,65 |
| 17,8 | 123 | 73 | 18 | ....01780 | 197,38 | |
| 18 | 123 | 73 | 18 | ....01800 | 197,38 | 341,65 |
| 18,5 | 131 | 79 | 20 | ....01850 | 242,47 | 373,26 |
| 19 | 131 | 79 | 20 | ....01900 | 242,47 | 373,26 |
| 19,5 | 131 | 79 | 20 | ....01950 | 242,47 | 373,26 |
| 19,8 | 131 | 79 | 20 | ....01980 | 242,47 | |
| 20 | 131 | 79 | 20 | ....02000 | 242,47 | 373,26 |

PUNTE A DUE ELICHE CON CODOLO RINFORZATO TWO FLUTE TWIST DRILLS WITH REINFORCED SHANK
SPIRALBOHRER-ZWEISCHNEIDER MIT VERSTÄRKTEM SHAFT FORETS HELICOIDAUX A DEUX DENTS BROCAS DE DOS LABIOS

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CL 420** | DIN 6537L | N | λ | 30° | δ | 140° | | S-GRIND | 5xD |
| **CL 430** | DIN 6537L | N | λ | 30° | δ | 140° | | S-GRIND | 5xD |




**CL420**

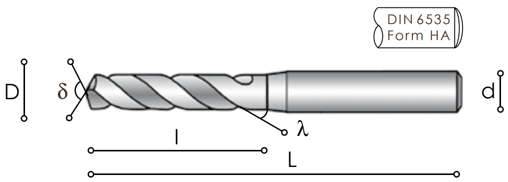
**CL430**

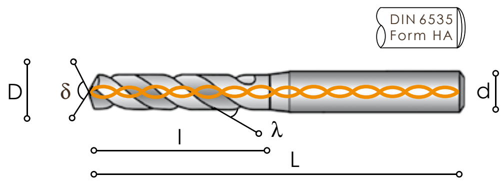
| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10 7420..... € SAPPHIRE | Micrograin Carbide Co10 7430..... € SAPPHIRE |
|---|---|---|---|---|---|---|
| 3 | 66 | 28 | 6 | ....00300 | 47,82 | 73,45 |
| 3,1 | 66 | 28 | 6 | ....00310 | 47,82 | 73,45 |
| 3,2 | 66 | 28 | 6 | ....00320 | 47,82 | 73,45 |
| 3,3 | 66 | 28 | 6 | ....00330 | 47,82 | 73,45 |
| 3,4 | 66 | 28 | 6 | ....00340 | 47,82 | 73,45 |
| 3,5 | 66 | 28 | 6 | ....00350 | 47,82 | 73,45 |
| 3,6 | 66 | 28 | 6 | ....00360 | 47,82 | 73,45 |
| 3,7 | 66 | 28 | 6 | ....00370 | 47,82 | 73,45 |
| 3,8 | 74 | 36 | 6 | ....00380 | 47,82 | 73,45 |
| 3,9 | 74 | 36 | 6 | ....00390 | 47,82 | 73,45 |
| 4 | 74 | 36 | 6 | ....00400 | 47,82 | 73,45 |
| 4,1 | 74 | 36 | 6 | ....00410 | 47,82 | 73,45 |
| 4,2 | 74 | 36 | 6 | ....00420 | 47,82 | 73,45 |
| 4,3 | 74 | 36 | 6 | ....00430 | 47,82 | 73,45 |
| 4,4 | 74 | 36 | 6 | ....00440 | 47,82 | 73,45 |
| 4,5 | 74 | 36 | 6 | ....00450 | 47,82 | 73,45 |
| 4,6 | 74 | 36 | 6 | ....00460 | 47,82 | 73,45 |
| 4,7 | 74 | 36 | 6 | ....00470 | 47,82 | 73,45 |
| 4,8 | 82 | 44 | 6 | ....00480 | 47,82 | 73,45 |
| 4,9 | 82 | 44 | 6 | ....00490 | 47,82 | 73,45 |
| 5 | 82 | 44 | 6 | ....00500 | 47,82 | 73,45 |
| 5,1 | 82 | 44 | 6 | ....00510 | 47,82 | 73,45 |
| 5,2 | 82 | 44 | 6 | ....00520 | 47,82 | 73,45 |
| 5,3 | 82 | 44 | 6 | ....00530 | 47,82 | 73,45 |
| 5,4 | 82 | 44 | 6 | ....00540 | 47,82 | 73,45 |
| 5,5 | 82 | 44 | 6 | ....00550 | 47,82 | 73,45 |
| 5,6 | 82 | 44 | 6 | ....00560 | 47,82 | 73,45 |
| 5,7 | 82 | 44 | 6 | ....00570 | 47,82 | 73,45 |
| 5,8 | 82 | 44 | 6 | ....00580 | 47,82 | 73,45 |
| 5,9 | 82 | 44 | 6 | ....00590 | 47,82 | 73,45 |
| 6 | 82 | 44 | 6 | ....00600 | 47,82 | 73,45 |
| 6,1 | 91 | 53 | 8 | ....00610 | 58,73 | 81,16 |
| 6,2 | 91 | 53 | 8 | ....00620 | 58,73 | 81,16 |
| 6,3 | 91 | 53 | 8 | ....00630 | 58,73 | 81,16 |
| 6,4 | 91 | 53 | 8 | ....00640 | 58,73 | 81,16 |
| 6,5 | 91 | 53 | 8 | ....00650 | 58,73 | 81,16 |
| 6,6 | 91 | 53 | 8 | ....00660 | 58,73 | 81,16 |
| 6,7 | 91 | 53 | 8 | ....00670 | 58,73 | 81,16 |
| 6,8 | 91 | 53 | 8 | ....00680 | 58,73 | 81,16 |
| 6,9 | 91 | 53 | 8 | ....00690 | 58,73 | 81,16 |

carmon

# PUNTE A DUE ELICHE CON CODOLO RINFORZATO TWO FLUTE TWIST DRILLS WITH REINFORCED SHANK
# SPIRALBOHRER-ZWEISCHNEIDER MIT VERSTÄRKTEM SHAFT FORETS HELICOIDAUX A DEUX DENTS BROCAS DE DOS LABIOS

| | | | | | | |
|---|---|---|---|---|---|---|
| **CL 420** | DIN 6537L | N | λ 30° | δ 140° | S-GRIND | 5xD |
| **CL 430** | DIN 6537L | N | λ 30° | δ 140° | S-GRIND | 5xD |




**CL420** **CL430**

| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10 7420..... € SAPPHIRE | Micrograin Carbide Co10 7430..... € SAPPHIRE |
|---|---|---|---|---|---|---|
| 7 | 91 | 53 | 8 | ....00700 | 58,73 | 81,16 |
| 7,1 | 91 | 53 | 8 | ....00710 | 58,73 | 81,16 |
| 7,2 | 91 | 53 | 8 | ....00720 | 58,73 | 81,16 |
| 7,3 | 91 | 53 | 8 | ....00730 | 58,73 | 81,16 |
| 7,4 | 91 | 53 | 8 | ....00740 | 58,73 | 81,16 |
| 7,5 | 91 | 53 | 8 | ....00750 | 58,73 | 81,16 |
| 7,6 | 91 | 53 | 8 | ....00760 | 58,73 | 81,16 |
| 7,7 | 91 | 53 | 8 | ....00770 | 58,73 | 81,16 |
| 7,8 | 91 | 53 | 8 | ....00780 | 58,73 | 81,16 |
| 7,9 | 91 | 53 | 8 | ....00790 | 58,73 | 81,16 |
| 8 | 91 | 53 | 8 | ....00800 | 58,73 | 81,16 |
| 8,1 | 103 | 61 | 10 | ....00810 | 75,64 | 95,87 |
| 8,2 | 103 | 61 | 10 | ....00820 | 75,64 | 96,60 |
| 8,3 | 103 | 61 | 10 | ....00830 | 75,64 | 96,60 |
| 8,4 | 103 | 61 | 10 | ....00840 | 75,64 | 96,60 |
| 8,5 | 103 | 61 | 10 | ....00850 | 75,64 | 96,60 |
| 8,6 | 103 | 61 | 10 | ....00860 | 75,64 | 96,60 |
| 8,7 | 103 | 61 | 10 | ....00870 | 75,64 | 96,60 |
| 8,8 | 103 | 61 | 10 | ....00880 | 75,64 | 96,60 |
| 8,9 | 103 | 61 | 10 | ....00890 | 75,64 | 96,60 |
| 9 | 103 | 61 | 10 | ....00900 | 75,64 | 96,60 |
| 9,1 | 103 | 61 | 10 | ....00910 | 75,64 | 96,60 |
| 9,2 | 103 | 61 | 10 | ....00920 | 75,64 | 96,60 |
| 9,3 | 103 | 61 | 10 | ....00930 | 75,64 | 96,60 |
| 9,4 | 103 | 61 | 10 | ....00940 | 75,64 | 96,60 |
| 9,5 | 103 | 61 | 10 | ....00950 | 75,64 | 96,60 |
| 9,6 | 103 | 61 | 10 | ....00960 | 75,64 | 96,60 |
| 9,7 | 103 | 61 | 10 | ....00970 | 75,64 | 96,60 |
| 9,8 | 103 | 61 | 10 | ....00980 | 75,64 | 96,60 |
| 9,9 | 103 | 61 | 10 | ....00990 | 75,64 | 96,60 |
| 10 | 103 | 61 | 10 | ....01000 | 75,64 | 96,60 |
| 10,1 | 118 | 71 | 12 | ....01010 | 117,61 | 135,79 |
| 10,2 | 118 | 71 | 12 | ....01020 | 117,61 | 135,79 |
| 10,3 | 118 | 71 | 12 | ....01030 | 117,61 | 135,79 |
| 10,4 | 118 | 71 | 12 | ....01040 | 117,61 | 135,79 |
| 10,5 | 118 | 71 | 12 | ....01050 | 117,61 | 135,79 |
| 10,6 | 118 | 71 | 12 | ....01060 | 117,61 | 135,79 |
| 10,7 | 118 | 71 | 12 | ....01070 | 117,61 | 135,79 |
| 10,8 | 118 | 71 | 12 | ....01080 | 117,61 | 135,79 |
| 10,9 | 118 | 71 | 12 | ....01090 | 117,61 | 135,79 |

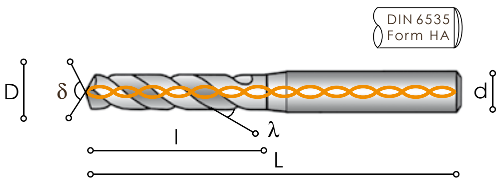
| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10 7420..... € SAPPHIRE | Micrograin Carbide Co10 7430..... € SAPPHIRE |
|---|---|---|---|---|---|---|
| 11 | 118 | 71 | 12 | ....01100 | 117,61 | 135,79 |
| 11,1 | 118 | 71 | 12 | ....01110 | 117,61 | 135,79 |
| 11,2 | 118 | 71 | 12 | ....01120 | 117,61 | 135,79 |
| 11,3 | 118 | 71 | 12 | ....01130 | 117,61 | 135,79 |
| 11,4 | 118 | 71 | 12 | ....01140 | 117,61 | 135,79 |
| 11,5 | 118 | 71 | 12 | ....01150 | 117,61 | 135,79 |
| 11,6 | 118 | 71 | 12 | ....01160 | 117,61 | 135,79 |
| 11,7 | 118 | 71 | 12 | ....01170 | 117,61 | 135,79 |
| 11,8 | 118 | 71 | 12 | ....01180 | 117,61 | 135,79 |
| 11,9 | 118 | 71 | 12 | ....01190 | 117,61 | 135,79 |
| 12 | 118 | 71 | 12 | ....01200 | 117,61 | 135,79 |
| 12,3 | 124 | 77 | 14 | ....01230 | 139,35 | |
| 12,5 | 124 | 77 | 14 | ....01250 | 139,35 | 182,79 |
| 12,8 | 124 | 77 | 14 | ....01280 | 139,35 | |
| 13 | 124 | 77 | 14 | ....01300 | 139,35 | 182,79 |
| 13,5 | 124 | 77 | 14 | ....01350 | 139,35 | 182,79 |
| 13,8 | 124 | 77 | 14 | ....01380 | 139,35 | |
| 14 | 124 | 77 | 14 | ....01400 | 139,35 | 182,79 |
| 14,5 | 133 | 83 | 16 | ....01450 | 175,44 | 241,58 |
| 14,8 | 133 | 83 | 16 | ....01480 | 175,44 | |
| 15 | 133 | 83 | 16 | ....01500 | 175,44 | 241,58 |
| 15,5 | 133 | 83 | 16 | ....01550 | 175,44 | 241,58 |
| 15,8 | 133 | 83 | 16 | ....01580 | 175,44 | |
| 16 | 133 | 83 | 16 | ....01600 | 175,44 | 241,58 |
| 16,5 | 143 | 93 | 18 | ....01650 | 222,35 | 361,30 |
| 16,8 | 143 | 93 | 18 | ....01680 | 222,35 | |
| 17 | 143 | 93 | 18 | ....01700 | 222,35 | 361,30 |
| 17,5 | 143 | 93 | 18 | ....01750 | 222,35 | 361,30 |
| 17,8 | 143 | 93 | 18 | ....01780 | 222,35 | |
| 18 | 143 | 93 | 18 | ....01800 | 222,35 | 361,30 |
| 18,5 | 153 | 101 | 20 | ....01850 | 278,85 | 413,64 |
| 19 | 153 | 101 | 20 | ....01900 | 278,85 | 413,64 |
| 19,5 | 153 | 101 | 20 | ....01950 | 278,85 | 413,64 |
| 19,8 | 153 | 101 | 20 | ....01980 | 278,85 | |
| 20 | 153 | 101 | 20 | ....02000 | 278,85 | 413,64 |

carmon

PUNTE A DUE ELICHE CON CODOLO RINFORZATO TWO FLUTE TWIST DRILLS WITH REINFORCED SHANK
SPIRALBOHRER-ZWEISCHNEIDER MIT VERSTÄRKTEM SHAFT FORETS HELICOIDAUX A DEUX DENTS BROCAS DE DOS LABIOS

## CL 435

CARMON NORM | N | λ 30° | δ 140° | S-GRIND | 8xD




CL435

| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10 7435..... € SAPPHIRE |
|---|---|---|---|---|---|
| 3 | 72 | 34 | 6 | ....00300 | 143,74 |
| 3,1 | 72 | 34 | 6 | ....00310 | 143,74 |
| 3,2 | 72 | 34 | 6 | ....00320 | 143,74 |
| 3,3 | 72 | 34 | 6 | ....00330 | 143,74 |
| 3,4 | 72 | 34 | 6 | ....00340 | 143,74 |
| 3,5 | 72 | 34 | 6 | ....00350 | 143,74 |
| 3,6 | 72 | 34 | 6 | ....00360 | 143,74 |
| 3,7 | 72 | 34 | 6 | ....00370 | 143,74 |
| 3,8 | 81 | 43 | 6 | ....00380 | 143,74 |
| 3,9 | 81 | 43 | 6 | ....00390 | 143,74 |
| 4 | 81 | 43 | 6 | ....00400 | 143,74 |
| 4,1 | 81 | 43 | 6 | ....00410 | 143,74 |
| 4,2 | 81 | 43 | 6 | ....00420 | 143,74 |
| 4,3 | 81 | 43 | 6 | ....00430 | 143,74 |
| 4,4 | 81 | 43 | 6 | ....00440 | 143,74 |
| 4,5 | 81 | 43 | 6 | ....00450 | 143,74 |
| 4,6 | 81 | 43 | 6 | ....00460 | 143,74 |
| 4,7 | 81 | 43 | 6 | ....00470 | 143,74 |
| 4,8 | 95 | 57 | 6 | ....00480 | 143,74 |
| 4,9 | 95 | 57 | 6 | ....00490 | 143,74 |
| 5 | 95 | 57 | 6 | ....00500 | 143,74 |
| 5,1 | 95 | 57 | 6 | ....00510 | 143,74 |
| 5,2 | 95 | 57 | 6 | ....00520 | 143,74 |
| 5,3 | 95 | 57 | 6 | ....00530 | 143,74 |
| 5,4 | 95 | 57 | 6 | ....00540 | 143,74 |
| 5,5 | 95 | 57 | 6 | ....00550 | 143,74 |
| 5,6 | 95 | 57 | 6 | ....00560 | 143,74 |
| 5,7 | 95 | 57 | 6 | ....00570 | 143,74 |
| 5,8 | 95 | 57 | 6 | ....00580 | 143,74 |
| 5,9 | 95 | 57 | 6 | ....00590 | 143,74 |
| 6 | 95 | 57 | 6 | ....00600 | 143,74 |
| 6,1 | 114 | 76 | 8 | ....00610 | 156,43 |
| 6,2 | 114 | 76 | 8 | ....00620 | 156,43 |
| 6,3 | 114 | 76 | 8 | ....00630 | 156,43 |
| 6,4 | 114 | 76 | 8 | ....00640 | 156,43 |
| 6,5 | 114 | 76 | 8 | ....00650 | 156,43 |
| 6,6 | 114 | 76 | 8 | ....00660 | 156,43 |
| 6,7 | 114 | 76 | 8 | ....00670 | 156,43 |
| 6,8 | 114 | 76 | 8 | ....00680 | 156,43 |
| 6,9 | 114 | 76 | 8 | ....00690 | 156,43 |

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| D m7 | L | l | d h6 | CODE | Micrograin Carbide Co10<br>7435.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|
| 7 | 114 | 76 | 8 | ....00700 | 156,43 |
| 7,1 | 114 | 76 | 8 | ....00710 | 156,43 |
| 7,2 | 114 | 76 | 8 | ....00720 | 156,43 |
| 7,3 | 114 | 76 | 8 | ....00730 | 156,43 |
| 7,4 | 114 | 76 | 8 | ....00740 | 156,43 |
| 7,5 | 114 | 76 | 8 | ....00750 | 156,43 |
| 7,6 | 114 | 76 | 8 | ....00760 | 156,43 |
| 7,7 | 114 | 76 | 8 | ....00770 | 156,43 |
| 7,8 | 114 | 76 | 8 | ....00780 | 156,43 |
| 7,9 | 114 | 76 | 8 | ....00790 | 156,43 |
| 8 | 114 | 76 | 8 | ....00800 | 156,43 |
| 8,1 | 142 | 95 | 10 | ....00810 | 211,84 |
| 8,2 | 142 | 95 | 10 | ....00820 | 211,84 |
| 8,3 | 142 | 95 | 10 | ....00830 | 211,84 |
| 8,4 | 142 | 95 | 10 | ....00840 | 211,84 |
| 8,5 | 142 | 95 | 10 | ....00850 | 211,84 |
| 8,6 | 142 | 95 | 10 | ....00860 | 211,84 |
| 8,7 | 142 | 95 | 10 | ....00870 | 211,84 |
| 8,8 | 142 | 95 | 10 | ....00880 | 211,84 |
| 8,9 | 142 | 95 | 10 | ....00890 | 211,84 |
| 9 | 142 | 95 | 10 | ....00900 | 211,84 |
| 9,1 | 142 | 95 | 10 | ....00910 | 211,84 |
| 9,2 | 142 | 95 | 10 | ....00920 | 211,84 |
| 9,3 | 142 | 95 | 10 | ....00930 | 211,84 |
| 9,4 | 142 | 95 | 10 | ....00940 | 211,84 |
| 9,5 | 142 | 95 | 10 | ....00950 | 211,84 |
| 9,6 | 142 | 95 | 10 | ....00960 | 211,84 |
| 9,7 | 142 | 95 | 10 | ....00970 | 211,84 |
| 9,8 | 142 | 95 | 10 | ....00980 | 211,84 |
| 9,9 | 142 | 95 | 10 | ....00990 | 211,84 |
| 10 | 142 | 95 | 10 | ....01000 | 211,84 |
| 10,1 | 162 | 114 | 12 | ....01010 | 279,30 |
| 10,2 | 162 | 114 | 12 | ....01020 | 279,30 |
| 10,3 | 162 | 114 | 12 | ....01030 | 279,30 |
| 10,4 | 162 | 114 | 12 | ....01040 | 279,30 |
| 10,5 | 162 | 114 | 12 | ....01050 | 279,30 |
| 10,6 | 162 | 114 | 12 | ....01060 | 279,30 |
| 10,7 | 162 | 114 | 12 | ....01070 | 279,30 |
| 10,8 | 162 | 114 | 12 | ....01080 | 279,30 |
| 10,9 | 162 | 114 | 12 | ....01090 | 279,30 |
| 11 | 162 | 114 | 12 | ....01100 | 279,30 |
| 11,1 | 162 | 114 | 12 | ....01110 | 279,30 |
| 11,2 | 162 | 114 | 12 | ....01120 | 279,30 |
| 11,3 | 162 | 114 | 12 | ....01130 | 279,30 |
| 11,4 | 162 | 114 | 12 | ....01140 | 279,30 |
| 11,5 | 162 | 114 | 12 | ....01150 | 279,30 |
| 11,6 | 162 | 114 | 12 | ....01160 | 279,30 |
| 11,7 | 162 | 114 | 12 | ....01170 | 279,30 |
| 11,8 | 162 | 114 | 12 | ....01180 | 279,30 |
| 11,9 | 162 | 114 | 12 | ....01190 | 279,30 |
| 12 | 162 | 114 | 12 | ....01200 | 279,30 |

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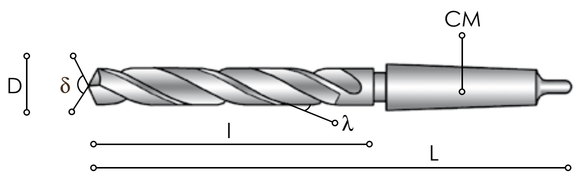
PUNTE ELICOIDALI TWIST DRILLS SPIRALBOHRER FORETS BROCAS

**CM 300** DIN 345 N λ 25°-30° δ 118° STANDARD

**CM 303** DIN 345 N λ 25°-30° δ 118° STANDARD





| D h8 | L | l | CM | CODE | HSS 5300..... € | HSS+5%Co 5303..... € | HSS+5%Co 6303..... € QUARTZ | HSS+5%Co 7303..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 3 | 114 | 33 | 1 | ....00300 | 14,87 | | | |
| 3,10 | 117 | 36 | 1 | ....00310 | 18,80 | | | |
| 3,20 | 117 | 36 | 1 | ....00320 | 18,80 | | | |
| 3,25 | 117 | 36 | 1 | ....00325 | 17,37 | | | |
| 3,30 | 117 | 36 | 1 | ....00330 | 20,16 | | | |
| 3,40 | 120 | 39 | 1 | ....00340 | 20,16 | | | |
| 3,50 | 120 | 39 | 1 | ....00350 | 14,28 | | | |
| 3,60 | 120 | 39 | 1 | ....00360 | 19,21 | | | |
| 3,70 | 120 | 39 | 1 | ....00370 | 19,21 | | | |
| 3,75 | 120 | 39 | 1 | ....00375 | 17,04 | | | |
| 3,80 | 124 | 43 | 1 | ....00380 | 19,31 | | | |
| 3,90 | 124 | 43 | 1 | ....00390 | 19,31 | | | |
| 4,00 | 124 | 43 | 1 | ....00400 | 13,56 | | | |
| 4,10 | 124 | 43 | 1 | ....00410 | 18,92 | | | |
| 4,20 | 124 | 43 | 1 | ....00420 | 18,92 | | | |
| 4,25 | 124 | 43 | 1 | ....00425 | 17,01 | | | |
| 4,30 | 128 | 47 | 1 | ....00430 | 18,92 | | | |
| 4,40 | 128 | 47 | 1 | ....00440 | 18,92 | | | |
| 4,50 | 128 | 47 | 1 | ....00450 | 13,44 | | | |
| 4,60 | 128 | 47 | 1 | ....00460 | 18,92 | | | |
| 4,70 | 128 | 47 | 1 | ....00470 | 18,92 | | | |
| 4,75 | 128 | 47 | 1 | ....00475 | 17,01 | | | |
| 4,80 | 133 | 52 | 1 | ....00480 | 19,27 | | | |
| 4,90 | 133 | 52 | 1 | ....00490 | 19,27 | | | |
| 5,00 | 133 | 52 | 1 | ....00500 | 11,80 | 26,65 | 34,55 | 38,59 |
| 5,10 | 133 | 52 | 1 | ....00510 | 19,30 | | | |
| 5,20 | 133 | 52 | 1 | ....00520 | 19,30 | | | |
| 5,25 | 133 | 52 | 1 | ....00525 | 16,23 | | | |
| 5,30 | 133 | 52 | 1 | ....00530 | 19,30 | | | |
| 5,40 | 138 | 57 | 1 | ....00540 | 19,30 | | | |
| 5,50 | 138 | 57 | 1 | ....00550 | 11,43 | 26,17 | 34,02 | 38,07 |
| 5,60 | 138 | 57 | 1 | ....00560 | 19,30 | | | |
| 5,70 | 138 | 57 | 1 | ....00570 | 19,30 | | | |
| 5,75 | 138 | 57 | 1 | ....00575 | 16,11 | | | |
| 5,80 | 138 | 57 | 1 | ....00580 | 19,30 | | | |
| 5,90 | 138 | 57 | 1 | ....00590 | 19,30 | | | |
| 6,00 | 138 | 57 | 1 | ....00600 | 11,25 | 26,17 | 34,02 | 38,07 |
| 6,10 | 144 | 63 | 1 | ....00610 | 19,72 | | | |
| 6,20 | 144 | 63 | 1 | ....00620 | 19,72 | | | |
| 6,25 | 144 | 63 | 1 | ....00625 | 16,71 | | | |

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| D h8 | L | l | CM | CODE | HSS 5300….. € | HSS+5%Co 5303….. € | HSS+5%Co 6303….. € QUARTZ | HSS+5%Co 7303….. € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 6,30 | 144 | 63 | 1 | ….00630 | 19,72 | | | |
| 6,40 | 144 | 63 | 1 | ….00640 | 19,72 | | | |
| 6,50 | 144 | 63 | 1 | ….00650 | 11,00 | 24,30 | 33,23 | 38,23 |
| 6,60 | 144 | 63 | 1 | ….00660 | 19,72 | | | |
| 6,70 | 144 | 63 | 1 | ….00670 | 19,72 | | | |
| 6,75 | 150 | 69 | 1 | ….00675 | 13,22 | | | |
| 6,80 | 150 | 69 | 1 | ….00680 | 19,72 | | | |
| 6,90 | 150 | 69 | 1 | ….00690 | 19,72 | | | |
| 7,00 | 150 | 69 | 1 | ….00700 | 11,43 | 25,34 | 34,37 | 39,37 |
| 7,10 | 150 | 69 | 1 | ….00710 | 20,59 | | | |
| 7,20 | 150 | 69 | 1 | ….00720 | 20,59 | | | |
| 7,25 | 150 | 69 | 1 | ….00725 | 16,23 | | | |
| 7,30 | 150 | 69 | 1 | ….00730 | 20,59 | | | |
| 7,40 | 150 | 69 | 1 | ….00740 | 20,59 | | | |
| 7,50 | 150 | 69 | 1 | ….00750 | 12,17 | 26,77 | 35,95 | 40,95 |
| 7,60 | 156 | 75 | 1 | ….00760 | 20,96 | | | |
| 7,70 | 156 | 75 | 1 | ….00770 | 20,96 | | | |
| 7,75 | 156 | 75 | 1 | ….00775 | 16,23 | | | |
| 7,80 | 156 | 75 | 1 | ….00780 | 20,96 | | | |
| 7,90 | 156 | 75 | 1 | ….00790 | 20,96 | | | |
| 8,00 | 156 | 75 | 1 | ….00800 | 11,55 | 24,40 | 33,34 | 38,34 |
| 8,10 | 156 | 75 | 1 | ….00810 | 15,06 | | | |
| 8,20 | 156 | 75 | 1 | ….00820 | 15,06 | | | |
| 8,25 | 156 | 75 | 1 | ….00825 | 14,69 | | | |
| 8,30 | 156 | 75 | 1 | ….00830 | 15,06 | | | |
| 8,40 | 156 | 75 | 1 | ….00840 | 15,06 | | | |
| 8,50 | 156 | 75 | 1 | ….00850 | 11,80 | 26,85 | 36,03 | 41,04 |
| 8,60 | 162 | 81 | 1 | ….00860 | 16,85 | | | |
| 8,70 | 162 | 81 | 1 | ….00870 | 16,85 | | | |
| 8,75 | 162 | 81 | 1 | ….00875 | 15,55 | | | |
| 8,80 | 162 | 81 | 1 | ….00880 | 16,85 | | | |
| 8,90 | 162 | 81 | 1 | ….00890 | 16,85 | | | |
| 9,00 | 162 | 81 | 1 | ….00900 | 12,05 | 29,68 | 39,15 | 44,15 |
| 9,10 | 162 | 81 | 1 | ….00910 | 22,07 | | | |
| 9,20 | 162 | 81 | 1 | ….00920 | 22,07 | | | |
| 9,25 | 162 | 81 | 1 | ….00925 | 17,14 | | | |
| 9,30 | 162 | 81 | 1 | ….00930 | 22,07 | | | |
| 9,40 | 162 | 81 | 1 | ….00940 | 22,07 | | | |
| 9,50 | 162 | 81 | 1 | ….00950 | 12,05 | 30,73 | 40,30 | 45,30 |
| 9,60 | 168 | 87 | 1 | ….00960 | 22,07 | | | |
| 9,70 | 168 | 87 | 1 | ….00970 | 22,07 | | | |
| 9,75 | 168 | 87 | 1 | ….00975 | 18,50 | | | |
| 9,80 | 168 | 87 | 1 | ….00980 | 22,07 | | | |
| 9,90 | 168 | 87 | 1 | ….00990 | 22,07 | | | |
| 10,00 | 168 | 87 | 1 | ….01000 | 12,54 | 30,05 | 39,55 | 44,56 |
| 10,10 | 168 | 87 | 1 | ….01010 | 17,21 | | | |
| 10,20 | 168 | 87 | 1 | ….01020 | 17,21 | | | |
| 10,25 | 168 | 87 | 1 | ….01025 | 16,66 | | | |
| 10,30 | 168 | 87 | 1 | ….01030 | 17,27 | | | |
| 10,40 | 168 | 87 | 1 | ….01040 | 17,27 | | | |
| 10,50 | 168 | 87 | 1 | ….01050 | 14,44 | 32,20 | 41,92 | 46,92 |
| 10,60 | 168 | 87 | 1 | ….01060 | 17,95 | | | |
| 10,70 | 175 | 94 | 1 | ….01070 | 17,95 | | | |
| 10,75 | 175 | 94 | 1 | ….01075 | 16,66 | | | |
| 10,80 | 175 | 94 | 1 | ….01080 | 19,12 | | | |
| 10,90 | 175 | 94 | 1 | ….01090 | 19,12 | | | |
| 11,00 | 175 | 94 | 1 | ….01100 | 14,69 | 31,16 | 40,77 | 45,78 |
| 11,10 | 175 | 94 | 1 | ….01110 | 20,09 | | | |
| 11,20 | 175 | 94 | 1 | ….01120 | 19,78 | | | |
| 11,25 | 175 | 94 | 1 | ….01125 | 17,76 | | | |
| 11,30 | 175 | 94 | 1 | ….01130 | 20,59 | | | |
| 11,40 | 175 | 94 | 1 | ….01140 | 20,59 | | | |
| 11,50 | 175 | 94 | 1 | ….01150 | 15,67 | 33,25 | 43,07 | 48,08 |

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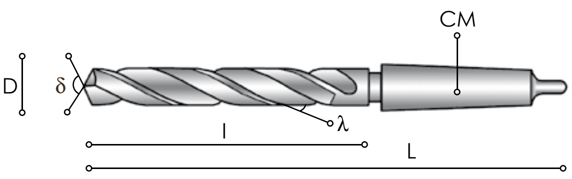
PUNTE ELICOIDALI TWIST DRILLS SPIRALBOHRER FORETS BROCAS

| | | | | | | |
|---|---|---|---|---|---|---|
| **CM 300** | DIN 345 | N | λ 25°-30° | δ 118° | STANDARD | |
| **CM 303** | DIN 345 | N | λ 25°-30° | δ 118° | STANDARD | |





| D h8 | L | l | CM | CODE | HSS 5300..... € | HSS+5%Co 5303..... € | HSS+5%Co 6303..... € QUARTZ | HSS+5%Co 7303..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 11,60 | 175 | 94 | 1 | ....01160 | 19,78 | | | |
| 11,70 | 175 | 94 | 1 | ....01170 | 19,78 | | | |
| 11,75 | 175 | 94 | 1 | ....01175 | 17,76 | | | |
| 11,80 | 175 | 94 | 1 | ....01180 | 19,78 | | | |
| 11,90 | 182 | 101 | 1 | ....01190 | 20,59 | | | |
| 12,00 | 182 | 101 | 1 | ....01200 | 16,29 | 32,20 | 44,84 | 52,11 |
| 12,10 | 182 | 101 | 1 | ....01210 | 20,65 | | | |
| 12,20 | 182 | 101 | 1 | ....01220 | 20,65 | | | |
| 12,25 | 182 | 101 | 1 | ....01225 | 19,66 | | | |
| 12,30 | 182 | 101 | 1 | ....01230 | 20,65 | | | |
| 12,40 | 182 | 101 | 1 | ....01240 | 20,65 | | | |
| 12,50 | 182 | 101 | 1 | ....01250 | 17,27 | 36,44 | 49,50 | 56,77 |
| 12,60 | 182 | 101 | 1 | ....01260 | 20,65 | | | |
| 12,70 | 182 | 101 | 1 | ....01270 | 17,64 | | | |
| 12,75 | 182 | 101 | 1 | ....01275 | 18,25 | | | |
| 12,80 | 182 | 101 | 1 | ....01280 | 22,87 | | | |
| 12,90 | 182 | 101 | 1 | ....01290 | 22,87 | | | |
| 13,00 | 182 | 101 | 1 | ....01300 | 18,08 | 36,17 | 49,21 | 56,48 |
| 13,20 | 182 | 101 | 1 | ....01320 | 24,86 | | | |
| 13,25 | 189 | 108 | 1 | ....01325 | 20,46 | | | |
| 13,50 | 189 | 108 | 1 | ....01350 | 20,46 | 50,56 | 65,04 | 72,31 |
| 13,75 | 189 | 108 | 1 | ....01375 | 20,46 | | | |
| 13,80 | 189 | 108 | 1 | ....01380 | 24,86 | | | |
| 14,00 | 189 | 108 | 1 | ....01400 | 21,53 | 48,78 | 63,08 | 70,35 |
| 14,25 | 212 | 114 | 2 | ....01425 | 24,51 | | | |
| 14,50 | 212 | 114 | 2 | ....01450 | 23,73 | 54,72 | 75,85 | 87,94 |
| 14,75 | 212 | 114 | 2 | ....01475 | 25,34 | | | |
| 15,00 | 212 | 114 | 2 | ....01500 | 25,34 | 49,60 | 70,22 | 82,31 |
| 15,25 | 218 | 120 | 2 | ....01525 | 26,29 | | | |
| 15,50 | 218 | 120 | 2 | ....01550 | 26,94 | 55,91 | 77,16 | 89,25 |
| 15,75 | 218 | 120 | 2 | ....01575 | 26,53 | | | |
| 16,00 | 218 | 120 | 2 | ....01600 | 24,51 | 53,53 | 74,54 | 86,63 |
| 16,25 | 223 | 125 | 2 | ....01625 | 28,91 | | | |
| 16,50 | 223 | 125 | 2 | ....01650 | 27,72 | 56,87 | 78,22 | 90,30 |
| 16,75 | 223 | 125 | 2 | ....01675 | 28,91 | | | |
| 17,00 | 223 | 125 | 2 | ....01700 | 27,12 | 53,89 | 74,94 | 87,03 |
| 17,25 | 228 | 130 | 2 | ....01725 | 29,50 | | | |
| 17,50 | 228 | 130 | 2 | ....01750 | 29,50 | 59,24 | 80,83 | 92,91 |
| 17,75 | 228 | 130 | 2 | ....01775 | 30,57 | | | |
| 18,00 | 228 | 130 | 2 | ....01800 | 30,65 | 55,68 | 76,91 | 88,99 |

| D h8 | L | l | CM | CODE | HSS 5300..... € | HSS+5%Co 5303..... € | HSS+5%Co 6303..... € QUARTZ | HSS+5%Co 7303..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 18,25 | 233 | 135 | 2 | ....01825 | 33,07 | | | |
| 18,50 | 233 | 135 | 2 | ....01850 | 32,36 | 60,43 | 89,08 | 106,54 |
| 18,75 | 233 | 135 | 2 | ....01875 | 33,07 | | | |
| 19,00 | 233 | 135 | 2 | ....01900 | 33,12 | 57,10 | 85,41 | 102,87 |
| 19,25 | 238 | 140 | 2 | ....01925 | 35,33 | | | |
| 19,50 | 238 | 140 | 2 | ....01950 | 34,02 | 68,17 | 97,59 | 115,05 |
| 19,75 | 238 | 140 | 2 | ....01975 | 36,83 | | | |
| 20,00 | 238 | 140 | 2 | ....02000 | 34,73 | 68,17 | 97,59 | 115,05 |
| 20,25 | 243 | 145 | 2 | ....02025 | 39,62 | | | |
| 20,50 | 243 | 145 | 2 | ....02050 | 39,62 | 80,66 | 111,33 | 128,79 |
| 20,75 | 243 | 145 | 2 | ....02075 | 41,16 | | | |
| 21,00 | 243 | 145 | 2 | ....02100 | 39,62 | 78,28 | 108,71 | 126,17 |
| 21,25 | 248 | 150 | 2 | ....02125 | 44,02 | | | |
| 21,50 | 248 | 150 | 2 | ....02150 | 44,02 | 87,68 | 119,05 | 136,51 |
| 21,75 | 248 | 150 | 2 | ....02175 | 45,73 | | | |
| 22,00 | 248 | 150 | 2 | ....02200 | 45,73 | 82,20 | 113,02 | 130,48 |
| 22,25 | 248 | 150 | 2 | ....02225 | 46,63 | | | |
| 22,50 | 253 | 155 | 2 | ....02250 | 46,63 | 100,29 | 147,35 | 175,93 |
| 22,75 | 253 | 155 | 2 | ....02275 | 49,97 | | | |
| 23,00 | 253 | 155 | 2 | ....02300 | 49,85 | 97,13 | 143,87 | 172,46 |
| 23,25 | 276 | 155 | 3 | ....02325 | 52,70 | | | |
| 23,50 | 276 | 155 | 3 | ....02350 | 50,44 | 104,69 | 152,19 | 180,77 |
| 23,75 | 281 | 160 | 3 | ....02375 | 59,60 | | | |
| 24,00 | 281 | 160 | 3 | ....02400 | 52,82 | 107,31 | 155,07 | 183,65 |
| 24,25 | 281 | 160 | 3 | ....02425 | 60,55 | | | |
| 24,50 | 281 | 160 | 3 | ....02450 | 57,16 | 115,63 | • | • |
| 24,75 | 281 | 160 | 3 | ....02475 | 63,65 | | | |
| 25,00 | 281 | 160 | 3 | ....02500 | 55,65 | 111,95 | • | • |
| 25,25 | 286 | 165 | 3 | ....02525 | 67,69 | | | |
| 25,50 | 286 | 165 | 3 | ....02550 | 65,19 | 139,78 | • | • |
| 25,75 | 286 | 165 | 3 | ....02575 | 70,78 | | | |
| 26,00 | 286 | 165 | 3 | ....02600 | 66,26 | 132,65 | • | • |
| 26,25 | 286 | 165 | 3 | ....02625 | 71,50 | | | |
| 26,50 | 286 | 165 | 3 | ....02650 | 66,62 | 147,64 | • | • |
| 26,75 | 291 | 170 | 3 | ....02675 | 76,49 | | | |
| 27,00 | 291 | 170 | 3 | ....02700 | 71,26 | 146,09 | • | • |
| 27,25 | 291 | 170 | 3 | ....02725 | 79,59 | | | |
| 27,50 | 291 | 170 | 3 | ....02750 | 71,44 | 173,45 | • | • |
| 27,75 | 291 | 170 | 3 | ....02775 | 79,71 | | | |
| 28,00 | 291 | 170 | 3 | ....02800 | 73,28 | 150,01 | • | • |
| 28,25 | 296 | 175 | 3 | ....02825 | 84,94 | | | |
| 28,50 | 296 | 175 | 3 | ....02850 | 79,23 | 182,25 | • | • |
| 28,75 | 296 | 175 | 3 | ....02875 | 86,49 | | | |
| 29,00 | 296 | 175 | 3 | ....02900 | 76,73 | 157,15 | • | • |
| 29,25 | 296 | 175 | 3 | ....02925 | 87,80 | | | |
| 29,50 | 296 | 175 | 3 | ....02950 | 80,22 | 190,23 | • | • |
| 29,75 | 296 | 175 | 3 | ....02975 | 87,80 | | | |
| 30,00 | 296 | 175 | 3 | ....03000 | 79,72 | 166,31 | • | • |
| 30,25 | 301 | 180 | 3 | ....03025 | 100,05 | | | |
| 30,50 | 301 | 180 | 3 | ....03050 | 100,05 | 201,65 | • | • |
| 30,75 | 301 | 180 | 3 | ....03075 | 100,05 | | | |
| 31,00 | 301 | 180 | 3 | ....03100 | 95,65 | 201,65 | • | • |
| 31,25 | 301 | 180 | 3 | ....03125 | 104,93 | | | |
| 31,50 | 301 | 180 | 3 | ....03150 | 104,93 | 221,04 | • | • |
| 31,75 | 306 | 185 | 3 | ....03175 | 104,93 | | | |
| 32,00 | 334 | 185 | 4 | ....03200 | 104,69 | 220,44 | • | • |
| 32,50 | 334 | 185 | 4 | ....03250 | 112,66 | 266,48 | • | • |
| 33,00 | 334 | 185 | 4 | ....03300 | 111,83 | 266,48 | • | • |
| 33,50 | 334 | 185 | 4 | ....03350 | 125,15 | 303,48 | • | • |
| 34,00 | 339 | 190 | 4 | ....03400 | 125,03 | 289,68 | • | • |
| 34,50 | 339 | 190 | 4 | ....03450 | 140,50 | 289,68 | • | • |
| 35,00 | 339 | 190 | 4 | ....03500 | 125,03 | 289,68 | • | • |
| 35,50 | 339 | 190 | 4 | ....03550 | 141,69 | 349,16 | • | • |

• a richiesta - on demand

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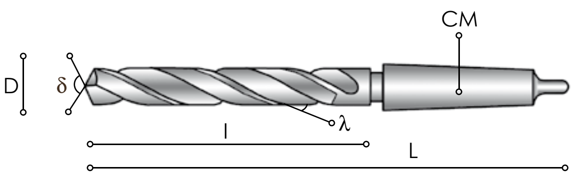
PUNTE ELICOIDALI TWIST DRILLS SPIRALBOHRER FORETS BROCAS

| | | | | | | |
|---|---|---|---|---|---|---|
| **CM 300** | DIN 345 | N | λ 25°-30° | δ 118° | STANDARD | |
| **CM 303** | DIN 345 | N | λ 25°-30° | δ 118° | STANDARD | |





| D h8 | L | l | CM | CODE | HSS 5300..... € | HSS+5%Co 5303..... € | HSS+5%Co 6303..... € QUARTZ | HSS+5%Co 7303..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 36,00 | 344 | 195 | 4 | ....03600 | 142,52 | 349,16 | • | • |
| 36,50 | 344 | 195 | 4 | ....03650 | 152,99 | 364,63 | • | • |
| 37,00 | 344 | 195 | 4 | ....03700 | 147,40 | 364,63 | • | • |
| 37,50 | 344 | 195 | 4 | ....03750 | 162,15 | 418,16 | • | • |
| 38,00 | 349 | 200 | 4 | ....03800 | 160,96 | 418,16 | • | • |
| 38,50 | 349 | 200 | 4 | ....03850 | 194,86 | 434,34 | • | • |
| 39,00 | 349 | 200 | 4 | ....03900 | 160,93 | 434,34 | • | • |
| 39,50 | 349 | 200 | 4 | ....03950 | 196,65 | 434,34 | • | • |
| 40,00 | 349 | 200 | 4 | ....04000 | 173,09 | 420,54 | • | • |
| 40,50 | 354 | 205 | 4 | ....04050 | 206,88 | 432,24 | • | • |
| 41,00 | 354 | 205 | 4 | ....04100 | 191,77 | 432,38 | • | • |
| 41,50 | 354 | 205 | 4 | ....04150 | 221,16 | 453,53 | • | • |
| 42,00 | 354 | 205 | 4 | ....04200 | 199,98 | 451,67 | • | • |
| 42,50 | 354 | 205 | 4 | ....04250 | 226,15 | 508,16 | • | • |
| 43,00 | 359 | 210 | 4 | ....04300 | 219,37 | 501,12 | • | • |
| 43,50 | 359 | 210 | 4 | ....04350 | 249,23 | 519,62 | • | • |
| 44,00 | 359 | 210 | 4 | ....04400 | 224,37 | 517,82 | • | • |
| 44,50 | 359 | 210 | 4 | ....04450 | 266,96 | 565,48 | • | • |
| 45,00 | 359 | 210 | 4 | ....04500 | 238,05 | 554,25 | • | • |
| 45,50 | 364 | 215 | 4 | ....04550 | 269,93 | 566,24 | • | • |
| 46,00 | 364 | 215 | 4 | ....04600 | 240,67 | 560,74 | • | • |
| 46,50 | 364 | 215 | 4 | ....04650 | 303,12 | 592,90 | • | • |
| 47,00 | 364 | 215 | 4 | ....04700 | 254,35 | 589,16 | • | • |
| 47,50 | 364 | 215 | 4 | ....04750 | 310,62 | 611,87 | • | • |
| 48,00 | 369 | 220 | 4 | ....04800 | 277,66 | 608,04 | • | • |
| 48,50 | 369 | 220 | 4 | ....04850 | 322,16 | 624,96 | • | • |
| 49,00 | 369 | 220 | 4 | ....04900 | 285,04 | 624,96 | • | • |
| 49,50 | 369 | 220 | 4 | ....04950 | 326,08 | 654,90 | • | • |
| 50,00 | 369 | 220 | 4 | ....05000 | 291,46 | 654,90 | • | • |
| 50,50 | 374 | 225 | 4 | ....05050 | 342,50 | | | |
| 51 | 412 | 225 | 5 | ....05100 | 357,61 | | | |
| 52 | 412 | 225 | 5 | ....05200 | 370,22 | | | |
| 53 | 412 | 225 | 5 | ....05300 | 374,74 | | | |
| 54 | 417 | 230 | 5 | ....05400 | 403,17 | | | |
| 55 | 417 | 230 | 5 | ....05500 | 409,72 | | | |
| 56 | 417 | 230 | 5 | ....05600 | 409,72 | | | |
| 57 | 422 | 235 | 5 | ....05700 | 433,98 | | | |
| 58 | 422 | 235 | 5 | ....05800 | 458,61 | | | |
| 59 | 422 | 235 | 5 | ....05900 | 458,61 | | | |
| 60 | 422 | 235 | 5 | ....06000 | 475,03 | | | |

| D h8 | L | l | CM | CODE | HSS 5300….. € | HSS+5%Co 5303….. € | HSS+5%Co 6303….. € QUARTZ | HSS+5%Co 7303….. € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 61 | 427 | 240 | 5 | ….06100 | 507,45 | | | |
| 62 | 427 | 240 | 5 | ….06200 | 514,63 | | | |
| 63 | 427 | 240 | 5 | ….06300 | 545,97 | | | |
| 64 | 432 | 245 | 5 | ….06400 | 570,60 | | | |
| 65 | 432 | 245 | 5 | ….06500 | 603,59 | | | |
| 66 | 432 | 245 | 5 | ….06600 | 646,97 | | | |
| 67 | 432 | 245 | 5 | ….06700 | 646,97 | | | |
| 68 | 437 | 250 | 5 | ….06800 | 694,84 | | | |
| 69 | 437 | 250 | 5 | ….06900 | 737,71 | | | |
| 70 | 437 | 250 | 5 | ….07000 | 760,02 | | | |
| 71 | 437 | 250 | 5 | ….07100 | 775,94 | | | |
| 72 | 442 | 255 | 5 | ….07200 | 813,47 | | | |
| 73 | 442 | 255 | 5 | ….07300 | 846,47 | | | |
| 74 | 442 | 255 | 5 | ….07400 | 885,17 | | | |
| 75 | 442 | 255 | 5 | ….07500 | 907,91 | | | |
| 76 | 447 | 260 | 5 | ….07600 | 983,91 | | | |
| 77 | 514 | 260 | 6 | ….07700 | 1106,19 | | | |
| 78 | 514 | 260 | 6 | ….07800 | 1127,88 | | | |
| 79 | 514 | 260 | 6 | ….07900 | 1180,07 | | | |
| 80 | 514 | 260 | 6 | ….08000 | 1206,74 | | | |

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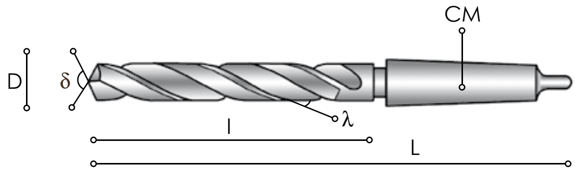
# PUNTE LUNGHE PER FORARE CON BUSSOLA DI GUIDA TWIST DRILLS SUITABLE FOR BUSHING, LONG SERIES LANGE SPIRALBOHRER ZUM BOHREN DURCH BOHRBUCHSEN FORETS LONGS POUR FORER AVEC GUIDE BROCAS LARGA PARA FORAR CON GUIA

| | | | | | |
|---|---|---|---|---|---|
| **CM 301** | DIN 341 | N | λ 25°-30° | δ 118° | STANDARD |
| **CM 302** FORI PROFONDI DEEP HOLE | DIN 341 | S | λ 35°-40° | δ 135° | DIN 1412 C |




CM301 CM302

| D h8 | L | l | CM | CODE | HSS 5301..... € | HSS+5%Co 5302..... € | HSS+5%Co 6302..... € QUARTZ | HSS+5%Co 7302..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 8 | 181 | 100 | 1 | ....00800 | 20,46 | 31,28 | 43,82 | 51,09 |
| 8,5 | 181 | 100 | 1 | ....00850 | 18,75 | 32,38 | 45,04 | 52,31 |
| 9 | 188 | 107 | 1 | ....00900 | 21,39 | 37,12 | 50,25 | 57,52 |
| 9,5 | 188 | 107 | 1 | ....00950 | 23,35 | 38,71 | 52,00 | 59,27 |
| 10 | 197 | 116 | 1 | ....01000 | 24,28 | 39,08 | 52,41 | 59,68 |
| 10,5 | 197 | 116 | 1 | ....01050 | 25,14 | 41,78 | 55,38 | 62,65 |
| 11 | 206 | 125 | 1 | ....01100 | 25,82 | 45,04 | 58,96 | 66,23 |
| 11,5 | 206 | 125 | 1 | ....01150 | 25,82 | 48,42 | 62,68 | 69,95 |
| 12 | 215 | 134 | 1 | ....01200 | 25,82 | 48,85 | 65,68 | 74,89 |
| 12,5 | 215 | 134 | 1 | ....01250 | 26,55 | 50,88 | 67,91 | 77,12 |
| 13 | 215 | 134 | 1 | ....01300 | 26,65 | 54,81 | 72,23 | 81,44 |
| 13,5 | 223 | 142 | 1 | ....01350 | 29,86 | 62,80 | 81,03 | 90,24 |
| 14 | 223 | 142 | 1 | ....01400 | 31,88 | 65,93 | 84,47 | 93,68 |
| 14,5 | 245 | 147 | 2 | ....01450 | 39,62 | 76,86 | 100,21 | 112,30 |
| 15 | 245 | 147 | 2 | ....01500 | 39,62 | 79,02 | 102,58 | 114,66 |
| 15,5 | 251 | 153 | 2 | ....01550 | 43,42 | 82,76 | 111,49 | 118,79 |
| 16 | 251 | 153 | 2 | ....01600 | 43,42 | 86,33 | 115,42 | 122,71 |
| 16,5 | 257 | 159 | 2 | ....01650 | 45,56 | 92,96 | 122,71 | 130,00 |
| 17 | 257 | 159 | 2 | ....01700 | 45,56 | 98,06 | 128,32 | 135,62 |
| 17,5 | 263 | 165 | 2 | ....01750 | 50,80 | 102,49 | 133,19 | 140,48 |
| 18 | 263 | 165 | 2 | ....01800 | 48,66 | 108,45 | 139,75 | 147,04 |
| 18,5 | 269 | 171 | 2 | ....01850 | 55,44 | 111,21 | 151,34 | 173,73 |
| 19 | 269 | 171 | 2 | ....01900 | 51,51 | 117,30 | 158,04 | 180,43 |
| 19,5 | 275 | 177 | 2 | ....01950 | 60,20 | 123,75 | 165,13 | 187,52 |
| 20 | 275 | 177 | 2 | ....02000 | 55,56 | 128,17 | 170,00 | 192,39 |
| 20,5 | 282 | 184 | 2 | ....02050 | 60,67 | | | |
| 21 | 282 | 184 | 2 | ....02100 | 72,45 | 134,00 | 176,41 | 198,80 |
| 21,5 | 289 | 191 | 2 | ....02150 | 74,95 | | | |
| 22 | 289 | 191 | 2 | ....02200 | 72,45 | 141,44 | 184,59 | 206,99 |
| 22,5 | 296 | 198 | 2 | ....02250 | 77,68 | | | |
| 23 | 296 | 198 | 2 | ....02300 | 77,91 | 156,34 | 209,00 | 237,59 |
| 23,5 | 319 | 198 | 3 | ....02350 | 84,88 | | | |
| 24 | 327 | 206 | 3 | ....02400 | 96,41 | 170,64 | 235,86 | 273,02 |
| 24,5 | 327 | 206 | 3 | ....02450 | 103,50 | | | |
| 25 | 327 | 206 | 3 | ....02500 | 96,41 | 187,83 | • | • |
| 25,5 | 335 | 214 | 3 | ....02550 | 103,50 | | | |
| 26 | 335 | 214 | 3 | ....02600 | 100,53 | 199,70 | • | • |
| 26,5 | 335 | 214 | 3 | ....02650 | 106,47 | | | |
| 27 | 343 | 222 | 3 | ....02700 | 115,29 | 231,57 | • | • |
| 27,5 | 343 | 222 | 3 | ....02750 | 116,59 | | | |



• a richiesta - on demand

| D h8 | L | l | CM | CODE | HSS 5301..... € | HSS+5%Co 5302..... € | HSS+5%Co 6302..... € QUARTZ | HSS+5%Co 7302..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 28 | 343 | 222 | 3 | ....02800 | 122,33 | 240,35 | • | • |
| 28,5 | 351 | 230 | 3 | ....02850 | 132,17 | | | |
| 29 | 351 | 230 | 3 | ....02900 | 132,05 | 258,80 | • | • |
| 29,5 | 351 | 230 | 3 | ....02950 | 143,00 | | | |
| 30 | 351 | 230 | 3 | ....03000 | 136,45 | 276,49 | • | • |

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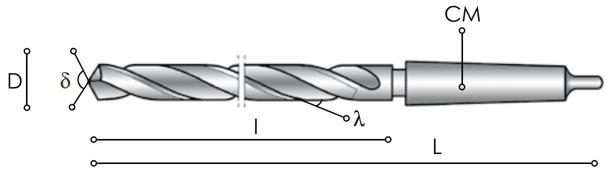
**PUNTE EXTRA LUNGHE** TWIST DRILLS, EXTRA LONG SERIES **ÜBERLANGE SPIRALBOHRER** FORETS EXTRA LONGS **BROCAS EXTRA LARGA**

| | | | | | | |
|---|---|---|---|---|---|---|
| **CM 304** | DIN 1870/1 | N | λ 25°-30° | δ 118° | STANDARD | |
| **CM 306** FORI PROFONDI DEEP HOLE | DIN 1870/1 | S | λ 35°-40° | δ 135° | DIN 1412 C | |




**CM304** **CM306**

| D h8 | L | l | CM | CODE | HSS 5304..... € | HSS+5%Co 5306..... € | HSS+5%Co 6306..... € QUARTZ | HSS+5%Co 7306..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 8 | 265 | 165 | 1 | ....00800 | 38,71 | 53,49 | 72,66 | 83,33 |
| 8,5 | 265 | 165 | 1 | ....00850 | 43,39 | 64,10 | 84,33 | 94,99 |
| 9 | 275 | 175 | 1 | ....00900 | 46,96 | 60,59 | 80,47 | 91,13 |
| 9,5 | 275 | 175 | 1 | ....00950 | 50,55 | 68,18 | 88,81 | 99,48 |
| 10 | 285 | 185 | 1 | ....01000 | 48,01 | 63,84 | 84,04 | 94,71 |
| 10,5 | 285 | 185 | 1 | ....01050 | 53,83 | 78,71 | 100,40 | 111,06 |
| 11 | 300 | 195 | 1 | ....01100 | 66,30 | 61,98 | 81,99 | 92,65 |
| 11,5 | 300 | 195 | 1 | ....01150 | 69,24 | 63,15 | 83,28 | 93,95 |
| 12 | 310 | 205 | 1 | ....01200 | 70,11 | 65,59 | 90,94 | 101,48 |
| 12,5 | 310 | 205 | 1 | ....01250 | 70,56 | 87,84 | 115,42 | 125,96 |
| 13 | 310 | 205 | 1 | ....01300 | 72,43 | 84,65 | 111,90 | 122,44 |
| 13,5 | 325 | 220 | 1 | ....01350 | 74,37 | 95,37 | 123,70 | 134,24 |
| 14 | 325 | 220 | 1 | ....01400 | 74,37 | 97,29 | 125,80 | 136,34 |
| 14,5 | 340 | 220 | 2 | ....01450 | 76,96 | 106,42 | 144,14 | 159,43 |
| 15 | 340 | 220 | 2 | ....01500 | 80,37 | 107,89 | 145,76 | 161,04 |
| 15,5 | 355 | 230 | 2 | ....01550 | 88,24 | 118,87 | 171,36 | 194,28 |
| 16 | 355 | 230 | 2 | ....01600 | 90,08 | 119,19 | 171,72 | 194,63 |
| 16,5 | 355 | 230 | 2 | ....01650 | 98,31 | 125,44 | 178,60 | 201,51 |
| 17 | 355 | 230 | 2 | ....01700 | 98,31 | 129,90 | 183,50 | 206,42 |
| 17,5 | 370 | 245 | 2 | ....01750 | 114,22 | 137,83 | • | • |
| 18 | 370 | 245 | 2 | ....01800 | 106,30 | 143,57 | • | • |
| 18,5 | 370 | 245 | 2 | ....01850 | 109,86 | 154,99 | • | • |
| 19 | 370 | 245 | 2 | ....01900 | 114,96 | 155,25 | • | • |
| 19,5 | 385 | 260 | 2 | ....01950 | 122,64 | 172,93 | • | • |
| 20 | 385 | 260 | 2 | ....02000 | 125,65 | 169,68 | • | • |
| 20,5 | 385 | 260 | 2 | ....02050 | 132,10 | 214,24 | • | • |
| 21 | 385 | 260 | 2 | ....02100 | 140,13 | 202,81 | • | • |
| 21,5 | 405 | 270 | 2 | ....02150 | 164,48 | 231,79 | • | • |
| 22 | 405 | 270 | 2 | ....02200 | 154,91 | 221,85 | • | • |
| 22,5 | 405 | 270 | 2 | ....02250 | 179,10 | 246,73 | • | • |
| 23 | 405 | 270 | 2 | ....02300 | 170,89 | 240,37 | • | • |
| 23,5 | 425 | 270 | 3 | ....02350 | 211,97 | 301,50 | • | • |
| 24 | 440 | 290 | 3 | ....02400 | 192,99 | 275,32 | • | • |
| 24,5 | 440 | 290 | 3 | ....02450 | 225,80 | 325,30 | • | • |
| 25 | 440 | 290 | 3 | ....02500 | 204,48 | 285,34 | • | • |
| 25,5 | 440 | 290 | 3 | ....02550 | 244,47 | 346,12 | • | • |
| 26 | 440 | 290 | 3 | ....02600 | 219,47 | 313,68 | • | • |
| 26,5 | 440 | 290 | 3 | ....02650 | 258,74 | 351,48 | • | • |
| 27 | 460 | 305 | 3 | ....02700 | 226,78 | 325,78 | • | • |
| 27,5 | 460 | 305 | 3 | ....02750 | 254,06 | 382,37 | • | • |

| D h8 | L | l | CM | CODE | HSS 5304..... € | HSS+5%Co 5306..... € | HSS+5%Co 6306..... € QUARTZ | HSS+5%Co 7306..... € TITANITE |
|---|---|---|---|---|---|---|---|---|
| 28 | 460 | 305 | 3 | ....02800 | 243,99 | 345,41 | • | • |
| 28,5 | 460 | 305 | 3 | ....02850 | 286,68 | 405,74 | • | • |
| 29 | 460 | 305 | 3 | ....02900 | 258,74 | 371,01 | • | • |
| 29,5 | 460 | 305 | 3 | ....02950 | 293,51 | 412,76 | • | • |
| 30 | 460 | 305 | 3 | ....03000 | 281,09 | 392,12 | • | • |
| 30,5 | 480 | 320 | 3 | ....03050 | 339,65 | | | |
| 31 | 480 | 320 | 3 | ....03100 | 308,50 | 468,16 | • | • |
| 32 | 505 | 320 | 4 | ....03200 | 330,19 | | | |
| 33 | 505 | 320 | 4 | ....03300 | 371,04 | | | |
| 34 | 530 | 340 | 4 | ....03400 | 393,77 | | | |
| 35 | 530 | 340 | 4 | ....03500 | 400,16 | | | |
| 36 | 530 | 340 | 4 | ....03600 | 425,48 | | | |
| 37 | 530 | 340 | 4 | ....03700 | 439,67 | | | |
| 38 | 555 | 360 | 4 | ....03800 | 461,92 | | | |
| 39 | 555 | 360 | 4 | ....03900 | 479,06 | | | |
| 40 | 555 | 360 | 4 | ....04000 | 509,72 | | | |
| 41 | 555 | 360 | 4 | ....04100 | 534,47 | | | |
| 42 | 555 | 360 | 4 | ....04200 | 555,00 | | | |
| 43 | 585 | 385 | 4 | ....04300 | 630,01 | | | |
| 44 | 585 | 385 | 4 | ....04400 | 654,28 | | | |
| 45 | 585 | 385 | 4 | ....04500 | 689,99 | | | |
| 46 | 585 | 385 | 4 | ....04600 | 724,20 | | | |
| 47 | 585 | 385 | 4 | ....04700 | 762,79 | | | |
| 48 | 605 | 405 | 4 | ....04800 | 837,87 | | | |
| 49 | 605 | 405 | 4 | ....04900 | 879,71 | | | |
| 50 | 605 | 405 | 4 | ....05000 | 919,88 | | | |

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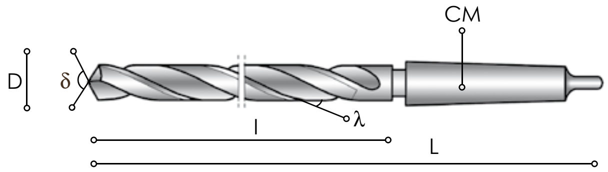
**PUNTE EXTRA LUNGHE** TWIST DRILLS, EXTRA LONG SERIES **ÜBERLANGE SPIRALBOHRER** FORETS EXTRA LONGS **BROCAS EXTRA LARGA**

| | | | | | | |
|---|---|---|---|---|---|---|
| **CM 305** | DIN 1870/2 | N | λ 25°-30° | δ 118° | STANDARD | |
| **CM 307** FORI PROFONDI DEEP HOLE | DIN 1870/2 | S | λ 35°-40° | δ 135° | DIN 1412 C | |




**CM305** **CM307**

| D h8 | L | l | CM | CODE | HSS 5305….. € | HSS+5%Co 5307….. € |
|---|---|---|---|---|---|---|
| 8 | 330 | 210 | 1 | ….00800 | 57,58 | 78,20 |
| 8,5 | 330 | 210 | 1 | ….00850 | 62,92 | 87,52 |
| 9 | 345 | 220 | 1 | ….00900 | 67,41 | 90,65 |
| 9,5 | 345 | 220 | 1 | ….00950 | 71,21 | 100,03 |
| 10 | 360 | 235 | 1 | ….01000 | 64,82 | 89,76 |
| 10,5 | 360 | 235 | 1 | ….01050 | 76,99 | 110,63 |
| 11 | 375 | 250 | 1 | ….01100 | 80,18 | 105,33 |
| 11,5 | 375 | 250 | 1 | ….01150 | 85,68 | 112,80 |
| 12 | 395 | 260 | 1 | ….01200 | 82,38 | 112,80 |
| 12,5 | 395 | 260 | 1 | ….01250 | 91,35 | 125,38 |
| 13 | 395 | 260 | 1 | ….01300 | 94,80 | 121,67 |
| 13,5 | 410 | 275 | 1 | ….01350 | 104,31 | 137,12 |
| 14 | 410 | 275 | 1 | ….01400 | 107,19 | 136,29 |
| 14,5 | 425 | 275 | 2 | ….01450 | 114,10 | 149,89 |
| 15 | 425 | 275 | 2 | ….01500 | 114,10 | 149,89 |
| 15,5 | 445 | 295 | 2 | ….01550 | 121,36 | 160,16 |
| 16 | 445 | 295 | 2 | ….01600 | 121,36 | 164,76 |
| 16,5 | 445 | 295 | 2 | ….01650 | 130,62 | 176,38 |
| 17 | 445 | 295 | 2 | ….01700 | 137,88 | 186,14 |
| 17,5 | 465 | 310 | 2 | ….01750 | 144,02 | 210,72 |
| 18 | 465 | 310 | 2 | ….01800 | 152,38 | 222,96 |
| 18,5 | 465 | 310 | 2 | ….01850 | 156,31 | 229,18 |
| 19 | 465 | 310 | 2 | ….01900 | 164,79 | 241,14 |
| 19,5 | 490 | 325 | 2 | ….01950 | 173,88 | 254,42 |
| 20 | 490 | 325 | 2 | ….02000 | 180,09 | 263,49 |
| 20,5 | 490 | 325 | 2 | ….02050 | 185,25 | 282,09 |
| 21 | 490 | 325 | 2 | ….02100 | 188,32 | 275,51 |
| 21,5 | 515 | 345 | 2 | ….02150 | 203,80 | 313,62 |
| 22 | 515 | 345 | 2 | ….02200 | 203,80 | 305,73 |
| 22,5 | 515 | 345 | 2 | ….02250 | 215,78 | 330,56 |
| 23 | 515 | 345 | 2 | ….02300 | 220,94 | 330,56 |
| 23,5 | 535 | 345 | 3 | ….02350 | 255,42 | 398,41 |
| 24 | 555 | 365 | 3 | ….02400 | 241,77 | 365,00 |
| 24,5 | 555 | 365 | 3 | ….02450 | 275,81 | 418,87 |
| 25 | 555 | 365 | 3 | ….02500 | 263,95 | 395,43 |
| 25,5 | 555 | 365 | 3 | ….02550 | 315,32 | 488,31 |
| 26 | 555 | 365 | 3 | ….02600 | 290,80 | 439,41 |
| 26,5 | 555 | 365 | 3 | ….02650 | 331,54 | 524,33 |
| 27 | 580 | 385 | 3 | ….02700 | 312,68 | 465,13 |
| 27,5 | 580 | 385 | 3 | ….02750 | 354,63 | 555,18 |

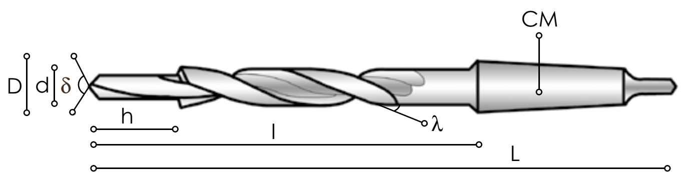
| D h8 | L | l | CM | CODE | HSS 5305….. € | HSS+5%Co 5307….. € |
|---|---|---|---|---|---|---|
| 28 | 580 | 385 | 3 | ….02800 | 314,70 | 505,45 |
| 28,5 | 580 | 385 | 3 | ….02850 | 353,23 | 578,19 |
| 29 | 580 | 385 | 3 | ….02900 | 363,68 | 559,66 |
| 29,5 | 580 | 385 | 3 | ….02950 | 397,34 | 617,06 |
| 30 | 580 | 385 | 3 | ….03000 | 388,49 | 581,80 |
| 31 | 610 | 410 | 3 | ….03100 | 413,01 | |
| 32 | 635 | 410 | 4 | ….03200 | 437,59 | |
| 33 | 635 | 410 | 4 | ….03300 | 494,85 | |
| 34 | 665 | 430 | 4 | ….03400 | 494,85 | |
| 35 | 665 | 430 | 4 | ….03500 | 494,85 | |
| 36 | 665 | 430 | 4 | ….03600 | 497,31 | |
| 37 | 665 | 430 | 4 | ….03700 | 562,43 | |
| 38 | 695 | 460 | 4 | ….03800 | 562,43 | |
| 39 | 695 | 460 | 4 | ….03900 | 572,02 | |
| 40 | 695 | 460 | 4 | ….04000 | 581,42 | |
| 41 | 695 | 460 | 4 | ….04100 | 646,73 | |
| 42 | 695 | 460 | 4 | ….04200 | 683,29 | |
| 43 | 735 | 490 | 4 | ….04300 | 749,21 | |
| 44 | 735 | 490 | 4 | ….04400 | 771,14 | |
| 45 | 735 | 490 | 4 | ….04500 | 813,17 | |
| 46 | 735 | 490 | 4 | ….04600 | 853,54 | |
| 47 | 735 | 490 | 4 | ….04700 | 898,99 | |
| 48 | 765 | 510 | 4 | ….04800 | 987,47 | |
| 49 | 765 | 510 | 4 | ….04900 | 1.036,82 | |
| 50 | 765 | 510 | 4 | ….05000 | 1.084,18 | |

PUNTE A GRADINO CON ELICHE INDIPENDENTI SUBLAND DRILLS WITH INDIPENDENT SPIRAL
MEHRFASEN-STUFENBOHRER FORETS A ETAGE AVEC HELICE INDEPENDANTE BROCAS BIDIAMETRALES

## CM 370

DIN 8377 N λ 25°-30° δ 118° DIN 1412 A

CM370



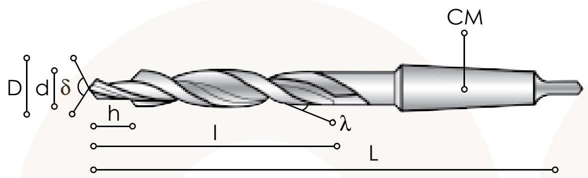


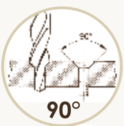
| VITE SCREW | D h8 | d h9 | L | l | h | CM | CODE | HSS 5370..... € |
|---|---|---|---|---|---|---|---|---|
| M5 | 10 | 5,5 | 168 | 87 | 13 | 1 | ....00005 | 68,88 |
| M6 | 11 | 6,6 | 175 | 94 | 15 | 1 | ....00006 | 69,56 |
| M8 | 15 | 9 | 212 | 114 | 19 | 2 | ....00008 | 93,97 |
| M10 | 18 | 11 | 228 | 130 | 23 | 2 | ....00010 | 124,72 |
| M12 | 20 | 13,5 | 238 | 140 | 27 | 2 | ....00012 | 148,56 |
| M14 | 24 | 15,5 | 281 | 160 | 31 | 3 | ....00014 | 185,43 |
| M16 | 26 | 17,5 | 286 | 165 | 35 | 3 | ....00016 | 218,30 |
| M18 | 30 | 20 | 296 | 175 | 39 | 3 | ....00018 | 253,69 |
| M20 | 33 | 22 | 334 | 185 | 43 | 4 | ....00020 | 296,02 |

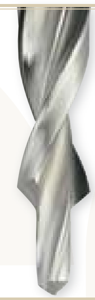
## CM 371

DIN 8375 N λ 25°-30° δ 118° DIN 1412 A

CM371



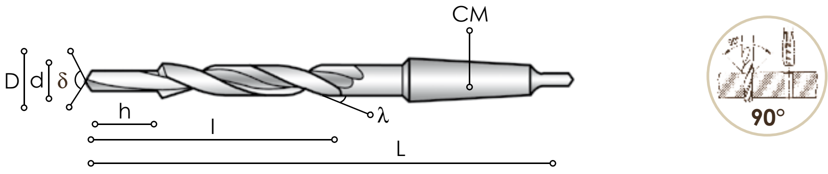
| VITE SCREW | D h8 | d h9 | L | l | h | CM | CODE | HSS 5371..... € |
|---|---|---|---|---|---|---|---|---|
| M5 | 11 | 5,5 | 175 | 94 | 13 | 1 | ....00005 | 75,70 |
| M6 | 13 | 6,6 | 182 | 101 | 15 | 1 | ....00006 | 81,97 |
| M8 | 17,2 | 9 | 228 | 130 | 19 | 2 | ....00008 | 118,04 |
| M10 | 21,5 | 11 | 248 | 150 | 23 | 2 | ....00010 | 170,44 |

PUNTE A GRADINO CON ELICHE INDIPENDENTI SUBLAND DRILLS WITH INDIPENDENT SPIRAL MEHRFASEN-STUFENBOHRER FORETS A ETAGE AVEC HELICE INDEPENDANTE BROCAS BIDIAMETRALES

## CM 372

DIN 8379 | N | λ 25°-30° | δ 118° | DIN 1412 A

CM372




| VITE SCREW | D h8 | d h9 | L | l | h | CM | CODE | HSS 5372..... € |
|---|---|---|---|---|---|---|---|---|
| M8 | 9 | 6,8 | 162 | 81 | 21 | 1 | ....00008 | 63,04 |
| M10 | 11 | 8,5 | 175 | 94 | 25,5 | 1 | ....00010 | 73,73 |
| M12 | 13,5 | 10,2 | 189 | 108 | 30 | 1 | ....00012 | 88,11 |
| M14 | 15,5 | 12 | 218 | 120 | 34,5 | 2 | ....00014 | 105,93 |
| M16 | 17,5 | 14 | 228 | 130 | 38,5 | 2 | ....00016 | 126,76 |
| M18 | 20 | 15,5 | 238 | 140 | 43,5 | 2 | ....00018 | 145,49 |
| M20 | 22 | 17,5 | 248 | 150 | 47,5 | 2 | ....00020 | 171,86 |

## CL 104

DIN 338 | N | λ 25°-30° | δ 118° | STANDARD

| N. PEZZI PIECES | Ø | CODE | HSS 5104..... € |
|---|---|---|---|
| 50 | 1 - 5,9 x 0,1 | ....10000 | 87,90 |
| 41 | 6 - 10 x 0,1 | ....20000 | 199,10 |
| 19 | 1 - 10 x 0,5 | ....30000 | 58,99 |
| 25 | 1 - 13 x 0,5 | ....40000 | 127,80 |
| 49 | 1 - 13 x 0,25 | ....50000 | 291,85 |
| 380 | 1 - 13 x 0,5 +3,3+4,2+6,8+10,2 | ....60000 | 1327,12 |

## CL 106

DIN 338 | W | λ 35°-40° | δ 130° | DIN 1412 C

| N. PEZZI PIECES | Ø | CODE | HSS+5%Co 5106..... € |
|---|---|---|---|
| 50 | 1 - 5,9 x 0,1 | ....10000 | 138,25 |
| 41 | 6 - 10 x 0,1 | ....20000 | 320,11 |
| 19 | 1 - 10 x 0,5 | ....30000 | 110,60 |
| 25 | 1 - 13 x 0,5 | ....40000 | 230,41 |
| 49 | 1 - 13 x 0,25 | ....50000 | 460,81 |
| 380 | 1 - 13 x 0,5 +3,3+4,2+6,8+10,2 | ....60000 | 1990,68 |

## CL 101

DIN 1897 | W | λ 35°-40° | δ 130° | DIN 1412 C



| Ø | CODE | HSS+8%Co € |
|---|---|---|
| 2,5-3,3-4,2-5-6,8-8,5 | 510110000 | 23,62 |

| Ø | CODE | HSS+8%Co € QUARTZ |
|---|---|---|
| 2,5-3,3-4,2-5-6,8-8,5 | 610110000 | 43,20 |

| Ø | CODE | HSS+8%Co € TITANITE |
|---|---|---|
| 2,5-3,3-4,2-5-6,8-8,5 | 710110000 | 54,78 |

## CL 105

DIN 338 | W | λ 35°-40° | δ 130° | DIN 1412 C



| Ø | CODE | HSS+8%Co € |
|---|---|---|
| 2,5-3,3-4,2-5-6,8-8,5 | 510510000 | 30,83 |

| Ø | CODE | HSS+8%Co € QUARTZ |
|---|---|---|
| 2,5-3,3-4,2-5-6,8-8,5 | 610510000 | 52,54 |

| Ø | CODE | HSS+8%Co € TITANITE |
|---|---|---|
| 2,5-3,3-4,2-5-6,8-8,5 | 710510000 | 66,53 |

carmon

rpm
=(mt/min x 1000) / ( D x 3,14 )

mm/min
= mm/rev x rpm

= mt/min

= mm/rev (*vedi tabella - see table page pag. 67*)

| | ALESATORI A MANO / HAND REAMERS | | ALESATORI A MACCHINA / MACHINE REAMERS | | | | | SVASATORI CONICI / COUNTERSINKS | | | SVASATORI PER SEDI DI VITI A TESTA CILINDRICA / COUNTER BORES FOR CAPSCREWS | | KIT SVASATORI / SET OF CONIC |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | AL111 | AS115 | AM117 | AM112 | AMM113 | AFE116 | MAN114 | SV74 | SV74 (SAPPHIRE MULTI) | SV72 | BR51 | BR52 | SV74 PZ.3 |
| | DIN 206/B | DIN 9/A | DIN 212B/D | DIN 208/B | DIN 219/B | DIN 219/C | DIN 217/B | DIN 335/C | | DIN 334 335/B | DIN 373 | DIN 375 | DIN 335/C |
| | HSS | | HSS+5%Co | | | | | HSS+5%Co | | | | | |
| Pagina Page | 68 | 69 | 70 | 72 | 73 | 73 | 74 | 75 | 75 | 75 | 76 | 76 | 77 |

| Pag. 228 | TIPO DI ACCIAIO / TYPE OF STEEL | | N/mm² | HV | AL111 mt/min mm/rev | AS115 mt/min mm/rev | AM117 mt/min mm/rev | AM112 mt/min mm/rev | AMM113 mt/min mm/rev | AFE116 mt/min mm/rev | MAN114 mt/min mm/rev | SV74 mt/min mm/rev | SV74 mt/min mm/rev | SV72 mt/min mm/rev | BR51 mt/min mm/rev | BR52 mt/min mm/rev |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACCIAI COMUNI / COMMON STEEL | Acciai teneri / Soft steel | 1 | 500 | 160 | | | 20 f | 20 f | 18 f | 15 f | | 30 d | 40 d | 30 d | 25 c | 25 c |
| | Acciai da costruzione / Structural steel | 2 | 700 | 220 | | | 18 f | 18 f | 15 f | 12 e | | 25 c | 35 c | 25 c | 20 c | 20 c |
| | Acciai da tempra / Hardening steel | 3 | 900 | 280 | | | 15 f | 15 f | 12 e | 10 d | | 20 c | 30 c | 20 c | 18 b | 18 b |
| | Acciaio automatico / Automatic steel | 4 | 1200 | 373 | | | 10 d | 10 d | 8 d | 6 d | | 10 b | 15 c | 10 b | 10 b | 10 b |
| ACCIAI INOX / STAINLESS STEEL | Acciaio automatico / Automatic steel | 3 | 850 | 268 | | | 12 e | 12 e | 10 d | 8 d | | 12 b | 22 b | 12 b | 8 b | 8 b |
| | Austenitico / Austenitic | 3 | 850 | 268 | | | 6 c | 6 c | 4 c | 2 b | | 10 b | 20 b | 10 b | 4 b | 4 b |
| | Ferritico+austenitico / Ferritic austenitic | 4 | 1000 | 317 | | | 4 c | 4 c | 2 b | 2 a | | 5 a | 10 a | 5 a | 4 a | 4 a |
| GHISA / CAST IRON | Ghisa fino a 180 hb / Cast iron up to 180hb | 2 | 500 | 160 | | | 15 g | 15 g | 12 e | 10 e | | 20 d | 30 d | 20 d | 20 d | 20 d |
| | Ghisa oltre 180 hb / Cast iron over 180hb | 3 | 700 | 220 | | | 12 e | 12 e | 10 d | 8 d | | 12 d | 20 d | 12 d | 10 c | 10 c |
| TITANIO / TITANIUM | Titanio non legato / Unalloyed titanium | 5 | 500 | 160 | | | 12 e | 12 e | 10 d | 8 d | | 10 b | 18 d | 10 b | 10 c | 10 c |
| | Leghe di titanio / Titanium alloys | 5 | 900 | 280 | | | 4 c | 4 c | 6 d | 4 c | | 5 a | 10 a | 5 a | 5 c | 5 c |
| RAME / COPPER | Rame / Copper | 9 | 350 | 110 | | | 20 g | 20 g | 15 f | 12 e | | 25 c | 35 c | 25 c | 20 b | 20 b |
| | Ottone / Brass | 9 | 700 | 220 | | | 25 h | 25 h | 18 f | 15 f | | 20 c | 30 c | 20 c | 18 b | 18 b |
| | Bronzo / Bronze | 9 | 700 | 220 | | | 20 g | 20 g | 15 f | 12 e | | 25 d | 35 d | 25 d | 20 b | 20 b |
| NICHEL / NICKEL | Nichel non legato / Unalloyed nichel | 6 | 700 | 220 | | | 6 c | 6 c | 4 c | 2 b | | 5 a | 10 a | 5 a | 5 c | 5 c |
| | Leghe di nichel / Nichel alloys | 6 | 900 | 280 | | | 4 c | 4 c | 2 b | 1 a | | 1 a | 3 a | 1 a | 1 a | 1 a |
| ALLUMINIO / ALUMINIUM | Alluminio non legato / Unalloyed aluminium | 7 | 350 | 110 | | | | | 20 h | 18 h | | 30 e | 40 e | 30 e | 25 d | 25 d |
| | Alluminio con leghe / Alloyed aluminium | 7 | 400 | 125 | | | | | 18 h | 15 h | | 25 d | 35 d | 25 d | 20 d | 20 d |
| | Alluminio con leghe / Alloyed aluminium | 7 | 500 | 160 | | | | | 15 f | 12 e | | 20 c | 30 c | 20 c | 18 d | 18 d |

CONICI
COUNTERSINKS

SV74 PZ.5

DIN 335/C

77

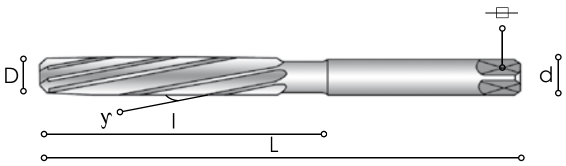
| FORATURA *DRILLING* | TABELLA PARAMETRI DI AVANZAMENTO mm/giro - *RECOMMENDED FEED DATA mm/rev.* | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DIAMETRO DELLA PUNTA *DRILL DIAMETER* | | | | | | | | | | | | | | | | |
| LETTERA DI RIFERIMENTO *REFERENCE LETTER* | D. 1 | D. 2 | D. 3 | D. 4 | D. 5 | D. 6 | D. 8 | D. 10 | D. 12 | D. 14 | D. 16 | D. 20 | D. 25 | D. 30 | D. 35 | D. 40 | D. 50 |
| a | 0,015 | 0,030 | 0,038 | 0,047 | 0,053 | 0,060 | 0,075 | 0,090 | 0,100 | 0,120 | 0,127 | 0,160 | 0,200 | 0,230 | 0,250 | 0,300 | 0,350 |
| b | 0,020 | 0,050 | 0,070 | 0,085 | 0,100 | 0,120 | 0,150 | 0,180 | 0,200 | 0,230 | 0,250 | 0,270 | 0,290 | 0,330 | 0,350 | 0,380 | 0,400 |
| c | 0,023 | 0,080 | 0,100 | 0,130 | 0,150 | 0,180 | 0,250 | 0,270 | 0,280 | 0,300 | 0,330 | 0,370 | 0,420 | 0,450 | 0,470 | 0,500 | 0,550 |
| d | 0,030 | 0,100 | 0,160 | 0,180 | 0,220 | 0,240 | 0,300 | 0,370 | 0,400 | 0,450 | 0,480 | 0,500 | 0,530 | 0,550 | 0,580 | 0,600 | 0,630 |
| e | 0,035 | 0,120 | 0,200 | 0,250 | 0,270 | 0,300 | 0,350 | 0,450 | 0,470 | 0,500 | 0,530 | 0,550 | 0,600 | 0,640 | 0,680 | 0,700 | 0,730 |
| f | 0,050 | 0,150 | 0,220 | 0,250 | 0,320 | 0,400 | 0,490 | 0,620 | 0,650 | 0,720 | 0,850 | 0,900 | 1,100 | 1,130 | 1,170 | 1,200 | 1,250 |
| g | 0,070 | 0,160 | 0,250 | 0,270 | 0,360 | 0,470 | 0,620 | 0,830 | 0,900 | 0,950 | 1,100 | 1,200 | 1,280 | 1,330 | 1,400 | 1,470 | 1,520 |
| h | 0,090 | 0,200 | 0,270 | 0,300 | 0,400 | 0,520 | 0,750 | 1,000 | 1,100 | 1,200 | 1,300 | 1,350 | 1,430 | 1,500 | 1,650 | 1,700 | 1,800 |

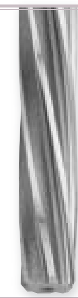
# AL 111

DIN 206/B

λ 7°- 10°

**AL111**



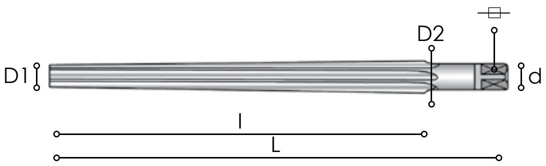
| D H7 | L | l | d e9 | □ | z | CODE | HSS 1111..... € |
|---|---|---|---|---|---|---|---|
| 3 | 62 | 31 | 3 | 2,1 | 4 | ....03000 | 24,21 |
| 4 | 76 | 38 | 4 | 3 | 6 | ....04000 | 24,71 |
| 5 | 87 | 44 | 5 | 3,8 | 6 | ....50000 | 27,66 |
| 6 | 93 | 47 | 6 | 4,3 | 6 | ....60000 | 27,09 |
| 7 | 107 | 54 | 7 | 5,5 | 6 | ....70000 | 31,17 |
| 8 | 115 | 58 | 8 | 6,2 | 6 | ....80000 | 33,99 |
| 9 | 124 | 62 | 9 | 7 | 6 | ....90000 | 35,09 |
| 10 | 133 | 66 | 10 | 8 | 6 | ....10000 | 35,90 |
| 11 | 142 | 71 | 11 | 9 | 6 | ....11000 | 41,16 |
| 12 | 152 | 76 | 12 | 10 | 8 | ....12000 | 40,30 |
| 13 | 152 | 76 | 13 | 10 | 8 | ....13000 | 48,42 |
| 14 | 163 | 81 | 14 | 11 | 8 | ....14000 | 47,20 |
| 15 | 163 | 81 | 15 | 11 | 8 | ....15000 | 51,48 |
| 16 | 175 | 87 | 16 | 12 | 8 | ....16000 | 52,70 |
| 17 | 175 | 87 | 17 | 12 | 8 | ....17000 | 65,37 |
| 18 | 188 | 93 | 18 | 14,5 | 8 | ....18000 | 63,44 |
| 19 | 188 | 93 | 19 | 14,5 | 8 | ....19000 | 72,39 |
| 20 | 201 | 100 | 20 | 16 | 8 | ....20000 | 76,11 |
| 21 | 201 | 100 | 21 | 16 | 8 | ....21000 | 88,57 |
| 22 | 215 | 107 | 22 | 18 | 8 | ....22000 | 82,83 |
| 23 | 215 | 107 | 23 | 18 | 8 | ....23000 | 104,33 |
| 24 | 231 | 115 | 24 | 20 | 8 | ....24000 | 98,68 |
| 25 | 231 | 115 | 25 | 20 | 10 | ....25000 | 105,49 |
| 26 | 231 | 115 | 26 | 20 | 10 | ....26000 | 114,09 |
| 27 | 247 | 124 | 27 | 22 | 10 | ....27000 | 145,32 |
| 28 | 247 | 124 | 28 | 22 | 10 | ....28000 | 132,88 |
| 29 | 247 | 124 | 29 | 22 | 10 | ....29000 | 152,01 |
| 30 | 247 | 124 | 30 | 22 | 10 | ....30000 | 144,99 |
| 32 | 265 | 133 | 32 | 24 | 10 | ....32000 | 161,67 |
| 34 | 284 | 142 | 34 | 29 | 10 | ....34000 | 178,06 |
| 35 | 284 | 142 | 35 | 29 | 10 | ....35000 | 188,29 |
| 36 | 284 | 142 | 36 | 29 | 10 | ....36000 | 198,28 |
| 38 | 305 | 152 | 38 | 32 | 12 | ....38000 | 230,08 |
| 40 | 305 | 152 | 40 | 32 | 12 | ....40000 | 255,77 |

# AS 115

DIN 9/A

λ 0°

AS115



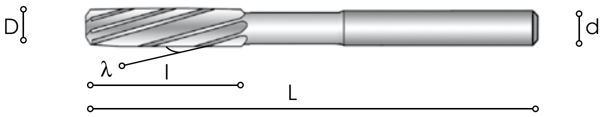

| D Norm. | D1 | D2 | L | l | d h11 | ⊟ | z | CODE | HSS 1115..... € |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 4,9 | 6,36 | 100 | 73 | 6,3 | 4,9 | 5 | ....50000 | 36,82 |
| 6 | 5,9 | 8 | 135 | 105 | 8 | 6,2 | 5 | ....60000 | 45,56 |
| 6,5 | 6,4 | 8,6 | 140 | 110 | 8 | 6,2 | 5 | ....65000 | 48,84 |
| 8 | 7,9 | 10,8 | 180 | 145 | 10 | 8 | 5 | ....80000 | 52,59 |
| 10 | 9,9 | 13,4 | 215 | 175 | 12,5 | 10 | 7 | ....10000 | 67,66 |
| 12 | 11,8 | 16 | 255 | 210 | 14 | 11 | 7 | ....12000 | 92,23 |
| 16 | 15,8 | 20,4 | 280 | 230 | 18 | 14,5 | 9 | ....16000 | 141,33 |
| 20 | 19,8 | 24,8 | 310 | 250 | 22,4 | 18 | 9 | ....20000 | 294,26 |

## AM 117

DIN 212 B/D

λ 7°- 10

AM117




| D H7 | L | l | d h9 | Z | CODE | HSS+5%Co 1117..... € |
|---|---|---|---|---|---|---|
| 2 | 49 | 11 | 2 | 4 | ....02000 | 21,14 |
| 2,1 | 49 | 11 | 2,1 | 4 | ....21000 | 24,91 |
| 2,2 | 53 | 12 | 2,2 | 4 | ....22000 | 24,91 |
| 2,3 | 53 | 12 | 2,3 | 4 | ....23000 | 24,91 |
| 2,4 | 57 | 14 | 2,4 | 4 | ....24000 | 24,91 |
| 2,5 | 57 | 14 | 2,5 | 4 | ....25000 | 20,00 |
| 2,6 | 57 | 14 | 2,6 | 4 | ....26000 | 23,35 |
| 2,7 | 61 | 15 | 2,7 | 4 | ....27000 | 23,35 |
| 2,8 | 61 | 15 | 2,8 | 4 | ....28000 | 23,35 |
| 2,9 | 61 | 15 | 2,9 | 4 | ....29000 | 23,35 |
| 3 | 61 | 15 | 3 | 4 | ....30000 | 20,00 |
| 3,1 | 65 | 16 | 3,1 | 4 | ....31000 | 24,39 |
| 3,2 | 65 | 16 | 3,2 | 4 | ....32000 | 24,39 |
| 3,3 | 65 | 16 | 3,3 | 4 | ....33000 | 24,39 |
| 3,4 | 70 | 18 | 3,4 | 4 | ....34000 | 24,39 |
| 3,5 | 70 | 18 | 3,5 | 6 | ....35000 | 21,14 |
| 3,6 | 70 | 18 | 3,6 | 6 | ....36000 | 25,82 |
| 3,7 | 70 | 18 | 3,7 | 6 | ....37000 | 25,82 |
| 3,8 | 75 | 19 | 4 | 6 | ....38000 | 25,82 |
| 3,9 | 75 | 19 | 4 | 6 | ....39000 | 25,82 |
| 4 | 75 | 19 | 4 | 6 | ....40000 | 21,14 |
| 4,1 | 75 | 19 | 4 | 6 | ....41000 | 26,47 |
| 4,2 | 75 | 19 | 4 | 6 | ....42000 | 26,47 |
| 4,3 | 80 | 21 | 4,5 | 6 | ....43000 | 26,47 |
| 4,4 | 80 | 21 | 4,5 | 6 | ....44000 | 26,47 |
| 4,5 | 80 | 21 | 4,5 | 6 | ....45000 | 23,48 |
| 4,6 | 80 | 21 | 4,5 | 6 | ....46000 | 27,66 |
| 4,7 | 80 | 21 | 4,5 | 6 | ....47000 | 27,66 |
| 4,8 | 86 | 23 | 5 | 6 | ....48000 | 27,66 |
| 4,9 | 86 | 23 | 5 | 6 | ....49000 | 27,66 |
| 5 | 86 | 23 | 5 | 6 | ....50000 | 23,48 |
| 5,1 | 86 | 23 | 5 | 6 | ....51000 | 30,63 |
| 5,2 | 86 | 23 | 5 | 6 | ....52000 | 30,63 |
| 5,3 | 86 | 23 | 5 | 6 | ....53000 | 30,63 |
| 5,4 | 93 | 26 | 5,6 | 6 | ....54000 | 30,63 |
| 5,5 | 93 | 26 | 5,6 | 6 | ....55000 | 25,26 |
| 5,6 | 93 | 26 | 5,6 | 6 | ....56000 | 29,15 |
| 5,7 | 93 | 26 | 5,6 | 6 | ....57000 | 29,15 |
| 5,8 | 93 | 26 | 5,6 | 6 | ....58000 | 29,15 |
| 5,9 | 93 | 26 | 5,6 | 6 | ....59000 | 29,15 |

carmon

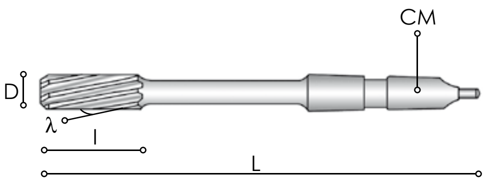
| D H7 | L | l | d h9 | Z | CODE | HSS+5%Co 1117..... € |
|---|---|---|---|---|---|---|
| 6 | 93 | 26 | 5,6 | 6 | ....60000 | 24,69 |
| 6,1 | 101 | 28 | 6,3 | 6 | ....61000 | 32,80 |
| 6,2 | 101 | 28 | 6,3 | 6 | ....62000 | 32,80 |
| 6,3 | 101 | 28 | 6,3 | 6 | ....63000 | 32,80 |
| 6,4 | 101 | 28 | 6,3 | 6 | ....64000 | 32,80 |
| 6,5 | 101 | 28 | 6,3 | 6 | ....65000 | 25,89 |
| 6,6 | 101 | 28 | 6,3 | 6 | ....66000 | 31,15 |
| 6,7 | 101 | 28 | 6,3 | 6 | ....67000 | 31,15 |
| 6,8 | 109 | 31 | 7,1 | 6 | ....68000 | 31,15 |
| 6,9 | 109 | 31 | 7,1 | 6 | ....69000 | 31,15 |
| 7 | 109 | 31 | 7,1 | 6 | ....70000 | 25,89 |
| 7,1 | 109 | 31 | 7,1 | 6 | ....71000 | 34,56 |
| 7,2 | 109 | 31 | 7,1 | 6 | ....72000 | 34,56 |
| 7,3 | 109 | 31 | 7,1 | 6 | ....73000 | 34,56 |
| 7,4 | 109 | 31 | 7,1 | 6 | ....74000 | 34,56 |
| 7,5 | 109 | 31 | 7,1 | 6 | ....75000 | 27,03 |
| 7,6 | 117 | 33 | 8 | 6 | ....76000 | 32,42 |
| 7,7 | 117 | 33 | 8 | 6 | ....77000 | 32,42 |
| 7,8 | 117 | 33 | 8 | 6 | ....78000 | 32,42 |
| 7,9 | 117 | 33 | 8 | 6 | ....79000 | 32,42 |
| 8 | 117 | 33 | 8 | 6 | ....80000 | 27,03 |
| 8,1 | 117 | 33 | 8 | 6 | ....81000 | 38,57 |
| 8,2 | 117 | 33 | 8 | 6 | ....82000 | 38,57 |
| 8,3 | 117 | 33 | 8 | 6 | ....83000 | 38,57 |
| 8,4 | 117 | 33 | 8 | 6 | ....84000 | 38,57 |
| 8,5 | 117 | 33 | 8 | 6 | ....85000 | 30,56 |
| 8,6 | 125 | 36 | 9 | 6 | ....86000 | 35,09 |
| 8,7 | 125 | 36 | 9 | 6 | ....87000 | 35,09 |
| 8,8 | 125 | 36 | 9 | 6 | ....88000 | 35,09 |
| 8,9 | 125 | 36 | 9 | 6 | ....89000 | 35,09 |
| 9 | 125 | 36 | 9 | 6 | ....90000 | 31,70 |
| 9,1 | 125 | 36 | 9 | 6 | ....91000 | 40,18 |
| 9,2 | 125 | 36 | 9 | 6 | ....92000 | 40,18 |
| 9,3 | 125 | 36 | 9 | 6 | ....93000 | 40,18 |
| 9,4 | 125 | 36 | 9 | 6 | ....94000 | 40,18 |
| 9,5 | 125 | 36 | 9 | 6 | ....95000 | 32,91 |
| 9,6 | 133 | 38 | 10 | 6 | ....96000 | 37,39 |
| 9,7 | 133 | 38 | 10 | 6 | ....97000 | 37,39 |
| 9,8 | 133 | 38 | 10 | 6 | ....98000 | 37,39 |
| 9,9 | 133 | 38 | 10 | 6 | ....99000 | 37,39 |
| 10 | 133 | 38 | 10 | 6 | ....10000 | 32,91 |
| 11 | 142 | 41 | 10 | 6 | ....11000 | 37,59 |
| 12 | 151 | 44 | 10 | 6 | ....12000 | 41,94 |
| 13 | 151 | 44 | 10 | 6 | ....13000 | 45,21 |
| 14 | 160 | 47 | 12,5 | 6 | ....14000 | 45,80 |
| 15 | 162 | 50 | 12,5 | 8 | ....15000 | 49,36 |
| 16 | 170 | 52 | 12,5 | 8 | ....16000 | 58,79 |
| 17 | 175 | 54 | 14 | 8 | ....17000 | 69,55 |
| 18 | 182 | 56 | 14 | 8 | ....18000 | 71,20 |
| 19 | 189 | 58 | 16 | 8 | ....19000 | 83,94 |
| 20 | 195 | 60 | 16 | 8 | ....20000 | 77,15 |

## AM 112

DIN 208/B

λ 7°- 10°

AM112




| D H7 | L | l | CM | Z | CODE | HSS+5%Co 1112..... € |
|---|---|---|---|---|---|---|
| 5 | 133 | 23 | 1 | 6 | ....50000 | 38,87 |
| 6 | 138 | 26 | 1 | 6 | ....60000 | 39,38 |
| 7 | 150 | 31 | 1 | 6 | ....70000 | 41,73 |
| 8 | 156 | 33 | 1 | 6 | ....80000 | 41,73 |
| 9 | 162 | 36 | 1 | 6 | ....90000 | 45,30 |
| 10 | 168 | 38 | 1 | 6 | ....10000 | 45,09 |
| 11 | 175 | 41 | 1 | 6 | ....11000 | 47,68 |
| 12 | 182 | 44 | 1 | 8 | ....12000 | 47,68 |
| 13 | 182 | 44 | 1 | 8 | ....13000 | 52,46 |
| 14 | 189 | 47 | 1 | 8 | ....14000 | 51,01 |
| 15 | 204 | 50 | 2 | 8 | ....15000 | 53,36 |
| 16 | 210 | 52 | 2 | 8 | ....16000 | 58,08 |
| 17 | 214 | 54 | 2 | 8 | ....17000 | 62,87 |
| 18 | 219 | 56 | 2 | 8 | ....18000 | 62,87 |
| 19 | 223 | 58 | 2 | 8 | ....19000 | 69,12 |
| 20 | 228 | 60 | 2 | 8 | ....20000 | 63,17 |
| 21 | 232 | 62 | 2 | 10 | ....21000 | 73,22 |
| 22 | 237 | 64 | 2 | 10 | ....22000 | 67,84 |
| 23 | 241 | 66 | 2 | 10 | ....23000 | 74,83 |
| 24 | 268 | 68 | 3 | 10 | ....24000 | 78,28 |
| 25 | 268 | 68 | 3 | 10 | ....25000 | 81,94 |
| 26 | 273 | 70 | 3 | 10 | ....26000 | 90,98 |
| 27 | 277 | 71 | 3 | 10 | ....27000 | 101,74 |
| 28 | 277 | 71 | 3 | 10 | ....28000 | 106,64 |
| 29 | 281 | 73 | 3 | 10 | ....29000 | 110,01 |
| 30 | 281 | 73 | 3 | 10 | ....30000 | 110,87 |
| 32 | 317 | 77 | 4 | 10 | ....32000 | 135,98 |
| 34 | 321 | 78 | 4 | 10 | ....34000 | 148,80 |
| 35 | 321 | 78 | 4 | 12 | ....35000 | 161,38 |
| 36 | 325 | 79 | 4 | 12 | ....36000 | 179,15 |
| 38 | 329 | 81 | 4 | 12 | ....38000 | 192,13 |
| 40 | 329 | 81 | 4 | 12 | ....40000 | 205,43 |

**ALESATORI A MACCHINA TIPO A MANICOTTO, FORO CONICO 1:30 SHELL REAMERS, TAPER HOLE 1:30 AUFSTECK-REIBAHLEN, KEGELBOHRUNG 1:30 ALESOIRS CREUX, ALÉSAGE CONIQUE 1:30 ESCARIADOR DE MAQUINA HUECO, AGUJERO CONICO 1:30**

## AMM 113

DIN 219/B

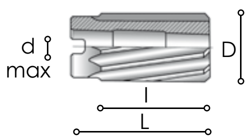
λ 10°

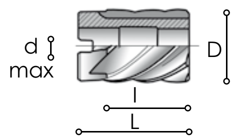
## AFE 116

DIN 219/C

λ 45°

**AMM113** **AFE116**

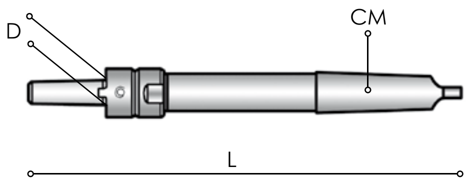



| D H7 | L | l | d max | Z | CODE | HSS+5%Co 1113..... € | HSS+5%Co 1116..... € |
|---|---|---|---|---|---|---|---|
| 20 | 40 | 28 | 10 | 8 | ....20000 | 98,68 | |
| 21 | 40 | 28 | 10 | 8 | ....21000 | 100,17 | |
| 22 | 40 | 28 | 10 | 8 | ....22000 | 102,67 | |
| 23 | 40 | 28 | 10 | 8 | ....23000 | 103,86 | |
| 24 | 45 | 32 | 13 | 10 | ....24000 | 108,32 | |
| 25 | 45 | 32 | 13 | 10 | ....25000 | 109,51 | 110,61 |
| 26 | 45 | 32 | 13 | 10 | ....26000 | 114,09 | 114,09 |
| 27 | 45 | 32 | 13 | 10 | ....27000 | 119,38 | 119,38 |
| 28 | 45 | 32 | 13 | 10 | ....28000 | 119,38 | 119,38 |
| 29 | 45 | 32 | 13 | 10 | ....29000 | 126,22 | 126,22 |
| 30 | 45 | 32 | 13 | 10 | ....30000 | 126,22 | 126,22 |
| 31 | 50 | 36 | 16 | 10 | ....31000 | 135,17 | |
| 32 | 50 | 36 | 16 | 10 | ....32000 | 131,19 | 135,17 |
| 33 | 50 | 36 | 16 | 10 | ....33000 | 143,95 | |
| 34 | 50 | 36 | 16 | 10 | ....34000 | 143,95 | 143,95 |
| 35 | 50 | 36 | 16 | 12 | ....35000 | 143,95 | |
| 36 | 56 | 40 | 19 | 12 | ....36000 | 152,81 | 157,99 |
| 37 | 56 | 40 | 19 | 12 | ....37000 | 161,52 | |
| 38 | 56 | 40 | 19 | 12 | ....38000 | 161,52 | 161,52 |
| 39 | 56 | 40 | 19 | 12 | ....39000 | 172,92 | |
| 40 | 56 | 40 | 19 | 12 | ....40000 | 169,64 | 172,92 |
| 42 | 56 | 40 | 19 | 12 | ....42000 | 182,55 | 182,55 |
| 44 | 63 | 45 | 22 | 12 | ....44000 | 200,13 | |
| 45 | 63 | 45 | 22 | 12 | ....45000 | 205,39 | 205,39 |
| 46 | 63 | 45 | 22 | 14 | ....46000 | 211,55 | |
| 48 | 63 | 45 | 22 | 14 | ....48000 | 221,19 | 221,19 |
| 50 | 63 | 45 | 22 | 14 | ....50000 | 222,97 | 231,66 |
| 52 | 71 | 50 | 27 | 14 | ....52000 | 256,28 | 256,28 |
| 55 | 71 | 50 | 27 | 14 | ....55000 | 270,35 | 270,35 |
| 56 | 71 | 50 | 27 | 16 | ....56000 | 339,82 | 339,82 |
| 58 | 71 | 50 | 27 | 16 | ....58000 | 287,93 | 287,93 |
| 60 | 71 | 50 | 27 | 16 | ....60000 | 303,72 | 315,55 |
| 62 | 80 | 56 | 32 | 16 | ....62000 | 367,33 | |
| 65 | 80 | 56 | 32 | 16 | ....65000 | 411,53 | |
| 68 | 80 | 56 | 32 | 16 | ....68000 | 431,78 | |
| 70 | 80 | 56 | 32 | 16 | ....70000 | 439,58 | |
| 72 | 90 | 63 | 40 | 16 | ....72000 | 491,27 | |
| 75 | 90 | 63 | 40 | 16 | ....75000 | 521,57 | |
| 78 | 90 | 63 | 40 | 16 | ....78000 | 556,46 | |
| 80 | 90 | 63 | 40 | 20 | ....80000 | 589,50 | |

# MAN 114

DIN 217/B



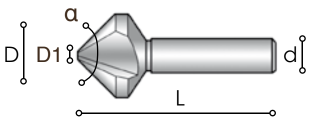

MAN114

| D | L | CM | CODE | 1.5990 - DIN 16CrNi4 |
|---|---|---|---|---|
| | | | | 1114..... € |
| 10 | 216 | 2 | ....10000 | 131,61 |
| 13 | 250 | 3 | ....13000 | 157,97 |
| 16 | 261 | 3 | ....16000 | 171,06 |
| 19 | 298 | 4 | ....19000 | 197,41 |
| 22 | 312 | 4 | ....22000 | 223,77 |
| 27 | 359 | 4 | ....27000 | 250,10 |

## SV 74

DIN 335C

λ 0°

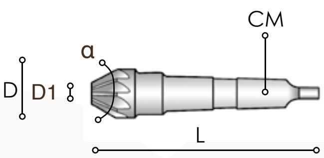




| D | D1z9 | α + 0° - 1° | L | D h9 | CODE | HSS+5%Co 1740..... € | HSS+5%Co 2740..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|
| 10,4 | 2,5 | 90° | 50 | 6 | ....10490 | 23,68 | 31,33 |
| 11,5 | 2,8 | 90° | 56 | 8 | ....11590 | 24,54 | 32,28 |
| 12,4 | 2,8 | 90° | 56 | 8 | ....12490 | 27,43 | 35,95 |
| 15 | 3,2 | 90° | 60 | 10 | ....15090 | 30,32 | 39,12 |
| 16,5 | 3,2 | 90° | 60 | 10 | ....16590 | 32,34 | 42,96 |
| 19 | 3,5 | 90° | 63 | 10 | ....19090 | 38,69 | 51,28 |
| 20,5 | 3,5 | 90° | 63 | 10 | ....20590 | 41,87 | 54,77 |
| 23 | 3,8 | 90° | 67 | 10 | ....23090 | 54,00 | 70,03 |
| 25 | 3,8 | 90° | 67 | 10 | ....25090 | 56,31 | 72,57 |
| 28 | 4 | 90° | 71 | 12 | ....28090 | 66,93 | 87,79 |
| 31 | 4,2 | 90° | 71 | 12 | ....31090 | 78,83 | 103,82 |

## SV 72

DIN 334B DIN 335B

λ 0°


| D | D1 | α + 0° - 1° | L | CM | Z | CODE | HSS+5%Co 1720..... € |
|---|---|---|---|---|---|---|---|
| 25 | 7 | 60° | 125 | 2 | 7 | ....25600 | 90,90 |
| 31,5 | 9 | 60° | 132 | 2 | 7 | ....31560 | 124,18 |
| 40 | 12 | 60° | 160 | 3 | 10 | ....40600 | 180,39 |
| 50 | 16 | 60° | 165 | 3 | 12 | ....50600 | 247,46 |
| 25 | 7 | 90° | 121 | 2 | 7 | ....25900 | 90,90 |
| 31,5 | 9 | 90° | 124 | 2 | 7 | ....31590 | 117,23 |
| 40 | 12 | 90° | 150 | 3 | 10 | ....40900 | 180,39 |
| 50 | 16 | 90° | 153 | 3 | 12 | ....50900 | 247,46 |

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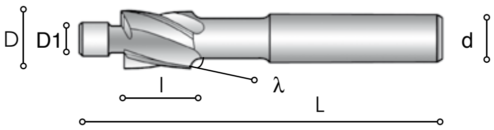
**SVASATORI PER SEDI DI VITI A TESTA CILINDRICA** COUNTERBORES FOR CAPSCREWS **FLACHSENKER FÜR ZYLINDERSCHRAUBEN MIT INNENSECHSKANT** FRAISES A CHAMBRER LE LOGEMENT DES TETES DE VIS CYLINDRIQUE **AVELLANADORES PARA ASIENTOS DE TORNILLO**

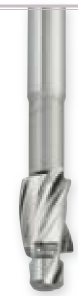
## BR 51

DIN 373

λ 30°

BR51



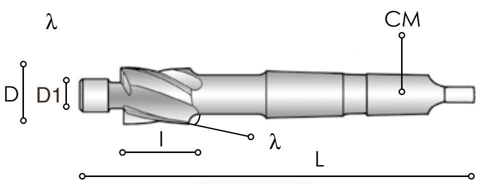
| | D H8 | D1 f8 | L | l | d h9 | Z | CODE | HSS+5%Co 1510..... € |
|---|---|---|---|---|---|---|---|---|
| M3 | 5,9 | 3,2 | 71 | 14 | 6 | 3 | ....30000 | 28,04 |
| M4 | 7,4 | 4,3 | 71 | 14 | 8 | 3 | ....40000 | 28,04 |
| M5 | 9,4 | 5,3 | 80 | 18 | 10 | 3 | ....50000 | 30,15 |
| M6 | 10,4 | 6,4 | 80 | 18 | 10 | 3 | ....60000 | 31,53 |
| M8 | 13,5 | 8,4 | 100 | 22 | 12 | 3 | ....80000 | 39,24 |
| M10 | 16,5 | 10,5 | 100 | 22 | 12 | 3 | ....10000 | 49,67 |
| M12 | 19 | 13 | 100 | 22 | 16 | 3 | ....12000 | 61,68 |
| M14 | 23 | 15 | 130 | 30 | 16 | 3 | ....14000 | 83,42 |
| M16 | 25 | 17 | 150 | 30 | 20 | 3 | ....16000 | 105,13 |
| M18 | 28 | 19 | 155 | 35 | 20 | 3 | ....18000 | 131,76 |
| M20 | 31 | 21 | 165 | 35 | 20 | 3 | ....20000 | 156,30 |

## BR 52

DIN 375

λ 30°

BR52




| | D h8 | D1 f8 | L | l | CM | CODE | HSS+5%Co 1520..... € |
|---|---|---|---|---|---|---|---|
| M6 | 10,4 | 6,4 | 125 | 18 | 1 | ....60000 | 42,91 |
| M8 | 13,5 | 8,4 | 140 | 22 | 1 | ....80000 | 49,53 |
| M10 | 16,5 | 10,5 | 150 | 25 | 2 | ....10000 | 60,98 |
| M12 | 19 | 13 | 150 | 25 | 2 | ....12000 | 74,50 |
| M14 | 23 | 15 | 160 | 30 | 2 | ....14000 | 93,84 |
| M16 | 25 | 17 | 160 | 30 | 2 | ....16000 | 118,39 |
| M18 | 28 | 19 | 190 | 35 | 3 | ....18000 | 140,91 |
| M20 | 31 | 21 | 190 | 35 | 3 | ....20000 | 169,50 |
| M22 | 34 | 23 | 205 | 40 | 3 | ....22000 | 239,37 |
| M24 | 37 | 25 | 205 | 40 | 3 | ....24000 | 294,53 |

## SV 74

DIN 335/C

λ 0°


| PEZZI PIECES | Ø | CODE | HSS+5%Co 1740..... € |
|---|---|---|---|
| 3 | 10,4-12,4 16,5 | ....10000 | 83,45 |


| PEZZI PIECES | Ø | CODE | HSS+5%Co 2740..... € SAPPHIRE MULTI |
|---|---|---|---|
| 3 | 10,4-12,4 16,5 | ....10000 | 107,98 |

## SV 74

DIN 335/C

λ 0°

| PEZZI PIECES | Ø | CODE | HSS+5%Co 1740..... € |
|---|---|---|---|
| 5 | 10,4-12,4-16,5-20,5-25 | ....20000 | 181,62 |

| PEZZI PIECES | Ø | CODE | HSS+5%Co 2740..... € SAPPHIRE MULTI |
|---|---|---|---|
| 5 | 10,4-12,4-16,5-20,5-25 | ....20000 | 235,97 |

carmon

rpm =(mt/min x 1000) / ( D x 3,14 )

= mt/min

## MASCHI A MANO
### HAND TAPS


| | | | | M500 | M501 | M518 | M519S | MF510 | G540 | UNC556 | UNF558 | M502 | M502 QUARTZ | M502 TITANITE | M503 | M503 QUARTZ | M503 TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | DIN 352 | | DIN 2181 | DIN 5157 | DIN 352 | DIN 2181 | DIN 376 | | | | | |
| | | | | HSS | | | C | | | | | HSS+5%Co B | | | C | | |
| | | Pagina Page | | 86 | 86 | 87 | 87 | 88 | 90 | 91 | 92 | 93 | 93 | 93 | 94 | 94 | 94 |
| Pag. 228 | TIPO DI ACCIAIO TYPE OF STEEL | N/mm² | HV | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel 1 | 500 | 160 | | | | | | | | | 26 | 41 | 50 | 26 | 41 | 50 |
| | Acciai da costruzione Structural steel 2 | 700 | 220 | | | | | | | | | 23 | 38 | 47 | 23 | 38 | 47 |
| | Acciai da tempra Hardening steel 3 | 900 | 280 | | | | | | | | | 10 | 13 | 17 | 10 | 13 | 17 |
| | Acciaio automatico Automatic steel 4 | 1200 | 373 | | | | | | | | | | | | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel 3 | 850 | 268 | | | | | | | | | | | | | | |
| | Austenitico Austenitic 3 | 850 | 268 | | | | | | | | | | | | | | |
| | Ferritico+austenitico Ferritic austenitic 4 | 1000 | 317 | | | | | | | | | | | | | | |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb 2 | 500 | 160 | | | | | | | | | | | | | | |
| | Ghisa oltre 180 hb Cast iron over 180hb 3 | 700 | 220 | | | | | | | | | | | | | | |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium 5 | 500 | 160 | | | | | | | | | 16 | 26 | 30 | 16 | 26 | 30 |
| | Leghe di titanio Titanium alloys 5 | 900 | 280 | | | | | | | | | 5 | 10 | 19 | 5 | 10 | 19 |
| RAME COPPER | Rame Copper 9 | 350 | 110 | | | | | | | | | | | | | | |
| | Ottone Brass 9 | 700 | 220 | | | | | | | | | | | | | | |
| | Bronzo Bronze 9 | 700 | 220 | | | | | | | | | | | | | | |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel 6 | 700 | 220 | | | | | | | | | 13 | 27 | 30 | 13 | 27 | 30 |
| | Leghe di nichel Nichel alloys 6 | 900 | 280 | | | | | | | | | 6 | 10 | 13 | 6 | 10 | 13 |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium 7 | 350 | 110 | | | | | | | | | | | | | | |
| | Alluminio con leghe Alloyed aluminium 7 | 400 | 125 | | | | | | | | | | | | | | |
| | Alluminio con leghe Alloyed aluminium 7 | 500 | 160 | | | | | | | | | | | | | | |

## MASCHI A MACCHINA
## MACHINE TAPS

| M521S | M505 | M505 QUARTZ | M505 TITANITE | M506 | M506 QUARTZ | M506 TITANITE | M515 | M515 QUARTZ | M515 TITANITE | M508 | M508 QUARTZ | M508 TITANITE | M508 OPAL | M509 | M509 QUARTZ | M509 TITANITE | M511 | M511 QUARTZ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN 376 | | | | | | | | | | DIN 371 | | | | | | | | |
| HSS+5%Co | | | | | | | | | | HSS+5%Co | | | RESISTOR | HSS+5%Co | | | | |
| C | | | | | | | | | | B | | | | C | | | | |
| 94 | 95 | 95 | 95 | 96 | 96 | 96 | 97 | 97 | 97 | 98 | 98 | 98 | 98 | 99 | 99 | 99 | 100 | 100 |
| mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| 26 | 26 | 41 | 50 | 26 | 41 | 50 | | | | 26 | 41 | 50 | 60 | 26 | 41 | 50 | 26 | 41 |
| 23 | 23 | 38 | 47 | 23 | 38 | 47 | | | | 23 | 38 | 47 | 57 | 23 | 38 | 47 | 23 | 38 |
| 10 | 10 | 13 | 17 | 10 | 13 | 17 | | | | 10 | 13 | 17 | 27 | 10 | 13 | 17 | 10 | 13 |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | 27 | | | | | |
| | | | | | | | | | | | | | 27 | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 16 | 16 | 26 | 30 | 16 | 26 | 30 | | | | 16 | 26 | 30 | 40 | 16 | 26 | 30 | 16 | 26 |
| 5 | 5 | 10 | 19 | 5 | 10 | 19 | | | | 5 | 10 | 19 | 30 | 5 | 10 | 19 | 5 | 10 |
| | | | | | | | 12 | 20 | 26 | | | | | | | | | |
| | | | | | | | 25 | 40 | 50 | | | | | | | | | |
| | | | | | | | 5 | | 8 | | | | | | | | | |
| 13 | 13 | 27 | 30 | 13 | 27 | 30 | | | | 13 | 27 | 30 | 40 | 13 | 27 | 30 | 13 | 27 |
| 6 | 6 | 10 | 13 | 6 | 10 | 13 | | | | 6 | 10 | 13 | 27 | 6 | 10 | 13 | 6 | 10 |
| | | | | | | | 17 | 26 | 32 | | | | | | | | | |
| | | | | | | | 36 | 46 | 56 | | | | | | | | | |
| | | | | | | | 16 | 21 | 31 | | | | | | | | | |

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## MASCHI A MACCHINA
### MACHINE TAPS

rpm =(mt/min x 1000) / ( D x 3,14 )

= mt/min


| | | | | M511 | M512 | | | | M513 | | | M516 | | M535 | | M517 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TITANITE | | QUARTZ | TITANITE | OPAL | | QUARTZ | TITANITE | | QUARTZ | NEW | NEW QUARTZ | | QUARTZ |
| | | | | | | | | DIN 371 | | | | | | DIN 371 | DIN 376 | | |
| | | | | HSS+5%Co | | | | RESISTOR | HSS+5%Co | | | | | | | | |
| | | | | | | | | C | | | | | B | | | | |
| | | Pagina Page | | 100 | 100 | 100 | 100 | 100 | 101 | 101 | 101 | 102 | 102 | 102 | 102 | 103 | 103 |
| Pag. 228 | TIPO DI ACCIAIO TYPE OF STEEL | N/mm² | HV | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel 1 | 500 | 160 | 50 | 26 | 41 | 50 | 60 | | | | | | 26 | 41 | | |
| | Acciai da costruzione Structural steel 2 | 700 | 220 | 47 | 23 | 38 | 47 | 57 | | | | | | 23 | 38 | | |
| | Acciai da tempra Hardening steel 3 | 900 | 280 | 17 | 10 | 13 | 17 | 27 | | | | | | 10 | 13 | | |
| | Acciaio automatico Automatic steel 4 | 1200 | 373 | | | | | | | | | | | | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel 3 | 850 | 268 | | | | | 27 | | | | 10 | 14 | | | 10 | 14 |
| | Austenitico Austenitic 3 | 850 | 268 | | | | | 27 | | | | 8 | 12 | | | 8 | 12 |
| | Ferritico+austenitico Ferritic austenitic 4 | 1000 | 317 | | | | | | | | | 5 | 10 | | | 5 | 10 |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb 2 | 500 | 160 | | | | | | | | | | | | | | |
| | Ghisa oltre 180 hb Cast iron over 180hb 3 | 700 | 220 | | | | | | | | | | | | | | |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium 5 | 500 | 160 | 30 | 16 | 26 | 30 | 40 | | | | 16 | 26 | 16 | 26 | 16 | 26 |
| | Leghe di titanio Titanium alloys 5 | 900 | 280 | 19 | 5 | 10 | 19 | 30 | | | | 5 | 10 | 5 | 10 | 5 | 10 |
| RAME COPPER | Rame Copper 9 | 350 | 110 | | | | | | 12 | 20 | 26 | | | | | | |
| | Ottone Brass 9 | 700 | 220 | | | | | | 25 | 40 | 50 | | | | | | |
| | Bronzo Bronze 9 | 700 | 220 | | | | | | 5 | | 8 | | | | | | |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel 6 | 700 | 220 | 30 | 13 | 27 | 30 | 40 | | | | 13 | 27 | 13 | 27 | 13 | 27 |
| | Leghe di nichel Nichel alloys 6 | 900 | 280 | 13 | 6 | 10 | 13 | 27 | | | | 6 | 10 | 6 | 10 | 6 | 10 |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium 7 | 350 | 110 | | | | | | 17 | 26 | 32 | | | | | | |
| | Alluminio con leghe Alloyed aluminium 7 | 400 | 125 | | | | | | 36 | 46 | 56 | | | | | | |
| | Alluminio con leghe Alloyed aluminium 7 | 500 | 160 | | | | | | 16 | 21 | 31 | | | | | | |

## MASCHI A MACCHINA
## MACHINE TAPS

HSS+5%Co

| M536 | M536 | M524 | R570 | R571 | R572 | M514 | M514 | M514 | MF520 | MF520 | MF520 | MF530 | MF530 | MF530 | MF522S | MF507 | MF507 | MF507 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NEW | NEW | NEW | | | | | | | | | | | | | | | | |
| | QUARTZ | | | | | | QUARTZ | TITANITE | | QUARTZ | TITANITE | | QUARTZ | TITANITE | | | QUARTZ | TITANITE |
| DIN 371 | DIN 376 | | | DIN 371 | | DIN 357 | | | | | | | DIN 374 | | | | | |
| C | | | | C | | | 12P | | | B | | | | | C | | | |
| 103 | 103 | 104 | 105 | 105 | 105 | 106 | 106 | 106 | 107 | 107 | 107 | 108 | 108 | 108 | 108 | 109 | 109 | 109 |
| mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| 26 | 41 | | | | | | | | 26 | 41 | 50 | 26 | 41 | 50 | 26 | 26 | 41 | 50 |
| 23 | 38 | | | | | | | | 23 | 38 | 47 | 23 | 38 | 47 | 23 | 23 | 38 | 47 |
| 10 | 13 | | | | | | | | 10 | 13 | 17 | 10 | 13 | 17 | 10 | 10 | 13 | 17 |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | 25 | | | | | | | | | | | | | | | | |
| | | 12 | | | | | | | | | | | | | | | | |
| 16 | 26 | | | | | | | | 16 | 26 | 30 | 16 | 26 | 30 | 16 | 16 | 26 | 30 |
| 5 | 10 | | | | | | | | 5 | 10 | 19 | 5 | 10 | 19 | 5 | 5 | 10 | 19 |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| 13 | 27 | | | | | | | | 13 | 27 | 30 | 13 | 27 | 30 | 13 | 13 | 27 | 30 |
| 6 | 10 | | | | | | | | 6 | 10 | 13 | 6 | 10 | 13 | 6 | 6 | 10 | 13 |
| | | | 17 | 17 | 17 | | | | | | | | | | | | | |
| | | | 36 | 36 | 36 | | | | | | | | | | | | | |
| | | | 16 | 16 | 16 | | | | | | | | | | | | | |

carmon

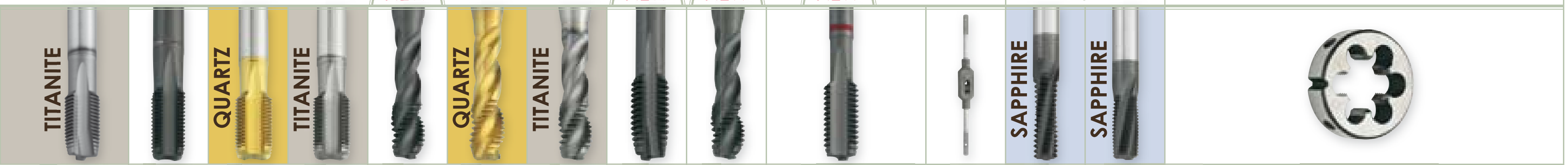
rpm
=(mt/min x 1000) / ( D x 3,14 )

= mt/min

## MASCHI A MACCHINA
## MACHINE TAPS

HSS+5%Co

| | | | | | UNC560 | | | UNC561 | | | UNF562 | | | UNF563 | | | G550 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | QUARTZ | TITANITE | | QUARTZ | TITANITE | | QUARTZ | TITANITE | | QUARTZ | TITANITE | | QUARTZ |
| | | | | | DIN 371 | | | DIN 376 | | | DIN 371 | | | DIN 374 | | | DIN 5156 | |
| | | | | | B | | | C | | | B | | | C | | | B | |
| | | | Pagina Page | | 110 | 110 | 110 | 111 | 111 | 111 | 112 | 112 | 112 | 113 | 113 | 113 | 114 | 114 |
| | TIPO DI ACCIAIO TYPE OF STEEL | Pag. 228 | N/mm² | HV | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel | 1 | 500 | 160 | 26 | 41 | 50 | 26 | 41 | 50 | 26 | 41 | 50 | 26 | 41 | 50 | 26 | 41 |
| | Acciai da costruzione Structural steel | 2 | 700 | 220 | 23 | 38 | 47 | 23 | 38 | 47 | 23 | 38 | 47 | 23 | 38 | 47 | 23 | 38 |
| | Acciai da tempra Hardening steel | 3 | 900 | 280 | 10 | 13 | 17 | 10 | 13 | 17 | 10 | 13 | 17 | 10 | 13 | 17 | 10 | 13 |
| | Acciaio automatico Automatic steel | 4 | 1200 | 373 | | | | | | | | | | | | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel | 3 | 850 | 268 | | | | | | | | | | | | | | |
| | Austenitico Austenitic | 3 | 850 | 268 | | | | | | | | | | | | | | |
| | Ferritico+austenitico Ferritic austenitic | 4 | 1000 | 317 | | | | | | | | | | | | | | |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb | 2 | 500 | 160 | | | | | | | | | | | | | | |
| | Ghisa oltre 180 hb Cast iron over 180hb | 3 | 700 | 220 | | | | | | | | | | | | | | |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium | 5 | 500 | 160 | 16 | 26 | 30 | 16 | 26 | 30 | 16 | 26 | 30 | 16 | 26 | 30 | 16 | 26 |
| | Leghe di titanio Titanium alloys | 5 | 900 | 280 | 5 | 10 | 19 | 5 | 10 | 19 | 5 | 10 | 19 | 5 | 10 | 19 | 5 | 10 |
| RAME COPPER | Rame Copper | 9 | 350 | 110 | | | | | | | | | | | | | | |
| | Ottone Brass | 9 | 700 | 220 | | | | | | | | | | | | | | |
| | Bronzo Bronze | 9 | 700 | 220 | | | | | | | | | | | | | | |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel | 6 | 700 | 220 | 13 | 27 | 30 | 13 | 27 | 30 | 13 | 27 | 30 | 13 | 27 | 30 | 13 | 27 |
| | Leghe di nichel Nichel alloys | 6 | 900 | 280 | 6 | 10 | 13 | 6 | 10 | 13 | 6 | 10 | 13 | 6 | 10 | 13 | 6 | 10 |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium | 7 | 350 | 110 | | | | | | | | | | | | | | |
| | Alluminio con leghe Alloyed aluminium | 7 | 400 | 125 | | | | | | | | | | | | | | |
| | Alluminio con leghe Alloyed aluminium | 7 | 500 | 160 | | | | | | | | | | | | | | |




| MASCHI A MACCHINA / MACHINE TAPS | | | | NEW | | | NEW | NEW | NEW | | FRESE A FILETTARE IN HM SOLID CARBIDE DE THREADING END MILLS | | FILIERE DIES | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| G550 | G504 | | | G551 | | | W580 | W581 | N590 | GM685 | CL28MHM | CL29MFHM | FM610 | FMS630 | FMF600 | FMFS640 | FUNC645 |
| | | DIN 5156 | | | | | DIN 371 | DIN 376 | DIN 371 / DIN 374 | DIN 1814 | CARMON NORM | | | | DIN EN 22568 | | |
| HSS+5%Co | | | | | | | | | | | HM | | HSS | | | | |
| | | C | | | C | | B | C | C | | | | | | | | |
| 114 | 115 | 115 | 115 | 116 | 116 | 116 | 117 | 118 | 119 | 119 | 120 | 121 | 122 | 122 | 123 | 123 | 125 |
| mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| 50 | 26 | 41 | 50 | 26 | 41 | 50 | 26 | 26 | 26 | | 90 | 90 | 26 | 26 | 26 | 26 | 26 |
| 47 | 23 | 38 | 47 | 23 | 38 | 47 | 23 | 23 | 23 | | 80 | 80 | 23 | 23 | 23 | 23 | 23 |
| 17 | 10 | 13 | 17 | 10 | 13 | 17 | 10 | 10 | 10 | | 60 | 60 | 10 | 10 | 10 | 10 | 10 |
| | | | | | | | | | | | 40 | 40 | | | | | |
| | | | | | | | | | | | 60 | 60 | 10 | 10 | 10 | 10 | 10 |
| | | | | | | | | | | | 60 | 60 | 8 | 8 | 8 | 8 | 8 |
| | | | | | | | | | | | 40 | 40 | 5 | 5 | 5 | 5 | 5 |
| | | | | | | | | | | | 120 | 120 | | | | | |
| | | | | | | | | | | | 100 | 100 | | | | | |
| 30 | 16 | 26 | 30 | 16 | 26 | 30 | 16 | 16 | 16 | | 50 | 50 | 16 | 16 | 16 | 16 | 16 |
| 19 | 5 | 10 | 19 | 5 | 10 | 19 | 5 | 5 | 5 | | 30 | 30 | 5 | 5 | 5 | 5 | 5 |
| | | | | | | | | | | | 150 | 150 | | | | | |
| | | | | | | | | | | | 150 | 150 | | | | | |
| | | | | | | | | | | | 160 | 160 | | | | | |
| 30 | 13 | 27 | 30 | 13 | 27 | 30 | 13 | 13 | 13 | | 130 | 130 | 13 | 13 | 13 | 13 | 13 |
| 13 | 6 | 10 | 13 | 6 | 10 | 13 | 6 | 6 | 6 | | 100 | 100 | 6 | 6 | 6 | 6 | 6 |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |

carmon

rpm
=(mt/min x 1000) / ( D x 3,14 )

= mt/min

| | FILIERE DIES | | | | KIT DI MASCHI A MANO HAND TAPS SET | KIT DI MASCHI A MACCHINA MACHINE TAPS SET |
|---|---|---|---|---|---|---|
| |  | | |  |  |  |
| | FUNC650 | FG620 | FW660 | PF856 | AS 500 | |
| | DIN EN 22568 | DIN EN 24231 | DIN EN 22568 | DIN 225 | DIN 352 | DIN 371 |
| | HSS | | | | HSS | HSS+5%Co |
| | | | | | C | B/C |
| Pagina Page | 126 | 127 | 128 | 129 | 130 | 130 - 131 - 132 - 133 |

| | TIPO DI ACCIAIO TYPE OF STEEL | Pag. 228 | N/mm² | HV | mt/min (126) | mt/min (127) | mt/min (128) | (129) |
|---|---|---|---|---|---|---|---|---|
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel | 1 | 500 | 160 | 26 | 26 | 26 | |
| | Acciai da costruzione Structural steel | 2 | 700 | 220 | 23 | 23 | 23 | |
| | Acciai da tempra Hardening steel | 3 | 900 | 280 | 10 | 10 | 10 | |
| | Acciaio automatico Automatic steel | 4 | 1200 | 373 | | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel | 3 | 850 | 268 | 10 | 10 | 10 | |
| | Austenitico Austenitic | 3 | 850 | 268 | 8 | 8 | 8 | |
| | Ferritico+austenitico Ferritic austenitic | 4 | 1000 | 317 | 5 | 5 | 5 | |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb | 2 | 500 | 160 | | | | |
| | Ghisa oltre 180 hb Cast iron over 180hb | 3 | 700 | 220 | | | | |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium | 5 | 500 | 160 | 16 | 16 | 16 | |
| | Leghe di titanio Titanium alloys | 5 | 900 | 280 | 5 | 5 | 5 | |
| RAME COPPER | Rame Copper | 9 | 350 | 110 | | | | |
| | Ottone Brass | 9 | 700 | 220 | | | | |
| | Bronzo Bronze | 9 | 700 | 220 | | | | |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel | 6 | 700 | 220 | 13 | 13 | 13 | |
| | Leghe di nichel Nichel alloys | 6 | 900 | 280 | 6 | 6 | 6 | |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium | 7 | 350 | 110 | | | | |
| | Alluminio con leghe Alloyed aluminium | 7 | 400 | 125 | | | | |
| | Alluminio con leghe Alloyed aluminium | 7 | 500 | 160 | | | | |

carmon

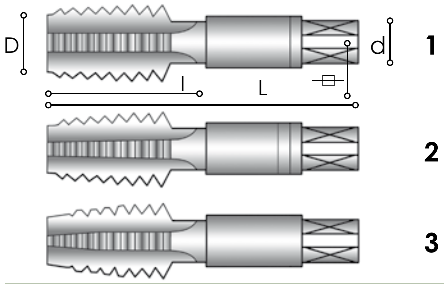
MASCHI A MANO HAND TAPS HAND-GEWINDEBOHRER TARAUDS MAIN MACHOS DE MANO

## M 500

DIN 352 λ 0° 60° 6H

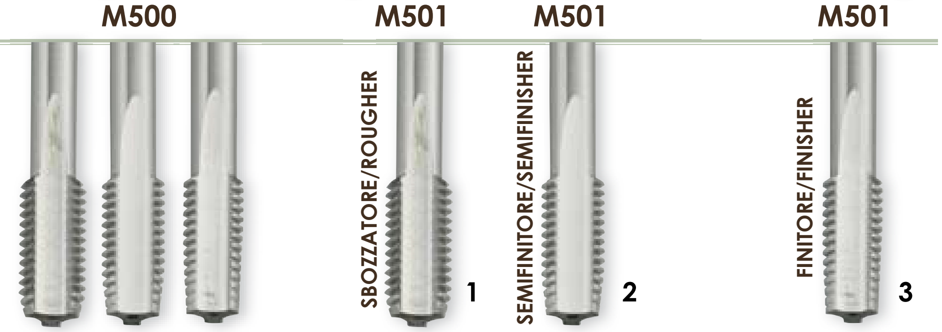
## M 501

DIN 352 λ 0° 60° 6H




C

M ISO/DIN 13




| D | | L | l | d | | CODE | HSS 5500..... € | CODE | HSS 55011..... € | HSS 55012..... € | CODE | HSS 5501..... € |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,6 | 36 | 8 | 2,8 | 2,1 | ....00002 | 27,47 | .....0002 | 9,16 | 9,16 | ....00002 | 9,16 |
| M 2,5 x 0,45 | 2 | 40 | 9 | 2,8 | 2,1 | ....00025 | 24,34 | .....0025 | 8,11 | 8,11 | ....00025 | 8,11 |
| M 2,6 x 0,45 | 2,1 | 40 | 9 | 2,8 | 2,1 | ....00026 | 24,34 | .....0026 | 8,11 | 8,11 | ....00026 | 8,11 |
| M 3 x 0,5 | 2,5 | 40 | 11 | 3,5 | 2,7 | ....00003 | 19,12 | .....0003 | 6,37 | 6,37 | ....00003 | 6,37 |
| M 3,5 x 0,6 | 2,9 | 45 | 12 | 4 | 3 | ....00035 | 21,70 | .....0035 | 7,23 | 7,23 | ....00035 | 7,23 |
| M 4 x 0,7 | 3,3 | 45 | 13 | 4,5 | 3,4 | ....00004 | 19,12 | .....0004 | 6,37 | 6,37 | ....00004 | 6,37 |
| M 4,5 x 0,75 | 3,8 | 50 | 16 | 6 | 4,9 | ....00045 | 31,53 | .....0045 | 10,51 | 10,51 | ....00045 | 10,51 |
| M 5 x 0,8 | 4,2 | 50 | 16 | 6 | 4,9 | ....00005 | 20,40 | .....0005 | 6,80 | 6,80 | ....00005 | 6,80 |
| M 6 x 1 | 5 | 50 | 19 | 6 | 4,9 | ....00006 | 20,40 | .....0006 | 6,80 | 6,80 | ....00006 | 6,80 |
| M 7 x 1 | 6 | 50 | 19 | 6 | 4,9 | ....00007 | 29,80 | .....0007 | 9,93 | 9,93 | ....00007 | 9,93 |
| M 8 x 1,25 | 6,8 | 63 | 22 | 6 | 4,9 | ....00008 | 22,98 | .....0008 | 7,66 | 7,66 | ....00008 | 7,66 |
| M 9 x 1,25 | 7,8 | 63 | 22 | 7 | 5,5 | ....00009 | 38,96 | .....0009 | 12,99 | 12,99 | ....00009 | 12,99 |
| M 10 x 1,5 | 8,5 | 70 | 24 | 7 | 5,5 | ....00100 | 29,13 | ....0010 | 9,71 | 9,71 | ...00010 | 9,71 |
| M 11 x 1,5 | 9,5 | 70 | 24 | 8 | 6,2 | ....00110 | 44,37 | ....0011 | 14,79 | 14,79 | ...00011 | 14,79 |
| M 12 x 1,75 | 10,2 | 75 | 28 | 9 | 7 | ....00120 | 37,12 | ....0012 | 12,37 | 12,37 | ...00012 | 12,37 |
| M 14 x 2 | 12 | 80 | 30 | 11 | 9 | ....00140 | 46,82 | ....0014 | 15,61 | 15,61 | ...00014 | 15,61 |
| M 16 x 2 | 14 | 80 | 32 | 12 | 9 | ....00160 | 57,39 | ....0016 | 19,13 | 19,13 | ...00016 | 19,13 |
| M 18 x 2,5 | 15,5 | 95 | 34 | 14 | 11 | ....00180 | 80,49 | ....0018 | 26,83 | 26,83 | ...00018 | 26,83 |
| M 20 x 2,5 | 17,5 | 95 | 34 | 16 | 12 | ....00200 | 88,61 | ....0020 | 29,54 | 29,54 | ...00020 | 29,54 |
| M 22 x 2,5 | 19,5 | 100 | 34 | 18 | 14,5 | ....00220 | 107,16 | ....0022 | 35,72 | 35,72 | ...00022 | 35,72 |
| M 24 x 3 | 21 | 110 | 38 | 18 | 14,5 | ....00240 | 119,88 | ....0024 | 39,96 | 39,96 | ...00024 | 39,96 |
| M 27 x 3 | 24 | 110 | 38 | 20 | 16 | ....00270 | 161,90 | ....0027 | 53,97 | 53,97 | ...00027 | 53,97 |
| M 30 x 3,5 | 26,5 | 125 | 45 | 22 | 18 | ....00300 | 204,61 | ....0030 | 68,20 | 68,20 | ...00030 | 68,20 |
| M 33 x 3,5 | 29,5 | 125 | 50 | 25 | 20 | ....00330 | 291,30 | ....0033 | 97,10 | 97,10 | ...00033 | 97,10 |
| M 36 x 4 | 32 | 150 | 56 | 28 | 22 | ....00360 | 413,99 | ....0036 | 138,00 | 138,00 | ...00036 | 138,00 |
| M 39 x 4 | 35 | 150 | 60 | 32 | 24 | ....00390 | 442,00 | ....0039 | 147,33 | 147,33 | ...00039 | 147,33 |
| M 42 x 4,5 | 37,5 | 150 | 60 | 32 | 24 | ....00420 | 522,32 | ....0042 | 174,11 | 174,11 | ...00042 | 174,11 |
| M 45 x 4,5 | 40,5 | 160 | 65 | 36 | 29 | ....00450 | 582,33 | ....0450 | 194,11 | 194,11 | ...00450 | 194,11 |
| M 48 x 5 | 43 | 180 | 70 | 36 | 29 | ....00480 | 687,14 | ....0048 | 229,05 | 229,05 | ...00048 | 229,05 |
| M 52 x 5 | 47 | 180 | 70 | 40 | 32 | ....00520 | 792,43 | ....0052 | 264,14 | 264,14 | ...00052 | 264,14 |

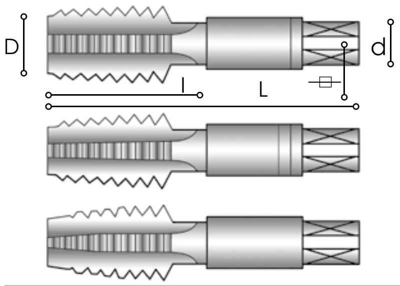
MASCHI A MANO SINISTRI HAND TAPS, LEFT HAND CUT HAND-GEWINDEBOHRER, LINKSGEWINDE TARAUDS MAIN A GAUCHE MACHOS DE MANO, CORTE A IZQUIERDAS

## M 518

DIN 352 λ 0° 60° 6H

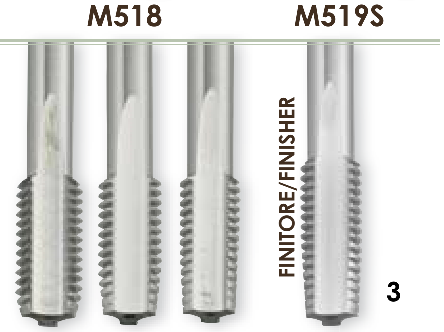
## M 519S

DIN 352 λ 0° 60° 6H




C

M ISO/DIN 13

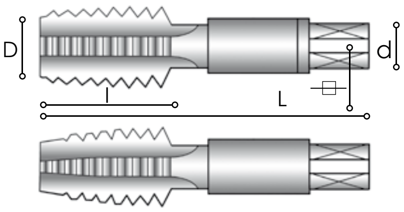



| D | | L | l | d | | CODE | HSS 5518..... € | HSS 5519..... € |
|---|---|---|---|---|---|---|---|---|
| M 3 x 0,5 | 2,5 | 40 | 11 | 3,5 | 2,7 | ....00003 | 28,36 | 9,45 |
| M 3,5 x 0,6 | 2,9 | 45 | 12 | 4 | 3 | ....00035 | 33,33 | 11,11 |
| M 4 x 0,7 | 3,3 | 45 | 13 | 4,5 | 3,4 | ....00004 | 27,33 | 9,11 |
| M 4,5 x 0,75 | 3,8 | 50 | 16 | 6 | 4,9 | ....00045 | 38,61 | 12,87 |
| M 5 x 0,8 | 4,2 | 50 | 16 | 6 | 4,9 | ....00005 | 28,36 | 9,45 |
| M 6 x 1 | 5 | 50 | 19 | 6 | 4,9 | ....00006 | 29,94 | 9,98 |
| M 7 x 1 | 6 | 50 | 19 | 6 | 4,9 | ....00007 | 39,66 | 13,21 |
| M 8 x 1,25 | 6,8 | 63 | 22 | 6 | 4,9 | ....00008 | 33,35 | 11,12 |
| M 9 x 1,25 | 7,8 | 63 | 22 | 7 | 5,5 | ....00009 | 51,51 | 17,17 |
| M 10 x 1,5 | 8,5 | 70 | 24 | 7 | 5,5 | ....00010 | 40,83 | 13,61 |
| M 12 x 1,75 | 10,2 | 75 | 28 | 9 | 7 | ....00012 | 52,21 | 17,41 |
| M 14 x 2 | 12 | 80 | 30 | 11 | 9 | ....00014 | 66,85 | 22,28 |
| M 16 x 2 | 14 | 80 | 32 | 12 | 9 | ....00016 | 82,39 | 27,47 |
| M 18 x 2,5 | 15,5 | 95 | 34 | 14 | 11 | ....00018 | 116,62 | 38,88 |
| M 20 x 2,5 | 17,5 | 95 | 34 | 16 | 12 | ....00020 | 123,13 | 41,05 |
| M 22 x 2,5 | 19,5 | 100 | 34 | 18 | 14,5 | ....00022 | 147,29 | 49,10 |
| M 24 x 3 | 21 | 110 | 38 | 18 | 14,5 | ....00024 | 164,28 | 54,76 |
| M 27 x 3 | 24 | 110 | 38 | 20 | 16 | ....00027 | 220,68 | 73,56 |
| M 30 x 3,5 | 26,5 | 125 | 45 | 22 | 18 | ....00030 | 275,40 | 91,80 |
| M 33 x 3,5 | 29,5 | 125 | 50 | 25 | 20 | ....00033 | 338,46 | 112,82 |
| M 36 x 4 | 32 | 150 | 56 | 28 | 22 | ....00036 | 399,13 | 133,04 |
| M 39 x 4 | 35 | 150 | 60 | 32 | 24 | ....00039 | 518,09 | 172,70 |

## MF510

DIN 2181 λ 0° 60° 6H

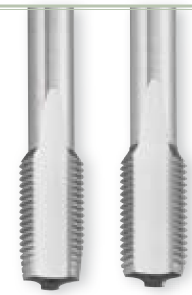
**MF510**




1 C

3

MF ISO/DIN 13



| D | | L | l | d | | CODE | HSS 5510..... € |
|---|---|---|---|---|---|---|---|
| MF 3 x 0,35 | 2,65 | 40 | 8 | 3,5 | 2,7 | ....00003 | 25,63 |
| MF 4 x 0,5 | 3,5 | 45 | 10 | 4,5 | 3,4 | ....00004 | 21,14 |
| MF 4,5 x 0,5 | 4 | 50 | 12 | 6 | 4,9 | ....00045 | 31,85 |
| MF 5 x 0,5 | 4,5 | 50 | 12 | 6 | 4,9 | ....00005 | 22,96 |
| MF 5,5 x 0,5 | 5 | 50 | 12 | 6 | 4,9 | ....00055 | 37,50 |
| MF 6 x 0,5 | 5,5 | 50 | 14 | 6 | 4,9 | ....50006 | 24,89 |
| MF 6 x 0,75 | 5,3 | 50 | 14 | 6 | 4,9 | ....75006 | 23,92 |
| MF 7 x 0,75 | 6,2 | 50 | 14 | 6 | 4,9 | ....75007 | 28,54 |
| MF 8 x 0,5 | 7,5 | 50 | 18 | 6 | 4,9 | ....50008 | 29,89 |
| MF 8 x 0,75 | 7,3 | 50 | 18 | 6 | 4,9 | ....75008 | 28,20 |
| MF 8 x 1 | 7 | 56 | 22 | 6 | 4,9 | ....10008 | 22,56 |
| MF 9 x 0,75 | 8,2 | 56 | 18 | 7 | 5,5 | ....75009 | 36,13 |
| MF 9 x 1 | 8 | 63 | 22 | 7 | 5,5 | ....10009 | 35,67 |
| MF 10 x 0,75 | 9,3 | 63 | 20 | 7 | 5,5 | ....75010 | 35,20 |
| MF 10 x 1 | 9 | 63 | 20 | 7 | 5,5 | ....10010 | 25,74 |
| MF 10 x 1,25 | 8,8 | 70 | 24 | 7 | 5,5 | ....12510 | 29,68 |
| MF 11 x 1 | 10 | 63 | 20 | 8 | 6,2 | ....10011 | 40,61 |
| MF 12 x 1 | 11 | 70 | 22 | 9 | 7 | ....10012 | 32,57 |
| MF 12 x 1,25 | 10,8 | 70 | 22 | 9 | 7 | ....12512 | 32,34 |
| MF 12 x 1,5 | 10,5 | 70 | 22 | 9 | 7 | ....15012 | 30,84 |
| MF 14 x 1 | 13 | 70 | 22 | 11 | 9 | ....10014 | 40,98 |
| MF 14 x 1,25 | 12,8 | 70 | 22 | 11 | 9 | ....12514 | 40,87 |
| MF 14 x 1,5 | 12,5 | 70 | 22 | 11 | 9 | ....15014 | 39,29 |
| MF 15 x 1 | 14 | 70 | 22 | 12 | 9 | ....10015 | 52,14 |
| MF 15 x 1,5 | 13,5 | 70 | 22 | 12 | 9 | ....15015 | 46,15 |
| MF 16 x 1 | 15 | 70 | 22 | 12 | 9 | ....10016 | 45,16 |
| MF 16 x 1,25 | 14,8 | 70 | 22 | 12 | 9 | ....12516 | 45,16 |
| MF 16 x 1,5 | 14,5 | 70 | 22 | 12 | 9 | ....15016 | 39,02 |
| MF 18 x 1 | 17 | 80 | 22 | 14 | 11 | ....10018 | 61,39 |
| MF 18 x 1,5 | 16,5 | 80 | 22 | 14 | 11 | ....15018 | 58,73 |
| MF 18 x 2 | 16 | 80 | 22 | 14 | 11 | ....20018 | 75,15 |
| MF 20 x 1 | 19 | 80 | 22 | 16 | 12 | ....10020 | 66,36 |
| MF 20 x 1,5 | 18,5 | 80 | 22 | 16 | 12 | ....15020 | 58,44 |
| MF 20 x 2 | 18 | 80 | 22 | 16 | 12 | ....20020 | 80,61 |
| MF 22 x 1 | 21 | 80 | 22 | 18 | 14,5 | ....10022 | 90,20 |
| MF 22 x 1,5 | 20,5 | 80 | 22 | 18 | 14,5 | ....00022 | 70,42 |
| MF 22 x 2 | 20 | 80 | 22 | 18 | 14,5 | ....20022 | 91,61 |
| MF 24 x 1 | 23 | 90 | 22 | 18 | 14,5 | ....10024 | 109,36 |
| MF 24 x 1,5 | 22,5 | 90 | 22 | 18 | 14,5 | ....00024 | 82,64 |
| MF 24 x 2 | 22 | 90 | 22 | 18 | 14,5 | ....20024 | 97,09 |

| D | | L | l | d | | CODE | HSS 5510..... € |
|---|---|---|---|---|---|---|---|
| MF 25 x 1 | 24 | 90 | 22 | 18 | 14,5 | ....10025 | 109,36 |
| MF 25 x 1,5 | 23,5 | 90 | 22 | 18 | 14,5 | ....15025 | 106,66 |
| MF 25 x 2 | 23 | 90 | 22 | 18 | 14,5 | ....20025 | 107,24 |
| MF 26 x 1,5 | 24,5 | 90 | 22 | 18 | 14,5 | ....15026 | 122,33 |
| MF 27 x 1 | 26 | 90 | 22 | 20 | 16 | ....10027 | 143,34 |
| MF 27 x 1,5 | 25,5 | 90 | 22 | 20 | 16 | ....15027 | 122,33 |
| MF 27 x 2 | 25 | 90 | 22 | 20 | 16 | ....20027 | 131,43 |
| MF 28 x 1,5 | 26,5 | 90 | 22 | 20 | 16 | ....15028 | 122,49 |
| MF 28 x 2 | 26 | 90 | 22 | 20 | 16 | ....20028 | 122,56 |
| MF 30 x 1,5 | 28,5 | 90 | 22 | 22 | 18 | ....15030 | 145,80 |
| MF 30 x 2 | 28 | 90 | 22 | 22 | 18 | ....20030 | 162,64 |
| MF 32 x 1,5 | 30,5 | 90 | 22 | 22 | 18 | ....15032 | 165,22 |
| MF 33 x 1,5 | 31,5 | 100 | 25 | 25 | 20 | ....15033 | 220,20 |
| MF 33 x 2 | 31 | 100 | 25 | 25 | 20 | ....20033 | 236,43 |
| MF 35 x 1,5 | 33,5 | 100 | 25 | 28 | 22 | ....15035 | 220,20 |
| MF 36 x 1,5 | 34,5 | 100 | 25 | 28 | 22 | ....15036 | 255,23 |
| MF 36 x 2 | 34 | 125 | 40 | 28 | 22 | ....20036 | 255,23 |
| MF 36 x 3 | 33 | 125 | 40 | 28 | 22 | ....30036 | 264,82 |
| MF 39 x 1,5 | 37,5 | 110 | 25 | 32 | 24 | ....15039 | 327,15 |
| MF 39 x 2 | 37 | 125 | 40 | 32 | 24 | ....20039 | 360,54 |
| MF 39 x 3 | 36 | 125 | 40 | 32 | 24 | ....30039 | 360,54 |
| MF 40 x 1,5 | 38,5 | 110 | 25 | 32 | 24 | ....15040 | 282,33 |
| MF 40 x 2 | 38 | 125 | 40 | 32 | 24 | ....20040 | 282,33 |
| MF 40 x 3 | 37 | 125 | 40 | 32 | 24 | ....30040 | 282,33 |
| MF 42 x 1,5 | 40,5 | 110 | 25 | 32 | 24 | ....15042 | 321,21 |
| MF 42 x 2 | 40 | 125 | 40 | 32 | 24 | ....20042 | 323,82 |
| MF 42 x 3 | 39 | 125 | 40 | 32 | 24 | ....30042 | 322,91 |
| MF 45 x 1,5 | 43,5 | 110 | 25 | 36 | 29 | ....15045 | 380,69 |
| MF 45 x 2 | 43 | 125 | 40 | 36 | 29 | ....20045 | 381,98 |
| MF 45 x 3 | 42 | 125 | 40 | 36 | 29 | ....30045 | 381,16 |
| MF 48 x 1,5 | 46,5 | 140 | 40 | 36 | 29 | ....15048 | 428,27 |
| MF 48 x 2 | 46 | 140 | 40 | 36 | 29 | ....20048 | 428,63 |
| MF 48 x 3 | 45 | 140 | 40 | 36 | 29 | ....30048 | 428,63 |
| MF 50 x 1,5 | 48,5 | 140 | 40 | 36 | 29 | ....15050 | 511,55 |
| MF 50 x 2 | 48 | 140 | 40 | 36 | 29 | ....20050 | 514,29 |
| MF 50 x 3 | 47 | 140 | 40 | 36 | 29 | ....30050 | 514,29 |
| MF 52 x 1,5 | 50,5 | 140 | 40 | 40 | 32 | ....15052 | 559,14 |
| MF 52 x 2 | 50 | 140 | 40 | 40 | 32 | ....20052 | 560,33 |
| MF 52 x 3 | 49 | 140 | 40 | 40 | 32 | ....30052 | 560,33 |

## G 540

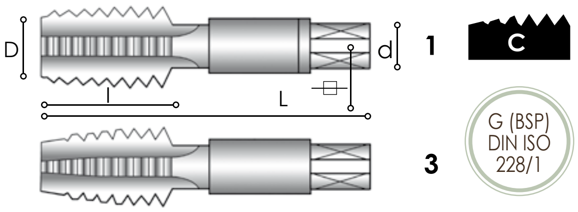
DIN 5157

0°

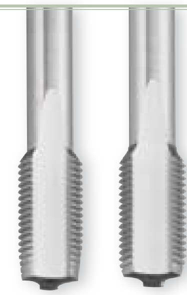
55°

A

G540




G (BSP) DIN ISO 228/1



| D(“) | D (mm) | | L | l | d | | CODE | HSS 5540..... € |
|---|---|---|---|---|---|---|---|---|
| G 1/8 - 28 | 9,73 | 8,8 | 63 | 20 | 7 | 5,5 | ....00108 | 33,87 |
| G 1/4 - 19 | 13,16 | 11,8 | 70 | 22 | 11 | 9 | ....00104 | 45,91 |
| G 3/8 - 19 | 16,66 | 15,25 | 70 | 22 | 12 | 9 | ....00308 | 55,68 |
| G 1/2 - 14 | 20,96 | 19 | 80 | 22 | 16 | 12 | ....00102 | 79,39 |
| G 5/8 - 14 | 22,91 | 21 | 80 | 22 | 18 | 14,5 | ....00508 | 96,23 |
| G 3/4 - 14 | 26,44 | 24,5 | 90 | 22 | 20 | 16 | ....00304 | 116,87 |
| G 7/8 - 14 | 30,20 | 28,25 | 90 | 22 | 22 | 18 | ....00708 | 161,22 |
| G 1" - 11 | 33,25 | 30,75 | 100 | 25 | 25 | 20 | ....00100 | 189,12 |
| G 1" 1/8 - 11 | 37,90 | 35 | 125 | 40 | 28 | 22 | ....01108 | 289,91 |
| G 1" 1/4 - 11 | 41,91 | 39,5 | 125 | 40 | 32 | 24 | ....01104 | 339,16 |
| G 1" 3/8 - 11 | 44,32 | 42 | 125 | 40 | 36 | 29 | ....01308 | 395,07 |
| G 1" 1/2 - 11 | 47,80 | 45 | 140 | 40 | 36 | 29 | ....01102 | 428,25 |
| G 1" 3/4 - 11 | 53,75 | 51 | 140 | 40 | 40 | 32 | ....01304 | 500,81 |
| G 2" - 11 | 59,61 | 57 | 160 | 40 | 45 | 35 | ....00200 | 626,70 |

# UNC 556

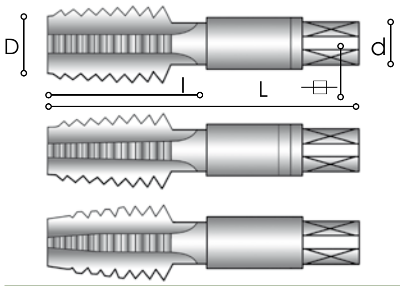
DIN 352

0°

60°

2B

UNC556




1

2

3

C

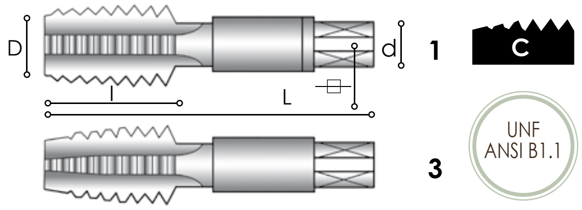
UNC ANSI B1.1

| D(") | D (mm) | | L | l | d | | CODE | HSS 5556..... € |
|---|---|---|---|---|---|---|---|---|
| UNC 5 - 40 | 3,175 | 2,65 | | 11 | 3,5 | 2,7 | ....00540 | 33,79 |
| UNC 6 - 32 | 3,505 | 2,85 | 45 | 12 | 4 | 3 | ....00632 | 33,79 |
| UNC 8 - 32 | 4,166 | 3,5 | 45 | 13 | 4,5 | 3,4 | ....00832 | 33,79 |
| UNC 10 - 24 | 4,826 | 3,9 | 50 | 16 | 6 | 4,9 | ....01024 | 40,73 |
| UNC 12 - 24 | 5,486 | 4,5 | 50 | 16 | 6 | 4,9 | ....01224 | 40,73 |
| UNC 1/4 - 20 | 6,35 | 5,1 | 50 | 19 | 6 | 4,9 | ....01420 | 40,73 |
| UNC 5/16 - 18 | 7,938 | 6,6 | 56 | 22 | 6 | 4,9 | ....51618 | 45,27 |
| UNC 3/8 - 16 | 9,525 | 8 | 63 | 22 | 7 | 5,5 | ....03816 | 48,96 |
| UNC 7/16 - 14 | 11,11 | 9,4 | 70 | 24 | 8 | 6,2 | ....71614 | 60,34 |
| UNC 1/2 - 13 | 12,7 | 10,8 | 75 | 28 | 9 | 7 | ....71213 | 70,20 |
| UNC 9/16 - 12 | 14,29 | 12,2 | 80 | 30 | 11 | 9 | ....91612 | 92,40 |
| UNC 5/8 - 11 | 15,88 | 13,5 | 80 | 32 | 12 | 9 | ....05811 | 99,53 |
| UNC 3/4 - 10 | 19,05 | 16,5 | 95 | 34 | 14 | 11 | ....03410 | 128,70 |
| UNC 7/8 - 9 | 22,23 | 19,5 | 100 | 34 | 18 | 14,5 | ....07809 | 162,74 |
| UNC 1" - 8 | 25,4 | 22,25 | 110 | 38 | 18 | 14,5 | ....01008 | 218,30 |
| UNC 1" 1/8 - 7 | 28,58 | 25 | 125 | 45 | 22 | 18 | ....11807 | 291,08 |
| UNC 1" 1/4 - 7 | 31,75 | 28 | 125 | 50 | 25 | 20 | ....11407 | 296,89 |
| UNC 1" 3/8 - 6 | 34,93 | 30,75 | 150 | 56 | 28 | 22 | ....13806 | 413,27 |
| UNC 1" 1/2 - 6 | 38,1 | 34 | 150 | 60 | 32 | 24 | ....11206 | 482,31 |

## UNF 558

DIN 2181 λ 0° 60° 2B

UNF558



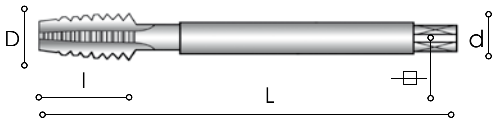

| D(") | D (mm) | | L | l | d | | CODE | HSS 5558..... € |
|---|---|---|---|---|---|---|---|---|
| UNF 5 - 44 | 3,175 | 2,7 | 40 | 11 | 3,5 | 2,7 | ....00544 | 25,82 |
| UNF 6 - 40 | 3,505 | 2,95 | 45 | 13 | 4 | 3 | ....00640 | 25,86 |
| UNF 8 - 36 | 4,166 | 3,5 | 45 | 13 | 4,5 | 3,4 | ....00836 | 25,53 |
| UNF 10 - 32 | 4,826 | 4,1 | 50 | 16 | 6 | 4,9 | ....01032 | 25,53 |
| UNF 12 - 28 | 5,486 | 4,7 | 50 | 16 | 6 | 4,9 | ....01228 | 30,26 |
| UNF 1/4 - 28 | 6,35 | 5,5 | 50 | 19 | 6 | 4,9 | ....01428 | 30,21 |
| UNF 5/16 - 24 | 7,938 | 6,9 | 56 | 22 | 6 | 4,9 | ....51624 | 33,61 |
| UNF 3/8 - 24 | 9,525 | 8,5 | 63 | 22 | 7 | 5,5 | ....03824 | 36,92 |
| UNF 7/16 - 20 | 11,11 | 9,9 | 63 | 22 | 8 | 6,2 | ....71620 | 44,55 |
| UNF 1/2 - 20 | 12,7 | 11,5 | 63 | 22 | 9 | 7 | ....01220 | 52,08 |
| UNF 9/16 - 18 | 14,29 | 12,9 | 70 | 22 | 11 | 9 | ....91618 | 68,35 |
| UNF 5/8 - 18 | 15,88 | 14,5 | 70 | 22 | 12 | 9 | ....05818 | 62,03 |
| UNF 3/4 - 16 | 19,05 | 17,5 | 80 | 22 | 14 | 11 | ....03416 | 94,68 |
| UNF 7/8 - 14 | 22,23 | 20,4 | 80 | 22 | 18 | 14,5 | ....07814 | 101,09 |
| UNF 1" - 12 | 25,4 | 23,25 | 80 | 22 | 18 | 14,5 | ....01012 | 137,59 |
| UNF 1" 1/8 - 12 | 28,58 | 26,5 | 90 | 22 | 22 | 18 | ....11812 | 181,12 |
| UNF 1" 1/4 - 12 | 31,75 | 29,5 | 90 | 22 | 22 | 18 | ....11412 | 222,54 |
| UNF 1" 3/8 - 12 | 34,93 | 32,75 | 125 | 25 | 28 | 22 | ....13812 | 319,80 |
| UNF 1" 1/2 - 12 | 38,1 | 36 | 125 | 25 | 28 | 22 | ....11212 | 361,55 |

**MASCHI A MACCHINA PER FORI PASSANTI** MACHINE TAPS FOR THROUGHT HOLES **MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER** TARAUDS MACHINE POUR TROUS DEBOUCHANTS **MACHOS DE MAQUINA PARA AGUJEROS PASANTES**



# M 502

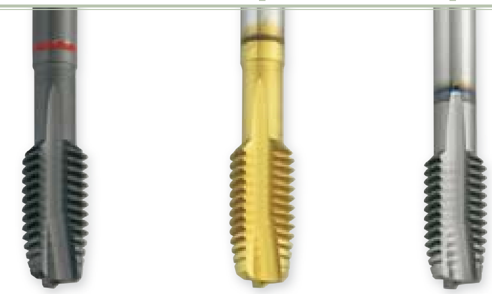
DIN 376 | λ 0° | 60° | 6H




B

M ISO/DIN 13

M502



| D | | L | l | d | □ | CODE | HSS+5%Co 5502..... € | HSS+5%Co 6502..... € QUARTZ | HSS+5%Co 7502..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 3 x 0,5 | 2,5 | 56 | 11 | 2,2 | - | ....00003 | 13,76 | 16,66 | 17,81 |
| M 4 x 0,7 | 3,3 | 63 | 13 | 2,8 | 2,1 | ....00004 | 13,76 | 16,66 | 17,81 |
| M 5 x 0,8 | 4,2 | 70 | 16 | 3,5 | 2,7 | ....00005 | 13,76 | 17,20 | 18,79 |
| M 6 x 1 | 5 | 80 | 19 | 4,5 | 3,4 | ....00006 | 13,76 | 17,55 | 19,77 |
| M 7 x 1 | 6 | 80 | 19 | 5,5 | 4,3 | ....00007 | 16,48 | 21,23 | 23,62 |
| M 8 x 1,25 | 6,8 | 90 | 22 | 6 | 4,9 | ....00008 | 15,86 | 20,55 | 22,94 |
| M 10 x 1,5 | 8,5 | 100 | 24 | 7 | 5,5 | ....00010 | 18,44 | 23,98 | 26,85 |
| M 11 x 1,5 | 9,5 | 100 | 24 | 8 | 6,2 | ....00011 | 28,80 | 35,37 | 38,25 |
| M 12 x 1,75 | 10,2 | 110 | 28 | 9 | 7 | ....00012 | 21,94 | 28,88 | 32,55 |
| M 14 x 2 | 12 | 110 | 30 | 11 | 9 | ....00014 | 31,10 | 39,44 | 43,49 |
| M 16 x 2 | 14 | 110 | 32 | 12 | 9 | ....00016 | 35,33 | 44,10 | 48,15 |
| M 18 x 2,5 | 15,5 | 125 | 34 | 14 | 11 | ....00018 | 46,52 | 57,17 | 61,80 |
| M 20 x 2,5 | 17,5 | 140 | 34 | 16 | 12 | ....00020 | 52,36 | 65,05 | 70,80 |
| M 22 x 2,5 | 19,5 | 140 | 34 | 18 | 14,5 | ....00022 | 66,05 | 80,11 | 85,86 |
| M 24 x 3 | 21 | 160 | 38 | 18 | 14,5 | ....00024 | 70,61 | 88,09 | 111,30 |
| M 27 x 3 | 24 | 160 | 38 | 20 | 16 | ....00027 | 95,98 | 129,75 | 148,38 |
| M 30 x 3,5 | 26,5 | 180 | 45 | 22 | 18 | ....00030 | 117,11 | 152,99 | 171,62 |
| M 33 x 3,5 | 29,5 | 180 | 50 | 25 | 20 | ....00033 | 157,78 | 200,42 | 221,15 |
| M 36 x 4 | 32 | 200 | 56 | 28 | 22 | ....00036 | 220,57 | 278,18 | 305,63 |
| M 39 x 4 | 35 | 200 | 60 | 32 | 24 | ....00039 | 274,70 | 337,73 | 365,17 |
| M 42 x 4,5 | 37,5 | 200 | 60 | 32 | 24 | ....00042 | 326,99 | 409,36 | 447,72 |

carmon

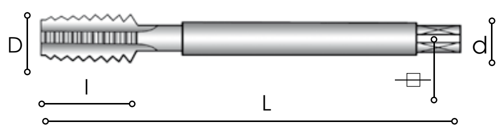
MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

## M 503

DIN 376 — λ 0° — 60° — 6H

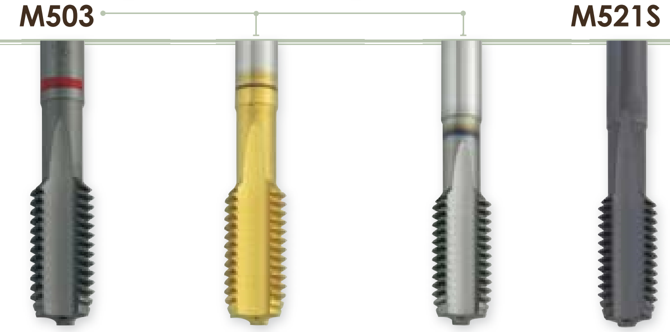
## M 521S

DIN 376 — λ 0° — 60° — 6H




C

M ISO/DIN 13



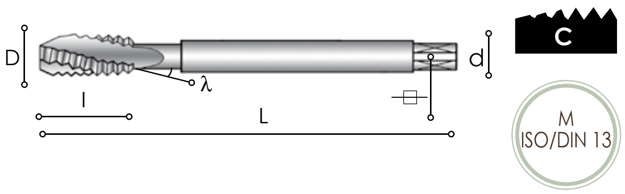

| D | (drill) | L | l | d | □ | CODE | HSS+5%Co 5503..... € | HSS+5%Co 6503..... € QUARTZ | HSS+5%Co 7503..... € TITANITE | HSS+5%Co 5521..... € |
|---|---|---|---|---|---|---|---|---|---|---|
| M 3 x 0,5 | 2,5 | 56 | 11 | 2,2 | - | ....00003 | 11,43 | 14,10 | 15,24 | 19,80 |
| M 4 x 0,7 | 3,3 | 63 | 13 | 2,8 | 2,1 | ....00004 | 12,91 | 15,72 | 16,86 | 20,28 |
| M 5 x 0,8 | 4,2 | 70 | 16 | 3,5 | 2,7 | ....00005 | 12,91 | 16,26 | 17,84 | 20,28 |
| M 6 x 1 | 5 | 80 | 19 | 4,5 | 3,4 | ....00006 | 12,91 | 16,61 | 18,83 | 20,28 |
| M 7 x 1 | 6 | 80 | 19 | 5,5 | 4,3 | ....00007 | 16,11 | 20,83 | 23,21 | |
| M 8 x 1,25 | 6,8 | 90 | 22 | 6 | 4,9 | ....00008 | 12,91 | 17,31 | 19,69 | 22,67 |
| M 10 x 1,5 | 8,5 | 100 | 24 | 7 | 5,5 | ....00010 | 15,74 | 21,01 | 23,88 | 26,64 |
| M 11 x 1,5 | 9,5 | 100 | 24 | 8 | 6,2 | ....00011 | 22,96 | 28,95 | 31,82 | |
| M 12 x 1,75 | 10,2 | 110 | 28 | 9 | 7 | ....00012 | 20,03 | 26,78 | 30,45 | 34,27 |
| M 14 x 2 | 12 | 110 | 30 | 11 | 9 | ....00014 | 27,10 | 35,05 | 39,09 | 42,82 |
| M 16 x 2 | 14 | 110 | 32 | 12 | 9 | ....00016 | 32,88 | 41,41 | 45,45 | 48,05 |
| M 18 x 2,5 | 15,5 | 125 | 34 | 14 | 11 | ....00018 | 44,24 | 54,67 | 59,30 | 69,23 |
| M 20 x 2,5 | 17,5 | 140 | 34 | 16 | 12 | ....00020 | 47,13 | 59,30 | 65,05 | 81,15 |
| M 22 x 2,5 | 19,5 | 140 | 34 | 18 | 14,5 | ....00022 | 63,78 | 77,61 | 83,36 | 93,74 |
| M 24 x 3 | 21 | 160 | 38 | 18 | 14,5 | ....00024 | 68,33 | 85,59 | 108,80 | 99,15 |
| M 27 x 3 | 24 | 160 | 38 | 20 | 16 | ....00027 | 89,52 | 122,64 | 141,27 | 133,45 |
| M 30 x 3,5 | 26,5 | 180 | 45 | 22 | 18 | ....00030 | 106,49 | 141,30 | 159,93 | 154,32 |
| M 33 x 3,5 | 29,5 | 180 | 50 | 25 | 20 | ....00033 | 156,19 | 198,67 | 219,40 | 199,33 |
| M 36 x 4 | 32 | 200 | 56 | 28 | 22 | ....00036 | 174,31 | 227,29 | 254,73 | 236,76 |
| M 39 x 4 | 35 | 200 | 60 | 32 | 24 | ....00039 | 227,40 | 285,70 | 313,14 | 280,62 |
| M 42 x 4,5 | 37,5 | 200 | 60 | 32 | 24 | ....00042 | 256,16 | 331,44 | 369,80 | |
| M 45 x 4,5 | 40,5 | 220 | 65 | 36 | 29 | ....00045 | 260,28 | 345,71 | 391,55 | |
| M 48 x 5 | 43 | 250 | 70 | 36 | 29 | ....00048 | 310,94 | 401,43 | 447,27 | |
| M 52 x 5 | 47 | 250 | 70 | 40 | 32 | ....00052 | 401,84 | 512,48 | 551,89 | |

# MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

## M 505

DIN 376 — 15° — 60° — 6H

M505



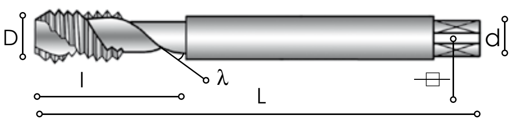

| D | | L | l | d | | CODE | HSS+5%Co 5505..... € | HSS+5%Co 6505..... € QUARTZ | HSS+5%Co 7505..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 3 x 0,5 | 2,5 | 56 | 11 | 2,2 | - | ....00003 | 14,32 | 17,28 | 18,42 |
| M 4 x 0,7 | 3,3 | 63 | 13 | 2,8 | 2,1 | ....00004 | 14,87 | 17,88 | 19,02 |
| M 5 x 0,8 | 4,2 | 70 | 16 | 3,5 | 2,7 | ....00005 | 14,20 | 17,68 | 19,27 |
| M 6 x 1 | 5 | 80 | 19 | 4,5 | 3,4 | ....00006 | 15,61 | 19,79 | 21,80 |
| M 7 x 1 | 6 | 80 | 19 | 5,5 | 4,3 | ....00007 | 15,86 | 20,55 | 22,94 |
| M 8 x 1,25 | 6,8 | 90 | 22 | 6 | 4,9 | ....00008 | 17,02 | 21,84 | 24,22 |
| M 10 x 1,5 | 8,5 | 100 | 24 | 7 | 5,5 | ....00010 | 21,20 | 27,01 | 29,89 |
| M 12 x 1,75 | 10,2 | 110 | 28 | 9 | 7 | ....00012 | 24,15 | 31,31 | 34,98 |
| M 14 x 2 | 12 | 110 | 30 | 11 | 9 | ....00014 | 33,31 | 41,88 | 45,92 |
| M 16 x 2 | 14 | 110 | 32 | 12 | 9 | ....00016 | 38,22 | 47,28 | 51,33 |
| M 18 x 2,5 | 15,5 | 125 | 34 | 14 | 11 | ....00018 | 52,36 | 63,60 | 68,23 |
| M 20 x 2,5 | 17,5 | 140 | 34 | 16 | 12 | ....00020 | 57,89 | 71,14 | 76,89 |
| M 22 x 2,5 | 19,5 | 140 | 34 | 18 | 14,5 | ....00022 | 70,84 | 85,38 | 91,13 |
| M 24 x 3 | 21 | 160 | 38 | 18 | 14,5 | ....00024 | 75,09 | 101,58 | 116,24 |
| M 27 x 3 | 24 | 160 | 38 | 20 | 16 | ....00027 | 102,18 | 136,57 | 155,20 |
| M 30 x 3,5 | 26,5 | 180 | 45 | 22 | 18 | ....00030 | 123,56 | 160,08 | 178,71 |
| M 33 x 3,5 | 29,5 | 180 | 50 | 25 | 20 | ....00033 | 168,29 | 211,97 | 232,71 |
| M 36 x 4 | 32 | 200 | 56 | 28 | 22 | ....00036 | 198,65 | 254,07 | 281,51 |

MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

## M 506

DIN 376 | λ 35° | 60° | 6H

M506





M ISO/DIN 13

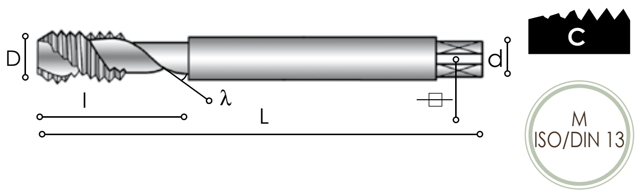
| D | | L | l | d | | CODE | HSS+5%Co 5506..... € | HSS+5%Co 6506..... € QUARTZ | HSS+5%Co 7506..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 3 x 0,5 | 2,5 | 56 | 5 | 2,2 | - | ....00003 | 14,13 | 17,07 | 18,21 |
| M 4 x 0,7 | 3,3 | 63 | 7 | 2,8 | 2,1 | ....00004 | 14,01 | 16,93 | 18,08 |
| M 5 x 0,8 | 4,2 | 70 | 8 | 3,5 | 2,7 | ....00005 | 13,74 | 17,17 | 18,76 |
| M 6 x 1 | 5 | 80 | 10 | 4,5 | 3,4 | ....00006 | 14,69 | 18,78 | 20,79 |
| M 7 x 1 | 6 | 80 | 10 | 5,5 | 4,3 | ....00007 | 15,86 | 20,55 | 22,94 |
| M 8 x 1,25 | 6,8 | 90 | 13 | 6 | 4,9 | ....00008 | 17,14 | 21,97 | 24,35 |
| M 10 x 1,5 | 8,5 | 100 | 15 | 7 | 5,5 | ....00010 | 21,39 | 27,22 | 30,10 |
| M 12 x 1,75 | 10,2 | 110 | 18 | 9 | 7 | ....00012 | 24,40 | 31,58 | 35,25 |
| M 14 x 2 | 12 | 110 | 20 | 11 | 9 | ....00014 | 33,55 | 42,14 | 46,18 |
| M 16 x 2 | 14 | 110 | 20 | 12 | 9 | ....00016 | 38,53 | 47,62 | 51,67 |
| M 18 x 2,5 | 15,5 | 125 | 25 | 14 | 11 | ....00018 | 52,84 | 64,14 | 68,76 |
| M 20 x 2,5 | 17,5 | 140 | 25 | 16 | 12 | ....00020 | 57,12 | 70,29 | 76,04 |
| M 22 x 2,5 | 19,5 | 140 | 25 | 18 | 14,5 | ....00022 | 71,52 | 86,13 | 91,88 |
| M 24 x 3 | 21 | 160 | 30 | 18 | 14,5 | ....00024 | 75,76 | 102,31 | 116,97 |
| M 27 x 3 | 24 | 160 | 38 | 20 | 16 | ....00027 | 103,17 | 137,65 | 156,28 |
| M 30 x 3,5 | 26,5 | 180 | 45 | 22 | 18 | ....00030 | 124,73 | 161,38 | 180,01 |
| M 33 x 3,5 | 29,5 | 180 | 50 | 25 | 20 | ....00033 | 154,52 | 196,83 | 217,57 |
| M 36 x 4 | 32 | 200 | 56 | 28 | 22 | ....00036 | 254,06 | 315,02 | 342,46 |

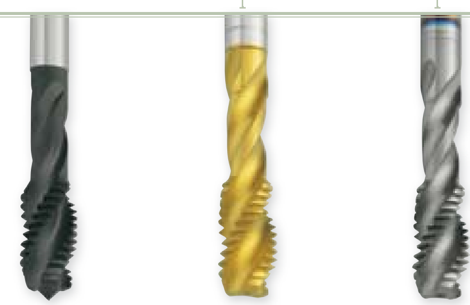
MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FüR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

# M 515

DIN 376 λ 35° 60° 6H

M515



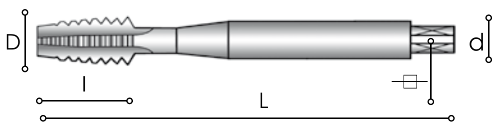



| D | | L | l | d | ⊣□⊢ | CODE | HSS+5%Co 5515..... € | HSS+5%Co 6515..... € QUARTZ | HSS+5%Co 7515..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 3 x 0,5 | 2,5 | 56 | 5 | 2,2 | - | ....00003 | 14,44 | 17,41 | 18,55 |
| M 4 x 0,7 | 3,3 | 63 | 7 | 2,8 | 2,1 | ....00004 | 14,44 | 17,41 | 18,55 |
| M 5 x 0,8 | 4,2 | 70 | 8 | 3,5 | 2,7 | ....00005 | 15,18 | 18,75 | 20,34 |
| M 6 x 1 | 5 | 80 | 10 | 4,5 | 3,4 | ....00006 | 15,18 | 19,32 | 21,33 |
| M 8 x 1,25 | 6,8 | 90 | 13 | 6 | 4,9 | ....00008 | 18,93 | 23,93 | 26,31 |
| M 10 x 1,5 | 8,5 | 100 | 15 | 7 | 5,5 | ....00010 | 23,84 | 29,92 | 32,79 |
| M 12 x 1,75 | 10,2 | 110 | 18 | 9 | 7 | ....00012 | 26,85 | 34,28 | 37,95 |
| M 14 x 2 | 12 | 110 | 20 | 11 | 9 | ....00014 | 37,06 | 46,00 | 50,04 |
| M 16 x 2 | 14 | 110 | 20 | 12 | 9 | ....00016 | 42,52 | 52,01 | 56,05 |

**MASCHI A MACCHINA PER FORI PASSANTI** MACHINE TAPS FOR THROUGHT HOLES **MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLöCHER** TARAUDS MACHINE POUR TROUS DEBOUCHANTS **MACHOS DE MAQUINA PARA AGUJEROS PASANTES**

# M 508

DIN 371 — λ 0° — 60° — 6H





M ISO/DIN 13

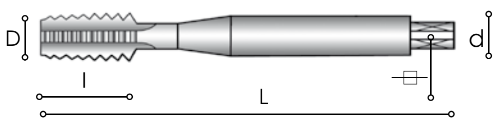
M508

| D | | L | l | d | | CODE | HSS+5%Co 5508..... € | HSS+5%Co 6508..... € QUARTZ | HSS+5%Co 7508..... € TITANITE | CODE | RESISTOR 8508..... € OPAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,6 | 45 | 8 | 2,8 | 2,1 | ....00002 | 15,37 | 18,43 | 19,57 | | |
| M 2,5 x 0,45 | 2 | 50 | 9 | 2,8 | 2,1 | ....00025 | 15,37 | 18,43 | 19,57 | | |
| M 2,6 x 0,45 | 2,1 | 50 | 9 | 2,8 | 2,1 | ....00026 | 15,37 | 18,43 | 19,57 | | |
| M 3 x 0,5 | 2,5 | 56 | 10 | 3,5 | 2,7 | ....00003 | 11,92 | 14,63 | 15,78 | ....30030 | 32,79 |
| M 3,5 x 0,6 | 2,9 | 56 | 12 | 4 | 3 | ....00035 | 12,79 | 15,59 | 16,73 | | |
| M 4 x 0,7 | 3,3 | 63 | 12 | 4,5 | 3,4 | ....00004 | 12,11 | 15,38 | 16,97 | ....40030 | 32,79 |
| M 5 x 0,8 | 4,2 | 70 | 14 | 6 | 4,9 | ....00005 | 12,79 | 16,12 | 17,71 | ....50030 | 32,79 |
| M 6 x 1 | 5 | 80 | 18 | 6 | 4,9 | ....00006 | 12,79 | 16,12 | 18,70 | ....60030 | 32,79 |
| M 7 x 1 | 6 | 80 | 18 | 7 | 5,5 | ....00007 | 14,32 | 18,86 | 21,25 | | |
| M 8 x 1,25 | 6,8 | 90 | 20 | 8 | 6,2 | ....00008 | 14,57 | 19,14 | 21,52 | ....80030 | 42,85 |
| M 10 x 1,5 | 8,5 | 100 | 20 | 10 | 8 | ....00010 | 18,38 | 23,91 | 26,79 | ....10030 | 52,16 |

# MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

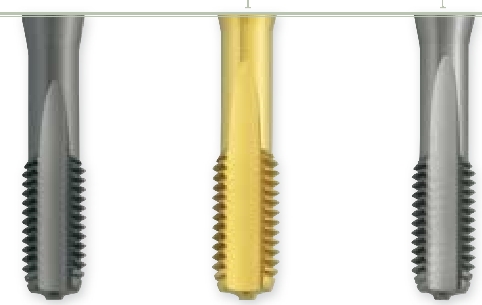
## M 509

DIN 371 · λ 0° · 60° · 6H





M ISO/DIN 13




| D | | L | l | d | | CODE | HSS+5%Co 5509..... € | HSS+5%Co 6509..... € QUARTZ | HSS+5%Co 7509..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,6 | 45 | 8 | 2,8 | 2,1 | ....00002 | 15,86 | 18,96 | 20,11 |
| M 2,5 x 0,45 | 2 | 50 | 9 | 2,8 | 2,1 | ....00025 | 15,86 | 18,96 | 20,11 |
| M 2,6 x 0,45 | 2,1 | 50 | 9 | 2,8 | 2,1 | ....00026 | 15,86 | 18,96 | 20,11 |
| M 3 x 0,5 | 2,5 | 56 | 10 | 3,5 | 2,7 | ....00003 | 10,69 | 13,28 | 14,43 |
| M 3,5 x 0,6 | 2,9 | 56 | 12 | 4 | 3 | ....00035 | 13,10 | 15,93 | 17,07 |
| M 4 x 0,7 | 3,3 | 63 | 12 | 4,5 | 3,4 | ....00004 | 10,69 | 13,82 | 15,41 |
| M 5 x 0,8 | 4,2 | 70 | 14 | 6 | 4,9 | ....00005 | 11,37 | 14,57 | 16,16 |
| M 6 x 1 | 5 | 80 | 18 | 6 | 4,9 | ....00006 | 11,37 | 14,57 | 17,14 |
| M 7 x 1 | 6 | 80 | 18 | 7 | 5,5 | ....00007 | 12,79 | 17,18 | 19,56 |
| M 8 x 1,25 | 6,8 | 90 | 20 | 8 | 6,2 | ....00008 | 13,40 | 17,85 | 20,23 |
| M 10 x 1,5 | 8,5 | 100 | 20 | 10 | 8 | ....00010 | 15,61 | 20,86 | 23,74 |

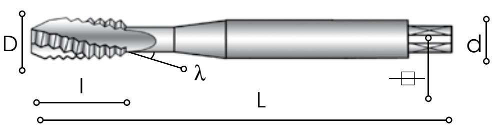
carmon

MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

## M 511

DIN 371 · λ 15° · 60° · 6H

M511




C

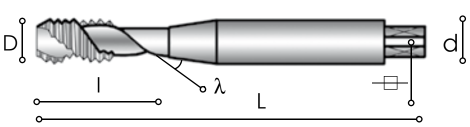
M ISO/DIN 13

| D | | L | l | d | | CODE | HSS+5%Co 5511..... € | HSS+5%Co 6511..... € QUARTZ | HSS+5%Co 7511..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,6 | 45 | 8 | 2,8 | 2,1 | ....00002 | 15,76 | 18,86 | 20,00 |
| M 2,5 x 0,45 | 2 | 50 | 9 | 2,8 | 2,1 | ....00025 | 14,13 | 17,07 | 18,21 |
| M 2,6 x 0,45 | 2,1 | 50 | 9 | 2,8 | 2,1 | ....00026 | 14,13 | 17,07 | 18,21 |
| M 3 x 0,5 | 2,5 | 56 | 11 | 3,5 | 2,7 | ....00003 | 12,79 | 15,59 | 16,73 |
| M 4 x 0,7 | 3,3 | 63 | 13 | 4,5 | 3,4 | ....00004 | 12,79 | 16,12 | 17,71 |
| M 5 x 0,8 | 4,2 | 70 | 15 | 6 | 4,9 | ....00005 | 13,40 | 16,79 | 18,38 |
| M 6 x 1 | 5 | 80 | 17 | 6 | 4,9 | ....00006 | 14,13 | 18,16 | 20,17 |
| M 7 x 1 | 6 | 80 | 17 | 7 | 5,5 | ....00007 | 14,87 | 19,47 | 21,85 |
| M 8 x 1,25 | 6,8 | 90 | 20 | 8 | 6,2 | ....00008 | 15,61 | 20,28 | 22,66 |
| M 10 x 1,5 | 8,5 | 100 | 20 | 10 | 8 | ....00010 | 19,24 | 24,85 | 27,73 |

## M 512

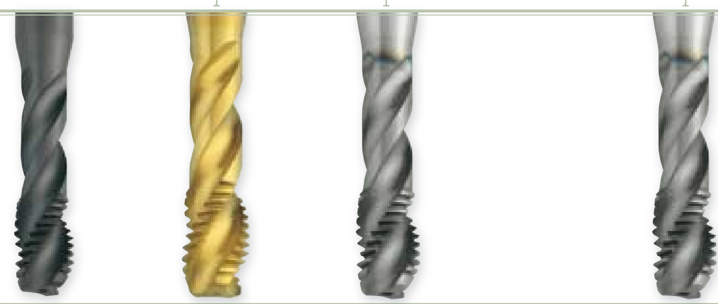
DIN 371 · λ 35° · 60° · 6H

M512




C

M ISO/DIN 13

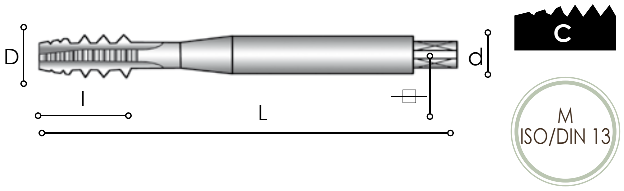


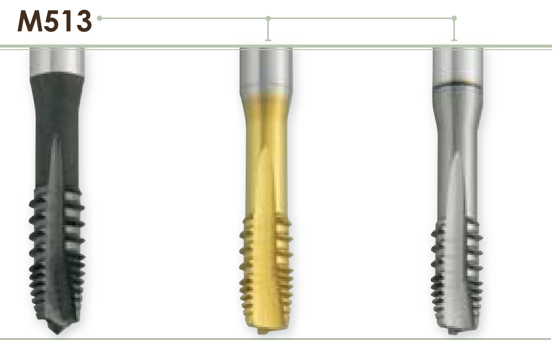
| D | | L | l | d | | CODE | HSS+5%Co 5512..... € | HSS+5%Co 6512..... € QUARTZ | HSS+5%Co 7512..... € TITANITE | CODE | RESISTOR 8512..... € OPAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,6 | 45 | 8 | 2,8 | 2,1 | ....00002 | 16,90 | 20,11 | 21,26 | | |
| M 2,5 x 0,45 | 2 | 50 | 9 | 2,8 | 2,1 | ....00025 | 16,90 | 20,11 | 21,26 | | |
| M 2,6 x 0,45 | 2,1 | 50 | 9 | 2,8 | 2,1 | ....00026 | 16,90 | 20,11 | 21,26 | | |
| M 3 x 0,5 | 2,5 | 56 | 5 | 3,5 | 2,7 | ....00003 | 12,79 | 15,59 | 16,73 | ....30030 | 34,44 |
| M 4 x 0,7 | 3,3 | 63 | 7 | 4,5 | 3,4 | ....00004 | 13,40 | 16,79 | 18,38 | ....40030 | 34,44 |
| M 5 x 0,8 | 4,2 | 70 | 8 | 6 | 4,9 | ....00005 | 14,13 | 17,60 | 19,19 | ....50030 | 34,44 |
| M 6 x 1 | 5 | 80 | 10 | 6 | 4,9 | ....00006 | 14,13 | 18,16 | 20,17 | ....60030 | 34,44 |
| M 7 x 1 | 6 | 80 | 10 | 7 | 5,5 | ....00007 | 14,58 | 19,15 | 21,53 | | |
| M 8 x 1,25 | 6,8 | 90 | 13 | 8 | 6,2 | ....00008 | 16,29 | 21,02 | 23,41 | ....80030 | 45,13 |
| M 10 x 1,5 | 8,5 | 100 | 15 | 10 | 8 | ....00010 | 19,24 | 24,85 | 27,73 | ....10030 | 54,98 |

MASCHI A MACCHINA PER FORI PASSANTI MACHINE TAPS FOR THROUGHT HOLES MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER TARAUDS MACHINE POUR TROUS DEBOUCHANTS MACHOS DE MAQUINA PARA AGUJEROS PASANTES

## M 513

DIN 371 | λ 0° | 60° | 6H



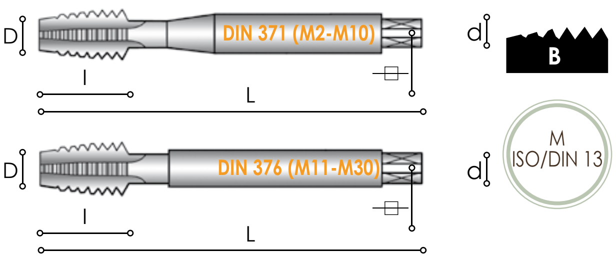

| D | | L | l | d | | CODE | HSS+5%Co 5513..... € | HSS+5%Co 6513..... € QUARTZ | HSS+5%Co 7513..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 3 x 0,5 | 2,5 | 56 | 10 | 3,5 | 2,7 | ....00003 | 14,81 | 17,81 | 18,96 |
| M 4 x 0,7 | 3,3 | 63 | 12 | 4,5 | 3,4 | ....00004 | 14,81 | 18,35 | 19,94 |
| M 5 x 0,8 | 4,2 | 70 | 14 | 6 | 4,9 | ....00005 | 15,61 | 19,23 | 20,82 |
| M 6 x 1 | 5 | 80 | 18 | 6 | 4,9 | ....00006 | 15,61 | 19,79 | 21,80 |
| M 8 x 1,25 | 6,8 | 90 | 20 | 8 | 6,2 | ....00008 | 18,75 | 23,73 | 26,12 |
| M 10 x 1,5 | 8,5 | 100 | 20 | 10 | 8 | ....00010 | 23,96 | 30,05 | 32,92 |

M 516 INOX 535

# MASCHI A MACCHINA PER FORI PASSANTI MACHINE TAPS FOR THROUGHT HOLES MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER TARAUDS MACHINE POUR TROUS DEBOUCHANTS MACHOS DE MAQUINA PARA AGUJEROS PASANTES

**M 516** DIN 371 DIN 376 λ 0° 60° 6H

**M 535** DIN 371 DIN 376 λ 0° 60° 6H





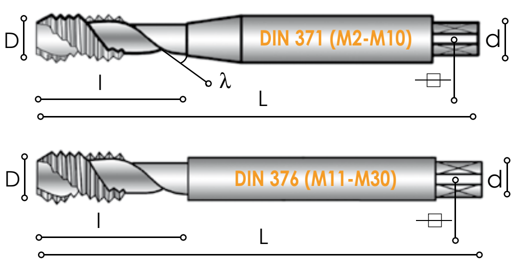
| D | | L | l | d | □ | CODE | HSS+5%Co 5516..... € | HSS+5%Co 6516..... € QUARTZ | HSS+5%Co 5535..... € | HSS+5%Co 6535..... € QUARTZ |
|---|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,6 | 45 | 8 | 2,8 | 2,1 | ....00002 | 24,40 | 28,36 | | |
| M 2,2 x 0,45 | 1,75 | 45 | 8 | 2,8 | 2,1 | ....00022 | 26,55 | 30,73 | | |
| M 2,3 x 0,4 | 1,9 | 45 | 8 | 2,8 | 2,1 | ....00023 | 27,66 | 31,94 | | |
| M 2,5 x 0,45 | 2 | 50 | 9 | 2,8 | 2,1 | ....00025 | 22,98 | 26,80 | | |
| M 2,6 x 0,45 | 2,1 | 50 | 9 | 2,8 | 2,1 | ....00026 | 22,73 | 26,53 | | |
| M 3 x 0,5 | 2,5 | 56 | 10 | 3,5 | 2,7 | ....00003 | 14,81 | 17,81 | 14,81 | 17,81 |
| M 3,5 x 0,6 | 2,9 | 56 | 12 | 4 | 3 | ....00035 | 18,07 | 21,40 | 18,07 | 21,40 |
| M 4 x 0,7 | 3,3 | 63 | 12 | 4,5 | 3,4 | ....00004 | 14,81 | 18,35 | 14,81 | 18,35 |
| M 4,5 x 0,75 | 3,7 | 70 | 14 | 6 | 4,9 | ....00045 | 19,26 | 23,24 | 19,26 | 23,24 |
| M 5 x 0,8 | 4,2 | 70 | 14 | 6 | 4,9 | ....00005 | 15,30 | 18,89 | 15,30 | 18,89 |
| M 6 x 1 | 5 | 80 | 18 | 6 | 4,9 | ....00006 | 16,04 | 20,26 | 16,04 | 20,26 |
| M 7 x 1 | 6 | 80 | 18 | 7 | 5,5 | ....00007 | 22,98 | 28,39 | 22,98 | 28,39 |
| M 8 x 1,25 | 6,8 | 90 | 20 | 8 | 6,2 | ....00008 | 18,69 | 23,67 | 18,69 | 23,67 |
| M 9 x 1,25 | 7,8 | 90 | 20 | 9 | 7 | ....00009 | 30,42 | 37,15 | | |
| M 10 x 1,5 | 8,5 | 100 | 20 | 10 | 8 | ....00010 | 24,03 | 30,13 | 24,03 | 30,13 |
| M 11 x 1,5 | 9,5 | 100 | 24 | 8 | 6,2 | ....00011 | 38,77 | 46,34 | | |
| M 12 x 1,75 | 10,2 | 110 | 28 | 9 | 7 | ....00012 | 29,68 | 37,40 | 29,68 | 37,40 |
| M 14 x 2 | 12 | 110 | 30 | 11 | 9 | ....00014 | 39,02 | 48,16 | 39,02 | 48,16 |
| M 16 x 2 | 14 | 110 | 32 | 12 | 9 | ....00016 | 43,56 | 53,16 | 43,56 | 53,16 |
| M 18 x 2,5 | 15,5 | 125 | 34 | 14 | 11 | ....00018 | 65,01 | 77,52 | 65,01 | 77,52 |
| M 20 x 2,5 | 17,5 | 140 | 34 | 16 | 12 | ....00020 | 71,21 | 85,79 | 71,21 | 85,79 |
| M 22 x 2,5 | 19,5 | 140 | 34 | 18 | 14,5 | ....00220 | 97,52 | 114,72 | 97,52 | 114,72 |
| M 24 x 3 | 21 | 160 | 38 | 18 | 14,5 | ....00024 | 112,99 | 143,27 | 112,99 | 143,27 |
| M 27 x 3 | 24 | 160 | 38 | 20 | 16 | ....00027 | 172,40 | 213,81 | 172,40 | 213,81 |
| M 30 x 3,5 | 26,5 | 180 | 45 | 22 | 18 | ....00030 | 213,95 | 259,51 | 213,95 | 259,51 |

## MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FüR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS



**M 517** DIN 371 DIN 376 λ 35° 60° 6H

**M 536** DIN 371 DIN 376 λ 35° 60° 6H





M ISO/DIN 13


| D | | L | l | d | | CODE | HSS+5%Co 5517..... € | HSS+5%Co 6517..... € QUARTZ | HSS+5%Co 5536..... € | HSS+5%Co 6536..... € QUARTZ |
|---|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,6 | 45 | 8 | 2,8 | 2,1 | ....00002 | 26,42 | 30,58 | | |
| M 2,2 x 0,45 | 1,75 | 45 | 8 | 2,8 | 2,1 | ....00022 | 28,52 | 32,89 | | |
| M 2,3 x 0,4 | 1,9 | 45 | 8 | 2,8 | 2,1 | ....00023 | 29,68 | 34,17 | | |
| M 2,5 x 0,45 | 2 | 50 | 9 | 2,8 | 2,1 | ....00025 | 25,74 | 29,84 | | |
| M 2,6 x 0,45 | 2,1 | 50 | 9 | 2,8 | 2,1 | ....00026 | 24,77 | 28,76 | | |
| M 3 x 0,5 | 2,5 | 56 | 5 | 3,5 | 2,7 | ....00003 | 18,32 | 21,67 | 18,32 | 21,67 |
| M 3,5 x 0,6 | 2,9 | 56 | 6 | 4 | 3 | ....00035 | 19,55 | 23,02 | 19,55 | 23,02 |
| M 4 x 0,7 | 3,3 | 63 | 7 | 4,5 | 3,4 | ....00004 | 18,32 | 22,21 | 18,32 | 22,21 |
| M 4,5 x 0,75 | 3,7 | 70 | 7,5 | 6 | 4,9 | ....00045 | 19,91 | 23,96 | 19,91 | 23,96 |
| M 5 x 0,8 | 4,2 | 70 | 8 | 6 | 4,9 | ....00005 | 18,75 | 22,68 | 18,75 | 22,68 |
| M 6 x 1 | 5 | 80 | 10 | 6 | 4,9 | ....00006 | 19,49 | 24,05 | 19,49 | 24,05 |
| M 7 x 1 | 6 | 80 | 10 | 7 | 5,5 | ....00007 | 24,77 | 30,35 | 24,77 | 30,35 |
| M 8 x 1,25 | 6,8 | 90 | 13 | 8 | 6,2 | ....00008 | 22,00 | 27,31 | 22,00 | 27,31 |
| M 9 x 1,25 | 7,8 | 90 | 13 | 9 | 7 | ....00009 | 32,75 | 39,72 | | |
| M 10 x 1,5 | 8,5 | 100 | 15 | 10 | 8 | ....00010 | 27,41 | 33,84 | 27,41 | 33,84 |
| M 11 x 1,5 | 9,5 | 100 | 15 | 8 | 6,2 | ....00011 | 45,29 | 53,51 | | |
| M 12 x 1,75 | 10,2 | 110 | 18 | 9 | 7 | ....00012 | 36,19 | 44,55 | 36,19 | 44,55 |
| M 14 x 2 | 12 | 110 | 20 | 11 | 9 | ....00014 | 47,56 | 57,55 | 47,56 | 57,55 |
| M 16 x 2 | 14 | 110 | 20 | 12 | 9 | ....00016 | 51,68 | 62,08 | 51,68 | 62,08 |
| M 18 x 2,5 | 15,5 | 125 | 25 | 14 | 11 | ....00018 | 73,73 | 87,12 | 73,73 | 87,12 |
| M 20 x 2,5 | 17,5 | 140 | 25 | 16 | 12 | ....00020 | 78,71 | 94,03 | 78,71 | 94,03 |
| M 22 x 2,5 | 19,5 | 140 | 25 | 18 | 14,5 | ....00220 | 113,24 | 132,02 | 113,24 | 132,02 |
| M 24 x 3 | 21 | 160 | 30 | 18 | 14,5 | ....00024 | 122,76 | 154,02 | 122,76 | 154,02 |
| M 27 x 3 | 24 | 160 | 38 | 20 | 16 | ....00027 | 182,48 | 224,90 | 182,48 | 224,90 |
| M 30 x 3,5 | 26,5 | 180 | 45 | 22 | 18 | ....00030 | 229,42 | 276,54 | 229,42 | 276,54 |

carmon

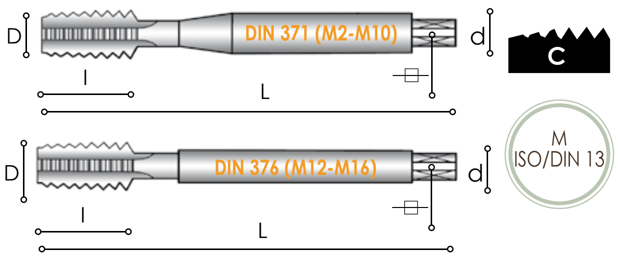
**MASCHI A MACCHINA PER FORI PASSANTI** MACHINE TAPS FOR THROUGHT HOLES **MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER** TARAUDS MACHINE POUR TROUS DEBOUCHANTS **MACHOS DE MAQUINA PARA AGUJEROS PASANTES**

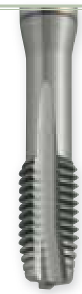
## M 524

GHISA - CAST IRON

DIN 371 DIN 376 λ 0° 60° 6H

NEW M524



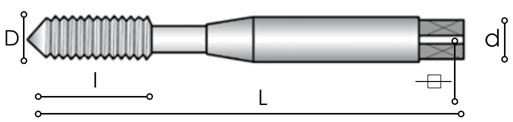
| D | | L | l | d | | CODE | HSS+5%Co 5524….. € OPAL |
|---|---|---|---|---|---|---|---|
| M 3 | 2,5 | 56 | 10 | 3,5 | 2,7 | ….00003 | 16,25 |
| M 4 | 3,3 | 63 | 12 | 4,5 | 3,4 | ….00004 | 18,60 |
| M 5 | 4,2 | 70 | 14 | 6 | 4,9 | ….00005 | 17,41 |
| M 6 | 5 | 80 | 18 | 6 | 4,9 | ….00006 | 18,48 |
| M 8 | 6,8 | 90 | 20 | 8 | 6,2 | ….00008 | 24,98 |
| M 10 | 8,5 | 100 | 20 | 10 | 8 | ….00010 | 31,80 |
| M 12 | 10,2 | 110 | 28 | 9 | 7 | ….00012 | 42,99 |
| M 16 | 14 | 110 | 32 | 12 | 9 | ….00016 | 59,06 |

MASCHI A MACCHINA A RULLARE FLUTELESS TAPS MASCHINEN-GEWINDEBOHRER TARAUDS MACHINE
A REFOULER MACHOS DE MAQUINA DE EMBUTIR

**R 570** DIN 371 0° 60° 6HX

**R 571** DIN 371 0° 60° 6HX

**R 572** DIN 371 0° 60° 6HX




C

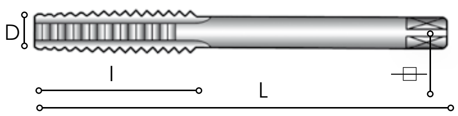
M ISO/DIN 13


| D | | L | l | d | | CODE | HSS+5%Co 5570….. € | HSS+5%Co 5571….. € | HSS+5%Co 5572….. € |
|---|---|---|---|---|---|---|---|---|---|
| M 2 x 0,4 | 1,8 | 45 | 8 | 2,8 | 2,1 | ….00002 | | | 28,88 |
| M 2,3 x 0,4 | 2,1 | 45 | 9 | 2,8 | 2,1 | ….00023 | | | 24,58 |
| M 2,6 x 0,45 | 2,4 | 50 | 9 | 2,8 | 2,1 | ….00026 | | | 24,58 |
| M 3 x 0,5 | 2,8 | 56 | 11 | 3,5 | 2,7 | ….00003 | 17,64 | 17,64 | 19,66 |
| M 3,5 x 0,6 | 3,2 | 56 | 12 | 4 | 3 | ….00035 | | | 22,13 |
| M 4 x 0,7 | 3,7 | 63 | 13 | 4,5 | 3,4 | ….00004 | 17,64 | 17,64 | 19,66 |
| M 5 x 0,8 | 4,6 | 70 | 15 | 6 | 4,9 | ….00005 | 17,64 | 17,64 | 20,28 |
| M 6 x 1 | 5,5 | 80 | 17 | 6 | 4,9 | ….00006 | 17,64 | 17,64 | 20,28 |
| M 8 x 1,25 | 7,4 | 90 | 20 | 8 | 6,2 | ….00008 | 21,51 | 21,51 | 26,42 |
| M 10 x 1,5 | 9,3 | 100 | 22 | 10 | 8 | ….00010 | 25,81 | 25,81 | 31,34 |

MASCHI A MACCHINA PER DADI MACHINE NUTS TAPS MASCHINEN-MUTTERGEWINDEBOHRER
TARAUDS MACHINE A L' ENFILADE MACHOS DE MAQUINA PARA TUERCAS

## M 514

DIN 357 — λ 0° — 60° — 6H




~12P

M ISO/DIN 13

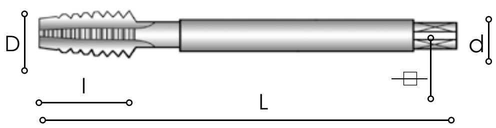
M514

| D | | L | l | d | | CODE | HSS+5%Co 5514..... € | HSS+5%Co 6514..... € QUARTZ | HSS+5%Co 7514..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| M 4 x 0,7 | 3,3 | 90 | 25 | 2,8 | 2,1 | ....00004 | 20,71 | 24,72 | 26,24 |
| M 5 x 0,8 | 4,2 | 100 | 28 | 3,5 | 2,7 | ....00005 | 22,00 | 26,81 | 28,82 |
| M 6 x 1 | 5 | 110 | 32 | 4,5 | 3,4 | ....00006 | 23,29 | 28,73 | 31,14 |
| M 8 x 1,25 | 6,8 | 125 | 40 | 6 | 4,9 | ....00008 | 29,31 | 36,08 | 39,05 |
| M 10 x 1,5 | 8,5 | 140 | 45 | 7 | 5,5 | ....00010 | 32,75 | 40,77 | 44,44 |
| M 12 x 1,75 | 10,2 | 180 | 50 | 9 | 7 | ....00012 | 43,14 | 53,18 | 57,62 |
| M 14 x 2 | 12 | 200 | 56 | 11 | 9 | ....00014 | 60,77 | 76,26 | 83,53 |
| M 16 x 2 | 14 | 200 | 63 | 12 | 9 | ....00016 | 71,15 | 87,69 | 94,96 |
| M 18 x 2,5 | 15,5 | 220 | 63 | 14 | 11 | ....00018 | 86,20 | 110,48 | 122,57 |
| M 20 x 2,5 | 17,5 | 250 | 70 | 16 | 12 | ....00020 | 95,73 | 127,91 | 145,37 |

MASCHI A MACCHINA PER FORI PASSANTI MACHINE TAPS FOR THROUGHT HOLES MASCHINEN-GEWINDEBOHRER FÜR DURCHGANGSLÖCHER TARAUDS MACHINE POUR TROUS DEBOUCHANTS MACHOS DE MAQUINA PARA AGUJEROS PASANTES

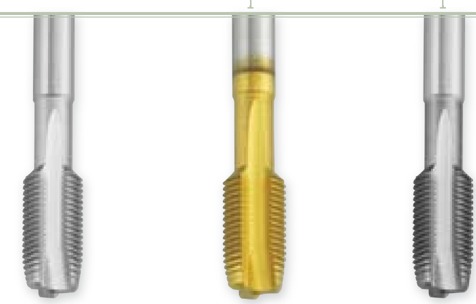
# MF 520

DIN 374 | 0° | 60° | 6H




MF ISO/DIN 13

MF520



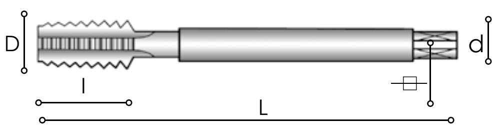
| D | | L | l | d | | CODE | HSS+5%Co 5520..... € | HSS+5%Co 6520..... € QUARTZ | HSS+5%Co 7520..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| MF 4 x 0,5 | 3,5 | 63 | 10 | 2,8 | 2,1 | ....00004 | 20,47 | 24,03 | 25,18 |
| MF 5 x 0,5 | 4,5 | 70 | 12 | 3,5 | 2,7 | ....00005 | 20,47 | 24,57 | 26,16 |
| MF 5,5 x 0,5 | 5 | 80 | 12 | 4 | 3 | ....00055 | 26,81 | 32,11 | 34,12 |
| MF 6 x 0,5 | 5,5 | 80 | 14 | 4,5 | 3,4 | ....05006 | 21,85 | 26,66 | 28,67 |
| MF 6 x 0,75 | 5,3 | 80 | 14 | 4,5 | 3,4 | ....07506 | 20,47 | 25,13 | 27,14 |
| MF 7 x 0,75 | 6,2 | 80 | 14 | 5,5 | 4,3 | ....07507 | 22,34 | 27,68 | 30,07 |
| MF 8 x 0,75 | 7,3 | 80 | 18 | 6 | 4,9 | ....07508 | 23,36 | 28,80 | 31,19 |
| MF 8 x 1 | 7 | 90 | 20 | 6 | 4,9 | ....10008 | 21,22 | 26,45 | 28,84 |
| MF 10 x 0,75 | 9,2 | 90 | 20 | 7 | 5,5 | ....07510 | 25,95 | 32,24 | 35,11 |
| MF 10 x 1 | 9 | 90 | 20 | 7 | 5,5 | ....10010 | 26,67 | 33,03 | 35,90 |
| MF 10 x 1,25 | 8,8 | 100 | 20 | 7 | 5,5 | ....12510 | 26,67 | 33,03 | 35,90 |
| MF 11 x 1 | 10 | 90 | 20 | 8 | 6,2 | ....10011 | 32,37 | 39,30 | 42,18 |
| MF 12 x 1 | 11 | 100 | 20 | 9 | 7 | ....10012 | 31,18 | 37,99 | 40,86 |
| MF 12 x 1,25 | 10,8 | 100 | 20 | 9 | 7 | ....12512 | 30,27 | 36,99 | 39,87 |
| MF 12 x 1,5 | 10,5 | 100 | 20 | 9 | 7 | ....15012 | 30,27 | 36,99 | 39,87 |
| MF 14 x 1 | 13 | 100 | 20 | 11 | 9 | ....10014 | 37,80 | 45,58 | 48,68 |
| MF 14 x 1,25 | 12,8 | 100 | 20 | 11 | 9 | ....12514 | 42,75 | 51,02 | 54,13 |
| MF 14 x 1,5 | 12,5 | 100 | 20 | 11 | 9 | ....15014 | 42,75 | 51,02 | 54,13 |
| MF 15 x 1 | 14 | 100 | 20 | 12 | 9 | ....10015 | 48,23 | 57,05 | 60,16 |
| MF 15 x 1,5 | 13,5 | 100 | 20 | 12 | 9 | ....15015 | 48,23 | 57,05 | 60,16 |
| MF 16 x 1 | 15 | 100 | 20 | 12 | 9 | ....10016 | 51,56 | 60,71 | 63,82 |
| MF 16 x 1,5 | 14,5 | 100 | 20 | 12 | 9 | ....15016 | 49,88 | 58,87 | 61,97 |
| MF 18 x 1 | 17 | 110 | 24 | 14 | 11 | ....10018 | 64,04 | 76,46 | 81,08 |
| MF 18 x 1,5 | 16,5 | 110 | 24 | 14 | 11 | ....15018 | 58,76 | 70,65 | 75,28 |
| MF 18 x 2 | 16 | 125 | 32 | 14 | 11 | ....20018 | 59,07 | 70,98 | 75,61 |
| MF 20 x 1 | 19 | 125 | 24 | 16 | 12 | ....10020 | 69,41 | 83,81 | 89,56 |
| MF 20 x 1,5 | 18,5 | 125 | 24 | 16 | 12 | ....15020 | 65,88 | 79,93 | 85,68 |
| MF 20 x 2 | 18 | 140 | 32 | 16 | 12 | ....20020 | 62,28 | 75,96 | 81,71 |
| MF 22 x 1 | 21 | 125 | 24 | 18 | 14,5 | ....10022 | 75,45 | 90,45 | 96,20 |
| MF 22 x 1,5 | 20,5 | 125 | 24 | 18 | 14,5 | ....00022 | 71,16 | 85,74 | 91,49 |
| MF 22 x 2 | 20 | 140 | 32 | 18 | 14,5 | ....20022 | 90,09 | 106,56 | 112,31 |
| MF 24 x 1 | 23 | 140 | 27 | 18 | 14,5 | ....10024 | 99,37 | 119,73 | 127,77 |
| MF 24 x 1,5 | 22,5 | 140 | 27 | 18 | 14,5 | ....00024 | 80,05 | 98,48 | 106,52 |
| MF 24 x 2 | 22 | 140 | 27 | 18 | 14,5 | ....20024 | 101,20 | 121,74 | 129,78 |
| MF 25 x 1,5 | 23,5 | 140 | 27 | 18 | 14,5 | ....15025 | 110,58 | 132,07 | 140,11 |
| MF 26 x 1,5 | 24,5 | 140 | 27 | 18 | 14,5 | ....15026 | 94,31 | 115,57 | 124,71 |
| MF 27 x 1,5 | 25,5 | 140 | 27 | 20 | 16 | ....15027 | 100,03 | 121,86 | 131,00 |
| MF 27 x 2 | 25 | 140 | 27 | 20 | 16 | ....20027 | 101,20 | 123,15 | 132,29 |
| MF 28 x 1,5 | 26,5 | 150 | 27 | 22 | 18 | ....15028 | 108,76 | 143,81 | 162,44 |
| MF 28 x 2 | 26 | 150 | 27 | 22 | 18 | ....20028 | 112,14 | 147,53 | 166,16 |
| MF 30 x 1,5 | 28,5 | 150 | 27 | 22 | 18 | ....15030 | 115,43 | 151,14 | 169,77 |
| MF 30 x 2 | 28 | 150 | 27 | 22 | 18 | ....20030 | 115,43 | 151,14 | 169,77 |
| MF 33 x 2 | 31 | 160 | 30 | 25 | 20 | ....20033 | 147,17 | 188,75 | 209,48 |
| MF 36 x 3 | 33 | 200 | 56 | 28 | 22 | ....30036 | 194,34 | 249,33 | 276,77 |

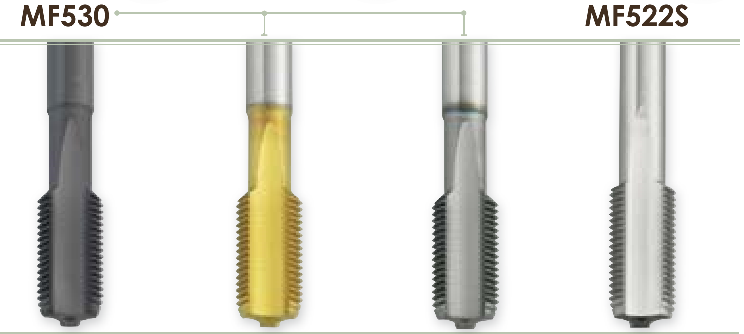
carmon

MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

**MF 530** DIN 374 0° 60° 6H

**MF 522S** DIN 374 0° 60° 6H



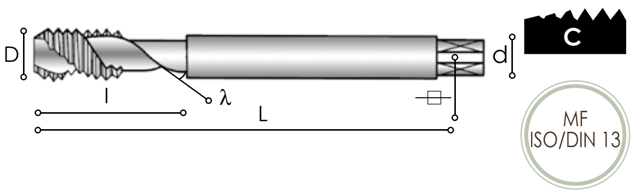




| D | | L | l | d | | CODE | HSS+5%Co 5530..... € | HSS+5%Co 6530..... € QUARTZ | HSS+5%Co 7530..... € TITANITE | HSS+5%Co 5522..... € |
|---|---|---|---|---|---|---|---|---|---|---|
| MF 4 x 0,5 | 3,5 | 63 | 10 | 2,8 | 2,1 | ....00004 | 18,56 | 21,93 | 23,08 | 35,71 |
| MF 5 x 0,5 | 4,5 | 70 | 12 | 3,5 | 2,7 | ....00005 | 18,87 | 22,81 | 25,38 | 35,71 |
| MF 6 x 0,5 | 5,5 | 80 | 14 | 4,5 | 3,4 | ....05006 | 20,03 | 24,66 | 26,67 | |
| MF 6 x 0,75 | 5,3 | 80 | 14 | 4,5 | 3,4 | ....07506 | 20,77 | 25,47 | 27,48 | 39,38 |
| MF 7 x 0,75 | 6,2 | 80 | 14 | 5,5 | 4,3 | ....07507 | | | | 35,14 |
| MF 8 x 0,75 | 7,3 | 80 | 18 | 6 | 4,9 | ....07508 | 20,77 | 25,47 | 28,34 | 35,14 |
| MF 8 x 1 | 7 | 90 | 20 | 6 | 4,9 | ....10008 | 18,87 | 23,86 | 26,25 | 32,13 |
| MF 9 x 1 | 8 | 90 | 20 | 7 | 5,5 | ....10009 | | | | 36,22 |
| MF 10 x 0,75 | 9,2 | 90 | 20 | 7 | 5,5 | ....07510 | | | | 39,50 |
| MF 10 x 1 | 9 | 90 | 20 | 7 | 5,5 | ....10010 | 20,81 | 26,59 | 29,46 | 35,14 |
| MF 10 x 1,25 | 8,8 | 100 | 20 | 7 | 5,5 | ....12510 | 22,44 | 28,37 | 31,25 | 35,14 |
| MF 11 x 1 | 10 | 90 | 20 | 8 | 6,2 | ....10011 | | | | 42,42 |
| MF 12 x 1 | 11 | 100 | 20 | 9 | 7 | ....10012 | 24,20 | 30,31 | 33,19 | 41,18 |
| MF 12 x 1,25 | 10,8 | 100 | 20 | 9 | 7 | ....12512 | 28,42 | 34,95 | 37,83 | 41,18 |
| MF 12 x 1,5 | 10,5 | 100 | 20 | 9 | 7 | ....15012 | 22,99 | 28,98 | 31,86 | 41,18 |
| MF 14 x 1 | 13 | 100 | 20 | 11 | 9 | ....10014 | 35,50 | 43,04 | 46,15 | 52,33 |
| MF 14 x 1,25 | 12,8 | 100 | 20 | 11 | 9 | ....12514 | 35,50 | 43,04 | 46,15 | 52,33 |
| MF 14 x 1,5 | 12,5 | 100 | 20 | 11 | 9 | ....00014 | 32,63 | 39,89 | 43,00 | 52,33 |
| MF 15 x 1 | 14 | 100 | 20 | 12 | 9 | ....10015 | | | | 71,51 |
| MF 16 x 1 | 15 | 100 | 20 | 12 | 9 | ....10016 | 40,92 | 49,01 | 52,12 | 66,59 |
| MF 16 x 1,5 | 14,5 | 100 | 20 | 12 | 9 | ....00016 | 35,62 | 43,18 | 46,29 | 59,37 |
| MF 18 x 1 | 17 | 110 | 24 | 14 | 11 | ....10018 | 53,03 | 64,35 | 68,97 | 76,34 |
| MF 18 x 1,5 | 16,5 | 110 | 24 | 14 | 11 | ....00018 | 42,96 | 53,27 | 57,90 | 76,34 |
| MF 18 x 2 | 16 | 125 | 32 | 14 | 11 | ....20018 | 53,03 | 64,35 | 68,97 | |
| MF 20 x 1 | 19 | 125 | 24 | 16 | 12 | ....10020 | 62,24 | 75,92 | 81,67 | 84,26 |
| MF 20 x 1,5 | 18,5 | 125 | 24 | 16 | 12 | ....00020 | 47,50 | 59,71 | 65,46 | 84,26 |
| MF 20 x 2 | 18 | 140 | 32 | 16 | 12 | ....20020 | 62,12 | 75,79 | 81,54 | |
| MF 22 x 1 | 21 | 125 | 24 | 18 | 14,5 | ....10022 | 68,56 | 82,87 | 88,62 | 99,28 |
| MF 22 x 1,5 | 20,5 | 125 | 24 | 18 | 14,5 | ....00022 | 55,61 | 68,63 | 74,38 | 99,28 |
| MF 22 x 2 | 20 | 140 | 32 | 18 | 14,5 | ....20022 | 66,20 | 80,28 | 86,03 | |
| MF 24 x 1 | 23 | 140 | 27 | 18 | 14,5 | ....10024 | 87,13 | 106,27 | 114,31 | 114,58 |
| MF 24 x 1,5 | 22,5 | 140 | 27 | 18 | 14,5 | ....00024 | 59,30 | 75,66 | 83,70 | 114,58 |
| MF 24 x 2 | 22 | 140 | 27 | 18 | 14,5 | ....20024 | 77,17 | 95,32 | 103,36 | 141,83 |

# MF 507

DIN 374 | λ 35° | 60° | 6H

MF507




| D | | L | l | d | | CODE | HSS+5%Co 5507..... € | HSS+5%Co 6507..... € QUARTZ | HSS+5%Co 7507..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|
| MF 4 x 0,5 | 3,5 | 63 | 7 | 2,8 | 2,1 | ....00004 | 21,55 | 25,22 | 26,37 |
| MF 5 x 0,5 | 4,5 | 70 | 8 | 3,5 | 2,7 | ....00005 | 21,93 | 26,18 | 27,77 |
| MF 6 x 0,5 | 5,5 | 80 | 10 | 4,5 | 3,4 | ....00006 | 21,93 | 26,74 | 28,75 |
| MF 8 x 1 | 7 | 90 | 13 | 6 | 4,9 | ....00008 | 22,12 | 27,44 | 29,82 |
| MF 10 x 1 | 9 | 90 | 13 | 7 | 5,5 | ....00010 | 24,36 | 30,49 | 33,37 |
| MF 10 x 1,25 | 8,8 | 100 | 15 | 7 | 5,5 | ....12510 | 31,35 | 38,18 | 41,05 |
| MF 12 x 1 | 11 | 100 | 15 | 9 | 7 | ....10012 | 29,63 | 36,28 | 39,16 |
| MF 12 x 1,25 | 10,8 | 100 | 15 | 9 | 7 | ....12512 | 38,08 | 45,58 | 48,45 |
| MF 12 x 1,5 | 10,5 | 100 | 15 | 9 | 7 | ....15012 | 28,01 | 34,51 | 37,38 |
| MF 14 x 1,25 | 12,8 | 100 | 15 | 11 | 9 | ....12514 | 46,99 | 55,69 | 58,79 |
| MF 14 x 1,5 | 12,5 | 100 | 15 | 11 | 9 | ....00014 | 39,88 | 47,86 | 50,97 |
| MF 16 x 1,5 | 14,5 | 100 | 15 | 12 | 9 | ....00016 | 47,88 | 56,67 | 59,78 |
| MF 18 x 1,5 | 16,5 | 110 | 17 | 14 | 11 | ....00018 | 54,62 | 66,09 | 70,72 |
| MF 20 x 1,5 | 18,5 | 125 | 17 | 16 | 12 | ....00020 | 61,15 | 74,72 | 80,47 |
| MF 22 x 1,5 | 20,5 | 125 | 17 | 18 | 14,5 | ....00022 | 69,55 | 83,97 | 89,72 |
| MF 24 x 1,5 | 22,5 | 140 | 20 | 18 | 14,5 | ....00024 | 85,05 | 103,98 | 112,02 |
| MF 24 x 2 | 22 | 140 | 20 | 18 | 14,5 | ....20024 | 92,60 | 112,29 | 120,33 |
| MF 25 x 1 | 24 | 140 | 20 | 18 | 14,5 | ....10025 | 140,69 | 165,18 | 173,23 |
| MF 25 x 1,5 | 23,5 | 140 | 20 | 18 | 14,5 | ....15025 | 140,69 | 165,18 | 173,23 |
| MF 26 x 1,5 | 24,5 | 140 | 20 | 18 | 16 | ....15026 | 135,56 | 160,94 | 170,08 |
| MF 27 x 1,5 | 25,5 | 140 | 20 | 20 | 16 | ....15027 | 135,56 | 160,94 | 170,08 |
| MF 27 x 2 | 25 | 140 | 20 | 20 | 16 | ....20027 | 140,69 | 166,59 | 175,73 |
| MF 28 x 1 | 27 | 140 | 20 | 20 | 16 | ....10028 | 173,78 | 202,99 | 212,13 |
| MF 28 x 1,5 | 26,5 | 140 | 20 | 20 | 16 | ....15028 | 173,78 | 202,99 | 212,13 |
| MF 28 x 2 | 26 | 140 | 20 | 20 | 16 | ....20028 | 173,78 | 202,99 | 212,13 |
| MF 30 x 1,5 | 28,5 | 150 | 22 | 22 | 18 | ....15030 | 173,78 | 215,33 | 233,96 |
| MF 30 x 2 | 28 | 150 | 22 | 22 | 18 | ....20030 | 171,65 | 212,98 | 231,61 |
| MF 32 x 0,5 | 31,5 | 150 | 22 | 22 | 20 | ....00032 | 183,23 | 228,41 | 249,14 |
| MF 32 x 1 | 31 | 150 | 22 | 22 | 20 | ....10032 | 183,23 | 228,41 | 249,14 |
| MF 32 x 1,5 | 30,5 | 150 | 22 | 22 | 20 | ....15032 | 183,23 | 228,41 | 249,14 |
| MF 32 x 2 | 30 | 150 | 22 | 22 | 20 | ....20032 | 182,30 | 227,39 | 248,12 |
| MF 33 x 2 | 31 | 160 | 24 | 25 | 20 | ....20033 | 223,78 | 273,02 | 293,75 |
| MF 34 x 1,5 | 32,5 | 170 | 24 | 28 | 22 | ....15034 | 263,15 | 316,32 | 337,06 |
| MF 36 x 1,5 | 34,5 | 170 | 24 | 28 | 22 | ....15036 | 285,94 | 345,41 | 369,23 |
| MF 36 x 3 | 33 | 200 | 30 | 28 | 22 | ....30036 | 285,94 | 350,09 | 377,53 |

carmon

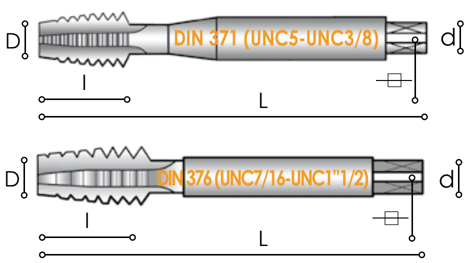
MASCHI A MACCHINA PER FORI PASSANTI MACHINE TAPS FOR THROUGHT HOLES MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER TARAUDS MACHINE POUR TROUS DEBOUCHANTS MACHOS DE MAQUINA PARA AGUJEROS PASANTES

## UNC 560

DIN 371 DIN 376

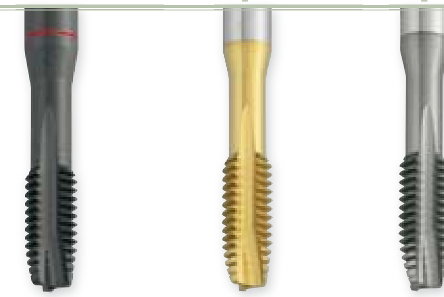
λ 0° 60° 2B

UNC560





UNC ANSI B1.1



| D (") | D (mm) | | L | l | d | ⊏⊐ | CODE | HSS+5%Co 5560..... € | HSS+5%Co 6560..... € QUARTZ | HSS+5%Co 7560..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|
| UNC 5 - 40 | 3,175 | 2,65 | 56 | 10 | 3,5 | 2,7 | ....00540 | 19,97 | 23,49 | 24,64 |
| UNC 6 - 32 | 3,505 | 2,85 | 56 | 12 | 4 | 3 | ....00632 | 18,93 | 22,34 | 23,48 |
| UNC 8 - 32 | 4,166 | 3,5 | 63 | 12 | 4,5 | 3,4 | ....00832 | 18,93 | 22,88 | 24,47 |
| UNC 10 - 24 | 4,826 | 3,9 | 70 | 14 | 6 | 4,9 | ....01024 | 21,02 | 25,18 | 26,77 |
| UNC 12 - 24 | 5,486 | 4,5 | 80 | 18 | 6 | 4,9 | ....01224 | 21,39 | 26,15 | 28,16 |
| UNC 1/4 - 20 | 6,35 | 5,1 | 80 | 18 | 7 | 5,5 | ....01420 | 22,44 | 27,79 | 30,17 |
| UNC 5/16 - 18 | 7,938 | 6,6 | 90 | 20 | 8 | 6,2 | ....51618 | 23,84 | 29,33 | 31,72 |
| UNC 3/8 - 16 | 9,525 | 8 | 100 | 21 | 10 | 8 | ....03816 | 22,98 | 28,98 | 31,85 |
| UNC 7/16 - 14 | 11,11 | 9,4 | 100 | 20 | 8 | 6,2 | ....71614 | 29,49 | 36,13 | 39,01 |
| UNC 1/2 - 13 | 12,7 | 10,8 | 110 | 24 | 9 | 7 | ....01213 | 32,07 | 40,52 | 44,56 |
| UNC 9/16 - 12 | 14,29 | 12,2 | 110 | 28 | 11 | 9 | ....91612 | 51,74 | 62,15 | 66,19 |
| UNC 5/8 - 11 | 15,88 | 13,5 | 110 | 30 | 12 | 9 | ....05811 | 46,57 | 56,47 | 60,51 |
| UNC 3/4 - 10 | 19,05 | 16,5 | 125 | 32 | 14 | 11 | ....03410 | 61,90 | 75,55 | 81,30 |
| UNC 7/8 - 9 | 22,23 | 19,5 | 140 | 32 | 18 | 14,5 | ....07809 | 76,78 | 94,88 | 102,92 |
| UNC 1" - 8 | 25,4 | 22,25 | 160 | 36 | 20 | 16 | ....01008 | 104,33 | 138,94 | 157,57 |
| UNC 1" 1/8 - 7 | 28,58 | 25 | 180 | 40 | 22 | 18 | ....11807 | 142,85 | 181,31 | 199,94 |
| UNC 1" 1/4 - 7 | 31,75 | 28 | 180 | 40 | 25 | 20 | ....11407 | 172,65 | 216,78 | 237,51 |
| UNC 1" 3/8 - 6 | 34,93 | 30,75 | 200 | 45 | 28 | 22 | ....13806 | 202,03 | 253,13 | 277,00 |
| UNC 1" 1/2 - 6 | 38,1 | 34 | 200 | 45 | 32 | 24 | ....11206 | 248,00 | 308,35 | 335,80 |

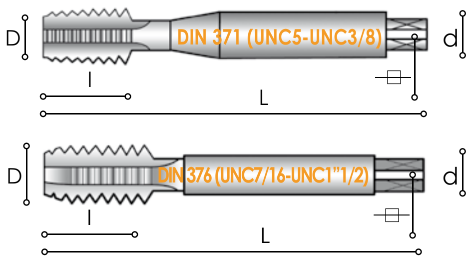
# UNC 561

DIN 371 DIN 376

0°

60°

2B




C

UNC ANSI B1.1

UNC561

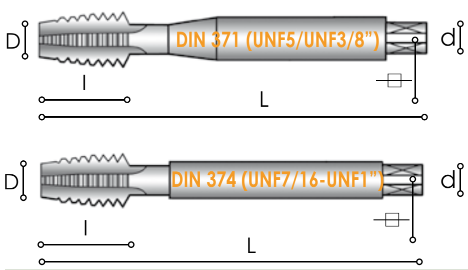
| D (“) | D (mm) | | L | l | d | | CODE | HSS+5%Co 5561….. € | HSS+5%Co 6561….. € QUARTZ | HSS+5%Co 7561….. € TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|
| UNC 5 - 40 | 3,175 | 2,65 | 56 | 10 | 3,5 | 2,7 | ….00540 | 16,85 | 20,05 | 21,19 |
| UNC 6 - 32 | 3,505 | 2,85 | 56 | 12 | 4 | 3 | ….00632 | 21,57 | 25,24 | 26,39 |
| UNC 8 - 32 | 4,166 | 3,5 | 63 | 12 | 4,5 | 3,4 | ….00832 | 15,61 | 19,23 | 20,82 |
| UNC 10 - 24 | 4,826 | 3,9 | 70 | 14 | 6 | 4,9 | ….01024 | 16,90 | 20,65 | 22,24 |
| UNC 12 - 24 | 5,486 | 4,5 | 80 | 18 | 6 | 4,9 | ….01224 | 17,27 | 21,62 | 23,63 |
| UNC 1/4 - 20 | 6,35 | 5,1 | 80 | 18 | 7 | 5,5 | ….01420 | 17,51 | 22,37 | 24,76 |
| UNC 5/16 - 18 | 7,938 | 6,6 | 90 | 20 | 8 | 6,2 | ….51618 | 18,81 | 23,80 | 26,18 |
| UNC 3/8 - 16 | 9,525 | 8 | 100 | 21 | 10 | 8 | ….03816 | 22,25 | 28,16 | 31,04 |
| UNC 7/16 - 14 | 11,11 | 9,4 | 100 | 20 | 8 | 6,2 | ….71614 | 29,00 | 35,60 | 38,47 |
| UNC 1/2 - 13 | 12,7 | 10,8 | 110 | 24 | 9 | 7 | ….01213 | 29,49 | 37,68 | 41,72 |
| UNC 9/16 - 12 | 14,29 | 12,2 | 110 | 28 | 11 | 9 | ….91612 | 33,62 | 42,22 | 46,26 |
| UNC 5/8 - 11 | 15,88 | 13,5 | 110 | 30 | 12 | 9 | ….05811 | 42,40 | 51,88 | 55,92 |
| UNC 3/4 - 10 | 19,05 | 16,5 | 125 | 32 | 14 | 11 | ….03410 | 59,20 | 72,58 | 78,33 |
| UNC 7/8 - 9 | 22,23 | 19,5 | 140 | 32 | 18 | 14,5 | ….07809 | 72,81 | 90,52 | 98,56 |
| UNC 1" - 8 | 25,4 | 22,25 | 160 | 36 | 20 | 16 | ….01008 | 99,42 | 133,53 | 152,16 |
| UNC 1" 1/8 - 7 | 28,58 | 25 | 180 | 40 | 22 | 18 | ….11807 | 136,10 | 173,88 | 192,51 |
| UNC 1" 1/4 - 7 | 31,75 | 28 | 180 | 40 | 25 | 20 | ….11407 | 163,26 | 206,44 | 227,17 |
| UNC 1" 3/8 - 6 | 34,93 | 30,75 | 200 | 45 | 28 | 22 | ….13806 | 225,56 | 279,02 | 302,88 |
| UNC 1" 1/2 - 6 | 38,1 | 34 | 200 | 45 | 32 | 24 | ….11206 | 240,98 | 300,63 | 328,07 |

**MASCHI A MACCHINA PER FORI PASSANTI** MACHINE TAPS FOR THROUGHT HOLES **MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER** TARAUDS MACHINE POUR TROUS DEBOUCHANTS **MACHOS DE MAQUINA PARA AGUJEROS PASANTES**

## UNF 562

DIN 371 DIN 374

0° 60° 2B




B

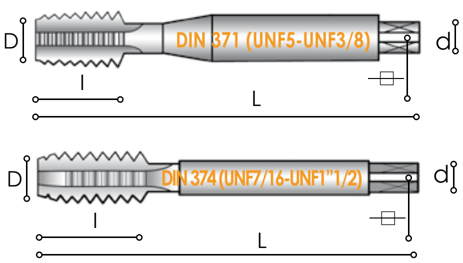
UNF ANSI B1.1

UNF562

| D (") | D (mm) | | L | l | d | | CODE | HSS+5%Co 5562..... € | HSS+5%Co 6562..... € QUARTZ | HSS+5%Co 7562..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|
| UNF 5 - 44 | 3,175 | 2,7 | 56 | 10 | 3,5 | 2,7 | ....00544 | 22,13 | 25,86 | 27,00 |
| UNF 6 - 40 | 3,505 | 2,95 | 56 | 12 | 4 | 3 | ....00640 | 22,13 | 25,86 | 27,00 |
| UNF 8 - 36 | 4,166 | 3,5 | 63 | 12 | 4,5 | 3,4 | ....00836 | 22,13 | 26,40 | 27,99 |
| UNF 10 - 32 | 4,826 | 4,1 | 70 | 14 | 6 | 4,9 | ....01032 | 22,50 | 26,80 | 28,39 |
| UNF 12 - 28 | 5,486 | 4,7 | 80 | 18 | 6 | 4,9 | ....01228 | 24,21 | 29,25 | 31,26 |
| UNF 1/4 - 28 | 6,35 | 5,5 | 80 | 18 | 7 | 5,5 | ....01428 | 24,21 | 29,74 | 32,12 |
| UNF 5/16 - 24 | 7,938 | 6,9 | 90 | 20 | 8 | 6,2 | ....51624 | 25,26 | 30,89 | 33,28 |
| UNF 3/8 - 24 | 9,525 | 8,5 | 100 | 21 | 10 | 8 | ....03824 | 28,27 | 34,79 | 37,66 |
| UNF 7/16 - 20 | 11,11 | 9,9 | 100 | 20 | 8 | 6,2 | ....71620 | 34,42 | 41,55 | 44,43 |
| UNF 1/2 - 20 | 12,7 | 11,5 | 100 | 20 | 9 | 7 | ....01220 | 34,42 | 41,86 | 44,96 |
| UNF 9/16 - 18 | 14,29 | 12,9 | 100 | 20 | 11 | 9 | ....91618 | 53,33 | 62,66 | 65,77 |
| UNF 5/8 - 18 | 15,88 | 14,5 | 100 | 20 | 12 | 9 | ....05818 | 49,16 | 58,07 | 61,18 |
| UNF 3/4 - 16 | 19,05 | 17,5 | 110 | 24 | 14 | 11 | ....03416 | 70,11 | 84,57 | 90,32 |
| UNF 7/8 - 14 | 22,23 | 20,4 | 125 | 24 | 18 | 14,5 | ....07814 | 81,97 | 100,59 | 108,63 |
| UNF 1" - 12 | 25,4 | 23,25 | 140 | 27 | 18 | 14,5 | ....01012 | 104,76 | 127,06 | 136,20 |

# UNF 563

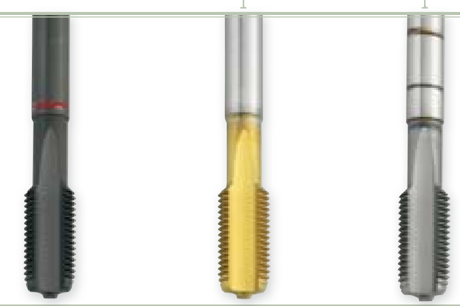
DIN 371 DIN 374 λ 0° 60° 2B




C

UNF ANSI B1.1

UNF563



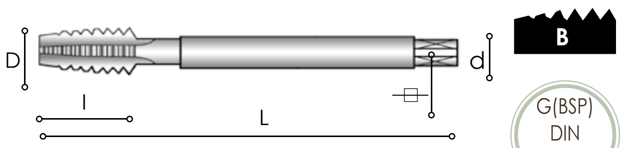
| D (") | D (mm) | | L | l | d | ⊡ | CODE | HSS+5%Co 5563..... € | HSS+5%Co 6563..... € QUARTZ | HSS+5%Co 7563..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|
| UNF 5 - 44 | 3,175 | 2,7 | 56 | 10 | 3,5 | 2,7 | ....00544 | 20,03 | 23,56 | 24,70 |
| UNF 6 - 40 | 3,505 | 2,95 | 56 | 12 | 4 | 3 | ....00640 | 19,12 | 22,55 | 23,69 |
| UNF 8 - 36 | 4,166 | 3,5 | 63 | 12 | 4,5 | 3,4 | ....00836 | 19,12 | 23,09 | 24,68 |
| UNF 10 - 32 | 4,826 | 4,1 | 70 | 14 | 6 | 4,9 | ....01032 | 20,03 | 24,09 | 25,68 |
| UNF 12 - 28 | 5,486 | 4,7 | 80 | 18 | 6 | 4,9 | ....01228 | 22,25 | 27,09 | 29,10 |
| UNF 1/4 - 28 | 6,35 | 5,5 | 80 | 18 | 7 | 5,5 | ....01428 | 22,25 | 27,58 | 29,96 |
| UNF 5/16 - 24 | 7,938 | 6,9 | 90 | 20 | 8 | 6,2 | ....51624 | 23,29 | 28,73 | 31,12 |
| UNF 3/8 - 24 | 9,525 | 8,5 | 100 | 21 | 10 | 8 | ....03824 | 27,53 | 33,97 | 36,85 |
| UNF 7/16 - 20 | 11,11 | 9,9 | 100 | 20 | 8 | 6,2 | ....71620 | 35,39 | 42,62 | 45,50 |
| UNF 1/2 - 20 | 12,7 | 11,5 | 100 | 20 | 9 | 7 | ....01220 | 35,39 | 42,93 | 46,04 |
| UNF 9/16 - 18 | 14,29 | 12,9 | 100 | 20 | 11 | 9 | ....91618 | 62,12 | 72,33 | 75,44 |
| UNF 5/8 - 18 | 15,88 | 14,5 | 100 | 20 | 12 | 9 | ....05818 | 53,46 | 62,81 | 65,92 |
| UNF 3/4 - 16 | 19,05 | 17,5 | 110 | 24 | 14 | 11 | ....03416 | 72,01 | 86,67 | 92,42 |
| UNF 7/8 - 14 | 22,23 | 20,4 | 125 | 24 | 18 | 14,5 | ....07814 | 88,18 | 107,42 | 115,46 |
| UNF 1" - 12 | 25,4 | 23,25 | 140 | 27 | 18 | 14,5 | ....01012 | 119,81 | 143,62 | 152,76 |
| UNF 1" 1/8 - 12 | 28,58 | 26,5 | 150 | 28 | 22 | 18 | ....11812 | 145,26 | 183,95 | 202,58 |
| UNF 1" 1/4 - 12 | 31,75 | 29,5 | 150 | 28 | 22 | 18 | ....11412 | 168,91 | 212,66 | 233,39 |
| UNF 1" 3/8 - 12 | 34,93 | 32,75 | 170 | 28 | 28 | 22 | ....13812 | 251,42 | 303,42 | 324,15 |
| UNF 1" 1/2 - 12 | 38,1 | 36 | 170 | 30 | 32 | 24 | ....11212 | 288,66 | 348,40 | 372,22 |

carmon

**MASCHI A MACCHINA PER FORI PASSANTI** MACHINE TAPS FOR THROUGHT HOLES **MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER** TARAUDS MACHINE POUR TROUS DEBOUCHANTS **MACHOS DE MAQUINA PARA AGUJEROS PASANTES**

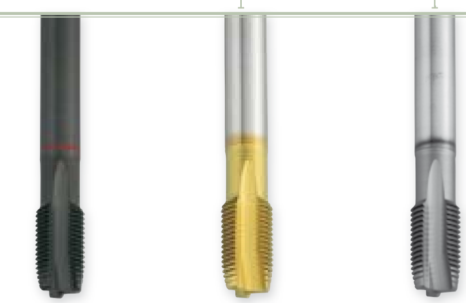
## G 550

DIN 5156 λ 0° 55° A




G(BSP) DIN ISO228/1

G550



| D (") | D (mm) | | L | l | d | | CODE | HSS+5%Co 5550..... € | HSS+5%Co 6550..... € QUARTZ | HSS+5%Co 7550..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|
| G 1/8 - 28 | 9,73 | 8,8 | 90 | 18 | 7 | 5,5 | ....00108 | 29,06 | 35,66 | 38,54 |
| G 1/4 - 19 | 13,16 | 11,8 | 100 | 22 | 11 | 9 | ....00104 | 38,16 | 45,98 | 49,09 |
| G 3/8 - 19 | 16,66 | 15,25 | 100 | 22 | 12 | 9 | ....00308 | 50,26 | 60,08 | 63,77 |
| G 1/2 - 14 | 20,96 | 19 | 125 | 25 | 16 | 12 | ....00102 | 65,56 | 79,57 | 85,32 |
| G 5/8 - 14 | 22,91 | 21 | 125 | 25 | 18 | 14,5 | ....00508 | 81,35 | 99,91 | 107,95 |
| G 3/4 - 14 | 26,44 | 24,5 | 140 | 28 | 20 | 16 | ....00304 | 105,44 | 127,81 | 136,95 |
| G 7/8 - 14 | 30,20 | 28,25 | 150 | 30 | 22 | 18 | ....00708 | 136,52 | 177,03 | 197,77 |
| G 1" - 11 | 33,25 | 30,75 | 160 | 30 | 25 | 20 | ....00100 | 148,50 | 190,21 | 210,95 |
| G 1" 1/8 - 11 | 37,90 | 35 | 170 | 30 | 28 | 22 | ....01108 | 218,82 | 271,58 | 295,40 |
| G 1" 1/4 - 11 | 41,91 | 39,5 | 170 | 30 | 32 | 24 | ....01104 | 276,38 | 346,31 | 378,94 |
| G 1" 3/8 - 11 | 44,32 | 42 | 180 | 32 | 36 | 29 | ....01308 | 328,80 | 403,97 | 436,60 |
| G 1" 1/2 - 11 | 47,80 | 45 | 190 | 32 | 36 | 29 | ....01102 | 377,94 | 465,41 | 503,77 |
| G 1" 3/4 - 11 | 53,75 | 51 | 190 | 32 | 40 | 32 | ....01304 | 498,34 | 612,27 | 648,40 |
| G 2" - 11 | 59,61 | 57 | 220 | 40 | 45 | 35 | ....00200 | 605,13 | 739,62 | 781,31 |

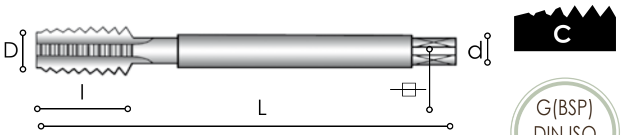
carmon

MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

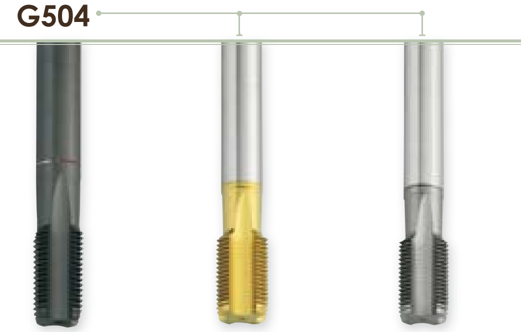


## G 504

DIN 5156 — λ 0° — 55° — A




G(BSP) DIN ISO 228/1




| D (") | D (mm) | | L | l | d | | CODE | HSS+5%Co 5504..... € | HSS+5%Co 6504..... € QUARTZ | HSS+5%Co 7504..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|
| G 1/8 - 28 | 9,73 | 8,8 | 90 | 18 | 7 | 5,5 | ....00108 | 21,14 | 26,95 | 29,82 |
| G 1/4 - 19 | 13,16 | 11,8 | 100 | 22 | 11 | 9 | ....00104 | 28,52 | 35,36 | 38,47 |
| G 3/8 - 19 | 16,66 | 15,25 | 100 | 22 | 12 | 9 | ....00308 | 40,01 | 48,80 | 52,49 |
| G 1/2 - 14 | 20,96 | 19 | 125 | 25 | 16 | 12 | ....00102 | 53,83 | 66,67 | 72,42 |
| G 5/8 - 14 | 22,91 | 21 | 125 | 25 | 18 | 14,5 | ....00508 | 69,43 | 86,80 | 94,84 |
| G 3/4 - 14 | 26,44 | 24,5 | 140 | 28 | 20 | 16 | ....00304 | 82,76 | 102,87 | 112,01 |
| G 7/8 - 14 | 30,20 | 28,25 | 150 | 28 | 22 | 18 | ....00708 | 117,23 | 155,81 | 176,54 |
| G 1" - 11 | 33,25 | 30,75 | 160 | 30 | 25 | 20 | ....00100 | 135,18 | 175,56 | 196,29 |
| G 1" 1/8 - 11 | 37,90 | 35 | 170 | 30 | 28 | 22 | ....00118 | 196,44 | 246,96 | 270,78 |
| G 1" 1/4 - 11 | 41,91 | 39,5 | 170 | 30 | 32 | 24 | ....00114 | 241,40 | 307,83 | 340,46 |
| G 1" 3/8 - 11 | 44,32 | 42 | 180 | 32 | 36 | 29 | ....01308 | 295,10 | 366,90 | 399,53 |
| G 1" 1/2 - 11 | 47,80 | 45 | 190 | 32 | 36 | 29 | ....01102 | 322,50 | 404,42 | 442,78 |
| G 1" 3/4 - 11 | 53,75 | 51 | 190 | 32 | 40 | 32 | ....01304 | 430,95 | 531,76 | 572,15 |
| G 2" - 11 | 59,61 | 57 | 220 | 40 | 45 | 35 | ....00200 | 481,76 | 595,72 | 641,89 |

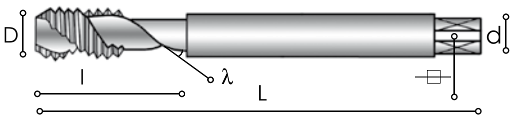
carmon

MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

# G 551

DIN 5156 λ 35° 55° A

NEW G551





G(BSP) DIN ISO 228/1

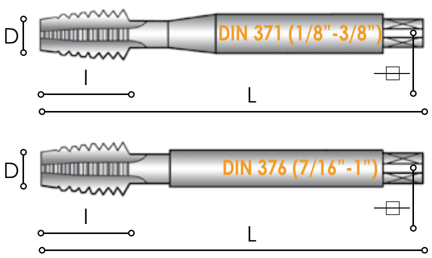
| D (") | D (mm) | | L | l | d | | CODE | HSS+5%Co 5551..... € | HSS+5%Co 6551..... € QUARTZ | HSS+5%Co 7551..... € TITANITE |
|---|---|---|---|---|---|---|---|---|---|---|
| G 1/8 - 28 | 9,73 | 8,8 | 90 | 18 | 7 | 5,5 | ....00108 | 36,97 | 44,36 | 47,24 |
| G 1/4 - 19 | 13,16 | 11,8 | 100 | 22 | 11 | 9 | ....00104 | 66,55 | 77,21 | 80,31 |
| G 3/8 - 19 | 16,66 | 15,25 | 100 | 22 | 12 | 9 | ....00308 | 65,76 | 77,12 | 80,82 |
| G 1/2 - 14 | 20,96 | 19 | 125 | 25 | 16 | 12 | ....00102 | 87,62 | 103,84 | 109,59 |
| G 5/8 - 14 | 22,91 | 21 | 125 | 25 | 18 | 14,5 | ....00508 | 136,25 | 160,29 | 168,34 |
| G 3/4 - 14 | 26,44 | 24,5 | 140 | 28 | 20 | 16 | ....00304 | 154,92 | 182,24 | 191,38 |
| G 7/8 - 14 | 30,20 | 28,25 | 150 | 28 | 22 | 18 | ....00708 | 198,12 | 244,79 | 265,52 |
| G 1" - 11 | 33,25 | 30,75 | 160 | 30 | 25 | 20 | ....00100 | 291,54 | 347,55 | 368,28 |

MASCHI A MACCHINA PER FORI PASSANTI MACHINE TAPS FOR THROUGHT HOLES MASCHINEN-GEWINDEBOHRER FüR DURCHGANGSLÖCHER TARAUDS MACHINE POUR TROUS DEBOUCHANTS MACHOS DE MAQUINA PARA AGUJEROS PASANTES

# W 580

DIN 371 DIN 376 λ 0° 55° 6H

NEW W580




d


BSW BS84:1956

| D (“) | D (mm) | | L | l | d | | CODE | HSS+5%Co 5580..... € |
|---|---|---|---|---|---|---|---|---|
| W 1/8-40 | 3,175 | 2,5 | 56 | 10 | 3,5 | 2,7 | ....00108 | 18,06 |
| W 3/16-24 | 4,762 | 3,6 | 70 | 14 | 6 | 4,9 | ....00316 | 18,33 |
| W 1/4-20 | 6,35 | 5,1 | 80 | 18 | 7 | 5,5 | ....00104 | 19,33 |
| W 5/16-18 | 7,938 | 6,5 | 90 | 20 | 8 | 6,2 | ....00516 | 20,93 |
| W 3/8-16 | 9,525 | 7,9 | 100 | 21 | 10 | 8 | ....00308 | 23,74 |
| W 7/16-14 | 11,11 | 9,25 | 100 | 20 | 8 | 6,2 | ....00716 | 33,58 |
| W 1/2-12 | 12,7 | 10,5 | 110 | 24 | 9 | 7 | ....00102 | 34,21 |
| W 5/8-11 | 15,88 | 13,5 | 110 | 30 | 12 | 9 | ....00508 | 46,92 |
| W 3/4-10 | 19,05 | 16,5 | 125 | 32 | 14 | 11 | ....00304 | 66,31 |
| W 7/8-9 | 22,23 | 19,25 | 140 | 32 | 18 | 14,5 | ....00708 | 93,32 |
| W 1-8 | 25,4 | 22 | 160 | 36 | 18 | 14,5 | ....00100 | 95,30 |

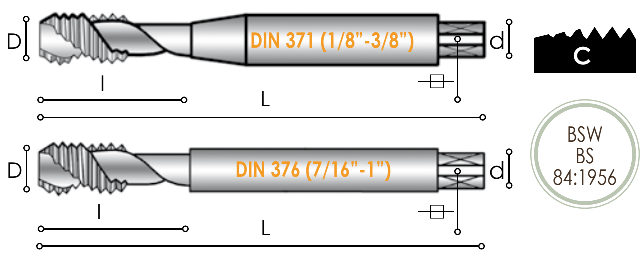
carmon

MASCHI A MACCHINA PER FORI CIECHI MACHINE TAPS FOR BLIND HOLES MASCHINEN-GEWINDEBOHRER FÜR SACKLÖCHER TARAUDS MACHINE POUR TROUS BORGNES MACHOS DE MAQUINA PARA AGUJEROS CIEGOS

## W 581

DIN 371 DIN 376 λ 35° 55° 6H

NEW W581

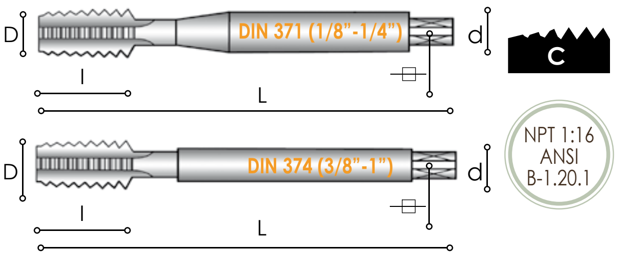



| D (") | D (mm) | | L | l | d | | CODE | HSS+5%Co 5581….. € |
|---|---|---|---|---|---|---|---|---|
| W 1/8-40 | 3,175 | 2,5 | 56 | 5 | 3,5 | 2,7 | ….00108 | 19,84 |
| W 3/16-24 | 4,762 | 3,6 | 70 | 8 | 6 | 4,9 | ….00316 | 20,16 |
| W 1/4-20 | 6,35 | 5,1 | 80 | 12 | 7 | 5,5 | ….00104 | 21,25 |
| W 5/16-18 | 7,938 | 6,5 | 90 | 15 | 8 | 6,2 | ….00516 | 23,03 |
| W 3/8-16 | 9,525 | 7,9 | 100 | 18 | 10 | 8 | ….00308 | 26,60 |
| W 7/16-14 | 11,11 | 9,25 | 100 | 15 | 8 | 6,2 | ….00716 | 37,53 |
| W 1/2-12 | 12,7 | 10,5 | 110 | 18 | 9 | 7 | ….00102 | 37,53 |
| W 5/8-11 | 15,88 | 13,5 | 110 | 20 | 12 | 9 | ….00508 | 50,66 |
| W 3/4-10 | 19,05 | 16,5 | 125 | 25 | 14 | 11 | ….00304 | 78,10 |
| W 7/8-9 | 22,23 | 19,25 | 140 | 25 | 18 | 14,5 | ….00708 | 107,07 |
| W 1-8 | 25,4 | 22 | 160 | 30 | 18 | 14,5 | ….00100 | 103,87 |

# MASCHI A MACCHINA PER FORI PASSANTI E CIECHI
# MACHINE TAPS FOR THROUGHT AND BLIND HOLES
# MASCHINEN-GEWINDEBOHRER FüR DURCHGANGS UND SACKLÖCHER
# TARAUDS MACHINE POUR TROUS DEBOUCHANTS ET BORGNES
# MACHOS DE MAQUINA PARA AGUJEROS PASANTES Y CIECOS

## N 590

DIN 371 DIN 374 λ 0° 60° 2B




NPT 1:16
ANSI
B-1.20.1

NEW
N590

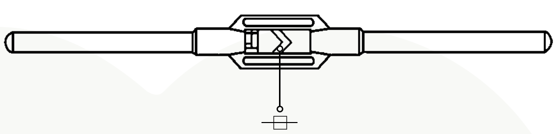
| D (") | | L | l | d | | CODE | HSS+5%Co 5590….. € |
|---|---|---|---|---|---|---|---|
| N 1/8-27 | 8,5 | 90 | 12 | 10 | 8 | ….00108 | 55,52 |
| N 1/4-18 | 11,1 | 100 | 18 | 14 | 11 | ….00104 | 67,09 |
| N 3/8-18 | 14,7 | 110 | 18 | 14 | 11 | ….00308 | 73,36 |
| N 1/2-14 | 18 | 140 | 23 | 16 | 12 | ….00102 | 97,48 |
| N 3/4-14 | 23,25 | 150 | 24 | 20 | 16 | ….00304 | 138,52 |
| N 1"-11.1/2 | 29,25 | 170 | 30 | 25 | 20 | ….00100 | 289,56 |

# GIRAMASCHI REGOLABILI
# ADJUSTABLE TAP WRENCHES
# VESTELLBARE WINDEISEN
# TOURNE A GAUCHE EXTENSIBLE
# GIRAMACHOS AJUSTABLES

## GM 685

DIN 1814

GM685

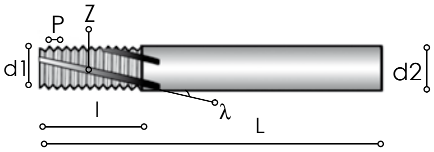


| Nr. | | | CODE | HSS 5685….. € |
|---|---|---|---|---|
| 0 | 2 - 5 | M 1 - 8 | ….00000 | 15,49 |
| 1 | 2 - 6,3 | M 1 - 10 | ….00001 | 16,40 |
| 2 | 3 - 9 | M4 - 12 | ….00002 | 24,21 |
| 3 | 4,9 - 12 | M 5 - 20 | ….00003 | 34,61 |
| 4 | 5,5 - 16 | M 9 - 27 | ….00004 | 48,79 |
| 5 | 7 - 20 | M 13 - 33 | ….00005 | 72,51 |
| 6 | 11 - 24 | M 19 - 39 | ….00006 | 176,14 |
| 7 | 16 - 39 | M 27 - 64 | ….00007 | 176,14 |

FRESE A FILETTARE IN METALLO DURO INTEGRALE SOLID CARBIDE THREADING END MILLS VOLLHARTMETALL GEWINDEFRÄSER FRAISER A FILETER EN CARBURE MONOBLOC FRESAS DE ROSCAR DE METAL DURO MICROGRANO

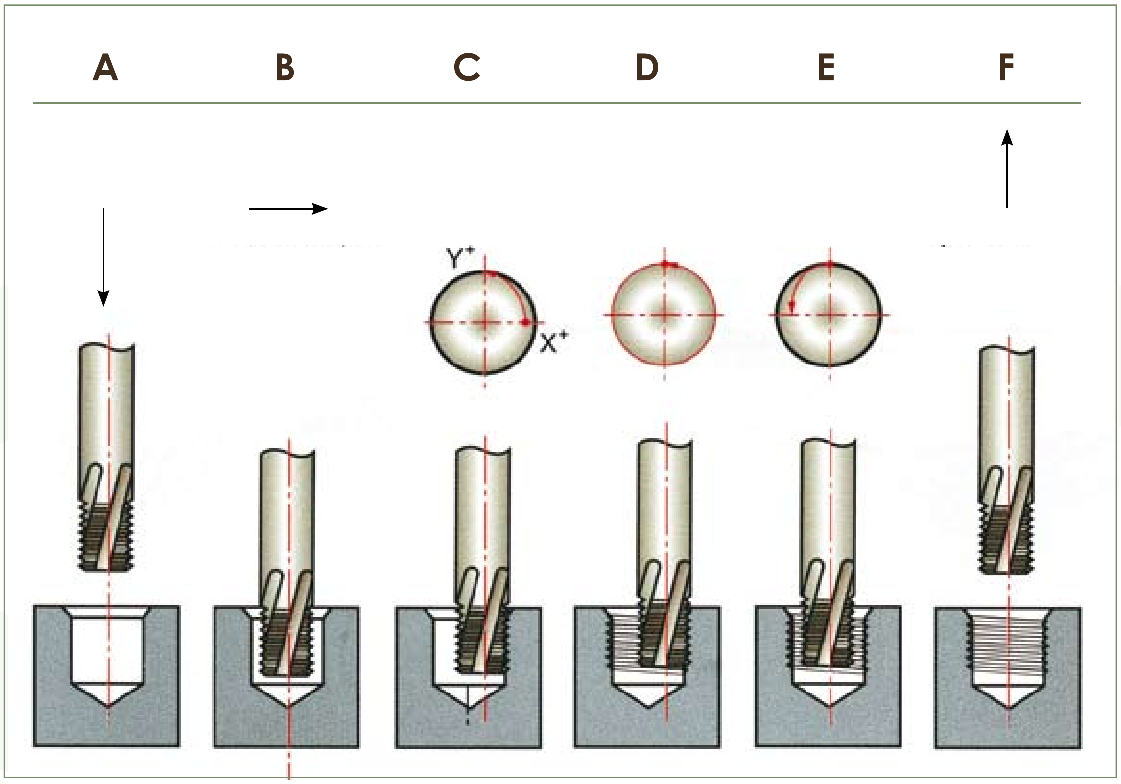
## CL 28MHM

CARMON NORM. M λ 15° 60° 2XD




CL28MHM

| D | P | d1 | L | l | d2 | Z | CODE | Micrograin Carbide Co10 2280….. € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| M6 | 1 | 4,5 | 57 | 13 | 6 | 3 | ….00006 | 147,68 |
| M8 | 1,25 | 6 | 65 | 17,5 | 6 | 3 | ….00008 | 177,32 |
| M10 | 1,5 | 7,5 | 72 | 21 | 8 | 4 | ….00010 | 196,15 |
| M12 | 1,75 | 9,5 | 80 | 26,25 | 10 | 4 | ….00012 | 254,62 |
| M14 | 2 | 10 | 83 | 30 | 10 | 4 | ….00014 | 254,62 |
| M16 | 2 | 12 | 92 | 34 | 12 | 4 | ….00016 | 346,19 |



# CL 29MFHM

CARMON NORM.

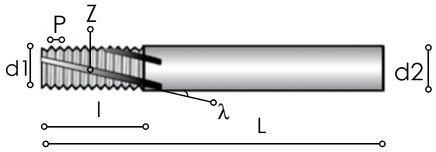
MF

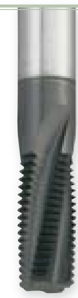
λ 15°

60°

2XD

CL29MFHM



| D | P | d1 | L | l | d2 | Z | CODE | Micrograin Carbide Co10<br>2290.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| M8 | 0.75 | 6 | 57 | 12,75 | 6 | 3 | ....07508 | 147,68 |
| M8 | 1.0 | 6 | 57 | 13 | 6 | 3 | ....10008 | 147,68 |
| M10 | 1.0 | 8 | 63 | 16 | 8 | 4 | ....10010 | 196,15 |
| M12 | 1.0 | 9,5 | 72 | 19 | 10 | 4 | ....10012 | 254,62 |
| M12 | 1.25 | 9,5 | 72 | 18,75 | 10 | 4 | ....12512 | 254,62 |
| M12 | 1.5 | 9,5 | 72 | 19,5 | 10 | 4 | ....15012 | 254,62 |
| M14 | 1.0 | 10 | 83 | 22 | 10 | 4 | ....10014 | 254,62 |
| M14 | 1.5 | 10 | 83 | 22,5 | 10 | 4 | ....15014 | 254,62 |
| M16 | 1.0 | 12 | 83 | 25 | 12 | 4 | ....10016 | 314,56 |
| M16 | 1.5 | 12 | 83 | 25,5 | 12 | 4 | ....15016 | 314,56 |
| M18 | 1.0 | 14 | 92 | 28 | 14 | 5 | ....10018 | 412,68 |
| M18 | 1.5 | 14 | 92 | 28,5 | 14 | 5 | ....15018 | 412,68 |
| M20 | 1.0 | 16 | 92 | 31 | 16 | 5 | ....10020 | 477,59 |
| M20 | 1.5 | 16 | 92 | 31,5 | 16 | 5 | ....15020 | 477,59 |

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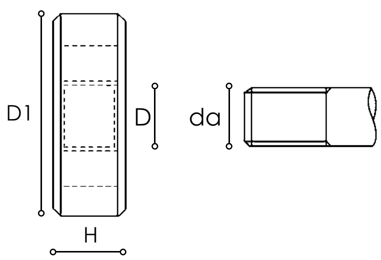
## FILIERE CON IMBOCCO CORRETTO DIES WITH SPIRAL POINT SCHNEIDEISEN MIT SCHÄLANSCHNITT FILIERES AVEC ENTREE "GUN" TERRAJAS CON ENTRADA CORREGIDA

**FM 610** DIN EN 22568 60° 6g

**FMS 630** DIN EN 22568 60° 6g




M ISO/DIN 13

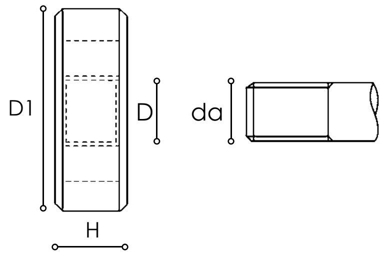
| D | da | D1 | H | CODE | HSS 5610..... € | HSS 5630..... € |
|---|---|---|---|---|---|---|
| M 1,6 x 0,35 | 1,54 | 16 | 5 | ....00160 | 22,25 | |
| M 2 x 0,4 | 1,94 | 16 | 5 | ....00002 | 22,25 | |
| M 2,5 x 0,45 | 2,43 | 16 | 5 | ....00025 | 22,25 | |
| M 3 x 0,5 | 2,92 | 20 | 5 | ....00003 | 17,25 | 24,63 |
| M 3,5 x 0,6 | 3,41 | 20 | 5 | ....00035 | 17,49 | 24,63 |
| M 4 x 0,7 | 3,9 | 20 | 5 | ....00004 | 17,13 | 24,63 |
| M 4,5 x 0,75 | 4,4 | 20 | 7 | ....00045 | 17,96 | 25,93 |
| M 5 x 0,8 | 4,9 | 20 | 7 | ....00005 | 18,44 | 27,01 |
| M 6 x 1 | 5,88 | 20 | 7 | ....00006 | 18,44 | 27,01 |
| M 7 x 1 | 6,88 | 25 | 9 | ....00007 | 20,58 | 31,53 |
| M 8 x 1,25 | 7,86 | 25 | 9 | ....00008 | 20,22 | 29,38 |
| M 9 x 1,25 | 8,86 | 25 | 9 | ....00009 | 20,58 | 29,38 |
| M 10 x 1,5 | 9,85 | 30 | 11 | ....00010 | 20,94 | 30,57 |
| M 11 x 1,5 | 10,85 | 30 | 11 | ....00011 | 26,39 | 40,92 |
| M 12 x 1,75 | 11,83 | 38 | 14 | ....00012 | 28,19 | 40,92 |
| M 14 x 2 | 13,82 | 38 | 14 | ....00014 | 29,50 | 43,07 |
| M 16 x 2 | 15,82 | 45 | 18 | ....00016 | 39,62 | 55,80 |
| M 18 x 2,5 | 17,79 | 45 | 18 | ....00018 | 40,92 | 56,88 |
| M 20 x 2,5 | 19,79 | 45 | 18 | ....00020 | 47,85 | 58,93 |
| M 22 x 2,5 | 21,79 | 55 | 22 | ....00022 | 54,94 | 78,09 |
| M 24 x 3 | 23,76 | 55 | 22 | ....00024 | 62,60 | 84,67 |
| M 27 x 3 | 26,76 | 65 | 25 | ....00027 | 78,73 | 151,32 |
| M 30 x 3,5 | 29,73 | 65 | 25 | ....00030 | 81,82 | 184,51 |
| M 33 x 3,5 | 32,73 | 65 | 25 | ....00033 | 84,68 | |
| M 36 x 4 | 35,7 | 65 | 25 | ....00036 | 90,31 | |
| M 39 x 4 | 38,7 | 75 | 30 | ....00039 | 128,13 | |
| M 42 x 4,5 | 41,68 | 75 | 30 | ....00042 | 148,23 | |
| M 45 x 4,5 | 44,68 | 90 | 36 | ....00450 | 334,89 | |
| M 48 x 5 | 47,65 | 90 | 36 | ....00048 | 334,89 | |
| M 52 x 5 | 51,65 | 90 | 36 | ....00052 | 336,20 | |

## FMF 600

DIN EN 22568 — 60° — 6g

## FMFS 640

DIN EN 22568 — 60° — 6g




MF
ISO/DIN 13

| D | da | D1 | H | CODE | HSS 5600..... € | HSS 5640..... € |
|---|---|---|---|---|---|---|
| MF 2 x 0,25 | 1,95 | 16 | 5 | ....00002 | 29,62 | |
| MF 2,5 x 0,35 | 2,44 | 16 | 5 | ....00025 | 29,62 | |
| MF 3 x 0,35 | 2,94 | 20 | 5 | ....00003 | 21,18 | 33,07 |
| MF 3,5 x 0,35 | 3,44 | 20 | 5 | ....00035 | 21,18 | 33,07 |
| MF 4 x 0,5 | 3,93 | 20 | 5 | ....00004 | 21,18 | 31,88 |
| MF 4,5x 0,5 | 4,43 | 20 | 5 | ....00045 | | 31,88 |
| MF 5 x 0,5 | 4,90 | 20 | 5 | ....00005 | 21,18 | 31,88 |
| MF 5,5 x 0,5 | 5,43 | 20 | 5 | ....00055 | 21,18 | 31,88 |
| MF 6 x 0,75 | 5,90 | 20 | 7 | ....00006 | 21,18 | 28,79 |
| MF 7 x 0,75 | 6,90 | 25 | 9 | ....00007 | 22,72 | 35,09 |
| MF 8 x 0,75 | 7,90 | 25 | 9 | ....07508 | 22,72 | 31,05 |
| MF 8 x 1 | 7,88 | 25 | 9 | ....10008 | 22,72 | 31,05 |
| MF 9 x 0,75 | 8,90 | 25 | 9 | ....07509 | 23,60 | |
| MF 9 x 1 | 8,88 | 25 | 9 | ....10009 | 23,60 | 38,43 |
| MF 10 x 0,75 | 9,90 | 30 | 11 | ....75010 | 29,62 | 38,43 |
| MF 10 x 1 | 9,88 | 30 | 11 | ....10010 | 29,38 | 43,42 |
| MF 10 x 1,25 | 9,86 | 30 | 11 | ....12510 | 29,38 | 43,42 |
| MF 11 x 0,75 | 10,90 | 30 | 11 | ....07511 | 36,28 | |
| MF 11 x 1 | 10,88 | 30 | 11 | ....10011 | 36,28 | 53,77 |
| MF 11 x 1,25 | 10,86 | 30 | 11 | ....12511 | | 53,77 |
| MF 12 x 1 | 11,88 | 38 | 10 | ....10012 | 36,28 | 50,56 |
| MF 12 x 1,25 | 11,86 | 38 | 10 | ....12512 | 35,81 | 50,56 |
| MF 12 x 1,5 | 11,85 | 38 | 10 | ....15012 | 35,81 | 50,56 |
| MF 14 x 1 | 13,88 | 38 | 10 | ....10014 | 36,28 | 51,65 |
| MF 14 x 1,25 | 13,86 | 38 | 10 | ....12514 | 36,28 | 51,65 |
| MF 14 x 1,5 | 13,85 | 38 | 10 | ....15014 | 35,81 | 51,65 |
| MF 15 x 1 | 14,88 | 38 | 10 | ....10015 | 49,37 | 56,03 |
| MF 15 x 1,5 | 14,85 | 38 | 10 | ....15015 | 49,37 | 56,03 |
| MF 16 x 1 | 15,88 | 45 | 14 | ....10016 | 51,51 | 73,17 |
| MF 16 x 1,25 | 15,86 | 45 | 14 | ....12516 | 50,44 | |
| MF 16 x 1,5 | 15,85 | 45 | 14 | ....15016 | 51,04 | 73,17 |
| MF 18 x 1 | 17,88 | 45 | 14 | ....10018 | 51,51 | 73,17 |
| MF 18 x 1,5 | 17,85 | 45 | 14 | ....15018 | 51,04 | 73,17 |
| MF 18 x 2 | 17,80 | 45 | 14 | ....20018 | 51,04 | |
| MF 20 x 1 | 19,88 | 45 | 14 | ....10020 | 53,18 | 76,45 |
| MF 20 x 1,5 | 19,85 | 45 | 14 | ....15020 | 53,18 | 76,45 |
| MF 20 x 2 | 19,80 | 45 | 14 | ....20020 | 53,18 | |
| MF 22 x 1 | 21,88 | 55 | 16 | ....10022 | 79,11 | 110,88 |
| MF 22 x 1,5 | 21,85 | 55 | 16 | ....15022 | 78,40 | 110,88 |
| MF 22 x 2 | 21,80 | 55 | 16 | ....20022 | 78,40 | |

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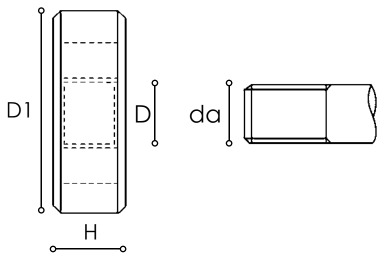
## FILIERE CON IMBOCCO CORRETTO DIES WITH SPIRAL POINT SCHNEIDEISEN MIT SCHÄLANSCHNITT FILIERES AVEC ENTREE "GUN" TERRAJAS CON ENTRADA CORREGIDA

**FMF 600** DIN EN 22568 60° 6g

**FMFS 640** DIN EN 22568 60° 6g




MF ISO/DIN 13

**FMF600**

**FMFS640**

| D | da | D1 | H | CODE | HSS 5600..... € | HSS 5640..... € |
|---|---|---|---|---|---|---|
| MF 24 x 1 | 23,88 | 55 | 16 | ....10024 | 83,16 | 118,50 |
| MF 24 x 1,5 | 23,85 | 55 | 16 | ....15024 | 83,16 | 118,50 |
| MF 24 x 2 | 23,80 | 55 | 16 | ....20024 | 83,16 | |
| MF 25 x 1,5 | 24,85 | 55 | 16 | ....15025 | 108,50 | |
| MF 25 x 2 | 24,80 | 55 | 16 | ....20025 | 108,50 | |
| MF 26 x 1,5 | 25,85 | 55 | 16 | ....15026 | 108,50 | |
| MF 26 x 2 | 25,80 | 55 | 16 | ....20026 | 108,50 | |
| MF 27 x 1 | 26,88 | 65 | 18 | ....10027 | | 164,77 |
| MF 27 x 1,5 | 26,85 | 65 | 18 | ....15027 | 110,76 | 164,77 |
| MF 27 x 2 | 26,80 | 65 | 18 | ....20027 | 110,76 | |
| MF 28 x 1,5 | 27,85 | 65 | 18 | ....15028 | 110,76 | 164,77 |
| MF 28 x 2 | 27,80 | 65 | 18 | ....20028 | 110,76 | 164,77 |
| MF 30 x 1 | 29,85 | 65 | 18 | ....10030 | 112,92 | 174,28 |
| MF 30 x 1,5 | 29,85 | 65 | 18 | ....15030 | 112,92 | 174,28 |
| MF 30 x 2 | 29,80 | 65 | 18 | ....20030 | 112,92 | |
| MF 32 x 1,5 | 31,85 | 65 | 18 | ....15032 | 113,16 | |
| MF 32 x 2 | 31,82 | 65 | 18 | ....20032 | 113,16 | |
| MF 33 x 1,5 | 32,85 | 65 | 18 | ....15033 | 117,15 | |
| MF 33 x 2 | 32,82 | 65 | 18 | ....20033 | 117,15 | |
| MF 36 x 1,5 | 35,85 | 65 | 18 | ....15036 | 122,24 | |
| MF 36 x 2 | 35,82 | 65 | 18 | ....20036 | 122,24 | |
| MF 36 x 3 | 35,76 | 65 | 25 | ....30036 | 122,24 | |
| MF 39 x 1,5 | 38,85 | 75 | 20 | ....15039 | 164,72 | |
| MF 39 x 2 | 38,82 | 75 | 20 | ....20039 | 164,72 | |
| MF 39 x 3 | 38,76 | 75 | 30 | ....30039 | 164,72 | |
| MF 40 x 1,5 | 39,85 | 75 | 20 | ....15040 | 164,72 | |
| MF 40 x 2 | 39,82 | 75 | 20 | ....20040 | 164,72 | |
| MF 40 x 3 | 39,76 | 75 | 30 | ....30040 | 164,72 | |
| MF 42 x 1,5 | 41,85 | 75 | 20 | ....15042 | 167,98 | |
| MF 42 x 2 | 41,82 | 75 | 20 | ....20042 | 167,98 | |
| MF 42 x 3 | 41,76 | 75 | 30 | ....30042 | 167,98 | |
| MF 45 x 1,5 | 44,85 | 90 | 22 | ....15045 | 266,86 | |
| MF 45 x 2 | 44,82 | 90 | 22 | ....20045 | 266,86 | |
| MF 45 x 3 | 44,76 | 90 | 36 | ....30045 | 266,86 | |
| MF 48 x 1,5 | 47,85 | 90 | 22 | ....15048 | 266,86 | |
| MF 48 x 2 | 47,82 | 90 | 22 | ....20048 | 266,86 | |
| MF 48 x 3 | 47,76 | 90 | 36 | ....30048 | 266,86 | |
| MF 50 x 1,5 | 49,85 | 90 | 22 | ....15050 | 277,27 | |
| MF 50 x 2 | 49,82 | 90 | 22 | ....20050 | 277,27 | |
| MF 50 x 3 | 49,76 | 90 | 36 | ....30050 | 277,27 | |
| MF 52 x 1,5 | 51,85 | 90 | 22 | ....15052 | 326,56 | |
| MF 52 x 2 | 51,82 | 90 | 22 | ....20052 | 326,56 | |
| MF 52 x 3 | 51,76 | 90 | 36 | ....30052 | 326,56 | |

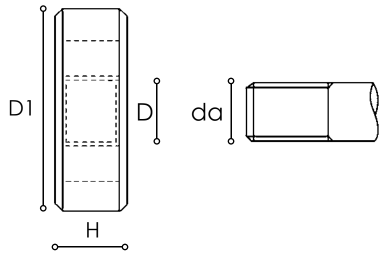
# FUNC 645

DIN EN 22568

60°

2A

## FUNC645




UNC ANSI B1.1

| D | da | D1 | H | CODE | HSS 5645..... € |
|---|---|---|---|---|---|
| UNC 4 - 40 | 2,76 | 20 | 5 | ....00440 | 35,38 |
| UNC 5 - 40 | 3,09 | 20 | 5 | ....00540 | 35,38 |
| UNC 6 - 32 | 3,41 | 20 | 7 | ....00632 | 35,38 |
| UNC 8 - 32 | 4,07 | 20 | 7 | ....00832 | 35,38 |
| UNC 10 - 24 | 4,71 | 20 | 7 | ....01024 | 35,38 |
| UNC 12 - 24 | 5,37 | 20 | 7 | ....01224 | 38,30 |
| UNC 1/4 - 20 | 6,22 | 20 | 7 | ....01420 | 34,56 |
| UNC 5/16 - 18 | 7,80 | 25 | 9 | ....51618 | 38,08 |
| UNC 3/8 - 16 | 9,37 | 30 | 11 | ....03816 | 42,87 |
| UNC 7/16 - 14 | 10,95 | 30 | 11 | ....71614 | 43,03 |
| UNC 1/2 - 13 | 12,52 | 38 | 14 | ....01213 | 55,81 |
| UNC 9/16 - 12 | 14,10 | 38 | 14 | ....91612 | 56,02 |
| UNC 5/8 - 11 | 15,68 | 45 | 18 | ....05811 | 77,15 |
| UNC 3/4 - 10 | 18,84 | 45 | 18 | ....03410 | 77,39 |
| UNC 7/8 - 9 | 22,00 | 55 | 22 | ....07809 | 106,43 |
| UNC 1" - 8 | 25,16 | 55 | 22 | ....01008 | 112,19 |

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FILIERE CON IMBOCCO CORRETTO DIES WITH SPIRAL POINT SCHNEIDEISEN MIT SCHÄLANSCHNITT FILIERES AVEC ENTREE "GUN" TERRAJAS CON ENTRADA CORREGIDA

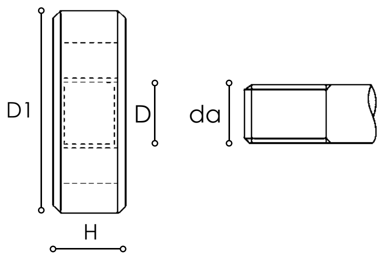
## FUNF 650

DIN EN 22568

60°

2A

FUNF650




UNF ANSI B1.1

| D | da | D1 | H | CODE | HSS 5650..... € |
|---|---|---|---|---|---|
| UNF 4 - 48 | 2,77 | 20 | 5 | ....00448 | 32,67 |
| UNF 5 - 44 | 3,10 | 20 | 5 | ....00544 | 30,66 |
| UNF 6 - 40 | 3,42 | 20 | 5 | ....00640 | 30,66 |
| UNF 8 - 36 | 4,08 | 20 | 7 | ....00836 | 30,66 |
| UNF 10 - 32 | 4,73 | 20 | 7 | ....01032 | 30,66 |
| UNF 12 - 28 | 5,38 | 20 | 7 | ....01228 | 33,20 |
| UNF 1/4 - 28 | 6,24 | 20 | 7 | ....01428 | 34,56 |
| UNF 5/16 - 24 | 7,82 | 25 | 9 | ....51624 | 37,27 |
| UNF 3/8 - 24 | 9,41 | 30 | 11 | ....03824 | 42,87 |
| UNF 7/16 - 20 | 10,98 | 30 | 11 | ....71620 | 37,96 |
| UNF 1/2 - 20 | 12,56 | 38 | 10 | ....01220 | 56,02 |
| UNF 9/16 - 18 | 14,14 | 38 | 10 | ....91618 | 56,26 |
| UNF 5/8 - 18 | 15,73 | 45 | 14 | ....05818 | 77,15 |
| UNF 3/4 - 16 | 18,89 | 45 | 14 | ....03416 | 77,39 |
| UNF 7/8 - 14 | 22,05 | 55 | 16 | ....07814 | 106,43 |
| UNF 1" - 12 | 25,21 | 55 | 16 | ....01012 | 112,19 |

FILIERE CON IMBOCCO CORRETTO DIES WITH SPIRAL POINT SCHNEIDEISEN MIT SCHÄLANSCHNITT FILIERES AVEC ENTREE "GUN" TERRAJAS CON ENTRADA CORREGIDA

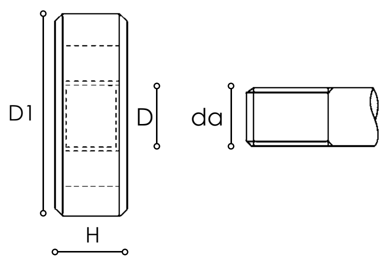
# FG 620

DIN EN 24231

55°

2A

**FG620**




G (BSP) DIN-ISO 228/1

| D | da | D1 | H | CODE | HSS 5620..... € |
|---|---|---|---|---|---|
| G 1/8 - 28 | 9,58 | 30 | 11 | ....00108 | 29,27 |
| G 1/4 - 19 | 13,01 | 38 | 10 | ....00104 | 29,27 |
| G 3/8 - 19 | 16,51 | 45 | 14 | ....00308 | 48,54 |
| G 1/2 - 14 | 20,80 | 45 | 14 | ....00102 | 48,06 |
| G 5/8 - 14 | 22,77 | 55 | 16 | ....00508 | 59,13 |
| G 3/4 - 14 | 26,26 | 55 | 16 | ....00304 | 86,01 |
| G 7/8 - 14 | 30,02 | 65 | 18 | ....00708 | 86,84 |
| G 1" - 11 | 33,07 | 65 | 18 | ....00100 | 89,94 |
| G 1" 1/8 - 11 | 37,72 | 75 | 20 | ....01108 | 127,65 |
| G 1" 1/4 - 11 | 41,73 | 75 | 20 | ....10104 | 139,90 |
| G 1" 3/8 - 11 | 44,14 | 90 | 22 | ....01308 | 158,82 |
| G 1" 1/2 - 11 | 47,62 | 90 | 22 | ....01102 | 162,86 |
| G 1" 3/4 - 11 | 53,57 | 105 | 22 | ....01304 | 183,80 |
| G 2" - 11 | 59,43 | 105 | 22 | ....00200 | 250,30 |

FILIERE CON IMBOCCO CORRETTO DIES WITH SPIRAL POINT SCHNEIDEISEN MIT SCHÄLANSCHNITT FILIERES AVEC ENTREE "GUN" TERRAJAS CON ENTRADA CORREGIDA

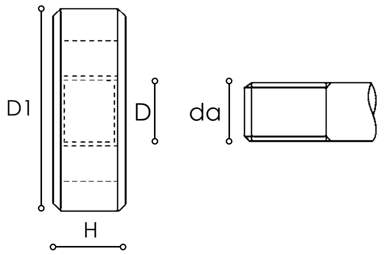
# FW 660

DIN EN 22568

55°

2A

NEW FW660



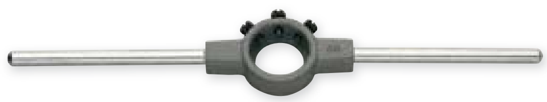

W(BSW) BS-84: 1956

| D | da | D1 | H | CODE | HSS 5660..... € |
|---|---|---|---|---|---|
| W 1/16"-60 | 0,423 | 16 | 5 | ....00116 | 39,56 |
| W 3/32"-48 | 0,529 | 16 | 5 | ....00332 | 28,15 |
| W 1/8" - 40 | 0,635 | 20 | 5 | ....00108 | 25,03 |
| W 5/32"-32 | 0,794 | 20 | 5 | ....00532 | 28,15 |
| W 3/16"-24 | 1,058 | 20 | 7 | ....00316 | 25,03 |
| W 7/32"-24 | 1,058 | 20 | 7 | ....00732 | 29,65 |
| W 1/4"-20 | 1,27 | 20 | 7 | ....00104 | 26,60 |
| W 5/16"-18 | 1,411 | 25 | 9 | ....00516 | 27,53 |
| W 3/8"-16 | 1,588 | 30 | 11 | ....00308 | 32,84 |
| W 7/16"-14 | 1,814 | 30 | 11 | ....00716 | 33,62 |
| W 1/2"-12 | 2,117 | 38 | 14 | ....00102 | 44,57 |
| W 9/16"-12 | 2,117 | 38 | 14 | ....00916 | 47,62 |
| W 5/8"-11 | 2,309 | 45 | 18 | ....00508 | 62,56 |
| W 3/4"-10 | 2,54 | 45 | 18 | ....00304 | 66,46 |
| W 7/8"-9 | 2,822 | 55 | 22 | ....00708 | 93,83 |
| W 1"-8 | 3,175 | 55 | 22 | ....00100 | 103,21 |
| W 1 1/8"-7 | 3,629 | 65 | 25 | ....01108 | 128,86 |
| W 1 1/4"-7 | 3,629 | 65 | 25 | ....01104 | 140,44 |
| W 1 3/8"-6 | 4,233 | 65 | 25 | ....01308 | 140,44 |
| W 1 1/2"-6 | 4,233 | 75 | 30 | ....01102 | 196,11 |

# PF 856

DIN 225

**PF856**



| Nr. | D x H | | CODE | HSS 5856….. € |
|---|---|---|---|---|
| 0 | 16 x 5 | M 1 - 2,6 | ….00000 | 11,41 |
| 1 | 20 x 5 | MF 3 - 4 | ….00001 | 13,57 |
| 2 | 20 x 7 | M 4,5 - 6 | ….00002 | 13,57 |
| 3 | 25 x 9 | M 7 - 9 | ….00003 | 16,17 |
| 4 | 30 x 11 | M 10 - 11 | ….00004 | 17,96 |
| 5 | 38 x 14 | M 12 - 14 | ….00005 | 20,33 |
| 6 | 38 x 10 | MF 12 - 14 | ….00006 | 20,33 |
| 7 | 45 x 18 | M 16 - 20 | ….00007 | 28,41 |
| 8 | 45 x 14 | MF 16 - 20 | ….00008 | 28,41 |
| 9 | 55 x 22 | M 22 - 24 | ….00009 | 36,32 |
| 10 | 55 x 16 | MF 22 - 24 | ….00010 | 36,32 |
| 11 | 65 x 25 | M 27 - 36 | ….00011 | 59,74 |
| 12 | 65 x 18 | MF 26 - 35 | ….00012 | 59,74 |
| 13 | 75 x 30 | M 39 - 42 | ….00013 | 99,62 |
| 14 | 75 x 20 | MF 38 - 42 | ….00014 | 99,62 |

KIT DI MASCHI A MANO HAND TAPS SET HANDGEWINDEBOHRER - SÄTZE
COFFRETS DE TARAUDS MAIN ESTUCHE DE JUEGOS DE MACHOS DE MANO

## AS 500/1

DIN 352 | 0° | 60° | 6H

C

M ISO/DIN 13

| N. PEZZI PIECES | M | CODE | HSS 5500..... € |
|---|---|---|---|
| 7 | 3 - 4 - 5 - 6 8 - 10 - 12 | ....10000 | 205,38 |

KIT DI MASCHII A MACCHINA MACHINE TAPS SETS MASCHINEN-GEWINDEBOHRER SÄTZE
COFFRETS DE TARAUDS MACHINE ESTUCHES DE MACHOS DE MAQUINA

## KIT

DIN 371 | M ISO/DIN 13 | 60° | 6H

## M 508

B | 0°

| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 550810000 | 85,62 |

| N. PEZZI PIECES | M | CODE | € QUARTZ |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 650810000 | 110,18 |

| N. PEZZI PIECES | M | CODE | € TITANITE |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 750810000 | 120,47 |

## M 509

C

0°




| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 550910000 | 75,60 |

| N. PEZZI PIECES | M | CODE | € QUARTZ |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 650910000 | 99,15 |

| N. PEZZI PIECES | M | CODE | € TITANITE |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 750910000 | 110,11 |

## M 513 ALU

B

0°




| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 551310000 | 106,72 |

| N. PEZZI PIECES | M | CODE | € QUARTZ |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 651310000 | 131,96 |

| N. PEZZI PIECES | M | CODE | € TITANITE |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 751310000 | 143,56 |

## M 516 INOX

B

0°


| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 551610000 | 106,85 |

## M 517 INOX

C

λ 35°


| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6<br>8 - 10 | 551710000 | 127,44 |

## M 511

C

λ 15°




| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6<br>8 - 10 | 551110000 | 91,02 |

| N. PEZZI PIECES | M | CODE | € QUARTZ |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6<br>8 - 10 | 651110000 | 116,10 |

| N. PEZZI PIECES | M | CODE | € TITANITE |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6<br>8 - 10 | 751110000 | 126,38 |

## M 512

C

λ 35°




| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6<br>8 - 10 | 551210000 | 93,05 |

| N. PEZZI PIECES | M | CODE | € QUARTZ |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6<br>8 - 10 | 651210000 | 118,33 |

| N. PEZZI PIECES | M | CODE | € TITANITE |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6<br>8 - 10 | 751210000 | 128,61 |

## R 570

C 0° 6HX

| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 557010000 | 120,95 |

## R 571

C 0° 6HX

| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 557110000 | 120,95 |

## R 572

C 0° 6HX

| N. PEZZI PIECES | M | CODE | € |
|---|---|---|---|
| 6 | 3 - 4 - 5 - 6 8 - 10 | 557210000 | 140,71 |

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## FRESE A CODOLO CILINDRICO
### STRAIGHT SHANK END MILLS

rpm
=(mt/min x 1000) / ( D x 3,14 )

mm/min
= mm/rev x rpm

= mt/min

= mm/tooth (vedi tabella - see table page pag. 141)


| | | | | | CL11 | | CL11 | | CL11 | | CL11 | | CL12 | | CL12 | | CL12 | | CL12 | | CL13F | | CL18 | | CL19 | | CL16 | | CL16 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | DIN 327/D | | | | | | | | CARMON NORM. | | | | | | | | DIN 327/H | | DIN 327/D | | CARMON NORM. | | DIN 844/B | | | |
| | | | | | HSS+8%Co | | | | RESISTOR | | | | HSS+8%Co | | | | RESISTOR | | | | HSS+8%Co | | | | | | HSS+8%Co | | | |
| | | | | Pagina Page | 142 | | 142 | | 142 | | 142 | | 144 | | 144 | | 144 | | 144 | | 145 | | 146 | | 147 | | 148 | | 148 | |
| | TIPO DI ACCIAIO TYPE OF STEEL | Pag. 228 | N/mm² | HV | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel | 1 | 500 | 157 | 60 | b | 120 | b | 75 | b | 130 | a | 60 | b | 120 | b | 75 | b | 130 | a | 60 | b | 40 | t | 40 | t | 50 | a | 100 | a |
| | Acciai da costruzione Structural steel | 2 | 700 | 219 | 50 | b | 100 | b | 65 | b | 120 | b | 50 | b | 100 | b | 65 | b | 120 | b | 50 | b | 28 | t | 28 | t | 40 | a | 80 | a |
| | Acciai da tempra Hardening steel | 3 | 900 | 280 | 12 | c | 45 | c | 35 | c | 70 | c | 12 | c | 45 | c | 35 | c | 70 | c | 12 | c | 24 | t | 24 | t | 28 | n | 60 | b |
| | Acciaio automatico Automatic steel | 4 | 1200 | 373 | | | 14 | d | | | 25 | c | | | 14 | d | | | 25 | c | | | | | | | | | 35 | d |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel | 3 | 850 | 265 | 25 | e | 35 | e | 40 | c | 80 | c | 25 | e | 35 | e | 40 | c | 80 | c | 25 | e | 25 | e | 25 | e | 20 | e | 34 | e |
| | Austenitico Austenitic | 3 | 850 | 265 | | | 22 | g | 35 | c | 70 | c | | | 22 | g | 35 | c | 70 | c | | | | | | | 15 | e | 25 | e |
| | Ferritico+austenitico Ferritic austenitic | 4 | 1000 | 311 | | | | | | | 20 | b | | | | | | | 20 | b | | | | | | | 8 | d | 18 | e |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb | 2 | 500 | 157 | 30 | b | 50 | b | 35 | r | 58 | r | 30 | b | 50 | b | 35 | r | 58 | r | 30 | b | 30 | b | 30 | b | 30 | b | 50 | b |
| | Ghisa oltre 180 hb Cast iron over 180hb | 3 | 700 | 219 | 25 | b | 45 | b | 30 | r | 45 | r | 25 | b | 45 | b | 30 | r | 45 | r | 25 | b | 25 | b | 25 | b | 25 | b | 45 | b |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium | 5 | 500 | 157 | 30 | e | 38 | e | 35 | e | 45 | e | 30 | e | 38 | e | 35 | e | 45 | e | 30 | e | 30 | e | 30 | e | 30 | e | 38 | e |
| | Leghe di titanio Titanium alloys | 5 | 900 | 280 | 25 | e | 33 | e | 28 | e | 38 | e | 25 | e | 33 | e | 28 | e | 38 | e | 25 | e | 25 | e | 25 | e | 25 | e | 33 | e |
| RAME COPPER | Rame Copper | 9 | 350 | 110 | 135 | c | 215 | c | 150 | d | 260 | d | 135 | c | 215 | c | 150 | d | 260 | d | 135 | c | 135 | c | 135 | c | 135 | c | 215 | c |
| | Ottone Brass | 9 | 700 | 219 | 140 | c | 220 | c | 160 | d | 270 | d | 140 | c | 220 | c | 160 | d | 270 | d | 140 | c | 140 | c | 140 | c | 140 | c | 220 | c |
| | Bronzo Bronze | 9 | 700 | 219 | 140 | c | 220 | c | 160 | d | 270 | d | 140 | c | 220 | c | 160 | d | 270 | d | 140 | c | 140 | c | 140 | c | 140 | c | 220 | c |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel | 6 | 700 | 219 | 50 | e | 100 | e | 55 | s | 125 | s | 50 | e | 100 | e | 55 | s | 125 | s | 50 | e | 50 | e | 50 | e | 50 | e | 100 | e |
| | Leghe di nichel Nichel alloys | 6 | 900 | 280 | 15 | b | 25 | b | 18 | s | 35 | s | 15 | b | 25 | b | 18 | s | 35 | s | 15 | b | 15 | b | 15 | b | 15 | b | 25 | b |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium | 7 | 350 | 110 | 330 | f | 660 | f | 350 | r | 700 | r | 330 | f | 660 | f | 350 | r | 700 | r | 330 | f | 330 | f | 330 | f | 330 | f | 660 | f |
| | Alluminio con leghe Alloyed aluminium | 7 | 400 | 125 | 330 | f | 660 | f | 350 | r | 700 | r | 330 | f | 660 | f | 350 | r | 700 | r | 330 | f | 330 | f | 330 | f | 330 | f | 660 | f |
| | Alluminio con leghe Alloyed aluminium | 7 | 500 | 157 | 100 | f | 200 | f | 120 | r | 240 | r | 100 | f | 200 | f | 120 | r | 240 | r | 100 | f | 100 | f | 100 | f | 100 | f | 200 | f |

## FRESE A CODOLO CILINDRICO
STRAIGHT SHANK END MILLS


DIN 844/B

| CL16 | CL16 | CL30FE | CL17 | CL21TF | CL21TF | CL21TF | CL21TF | CL21TF | CL22TF | CL22TF | CL22TF | CL22TF | CL24TF | CL24TF | CL24TF | CL24TF | CL24TF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RESISTOR | | HSS+8%Co | | | | RESISTOR | | | HSS+8%Co | | RESISTOR | | HSS+8%Co | | RESISTOR | | |
| 148 | 148 | 149 | 150 | 151 | 151 | 151 | 151 | 151 | 152 | 152 | 152 | 152 | 153 | 153 | 153 | 153 | 153 |
| mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth |
| 60 b | 120 b | 50 a | 50 a | 50 a | 100 a | 60 b | 120 b | 120 b | 50 a | 100 a | 60 b | 120 b | 50 s | 100 s | 60 r | 120 r | 120 b |
| 50 b | 100 b | 40 a | 40 a | 40 a | 80 a | 50 b | 100 b | 100 b | 40 a | 80 a | 50 b | 100 b | 40 s | 80 s | 50 r | 100 r | 100 b |
| 40 c | 80 c | 28 n | 28 n | 28 n | 60 b | 40 c | 80 c | 80 c | 28 n | 60 b | 40 c | 80 c | 28 s | 60 s | 40 r | 80 r | 80 c |
| | 38 c | | | | 35 d | | 38 c | 38 c | | 35 d | | 38 c | | 35 s | | 38 r | 38 c |
| 28 e | 45 e | 20 e | 20 e | 20 e | 34 e | 28 e | 45 e | 45 e | 20 e | 34 e | 28 e | 45 e | 25 r | 35 r | 30 r | 45 r | 45 e |
| 20 e | 35 e | 15 e | 15 e | 15 e | 25 e | 20 e | 35 e | 35 e | 15 e | 25 e | 20 e | 35 e | | | 28 r | 40 r | 35 e |
| 12 e | 23 e | 8 d | 8 d | 8 d | 18 e | 12 e | 23 e | 23 e | 8 d | 18 e | 12 e | 23 e | | 18 i | 15 r | 25 r | 23 e |
| 35 r | 58 r | 30 b | 30 b | 30 b | 50 b | 35 r | 58 r | 58 r | 30 b | 50 b | 35 r | 58 r | 27 m | 45 m | 32 m | 50 m | 50 m |
| 30 r | 45 r | 25 b | 25 b | 25 b | 45 b | 30 r | 45 r | 45 r | 25 b | 45 b | 30 r | 45 r | 22 m | 40 m | 27 m | 45 m | 45 m |
| 35 e | 45 e | 30 e | 30 e | 30 e | 38 e | 35 e | 45 e | 45 e | 30 e | 38 e | 35 e | 45 e | 32 h | 40 h | 35 m | 45 m | 45 m |
| 28 e | 38 e | 25 e | 25 e | 25 e | 33 e | 28 e | 38 e | 38 e | 25 e | 33 e | 28 e | 38 e | 28 h | 36 h | 30 m | 40 m | 40 m |
| 150 d | 260 d | 135 c | 135 c | 135 c | 215 c | 150 d | 260 d | 260 d | 135 c | 215 c | 150 d | 260 d | 140 s | 220 s | 155 s | 235 s | 235 s |
| 160 d | 270 d | 140 c | 140 c | 140 c | 220 c | 160 d | 270 d | 270 d | 140 c | 220 c | 160 d | 270 d | 150 s | 225 s | 160 s | 230 s | 230 s |
| 160 d | 270 d | 140 c | 140 c | 140 c | 220 c | 160 d | 270 d | 270 d | 140 c | 220 c | 160 d | 270 d | 150 s | 225 s | 160 s | 230 s | 230 s |
| 55 s | 125 s | 50 e | 50 e | 50 e | 100 e | 55 s | 125 s | 125 s | 50 e | 100 e | 55 s | 125 s | 55 u | 110 u | 65 u | 120 u | 120 u |
| 18 s | 35 s | 15 b | 15 b | 15 b | 25 b | 18 s | 35 s | 35 s | 15 b | 25 b | 18 s | 35 s | 20 u | 30 u | 30 u | 60 u | 60 u |
| 350 r | 700 r | 660 f | 330 f | 330 f | 660 f | 350 r | 700 r | 700 r | 330 f | 660 f | 350 r | 700 r | 330 u | 660 u | 350 u | 700 u | 700 u |
| 350 r | 700 r | 660 f | 330 f | 330 f | 660 f | 350 r | 700 r | 700 r | 330 f | 660 f | 350 r | 700 r | 330 u | 660 u | 350 u | 700 u | 700 u |
| 120 r | 240 r | 200 f | 100 f | 100 f | 200 f | 120 r | 240 r | 240 r | 100 f | 200 f | 120 r | 240 r | 100 u | 200 u | 100 u | 200 u | 200 u |

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## FRESE A CODOLO CILINDRICO
STRAIGHT SHANK END MILLS

rpm
=(mt/min x 1000) / ( D x 3,14 )

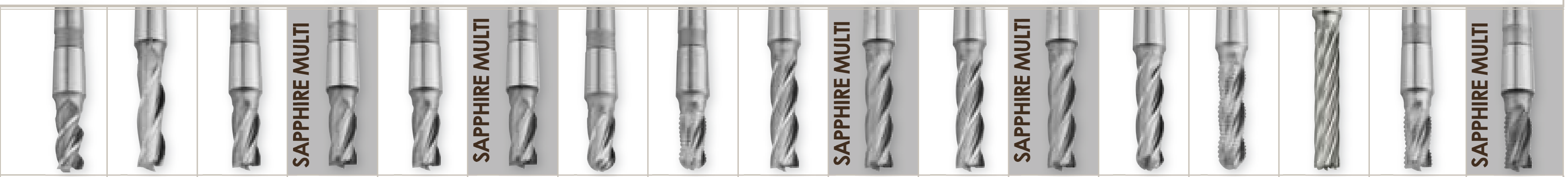
mm/min
= mm/rev x rpm

= mt/min

= mm/tooth (vedi tabella - see table page pag. 141)

| | | | | | CL24TFPF | | CL24TFPF | | CL24TFPF | | CL24TFPF | | CL24TFPF | | CL24SLTF | | CL24SLTF | | CL24SLTFPF | | CL24SLTFPF | | CL25TF | | CL25TF | | CM31 | | CM36 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | SAPPHIRE MULTI | | | | SAPPHIRE MULTI | | PEARL | | | | SAPPHIRE MULTI | | | | SAPPHIRE MULTI | | | | SAPPHIRE MULTI | | | | | |
| | | | | | | | | | | | | | | | DIN 844/B | | | | | | | | | | | | DIN 326/D | | | |
| | | | | | HSS+8%Co | | | | RESISTOR | | | | | | HSS+8%Co | | | | | | | | | | | | | | | |
| | | | Pagina Page | | 154 | | 154 | | 154 | | 154 | | 154 | | 155 | | 155 | | 156 | | 156 | | 157 | | 157 | | 158 | | 159 | |
| | TIPO DI ACCIAIO TYPE OF STEEL | Pag. 228 | N/mm² | HV | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth | mt/min | mm/tooth |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel | 1 | 500 | 157 | 50 | s | 100 | s | 60 | r | 120 | r | 120 | b | 50 | s | 100 | s | 50 | s | 100 | s | 50 | s | 100 | s | 60 | b | 50 | a |
| | Acciai da costruzione Structural steel | 2 | 700 | 219 | 40 | s | 80 | s | 50 | r | 100 | r | 100 | b | 40 | s | 80 | s | 40 | s | 80 | s | 40 | s | 80 | s | 50 | b | 40 | a |
| | Acciai da tempra Hardening steel | 3 | 900 | 280 | 28 | s | 60 | s | 40 | r | 80 | r | 80 | c | 28 | s | 60 | s | 28 | s | 60 | s | 28 | s | 60 | s | 12 | c | 28 | n |
| | Acciaio automatico Automatic steel | 4 | 1200 | 373 | | | 35 | s | | | 38 | r | 38 | c | | | 35 | s | | | 35 | s | | | 35 | s | | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel | 3 | 850 | 265 | 25 | r | 35 | r | 30 | r | 45 | r | 45 | r | 25 | r | 35 | r | 25 | r | 35 | r | 25 | r | 35 | r | 25 | e | 20 | e |
| | Austenitico Austenitic | 3 | 850 | 265 | | | | | 28 | r | 40 | r | 40 | r | | | | | | | | | | | | | | | 15 | e |
| | Ferritico+austenitico Ferritic austenitic | 4 | 1000 | 311 | | | 18 | i | 15 | r | 25 | r | 25 | r | | | 18 | i | | | 18 | i | | | 18 | i | | | 8 | d |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb | 2 | 500 | 157 | 27 | m | 45 | m | 32 | m | 50 | m | 50 | m | 27 | m | 45 | m | 27 | m | 45 | m | 27 | m | 45 | m | 30 | b | 30 | b |
| | Ghisa oltre 180 hb Cast iron over 180hb | 3 | 700 | 219 | 22 | m | 40 | m | 27 | m | 45 | m | 45 | m | 22 | m | 40 | m | 22 | m | 40 | m | 22 | m | 40 | m | 25 | b | 25 | b |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium | 5 | 500 | 157 | 32 | h | 40 | h | 35 | m | 45 | m | 40 | h | 32 | h | 40 | h | 32 | h | 40 | h | 32 | h | 40 | h | 30 | e | 30 | e |
| | Leghe di titanio Titanium alloys | 5 | 900 | 280 | 28 | h | 36 | h | 30 | m | 40 | m | 36 | h | 28 | h | 36 | h | 28 | h | 36 | h | 28 | h | 36 | h | 25 | e | 25 | e |
| RAME COPPER | Rame Copper | 9 | 350 | 110 | 140 | s | 220 | s | 155 | s | 235 | s | 235 | s | 140 | s | 220 | s | 140 | s | 220 | s | 140 | s | 220 | s | 135 | c | 135 | c |
| | Ottone Brass | 9 | 700 | 219 | 150 | s | 225 | s | 160 | s | 230 | s | 230 | s | 150 | s | 225 | s | 150 | s | 225 | s | 150 | s | 225 | s | 140 | c | 140 | c |
| | Bronzo Bronze | 9 | 700 | 219 | 150 | s | 225 | s | 160 | s | 230 | s | 230 | s | 150 | s | 225 | s | 150 | s | 225 | s | 150 | s | 225 | s | 140 | c | 140 | c |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel | 6 | 700 | 219 | 55 | u | 110 | u | 65 | u | 120 | u | 120 | u | 55 | u | 110 | u | 55 | u | 110 | u | 55 | u | 110 | u | 50 | e | 50 | e |
| | Leghe di nichel Nichel alloys | 6 | 900 | 280 | 20 | u | 30 | u | 30 | u | 60 | u | 60 | u | 20 | u | 30 | u | 20 | u | 30 | u | 20 | u | 30 | u | 15 | b | 15 | b |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium | 7 | 350 | 110 | 330 | u | 660 | u | 350 | u | 700 | u | 700 | u | 330 | u | 660 | u | 330 | u | 660 | u | 330 | u | 660 | u | 330 | f | 330 | f |
| | Alluminio con leghe Alloyed aluminium | 7 | 400 | 125 | 330 | u | 660 | u | 350 | u | 700 | u | 700 | u | 330 | u | 660 | u | 330 | u | 660 | u | 330 | u | 660 | u | 330 | f | 330 | f |
| | Alluminio con leghe Alloyed aluminium | 7 | 500 | 157 | 100 | u | 200 | u | 100 | u | 200 | u | 200 | u | 100 | u | 200 | u | 100 | u | 200 | u | 100 | u | 200 | u | 100 | f | 100 | f |

## FRESE A CODOLO CONICO
MORSE TAPER SHANK END MILLS




| CM37FE | CM38 | CM41TF | CM41TF | CM41TF | CM41TF | CM41R | CM44R | CM42 | CM42 | CM42 | CM42 | CM42R | CM48R | CM43 | CM44TF | CM44TF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN 845/B | | | | | | DIN 1889/2D | | DIN 845/B | | | | DIN 1889/2D | | CARMON NORM. | DIN 845/B | |
| HSS+8%Co | | | | RESISTOR | | HSS+8%Co | | | | HSS+8%Co | | HSS+8%Co | | | | |
| 159 | 160 | 161 | 161 | 161 | 161 | 162 | 162 | 162 | 162 | 162 | 162 | 163 | 163 | 163 | 164 | 164 |
| mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth |
| 50 a | 50 i | 50 a | 100 a | 60 b | 120 b | 50 a | 50 s | 50 g | 100 g | 60 b | 120 b | 50 g | 50 g | 25 m | 50 s | 100 s |
| 40 a | 40 i | 40 a | 80 a | 50 b | 100 b | 40 a | 40 s | 40 g | 80 g | 50 b | 100 b | 40 g | 40 g | 18 m | 40 s | 80 s |
| 28 n | 28 i | 28 n | 56 n | 40 c | 80 c | 28 n | 28 s | 28 i | 56 i | 40 c | 80 c | 28 i | 28 g | 12 m | 28 s | 56 s |
| | | | 35 d | | 38 c | | | | 35 d | | 38 c | | | 10 m | | 35 s |
| 20 e | 20 g | 20 e | 34 e | 28 e | 45 e | 20 e | 25 r | 20 c | 34 c | 28 e | 45 e | 20 c | 25 h | | 25 r | 35 r |
| 15 e | 15 g | 15 e | 25 e | 20 e | 35 e | 15 e | | 15 c | 25 c | 20 e | 35 e | 15 c | | | | |
| 8 d | 8 i | 8 d | 18 d | 12 e | 23 e | 8 d | | 8 i | 18 i | 12 e | 23 e | 8 i | | | | 18 i |
| 30 b | 30 i | 30 b | 50 b | 35 r | 58 r | 30 b | 27 m | 30 i | 50 i | 35 r | 58 r | 30 i | 27 m | | 27 m | 45 m |
| 25 b | 25 i | 25 b | 45 b | 30 r | 45 r | 25 b | 22 m | 25 i | 45 i | 30 r | 45 r | 25 i | 22 m | 16 m | 22 m | 40 m |
| 30 e | 30 g | 30 e | 38 e | 35 e | 45 e | 30 e | 32 h | 30 c | 38 c | 35 e | 45 e | 30 c | 32 h | | 32 h | 40 h |
| 25 e | 25 g | 25 e | 33 e | 28 e | 38 e | 25 e | 28 h | 25 c | 33 c | 28 e | 38 e | 25 c | 28 h | | 28 h | 36 h |
| 135 c | 135 i | 135 c | 215 c | 150 d | 260 d | 135 c | 140 s | 135 h | 215 h | 150 d | 260 d | 135 h | 140 o | | 140 s | 220 s |
| 140 c | 140 i | 140 c | 220 c | 160 d | 270 d | 140 c | 150 s | 140 h | 220 h | 160 d | 270 d | 140 h | 150 o | | 150 s | 225 s |
| 140 c | 140 i | 140 c | 220 c | 160 d | 270 d | 140 c | 150 s | 140 h | 220 h | 160 d | 270 d | 140 h | 150 o | | 150 s | 225 s |
| 50 e | 50 g | 50 e | 100 e | 55 s | 125 s | 50 e | 55 u | 50 c | 100 c | 55 s | 125 s | 50 c | 55 i | | 55 u | 110 u |
| 15 b | 15 i | 15 b | 25 b | 18 s | 35 s | 15 b | 20 u | 15 i | 25 i | 18 s | 35 s | 15 i | 20 i | | 20 u | 30 u |
| 660 f | 330 i | 330 f | 660 f | 350 r | 700 r | 330 f | 330 u | 330 h | 660 h | 350 r | 700 r | 330 h | 330 i | 150 m | 330 u | 660 u |
| 660 f | 330 i | 330 f | 660 f | 350 r | 700 r | 330 f | 330 u | 330 h | 660 h | 350 r | 700 r | 330 h | 330 i | | 330 u | 660 u |
| 200 f | 100 i | 100 f | 200 f | 120 r | 240 r | 100 f | 100 u | 100 h | 200 h | 120 r | 240 r | 100 h | 100 i | | 100 u | 200 u |

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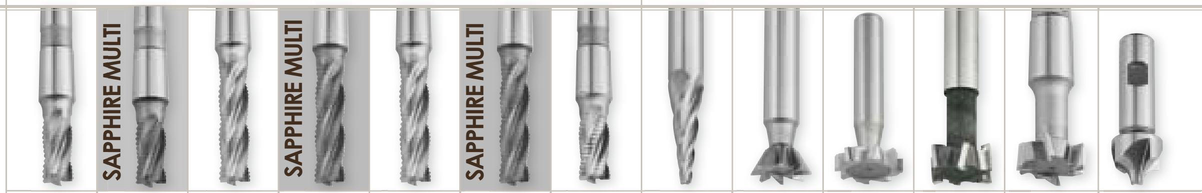
rpm
=(mt/min x 1000) / ( D x 3,14 )

mm/min
= mm/rev x rpm

= mt/min

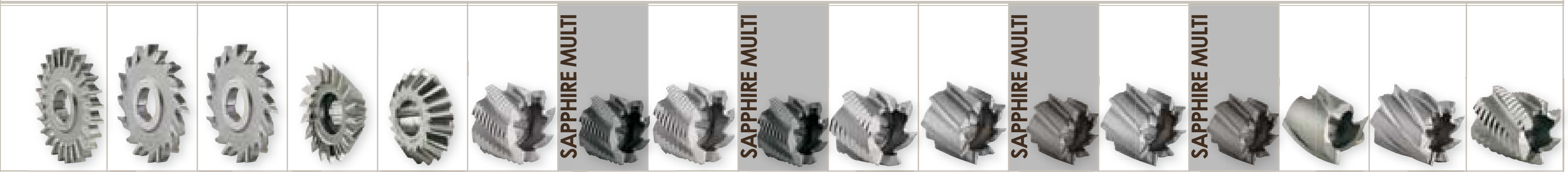
= mm/tooth (vedi tabella - see table page pag. 141)

## FRESE A CODOLO CONICO / MORSE TAPER SHANK END MILLS — UTENSILI VARI / VARIUS CUTTING TOOLS




| | | | | CM44TF | CM44TF SAPPHIRE MULTI | CM48 | CM48 SAPPHIRE MULTI | CM48 | CM48 SAPPHIRE MULTI | CM45TF | CS47 | TCL60 | TCL61 | TCL62 | TCM63 | RC135 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DIN | | | DIN 845/B | | | | | DIN 1889/EA | DIN 1833/A B | DIN 850/B | DIN 851/AA | DIN 851/B | DIN 6518/B |
| | | | | RESISTOR | RESISTOR | HSS+8%Co | HSS+8%Co | RESISTOR | RESISTOR | HSS+8%Co | HSS+5%Co | HSS+5%Co | HSS+5%Co | HSS+5%Co | HSS+5%Co | HSS+5%Co |
| | | | Pagina Page | 164 | 164 | 165 | 165 | 165 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 |
| | TIPO DI ACCIAIO / TYPE OF STEEL | Pag. 228 | N/mm² / HV | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth |
| ACCIAI COMUNI / COMMON STEEL | Acciai teneri / Soft steel | 1 | 500 / 157 | 60 r | 120 r | 50 g | 100 g | 60 r | 120 r | 50 s | 50 a | 35 f | 30 c | 35 c | 35 c | 50 a |
| | Acciai da costruzione / Structural steel | 2 | 700 / 219 | 50 r | 100 r | 40 g | 80 g | 50 r | 100 r | 40 s | 40 a | 30 f | 25 c | 30 c | 30 c | 40 a |
| | Acciai da tempra / Hardening steel | 3 | 900 / 280 | 40 r | 80 r | 28 g | 56 g | 40 r | 80 r | 28 s | 28 n | 25 e | 20 b | 25 b | 25 b | 28 n |
| | Acciaio automatico / Automatic steel | 4 | 1200 / 373 | | 38 r | | 35 s | | 38 r | | | 15 d | 10 b | 15 b | 15 b | |
| ACCIAI INOX / STAINLESS STEEL | Acciaio automatico / Automatic steel | 3 | 850 / 265 | 30 r | 45 r | 25 h | 35 h | 30 r | 45 r | 25 r | 20 e | 18 d | 15 c | 18 c | 18 c | 20 e |
| | Austenitico / Austenitic | 3 | 850 / 265 | 28 r | 40 r | | | 28 r | 40 r | | 15 e | 15 c | 10 b | 15 b | 15 b | 15 e |
| | Ferritico+austenitico / Ferritic austenitic | 4 | 1000 / 311 | 15 r | 25 r | | 18 i | 15 r | 25 r | | 8 d | 10 b | 10 a | 10 a | 10 a | 8 d |
| GHISA / CAST IRON | Ghisa fino a 180 hb / Cast iron up to 180hb | 2 | 500 / 157 | 32 m | 50 m | 27 m | 45 m | 32 m | 50 m | 27 m | 30 b | 20 e | 20 b | 20 b | 20 b | 30 b |
| | Ghisa oltre 180 hb / Cast iron over 180hb | 3 | 700 / 219 | 27 m | 45 m | 22 m | 40 m | 27 m | 45 m | 22 m | 25 b | 15 c | 15 b | 15 b | 15 b | 25 b |
| TITANIO / TITANIUM | Titanio non legato / Unalloyed titanium | 5 | 500 / 157 | 35 m | 45 m | 32 h | 40 h | 35 m | 45 m | 32 h | 30 e | 25 e | 30 c | 25 b | 25 b | 30 e |
| | Leghe di titanio / Titanium alloys | 5 | 900 / 280 | 30 m | 40 m | 28 h | 36 h | 30 m | 40 m | 28 h | 25 e | 15 c | 20 b | 15 b | 15 b | 25 e |
| RAME / COPPER | Rame / Copper | 9 | 350 / 110 | 155 s | 235 s | 140 o | 220 o | 155 s | 235 s | 140 s | 135 c | 75 f | 25 c | 90 d | 90 d | 135 c |
| | Ottone / Brass | 9 | 700 / 219 | 160 s | 230 s | 150 o | 225 o | 160 s | 230 s | 150 s | 140 c | 75 f | 25 c | 90 d | 90 d | 140 c |
| | Bronzo / Bronze | 9 | 700 / 219 | 160 s | 230 s | 150 o | 225 o | 160 s | 230 s | 150 s | 140 c | 65 f | 35 c | 35 c | 35 c | 140 c |
| NICHEL / NICKEL | Nichel non legato / Unalloyed nichel | 6 | 700 / 219 | 65 u | 120 u | 55 i | 110 i | 65 u | 120 u | 55 u | 50 e | 20 d | 30 c | 25 b | 25 b | 50 e |
| | Leghe di nichel / Nichel alloys | 6 | 900 / 280 | 30 u | 60 u | 20 i | 30 i | 30 u | 60 u | 20 u | 15 b | 12 c | 6 a | 6 a | 6 a | 15 b |
| ALLUMINIO / ALUMINIUM | Alluminio non legato / Unalloyed aluminium | 7 | 350 / 110 | 350 u | 700 u | 330 i | 660 i | 350 u | 700 u | 330 u | 330 f | 150 i | 60 h | 150 i | 150 i | 330 f |
| | Alluminio con leghe / Alloyed aluminium | 7 | 400 / 125 | 350 u | 700 u | 330 i | 660 i | 350 u | 700 u | 330 u | 330 f | 55 h | 30 d | 55 h | 55 h | 330 f |
| | Alluminio con leghe / Alloyed aluminium | 7 | 500 / 157 | 100 u | 200 u | 100 i | 200 i | 100 u | 200 u | 100 u | 100 f | 40 g | 15 b | 40 g | 40 g | 100 f |

## FRESE A DISCO, AD ANGOLO E FRONTALI
### SIDE AND FACE CUTTER, ANGLE CUTTER, SHELL END MILLS



| CR81 | CR83 | CR85 | FA91 | FP92 | CF94 | CF94 SAPPHIRE MULTI | CF94 | CF94 SAPPHIRE MULTI | CF95 | CF96 | CF96 SAPPHIRE MULTI | CF96 | CF96 SAPPHIRE MULTI | CF97 | CF98 | CF99 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIN 885/B | DIN 885/A | | DIN 842/A | DIN 847 | DIN 1880 | | | | | | | | | | DIN 841 | |
| HSS+5%Co | | | | | HSS+8%Co | | RESISTOR | | HSS+8%Co | | | RESISTOR | | HSS+5%Co | HSS+8%Co | |
| 173 | 175 | 178 | 179 | 180 | 181 | 181 | 181 | 181 | 181 | 182 | 182 | 182 | 182 | 182 | 183 | 183 |
| mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth | mt/min mm/tooth |
| 40 i | 40 c | 40 i | 35 m | 35 m | 30 d | 60 d | 35 t | 70 t | 30 d | 30 d | 60 d | 35 t | 70 t | | 30 d | 30 d |
| 35 i | 35 c | 35 i | 14 m | 14 m | 25 d | 50 d | 30 t | 60 t | 25 d | 25 d | 50 d | 30 t | 60 t | | 25 d | 25 d |
| 30 i | 30 c | 30 i | 11 m | 11 m | 20 c | 40 d | 25 p | 50 p | 20 c | 20 c | 40 d | 25 p | 50 p | | 20 c | 20 c |
| 20 i | 20 c | 20 i | 9 m | 9 m | 10 b | 20 b | 14 r | 28 r | 10 b | 10 b | 20 b | 14 r | 28 r | | 10 b | 10 b |
| 25 i | 25 c | 25 i | 14 m | 14 m | 20 c | 40 c | 20 b | 40 b | 20 c | 20 c | 40 c | 20 b | 40 b | | 20 c | 20 c |
| 20 i | 20 c | 20 i | 12 m | 12 m | 15 c | 30 c | 15 n | 30 n | 15 c | 15 c | 30 c | 15 n | 30 n | | 15 c | 15 c |
| 10 i | 10 c | 10 i | 10 m | 10 m | 6 a | 12 a | 8 r | 16 r | 6 a | 6 a | 12 a | 8 r | 16 r | | 6 a | 6 a |
| 25 c | 25 d | 25 c | 25 m | 25 m | 20 b | 40 b | 25 d | 50 d | 20 b | 20 b | 40 b | 25 d | 50 d | | 20 b | 20 b |
| 15 c | 15 d | 15 c | 20 m | 20 m | 15 b | 30 b | 20 d | 40 d | 15 b | 15 b | 30 b | 20 d | 40 d | | 15 b | 15 b |
| 25 c | 25 a | 25 c | | | 30 c | 30 c | 35 d | 70 d | 30 c | 30 c | 30 c | 35 d | 70 d | | 30 c | 30 c |
| 15 i | 15 b | 15 i | | | 20 b | 40 b | 25 a | 50 a | 20 b | 20 b | 40 b | 25 a | 50 a | | 20 b | 20 b |
| 120 i | 120 c | 120 i | | | 70 g | 140 g | 80 f | 160 f | 70 g | 70 g | 140 g | 80 f | 160 f | | 70 g | 70 g |
| 120 i | 120 c | 120 i | | | 70 g | 140 g | 80 f | 160 f | 70 g | 70 g | 140 g | 80 f | 160 f | | 70 g | 70 g |
| 120 i | 120 c | 120 i | | | 35 f | 70 f | 40 b | 80 b | 35 f | 35 f | 70 f | 40 b | 80 b | | 35 f | 35 f |
| 35 i | 35 c | 35 i | | | 30 c | 60 c | 35 d | 70 d | 30 c | 30 c | 60 c | 35 d | 70 d | | 30 c | 30 c |
| 12 c | 12 b | 12 c | | | 12 a | 24 a | 15 a | 30 a | 12 a | 12 a | 24 a | 15 a | 30 a | | 12 a | 12 a |
| 350 c | 350 d | 350 c | 85 m | 85 m | 200 h | 400 h | 230 i | 450 i | 200 h | | | | | 200 d | 200 h | 200 h |
| 100 c | 100 d | 100 c | | | 60 d | 120 d | 80 d | 160 d | 60 d | | | | | 120 d | 60 d | 60 d |
| 70 c | 70 d | 70 c | | | 35 d | 70 d | 40 d | 80 d | 35 d | | | | | 80 d | 35 d | 35 d |

rpm $=(mt/min \times 1000) / (D \times 3{,}14)$

mm/min $=$ mm/rev x rpm

$=$ mt/min

$=$ mm/tooth (vedi tabella - see table page pag. 141)

| | FRESE A DISCO, AD ANGOLO E FRONTALI / SIDE AND FACE CUTTER, ANGLE CUTTER, SHELL END MILLS | | | | UTENSILI PER PROFILATI D'ALLUMINIO, PVC E LEGHE LEGGERE / CUTTING TOOLS FOR ALUMINIUM PROFILS, PLASTIC AND LIGHT ALLOYS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SCR121 | SCV131 | SCC132 | MOD141 | ALL156 | ALL157 | ALL158 | SAPPHIRE MULTI ALL158 | ALL160 | ALL162 | ALL164 | ALL166 |
| | CARMON NORM. | DIN 856 | DIN 855/A | UNI 4501 | CARMON NORM. | | | | DIN 844/B | | | |
| | HSS+5%Co | | | | | | | | RESISTOR | | | |
| Pagina Page | 184 | 185 | 186 | 187 | 188 | 188 | 189 | 189 | 190 | 190 | 190 | 190 |

| | Pag. 228 | TIPO DI ACCIAIO / TYPE OF STEEL | N/mm² | HV | SCR121 mt/min mm/tooth | SCV131 mt/min mm/tooth | SCC132 mt/min mm/tooth | MOD141 mt/min mm/tooth | ALL156 mt/min mm/tooth | ALL157 mt/min mm/tooth | ALL158 mt/min mm/tooth | ALL158 SAPPHIRE MULTI mt/min mm/tooth | ALL160 mt/min mm/tooth | ALL162 mt/min mm/tooth | ALL164 mt/min mm/tooth | ALL166 mt/min mm/tooth |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ACCIAI COMUNI / COMMON STEEL | 1 | Acciai teneri / Soft steel | 500 | 157 | 25 m | 25 m | 25 m | 25 m | | | | | 60 b | 60 b | 60 r | 60 r |
| | 2 | Acciai da costruzione / Structural steel | 700 | 219 | 14 m | 14 m | 14 m | 14 m | | | | | 50 b | 50 b | 50 r | 50 r |
| | 3 | Acciai da tempra / Hardening steel | 900 | 280 | 11 m | 11 m | 11 m | 11 m | | | | | 40 c | 40 c | 40 r | 40 r |
| | 4 | Acciaio automatico / Automatic steel | 1200 | 373 | 9 m | 9 m | 9 m | 9 m | | | | | | | | |
| ACCIAI INOX / STAINLESS STEEL | 3 | Acciaio automatico / Automatic steel | 850 | 265 | 14 m | 14 m | 14 m | 14 m | | | | | 28 e | 28 e | 30 r | 30 r |
| | 3 | Austenitico / Austenitic | 850 | 265 | 12 m | 12 m | 12 m | 12 m | | | | | 20 e | 20 e | 28 r | 28 r |
| | 4 | Ferritico+austenitico / Ferritic austenitic | 1000 | 311 | 10 m | 10 m | 10 m | 10 m | | | | | 12 e | 12 e | 15 r | 15 r |
| GHISA / CAST IRON | 2 | Ghisa fino a 180 hb / Cast iron up to 180hb | 500 | 157 | 25 m | 25 m | 25 m | 25 m | | | | | 35 r | 35 r | 32 m | 32 m |
| | 3 | Ghisa oltre 180 hb / Cast iron over 180hb | 700 | 219 | 20 m | 20 m | 20 m | 20 m | | | | | 30 r | 30 r | 27 m | 27 m |
| TITANIO / TITANIUM | 5 | Titanio non legato / Unalloyed titanium | 500 | 157 | | | | | | | | | 35 e | 35 e | 35 m | 35 m |
| | 5 | Leghe di titanio / Titanium alloys | 900 | 280 | | | | | | | | | 28 e | 28 e | 30 m | 30 m |
| RAME / COPPER | 9 | Rame / Copper | 350 | 110 | | | | | | | | | 150 d | 150 d | 155 s | 155 s |
| | 9 | Ottone / Brass | 700 | 219 | | | | | | | | | 160 d | 160 d | 160 s | 160 s |
| | 9 | Bronzo / Bronze | 700 | 219 | | | | | | | | | 160 d | 160 d | 160 s | 160 s |
| NICHEL / NICKEL | 6 | Nichel non legato / Unalloyed nichel | 700 | 219 | | | | | | | | | 55 s | 55 s | 110 u | 110 u |
| | 6 | Leghe di nichel / Nichel alloys | 900 | 280 | | | | | | | | | 18 s | 18 s | 30 u | 30 u |
| ALLUMINIO / ALUMINIUM | 7 | Alluminio non legato / Unalloyed aluminium | 350 | 110 | 85 m | 85 m | 85 m | 85 m | 100 c | 100 c | 200 v | 400 v | 350 r | 350 r | 350 u | 350 u |
| | 7 | Alluminio con leghe / Alloyed aluminium | 400 | 125 | | | | | | | | | 350 r | 350 r | 350 u | 350 u |
| | 7 | Alluminio con leghe / Alloyed aluminium | 500 | 157 | | | | | | | | | 120 r | 120 r | 100 u | 100 u |

## KIT DI FRESE
POWDERSTEEL END MILLS SETS

| CL11 | CL21TF | CL24TF | CL24TFPF |
|---|---|---|---|
| DIN 327/D | | DIN 844/B | |
| | | RESISTOR | |
| 191 | 191 | 191 | 191 |

## FRESATURA *MILLING*

### TABELLA PARAMETRI DI AVANZAMENTO mm/dente - *FEED DATA (mm/tooth)*

DIAMETRO DELLA FRESA *MILLING DIAMETER*

| TIPO DI FRESATURA *TYPE OF MILLING* | LETTERA DI RIFERIMENTO *REFERENCE LETTER* | D. 1 | D. 2 | D. 3 | D. 4 | D. 5 | D. 6 | D. 8 | D. 10 | D. 12 | D. 14 | D. 16 | D. 20 | D. 25 | D. 30 | D. 35 | D. 40 | D.50 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| FRESATURA DI CAVE SLOTTING | a | 0,005 | 0,010 | 0,015 | 0,020 | 0,025 | 0,030 | 0,045 | 0,060 | 0,075 | 0,085 | 0,095 | 0,100 | 0,102 | 0,110 | 0,107 | 0,106 | 0,108 |
| | b | 0,005 | 0,008 | 0,013 | 0,017 | 0,023 | 0,027 | 0,040 | 0,056 | 0,065 | 0,074 | 0,085 | 0,087 | 0,089 | 0,100 | 0,098 | 0,096 | 0,098 |
| | c | 0,004 | 0,007 | 0,012 | 0,016 | 0,021 | 0,022 | 0,034 | 0,050 | 0,057 | 0,067 | 0,079 | 0,080 | 0,082 | 0,085 | 0,088 | 0,087 | 0,089 |
| | d | 0,004 | 0,008 | 0,010 | 0,014 | 0,020 | 0,025 | 0,036 | 0,052 | 0,063 | 0,072 | 0,083 | 0,084 | 0,086 | 0,092 | 0,098 | 0,100 | 0,102 |
| | e | 0,008 | 0,010 | 0,019 | 0,025 | 0,036 | 0,043 | 0,062 | 0,087 | 0,106 | 0,125 | 0,145 | 0,147 | 0,149 | 0,173 | 0,156 | 0,168 | 0,177 |
| | f | 0,008 | 0,010 | 0,015 | 0,020 | 0,022 | 0,024 | 0,035 | 0,042 | 0,054 | 0,056 | 0,067 | 0,079 | 0,086 | 0,089 | 0,091 | 0,091 | 0,091 |
| SGROSSATURA ROUGHING | g | | | | | | 0,027 | 0,036 | 0,037 | 0,045 | 0,053 | 0,057 | 0,074 | 0,075 | 0,055 | 0,057 | 0,056 | 0,056 |
| | h | | | | | | 0,024 | 0,033 | 0,034 | 0,039 | 0,046 | 0,051 | 0,065 | 0,067 | 0,050 | 0,051 | 0,049 | 0,052 |
| | i | | | | | | 0,022 | 0,031 | 0,034 | 0,040 | 0,045 | 0,054 | 0,063 | 0,065 | 0,050 | 0,055 | 0,056 | 0,060 |
| | l | | | | | | 0,025 | 0,036 | 0,048 | 0,064 | 0,080 | 0,093 | 0,105 | 0,100 | 0,102 | 0,112 | 0,115 | 0,120 |
| | m | | | | | | 0,026 | 0,011 | 0,014 | 0,018 | 0,022 | 0,027 | 0,030 | 0,033 | 0,036 | 0,040 | 0,043 | 0,045 |
| SEMI FINITURA SEMI-FINISHING | n | 0,008 | 0,012 | 0,017 | 0,023 | 0,030 | 0,036 | 0,052 | 0,061 | 0,073 | 0,083 | 0,106 | 0,083 | 0,078 | 0,084 | 0,089 | 0,095 | 0,100 |
| | o | 0,007 | 0,010 | 0,016 | 0,020 | 0,027 | 0,025 | 0,047 | 0,055 | 0,066 | 0,074 | 0,090 | 0,074 | 0,070 | 0,075 | 0,080 | 0,900 | 0,950 |
| | p | 0,080 | 0,011 | 0,018 | 0,021 | 0,029 | 0,029 | 0,050 | 0,060 | 0,070 | 0,080 | 0,099 | 0,082 | 0,075 | 0,080 | 0,085 | 0,095 | 0,101 |
| | q | 0,008 | 0,015 | 0,022 | 0,025 | 0,037 | 0,035 | 0,067 | 0,080 | 0,094 | 0,107 | 0,100 | 0,095 | 0,113 | 0,120 | 0,128 | 0,140 | 0,147 |
| | r | 0,013 | 0,017 | 0,020 | 0,026 | 0,030 | 0,030 | 0,048 | 0,057 | 0,063 | 0,075 | 0,095 | 0,094 | 0,092 | 0,093 | 0,105 | 0,108 | 0,115 |
| FINITURA FINISHING | s | 0,011 | 0,016 | 0,025 | 0,030 | 0,040 | 0,038 | 0,073 | 0,088 | 0,102 | 0,115 | 0,146 | 0,114 | 0,108 | 0,115 | 0,125 | 0,138 | 0,143 |
| | t | 0,008 | 0,013 | 0,022 | 0,025 | 0,036 | 0,036 | 0,047 | 0,066 | 0,078 | 0,093 | 0,105 | 0,130 | 0,104 | 0,098 | 0,105 | 0,112 | 0,128 |
| | u | 0,009 | 0,014 | 0,020 | 0,025 | 0,030 | 0,042 | 0,060 | 0,072 | 0,083 | 0,093 | 0,114 | 0,098 | 0,089 | 0,095 | 0,100 | 0,110 | 0,118 |
| | v | 0,012 | 0,018 | 0,025 | 0,034 | 0,046 | 0,048 | 0,060 | 0,083 | 0,100 | 0,116 | 0,135 | 0,122 | 0,140 | 0,149 | 0,155 | 0,178 | 0,180 |
| | z | 0,016 | 0,022 | 0,027 | 0,033 | 0,038 | 0,048 | 0,061 | 0,073 | 0,083 | 0,094 | 0,115 | 0,117 | 0,118 | 0,135 | 0,137 | 0,140 | 0,143 |

carmon

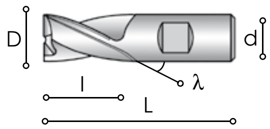
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT DRILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

# CL 11

DIN 327D

N

λ 30°




CL11

| D e8 | L | l | d h6 | Z | CODE | HSS+8%Co 1110..... € | HSS+8%Co 2110..... € SAPPHIRE MULTI | CODE | RESISTOR 1110..... € | RESISTOR 2110..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 47 | 2,5 | 6 | 2 | ....01000 | 18,64 | 24,15 | | | |
| 1,5 | 47 | 3 | 6 | 2 | ....01500 | 17,37 | 22,75 | | | |
| 2 | 48 | 4 | 6 | 2 | ....02000 | 15,55 | 20,75 | ....02030 | 18,09 | 23,55 |
| 2,5 | 49 | 5 | 6 | 2 | ....25000 | 15,55 | 20,75 | | | |
| 3 | 49 | 5 | 6 | 2 | ....30000 | 13,22 | 18,19 | ....30030 | 15,17 | 20,33 |
| 3,5 | 50 | 6 | 6 | 2 | ....35000 | 13,22 | | | | |
| 4 | 51 | 7 | 6 | 2 | ....40000 | 12,84 | 17,77 | ....40030 | 14,76 | 19,88 |
| 4,5 | 51 | 7 | 6 | 2 | ....45000 | 13,28 | | | | |
| 5 | 52 | 8 | 6 | 2 | ....50000 | 12,61 | 17,52 | ....50030 | 14,55 | 19,65 |
| 5,5 | 52 | 8 | 6 | 2 | ....55000 | 12,84 | | | | |
| 6 | 52 | 8 | 6 | 2 | ....60000 | 11,87 | 16,70 | ....60030 | 13,80 | 18,83 |
| 6,5 | 60 | 10 | 10 | 2 | ....65000 | 16,93 | | | | |
| 7 | 60 | 10 | 10 | 2 | ....70000 | 16,93 | 23,90 | ....70030 | 19,74 | 27,00 |
| 7,5 | 60 | 10 | 10 | 2 | ....75000 | 17,31 | | | | |
| 8 | 61 | 11 | 10 | 2 | ....80000 | 16,22 | 23,12 | ....80030 | 18,75 | 25,91 |
| 8,5 | 61 | 11 | 10 | 2 | ....85000 | 19,64 | | | | |
| 9 | 61 | 11 | 10 | 2 | ....90000 | 19,03 | 26,21 | ....90030 | 22,23 | 29,74 |
| 9,5 | 61 | 11 | 10 | 2 | ....95000 | 19,74 | | | | |
| 10 | 63 | 13 | 10 | 2 | ....10000 | 18,37 | 25,49 | ....10030 | 21,37 | 28,79 |
| 10,5 | 70 | 13 | 12 | 2 | ....10500 | 23,67 | | | | |
| 11 | 70 | 13 | 12 | 2 | ....11000 | 22,68 | 30,23 | ....11030 | 26,44 | 34,37 |
| 11,5 | 70 | 13 | 12 | 2 | ....11500 | 23,45 | | | | |
| 12 | 73 | 16 | 12 | 2 | ....12000 | 22,77 | 30,32 | ....12030 | 26,41 | 34,33 |
| 12,5 | 73 | 16 | 12 | 2 | ....12500 | 25,33 | | | | |
| 13 | 73 | 16 | 12 | 2 | ....13000 | 25,33 | 33,64 | ....13030 | 29,48 | 38,20 |
| 13,5 | 73 | 16 | 12 | 2 | ....13500 | 27,21 | | | | |
| 14 | 73 | 16 | 12 | 2 | ....14000 | 27,21 | 35,70 | ....14030 | 32,07 | 41,05 |
| 14,5 | 73 | 16 | 12 | 2 | ....14500 | 30,59 | | | | |
| 15 | 73 | 16 | 12 | 2 | ....15000 | 30,59 | 39,42 | ....15030 | 35,78 | 45,13 |
| 15,5 | 79 | 19 | 16 | 2 | ....15500 | 32,57 | | | | |
| 16 | 79 | 19 | 16 | 2 | ....16000 | 32,57 | 41,60 | ....16030 | 38,21 | 47,81 |
| 17 | 79 | 19 | 16 | 2 | ....17000 | 36,45 | 48,58 | ....17030 | 49,83 | 63,30 |
| 18 | 79 | 19 | 16 | 2 | ....18000 | 40,48 | 53,02 | ....18030 | 49,83 | 63,30 |
| 19 | 79 | 19 | 16 | 2 | ....19000 | 50,04 | 65,22 | ....19030 | 62,52 | 78,94 |
| 20 | 88 | 22 | 20 | 2 | ....20000 | 48,59 | 63,61 | ....20030 | 57,83 | 73,78 |
| 22 | 88 | 22 | 20 | 2 | ....22000 | 64,65 | 81,28 | ....22030 | 78,39 | 96,40 |
| 24 | 102 | 26 | 25 | 2 | ....24000 | 93,73 | 121,57 | ....24030 | 116,74 | 146,88 |
| 25 | 102 | 26 | 25 | 2 | ....02500 | 93,73 | 121,57 | ....25030 | 116,74 | 146,88 |
| 26 | 102 | 26 | 25 | 2 | ....26000 | 101,31 | | | | |
| 28 | 102 | 26 | 25 | 2 | ....28000 | 107,34 | | | | |

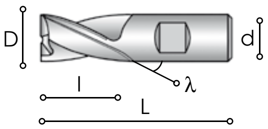
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT DRILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

# CL 11

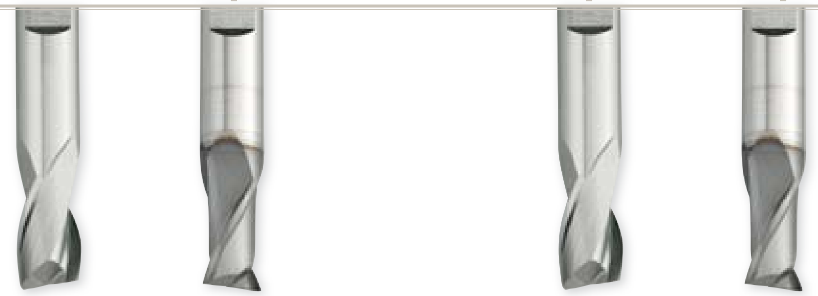
DIN 327D

N

λ 30°




CL11

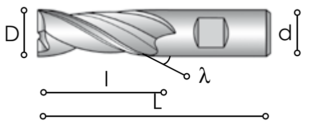


| D e8 | L | l | d h6 | Z | CODE | HSS+8%Co 1110..... € | HSS+8%Co 2110..... € SAPPHIRE MULTI | CODE | RESISTOR 1110..... € | RESISTOR 2110..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 30 | 102 | 26 | 25 | 2 | ....03000 | 117,56 | | | | |
| 32 | 112 | 32 | 32 | 2 | ....32000 | 130,45 | | | | |
| 35 | 112 | 32 | 32 | 2 | ....03500 | 152,63 | | | | |
| 36 | 112 | 32 | 32 | 2 | ....36000 | 166,28 | | | | |
| 38 | 118 | 38 | 32 | 2 | ....38000 | 187,29 | | | | |
| 40 | 118 | 38 | 32 | 2 | ....04000 | 208,09 | | | | |

FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT DRILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

# CL 12

CARMON NORM. N λ 30°





| D e8 | L | l | d h6 | Z | CODE | HSS+8%Co 1120..... € | HSS+8%Co 2120..... € SAPPHIRE MULTI | CODE | RESISTOR 1120..... € | RESISTOR 2120..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 56 | 8 | 6 | 2 | ....30000 | 17,81 | 23,23 | ....30030 | 20,86 | 26,59 |
| 4 | 63 | 11 | 6 | 2 | ....40000 | 17,42 | 22,81 | ....40030 | 20,35 | 26,04 |
| 5 | 68 | 13 | 6 | 2 | ....50000 | 17,42 | 22,81 | ....50030 | 20,35 | 26,04 |
| 6 | 68 | 13 | 6 | 2 | ....60000 | 16,87 | 22,21 | ....60030 | 19,74 | 25,36 |
| 7 | 80 | 16 | 10 | 2 | ....70000 | 22,01 | 30,78 | ....70030 | 25,72 | 34,86 |
| 8 | 88 | 19 | 10 | 2 | ....80000 | 20,78 | 29,43 | ....80030 | 24,38 | 33,38 |
| 9 | 88 | 19 | 10 | 2 | ....90000 | 25,16 | 34,25 | ....90030 | 29,59 | 39,12 |
| 10 | 95 | 22 | 10 | 2 | ....10000 | 22,93 | 31,79 | ....10030 | 26,85 | 36,10 |
| 11 | 102 | 22 | 12 | 2 | ....11000 | 31,31 | 42,85 | ....11030 | 36,67 | 48,75 |
| 12 | 110 | 26 | 12 | 2 | ....12000 | 28,84 | 40,13 | ....12030 | 33,77 | 45,57 |
| 13 | 110 | 26 | 12 | 2 | ....13000 | 38,38 | 51,50 | ....13030 | 45,24 | 59,04 |
| 14 | 110 | 26 | 12 | 2 | ....14000 | 36,83 | 49,79 | ....14030 | 43,36 | 56,98 |
| 15 | 110 | 26 | 12 | 2 | ....15000 | 44,19 | 57,89 | ....15030 | 52,21 | 66,71 |
| 16 | 123 | 32 | 16 | 2 | ....16000 | 44,80 | 58,56 | ....16030 | 52,75 | 67,31 |
| 17 | 123 | 32 | 16 | 2 | ....17000 | 54,69 | 70,80 | ....17030 | 65,09 | 82,23 |
| 18 | 123 | 32 | 16 | 2 | ....18000 | 54,69 | 70,80 | ....18030 | 67,97 | 85,40 |
| 19 | 123 | 32 | 16 | 2 | ....19000 | 70,50 | 90,76 | ....19030 | 84,99 | 106,70 |
| 20 | 141 | 38 | 20 | 2 | ....20000 | 69,79 | 96,52 | ....20030 | 87,15 | 115,62 |
| 22 | 141 | 38 | 20 | 2 | ....22000 | 84,98 | 113,23 | ....22030 | 102,21 | 132,18 |
| 24 | 166 | 45 | 25 | 2 | ....24000 | 118,76 | 164,27 | ....24030 | 147,43 | 195,81 |
| 25 | 166 | 45 | 25 | 2 | ....25000 | 116,29 | 161,56 | ....25030 | 144,49 | 192,58 |

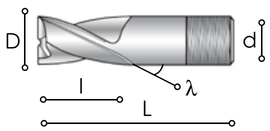
# CL 13F

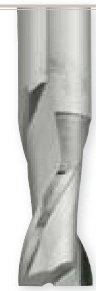
DIN 327H

N

λ 30°

CL13F



| D e8 | L | l | d h8 | Z | CODE | HSS+8%Co 1130..... € |
|---|---|---|---|---|---|---|
| 4 | 51 | 7 | 6 | 2 | ....04000 | 12,83 |
| 5 | 52 | 8 | 6 | 2 | ....50000 | 12,56 |
| 6 | 52 | 8 | 6 | 2 | ....60000 | 12,30 |
| 7 | 60 | 10 | 10 | 2 | ....70000 | 16,79 |
| 8 | 61 | 11 | 10 | 2 | ....80000 | 16,53 |
| 9 | 61 | 11 | 10 | 2 | ....90000 | 18,91 |
| 10 | 63 | 13 | 10 | 2 | ....10000 | 19,00 |
| 11 | 70 | 13 | 12 | 2 | ....11000 | 22,69 |
| 12 | 73 | 16 | 12 | 2 | ....12000 | 23,49 |
| 13 | 73 | 16 | 12 | 2 | ....13000 | 24,96 |
| 14 | 73 | 16 | 12 | 2 | ....14000 | 26,96 |
| 15 | 73 | 16 | 12 | 2 | ....15000 | 30,03 |
| 16 | 79 | 19 | 16 | 2 | ....16000 | 32,03 |
| 17 | 79 | 19 | 16 | 2 | ....17000 | 35,50 |
| 18 | 79 | 19 | 16 | 2 | ....18000 | 39,64 |
| 19 | 79 | 19 | 16 | 2 | ....19000 | 49,12 |
| 20 | 88 | 22 | 20 | 2 | ....20000 | 47,92 |
| 22 | 88 | 22 | 20 | 2 | ....22000 | 90,89 |
| 24 | 102 | 26 | 25 | 2 | ....24000 | 94,23 |
| 25 | 102 | 26 | 25 | 2 | ....25000 | 94,23 |
| 26 | 102 | 26 | 25 | 2 | ....26000 | 101,71 |
| 28 | 102 | 26 | 25 | 2 | ....28000 | 107,71 |
| 30 | 102 | 26 | 25 | 2 | ....30000 | 117,86 |
| 32 | 112 | 32 | 32 | 2 | ....32000 | 130,54 |
| 35 | 112 | 32 | 32 | 2 | ....35000 | 152,56 |
| 36 | 112 | 32 | 32 | 2 | ....36000 | 166,17 |
| 38 | 118 | 38 | 32 | 2 | ....38000 | 186,73 |
| 40 | 118 | 38 | 32 | 2 | ....40000 | 207,55 |

carmon

# FRESE CILINDRICHE A DUE TAGLIENTI CON TESTA SEMISFERICA TWO FLUTE BALL NOSE END MILLS ZWEISCHNEIDENENFRÄSER MIT VOLLEM STIRNRADIUS FRAISES CYLINDRIQUES A DEUX DENTS AVEC TETE HEMISPHERIQUES FRESAS CILINDRICAS DE DOS LABIOS CON CABEZA SEMISFÉRICA

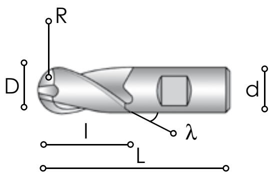
## CL 18

DIN 327D

N

λ 30°

CL18




| D e8 | R ± 0,02 | L | l | d h6 | Z | CODE | HSS+8%Co 1180..... € |
|---|---|---|---|---|---|---|---|
| 2 | 1 | 48 | 4 | 6 | 2 | ....02000 | 25,99 |
| 3 | 1,5 | 49 | 5 | 6 | 2 | ....30000 | 23,39 |
| 4 | 2 | 51 | 7 | 6 | 2 | ....40000 | 21,95 |
| 5 | 2,5 | 52 | 8 | 6 | 2 | ....50000 | 21,95 |
| 6 | 3 | 52 | 8 | 6 | 2 | ....60000 | 21,95 |
| 7 | 3,5 | 60 | 10 | 10 | 2 | ....70000 | 29,16 |
| 8 | 4 | 61 | 11 | 10 | 2 | ....80000 | 29,16 |
| 9 | 4,5 | 61 | 11 | 10 | 2 | ....90000 | 29,45 |
| 10 | 5 | 63 | 13 | 10 | 2 | ....10000 | 30,32 |
| 11 | 5,5 | 70 | 13 | 12 | 2 | ....11000 | 34,77 |
| 12 | 6 | 73 | 16 | 12 | 2 | ....12000 | 34,77 |
| 13 | 6,5 | 73 | 16 | 12 | 2 | ....13000 | 41,72 |
| 14 | 7 | 73 | 16 | 12 | 2 | ....14000 | 41,72 |
| 15 | 7,5 | 73 | 16 | 12 | 2 | ....15000 | 45,91 |
| 16 | 8 | 79 | 19 | 16 | 2 | ....16000 | 46,78 |
| 17 | 8,5 | 79 | 19 | 16 | 2 | ....17000 | 57,00 |
| 18 | 9 | 79 | 19 | 16 | 2 | ....18000 | 57,00 |
| 19 | 9,5 | 79 | 19 | 16 | 2 | ....19000 | 67,57 |
| 20 | 10 | 88 | 22 | 20 | 2 | ....20000 | 67,57 |

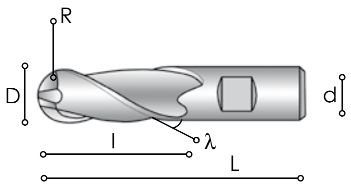
# FRESE CILINDRICHE A DUE TAGLIENTI CON TESTA SEMISFERICA TWO FLUTE BALL NOSE END MILLS ZWEISCHNEIDENENFRÄSER MIT VOLLEM STIRNRADIUS FRAISES CYLINDRIQUES A DEUX DENTS AVEC TETE HEMISPHERIQUES FRESAS CILINDRICAS DE DOS LABIOS CON CABEZA SEMISFÉRICA

## CL 19

CARMON NORM.

N

λ 30°




CL19

| D e8 | R ± 0,02 | L | l | d h6 | Z | CODE | HSS+8%Co 1190..... € |
|---|---|---|---|---|---|---|---|
| 3 | 1,5 | 56 | 8 | 6 | 2 | ....30000 | 28,41 |
| 4 | 2 | 63 | 11 | 6 | 2 | ....40000 | 28,41 |
| 5 | 2,5 | 68 | 13 | 6 | 2 | ....50000 | 28,41 |
| 6 | 3 | 68 | 13 | 6 | 2 | ....60000 | 27,91 |
| 7 | 3,5 | 80 | 16 | 10 | 2 | ....70000 | 34,33 |
| 8 | 4 | 88 | 19 | 10 | 2 | ....80000 | 33,15 |
| 9 | 4,5 | 88 | 19 | 10 | 2 | ....90000 | 40,09 |
| 10 | 5 | 95 | 22 | 10 | 2 | ....10000 | 36,63 |
| 11 | 5,5 | 102 | 22 | 12 | 2 | ....11000 | 45,40 |
| 12 | 6 | 110 | 26 | 12 | 2 | ....12000 | 43,77 |
| 13 | 6,5 | 110 | 26 | 12 | 2 | ....13000 | 55,81 |
| 14 | 7 | 110 | 26 | 12 | 2 | ....14000 | 54,12 |
| 15 | 7,5 | 110 | 26 | 12 | 2 | ....15000 | 63,14 |
| 16 | 8 | 123 | 32 | 16 | 2 | ....16000 | 63,86 |
| 17 | 8,5 | 123 | 32 | 16 | 2 | ....17000 | 78,70 |
| 18 | 9 | 123 | 32 | 16 | 2 | ....18000 | 75,13 |
| 19 | 9,5 | 123 | 32 | 16 | 2 | ....19000 | 101,29 |
| 20 | 10 | 141 | 38 | 20 | 2 | ....20000 | 95,73 |

carmon

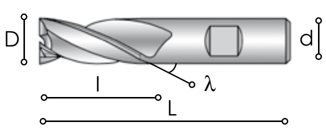
## FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

# CL 16

DIN 844B

N

λ 30°




CL16

| D e8 | L | l | d h6 | Z | CODE | HSS+8%Co 1160..... € | HSS+8%Co 2160..... € SAPPHIRE MULTI | CODE | RESISTOR 1160..... € | RESISTOR 2160..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 51 | 7 | 6 | 3 | ....02000 | 17,37 | 22,75 | | | |
| 3 | 52 | 8 | 6 | 3 | ....30000 | 14,50 | 19,59 | ....30030 | 16,93 | 22,27 |
| 4 | 55 | 11 | 6 | 3 | ....40000 | 13,72 | 18,73 | ....40030 | 16,21 | 21,48 |
| 5 | 57 | 13 | 6 | 3 | ....50000 | 13,72 | 18,73 | ....50030 | 16,51 | 21,80 |
| 6 | 57 | 13 | 6 | 3 | ....60000 | 12,89 | 17,83 | ....60030 | 15,69 | 20,90 |
| 7 | 66 | 16 | 10 | 3 | ....70000 | 20,96 | 28,34 | | | |
| 8 | 69 | 19 | 10 | 3 | ....80000 | 19,39 | 26,61 | ....80030 | 22,77 | 30,33 |
| 9 | 69 | 19 | 10 | 3 | ....90000 | 22,68 | 30,23 | | | |
| 10 | 72 | 22 | 10 | 3 | ....10000 | 20,62 | 27,97 | ....10030 | 24,22 | 31,92 |
| 11 | 79 | 22 | 12 | 3 | ....11000 | 27,71 | 37,05 | | | |
| 12 | 83 | 26 | 12 | 3 | ....12000 | 25,46 | 34,57 | ....12030 | 30,01 | 39,58 |
| 13 | 83 | 26 | 12 | 3 | ....13000 | 31,14 | 41,36 | | | |
| 14 | 83 | 26 | 12 | 3 | ....14000 | 29,26 | 39,29 | ....14030 | 34,40 | 44,95 |
| 15 | 83 | 26 | 12 | 3 | ....15000 | 37,11 | 47,93 | | | |
| 16 | 92 | 32 | 16 | 3 | ....16000 | 36,72 | 47,50 | ....16030 | 44,07 | 55,58 |
| 17 | 92 | 32 | 16 | 3 | ....17000 | 46,79 | 59,95 | | | |
| 18 | 92 | 32 | 16 | 3 | ....18000 | 44,85 | 57,82 | ....18030 | 55,74 | 69,80 |
| 19 | 92 | 32 | 16 | 3 | ....19000 | 54,53 | 70,15 | | | |
| 20 | 104 | 38 | 20 | 3 | ....20000 | 54,69 | 73,37 | ....20030 | 68,13 | 88,15 |
| 22 | 104 | 38 | 20 | 3 | ....22000 | 70,89 | 91,19 | ....22030 | 85,49 | 107,25 |
| 24 | 121 | 45 | 25 | 3 | ....24000 | 102,25 | 130,94 | ....24030 | 126,19 | 157,28 |
| 25 | 121 | 45 | 25 | 3 | ....25000 | 99,49 | 127,90 | ....25030 | 122,87 | 153,63 |

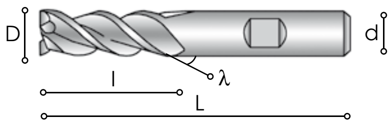
## CL 30FE

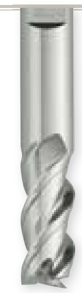
DIN 844B

N

λ 45°

CL30FE



| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1300..... € |
|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 3 | ....60000 | 18,32 |
| 8 | 69 | 19 | 10 | 3 | ....80000 | 26,31 |
| 10 | 72 | 22 | 10 | 3 | ....10000 | 28,19 |
| 12 | 83 | 26 | 12 | 3 | ....12000 | 33,67 |
| 14 | 83 | 26 | 12 | 3 | ....14000 | 36,08 |
| 16 | 92 | 32 | 16 | 3 | ....16000 | 45,43 |
| 18 | 92 | 32 | 16 | 3 | ....18000 | 55,57 |
| 20 | 104 | 38 | 20 | 3 | ....20000 | 67,28 |

carmon

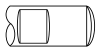
**FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI** THREE FLUTE END MILLS **LANGLOCHFRÄSER MIT DREI SCHNEIDEN** FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS **FRESAS CILINDRICAS FRONTALES DE TRES LABIOS**

## CL 17

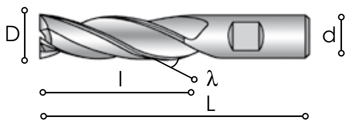
DIN 844B

N

λ 30°



CL17




| D e8 | L | l | d h6 | Z | CODE | HSS+8%Co 1170..... € |
|---|---|---|---|---|---|---|
| 3 | 56 | 12 | 6 | 3 | ....30000 | 19,13 |
| 4 | 63 | 19 | 6 | 3 | ....40000 | 18,26 |
| 5 | 68 | 24 | 6 | 3 | ....50000 | 17,59 |
| 6 | 68 | 24 | 6 | 3 | ....60000 | 17,09 |
| 7 | 80 | 30 | 10 | 3 | ....70000 | 29,04 |
| 8 | 88 | 38 | 10 | 3 | ....80000 | 27,48 |
| 9 | 88 | 38 | 10 | 3 | ....90000 | 28,20 |
| 10 | 95 | 45 | 10 | 3 | ....10000 | 26,33 |
| 11 | 102 | 45 | 12 | 3 | ....11000 | 34,89 |
| 12 | 110 | 53 | 12 | 3 | ....12000 | 32,69 |
| 13 | 110 | 53 | 12 | 3 | ....13000 | 39,93 |
| 14 | 110 | 53 | 12 | 3 | ....14000 | 37,22 |
| 15 | 110 | 53 | 12 | 3 | ....15000 | 47,84 |
| 16 | 123 | 63 | 16 | 3 | ....16000 | 46,95 |
| 17 | 123 | 63 | 16 | 3 | ....17000 | 60,23 |
| 18 | 123 | 63 | 16 | 3 | ....18000 | 57,78 |
| 19 | 123 | 63 | 16 | 3 | ....19000 | 70,68 |
| 20 | 141 | 75 | 20 | 3 | ....20000 | 70,68 |
| 22 | 141 | 75 | 20 | 3 | ....22000 | 91,08 |
| 24 | 166 | 90 | 25 | 3 | ....24000 | 130,78 |
| 25 | 166 | 90 | 25 | 3 | ....25000 | 130,78 |

# CL 21TF

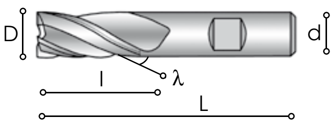
DIN 844B

N λ 30°

INOX

NEW

CL21TF



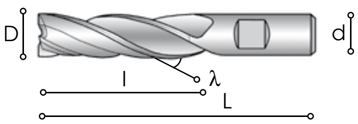

| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1213..... € | HSS+8%Co 2215..... € SAPPHIRE MULTI | CODE | RESISTOR 1213..... € | RESISTOR 2215..... € SAPPHIRE MULTI | RESISTOR 2218..... € PEARL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 52 | 8 | 6 | 4 | ....03000 | 13,86 | 18,89 | ....03030 | 15,90 | 21,14 | 21,14 |
| 3,5 | 54 | 10 | 6 | 4 | ....03500 | 14,73 | | | | | |
| 4 | 55 | 11 | 6 | 4 | ....04000 | 12,94 | 17,88 | ....04030 | 15,46 | 20,65 | 20,65 |
| 4,5 | 55 | 11 | 6 | 4 | ....45000 | 14,00 | | | | | |
| 5 | 57 | 13 | 6 | 4 | ....50000 | 13,28 | 18,26 | ....50030 | 15,00 | 20,15 | 20,15 |
| 5,5 | 57 | 13 | 6 | 4 | ....55000 | 13,54 | | | | | |
| 6 | 57 | 13 | 6 | 4 | ....60000 | 13,05 | 18,00 | ....60030 | 14,74 | 19,86 | 19,86 |
| 6,5 | 66 | 16 | 10 | 4 | ....65000 | 20,93 | | | | | |
| 7 | 66 | 16 | 10 | 4 | ....70000 | 20,95 | 28,32 | ....70030 | 21,91 | 29,38 | 29,38 |
| 7,5 | 66 | 16 | 10 | 4 | ....75000 | 20,95 | | | | | |
| 8 | 69 | 19 | 10 | 4 | ....80000 | 19,33 | 26,55 | ....80030 | 21,91 | 29,38 | 29,38 |
| 8,5 | 69 | 19 | 10 | 4 | ....85000 | 20,89 | | | | | |
| 9 | 69 | 19 | 10 | 4 | ....90000 | 20,89 | 28,27 | ....90030 | 22,81 | 30,37 | 30,37 |
| 9,5 | 69 | 19 | 10 | 4 | ....95000 | 20,89 | | | | | |
| 10 | 72 | 22 | 10 | 4 | ....10000 | 20,39 | 27,71 | ....10030 | 22,81 | 30,37 | 30,37 |
| 10,5 | 79 | 22 | 12 | 4 | ....10500 | 25,04 | | | | | |
| 11 | 79 | 22 | 12 | 4 | ....11000 | 25,03 | 34,11 | ....11030 | 31,05 | 40,72 | 40,72 |
| 11,5 | 79 | 22 | 12 | 4 | ....11500 | 24,64 | | | | | |
| 12 | 83 | 26 | 12 | 4 | ....12000 | 24,63 | 33,66 | ....12030 | 29,60 | 39,13 | 39,13 |
| 12,5 | 83 | 26 | 12 | 4 | ....12500 | 31,84 | | | | | |
| 13 | 83 | 26 | 12 | 4 | ....13000 | 31,84 | 42,13 | ....13030 | 34,96 | 45,56 | 45,56 |
| 13,5 | 83 | 26 | 12 | 4 | ....13500 | 26,90 | | | | | |
| 14 | 83 | 26 | 12 | 4 | ....14000 | 26,90 | 36,70 | ....14030 | 33,46 | 43,91 | 43,91 |
| 14,5 | 83 | 26 | 12 | 4 | ....14500 | 34,10 | | | | | |
| 15 | 83 | 26 | 12 | 4 | ....15000 | 34,10 | 44,61 | ....15030 | 40,58 | 51,74 | 51,74 |
| 15,5 | 92 | 32 | 16 | 4 | ....15500 | 32,80 | | | | | |
| 16 | 92 | 32 | 16 | 4 | ....16000 | 32,81 | 43,19 | ....16030 | 41,40 | 52,65 | 52,65 |
| 17 | 92 | 32 | 16 | 4 | ....17000 | 50,60 | 64,15 | ....17030 | 52,08 | 65,77 | 65,77 |
| 18 | 92 | 32 | 16 | 4 | ....18000 | 41,92 | 54,59 | ....18030 | 49,67 | 63,12 | 63,12 |
| 19 | 92 | 32 | 16 | 4 | ....19000 | 49,60 | 64,73 | ....19030 | 60,34 | 76,54 | 76,54 |
| 20 | 104 | 38 | 20 | 4 | ....20000 | 48,72 | 66,79 | ....20030 | 60,63 | 79,90 | 79,90 |
| 22 | 104 | 38 | 20 | 4 | ....22000 | 77,90 | 98,90 | ....22030 | 90,23 | 112,46 | 112,46 |
| 24 | 121 | 45 | 25 | 5 | ....24000 | 109,35 | 138,75 | ....24030 | 131,38 | 162,99 | 162,99 |
| 25 | 121 | 45 | 25 | 5 | ....25000 | 109,35 | 138,75 | ....25030 | 131,38 | 162,99 | 162,99 |
| 26 | 121 | 45 | 25 | 5 | ....26000 | 120,36 | | | | | |
| 28 | 121 | 45 | 25 | 6 | ....28000 | 130,02 | | | | | |
| 30 | 121 | 45 | 25 | 6 | ....30000 | 143,07 | 178,35 | ....30030 | 177,22 | 215,91 | 215,91 |
| 32 | 133 | 53 | 32 | 6 | ....32000 | 165,83 | 205,67 | ....32030 | 214,98 | 259,74 | 259,74 |
| 35 | 133 | 53 | 32 | 6 | ....35000 | 195,09 | | | | | |
| 38 | 143 | 63 | 32 | 6 | ....38000 | 209,91 | | | | | |
| 40 | 143 | 63 | 32 | 8 | ....40000 | 254,31 | | | | | |

## CL 22TF

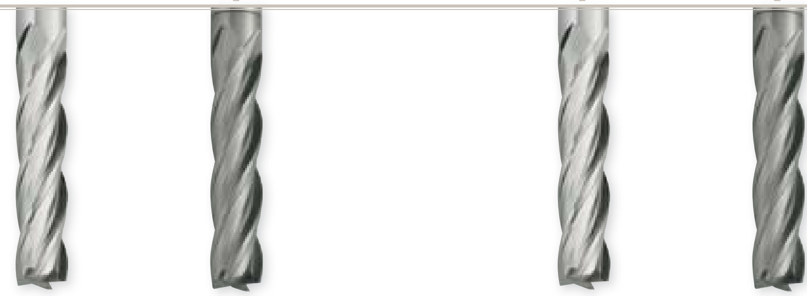
DIN 844B

N

λ 30°




CL22TF



| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1223..... € | HSS+8%Co 2223..... € SAPPHIRE MULTI | CODE | RESISTOR 1223..... € | RESISTOR 2223..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 3 | 56 | 12 | 6 | 4 | ....30000 | 20,30 | 25,98 | ....30030 | 20,86 | 26,59 |
| 4 | 63 | 19 | 6 | 4 | ....40000 | 18,92 | 24,46 | ....40030 | 20,29 | 25,97 |
| 5 | 68 | 24 | 6 | 4 | ....50000 | 18,42 | 23,90 | ....50030 | 19,77 | 25,39 |
| 6 | 68 | 24 | 6 | 4 | ....60000 | 17,64 | 23,06 | ....60030 | 19,03 | 24,58 |
| 7 | 80 | 30 | 10 | 4 | ....70000 | 27,76 | 37,11 | ....70030 | 30,86 | 40,51 |
| 8 | 88 | 38 | 10 | 4 | ....80000 | 27,60 | 36,93 | ....80030 | 29,59 | 39,12 |
| 9 | 88 | 38 | 10 | 4 | ....90000 | 27,60 | 36,93 | ....90030 | 30,86 | 40,51 |
| 10 | 95 | 45 | 10 | 4 | ....10000 | 26,10 | 35,28 | ....10030 | 28,32 | 37,72 |
| 11 | 102 | 45 | 12 | 4 | ....11000 | 34,29 | 46,14 | ....11030 | 38,71 | 50,99 |
| 12 | 110 | 53 | 12 | 4 | ....12000 | 32,46 | 44,12 | ....12030 | 36,01 | 48,02 |
| 13 | 110 | 53 | 12 | 4 | ....13000 | 38,55 | 51,68 | ....13030 | 42,97 | 56,54 |
| 14 | 110 | 53 | 12 | 4 | ....14000 | 35,23 | 48,03 | ....14030 | 45,38 | 59,20 |
| 15 | 110 | 53 | 12 | 4 | ....15000 | 45,24 | 59,04 | ....15030 | 51,20 | 65,60 |
| 16 | 123 | 63 | 16 | 4 | ....16000 | 45,87 | 59,74 | ....16030 | 54,64 | 69,39 |
| 17 | 123 | 63 | 16 | 4 | ....17000 | 64,65 | 81,75 | ....17030 | 70,44 | 88,12 |
| 18 | 123 | 63 | 16 | 4 | ....18000 | 53,64 | 69,64 | ....18030 | 67,46 | 84,84 |
| 19 | 123 | 63 | 16 | 4 | ....19000 | 76,21 | 97,04 | ....19030 | 85,97 | 107,77 |
| 20 | 141 | 75 | 20 | 4 | ....20000 | 65,26 | 91,54 | ....20030 | 83,54 | 111,65 |
| 22 | 141 | 75 | 20 | 4 | ....22000 | 94,94 | 124,19 | ....22030 | 115,18 | 146,45 |
| 24 | 166 | 90 | 25 | 5 | ....24000 | 131,76 | 178,58 | ....24030 | 165,61 | 215,81 |
| 25 | 166 | 90 | 25 | 5 | ....25000 | 131,76 | 178,58 | ....25030 | 172,07 | 222,91 |

# CL 24TF

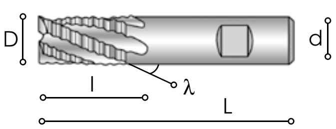
DIN 844B

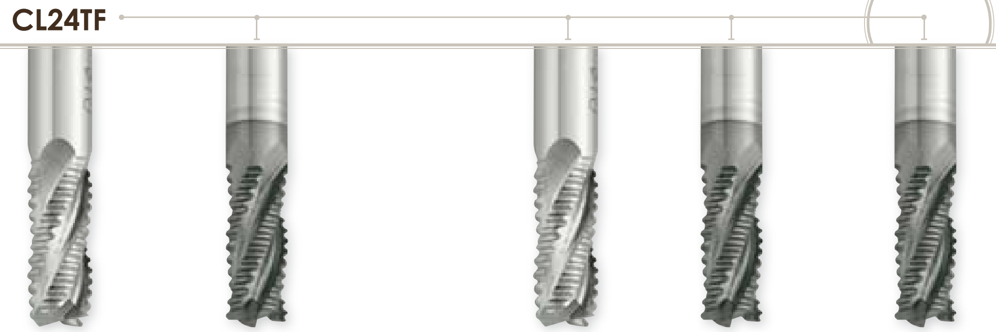
NR

λ 30°

INOX

NEW




| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1243..... € | HSS+8%Co 2245..... € SAPPHIRE MULTI | CODE | RESISTOR 1243..... € | RESISTOR 2245..... € SAPPHIRE MULTI | RESISTOR 2248..... € PEARL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 3 | ....60000 | 24,65 | 30,76 | ....60030 | 27,87 | 34,30 | 34,30 |
| 7 | 66 | 16 | 10 | 3 | ....70000 | 37,47 | 46,50 | ....70030 | 44,73 | 54,49 | 54,49 |
| 8 | 69 | 19 | 10 | 3 | ....80000 | 36,51 | 45,44 | ....80030 | 43,65 | 53,30 | 53,30 |
| 9 | 69 | 19 | 10 | 3 | ....90000 | 37,47 | 46,50 | ....90030 | 44,73 | 54,49 | 54,49 |
| 10 | 72 | 22 | 10 | 4 | ....10000 | 35,41 | 44,24 | ....10030 | 43,33 | 52,94 | 52,94 |
| 11 | 79 | 22 | 12 | 4 | ....11000 | 40,91 | 51,57 | ....11030 | 49,94 | 61,50 | 61,50 |
| 12 | 83 | 26 | 12 | 4 | ....12000 | 38,90 | 49,36 | ....12030 | 49,23 | 60,72 | 60,72 |
| 13 | 83 | 26 | 12 | 4 | ....13000 | 44,89 | 56,48 | ....13030 | 55,44 | 68,09 | 68,09 |
| 14 | 83 | 26 | 12 | 4 | ....14000 | 41,66 | 52,94 | ....14030 | 52,84 | 65,23 | 65,23 |
| 15 | 83 | 26 | 12 | 4 | ....15000 | 49,32 | 61,35 | ....15030 | 62,66 | 76,03 | 76,03 |
| 16 | 92 | 32 | 16 | 4 | ....16000 | 49,94 | 62,04 | ....16030 | 63,81 | 77,30 | 77,30 |
| 18 | 92 | 32 | 16 | 4 | ....18000 | 55,47 | 69,50 | ....18030 | 71,03 | 86,62 | 86,62 |
| 20 | 104 | 38 | 20 | 4 | ....20000 | 71,25 | 91,58 | ....20030 | 91,53 | 113,89 | 113,89 |
| 22 | 104 | 38 | 20 | 4 | ....22000 | 80,10 | 101,32 | ....22030 | 103,81 | 127,39 | 127,39 |
| 24 | 121 | 45 | 25 | 4 | ....24000 | 121,92 | 152,57 | | | | |
| 25 | 121 | 45 | 25 | 4 | ....25000 | 118,69 | 149,02 | ....25030 | 156,21 | 190,30 | 190,30 |
| 28 | 121 | 45 | 25 | 4 | ....28000 | 132,90 | 167,15 | | | | |
| 30 | 121 | 45 | 25 | 5 | ....30000 | 143,31 | 178,61 | ....30030 | 188,84 | 228,69 | 228,69 |
| 32 | 133 | 53 | 32 | 5 | ....32000 | 166,91 | 206,86 | ....32030 | 222,20 | 267,68 | 267,68 |
| 35 | 133 | 53 | 32 | 5 | ....35000 | 214,45 | | | | | |
| 38 | 143 | 63 | 32 | 5 | ....38000 | 233,53 | | | | | |
| 40 | 143 | 63 | 32 | 6 | ....40000 | 233,53 | | | | | |

carmon

FRESE CILINDRICHE FRONTALI PER SGROSSARE, PASSO FINE FINE PITCH ROUGHING END MILLS
SCHRUPPFRÄSER MIT FEINEM KORDEL PROFIL FRAISES DEUX TAILLES D'EBAUCHE, PAS FIN
FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE, PASO FINO

## CL 24TF-PF

DIN 844B

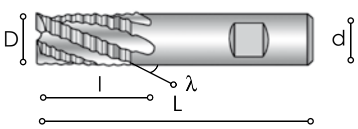
HR

λ 30°

INOX

NEW

CL24TF-PF



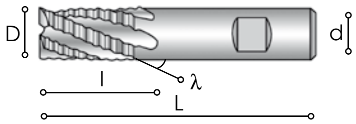

| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1244..... € | HSS+8%Co 2246..... € SAPPHIRE MULTI | CODE | RESISTOR 1244..... € | RESISTOR 2246..... € SAPPHIRE MULTI | RESISTOR 2249..... € PEARL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 3 | ....60000 | 33,91 | 40,95 | ....60030 | 38,98 | 46,53 | 46,53 |
| 7 | 66 | 16 | 10 | 3 | ....70000 | 39,11 | 48,31 | ....70030 | 53,95 | 64,63 | 64,63 |
| 8 | 69 | 19 | 10 | 3 | ....80000 | 39,11 | 48,31 | ....80030 | 53,95 | 64,63 | 64,63 |
| 9 | 69 | 19 | 10 | 3 | ....90000 | 39,11 | 48,31 | ....90030 | 53,95 | 64,63 | 64,63 |
| 10 | 72 | 22 | 10 | 4 | ....10000 | 39,11 | 48,31 | ....10030 | 53,95 | 64,63 | 64,63 |
| 11 | 79 | 22 | 12 | 4 | ....11000 | 45,31 | 56,41 | ....11030 | 62,60 | 75,43 | 75,43 |
| 12 | 83 | 26 | 12 | 4 | ....12000 | 45,31 | 56,41 | ....12030 | 60,72 | 73,36 | 73,36 |
| 13 | 83 | 26 | 12 | 4 | ....13000 | 51,40 | 63,65 | ....13030 | 65,26 | 78,89 | 78,89 |
| 14 | 83 | 26 | 12 | 4 | ....14000 | 51,40 | 63,65 | ....14030 | 64,37 | 77,91 | 77,91 |
| 15 | 83 | 26 | 12 | 4 | ....15000 | 55,52 | 68,18 | ....15030 | 70,74 | 84,92 | 84,92 |
| 16 | 92 | 32 | 16 | 4 | ....16000 | 59,63 | 72,70 | ....16030 | 75,10 | 89,72 | 89,72 |
| 18 | 92 | 32 | 16 | 4 | ....18000 | 74,11 | 90,01 | ....18030 | 82,90 | 99,68 | 99,68 |
| 20 | 104 | 38 | 20 | 4 | ....20000 | 78,11 | 99,13 | ....20030 | 99,83 | 123,02 | 123,02 |
| 22 | 104 | 38 | 20 | 4 | ....22000 | 95,25 | 117,98 | ....22030 | 117,81 | 142,80 | 142,80 |
| 24 | 121 | 45 | 25 | 4 | ....24000 | 141,34 | 173,94 | | | | |
| 25 | 121 | 45 | 25 | 4 | ....25000 | 141,34 | 173,94 | ....25030 | 163,68 | 198,51 | 198,51 |
| 28 | 121 | 45 | 25 | 4 | ....28000 | 148,79 | 184,63 | | | | |
| 30 | 121 | 45 | 25 | 5 | ....30000 | 163,68 | 201,02 | ....30030 | 195,77 | 236,32 | 236,32 |
| 32 | 133 | 53 | 32 | 5 | ....32000 | 190,44 | 232,74 | ....32030 | 229,85 | 276,09 | 276,09 |
| 35 | 133 | 53 | 32 | 5 | ....35000 | 214,25 | | | | | |
| 38 | 143 | 63 | 32 | 5 | ....38000 | 240,84 | | | | | |
| 40 | 143 | 63 | 32 | 6 | ....40000 | 250,85 | | | | | |

## CL 24SL-TF

DIN 844B

NR

λ 30°




CL24SL-TF

| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1247..... € | HSS+8%Co 2247..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|
| 6 | 68 | 24 | 6 | 3 | ....60000 | 44,02 | 52,07 |
| 8 | 88 | 38 | 10 | 3 | ....80000 | 44,38 | 54,61 |
| 10 | 95 | 45 | 10 | 4 | ....10000 | 45,45 | 55,79 |
| 12 | 110 | 53 | 12 | 4 | ....12000 | 52,99 | 65,71 |
| 14 | 110 | 53 | 12 | 4 | ....14000 | 58,15 | 72,15 |
| 16 | 123 | 63 | 16 | 4 | ....16000 | 69,58 | 84,73 |
| 18 | 123 | 63 | 16 | 4 | ....18000 | 79,30 | 96,62 |
| 20 | 141 | 75 | 20 | 4 | ....20000 | 95,30 | 122,26 |
| 22 | 141 | 75 | 20 | 4 | ....22000 | 116,13 | 145,17 |
| 24 | 166 | 90 | 25 | 4 | ....24000 | 157,53 | 202,96 |
| 25 | 166 | 90 | 25 | 4 | ....25000 | 157,53 | 202,96 |

carmon

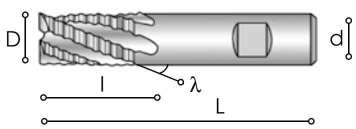
FRESE CILINDRICHE FRONTALI PER SGROSSARE, PASSO FINE FINE PITCH ROUGHING END MILLS
SCHRUPPFRÄSER MIT FEINEM KORDEL PROFIL FRAISES DEUX TAILLES D'EBAUCHE, PAS FIN
FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE, PASO FINO

## CL 24SL-TF-PF

DIN 844B

HR

λ 30°




CL24SL-TF-PF

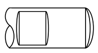
| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1248..... € | HSS+8%Co 2248..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|
| 6 | 68 | 24 | 6 | 3 | ....06000 | 52,20 | 61,07 |
| 8 | 88 | 38 | 10 | 3 | ....08000 | 52,63 | 64,46 |
| 10 | 95 | 45 | 10 | 4 | ....01000 | 53,90 | 65,86 |
| 12 | 110 | 53 | 12 | 4 | ....01200 | 62,84 | 77,54 |
| 14 | 110 | 53 | 12 | 4 | ....01400 | 65,51 | 81,34 |
| 16 | 123 | 63 | 16 | 4 | ....01600 | 78,39 | 95,51 |
| 18 | 123 | 63 | 16 | 4 | ....01800 | 89,35 | 108,92 |
| 20 | 141 | 75 | 20 | 4 | ....02000 | 107,37 | 137,86 |
| 22 | 141 | 75 | 20 | 4 | ....02200 | 125,93 | 158,27 |
| 24 | 166 | 90 | 25 | 4 | ....02400 | 182,96 | 234,90 |
| 25 | 166 | 90 | 25 | 4 | ....02500 | 182,96 | 234,90 |

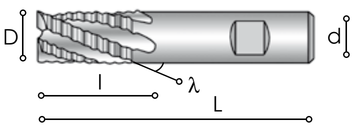
# CL 25TF

DIN 844B

NF

λ 30°







| D js14 | L | l | d h6 | Z | CODE | HSS+8%Co 1253..... € | HSS+8%Co 2253..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 3 | ....60000 | 24,65 | 30,76 |
| 7 | 66 | 16 | 10 | 3 | ....70000 | 37,47 | 46,50 |
| 8 | 69 | 19 | 10 | 3 | ....80000 | 36,51 | 45,44 |
| 9 | 69 | 19 | 10 | 3 | ....90000 | 37,47 | 46,50 |
| 10 | 72 | 22 | 10 | 4 | ....10000 | 35,41 | 44,24 |
| 11 | 79 | 22 | 12 | 4 | ....11000 | 40,91 | 51,57 |
| 12 | 83 | 26 | 12 | 4 | ....12000 | 38,90 | 49,36 |
| 13 | 83 | 26 | 12 | 4 | ....13000 | 44,89 | 56,48 |
| 14 | 83 | 26 | 12 | 4 | ....14000 | 41,66 | 52,94 |
| 15 | 83 | 26 | 12 | 4 | ....15000 | 49,32 | 61,35 |
| 16 | 92 | 32 | 16 | 4 | ....16000 | 49,94 | 62,04 |
| 18 | 92 | 32 | 16 | 4 | ....18000 | 55,47 | 69,50 |
| 20 | 104 | 38 | 20 | 4 | ....20000 | 71,25 | 91,58 |
| 22 | 104 | 38 | 20 | 4 | ....22000 | 80,10 | 101,32 |
| 24 | 121 | 45 | 25 | 4 | ....24000 | 121,92 | 152,57 |
| 25 | 121 | 45 | 25 | 4 | ....25000 | 118,69 | 149,02 |

carmon

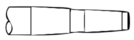
FRESE CILINDRICHE A DUE TAGLIENTI PER CAVE TWO FLUTE SLOT DRILLS LANGLOCHFRÄSER MIT ZWEI SCHNEIDEN FRAISES CYLINDRIQUES A DEUX DENTS A RAINURER FRESAS CILINDRICAS DE DOS LABIOS PARA CHAVETEROS

## CM 31

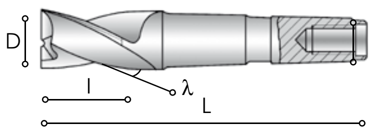
DIN 326D

N

λ 30°



CM31




| D e8 | L | l | CM | Z | CODE | HSS+8%Co 1310..... € |
|---|---|---|---|---|---|---|
| 14 | 101 | 16 | 2 | 2 | ....14000 | 47,23 |
| 15 | 101 | 16 | 2 | 2 | ....15000 | 53,77 |
| 16 | 104 | 19 | 2 | 2 | ....16000 | 50,44 |
| 17 | 104 | 19 | 2 | 2 | ....17000 | 55,86 |
| 18 | 104 | 19 | 2 | 2 | ....18000 | 52,75 |
| 19 | 104 | 19 | 2 | 2 | ....19000 | 64,65 |
| 20 | 124 | 22 | 3 | 2 | ....20000 | 76,85 |
| 21 | 124 | 22 | 3 | 2 | ....21000 | 85,38 |
| 22 | 124 | 22 | 3 | 2 | ....22000 | 80,78 |
| 23 | 124 | 22 | 3 | 2 | ....23000 | 94,11 |
| 24 | 128 | 26 | 3 | 2 | ....24000 | 90,97 |
| 25 | 128 | 26 | 3 | 2 | ....25000 | 93,73 |
| 26 | 128 | 26 | 3 | 2 | ....26000 | 101,14 |
| 28 | 128 | 26 | 3 | 2 | ....28000 | 113,52 |
| 30 | 128 | 26 | 3 | 2 | ....30000 | 128,18 |
| 32 | 157 | 32 | 4 | 2 | ....32000 | 159,42 |
| 34 | 157 | 32 | 4 | 2 | ....34000 | 174,47 |
| 35 | 157 | 32 | 4 | 2 | ....35000 | 188,12 |
| 36 | 157 | 32 | 4 | 2 | ....36000 | 199,23 |
| 38 | 163 | 38 | 4 | 2 | ....38000 | 224,18 |
| 40 | 163 | 38 | 4 | 2 | ....40000 | 248,17 |

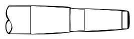
FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

## CM 36

DIN 845B — N — λ 30°

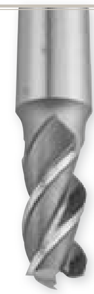
## CM 37FE

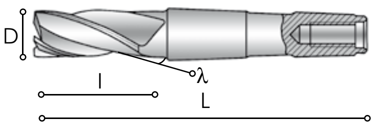
DIN 845B — N — λ 45°



CM36

CM37FE






| CM36 D e8<br>CM37FE D js14 | L | l | CM | Z | CODE | HSS+8%Co<br>1360.....<br>€ | HSS+8%Co<br>1370.....<br>€ |
|---|---|---|---|---|---|---|---|
| 14 | 111 | 26 | 2 | 3 | ....14000 | 54,53 | |
| 15 | 111 | 26 | 2 | 3 | ....15000 | 57,78 | |
| 16 | 117 | 32 | 2 | 3 | ....16000 | 58,62 | 66,70 |
| 17 | 117 | 32 | 2 | 3 | ....17000 | 78,09 | |
| 18 | 117 | 32 | 2 | 3 | ....18000 | 63,66 | |
| 19 | 117 | 32 | 2 | 3 | ....19000 | 86,60 | |
| 20 | 140 | 38 | 3 | 3 | ....20000 | 89,54 | 110,01 |
| 21 | 140 | 38 | 3 | 3 | ....21000 | 99,04 | |
| 22 | 140 | 38 | 3 | 3 | ....22000 | 94,72 | |
| 23 | 140 | 38 | 3 | 3 | ....23000 | 109,33 | |
| 24 | 147 | 45 | 3 | 3 | ....24000 | 109,71 | |
| 25 | 147 | 45 | 3 | 3 | ....25000 | 112,09 | 133,69 |
| 26 | 147 | 45 | 3 | 3 | ....26000 | 118,01 | |
| 28 | 147 | 45 | 3 | 3 | ....28000 | 125,19 | |
| 30 | 147 | 45 | 3 | 3 | ....30000 | 145,72 | 156,94 |
| 32 | 178 | 53 | 4 | 3 | ....32000 | 170,20 | |
| 34 | 178 | 53 | 4 | 3 | ....34000 | 187,80 | |
| 35 | 178 | 53 | 4 | 3 | ....35000 | 197,28 | 202,99 |
| 36 | 178 | 53 | 4 | 3 | ....36000 | 204,87 | |
| 38 | 188 | 63 | 4 | 3 | ....38000 | 237,17 | |
| 40 | 188 | 63 | 4 | 3 | ....40000 | 266,59 | 313,15 |

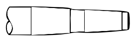
FRESE CILINDRICHE FRONTALI A TRE TAGLIENTI THREE FLUTE END MILLS LANGLOCHFRÄSER MIT DREI SCHNEIDEN FRAISES CYLINDRIQUES FRONTALES A TROIS DENTS FRESAS CILINDRICAS FRONTALES DE TRES LABIOS

## CM 38

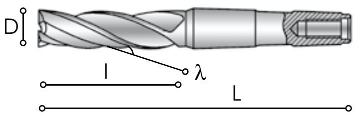
DIN 845-B

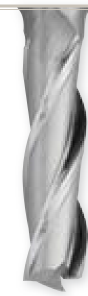
N

λ 30°



CM38



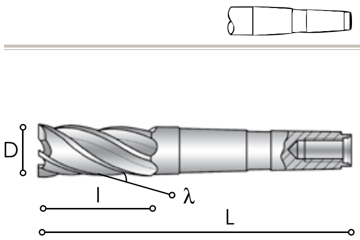
| D js14 | L | l | CM | Z | CODE | HSS+8%Co 1380..... € |
|---|---|---|---|---|---|---|
| 16 | 148 | 63 | 2 | 3 | ....16000 | 72,86 |
| 18 | 148 | 63 | 2 | 3 | ....18000 | 79,33 |
| 20 | 177 | 75 | 3 | 3 | ....20000 | 105,26 |
| 22 | 177 | 75 | 3 | 3 | ....22000 | 118,31 |
| 24 | 192 | 90 | 3 | 3 | ....24000 | 146,73 |
| 25 | 192 | 90 | 3 | 3 | ....25000 | 151,74 |
| 26 | 192 | 90 | 3 | 3 | ....26000 | 159,10 |
| 28 | 192 | 90 | 3 | 3 | ....28000 | 168,84 |
| 30 | 192 | 90 | 3 | 3 | ....30000 | 182,46 |
| 32 | 231 | 106 | 4 | 3 | ....32000 | 249,39 |
| 34 | 231 | 106 | 4 | 3 | ....34000 | 280,03 |
| 35 | 231 | 106 | 4 | 3 | ....35000 | 294,20 |
| 36 | 231 | 106 | 4 | 3 | ....36000 | 320,94 |
| 38 | 250 | 125 | 4 | 3 | ....38000 | 370,98 |
| 40 | 250 | 125 | 4 | 3 | ....40000 | 416,39 |

# CM 41TF

DIN 845-B

N

λ 30°





| D js14 | L | l | CM | Z | CODE | HSS+8%Co 1410..... € | HSS+8%Co 2410..... € SAPPHIRE MULTI | CODE | RESISTOR 1410..... € | RESISTOR 2410..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 111 | 26 | 2 | 4 | ....14000 | 52,63 | 68,53 | ....14030 | | |
| 15 | 111 | 26 | 2 | 4 | ....15000 | 58,88 | 75,40 | ....15030 | | |
| 16 | 117 | 32 | 2 | 4 | ....16000 | 55,04 | 71,18 | ....16030 | 64,75 | 81,86 |
| 17 | 117 | 32 | 2 | 4 | ....17000 | 59,44 | | ....17030 | | |
| 18 | 117 | 32 | 2 | 4 | ....18000 | 57,74 | 74,15 | ....18030 | 67,91 | 85,34 |
| 19 | 117 | 32 | 2 | 4 | ....19000 | 66,24 | | ....19030 | | |
| 20 | 140 | 38 | 3 | 4 | ....20000 | 80,33 | 106,83 | ....20030 | 101,06 | 129,63 |
| 21 | 140 | 38 | 3 | 4 | ....21000 | 91,24 | | ....21030 | | |
| 22 | 140 | 38 | 3 | 4 | ....22000 | 89,81 | 117,26 | ....22030 | 117,55 | 147,77 |
| 23 | 140 | 38 | 3 | 5 | ....23000 | 109,99 | | ....23030 | | |
| 24 | 147 | 45 | 3 | 5 | ....24000 | 106,12 | 150,36 | ....24030 | 133,27 | 180,23 |
| 25 | 147 | 45 | 3 | 5 | ....25000 | 108,61 | 153,11 | ....25030 | 136,42 | 183,69 |
| 26 | 147 | 45 | 3 | 5 | ....26000 | 113,26 | 167,38 | ....26030 | 143,17 | 200,29 |
| 28 | 147 | 45 | 3 | 6 | ....28000 | 117,89 | 172,48 | ....28030 | 149,69 | 207,46 |
| 30 | 147 | 45 | 3 | 6 | ....30000 | 138,69 | 195,36 | ....30030 | 176,20 | 236,62 |
| 32 | 178 | 53 | 4 | 6 | ....32000 | 160,53 | 224,17 | ....32030 | 214,98 | 284,07 |
| 34 | 178 | 53 | 4 | 6 | ....34000 | 182,99 | 248,88 | ....34030 | 239,29 | 310,81 |
| 35 | 178 | 53 | 4 | 6 | ....35000 | 181,60 | 247,35 | ....35030 | 238,88 | 310,36 |
| 36 | 178 | 53 | 4 | 6 | ....36000 | 215,50 | 291,75 | ....36030 | 258,71 | 339,28 |
| 38 | 188 | 63 | 4 | 6 | ....38000 | 221,59 | 306,74 | ....38030 | 285,94 | 377,53 |
| 40 | 188 | 63 | 4 | 8 | ....40000 | 249,00 | 336,90 | ....40030 | 325,92 | 421,50 |
| 42 | 188 | 63 | 4 | 8 | ....42000 | 388,32 | | ....42030 | | |
| 44 | 188 | 63 | 4 | 8 | ....44000 | 389,01 | | ....44030 | | |
| 45 | 188 | 63 | 4 | 8 | ....45000 | 345,98 | | ....45030 | 464,22 | |
| 50 | 233 | 75 | 5 | 8 | ....50000 | 472,02 | | ....50030 | 654,22 | |

carmon

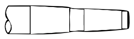
FRESE CILINDRICHE FRONTALI CON TESTA SEMISFERICA BALL NOSE END MILLS
MEHRSCHNEIDEN- RADIUSSCHAFTFRÄSER FRAISES CYLINDRIQUES FRONTALES AVEC TETE HEMISPHERIQUES
FRESAS CILÍNDRICAS FRONTALES CON CABEZA SEMIESFÉRICA

## CM 41R

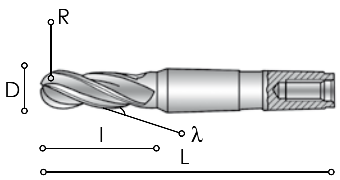
DIN 1889/2D — N — λ 30°

## CM 44R

DIN 1889/2D — NR — λ 30°



CM41R CM44R





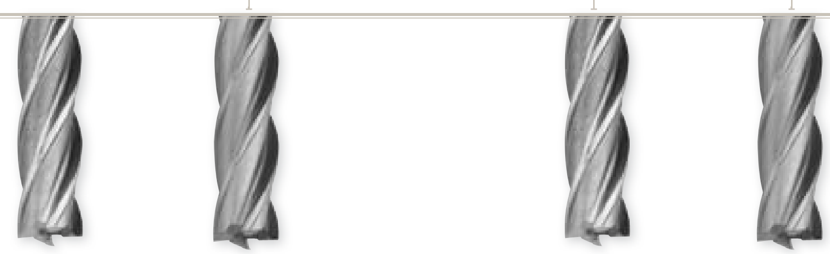
| D js14 | R ± 0,02 | L | l | CM | Z | CODE | HSS+8%Co 1411..... € | HSS+8%Co 1441..... € |
|---|---|---|---|---|---|---|---|---|
| 16 | 8 | 117 | 32 | 2 | 4 | ....16000 | 92,61 | 96,00 |
| 20 | 10 | 140 | 38 | 3 | 4 | ....20000 | 110,91 | 130,45 |
| 25 | 12,5 | 147 | 45 | 3 | 5 | ....25000 | 155,37 | 178,57 |
| 30 | 15 | 147 | 45 | 3 | 6 | ....30000 | 199,77 | 232,25 |
| 32 | 16 | 178 | 53 | 4 | 6 | ....32000 | 251,49 | 258,28 |
| 40 | 20 | 188 | 63 | 4 | 8 | ....40000 | 292,63 | 364,90 |

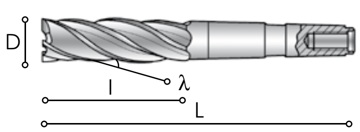
FRESE CILINDRICHE FRONTALI MULTIFLUTE FINISHING CUTTERS MEHRSCHNEIDENFRÄSER
FRAISES DEUX TAILLES FRESAS CILÍNDRICAS FRONTALES

## CM 42

DIN 845B — N — λ 30°

CM42







| D js14 | L | l | CM | Z | CODE | HSS+8%Co 1420..... € | HSS+8%Co 2420..... € SAPPHIRE MULTI | CODE | RESISTOR 1420..... € | RESISTOR 2420..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 148 | 63 | 2 | 4 | ....16000 | 72,05 | 93,58 | ....16030 | 86,59 | 109,58 |
| 18 | 148 | 63 | 2 | 4 | ....18000 | 75,38 | 97,24 | ....18030 | 90,78 | 114,19 |
| 20 | 177 | 75 | 3 | 4 | ....20000 | 97,76 | 141,18 | ....20030 | 120,16 | 165,82 |
| 22 | 177 | 75 | 3 | 4 | ....22000 | 116,17 | 161,42 | ....22030 | 142,65 | 190,56 |
| 24 | 192 | 90 | 3 | 5 | ....24000 | 145,27 | 200,82 | ....24030 | 185,28 | 244,83 |
| 25 | 192 | 90 | 3 | 5 | ....25000 | 145,60 | 201,19 | ....25030 | 178,33 | 237,19 |
| 26 | 192 | 90 | 3 | 5 | ....26000 | 154,11 | 218,89 | ....26030 | 190,23 | 258,62 |
| 28 | 192 | 90 | 3 | 6 | ....28000 | 167,11 | 233,19 | ....28030 | 207,86 | 278,02 |
| 30 | 192 | 90 | 3 | 6 | ....30000 | 180,55 | 247,97 | ....30030 | 223,96 | 295,72 |
| 32 | 231 | 106 | 4 | 6 | ....32000 | 249,34 | 339,68 | ....32030 | 314,87 | 411,76 |
| 34 | 231 | 106 | 4 | 6 | ....34000 | 274,38 | 367,23 | ....34030 | 351,58 | 452,14 |
| 35 | 231 | 106 | 4 | 6 | ....35000 | 288,32 | 382,56 | ....35030 | 371,92 | 474,52 |
| 36 | 231 | 106 | 4 | 6 | ....36000 | 303,03 | 408,83 | ....36030 | 394,22 | 509,14 |
| 38 | 250 | 125 | 4 | 6 | ....38000 | 363,41 | 475,25 | ....38030 | 479,59 | 603,05 |
| 40 | 250 | 125 | 4 | 8 | ....40000 | 402,95 | 518,75 | ....40030 | 539,37 | 668,81 |
| 45 | 250 | 125 | 4 | 8 | ....45000 | 485,73 | | ....45030 | 666,44 | |
| 50 | 308 | 150 | 5 | 8 | ....50000 | 696,74 | | ....50030 | 975,60 | |

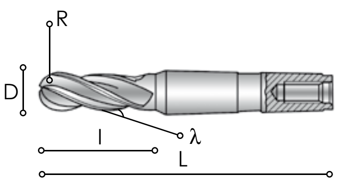
# FRESE CILINDRICHE FRONTALI CON TESTA SEMISFERICA BALL NOSE END MILLS MEHRSCHNEIDEN- RADIUSSCHAFTFRÄSER FRAISES CYLINDRIQUES FRONTALES AVEC TETE HEMISPHERIQUES FRESAS CILÍNDRICAS FRONTALES CON CABEZA SEMIESFÉRICA

## CM 42R

DIN 1889/2D — N — λ 30°

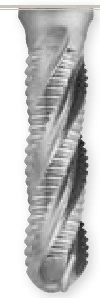
## CM 48R

DIN 1889/2D — NR — λ 30°




CM42R

CM48R

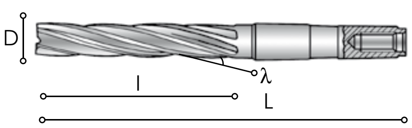


| D js14 | R ± 0,02 | L | l | CM | Z | CODE | HSS+8%Co 1421..... € | HSS+8%Co 1481..... € |
|---|---|---|---|---|---|---|---|---|
| 16 | 8 | 148 | 63 | 2 | 4 | ....16000 | 107,70 | 120,90 |
| 20 | 10 | 177 | 75 | 3 | 4 | ....20000 | 150,11 | 167,83 |
| 25 | 12,5 | 192 | 90 | 3 | 5 | ....25000 | 199,82 | 237,35 |
| 30 | 15 | 192 | 90 | 3 | 6 | ....30000 | 261,35 | 299,95 |
| 32 | 16 | 231 | 106 | 4 | 6 | ....32000 | 316,64 | 365,39 |
| 40 | 20 | 250 | 125 | 4 | 8 | ....40000 | 441,47 | 522,53 |

# FRESE CILINDRICHE FRONTALI MULTIFLUTE FINISHING CUTTERS MEHRSCHNEIDENFRÄSER FRAISES DEUX TAILLES FRESAS CILÍNDRICAS FRONTALES

## CM 43

CARMON NORM. — N — λ 20°




CM43

| D js14 | L | l | CM | Z | CODE | HSS+8%Co 1430..... € |
|---|---|---|---|---|---|---|
| 16 | 170 | 90 | 2 | 6 | ....16000 | 103,46 |
| 18 | 200 | 100 | 3 | 8 | ....18000 | 155,16 |
| 20 | 210 | 110 | 3 | 8 | ....20000 | 165,95 |
| 22 | 210 | 110 | 3 | 8 | ....22000 | 176,68 |
| 24 | 225 | 125 | 3 | 8 | ....24000 | 206,59 |
| 25 | 225 | 125 | 3 | 8 | ....25000 | 224,84 |
| 26 | 250 | 125 | 4 | 8 | ....26000 | 249,97 |
| 28 | 265 | 140 | 4 | 8 | ....28000 | 273,53 |
| 30 | 265 | 140 | 4 | 8 | ....30000 | 297,42 |
| 32 | 285 | 160 | 4 | 10 | ....32000 | 334,10 |
| 34 | 285 | 160 | 4 | 10 | ....34000 | 357,56 |
| 36 | 305 | 180 | 4 | 10 | ....36000 | 387,94 |
| 38 | 310 | 185 | 4 | 10 | ....38000 | 444,57 |
| 40 | 315 | 190 | 4 | 10 | ....40000 | 497,84 |

carmon

FRESE CILINDRICHE FRONTALI PER SGROSSARE
FRAISES DEUX TAILLES D'EBAUCHE
ROUGHING END MILLS
FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE
SCHRUPPFRÄSER

# CM 44TF

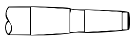
DIN 845B

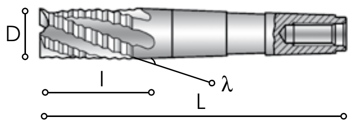
NR

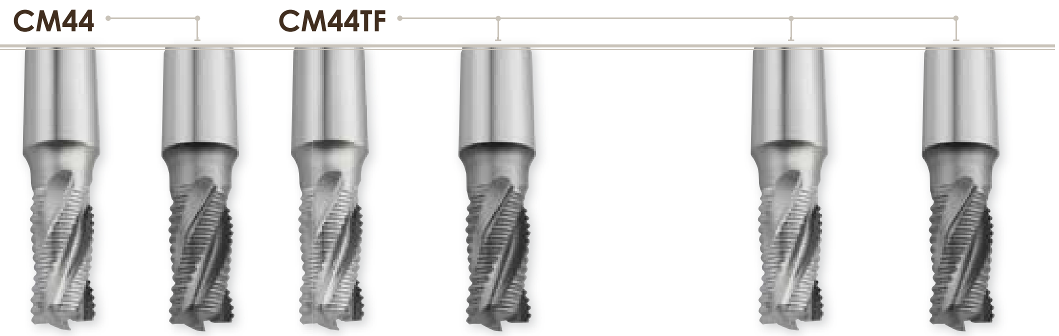
λ 30°

CM 44TF

CM 44





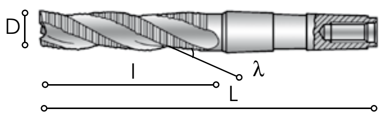

| D js14 | L | l | CM | Z | CODE | HSS+8%Co 1440..... € | RESISTOR 1440..... € | HSS+8%Co 1444..... € | HSS+8%Co 2444..... € SAPPHIRE MULTI | CODE | RESISTOR 1444..... € | RESISTOR 2444..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 117 | 32 | 2 | 3 | ....16000 | 64,15 | 78,89 | 67,36 | 84,74 | ....16030 | 82,84 | 101,76 |
| 18 | 117 | 32 | 2 | 3 | ....18000 | 70,48 | 86,85 | 74,00 | 92,03 | ....18030 | 91,19 | 110,94 |
| 20 | 140 | 38 | 3 | 4 | ....20000 | | 113,39 | 98,14 | 126,42 | ....20030 | 123,70 | 154,54 |
| 22 | 140 | 38 | 3 | 4 | ....22000 | | 126,71 | 105,61 | 134,64 | ....22030 | 133,04 | 164,81 |
| 24 | 147 | 45 | 3 | 4 | ....24000 | | 144,38 | 120,30 | 165,97 | ....24030 | 151,59 | 200,39 |
| 25 | 147 | 45 | 3 | 4 | ....25000 | | 150,43 | 123,91 | 169,94 | ....25030 | 157,95 | 207,38 |
| 26 | 147 | 45 | 3 | 4 | ....26000 | | 160,60 | 129,26 | 184,98 | ....26030 | 168,63 | 228,29 |
| 28 | 147 | 45 | 3 | 4 | ....28000 | | 173,53 | 143,20 | 200,32 | ....28030 | 182,20 | 243,22 |
| 30 | 147 | 45 | 3 | 5 | ....30000 | | 194,15 | 157,52 | 216,07 | ....30030 | 203,86 | 267,04 |
| 32 | 178 | 53 | 4 | 5 | ....32000 | 172,79 | | 188,49 | 254,93 | ....32030 | 234,93 | 306,01 |
| 35 | 178 | 53 | 4 | 5 | ....35000 | | 246,90 | 206,20 | 274,41 | ....35030 | | |
| 36 | 178 | 53 | 4 | 5 | ....36000 | | 255,96 | 212,41 | 288,34 | ....36030 | | |
| 40 | 188 | 63 | 4 | 6 | ....40000 | | | 251,82 | 340,00 | ....40030 | 327,44 | 423,18 |
| 45 | 188 | 63 | 4 | 6 | ....45000 | | 469,39 | 357,81 | | ....45030 | | |
| 50 | 233 | 75 | 5 | 6 | ....50000 | | 657,49 | 486,18 | | ....50030 | | |

# CM 48

DIN 845B

NR

λ 30°




CM48

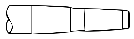
| D js14 | L | l | CM | Z | CODE | HSS+8%Co 1480..... € | HSS+8%Co 2480..... € SAPPHIRE MULTI | CODE | RESISTOR 1480..... € | RESISTOR 2480..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|---|
| 16 | 148 | 63 | 2 | 3 | ....16000 | 87,71 | 110,81 | ....16030 | 110,06 | 135,40 |
| 18 | 148 | 63 | 2 | 3 | ....18000 | 91,87 | 115,38 | ....18030 | 115,48 | 141,35 |
| 20 | 177 | 75 | 3 | 4 | ....20000 | 129,22 | 175,78 | ....20030 | 168,38 | 218,86 |
| 22 | 177 | 75 | 3 | 4 | ....22000 | 139,63 | 187,23 | ....22030 | 181,62 | 233,42 |
| 24 | 192 | 90 | 3 | 4 | ....24000 | 178,83 | 237,74 | ....24030 | 232,35 | 296,61 |
| 25 | 192 | 90 | 3 | 4 | ....25000 | 182,58 | 241,86 | ....25030 | 239,00 | 303,92 |
| 28 | 192 | 90 | 3 | 4 | ....28000 | 205,82 | 275,77 | ....28030 | 270,99 | 347,46 |
| 30 | 192 | 90 | 3 | 5 | ....30000 | 218,82 | 290,07 | ....30030 | 287,33 | 365,43 |
| 32 | 231 | 106 | 4 | 5 | ....32000 | 274,58 | 367,44 | ....32030 | 365,75 | 467,73 |
| 35 | 231 | 106 | 4 | 5 | ....35000 | 306,55 | 402,61 | ....35030 | 409,02 | 515,32 |
| 38 | 250 | 125 | 4 | 5 | ....38000 | 390,90 | 505,49 | ....38030 | 531,27 | 659,90 |
| 40 | 250 | 125 | 4 | 6 | ....40000 | 402,77 | 518,55 | ....40030 | 560,17 | 691,69 |
| 45 | 250 | 125 | 4 | 6 | ....45000 | 506,80 | | ....45030 | 683,49 | |
| 50 | 308 | 150 | 5 | 6 | ....50000 | 702,58 | | ....50030 | 1026,51 | |

# CM 45TF

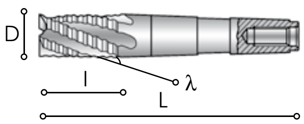
DIN 845B

NF

λ 30°



CM45TF




| D js14 | L | l | CM | Z | CODE | HSS+8%Co 1450..... € |
|---|---|---|---|---|---|---|
| 16 | 117 | 32 | 2 | 3 | ....16000 | 67,36 |
| 18 | 117 | 32 | 2 | 3 | ....18000 | 74,00 |
| 20 | 140 | 38 | 3 | 4 | ....20000 | 94,46 |
| 22 | 140 | 38 | 3 | 4 | ....22000 | 105,61 |
| 24 | 147 | 45 | 3 | 4 | ....24000 | 120,30 |
| 25 | 147 | 45 | 3 | 4 | ....25000 | 123,91 |
| 26 | 147 | 45 | 3 | 4 | ....26000 | 129,26 |
| 28 | 147 | 45 | 3 | 4 | ....28000 | 143,20 |
| 30 | 147 | 45 | 3 | 5 | ....30000 | 157,52 |
| 32 | 178 | 53 | 4 | 5 | ....32000 | 188,49 |
| 35 | 178 | 53 | 4 | 5 | ....35000 | 198,46 |
| 36 | 178 | 53 | 4 | 5 | ....36000 | 204,44 |
| 40 | 188 | 63 | 4 | 6 | ....40000 | 251,82 |
| 45 | 188 | 63 | 4 | 6 | ....45000 | 344,40 |
| 50 | 233 | 75 | 5 | 6 | ....50000 | 486,18 |

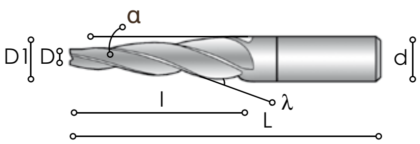
# CS 47

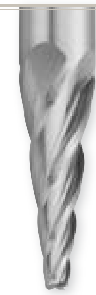
DIN 1889EA

N

λ 30°

CS47



| α ± 10' | D k12 | D1 | L | l | d h8 | Z | CODE | HSS+8%Co 1470..... € |
|---|---|---|---|---|---|---|---|---|
| 0° 30' | 3 | 3,3 | 60 | 17 | 6 | 3 | ....03003 | 24,38 |
| 0° 30' | 4 | 4,4 | 65 | 23 | 6 | 3 | ....03004 | 24,38 |
| 0° 30' | 5 | 5,5 | 70 | 29 | 6 | 3 | ....03005 | 30,60 |
| 0° 30' | 6 | 6,5 | 75 | 29 | 10 | 4 | ....03006 | 36,88 |
| 1° | 3 | 3,5 | 60 | 15 | 6 | 3 | ....10003 | 26,97 |
| 1° | 4 | 4,7 | 65 | 20 | 6 | 3 | ....10004 | 26,97 |
| 1° | 5 | 5,9 | 70 | 26 | 6 | 3 | ....10005 | 32,91 |
| 1° | 6 | 7,4 | 80 | 40 | 8 | 4 | ....10006 | 38,81 |
| 1° | 8 | 9,6 | 90 | 45 | 10 | 4 | ....10008 | 43,75 |
| 1°30 | 3 | 3,8 | 60 | 16 | 6 | 3 | ....13003 | 34,51 |
| 1°30 | 4 | 5 | 65 | 19 | 6 | 3 | ....13004 | 36,25 |
| 1°30 | 5 | 6,3 | 70 | 25 | 6 | 3 | ....13005 | 38,61 |
| 1°30 | 6 | 8,1 | 80 | 40 | 8 | 4 | ....13006 | 41,94 |
| 1°30 | 8 | 10,35 | 90 | 45 | 10 | 4 | ....13008 | 46,28 |
| 2° | 3 | 4,1 | 60 | 16 | 6 | 3 | ....20003 | 25,65 |
| 2° | 4 | 6 | 65 | 28,5 | 6 | 3 | ....20004 | 32,91 |
| 2° | 5 | 6,75 | 70 | 25 | 6 | 3 | ....20005 | 37,97 |
| 2° | 6 | 8,8 | 80 | 40 | 8 | 4 | ....20006 | 43,04 |
| 2° | 8 | 11,15 | 90 | 45 | 12 | 4 | ....20008 | 71,81 |
| 3° | 6 | 12,3 | 100 | 60 | 12 | 4 | ....30006 | 57,83 |
| 3° | 8 | 16,4 | 125 | 80 | 16 | 4 | ....30008 | 84,75 |
| 4° | 6 | 13 | 100 | 50 | 12 | 4 | ....40006 | 69,45 |
| 4° | 8 | 18,5 | 125 | 75 | 20 | 4 | ....40008 | 101,97 |
| 5° | 6 | 16,5 | 112 | 60 | 16 | 4 | ....50006 | 94,33 |
| 6° | 8 | 17,45 | 100 | 45 | 16 | 4 | ....60008 | 145,77 |
| 7° | 6 | 19,75 | 112 | 56 | 20 | 4 | ....70006 | 170,09 |
| 2°52 | 6 | 10 | 95 | 40 | 10 | 4 | ....25206 | 58,89 |
| 2°52 | 12 | 20 | 140 | 80 | 20 | 4 | ....25212 | 74,39 |
| 4° 34 | 6 | 16 | 112 | 62,5 | 16 | 4 | ....43406 | 170,09 |
| 5° 43 | 6 | 14 | 95 | 40 | 12 | 4 | ....54306 | 69,40 |
| 7° 7 | 6 | 20 | 120 | 56 | 20 | 4 | ....77006 | 102,03 |

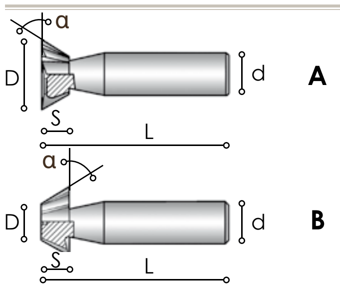
## TCL 60A

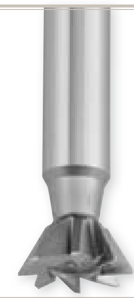
DIN 1833A/B N λ 0°

## TCL 60B

DIN 1833A/B N λ 0°

TCL60



| D js16 | α ± 30' | L | S js14 | d h8 | Z | CODE | HSS+5%Co<br>1601..... A<br>1602..... B<br>€ |
|---|---|---|---|---|---|---|---|
| 16 | 45° | 60 | 4 | 12 | 8 | ....16450 | 49,26 |
| 20 | 45° | 63 | 5 | 12 | 8 | ....20450 | 64,31 |
| 25 | 45° | 67 | 6,3 | 16 | 10 | ....25450 | 79,84 |
| 32 | 45° | 71 | 8 | 16 | 12 | ....32450 | 115,31 |
| 16 | 60° | 60 | 6,3 | 12 | 8 | ....16600 | 49,26 |
| 20 | 60° | 63 | 8 | 12 | 8 | ....20600 | 64,31 |
| 25 | 60° | 67 | 10 | 16 | 10 | ....25600 | 79,84 |
| 32 | 60° | 71 | 12,5 | 16 | 12 | ....32600 | 115,31 |
| 16 | 70° | 60 | 7 | 12 | 8 | ....16700 | 49,26 |
| 20 | 70° | 63 | 9 | 12 | 8 | ....20700 | 64,31 |
| 25 | 70° | 67 | 11 | 16 | 10 | ....25700 | 79,84 |

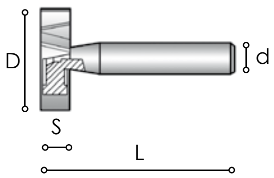
# TCL 61

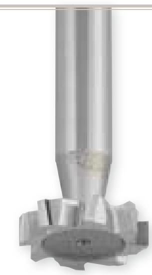
DIN 850/B

N

λ 10°

TCL61



| D + 0,05 - 0 | S d9 | L | d h8 | Z | CODE | HSS+5%Co 1610..... € |
|---|---|---|---|---|---|---|
| 10,5 | 2 | 50 | 6 | 6 | ....10520 | 39,24 |
| 10,5 | 2,5 | 50 | 6 | 6 | ....10525 | 39,24 |
| 10,5 | 3 | 50 | 6 | 6 | ....10530 | 39,24 |
| 13,5 | 2 | 56 | 10 | 8 | ....13520 | 43,46 |
| 13,5 | 3 | 56 | 10 | 8 | ....13530 | 43,46 |
| 13,5 | 4 | 56 | 10 | 8 | ....13540 | 43,46 |
| 16,5 | 3 | 56 | 10 | 8 | ....16530 | 51,17 |
| 16,5 | 4 | 56 | 10 | 8 | ....16540 | 51,17 |
| 16,5 | 5 | 56 | 10 | 8 | ....16550 | 51,17 |
| 16,5 | 6 | 56 | 10 | 8 | ....16560 | 51,17 |
| 19,5 | 3 | 56 | 10 | 8 | ....19530 | 58,18 |
| 19,5 | 4 | 56 | 10 | 8 | ....19540 | 58,18 |
| 19,5 | 5 | 56 | 10 | 8 | ....19550 | 58,18 |
| 19,5 | 6 | 56 | 10 | 8 | ....19560 | 58,18 |
| 22,5 | 4 | 56 | 10 | 8 | ....22540 | 68,00 |
| 22,5 | 5 | 56 | 10 | 8 | ....22550 | 68,00 |
| 22,5 | 6 | 56 | 10 | 8 | ....22560 | 68,00 |
| 22,5 | 8 | 56 | 10 | 8 | ....22580 | 68,00 |
| 25,5 | 5 | 56 | 10 | 8 | ....25550 | 78,48 |
| 25,5 | 6 | 56 | 10 | 8 | ....25560 | 78,48 |
| 25,5 | 7 | 56 | 10 | 8 | ....25570 | 78,48 |
| 25,5 | 8 | 56 | 10 | 8 | ....25580 | 78,48 |
| 28,5 | 6 | 56 | 10 | 8 | ....28560 | 93,21 |
| 28,5 | 8 | 56 | 10 | 8 | ....28580 | 93,21 |
| 28,5 | 10 | 63 | 12 | 8 | ....28510 | 93,21 |
| 32,5 | 6 | 56 | 10 | 10 | ....32560 | 108,63 |
| 32,5 | 7 | 56 | 10 | 10 | ....32570 | 108,63 |
| 32,5 | 8 | 56 | 10 | 10 | ....32580 | 108,63 |
| 32,5 | 10 | 63 | 12 | 10 | ....32510 | 108,63 |
| 45,5 | 10 | 63 | 12 | 10 | ....45510 | 152,81 |

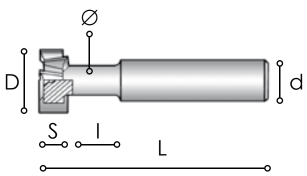
# TCL 62

DIN 851AA

N

λ 12°-15°

TCL62




| D +0,05 / 0 | S +0 / -0,05 | Ø | L | l | d h8 | Z | CODE | HSS+5%Co 1620….. € |
|---|---|---|---|---|---|---|---|---|
| 12,5 | 6 | 5 | 57 | 11 | 10 | 6 | ….12500 | 58,18 |
| 16 | 8 | 7 | 62 | 14 | 10 | 6 | ….16000 | 68,00 |
| 18 | 8 | 8 | 70 | 17 | 12 | 6 | ….18000 | 74,99 |
| 19 | 9 | 8 | 70 | 17 | 12 | 6 | ….19000 | 77,82 |
| 21 | 9 | 10 | 74 | 20 | 12 | 6 | ….21000 | 86,19 |
| 22 | 10 | 10 | 74 | 20 | 12 | 6 | ….22000 | 89,02 |
| 25 | 11 | 12 | 82 | 23 | 16 | 6 | ….25000 | 103,03 |
| 28 | 12 | 13 | 85 | 25 | 16 | 6 | ….28000 | 117,06 |
| 32 | 14 | 15 | 90 | 28 | 16 | 8 | ….32000 | 135,97 |

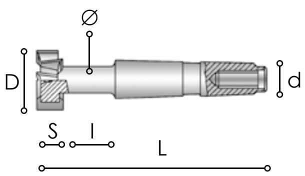
# TCM 63

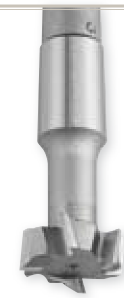
DIN 851/B

N

λ 12°-15°

TCL63



| D $^{+0,05}_{0}$ | S $^{+0}_{-0,05}$ | Ø | L | l | CM | Z | CODE | HSS+5%Co 1630..... € |
|---|---|---|---|---|---|---|---|---|
| 22 | 10 | 10 | 98 | 20 | 2 | 6 | ....22000 | 101,55 |
| 25 | 11 | 12 | 103 | 23 | 2 | 6 | ....25000 | 110,55 |
| 28 | 12 | 13 | 106 | 25 | 2 | 6 | ....28000 | 125,04 |
| 32 | 14 | 15 | 111 | 28 | 2 | 8 | ....32000 | 150,19 |
| 36 | 16 | 17 | 133 | 32 | 3 | 8 | ....36000 | 167,32 |
| 40 | 18 | 19 | 138 | 35 | 3 | 8 | ....40000 | 200,64 |
| 45 | 20 | 21 | 143 | 38 | 3 | 8 | ....45000 | 243,54 |
| 50 | 22 | 25 | 173 | 43 | 4 | 10 | ....50000 | 304,54 |
| 56 | 24 | 28 | 182 | 50 | 4 | 10 | ....56000 | 392,45 |

carmon

FRESE A PROFILO CONCAVO AD UN QUARTO DI CERCHIO QUARTER CIRCLE CUTTERS VIERTELKREISFRÄSER
FRAISES A PROFIL CONCAVE A UN QUART DE CERCLE FRESAS DE PERFIL CÓNCAVO DE UN CUARTO DE CÍRCULO

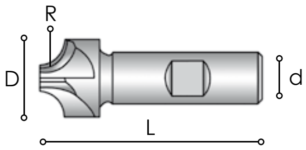
## RC 135

DIN 6518/B

N

λ 0°

RC135




| R H11 | D js14 | L | d h6 | Z | CODE | HSS+5%Co 1135..... € |
|---|---|---|---|---|---|---|
| 1 | 8 | 60 | 10 | 4 | ....01000 | 35,06 |
| 1,5 | 9 | 60 | 10 | 4 | ....15000 | 35,06 |
| 2 | 10 | 60 | 10 | 4 | ....20000 | 35,06 |
| 2,5 | 11 | 60 | 10 | 4 | ....25000 | 35,22 |
| 3 | 12 | 60 | 12 | 4 | ....30000 | 53,21 |
| 3,5 | 14 | 60 | 12 | 4 | ....35000 | 55,78 |
| 4 | 14 | 60 | 12 | 4 | ....40000 | 55,78 |
| 4,5 | 16 | 60 | 12 | 4 | ....45000 | 60,67 |
| 5 | 16 | 60 | 16 | 4 | ....50000 | 60,67 |
| 5,5 | 20 | 67 | 16 | 4 | ....55000 | 71,84 |
| 6 | 20 | 67 | 16 | 4 | ....60000 | 71,84 |
| 6,5 | 24 | 71 | 16 | 4 | ....65000 | 80,91 |
| 7 | 24 | 71 | 16 | 4 | ....70000 | 80,91 |
| 7,5 | 24 | 71 | 16 | 4 | ....75000 | 80,91 |
| 8 | 24 | 71 | 16 | 4 | ....80000 | 80,91 |
| 8,5 | 28 | 85 | 20 | 4 | ....85000 | 89,40 |
| 9 | 28 | 85 | 20 | 4 | ....90000 | 89,40 |
| 9,5 | 28 | 85 | 20 | 4 | ....95000 | 89,40 |
| 10 | 28 | 85 | 20 | 4 | ....10000 | 89,40 |
| 10,5 | 32 | 90 | 20 | 4 | ....10500 | 111,51 |
| 11 | 32 | 90 | 20 | 4 | ....11000 | 111,51 |
| 12 | 34 | 90 | 20 | 4 | ....12000 | 111,88 |
| 13 | 42 | 100 | 20 | 4 | ....13000 | 190,00 |
| 14 | 44 | 100 | 20 | 6 | ....14000 | 191,02 |
| 15 | 46 | 100 | 20 | 6 | ....01500 | 238,16 |
| 16 | 48 | 100 | 20 | 6 | ....16000 | 238,64 |
| 18 | 52 | 112 | 20 | 6 | ....18000 | 349,23 |
| 20 | 58 | 112 | 20 | 6 | ....02000 | 469,65 |

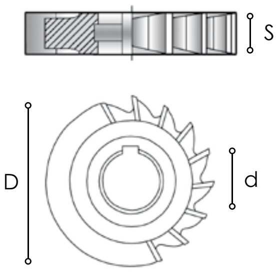
# CR 81

DIN 885/B

H

λ 0°

CR81




| D js16 | S k11 | d H7 | Z | CODE | HSS+5%Co 181..... € |
|---|---|---|---|---|---|
| 50 | 4 | 16 | 20 | ...150004 | 75,99 |
| 50 | 5 | 16 | 20 | ...150005 | 75,99 |
| 50 | 6 | 16 | 20 | ...150006 | 81,23 |
| 50 | 8 | 16 | 20 | ...150008 | 84,72 |
| 50 | 10 | 16 | 20 | ...150010 | 99,76 |
| 63 | 4 | 22 | 22 | ...263004 | 87,10 |
| 63 | 5 | 22 | 22 | ...263005 | 91,85 |
| 63 | 6 | 22 | 22 | ...263006 | 91,85 |
| 63 | 8 | 22 | 22 | ...263008 | 101,53 |
| 63 | 10 | 22 | 22 | ...263010 | 112,09 |
| 63 | 12 | 22 | 20 | ...263012 | 117,79 |
| 63 | 14 | 22 | 20 | ...263014 | 127,71 |
| 80 | 6 | 22 | 24 | ...280006 | 122,93 |
| 80 | 8 | 22 | 24 | ...280008 | 127,96 |
| 80 | 10 | 22 | 24 | ...280010 | 137,74 |
| 80 | 12 | 22 | 24 | ...280012 | 148,31 |
| 80 | 14 | 22 | 20 | ...280014 | 158,71 |
| 80 | 16 | 22 | 20 | ...280016 | 177,25 |
| 80 | 18 | 22 | 20 | ...280018 | 183,45 |
| 80 | 6 | 27 | 24 | ...380006 | 122,93 |
| 80 | 8 | 27 | 24 | ...380008 | 127,96 |
| 80 | 10 | 27 | 24 | ...380010 | 137,74 |
| 80 | 12 | 27 | 24 | ...380012 | 148,31 |
| 80 | 14 | 27 | 20 | ...380014 | 158,71 |
| 80 | 16 | 27 | 20 | ...380016 | 167,72 |
| 80 | 18 | 27 | 20 | ...380018 | 183,45 |
| 100 | 6 | 27 | 26 | ...310006 | 158,71 |
| 100 | 8 | 27 | 26 | ...310008 | 173,02 |
| 100 | 10 | 27 | 26 | ...310010 | 187,19 |
| 100 | 12 | 27 | 26 | ...310012 | 203,11 |
| 100 | 14 | 27 | 22 | ...310014 | 217,16 |
| 100 | 16 | 27 | 22 | ...310016 | 229,54 |
| 100 | 18 | 27 | 22 | ...310018 | 245,41 |
| 100 | 20 | 27 | 22 | ...310020 | 269,68 |
| 100 | 18 | 32 | 22 | ...410018 | 245,41 |
| 100 | 20 | 32 | 22 | ...410020 | 259,57 |
| 125 | 8 | 32 | 30 | ...412508 | 234,84 |
| 125 | 10 | 32 | 30 | ...412510 | 250,72 |
| 125 | 12 | 32 | 24 | ...412512 | 269,30 |
| 125 | 14 | 32 | 24 | ...412514 | 289,59 |

FRESE A DISCO A TRE TAGLI DIRITTI SIDE AND FACE CUTTERS WITH STRAIGHT TEEHT GERADEVERZAHNTE SCHEIBENFRÄSER FRAISES A DISQUE A TROIS TAILLES DROITES FRESAS DE DISCO DE TRES CORTES RECTOS

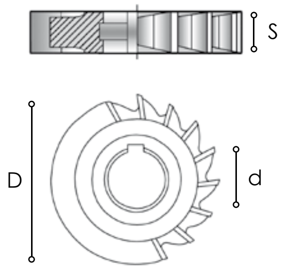
## CR 81

DIN 885/B

H

λ 0°

CR81

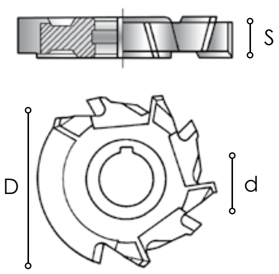



| D js16 | S k11 | d H7 | Z | CODE | HSS+5%Co 181..... € |
|---|---|---|---|---|---|
| 125 | 16 | 32 | 24 | ...412516 | 316,08 |
| 125 | 18 | 32 | 24 | ...412518 | 353,12 |
| 125 | 20 | 32 | 24 | ...412520 | 379,66 |
| 160 | 10 | 32 | 36 | ...416010 | 372,59 |
| 160 | 12 | 32 | 30 | ...416012 | 399,25 |
| 160 | 14 | 32 | 30 | ...416014 | 430,21 |
| 160 | 16 | 32 | 30 | ...416016 | 459,13 |
| 160 | 18 | 32 | 30 | ...416018 | 491,42 |
| 160 | 20 | 32 | 30 | ...416020 | 522,23 |
| 160 | 22 | 32 | 30 | ...416022 | 586,25 |
| 160 | 25 | 32 | 30 | ...416025 | 688,66 |
| 160 | 28 | 32 | 30 | ...416028 | 785,05 |
| 160 | 32 | 32 | 30 | ...416032 | 907,14 |
| 160 | 18 | 40 | 30 | ...516018 | 491,42 |
| 160 | 20 | 40 | 30 | ...516020 | 522,23 |
| 160 | 22 | 40 | 30 | ...516022 | 586,25 |
| 160 | 25 | 40 | 30 | ...516025 | 688,66 |
| 160 | 28 | 40 | 30 | ...516028 | 785,05 |
| 160 | 32 | 40 | 30 | ...516032 | 907,14 |

# CR 83

DIN 885/A   N   λ 8°-15°

CR83




| D js16 | S k11 | d H7 | Z | CODE | HSS+5%Co 183..... € |
|---|---|---|---|---|---|
| 50 | 3 | 16 | 14 | ...150003 | 85,70 |
| 50 | 4 | 16 | 14 | ...150004 | 75,25 |
| 50 | 5 | 16 | 14 | ...150005 | 75,25 |
| 50 | 6 | 16 | 14 | ...150006 | 80,44 |
| 50 | 7 | 16 | 14 | ...150007 | 83,90 |
| 50 | 8 | 16 | 14 | ...150008 | 83,90 |
| 50 | 9 | 16 | 14 | ...150009 | 94,25 |
| 50 | 10 | 16 | 14 | ...150010 | 97,14 |
| 63 | 3 | 22 | 16 | ...263003 | 108,37 |
| 63 | 4 | 22 | 16 | ...263004 | 86,25 |
| 63 | 5 | 22 | 16 | ...263005 | 90,96 |
| 63 | 6 | 22 | 16 | ...263006 | 90,96 |
| 63 | 7 | 22 | 14 | ...263007 | 95,67 |
| 63 | 8 | 22 | 14 | ...263008 | 100,55 |
| 63 | 9 | 22 | 14 | ...263009 | 105,80 |
| 63 | 10 | 22 | 14 | ...263010 | 111,00 |
| 63 | 12 | 22 | 14 | ...263012 | 116,64 |
| 63 | 14 | 22 | 16 | ...263014 | 127,71 |
| 63 | 16 | 22 | 16 | ...263016 | 135,76 |
| 63 | 18 | 22 | 16 | ...263018 | 141,27 |
| 80 | 3 | 22 | 18 | ...280003 | 131,16 |
| 80 | 4 | 22 | 18 | ...280004 | 108,37 |
| 80 | 5 | 22 | 18 | ...280005 | 115,43 |
| 80 | 6 | 22 | 18 | ...280006 | 121,73 |
| 80 | 7 | 22 | 16 | ...280007 | 125,90 |
| 80 | 8 | 22 | 16 | ...280008 | 125,90 |
| 80 | 9 | 22 | 16 | ...280009 | 131,16 |
| 80 | 10 | 22 | 16 | ...280010 | 141,72 |
| 80 | 12 | 22 | 16 | ...280012 | 152,59 |
| 80 | 14 | 22 | 16 | ...280014 | 163,29 |
| 80 | 16 | 22 | 16 | ...280016 | 174,26 |
| 80 | 18 | 22 | 16 | ...280018 | 183,45 |
| 80 | 20 | 22 | 16 | ...280020 | 194,48 |
| 80 | 3 | 27 | 18 | ...380003 | 131,16 |
| 80 | 4 | 27 | 18 | ...380004 | 108,37 |
| 80 | 5 | 27 | 18 | ...380005 | 115,43 |
| 80 | 6 | 27 | 18 | ...380006 | 121,73 |
| 80 | 7 | 27 | 16 | ...380007 | 125,90 |
| 80 | 8 | 27 | 16 | ...380008 | 125,90 |
| 80 | 9 | 27 | 16 | ...380009 | 131,16 |

carmon

**FRESE A DISCO A TRE TAGLI ALTERNATI** SIDE AND FACE CUTTERS WITH STAGGERED TEETH **KREUZVERZAHNTE SCHEIBENFRÄSER** FRAISES A DISQUE A TROIS TAILLES ALTERNEES **FRESAS DE DISCO DE TRES CORTES ALTERNOS**

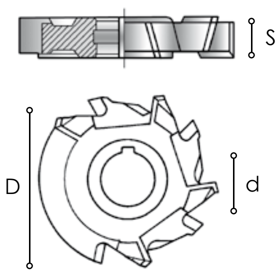
# CR 83

DIN 885/A

N

λ 8°-15°

**CR83**




| D js16 | S k11 | d H7 | Z | CODE | HSS+5%Co 183..... € |
|---|---|---|---|---|---|
| 80 | 10 | 27 | 16 | ...380010 | 141,72 |
| 80 | 12 | 27 | 16 | ...380012 | 152,59 |
| 80 | 14 | 27 | 16 | ...380014 | 163,29 |
| 80 | 16 | 27 | 16 | ...380016 | 174,26 |
| 80 | 18 | 27 | 16 | ...380018 | 183,45 |
| 80 | 20 | 27 | 16 | ...380020 | 194,48 |
| 100 | 3 | 27 | 22 | ...310003 | 180,11 |
| 100 | 4 | 27 | 22 | ...310004 | 146,04 |
| 100 | 5 | 27 | 22 | ...310005 | 150,37 |
| 100 | 6 | 27 | 22 | ...310006 | 157,17 |
| 100 | 7 | 27 | 18 | ...310007 | 164,40 |
| 100 | 8 | 27 | 18 | ...310008 | 171,34 |
| 100 | 9 | 27 | 18 | ...310009 | 178,36 |
| 100 | 10 | 27 | 18 | ...310010 | 185,37 |
| 100 | 12 | 27 | 18 | ...310012 | 201,14 |
| 100 | 14 | 27 | 18 | ...310014 | 217,16 |
| 100 | 16 | 27 | 18 | ...310016 | 229,54 |
| 100 | 18 | 27 | 18 | ...310018 | 245,41 |
| 100 | 20 | 27 | 18 | ...310020 | 259,57 |
| 100 | 3 | 32 | 22 | ...410003 | 180,11 |
| 100 | 4 | 32 | 22 | ...410004 | 146,04 |
| 100 | 5 | 32 | 22 | ...410005 | 150,37 |
| 100 | 6 | 32 | 22 | ...410006 | 157,17 |
| 100 | 7 | 32 | 18 | ...410007 | 164,40 |
| 100 | 8 | 32 | 18 | ...410008 | 171,34 |
| 100 | 9 | 32 | 18 | ...410009 | 178,36 |
| 100 | 10 | 32 | 18 | ...410010 | 185,37 |
| 100 | 12 | 32 | 18 | ...410012 | 201,14 |
| 100 | 14 | 32 | 18 | ...410014 | 217,16 |
| 100 | 16 | 32 | 18 | ...410016 | 229,54 |
| 100 | 18 | 32 | 18 | ...410018 | 245,41 |
| 100 | 20 | 32 | 18 | ...410020 | 259,57 |
| 125 | 4 | 32 | 24 | ...412504 | 222,11 |
| 125 | 5 | 32 | 24 | ...412505 | 217,94 |
| 125 | 6 | 32 | 24 | ...412506 | 217,94 |
| 125 | 7 | 32 | 20 | ...412507 | 227,32 |
| 125 | 8 | 32 | 20 | ...412508 | 232,56 |
| 125 | 10 | 32 | 20 | ...412510 | 248,29 |
| 125 | 12 | 32 | 20 | ...412512 | 266,68 |
| 125 | 14 | 32 | 20 | ...412514 | 289,59 |

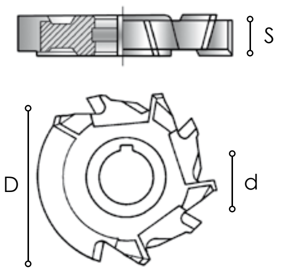
# CR 83

DIN 885/A

N

λ 8°-15°

CR83




| D js16 | S k11 | d H7 | Z | CODE | HSS+5%Co 183..... € |
|---|---|---|---|---|---|
| 125 | 16 | 32 | 20 | ...412516 | 316,08 |
| 125 | 18 | 32 | 20 | ...412518 | 353,12 |
| 125 | 20 | 32 | 20 | ...412520 | 379,66 |
| 125 | 22 | 32 | 20 | ...412522 | 429,60 |
| 125 | 25 | 32 | 18 | ...412525 | 503,09 |
| 160 | 5 | 32 | 26 | ...416005 | 358,46 |
| 160 | 6 | 32 | 26 | ...416006 | 323,53 |
| 160 | 7 | 32 | 26 | ...416007 | 364,59 |
| 160 | 8 | 32 | 26 | ...416008 | 340,94 |
| 160 | 10 | 32 | 22 | ...416010 | 368,97 |
| 160 | 12 | 32 | 22 | ...416012 | 395,37 |
| 160 | 14 | 32 | 22 | ...416014 | 430,21 |
| 160 | 16 | 32 | 24 | ...416016 | 459,13 |
| 160 | 18 | 32 | 24 | ...416018 | 491,42 |
| 160 | 20 | 32 | 22 | ...416020 | 522,23 |
| 160 | 22 | 32 | 22 | ...416022 | 586,25 |
| 160 | 25 | 32 | 22 | ...416025 | 688,61 |
| 160 | 32 | 32 | 22 | ...416032 | 907,14 |
| 160 | 5 | 40 | 26 | ...516005 | 358,46 |
| 160 | 6 | 40 | 26 | ...516006 | 323,53 |
| 160 | 7 | 40 | 26 | ...516007 | 364,59 |
| 160 | 8 | 40 | 26 | ...516008 | 340,94 |
| 160 | 10 | 40 | 22 | ...516010 | 368,97 |
| 160 | 12 | 40 | 22 | ...516012 | 395,37 |
| 160 | 14 | 40 | 22 | ...516014 | 430,21 |
| 160 | 16 | 40 | 24 | ...516016 | 459,13 |
| 160 | 18 | 40 | 24 | ...516018 | 491,42 |
| 160 | 20 | 40 | 22 | ...516020 | 522,23 |
| 160 | 32 | 40 | 22 | ...516032 | 907,14 |
| 200 | 10 | 40 | 34 | ...520010 | 558,37 |
| 200 | 12 | 40 | 30 | ...520012 | 595,53 |
| 200 | 14 | 40 | 30 | ...520014 | 643,73 |
| 200 | 16 | 40 | 30 | ...520016 | 696,65 |
| 200 | 18 | 40 | 30 | ...520018 | 755,20 |
| 200 | 20 | 40 | 28 | ...520020 | 819,19 |
| 200 | 28 | 40 | 28 | ...520028 | 1063,82 |
| 250 | 14 | 40 | 36 | ...525014 | 994,65 |
| 250 | 16 | 40 | 36 | ...525016 | 1101,33 |
| 250 | 18 | 40 | 36 | ...525018 | 1180,79 |
| 250 | 20 | 40 | 36 | ...525020 | 1233,64 |

FRESE SOTTILI A TAGLI ALTERNATI
STUGGERED TEETH SAWS
SCHMALE SCHEIBERFRÄSER,KREUZVERZAHNT
FRAISE CIRCULAIRE DENTURE ALTERNÉE EXÉCUTION MINCE
FRESU DE DISCO 3 CORTES

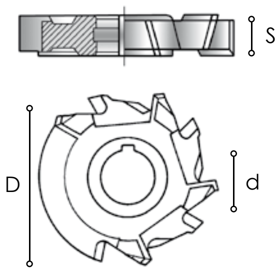
## CR 85

DIN 1834/A

H

λ 8°-15°

CR85




| D js16 | S k11 | d H7 | Z | CODE | HSS+5%Co 185..... € |
|---|---|---|---|---|---|
| 63 | 1,6 | 22 | 28 | ...263016 | 109,50 |
| 63 | 2 | 22 | 28 | ...263002 | 99,21 |
| 63 | 2,5 | 22 | 28 | ...263025 | 99,21 |
| 80 | 1,6 | 27 | 32 | ...380016 | 123,24 |
| 80 | 2 | 27 | 32 | ...380002 | 123,24 |
| 80 | 2,5 | 27 | 32 | ...380025 | 123,24 |
| 100 | 1,6 | 32 | 36 | ...410016 | 147,61 |
| 100 | 2 | 32 | 36 | ...410002 | 147,61 |
| 100 | 2,5 | 32 | 36 | ...410025 | 147,61 |
| 125 | 1,6 | 32 | 40 | ...412516 | 198,43 |
| 125 | 2 | 32 | 40 | ...412502 | 198,43 |
| 125 | 2,5 | 32 | 40 | ...412525 | 198,43 |
| 125 | 3 | 32 | 40 | ...412503 | 198,43 |
| 160 | 2 | 40 | 44 | ...516002 | 285,50 |
| 160 | 2,5 | 40 | 44 | ...516025 | 285,50 |
| 160 | 3 | 40 | 44 | ...516003 | 285,50 |
| 160 | 4 | 40 | 44 | ...516004 | 285,50 |

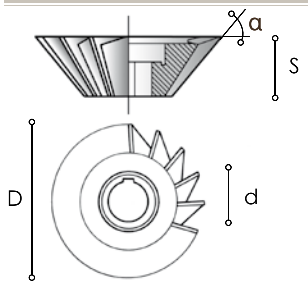
# FA 91

DIN 842-A

H

λ 0°

FA91




| D js16 | α ± 25' | S js14 | d H7 | Z | CODE | HSS+5%Co 1910..... € |
|---|---|---|---|---|---|---|
| 40 | 45° | 10 | 10 | 14 | ....40045 | 99,43 |
| 50 | 45° | 13 | 13 | 16 | ....50045 | 120,27 |
| 63 | 45° | 18 | 16 | 16 | ....63045 | 160,55 |
| 80 | 45° | 22 | 22 | 18 | ....80045 | 253,52 |
| 100 | 45° | 28 | 28 | 20 | ....10045 | 431,68 |
| 40 | 50° | 13 | 10 | 14 | ....40050 | 99,43 |
| 50 | 50° | 16 | 13 | 16 | ....50050 | 120,27 |
| 63 | 50° | 20 | 16 | 16 | ....63050 | 160,55 |
| 80 | 50° | 25 | 22 | 18 | ....80050 | 253,52 |
| 100 | 50° | 32 | 27 | 20 | ....10050 | 431,68 |
| 40 | 60° | 13 | 10 | 14 | ....40060 | 99,43 |
| 50 | 60° | 16 | 13 | 16 | ....50060 | 120,27 |
| 63 | 60° | 20 | 16 | 16 | ....63060 | 160,55 |
| 80 | 60° | 25 | 22 | 18 | ....80060 | 253,52 |
| 100 | 60° | 32 | 27 | 20 | ....10060 | 431,68 |

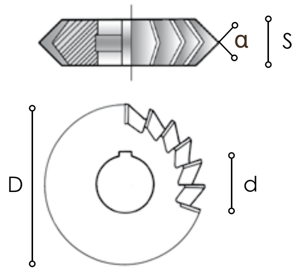
# FP 92

DIN 847

H

λ 0°

FP92



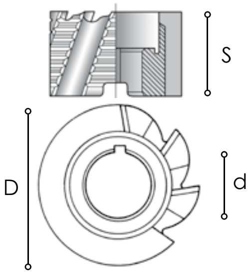

| D js16 | α ± 30' | S js16 | d H7 | Z | CODE | HSS+5%Co 1920..... € |
|---|---|---|---|---|---|---|
| 50 | 45° | 8 | 16 | 16 | ....50045 | 101,35 |
| 63 | 45° | 10 | 22 | 18 | ....63045 | 137,37 |
| 80 | 45° | 12 | 27 | 18 | ....80045 | 205,59 |
| 100 | 45° | 18 | 32 | 20 | ....10045 | 295,10 |
| 50 | 60° | 10 | 16 | 16 | ....50060 | 109,03 |
| 63 | 60° | 14 | 22 | 18 | ....63060 | 145,37 |
| 80 | 60° | 18 | 27 | 18 | ....80060 | 211,08 |
| 100 | 60° | 25 | 32 | 20 | ....10060 | 321,09 |
| 50 | 90° | 14 | 16 | 16 | ....50090 | 113,62 |
| 63 | 90° | 20 | 22 | 18 | ....63090 | 156,79 |
| 80 | 90° | 22 | 27 | 18 | ....80090 | 232,09 |
| 100 | 90° | 32 | 32 | 20 | ....10090 | 345,06 |

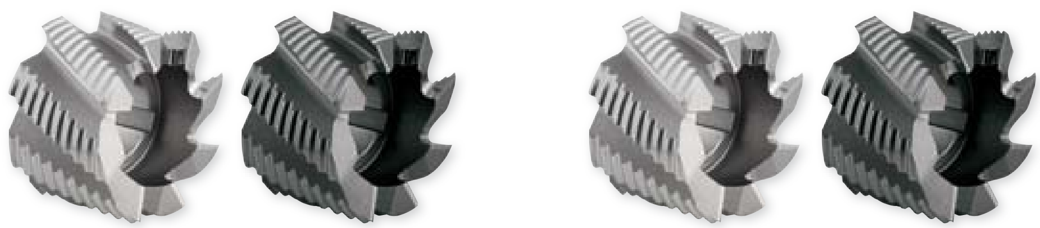
FRESE CILINDRICHE FRONTALI PER SGROSSARE ROUGHING SHELL END MILLS WALZENSTIRNFRÄSER IN SCHRUPPAUSFÜHRUNG FRAISES DEUX TAILLES D'EBAUCHE FRESAS CILÍNDRICAS FRONTALES PARA DESBASTE

## CF 94

DIN 1880 NR λ 30°

CF94



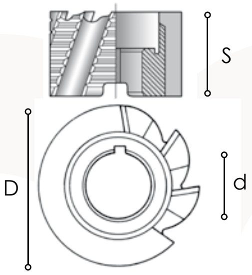
| D js16 | S k16 | d H7 | Z | CODE | HSS+8%Co 1940..... € | HSS+8%Co 2940..... € SAPPHIRE MULTI | CODE | RESISTOR 1940..... € | RESISTOR 2940..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|
| 40 | 32 | 16 | 6 | ....40000 | 136,09 | 188,50 | ....40030 | 178,92 | 235,62 |
| 50 | 36 | 22 | 6 | ....50000 | 179,69 | 237,92 | ....50030 | 246,40 | 311,30 |
| 63 | 40 | 27 | 8 | ....63000 | 254,79 | 338,80 | ....63030 | 349,21 | 442,67 |
| 80 | 45 | 27 | 10 | ....80000 | 398,94 | 510,96 | ....80030 | 559,71 | 687,80 |
| 100 | 50 | 32 | 12 | ....10000 | 600,66 | 757,85 | ....10030 | 834,39 | 1.014,96 |
| 160 | 63 | 50 | 16 | ....16000 | 1.779,42 | | | | |

FRESE CILINDRICHE FRONTALI PER SEMIFINIRE SEMIFINISHING SHELL END MILLS WALZENSTIRNFRÄSER IN SCHRUPPSCHLICHT AUSFÜHRUNG FRAISES DEUX TAILLES DE SEMIFINITION FRESAS CILÍNDRICAS FRONTALES PARA SEMIACABADO

## CF 95

DIN 1880 NF λ 30°

CF95

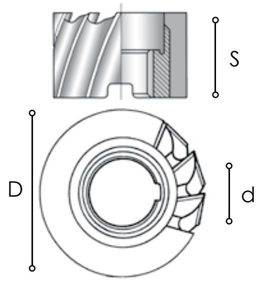



| D js16 | S k16 | d H7 | Z | CODE | HSS+8%Co 1950..... € |
|---|---|---|---|---|---|
| 40 | 32 | 16 | 6 | ....40000 | 136,09 |
| 50 | 36 | 22 | 6 | ....50000 | 179,69 |
| 63 | 40 | 27 | 8 | ....63000 | 254,79 |
| 80 | 45 | 27 | 10 | ....80000 | 398,94 |
| 100 | 50 | 32 | 12 | ....10000 | 600,66 |

## CF 96

DIN 1880 | N | λ 20°

CF96



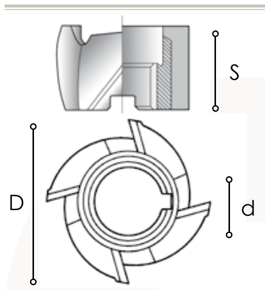

| D js16 | S k16 | d H7 | Z | CODE | HSS+8%Co 1960..... € | HSS+8%Co 2960..... € SAPPHIRE MULTI | CODE | RESISTOR 1960..... € | RESISTOR 2960..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|
| 40 | 32 | 16 | 8 | ....40000 | 102,41 | 151,46 | ....40030 | 138,30 | 190,94 |
| 50 | 36 | 22 | 8 | ....50000 | 133,16 | 186,74 | ....50030 | 184,31 | 243,00 |
| 63 | 40 | 27 | 10 | ....63000 | 190,50 | 268,08 | ....63030 | 255,92 | 340,04 |
| 80 | 45 | 27 | 10 | ....80000 | 285,94 | 386,66 | ....80030 | 394,10 | 505,63 |
| 100 | 50 | 32 | 12 | ....10000 | 460,41 | 603,58 | ....10030 | 629,50 | 789,58 |

FRESE CILINDRICHE FRONTALI SHELL END MILLS WALZENSTIRNFRÄSER
FRAISES DEUX TAILLES FRESAS CILÍNDRICAS FRONTALES

## CF 97

DIN 1880 | W | λ 40°

CF97



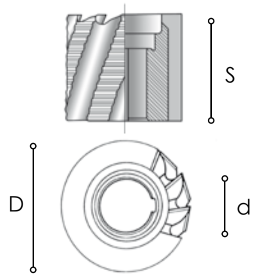

| D js16 | S k16 | d H7 | Z | CODE | HSS+5%Co 1970..... € |
|---|---|---|---|---|---|
| 40 | 32 | 16 | 3 | ....40000 | 98,10 |
| 50 | 36 | 22 | 3 | ....50000 | 127,52 |
| 63 | 40 | 27 | 4 | ....63000 | 181,37 |
| 80 | 45 | 27 | 4 | ....80000 | 269,58 |
| 100 | 50 | 32 | 4 | ....10000 | 431,59 |
| 125 | 56 | 40 | 5 | ....12500 | 794,61 |

## CF 98

DIN 841 — N — λ 30°

## CF 99

DIN 841 — NR — λ 30°




CF98

CF99

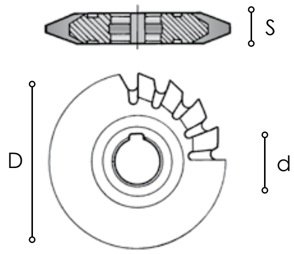
| D js16 | S k16 | d H7 | Z | CODE | HSS+8%Co 1980..... € | HSS+8%Co 1990..... € |
|---|---|---|---|---|---|---|
| 30 | 30 | 13 | 6 | ....30000 | 89,86 | 110,62 |
| 35 | 35 | 16 | 8 | ....35000 | 100,54 | 125,01 |
| 40 | 40 | 16 | 8 | ....40000 | 126,14 | 153,79 |
| 50 | 50 | 22 | 8 | ....50000 | 188,29 | 199,70 |
| 60 | 60 | 27 | 10 | ....60000 | 256,86 | 312,34 |
| 75 | 75 | 27 | 10 | ....75000 | 440,22 | 528,96 |

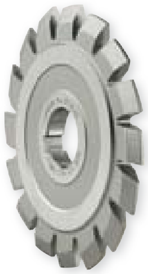
FRESE A DISCO PER DENTARE CREMAGLIERE. ANGOLO DI PRESSIONE 20° RACK MILLING CUTTERS. PRESSURE ANGLE 20° ZAHNSTANGENFRÄSER. 20° EINGRIFFSWINKEL FRAISES A DISQUE POUR DENTELLER LES CREMAILLERES. ANGLE DE PRESSION 20° FRESAS DE DISCO PARA DENTAR CREMALLERAS. ÁNGULO DE PRESIÓN 20°

## SCR 121

CARMON NORM. N λ 0°

SCR121



| Mod | D js16 | S js16 | d H7 | Z | CODE | HSS+5%Co 1121..... € |
|---|---|---|---|---|---|---|
| 1 | 100 | 8 | 22 | 18 | ....01000 | 261,23 |
| 1,5 | 100 | 8 | 22 | 18 | ....15000 | 261,23 |
| 2 | 100 | 8 | 22 | 16 | ....20000 | 268,58 |
| 2,5 | 100 | 9 | 22 | 16 | ....25000 | 273,50 |
| 3 | 100 | 10 | 22 | 16 | ....30000 | 283,23 |
| 3,5 | 100 | 11 | 22 | 16 | ....35000 | 300,32 |
| 4 | 100 | 11 | 22 | 16 | ....40000 | 300,32 |
| 4,5 | 125 | 13 | 27 | 18 | ....45000 | 581,11 |
| 5 | 125 | 14 | 27 | 18 | ....50000 | 581,11 |
| 5,5 | 125 | 15 | 27 | 18 | ....55000 | 664,11 |
| 6 | 125 | 16 | 27 | 18 | ....60000 | 664,11 |
| 6,5 | 125 | 17 | 27 | 18 | ....65000 | 708,13 |
| 7 | 125 | 18 | 27 | 18 | ....70000 | 708,13 |
| 8 | 125 | 21 | 27 | 18 | ....80000 | 769,18 |
| 9 | 125 | 24 | 27 | 18 | ....90000 | 769,18 |
| 10 | 125 | 26 | 27 | 18 | ....10000 | 854,66 |

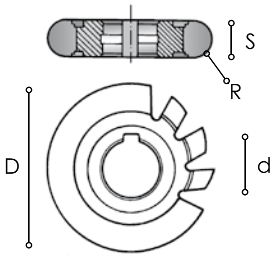
## SCV 131

DIN 856

N

λ 0°

SCV131




| R h11 | D js16 | S | d H7 | Z | CODE | HSS+5%Co 1131..... € |
|---|---|---|---|---|---|---|
| 1 | 50 | 2 | 16 | 14 | ....01000 | 88,36 |
| 1,5 | 50 | 3 | 16 | 14 | ....01500 | 92,57 |
| 2 | 50 | 4 | 16 | 14 | ....02000 | 94,62 |
| 2,5 | 63 | 5 | 22 | 12 | ....25000 | 100,59 |
| 3 | 63 | 6 | 22 | 12 | ....30000 | 106,39 |
| 3,5 | 63 | 7 | 22 | 12 | ....35000 | 122,10 |
| 4 | 63 | 8 | 22 | 12 | ....40000 | 127,57 |
| 4,5 | 63 | 9 | 22 | 12 | ....45000 | 133,55 |
| 5 | 63 | 10 | 22 | 12 | ....50000 | 139,52 |
| 5,5 | 80 | 11 | 27 | 12 | ....55000 | 163,57 |
| 6 | 80 | 12 | 27 | 12 | ....60000 | 163,57 |
| 6,5 | 80 | 13 | 27 | 12 | ....65000 | 176,57 |
| 7 | 80 | 14 | 27 | 12 | ....70000 | 183,64 |
| 7,5 | 80 | 15 | 27 | 12 | ....75000 | 191,11 |
| 8 | 80 | 16 | 27 | 12 | ....80000 | 199,18 |
| 8,5 | 100 | 17 | 32 | 12 | ....85000 | 234,35 |
| 9 | 100 | 18 | 32 | 12 | ....90000 | 243,65 |
| 9,5 | 100 | 19 | 32 | 12 | ....95000 | 252,93 |
| 10 | 100 | 20 | 32 | 12 | ....10000 | 265,09 |

carmon

FRESE A PROFILO COSTANTE SEMICIRCOLARE CONCAVO CONCAVE CUTTERS HALBKREISFRÄSER KONKAV
FRAISES A PROFIL CONSTANT SEMI-CIRCULAIRE CONCAVE FRESAS DE PERFIL CONSTANTE SEMICIRCULAR CÓNCAVO

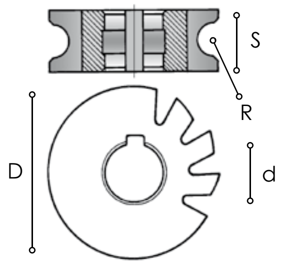
## SCC 132

DIN 855/A

N

λ 0°

SCC132




| R H11 | D js16 | S | d H7 | Z | CODE | HSS+5%Co 1132..... € |
|---|---|---|---|---|---|---|
| 1 | 50 | 6 | 16 | 14 | ....01000 | 112,98 |
| 1,5 | 50 | 8 | 16 | 14 | ....01500 | 117,89 |
| 2 | 50 | 9 | 16 | 14 | ....02000 | 117,12 |
| 2,5 | 63 | 10 | 22 | 12 | ....25000 | 120,39 |
| 3 | 63 | 12 | 22 | 12 | ....30000 | 138,02 |
| 3,5 | 63 | 14 | 22 | 12 | ....35000 | 151,35 |
| 4 | 63 | 16 | 22 | 12 | ....40000 | 166,06 |
| 4,5 | 63 | 18 | 22 | 12 | ....45000 | 178,78 |
| 5 | 63 | 20 | 22 | 12 | ....50000 | 188,01 |
| 5,5 | 80 | 22 | 27 | 12 | ....55000 | 211,95 |
| 6 | 80 | 24 | 27 | 12 | ....60000 | 234,41 |
| 6,5 | 80 | 26 | 27 | 12 | ....65000 | 256,42 |
| 7 | 80 | 28 | 27 | 12 | ....70000 | 272,29 |
| 7,5 | 80 | 30 | 27 | 12 | ....75000 | 325,42 |
| 8 | 80 | 32 | 27 | 12 | ....80000 | 342,29 |
| 8,5 | 100 | 34 | 32 | 12 | ....85000 | 374,92 |
| 9 | 100 | 34 | 32 | 12 | ....90000 | 422,85 |
| 9,5 | 100 | 36 | 32 | 12 | ....95000 | 443,76 |
| 10 | 100 | 36 | 32 | 12 | ....10000 | 457,86 |

FRESE A DISCO PER DENTARE INGRANAGGI CILINDRICI. ANGOLO DI PRESSIONE 20° INVOLUTE GEAR CUTTERS. 20° PRESSURE ANGLE ZAHNFORMFRÄSER FÜR STIRNRAEDER. 20° EINGRIFFSWINKEL FRAISES A DISQUE POUR DENTELER LES ENGRENAGES CYLINDRIQUES. ANGLE DE PRESSION 20° FRESAS DE DISCO PARA DENTAR ENGRANAJES CILÍNDRICOS ANGULO DE PRESIÓN 20°

# MOD 141

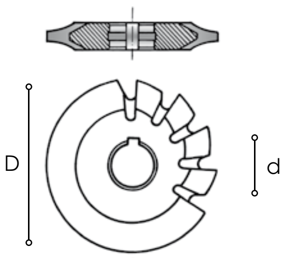
UNI 4501

N

λ 0°

| FRESA TIPO/*TYPE* | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| N°DENTI DA FRESARE<br>*NO. OF TEETH TO BE PRODUCED* | *12-13* | *14-16* | *17-20* | *21-25* | *26-34* | *35-54* | *55-134* | *135-00* |

**MOD141**




| Mod | D js16 | d H7 | CODE | HSS+5%Co<br>1141.....<br>€ |
|---|---|---|---|---|
| 0,5 | 40 | 16 | ....0500 (1÷8) | 86,99 |
| 0,75 | 40 | 16 | ....0750 (1÷8) | 86,99 |
| 1 | 50 | 16 | ....0100 (1÷8) | 82,11 |
| 1,25 | 50 | 16 | ....1250 (1÷8) | 90,84 |
| 1,5 | 63 | 22 | ....1500 (1÷8) | 95,03 |
| 1,75 | 63 | 22 | ....1750 (1÷8) | 108,07 |
| 2 | 63 | 22 | ....2000 (1÷8) | 106,00 |
| 2,25 | 63 | 22 | ....2250 (1÷8) | 116,69 |
| 2,5 | 63 | 22 | ....2500 (1÷8) | 109,22 |
| 2,75 | 70 | 27 | ....2750 (1÷8) | 146,61 |
| 3 | 70 | 27 | ....3000 (1÷8) | 132,49 |
| 3,25 | 70 | 27 | ....3250 (1÷8) | 149,66 |
| 3,5 | 80 | 27 | ....3500 (1÷8) | 162,24 |
| 3,75 | 80 | 27 | ....3750 (1÷8) | 185,51 |
| 4 | 80 | 27 | ....4000 (1÷8) | 199,08 |
| 4,25 | 80 | 27 | ....4250 (1÷8) | 238,49 |
| 4,5 | 90 | 27 | ....4500 (1÷8) | 266,41 |
| 4,75 | 90 | 27 | ....4750 (1÷8) | 266,41 |
| 5 | 90 | 32 | ....5000 (1÷8) | 299,32 |
| 5,25 | 90 | 32 | ....5250 (1÷8) | 347,52 |
| 5,5 | 90 | 32 | ....5500 (1÷8) | 347,52 |
| 5,75 | 90 | 32 | ....5750 (1÷8) | 380,56 |
| 6 | 100 | 32 | ....6000 (1÷8) | 380,56 |
| 6,5 | 100 | 32 | ....6500 (1÷8) | 428,82 |
| 7 | 110 | 32 | ....7000 (1÷8) | 507,41 |
| 8 | 110 | 32 | ....8000 (1÷8) | 545,44 |
| 9 | 125 | 40 | ....9000 (1÷8) | 887,96 |
| 10 | 125 | 40 | ....1000 (1÷8) | 887,96 |

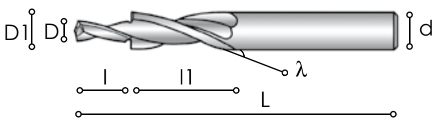
carmon

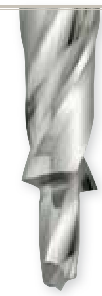
PUNTE PER LA FORATURA A DUE DIAMETRI DI PROFILATI STEP DRILLS STUFENBOHRER
FORETS A GRADIN POUR SIEGES VIS BROCAS ESCALONADAS GRADUADAS PARA ALOJAMIENTOS ASIENTOS DE TORNILLOS

## ALL 156

CARMON NORM. W λ 30°

ALL156



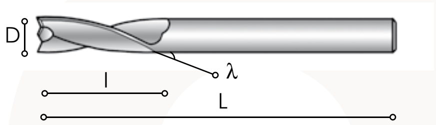
| D | D1 | L | l | l1 | d h8 | Z | CODE | HSS+5%Co 4156….. € |
|---|---|---|---|---|---|---|---|---|
| 6 | 12 | 83 | 13 | 35 | 10 | 2 | ….61283 | 49,40 |
| 6 | 14 | 83 | 13 | 35 | 10 | 2 | ….61483 | 52,08 |
| 5 | 12 | 100 | 15 | 35 | 10 | 2 | ….51200 | 52,09 |
| 6 | 10 | 100 | 15 | 35 | 10 | 2 | ….61000 | 52,08 |
| 6 | 11 | 100 | 15 | 35 | 10 | 2 | ….61100 | 52,08 |
| 6 | 11,5 | 100 | 15 | 35 | 10 | 2 | ….60011 | 52,08 |
| 6 | 12 | 100 | 15 | 35 | 10 | 2 | ….61200 | 52,08 |
| 5,5 | 11,5 | 100 | 12 | 35 | 12 | 2 | ….55115 | 52,08 |
| 6 | 11,5 | 100 | 12 | 35 | 12 | 2 | ….60115 | 52,08 |
| 6,5 | 11,5 | 100 | 12 | 35 | 12 | 2 | ….65115 | 52,08 |
| 6 | 12 | 100 | 12 | 35 | 12 | 2 | ….61210 | 52,08 |
| 6,5 | 13,5 | 100 | 12 | 35 | 12 | 2 | ….65135 | 59,06 |
| 6 | 11,5 | 122 | 18 | 45 | 12 | 2 | ….61150 | 59,06 |
| 6 | 12 | 122 | 18 | 45 | 12 | 2 | ….61212 | 59,06 |
| 6,5 | 11,5 | 122 | 18 | 45 | 12 | 2 | ….65122 | 59,06 |
| 6,5 | 12 | 122 | 18 | 45 | 12 | 2 | ….65012 | 59,06 |

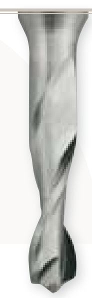
FRESE A DUE TAGLIENTI PER LA LAVORAZIONE DI PROFILATI PANTOGRAPH END MILLS
KOPIERFRÄSER FRAISES POUR PANTOGRAPHE FRESAS PARA PANTÓGRAFO

## ALL 157

CARMON NORM. W λ 30°

ALL157

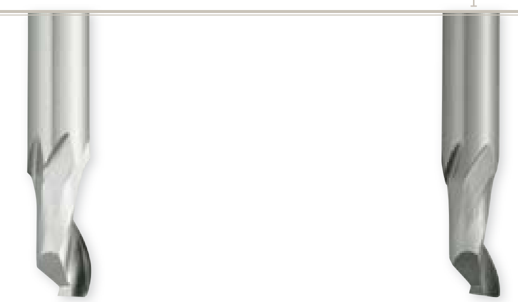


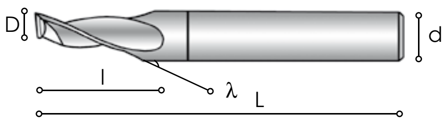



| D | L | l | d h8 | Z | CODE | HSS+5%Co 4157….. € |
|---|---|---|---|---|---|---|
| 4 | 55 | 14 | 6 | 2 | ….40000 | 18,56 |
| 5 | 58 | 15 | 6 | 2 | ….50000 | 18,56 |
| 3-6 | 65 | 10/15 | 6 | 2 | ….36000 | 27,68 |

## ALL 158

CARMON NORM. W λ 30°

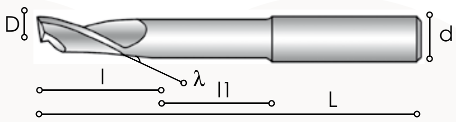



| D | L | l | d h8 | Z | CODE | HSS+5%Co 4158..... € | CODE | HSS+5%Co 2158..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|
| 4 | 60 | 12 | 6 | 1 | ....46000 | 22,93 | ....46002 | 28,87 |
| 5 | 60 | 15 | 6 | 1 | ....56015 | 22,10 | ....56152 | 27,95 |
| 5 | 60 | 25 | 6 | 1 | ....56000 | 25,39 | ....56002 | 31,57 |
| 6 | 60 | 15 | 6 | 1 | ....66000 | 22,93 | ....66002 | 28,87 |
| 2,75/5 | 68 | 8/15 | 8 | 1 | ....27550 | 32,72 | ....27552 | 40,32 |
| 3 | 68 | 12 | 8 | 1 | ....30000 | 21,37 | ....30002 | 27,83 |
| 4 | 68 | 12 | 8 | 1 | ....40000 | 20,79 | ....40002 | 27,19 |
| 5 | 68 | 15 | 8 | 1 | ....50000 | 20,79 | ....50002 | 27,19 |
| 6 | 68 | 15 | 8 | 1 | ....60000 | 20,79 | ....60002 | 27,19 |
| 7 | 68 | 15 | 8 | 1 | ....70000 | 20,79 | ....70002 | 27,19 |
| 8 | 80 | 15 | 8 | 1 | ....80000 | 20,79 | ....88002 | 28,36 |
| 10 | 80 | 15 | 8 | 1 | ....10008 | 25,93 | ....10002 | 35,09 |
| 5 | 68 | 15 | 10 | 1 | ....50010 | 22,10 | ....51002 | 29,59 |
| 6 | 68 | 15 | 10 | 1 | ....60010 | 22,10 | ....61002 | 29,59 |
| 10 | 80 | 15 | 10 | 1 | ....10080 | 29,16 | ....10012 | 38,65 |

## ALL 158

CARMON NORM. W λ 30°




| D | L | l | l1 | d h8 | Z | CODE | HSS+5%Co 4158..... € | CODE | HSS+5%Co 2158..... € SAPPHIRE MULTI |
|---|---|---|---|---|---|---|---|---|---|
| 5 | 80 | 15 | 40 | 8 | 1 | ....50080 | 24,49 | ....50802 | 32,43 |
| 6 | 80 | 15 | 40 | 8 | 1 | ....60080 | 24,49 | ....60082 | 32,43 |
| 8 | 80 | 15 | 40 | 8 | 1 | ....80080 | 24,49 | ....80802 | 32,43 |
| 8 | 95 | 18 | 50 | 8 | 1 | ....80095 | 24,83 | ....89502 | 32,81 |
| 8 | 120 | 18 | 70 | 8 | 1 | ....80120 | 25,99 | ....81202 | 35,39 |
| 10 | 95 | 18 | 50 | 8 | 1 | ....10000 | 28,30 | ....10802 | 37,70 |
| 8 | 95 | 18 | 50 | 10 | 1 | ....80010 | 30,87 | ....81002 | 40,53 |
| 10 | 95 | 18 | 50 | 10 | 1 | ....10010 | 30,03 | ....10102 | 39,60 |
| 10 | 120 | 18 | 70 | 10 | 1 | ....10120 | 30,87 | ....10122 | 42,38 |

carmon

FRESE CILINDRICHE FRONTALI / MULTIFLUTE CUTTERS / FRESAS CILÍNDRICAS / FRAISES DEUX TAILLES / MEHRSCHNEIDENFRÄSER FRONTALES

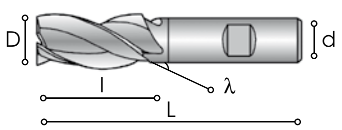
## ALL 160

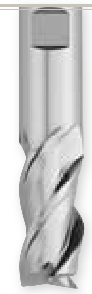
DIN 844/B — W — λ 40°

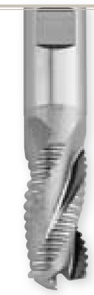
## ALL 164

DIN 844/B — WR — λ 35°

ALL160 ALL164





| **ALL160** D k10<br>**ALL164** D k12 | L | l | d h6 | Z | CODE | RESISTOR 4160..... € | RESISTOR 4164..... € |
|---|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 2 | ....60030 | 18,77 | |
| 8 | 69 | 19 | 10 | 2 | ....80030 | 23,97 | 37,83 |
| 10 | 72 | 22 | 10 | 3 | ....10030 | 27,43 | 38,66 |
| 12 | 83 | 26 | 12 | 3 | ....12030 | 32,21 | 46,17 |
| 14 | 83 | 26 | 12 | 3 | ....14030 | 36,84 | |
| 16 | 92 | 32 | 16 | 3 | ....16030 | 45,62 | 61,05 |
| 18 | 92 | 32 | 16 | 3 | ....18030 | 56,22 | |
| 20 | 104 | 38 | 20 | 3 | ....20030 | 73,18 | 88,07 |
| 25 | 121 | 45 | 25 | 3 | ....25030 | 128,85 | 154,62 |
| 32 | 133 | 53 | 32 | 3 | ....32030 | 218,88 | 230,16 |

FRESE CILINDRICHE FRONTALI / MULTIFLUTE CUTTERS / FRESAS CILÍNDRICAS / FRAISES DEUX TAILLES / MEHRSCHNEIDENFRÄSER FRONTALES

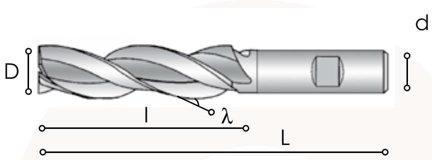
## ALL 162

DIN 844/B — W — λ 40°

## ALL 166

DIN 844/B — WR — λ 35°

ALL162 ALL166




| **ALL162** D k10<br>**ALL166** D k12 | L | l | d h6 | Z | CODE | RESISTOR 4162..... € | RESISTOR 4166..... € |
|---|---|---|---|---|---|---|---|
| 6 | 68 | 24 | 6 | 2 | ....60030 | 19,92 | |
| 8 | 88 | 38 | 10 | 2 | ....80030 | 32,34 | |
| 10 | 95 | 45 | 10 | 3 | ....10030 | 33,67 | 47,89 |
| 12 | 110 | 53 | 12 | 3 | ....12030 | 41,18 | 58,04 |
| 16 | 123 | 63 | 16 | 3 | ....16030 | 63,24 | 81,14 |
| 20 | 141 | 75 | 20 | 3 | ....20030 | 99,43 | 113,48 |
| 25 | 166 | 90 | 25 | 3 | ....25030 | 168,85 | 203,57 |
| 32 | 186 | 106 | 32 | 3 | ....32030 | 258,25 | 314,45 |

## CL 11
DIN 327/D N 30°

## CL 21TF
DIN 844/B N 30°

### CL11

| N. PEZZI PIECES | ∅ | CODE | RESISTOR 2119..... € SAPPHIRE MULTI |
|---|---|---|---|
| 6 | 6 - 8 - 10 - 12 - 16 - 20 | ....70030 | 234,50 |

### CL21TF

| N. PEZZI PIECES | ∅ | CODE | RESISTOR 2219..... € SAPPHIRE MULTI |
|---|---|---|---|
| 6 | 6 - 8 - 10 - 12 - 16 - 20 | ....80030 | 256,30 |

## CL 24TF
DIN 844/B NR 30°

## CL 24TFPF
DIN 844/B HR 30°

### CL24TF

| N. PEZZI PIECES | ∅ | CODE | RESISTOR 2249..... € SAPPHIRE MULTI |
|---|---|---|---|
| 6 | 6 - 8 - 10 - 12 - 16 - 20 | ....90030 | 397,50 |

### CL24TFPF

| N. PEZZI PIECES | ∅ | CODE | RESISTOR 2249..... € SAPPHIRE MULTI |
|---|---|---|---|
| 6 | 6 - 8 - 10 - 12 - 16 - 20 | ....10030 | 466,90 |

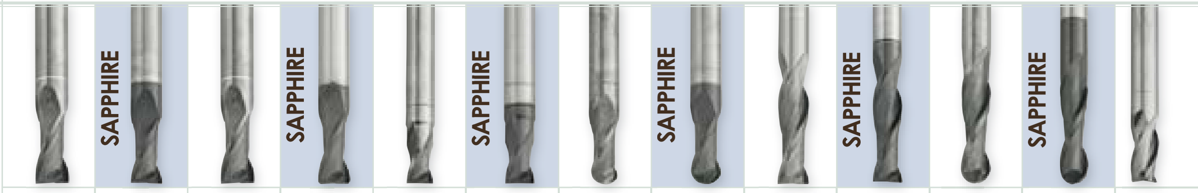
carmon

rpm
=(mt/min x 1000) / ( D x 3,14 )

mm/tooth
(vedi tabella - see table page pag. 195)

= mt/min

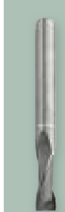
## FRESE A DUE TAGLIENTI
## TWO FLUTE END MILLS



Micrograin Co10%

| Pag. 228 | TIPO DI ACCIAIO / TYPE OF STEEL | | N/mm² | HV | CL11HM | CL11HM SAPPHIRE | CL11CRHM | CL11CRHM SAPPHIRE | CL11RSHM | CL11RSHM SAPPHIRE | CL18HM | CL18HM SAPPHIRE | CL12HM | CL12HM SAPPHIRE | CL18SLHM | CL18SLHM SAPPHIRE | CL16HM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | DIN 6527L | DIN 6528 | | | DIN 6527K | | DIN 6527L | DIN 6528 | CARMON NORM | | | | |
| | | | | Pagina Page | 196 | 196 | 197 | 197 | 198 | 198 | 199 | 199 | 200 | 200 | 201 | 201 | 202 |
| | | | | | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel | 1 | 500 | 157 | 130 | 210 | 130 | 200 | 130 | 210 | 120 | 200 | 130 | 210 | 120 | 200 | 130 |
| | Acciai da costruzione Structural steel | 2 | 700 | 219 | 120 | 200 | 120 | 190 | 120 | 200 | 110 | 190 | 120 | 200 | 110 | 190 | 120 |
| | Acciai da tempra Hardening steel | 3 | 900 | 280 | 100 | 140 | 100 | 130 | 100 | 140 | 90 | 130 | 100 | 140 | 90 | 130 | 100 |
| | Acciaio automatico Automatic steel | 4 | 1200 | 373 | | 75 | | 60 | | 75 | | 60 | | 75 | | 60 | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel | 3 | 850 | 265 | 20 | 100 | 20 | 140 | 20 | 100 | 20 | 140 | 20 | 100 | 20 | 140 | 20 |
| | Austenitico Austenitic | 3 | 850 | 265 | 15 | 70 | 15 | 100 | 15 | 70 | 15 | 100 | 15 | 70 | 15 | 100 | 15 |
| | Ferritico+austenitico Ferritic austenitic | 4 | 1000 | 311 | | 60 | | 90 | | 60 | | 90 | | 60 | | 90 | |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb | 2 | 500 | 157 | 110 | 155 | 140 | 230 | 110 | 155 | 140 | 230 | 110 | 155 | 140 | 230 | 110 |
| | Ghisa oltre 180 hb Cast iron over 180hb | 3 | 700 | 219 | 50 | 80 | 90 | 140 | 50 | 80 | 90 | 140 | 50 | 80 | 90 | 140 | 50 |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium | 5 | 500 | 157 | 115 | 140 | 110 | 140 | 115 | 140 | 110 | 140 | 115 | 140 | 110 | 140 | 115 |
| | Leghe di titanio Titanium alloys | 5 | 900 | 280 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 |
| RAME COPPER | Rame Copper | 9 | 350 | 110 | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | | 200 |
| | Ottone Brass | 9 | 700 | 219 | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | | 200 |
| | Bronzo Bronze | 9 | 700 | 219 | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | | 200 |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel | 6 | 700 | 219 | 120 | 160 | 40 | 160 | 120 | 160 | 40 | 160 | 120 | 160 | 40 | 160 | 120 |
| | Leghe di nichel Nichel alloys | 6 | 900 | 280 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium | 7 | 350 | 110 | 2000 | 3000 | | | | | | | 2000 | 3000 | | | 2000 |
| | Alluminio con leghe Alloyed aluminium | 7 | 400 | 125 | 2000 | 3000 | | | | | | | 2000 | 3000 | | | 2000 |
| | Alluminio con leghe Alloyed aluminium | 7 | 500 | 157 | 300 | 600 | | | | | | | 300 | 600 | | | 300 |

| FRESE A TRE TAGLIENTI THREE FLUTE END MILLS | | | | | | | | | | | FRESE A QUATTRO TAGLIENTI FOUR FLUTE END MILLS | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAPPHIRE | | SAPPHIRE | | SAPPHIRE | | SAPPHIRE | | SAPPHIRE | | SAPPHIRE | | SAPPHIRE | | SAPPHIRE | | SAPPHIRE | | SAPPHIRE |
| CL16HM | CL16CRHM | CL16CRHM | CL16RSHM | CL16RSHM | CL16RHM | CL16RHM | CL17HM | CL17HM | CL17RHM | CL17RHM | CL21TFHM | CL21TFHM | CL21CRHM | CL21CRHM | CL21RSHM | CL21RSHM | CL21RHM | CL21RHM |
| | DIN 6527L | DIN 6528 | DIN 6527K | | DIN 6527L | DIN 6528 | CARMON NORM. | | | | DIN 6527L | DIN 6528 | | | DIN 6527K | | DIN 6527L | DIN 6528 |
| Micrograin Co10% | | | | | | | | | | | Micrograin Co10% | | | | | | | |
| 202 | 203 | 203 | 204 | 204 | 205 | 205 | 206 | 206 | 207 | 207 | 208 | 208 | 209 | 209 | 210 | 210 | 211 | 211 |
| mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| 210 | 130 | 200 | 130 | 210 | 120 | 200 | 130 | 210 | 120 | 200 | 130 | 210 | 130 | 200 | 130 | 210 | 120 | 200 |
| 200 | 120 | 190 | 120 | 200 | 110 | 190 | 120 | 200 | 110 | 190 | 120 | 200 | 120 | 190 | 120 | 200 | 110 | 190 |
| 140 | 100 | 130 | 100 | 140 | 90 | 130 | 100 | 140 | 90 | 130 | 100 | 140 | 100 | 130 | 100 | 140 | 90 | 130 |
| 75 | | 60 | | 75 | | 60 | | 75 | | 60 | | 75 | | 60 | | 75 | | 60 |
| 100 | 20 | 140 | 20 | 100 | 20 | 140 | 20 | 100 | 20 | 140 | 20 | 140 | 20 | 140 | 20 | 100 | 20 | 140 |
| 70 | 15 | 100 | 15 | 70 | 15 | 100 | 15 | 70 | 15 | 100 | 15 | 100 | 15 | 100 | 15 | 70 | 15 | 100 |
| 60 | | 90 | | 60 | | 90 | | 60 | | 90 | | 90 | | 90 | | 60 | | 90 |
| 155 | 140 | 230 | 110 | 155 | 140 | 230 | 110 | 155 | 140 | 230 | 120 | 230 | 140 | 230 | 110 | 155 | 140 | 230 |
| 80 | 90 | 140 | 50 | 80 | 90 | 140 | 50 | 80 | 90 | 140 | 80 | 140 | 90 | 140 | 50 | 80 | 90 | 140 |
| 140 | 110 | 140 | 115 | 140 | 110 | 140 | 115 | 140 | 110 | 140 | 115 | 140 | 110 | 140 | 115 | 140 | 110 | 140 |
| 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 |
| 420 | | | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | |
| 420 | | | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | |
| 420 | | | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | | 200 | 420 | | |
| 160 | 40 | 160 | 120 | 160 | 40 | 160 | 120 | 160 | 40 | 160 | 120 | 160 | 40 | 160 | 120 | 160 | 40 | 160 |
| 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 |
| 3000 | | | | | | | 2000 | 3000 | | | 2000 | 3000 | | | | | | |
| 3000 | | | | | | | 2000 | 3000 | | | 2000 | 3000 | | | | | | |
| 600 | | | | | | | 300 | 600 | | | 300 | 600 | | | | | | |

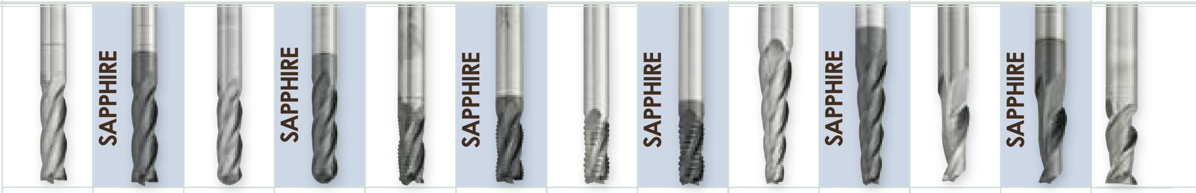


carmon

rpm
=(mt/min x 1000) / ( D x 3,14 )

mm/tooth
(vedi tabella - see table page pag. 195)

= mt/min

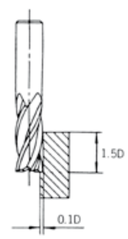
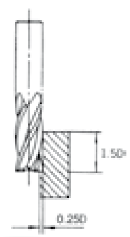
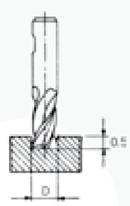
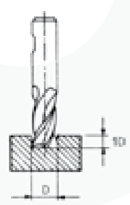



| | | | | FRESE A QUATTRO TAGLIENTI FOUR FLUTE END MILLS | | | | | | | | FRESE CONICHE PER STAMPI DIESINKING MILLING CUTTERS | | FRESE MONOTAGLIENTE PER ALLUMINIO SINGLE FLUTE END MILLS FOR ALUMINIUM | | FRESE IN SOLID |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | CL22TFHM | CL22TFHM (SAPPHIRE) | CL22RHM | CL22RHM (SAPPHIRE) | CL24TFPFHM | CL24TFPFHM (SAPPHIRE) | CL25TFHM | CL25TFHM (SAPPHIRE) | CS47HM | CS47HM (SAPPHIRE) | ALL158HM | ALL158HM (SAPPHIRE) | ALL161HM |
| | | | | CARMON NORM. | | | | DIN 6528 | | | | CARMON NORM. | | | | |
| | | | | Micrograin Co10% | | | | | | | | | | | | |
| | | | Pagina Page | 212 | 212 | 213 | 213 | 214 | 214 | 214 | 214 | 215 | 215 | 216 | 216 | 217 |
| Pag. 228 | TIPO DI ACCIAIO TYPE OF STEEL | N/mm² | HV | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| ACCIAI COMUNI COMMON STEEL | Acciai teneri Soft steel 1 | 500 | 157 | 130 | 210 | 120 | 200 | 130 | 210 | 130 | 210 | 130 | 210 | | | |
| | Acciai da costruzione Structural steel 2 | 700 | 219 | 120 | 200 | 110 | 190 | 120 | 200 | 120 | 200 | 120 | 200 | | | |
| | Acciai da tempra Hardening steel 3 | 900 | 280 | 100 | 140 | 90 | 130 | 100 | 140 | 100 | 140 | 100 | 140 | | | |
| | Acciaio automatico Automatic steel 4 | 1200 | 373 | | 75 | | 60 | | 75 | | 75 | | 75 | | | |
| ACCIAI INOX STAINLESS STEEL | Acciaio automatico Automatic steel 3 | 850 | 265 | 20 | 140 | 20 | 140 | 20 | 140 | 20 | 140 | 20 | 140 | | | 20 |
| | Austenitico Austenitic 3 | 850 | 265 | 15 | 100 | 15 | 100 | 15 | 100 | 15 | 100 | 15 | 100 | | | 15 |
| | Ferritico+austenitico Ferritic austenitic 4 | 1000 | 311 | | 90 | | 90 | | 90 | | 90 | | 90 | | | |
| GHISA CAST IRON | Ghisa fino a 180 hb Cast iron up to 180hb 2 | 500 | 157 | 120 | 230 | 140 | 230 | 120 | 230 | 120 | 230 | 120 | 230 | | | 110 |
| | Ghisa oltre 180 hb Cast iron over 180hb 3 | 700 | 219 | 80 | 140 | 90 | 140 | 80 | 140 | 80 | 140 | 80 | 140 | | | 50 |
| TITANIO TITANIUM | Titanio non legato Unalloyed titanium 5 | 500 | 157 | 115 | 140 | 110 | 140 | 115 | 140 | 115 | 140 | 115 | 140 | | | 115 |
| | Leghe di titanio Titanium alloys 5 | 900 | 280 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | 70 | 90 | | | 70 |
| RAME COPPER | Rame Copper 9 | 350 | 110 | 200 | 420 | | | 200 | 420 | 200 | 420 | 200 | 420 | | | 200 |
| | Ottone Brass 9 | 700 | 219 | 200 | 420 | | | 200 | 420 | 200 | 420 | 200 | 420 | | | 200 |
| | Bronzo Bronze 9 | 700 | 219 | 200 | 420 | | | 200 | 420 | 200 | 420 | 200 | 420 | | | 200 |
| NICHEL NICKEL | Nichel non legato Unalloyed nichel 6 | 700 | 219 | 120 | 160 | 40 | 160 | 120 | 160 | 120 | 160 | 120 | 160 | | | |
| | Leghe di nichel Nichel alloys 6 | 900 | 280 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | 10 | 30 | | | |
| ALLUMINIO ALUMINIUM | Alluminio non legato Unalloyed aluminium 7 | 350 | 110 | 2000 | 3000 | | | 2000 | 3000 | 2000 | 3000 | 2000 | 3000 | 2200 | 3200 | 2000 |
| | Alluminio con leghe Alloyed aluminium 7 | 400 | 125 | 2000 | 3000 | | | 2000 | 3000 | 2000 | 3000 | 2000 | 3000 | 2200 | 3200 | 2000 |
| | Alluminio con leghe Alloyed aluminium 7 | 500 | 157 | 300 | 600 | | | 300 | 600 | 300 | 600 | 300 | 600 | 300 | 600 | 300 |

| METALLO DURO PER ALLUMINIO CARBIDE END MILLS FOR ALUMINIUM | | | FRESE A DUE TAGLIENTI TWO FLUTE END MILLS | | FRESE MULTITAGLIENTE PER SUPERFINITURA MULTIFLUTE SUPERFINISHING END MILLS | | FRESE TORICHE A QUATTRO TAGLIENTI FOUR FLUTE CUTTERS WITH CORNER RADIUS | | KIT FRESE IN METALLO DURO INTEGRALE END MILLS SETS MICROGRAIN SOLID CARBIDE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SAPPHIRE | | SAPPHIRE | SAPPHIRE | SAPPHIRE | SAPPHIRE | SAPPHIRE | SAPPHIRE | SAPPHIRE | | | | | | |
| ALL161HM | ALL163HM | ALL163HM | CL19HM | CL19CMHM | CL26HM | CL26SLHM | CL27CRHM | CL27CRSLHM | CL11HM | CL16HM | CL18HM | CL21TFHM | CL19HM | CL26HM |
| DIN 6528 | | | CARMON NORM. | | DIN 6528 | CARMON NORM. | | | | DIN 6527L | DIN 6528 | | CARMON NORM. | DIN 6528 |
| Micrograin Co10% | | | Micrograin Co12% | | | | | | Micrograin Co10% | | | | Micrograin Co12% | |
| 217 | 218 | 218 | 219 | 219 | 220 | 220 | 221 | 221 | 222 | 222 | 222 | 223 | 223 | 223 |

| ALL161HM | ALL163HM | ALL163HM | CL19HM | CL19CMHM | CL26HM | CL26SLHM | CL27CRHM | CL27CRSLHM |
|---|---|---|---|---|---|---|---|---|
| mt/min | | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min | mt/min |
| | | | 310 | 310 | 310 | 310 | 310 | 310 |
| | | | 300 | 300 | 300 | 300 | 300 | 300 |
| | | | 220 | 220 | 220 | 220 | 220 | 220 |
| | | | 70 | 70 | 70 | 70 | 70 | 70 |
| 100 | 20 | 100 | 200 | 200 | 200 | 200 | 200 | 200 |
| 70 | 15 | 70 | 150 | 150 | 150 | 150 | 150 | 150 |
| 60 | | 60 | 100 | 100 | 100 | 100 | 100 | 100 |
| 155 | 110 | 155 | 290 | 290 | 290 | 290 | 290 | 290 |
| 80 | 50 | 80 | 180 | 180 | 180 | 180 | 180 | 180 |
| 140 | 115 | 140 | 200 | 200 | 200 | 200 | 200 | 200 |
| 90 | 70 | 90 | 120 | 120 | 120 | 120 | 120 | 120 |
| 420 | 200 | 420 | | | | | | |
| 420 | 200 | 420 | | | | | | |
| 420 | 200 | 420 | | | | | | |
| | 120 | 160 | 230 | 230 | 230 | 230 | 230 | 230 |
| | 10 | 30 | 50 | 50 | 50 | 50 | 50 | 50 |
| 3000 | 2000 | 3000 | | | | | | |
| 3000 | 2000 | 3000 | | | | | | |
| 600 | 300 | 600 | | | | | | |

**TABELLA PARAMETRI DI AVANZAMENTO mm/dente**
***FEED DATA mm/tooth.***

| FRESATURA *MILLING* | DIAMETRO DELLA FRESA *MILLING DIAMETER* | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TIPO DI FRESATURA *TYPE OF MILLING* | 2 | 3 | 4 | 5 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 |
|  1.5D 0.1D | 0,016 | 0,025 | 0,035 | 0,040 | 0,065 | 0,070 | 0,080 | 0,095 | 0,100 | 0,120 | 0,140 | 0,160 |
|  1.5D 0.25D | 0,013 | 0,025 | 0,030 | 0,040 | 0,050 | 0,055 | 0,060 | 0,070 | 0,080 | 0,090 | 0,100 | 0,120 |
|  0.5 D | 0,007 | 0,009 | 0,012 | 0,014 | 0,016 | 0,022 | 0,035 | 0,045 | 0,055 | 0,065 | 0,070 | 0,075 |
|  1D D | 0,004 | 0,008 | 0,010 | 0,013 | 0,015 | 0,025 | 0,035 | 0,040 | 0,045 | 0,050 | 0,055 | 0,060 |

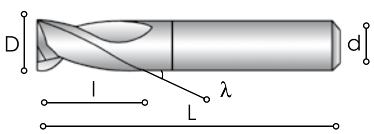
## CL 11HM

DIN 6527L DIN 6528

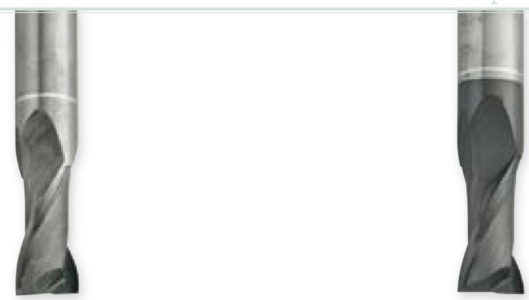
N

λ 30°

LASER RING I®




CL11HM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1110..... € | CODE | Micrograin Carbide Co10 2110..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 1 | 40 | 3 | 4 | 2 | ....01009 | 17,84 | ....01008 | 22,29 |
| 1,5 | 40 | 4,5 | 4 | 2 | ....01509 | 17,33 | ....01508 | 21,73 |
| 2 | 38 | 6 | 3 | 2 | ....02009 | 11,79 | ....02008 | 15,63 |
| 2,5 | 38 | 7 | 3 | 2 | ....25009 | 14,45 | ....25008 | 18,56 |
| 3 | 38 | 7 | 3 | 2 | ....30009 | 12,47 | ....30008 | 16,38 |
| 3,5 | 50 | 7 | 3,5 | 2 | ....35009 | 16,71 | ....35008 | 21,05 |
| 4 | 50 | 8 | 4 | 2 | ....40009 | 14,13 | ....40008 | 18,20 |
| 4,5 | 50 | 8 | 4,5 | 2 | ....45009 | 19,26 | ....45008 | 24,83 |
| 5 | 50 | 10 | 5 | 2 | ....50009 | 17,35 | ....50008 | 22,74 |
| 5,5 | 57 | 10 | 5,5 | 2 | ....55009 | 21,53 | ....55008 | 27,33 |
| 6 | 57 | 10 | 6 | 2 | ....60009 | 19,62 | ....60008 | 25,23 |
| 7 | 60 | 13 | 7 | 2 | ....70009 | 25,31 | ....70008 | 32,17 |
| 8 | 63 | 16 | 8 | 2 | ....80009 | 31,46 | ....80008 | 38,93 |
| 9 | 67 | 16 | 9 | 2 | ....90009 | 38,29 | ....90008 | 47,40 |
| 10 | 72 | 19 | 10 | 2 | ....10009 | 44,35 | ....10008 | 54,06 |
| 12 | 83 | 22 | 12 | 2 | ....12009 | 64,35 | ....12008 | 77,35 |
| 14 | 83 | 22 | 14 | 2 | ....14009 | 91,02 | ....14008 | 107,23 |
| 16 | 92 | 26 | 16 | 2 | ....16009 | 124,02 | ....16008 | 143,53 |
| 18 | 92 | 26 | 18 | 2 | ....18009 | 157,93 | ....18008 | 182,20 |
| 20 | 104 | 32 | 20 | 2 | ....20009 | 207,40 | ....20008 | 241,35 |

# CL 11CrHM

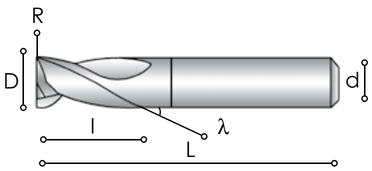
DIN 6527L DIN 6528

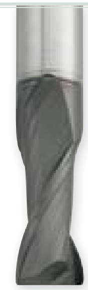
N

λ 30°

## LASER RING I®

CL11CrHM



| D h10 | R | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1110..... € | CODE | Micrograin Carbide Co10 2110..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 0,3 | 38 | 6 | 3 | 2 | ....02019 | 14,27 | ....02018 | 18,36 |
| 3 | 0,3 | 38 | 7 | 3 | 2 | ....30019 | 15,08 | ....30018 | 19,25 |
| 4 | 0,5 | 50 | 8 | 4 | 2 | ....40019 | 17,59 | ....40018 | 22,01 |
| 5 | 0,5 | 50 | 10 | 5 | 2 | ....50019 | 21,00 | ....50018 | 26,74 |
| 6 | 0,5 | 57 | 10 | 6 | 2 | ....60019 | 23,29 | ....60018 | 29,26 |
| 7 | 0,8 | 60 | 13 | 7 | 2 | ....70019 | 30,12 | ....70018 | 37,46 |
| 8 | 0,8 | 63 | 16 | 8 | 2 | ....80019 | 36,31 | ....80018 | 44,27 |
| 9 | 0,8 | 67 | 16 | 9 | 2 | ....90019 | 44,03 | ....90018 | 53,71 |
| 10 | 1 | 72 | 19 | 10 | 2 | ....10019 | 48,90 | ....10018 | 59,07 |
| 12 | 1 | 83 | 22 | 12 | 2 | ....12019 | 70,91 | ....12018 | 84,57 |
| 14 | 1 | 83 | 22 | 14 | 2 | ....14019 | 97,71 | ....14018 | 114,58 |
| 16 | 1,5 | 92 | 26 | 16 | 2 | ....16019 | 130,64 | ....16018 | 150,81 |
| 18 | 1,5 | 92 | 26 | 18 | 2 | ....18019 | 163,97 | ....18018 | 188,85 |
| 20 | 2 | 104 | 32 | 20 | 2 | ....20019 | 215,68 | ....20018 | 250,45 |

Altri raggi a richiesta - We can manufacture on request these cutters with different corner radius size

FRESE A DUE TAGLIENTI CON CODOLO RINFORZATO TWO FLUTE END MILLS WITH REINFORCED SHANK SCHAFTFRÄSER ZWEISCHNEIDER MIT VERSTAERKTEM SHAFT FRAISES DEUX DENTS FRESAS DOS LABIOS

## CL 11RsHM

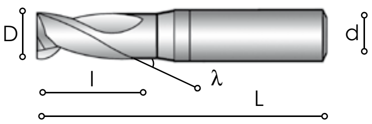
DIN 6527K

N

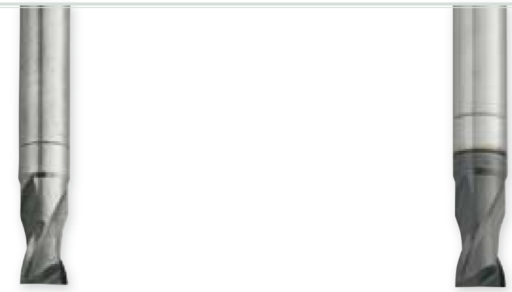
λ 30°

### LASER RING I®

DIN 6535 Form HA




CL11RsHM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1110..... € | CODE | Micrograin Carbide Co10 2110..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 2 | 50 | 3 | 6 | 2 | ....02029 | 24,46 | ....02028 | 30,55 |
| 2,5 | 50 | 3 | 6 | 2 | ....25029 | 24,46 | ....25028 | 30,55 |
| 3 | 50 | 4 | 6 | 2 | ....30029 | 24,46 | ....30028 | 30,55 |
| 3,5 | 50 | 4 | 6 | 2 | ....35029 | 24,46 | ....35028 | 30,55 |
| 4 | 54 | 5 | 6 | 2 | ....40029 | 24,46 | ....40028 | 30,55 |
| 4,5 | 54 | 5 | 6 | 2 | ....45029 | 24,46 | ....45028 | 30,55 |
| 5 | 54 | 6 | 6 | 2 | ....50029 | 24,46 | ....50028 | 30,55 |
| 5,5 | 54 | 7 | 6 | 2 | ....55029 | 24,46 | ....55028 | 30,55 |

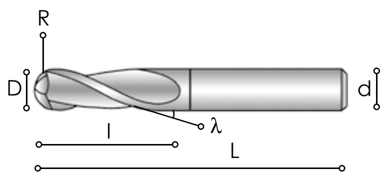
# CL 18HM

DIN 6527L DIN 6528

N

λ 30°

LASER RING I®




CL18HM

| D h10 | R ±0,02 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1180..... € | CODE | Micrograin Carbide Co10 2180..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | 38 | 6 | 3 | 2 | ....02009 | 25,07 | ....02008 | 30,24 |
| 3 | 1,5 | 38 | 7 | 3 | 2 | ....30009 | 21,67 | ....30008 | 26,50 |
| 4 | 2 | 50 | 8 | 4 | 2 | ....40009 | 24,36 | ....40008 | 29,46 |
| 5 | 2,5 | 50 | 10 | 5 | 2 | ....50009 | 32,57 | ....50008 | 39,48 |
| 6 | 3 | 57 | 10 | 6 | 2 | ....60009 | 30,59 | ....60008 | 37,30 |
| 7 | 3,5 | 60 | 13 | 7 | 2 | ....70009 | 44,47 | ....70008 | 53,24 |
| 8 | 4 | 63 | 16 | 8 | 2 | ....80009 | 41,95 | ....80008 | 50,47 |
| 9 | 4,5 | 67 | 16 | 9 | 2 | ....90009 | 68,55 | ....90008 | 80,68 |
| 10 | 5 | 72 | 19 | 10 | 2 | ....10009 | 65,71 | ....10008 | 77,57 |
| 12 | 6 | 83 | 22 | 12 | 2 | ....12009 | 79,03 | ....12008 | 93,50 |
| 14 | 7 | 83 | 22 | 14 | 2 | ....14009 | 108,70 | ....14008 | 126,67 |
| 16 | 8 | 92 | 26 | 16 | 2 | ....16009 | 146,12 | ....16008 | 167,83 |
| 18 | 9 | 92 | 26 | 18 | 2 | ....18009 | 191,64 | ....18008 | 219,29 |
| 20 | 10 | 104 | 32 | 20 | 2 | ....20009 | 241,40 | ....20008 | 278,75 |

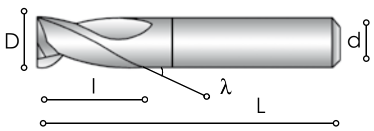
## CL 12HM

CARMON NORM.

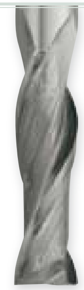
N

λ 30°

LASER RING I®




CL12HM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1120..... € | CODE | Micrograin Carbide Co10 2120..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 3 | 55 | 14 | 3 | 2 | ....30009 | 19,57 | ....30008 | 24,19 |
| 4 | 55 | 16 | 4 | 2 | ....40009 | 20,91 | ....40008 | 25,66 |
| 5 | 60 | 20 | 5 | 2 | ....50009 | 21,95 | ....50008 | 27,79 |
| 6 | 70 | 20 | 6 | 2 | ....60009 | 26,29 | ....60008 | 32,56 |
| 7 | 75 | 26 | 7 | 2 | ....70009 | 34,84 | ....70008 | 42,65 |
| 8 | 80 | 32 | 8 | 2 | ....80009 | 44,68 | ....80008 | 54,64 |
| 9 | 80 | 32 | 9 | 2 | ....90009 | 50,56 | ....90008 | 62,18 |
| 10 | 100 | 36 | 10 | 2 | ....10009 | 66,52 | ....10008 | 79,74 |
| 12 | 100 | 40 | 12 | 2 | ....12009 | 103,39 | ....12008 | 120,29 |
| 14 | 105 | 45 | 14 | 2 | ....14009 | 159,33 | ....14008 | 184,54 |
| 16 | 120 | 52 | 16 | 2 | ....16009 | 208,05 | ....16008 | 238,13 |
| 18 | 120 | 52 | 18 | 2 | ....18009 | 264,41 | ....18008 | 301,49 |
| 20 | 135 | 64 | 20 | 2 | ....20009 | 343,02 | ....20008 | 390,52 |

## CL 18SLHM

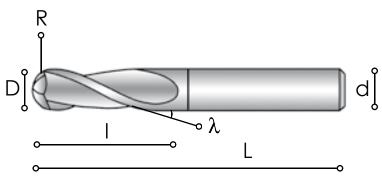
CARMON NORM.

N

λ 30°

LASER RING I®

CL18SLHM




| D h10 | R ±0,02 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1182..... € | CODE | Micrograin Carbide Co10 2182..... € SAP PHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 1,5 | 55 | 14 | 3 | 2 | ....30009 | 35,83 | ....30008 | 42,08 |
| 4 | 2 | 55 | 16 | 4 | 2 | ....40009 | 39,51 | ....40008 | 46,13 |
| 5 | 2,5 | 60 | 20 | 5 | 2 | ....50009 | 42,77 | ....50008 | 50,69 |
| 6 | 3 | 70 | 20 | 6 | 2 | ....60009 | 46,88 | ....60008 | 55,21 |
| 7 | 3,5 | 75 | 26 | 7 | 2 | ....70009 | 58,07 | ....70008 | 68,20 |
| 8 | 4 | 80 | 32 | 8 | 2 | ....80009 | 66,85 | ....80008 | 79,02 |
| 9 | 4,5 | 80 | 32 | 9 | 2 | ....90009 | 79,59 | ....90008 | 94,12 |
| 10 | 5 | 100 | 36 | 10 | 2 | ....10009 | 92,28 | ....10008 | 108,08 |
| 12 | 6 | 100 | 40 | 12 | 2 | ....12009 | 131,99 | ....12008 | 151,76 |
| 14 | 7 | 105 | 45 | 14 | 2 | ....14009 | 193,30 | ....14008 | 221,91 |
| 16 | 8 | 120 | 52 | 16 | 2 | ....16009 | 247,42 | ....16008 | 281,44 |
| 18 | 9 | 120 | 52 | 18 | 2 | ....18009 | 308,46 | ....18008 | 349,94 |
| 20 | 10 | 135 | 64 | 20 | 2 | ....20009 | 396,12 | ....20008 | 448,94 |

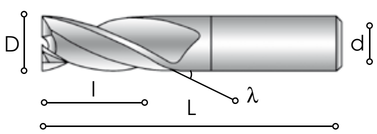
## CL 16HM

DIN 6527L DIN 6528

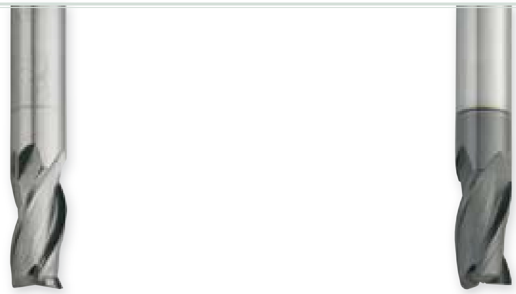
N

λ 30°

LASER RING I®




CL16HM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1160.....<br>€ | CODE | Micrograin Carbide Co10<br>2160.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 2 | 38 | 6 | 3 | 3 | ....02009 | 12,18 | ....02008 | 16,06 |
| 3 | 38 | 7 | 3 | 3 | ....30009 | 12,89 | ....30008 | 16,84 |
| 4 | 50 | 8 | 4 | 3 | ....40009 | 14,59 | ....40008 | 18,71 |
| 5 | 50 | 10 | 5 | 3 | ....50009 | 17,91 | ....50008 | 23,35 |
| 6 | 57 | 10 | 6 | 3 | ....60009 | 20,22 | ....60008 | 25,89 |
| 7 | 60 | 13 | 7 | 3 | ....70009 | 26,06 | ....70008 | 32,99 |
| 8 | 63 | 16 | 8 | 3 | ....80009 | 32,36 | ....80008 | 39,92 |
| 9 | 67 | 16 | 9 | 3 | ....90009 | 39,37 | ....90008 | 48,59 |
| 10 | 72 | 19 | 10 | 3 | ....10009 | 47,87 | ....10008 | 57,94 |
| 12 | 83 | 22 | 12 | 3 | ....12009 | 66,28 | ....12008 | 79,48 |
| 14 | 83 | 22 | 14 | 3 | ....14009 | 93,76 | ....14008 | 110,24 |
| 16 | 92 | 26 | 16 | 3 | ....16009 | 127,75 | ....16008 | 147,63 |
| 18 | 92 | 26 | 18 | 3 | ....18009 | 162,59 | ....18008 | 187,33 |
| 20 | 104 | 32 | 20 | 3 | ....20009 | 213,57 | ....20008 | 248,13 |

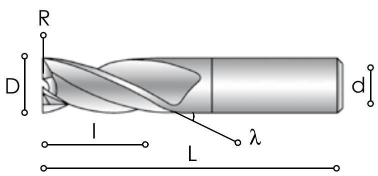
# CL 16CrHM

DIN 6527L DIN 6528

N

λ 30°

LASER RING I®




CL16CrHM

| D h10 | R | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1160.....<br>€ | CODE | Micrograin Carbide Co10<br>2160.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 0,3 | 38 | 6 | 3 | 3 | ....02019 | 14,74 | ....02018 | 18,88 |
| 3 | 0,3 | 38 | 7 | 3 | 3 | ....30019 | 15,59 | ....30018 | 19,81 |
| 4 | 0,5 | 50 | 8 | 4 | 3 | ....40019 | 18,17 | ....40018 | 22,65 |
| 5 | 0,5 | 50 | 10 | 5 | 3 | ....50019 | 21,67 | ....50018 | 27,49 |
| 6 | 0,5 | 57 | 10 | 6 | 3 | ....60019 | 24,01 | ....60018 | 30,06 |
| 7 | 0,8 | 60 | 13 | 7 | 3 | ....70019 | 31,01 | ....70018 | 38,44 |
| 8 | 0,8 | 63 | 16 | 8 | 3 | ....80019 | 37,34 | ....80018 | 45,40 |
| 9 | 0,8 | 67 | 16 | 9 | 3 | ....90019 | 45,28 | ....90018 | 55,09 |
| 10 | 1 | 72 | 19 | 10 | 3 | ....10019 | 52,79 | ....10018 | 63,35 |
| 12 | 1 | 83 | 22 | 12 | 3 | ....12019 | 73,04 | ....12018 | 86,91 |
| 14 | 1 | 83 | 22 | 14 | 3 | ....14019 | 100,65 | ....14018 | 117,82 |
| 16 | 1,5 | 92 | 26 | 16 | 3 | ....16019 | 134,56 | ....16018 | 155,12 |
| 18 | 1,5 | 92 | 26 | 18 | 3 | ....18019 | 168,81 | ....18018 | 194,17 |
| 20 | 2 | 104 | 32 | 20 | 3 | ....20019 | 222,09 | ....20018 | 257,51 |

carmon

FRESE A TRE TAGLIENTI CON CODOLO RINFORZATO THREE FLUTE END MILLS WITH REINFORCED SHANK SCHAFTFRÄSER DREISCHNEIDER MIT VERSTAERKTEM SHAFT FRAISES TROIS DENTS FRESAS TRES LABIOS

## CL 16RsHM

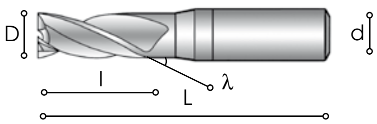
DIN 6527L

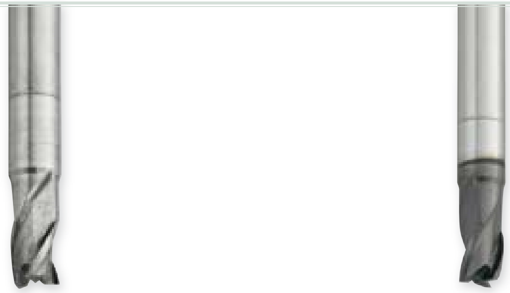
N

λ 30°

LASER RING I® DIN 6535 Form HA

CL16RsHM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1160..... € | CODE | Micrograin Carbide Co10 2160..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 2 | 50 | 3 | 6 | 3 | ....02029 | 24,46 | ....02028 | 30,55 |
| 2,5 | 50 | 3 | 6 | 3 | ....25029 | 24,46 | ....25028 | 30,55 |
| 3 | 50 | 4 | 6 | 3 | ....30029 | 24,46 | ....30028 | 30,55 |
| 3,5 | 50 | 4 | 6 | 3 | ....35029 | 24,46 | ....35028 | 30,55 |
| 4 | 54 | 5 | 6 | 3 | ....40029 | 24,46 | ....40028 | 30,55 |
| 4,5 | 54 | 5 | 6 | 3 | ....45029 | 24,46 | ....45028 | 30,55 |
| 5 | 54 | 6 | 6 | 3 | ....50029 | 24,46 | ....50028 | 30,55 |
| 5,5 | 54 | 7 | 6 | 3 | ....55029 | 24,46 | ....55028 | 30,55 |

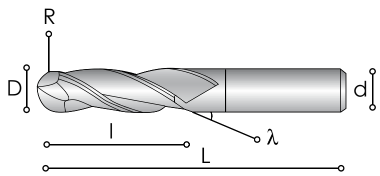
**FRESE A TRE TAGLIENTI CON TESTA SEMISFERICA** BALL NOSED THREE FLUTE END MILLS **RADIUSFRÄSER DREISCHNEIDER** FRAISES TROIS DENTS A BOUT HEMISPHERIQUE **FRESAS TRES LABIOS CON CABEZA SEMIESFERICA**



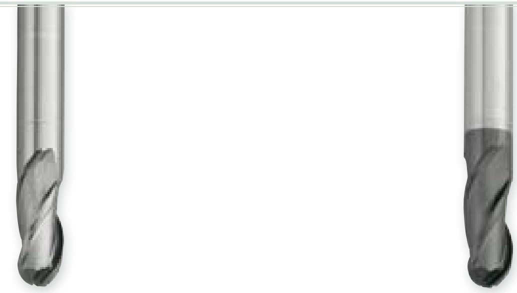
# CL 16RHM

DIN 6527L DIN 6528 N λ 30°

**LASER RING I®**




**CL16RHM**



| D h10 | R ± 0,02 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1161.....<br>€ | CODE | Micrograin Carbide Co10<br>2161.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | 38 | 6 | 3 | 3 | ....02009 | 24,36 | ....02008 | 29,46 |
| 3 | 1,5 | 38 | 7 | 3 | 3 | ....30009 | 22,94 | ....30008 | 27,90 |
| 4 | 2 | 50 | 8 | 4 | 3 | ....40009 | 27,29 | ....40008 | 32,68 |
| 5 | 2,5 | 50 | 10 | 5 | 3 | ....50009 | 29,74 | ....50008 | 36,36 |
| 6 | 3 | 57 | 10 | 6 | 3 | ....60009 | 32,57 | ....60008 | 39,48 |
| 7 | 3,5 | 60 | 13 | 7 | 3 | ....70009 | 44,75 | ....70008 | 53,55 |
| 8 | 4 | 63 | 16 | 8 | 3 | ....80009 | 45,83 | ....80008 | 54,74 |
| 9 | 4,5 | 67 | 16 | 9 | 3 | ....90009 | 54,67 | ....90008 | 65,42 |
| 10 | 5 | 72 | 19 | 10 | 3 | ....10009 | 60,05 | ....10008 | 71,34 |
| 12 | 6 | 83 | 22 | 12 | 3 | ....12009 | 80,73 | ....12008 | 95,37 |
| 14 | 7 | 83 | 22 | 14 | 3 | ....14009 | 114,57 | ....14008 | 133,14 |
| 16 | 8 | 92 | 26 | 16 | 3 | ....16009 | 149,27 | ....16008 | 171,31 |
| 18 | 9 | 92 | 26 | 18 | 3 | ....18009 | 198,84 | ....18008 | 227,21 |
| 20 | 10 | 104 | 32 | 20 | 3 | ....20009 | 250,96 | ....20008 | 289,26 |

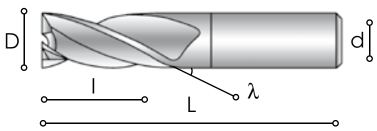
# CL 17HM

CARMON NORM.

N

λ 30°

## LASER RING I®




CL17HM

| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1170..... € | CODE | Micrograin Carbide Co10 2170..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 3 | 55 | 14 | 3 | 3 | ....30009 | 20,16 | ....30008 | 24,84 |
| 4 | 55 | 16 | 4 | 3 | ....40009 | 21,53 | ....40008 | 26,35 |
| 5 | 60 | 20 | 5 | 3 | ....50009 | 25,21 | ....50008 | 31,38 |
| 6 | 70 | 20 | 6 | 3 | ....60009 | 28,89 | ....60008 | 35,43 |
| 7 | 75 | 26 | 7 | 3 | ....70009 | 38,10 | ....70008 | 46,23 |
| 8 | 80 | 32 | 8 | 3 | ....80009 | 46,02 | ....80008 | 56,11 |
| 9 | 80 | 32 | 9 | 3 | ....90009 | 56,51 | ....90008 | 68,73 |
| 10 | 100 | 36 | 10 | 3 | ....10009 | 68,51 | ....10008 | 81,93 |
| 12 | 100 | 40 | 12 | 3 | ....12009 | 105,65 | ....12008 | 122,79 |
| 14 | 105 | 45 | 14 | 3 | ....14009 | 164,57 | ....14008 | 190,30 |
| 16 | 120 | 52 | 16 | 3 | ....16009 | 207,48 | ....16008 | 237,51 |
| 18 | 120 | 52 | 18 | 3 | ....18009 | 265,83 | ....18008 | 303,05 |
| 20 | 135 | 64 | 20 | 3 | ....20009 | 351,80 | ....20008 | 400,18 |

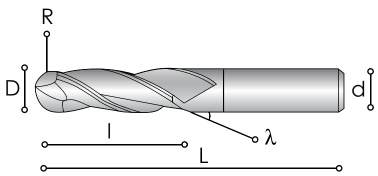
# CL 17RHM

CARMON NORM.

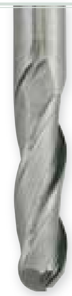
N

λ 30°

## LASER RING I®




CL17RHM



| D h10 | R ± 0,02 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1171.....<br>€ | CODE | Micrograin Carbide Co10<br>2171.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 1,5 | 55 | 14 | 3 | 3 | ....30009 | 37,53 | ....30008 | 43,95 |
| 4 | 2 | 55 | 16 | 4 | 3 | ....40009 | 43,34 | ....40008 | 50,34 |
| 5 | 2,5 | 60 | 20 | 5 | 3 | ....50009 | 44,90 | ....50008 | 53,03 |
| 6 | 3 | 70 | 20 | 6 | 3 | ....60009 | 48,86 | ....60008 | 57,39 |
| 7 | 3,5 | 75 | 26 | 7 | 3 | ....70009 | 64,72 | ....70008 | 75,52 |
| 8 | 4 | 80 | 32 | 8 | 3 | ....80009 | 70,67 | ....80008 | 83,23 |
| 9 | 4,5 | 80 | 32 | 9 | 3 | ....90009 | 81,86 | ....90008 | 96,61 |
| 10 | 5 | 100 | 36 | 10 | 3 | ....10009 | 91,91 | ....10008 | 107,67 |
| 12 | 6 | 100 | 40 | 12 | 3 | ....12009 | 130,01 | ....12008 | 149,58 |
| 14 | 7 | 105 | 45 | 14 | 3 | ....14009 | 201,11 | ....14008 | 230,50 |
| 16 | 8 | 120 | 52 | 16 | 3 | ....16009 | 242,44 | ....16008 | 275,97 |
| 18 | 9 | 120 | 52 | 18 | 3 | ....18009 | 313,98 | ....18008 | 356,02 |
| 20 | 10 | 135 | 64 | 20 | 3 | ....20009 | 408,16 | ....20008 | 462,19 |

## CL 21TFHM

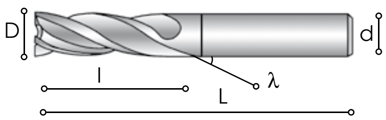
DIN 6527L DIN 6528

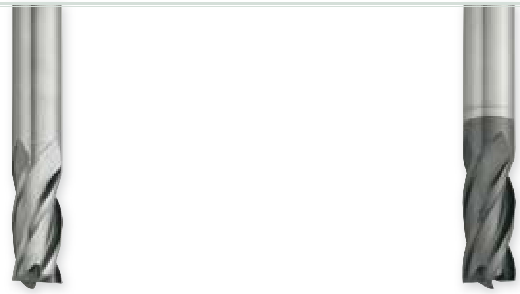
N

λ 30°

LASER RING I®

CL21TFHM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1213..... € | CODE | Micrograin Carbide Co10 2215..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 2 | 38 | 7 | 3 | 4 | ....02009 | 12,18 | ....02008 | 16,06 |
| 3 | 38 | 8 | 3 | 4 | ....30009 | 12,89 | ....30008 | 16,84 |
| 4 | 50 | 11 | 4 | 4 | ....40009 | 14,59 | ....40008 | 18,71 |
| 5 | 50 | 13 | 5 | 4 | ....50009 | 17,91 | ....50008 | 23,35 |
| 6 | 57 | 13 | 6 | 4 | ....60009 | 20,22 | ....60008 | 25,89 |
| 7 | 60 | 16 | 7 | 4 | ....70009 | 26,06 | ....70008 | 32,99 |
| 8 | 63 | 19 | 8 | 4 | ....80009 | 32,36 | ....80008 | 39,92 |
| 9 | 67 | 19 | 9 | 4 | ....90009 | 39,37 | ....90008 | 48,59 |
| 10 | 72 | 22 | 10 | 4 | ....10009 | 47,87 | ....10008 | 57,94 |
| 12 | 83 | 26 | 12 | 4 | ....12009 | 66,28 | ....12008 | 79,48 |
| 14 | 83 | 26 | 14 | 4 | ....14009 | 93,76 | ....14008 | 110,24 |
| 16 | 92 | 32 | 16 | 4 | ....16009 | 127,75 | ....16008 | 147,63 |
| 18 | 92 | 32 | 18 | 4 | ....18009 | 162,59 | ....18008 | 187,33 |
| 20 | 104 | 38 | 20 | 4 | ....20009 | 213,57 | ....20008 | 248,13 |

FRESE TORICHE A QUATTRO TAGLIENTI FOUR FLUTE CUTTERS WITH CORNER RADIUS VIERSCHNEIDENFRÄSER MIT ECKENRADIUS FRAISES TORIQUES QUATRE DENTS FRESAS TORICAS DE CUATRO LABIOS

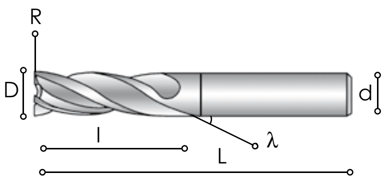
# CL 21CrHM

DIN 6527L DIN 6528

N λ 30°

LASER RING I®

CL21CrHM




| D h10 | R | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1210.....<br>€ | CODE | Micrograin Carbide Co10<br>2210.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 0,3 | 38 | 7 | 3 | 4 | ....02019 | 14,74 | ....02018 | 18,88 |
| 3 | 0,3 | 38 | 8 | 3 | 4 | ....30019 | 15,59 | ....30018 | 19,81 |
| 4 | 0,5 | 50 | 11 | 4 | 4 | ....40019 | 18,17 | ....40018 | 22,65 |
| 5 | 0,5 | 50 | 13 | 5 | 4 | ....50019 | 21,67 | ....50018 | 27,49 |
| 6 | 0,5 | 57 | 13 | 6 | 4 | ....60019 | 24,01 | ....60018 | 30,06 |
| 7 | 0,8 | 60 | 16 | 7 | 4 | ....70019 | 31,01 | ....70018 | 38,44 |
| 8 | 0,8 | 63 | 19 | 8 | 4 | ....80019 | 37,34 | ....80018 | 45,40 |
| 9 | 0,8 | 67 | 19 | 9 | 4 | ....90019 | 45,28 | ....90018 | 55,09 |
| 10 | 1 | 72 | 22 | 10 | 4 | ....10019 | 52,79 | ....10018 | 63,35 |
| 12 | 1 | 83 | 26 | 12 | 4 | ....12019 | 73,04 | ....12018 | 86,91 |
| 14 | 1 | 83 | 26 | 14 | 4 | ....14019 | 100,65 | ....14018 | 117,82 |
| 16 | 1,5 | 92 | 32 | 16 | 4 | ....16019 | 134,56 | ....16018 | 155,12 |
| 18 | 1,5 | 92 | 32 | 18 | 4 | ....18019 | 168,81 | ....18018 | 194,17 |
| 20 | 2 | 104 | 38 | 20 | 4 | ....20019 | 222,09 | ....20018 | 257,51 |

**Altri raggi a richiesta - We can manufacture on request these cutters with different corner radius size**

FRESE A QUATTRO TAGLIENTI CON CODOLO RINFORZATO FOUR FLUTE END MILLS WITH REINFORCED SHANK SCHAFTFRÄSER VIERSCHNEIDIG MIT VERSTAERKTEM SHAFT FRAISES DEUX TAILLES A QUATRE DENTS FRESAS CUATRO LABIOS

## CL 21RSHM

DIN 6527K

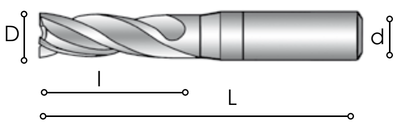
N

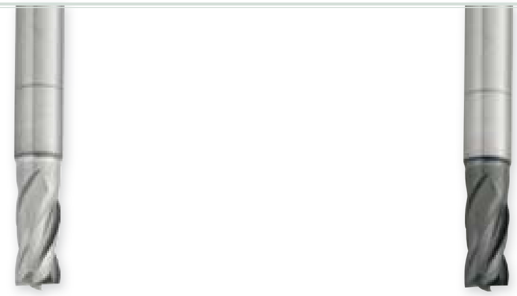
λ 30°

LASER RING I®

DIN 6535 Form HA

CL21RSHM



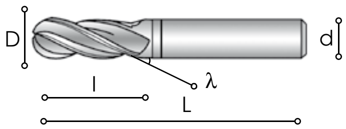
| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1213..... € | CODE | Micrograin Carbide Co10 2215..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 2 | 50 | 4 | 6 | 4 | ....02029 | 24,46 | ....02028 | 30,55 |
| 2,5 | 50 | 4 | 6 | 4 | ....25029 | 24,46 | ....25028 | 30,55 |
| 3 | 50 | 5 | 6 | 4 | ....30029 | 24,46 | ....30028 | 30,55 |
| 3,5 | 50 | 6 | 6 | 4 | ....35029 | 24,46 | ....35028 | 30,55 |
| 4 | 54 | 8 | 6 | 4 | ....40029 | 24,46 | ....40028 | 30,55 |
| 4,5 | 54 | 8 | 6 | 4 | ....45029 | 24,46 | ....45028 | 30,55 |
| 5 | 54 | 9 | 6 | 4 | ....50029 | 24,46 | ....50028 | 30,55 |
| 5,5 | 54 | 10 | 6 | 4 | ....55029 | 24,46 | ....55028 | 30,55 |

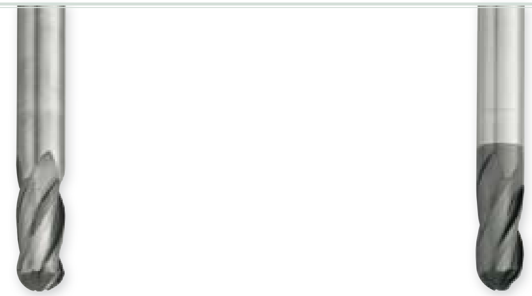
## FRESE A QUATTRO TAGLIENTI CON TESTA SEMISFERICA BALL NOSED FOUR FLUTE END MILLS RADIUSFRÄSER VIERSCHNEIDER FRAISES DEUX TAILLES A QUATRE DENTS A BOUT HEMISPHERIQUE FRESAS TORICAS DE CUATRO LABIOS CON CABEZA SEMISFERICA

# CL 21RHM

DIN 6527L DIN 6528 N λ 30°

LASER RING I®




| D h10 | R ±0,02 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1211.....<br>€ | CODE | Micrograin Carbide Co10<br>2211.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | 38 | 7 | 3 | 4 | ....02009 | 24,36 | ....02008 | 29,46 |
| 3 | 1,5 | 38 | 8 | 3 | 4 | ....30009 | 22,94 | ....30008 | 27,90 |
| 4 | 2 | 50 | 11 | 4 | 4 | ....40009 | 27,29 | ....40008 | 32,68 |
| 5 | 2,5 | 50 | 13 | 5 | 4 | ....50009 | 29,74 | ....50008 | 36,36 |
| 6 | 3 | 57 | 13 | 6 | 4 | ....60009 | 32,57 | ....60008 | 39,48 |
| 7 | 3,5 | 60 | 16 | 7 | 4 | ....70009 | 44,75 | ....70008 | 53,55 |
| 8 | 4 | 63 | 19 | 8 | 4 | ....80009 | 45,83 | ....80008 | 54,74 |
| 9 | 4,5 | 67 | 19 | 9 | 4 | ....90009 | 54,67 | ....90008 | 65,42 |
| 10 | 5 | 72 | 22 | 10 | 4 | ....10009 | 60,05 | ....10008 | 71,34 |
| 12 | 6 | 83 | 26 | 12 | 4 | ....12009 | 80,73 | ....12008 | 95,37 |
| 14 | 7 | 83 | 26 | 14 | 4 | ....14009 | 114,57 | ....14008 | 133,14 |
| 16 | 8 | 92 | 32 | 16 | 4 | ....16009 | 149,27 | ....16008 | 171,31 |
| 18 | 9 | 92 | 32 | 18 | 4 | ....18009 | 198,84 | ....18008 | 227,21 |
| 20 | 10 | 104 | 38 | 20 | 4 | ....20009 | 250,96 | ....20008 | 289,26 |

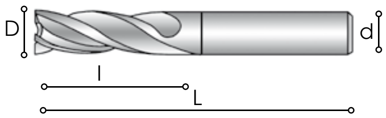
## CL 22TFHM

CARMON NORM.

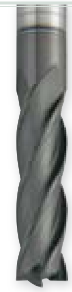
N

λ 30°

### LASER RING I®




CL22TFHM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1223.....<br>€ | CODE | Micrograin Carbide Co10<br>2225.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 3 | 55 | 14 | 3 | 4 | ....30009 | 20,16 | ....30008 | 24,84 |
| 4 | 55 | 16 | 4 | 4 | ....40009 | 21,53 | ....40008 | 26,35 |
| 5 | 60 | 20 | 5 | 4 | ....50009 | 25,21 | ....50008 | 31,38 |
| 6 | 70 | 20 | 6 | 4 | ....60009 | 28,89 | ....60008 | 35,43 |
| 7 | 75 | 26 | 7 | 4 | ....70009 | 38,10 | ....70008 | 46,23 |
| 8 | 80 | 32 | 8 | 4 | ....80009 | 46,02 | ....80008 | 56,11 |
| 9 | 80 | 32 | 9 | 4 | ....90009 | 56,51 | ....90008 | 68,73 |
| 10 | 100 | 36 | 10 | 4 | ....10009 | 68,51 | ....10008 | 81,93 |
| 12 | 100 | 40 | 12 | 4 | ....12009 | 105,65 | ....12008 | 122,79 |
| 14 | 105 | 45 | 14 | 4 | ....14009 | 164,57 | ....14008 | 190,30 |
| 16 | 120 | 52 | 16 | 4 | ....16009 | 207,48 | ....16008 | 237,51 |
| 18 | 120 | 52 | 18 | 4 | ....18009 | 265,83 | ....18008 | 303,05 |
| 20 | 135 | 64 | 20 | 4 | ....20009 | 351,80 | ....20008 | 400,18 |

## FRESE A QUATTRO TAGLIENTI CON TESTA SEMISFERICA BALL NOSED FOUR FLUTE END MILLS RADIUSFRÄSER VIERSCHNEIDER FRAISES DEUX TAILLES A QUATRE DENTS A BOUT HEMISPHERIQUE FRESAS TORICAS DE CUATRO LABIOS CON CABEZA SEMISFERICA

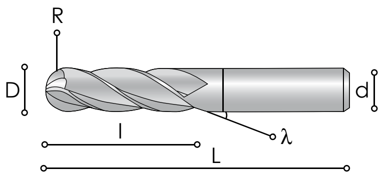
# CL 22RHM

CARMON NORM.

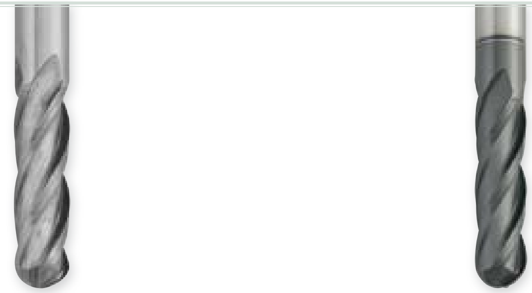
N

λ 30°

LASER RING I®




CL22RHM



| D h10 | R ± 0,02 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1221..... € | CODE | Micrograin Carbide Co10 2221..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 1,5 | 55 | 14 | 3 | 4 | ....30009 | 37,53 | ....30008 | 43,95 |
| 4 | 2 | 55 | 16 | 4 | 4 | ....40009 | 43,34 | ....40008 | 50,34 |
| 5 | 2,5 | 60 | 20 | 5 | 4 | ....50009 | 44,90 | ....50008 | 53,03 |
| 6 | 3 | 70 | 20 | 6 | 4 | ....60009 | 48,86 | ....60008 | 57,39 |
| 7 | 3,5 | 75 | 26 | 7 | 4 | ....70009 | 64,72 | ....70008 | 75,52 |
| 8 | 4 | 80 | 32 | 8 | 4 | ....80009 | 70,67 | ....80008 | 83,23 |
| 9 | 4,5 | 80 | 32 | 9 | 4 | ....90009 | 81,86 | ....90008 | 96,61 |
| 10 | 5 | 100 | 36 | 10 | 4 | ....10009 | 91,91 | ....10008 | 107,67 |
| 12 | 6 | 100 | 40 | 12 | 4 | ....12009 | 130,01 | ....12008 | 149,58 |
| 14 | 7 | 105 | 45 | 14 | 4 | ....14009 | 201,11 | ....14008 | 230,50 |
| 16 | 8 | 120 | 52 | 16 | 4 | ....16009 | 242,44 | ....16008 | 275,97 |
| 18 | 9 | 120 | 52 | 18 | 4 | ....18009 | 313,98 | ....18008 | 356,02 |
| 20 | 10 | 135 | 64 | 20 | 4 | ....20009 | 408,16 | ....20008 | 462,19 |

FRESE CILINDRICHE FRONTALI PER SGROSSARE ROUGHING END MILLS SCHRUPPFRÄSER
FRAISES DEUX TAILLES D'EBAUCHE FRESAS CILINDRICAS FRONTALES PARA DESBASTE

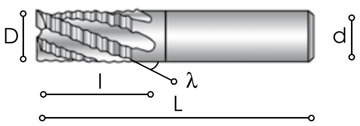
## CL 24TFPFHM

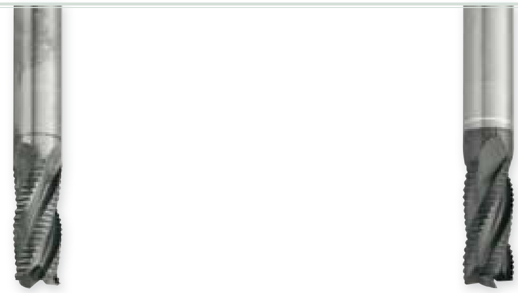
DIN 6528

HR λ 30°

LASER RING I®

CL24TFPHHM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1244..... € | CODE | Micrograin Carbide Co10 2246..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 4 | ....60009 | 32,76 | ....60008 | 39,68 |
| 8 | 63 | 19 | 8 | 4 | ....80009 | 48,28 | ....80008 | 57,43 |
| 10 | 72 | 22 | 10 | 4 | ....10009 | 68,40 | ....10008 | 80,52 |
| 12 | 83 | 26 | 12 | 4 | ....12009 | 89,09 | ....12008 | 104,57 |
| 14 | 83 | 26 | 14 | 4 | ....14009 | 104,03 | ....14008 | 121,54 |
| 16 | 92 | 32 | 16 | 4 | ....16009 | 139,10 | ....16008 | 160,12 |
| 18 | 92 | 32 | 18 | 4 | ....18009 | 178,18 | ....18008 | 204,48 |
| 20 | 104 | 38 | 20 | 4 | ....20009 | 213,81 | ....20008 | 248,40 |

FRESE CILINDRICHE FRONTALI PER SEMIFINIRE SEMIFINISHING END MILLS SCHRUPP-SCHLICHTFRÄSER
FRAISES DEUX TAILLES DE SEMI FINITION FRESAS CILINDRICAS FRONTALES PARA SEMIACABADO

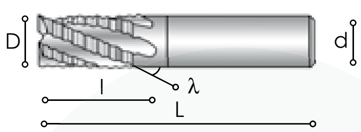
## CL 25TFHM

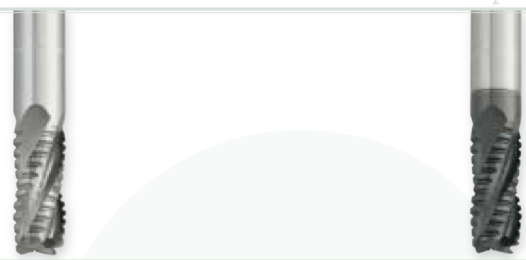
DIN 6528

NF λ 30°

LASER RING I®

CL25TFHM



| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1253..... € | CODE | Micrograin Carbide Co10 2255..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 4 | ....60009 | 33,75 | ....60008 | 40,77 |
| 8 | 63 | 19 | 8 | 4 | ....80009 | 49,73 | ....80008 | 59,03 |
| 10 | 72 | 22 | 10 | 4 | ....10009 | 70,44 | ....10008 | 82,77 |
| 12 | 83 | 26 | 12 | 4 | ....12009 | 91,76 | ....12008 | 107,50 |
| 14 | 83 | 26 | 14 | 4 | ....14009 | 107,15 | ....14008 | 124,97 |
| 16 | 92 | 32 | 16 | 4 | ....16009 | 143,26 | ....16008 | 164,69 |
| 18 | 92 | 32 | 18 | 4 | ....18009 | 183,51 | ....18008 | 210,35 |
| 20 | 104 | 38 | 20 | 4 | ....20009 | 220,22 | ....20008 | 255,45 |

Su richiesta si possono fornire toriche e con testa semisferica - On request we can manufacture also with corner radius or full radius

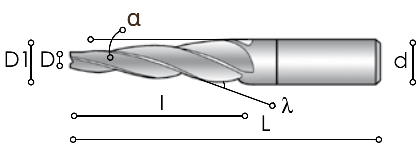
# CS 47HM

CARMON NORM.

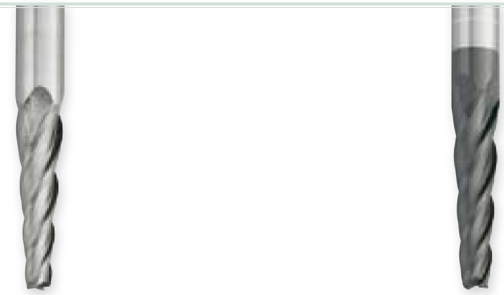
N

λ 30°

## LASER RING I®




CS47HM



| α | D | D1 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10<br>1470..<br>€ | CODE | Micrograin Carbide Co10<br>2470.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|---|
| 1° | 4 | 5,22 | 80 | 35 | 6 | 4 | ....10049 | 61,13 | ....10048 | 71,87 |
| 1° | 5 | 6,40 | 85 | 40 | 7 | 4 | ....10059 | 87,38 | ....10058 | 101,61 |
| 1° | 6 | 7,57 | 90 | 45 | 8 | 4 | ....10069 | 95,75 | ....10068 | 110,82 |
| 1° | 8 | 10,00 | 100 | 57 | 10 | 4 | ....10089 | 118,00 | ....10088 | 136,37 |
| 2° | 4 | 6,44 | 80 | 35 | 7 | 4 | ....20049 | 76,63 | ....20048 | 89,78 |
| 2° | 5 | 8,00 | 85 | 43 | 8 | 4 | ....20059 | 94,25 | ....20058 | 109,17 |
| 2° | 6 | 9,14 | 90 | 45 | 10 | 4 | ....20069 | 107,13 | ....20068 | 124,41 |
| 2° | 8 | 12,00 | 100 | 57 | 12 | 4 | ....20089 | 139,50 | ....20088 | 160,02 |
| 3° | 4 | 8,00 | 80 | 38 | 8 | 4 | ....30049 | 88,00 | ....30048 | 102,29 |
| 3° | 5 | 9,19 | 85 | 40 | 10 | 4 | ....30059 | 97,88 | ....30058 | 114,23 |
| 3° | 6 | 10,00 | 90 | 38 | 10 | 4 | ....30069 | 94,63 | ....30068 | 110,66 |
| 3° | 8 | 14,00 | 100 | 57 | 14 | 4 | ....30089 | 163,38 | ....30088 | 186,82 |
| 4° | 4 | 8,89 | 80 | 35 | 10 | 4 | ....40049 | 95,38 | ....40048 | 111,48 |
| 4° | 5 | 10,59 | 85 | 40 | 11 | 4 | ....40059 | 114,00 | ....40058 | 131,97 |
| 4° | 6 | 12,00 | 90 | 43 | 12 | 4 | ....40069 | 115,50 | ....40068 | 133,62 |
| 4° | 8 | 16,00 | 100 | 57 | 16 | 4 | ....40089 | 186,25 | ....40088 | 211,98 |
| 5° | 4 | 10,00 | 80 | 34 | 10 | 4 | ....50049 | 96,00 | ....50048 | 112,17 |
| 5° | 5 | 12,00 | 85 | 40 | 12 | 4 | ....50059 | 111,63 | ....50058 | 129,36 |
| 5° | 6 | 14,00 | 90 | 46 | 14 | 4 | ....50069 | 153,75 | ....50068 | 176,23 |

Su richiesta si possono fornire conicità diverse - On request we can manufacture with different angles

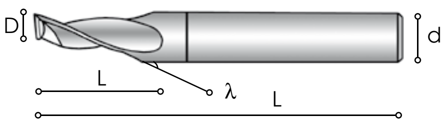
## ALL 158HM

CARMON NORM.

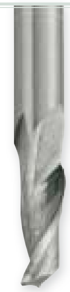
W

λ 30°

LASER RING I®




ALL158HM



| D | L | l | l1 | d h6 | Z | CODE | Micrograin Carbide Co10<br>4158.....<br>€ | CODE | Micrograin Carbide Co10<br>2158.....<br>€ SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 50 | 12 | _ | 3 | 1 | ....30009 | 18,13 | ....30008 | 22,61 |
| 4 | 50 | 15 | _ | 4 | 1 | ....40009 | 21,24 | ....40008 | 26,03 |
| 5 | 60 | 17 | _ | 5 | 1 | ....50009 | 25,21 | ....50008 | 31,38 |
| 5 | 60 | 17 | _ | 8 | 1 | ....50089 | 38,10 | ....50088 | 46,23 |
| 6 | 60 | 20 | _ | 6 | 1 | ....60009 | 28,61 | ....60008 | 35,12 |
| 6 | 60 | 20 | _ | 8 | 1 | ....60089 | 40,93 | ....60088 | 49,35 |
| 8 | 70 | 22 | _ | 8 | 1 | ....80009 | 45,04 | ....80008 | 53,86 |
| 8 | 100 | 25 | 50 | 8 | 1 | ....81009 | 57,64 | ....81008 | 68,90 |
| 10 | 80 | 25 | _ | 10 | 1 | ....10009 | 67,56 | ....10008 | 80,88 |
| 10 | 100 | 25 | 50 | 10 | 1 | ....10109 | 82,71 | ....10108 | 97,55 |
| 12 | 100 | 30 | 45 | 12 | 1 | ....12009 | 88,52 | ....12008 | 103,94 |

# ALL 161HM

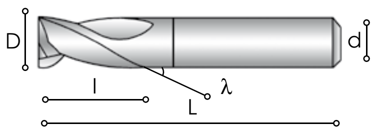
DIN 6528

W

λ 45°

## LASER RING I®

ALL161HM




| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 4161..... € | CODE | Micrograin Carbide Co10 2161..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 3 | 50 | 7 | 3 | 2 | ....30009 | 14,02 | ....03008 | 18,09 |
| 4 | 50 | 8 | 4 | 2 | ....40009 | 18,13 | ....04008 | 22,61 |
| 5 | 50 | 10 | 5 | 2 | ....50009 | 18,13 | ....05008 | 23,59 |
| 6 | 57 | 10 | 6 | 2 | ....60009 | 20,60 | ....06008 | 26,30 |
| 7 | 60 | 13 | 7 | 2 | ....70009 | 26,58 | ....07008 | 33,56 |
| 8 | 63 | 16 | 8 | 2 | ....80009 | 33,04 | ....08008 | 40,67 |
| 9 | 67 | 16 | 9 | 2 | ....90009 | 40,20 | ....09008 | 49,50 |
| 10 | 72 | 19 | 10 | 2 | ....10009 | 46,56 | ....01008 | 56,50 |
| 12 | 83 | 22 | 12 | 2 | ....12009 | 67,56 | ....01208 | 80,89 |
| 14 | 83 | 22 | 14 | 2 | ....14009 | 95,57 | ....01408 | 112,23 |
| 16 | 92 | 26 | 16 | 2 | ....16009 | 130,23 | ....01608 | 150,35 |
| 18 | 92 | 26 | 18 | 2 | ....18009 | 165,82 | ....01808 | 190,89 |
| 20 | 104 | 32 | 20 | 2 | ....20009 | 217,77 | ....00208 | 252,75 |

**Su richiesta si possono fornire toriche e con testa semisferica - On request we can manufacture also with corner radius or full radius**

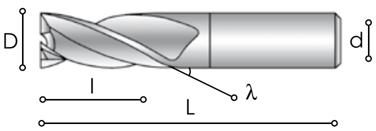
## ALL 163HM

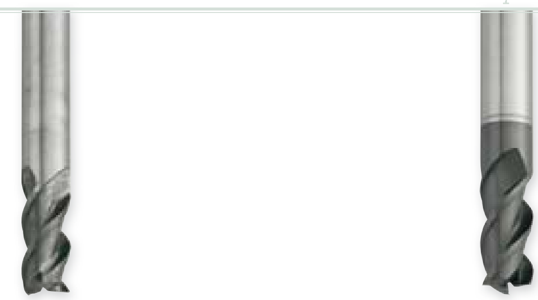
DIN 6528

W

λ 45°

### LASER RING I®




| D h10 | L | l | d h6 | Z | CODE | Micrograin Carbide Co10 1163..... € | CODE | Micrograin Carbide Co10 2163..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|
| 3 | 50 | 7 | 3 | 3 | ....30009 | 16,83 | ....30008 | 21,17 |
| 4 | 50 | 8 | 4 | 3 | ....40009 | 21,75 | ....40008 | 26,59 |
| 5 | 50 | 10 | 5 | 3 | ....50009 | 21,75 | ....50008 | 27,58 |
| 6 | 57 | 10 | 6 | 3 | ....60009 | 24,73 | ....60008 | 30,85 |
| 7 | 60 | 13 | 7 | 3 | ....70009 | 33,23 | ....70008 | 40,87 |
| 8 | 63 | 16 | 8 | 3 | ....80009 | 35,35 | ....80008 | 43,21 |
| 9 | 67 | 16 | 9 | 3 | ....90009 | 46,03 | ....90008 | 55,91 |
| 10 | 72 | 19 | 10 | 3 | ....10009 | 47,89 | ....10008 | 57,96 |
| 12 | 83 | 22 | 12 | 3 | ....12009 | 69,57 | ....12008 | 83,09 |
| 14 | 83 | 22 | 14 | 3 | ....14009 | 101,29 | ....14008 | 118,53 |
| 16 | 92 | 26 | 16 | 3 | ....16009 | 133,58 | ....16008 | 154,05 |
| 18 | 92 | 26 | 18 | 3 | ....18009 | 170,46 | ....18008 | 195,99 |
| 20 | 104 | 32 | 20 | 3 | ....20009 | 224,31 | ....20008 | 259,94 |

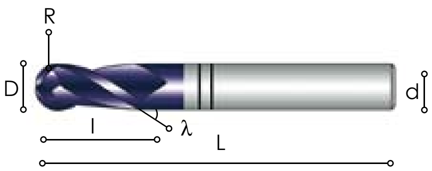
Su richiesta si possono fornire toriche e con testa semisferica - On request we can manufacture also with corner radius or full radius

## CL 19HM

CARMON NORM. HSC λ 30°

### LASER RING II®

CL19HM




| D e8 | R ±0,01 | L | l | d h6 | Z | CODE | Micrograin Carbide Co12 2190..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|
| 1 | 0,5 | 50 | 2,5 | 4 | 2 | ....01009 | 59,77 |
| 1,5 | 0,75 | 50 | 4 | 4 | 2 | ....01509 | 59,77 |
| 2 | 1 | 50 | 5 | 6 | 2 | ....02009 | 57,64 |
| 3 | 1,5 | 60 | 8 | 6 | 2 | ....03009 | 57,92 |
| 4 | 2 | 70 | 8 | 6 | 2 | ....04009 | 57,92 |
| 5 | 2,5 | 80 | 10 | 6 | 2 | ....05009 | 59,06 |
| 6 | 3 | 90 | 12 | 6 | 2 | ....06009 | 69,40 |
| 8 | 4 | 100 | 14 | 8 | 2 | ....08009 | 73,93 |
| 10 | 5 | 100 | 18 | 10 | 2 | ....10009 | 91,07 |
| 12 | 6 | 110 | 22 | 12 | 2 | ....12009 | 135,39 |
| 16 | 8 | 140 | 30 | 16 | 2 | ....16009 | 252,50 |
| 20 | 10 | 160 | 38 | 20 | 2 | ....20009 | 366,81 |

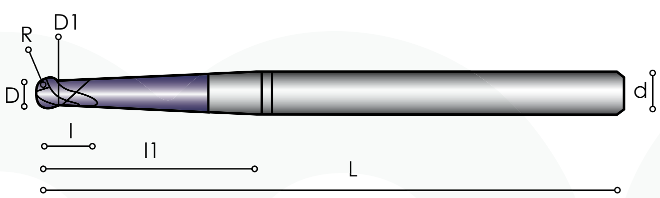
FRESE A DUE TAGLIENTI CON TESTA SEMISFERICA PER MACCHINE A COPIARE BALL NOSED TWO FLUTE END MILLS FOR COPYING MILLING MACHINES ZWEISCHNEIDEN-KOPIERFRÄSER MIT VOLLEM STIRNRADIUS FRAISES DEUX DENTS A COPIER A BOUT HEMISPHERIQUE FRESAS DOS LABIOS CON CABEZA SEMIESFERICA PARA COPIADORA

## CL 19CMHM

CARMON NORM. HSC λ 30°

### LASER RING II®

CL19CMHM




| D h10 | D1 | R ±0,01 | L | l | l1 | D h6 | Z | CODE | Micrograin Carbide Co12 2191..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 2,5 | 1,5 | 80 | 4 | 30 | 6 | 2 | ....03009 | 69,40 |
| 4 | 3,3 | 2 | 80 | 5 | 30 | 6 | 2 | ....04009 | 69,40 |
| 5 | 4,1 | 2,5 | 80 | 6 | 43 | 6 | 2 | ....05009 | 69,40 |
| 6 | 4,7 | 3 | 100 | 7 | 30 | 6 | 2 | ....06009 | 75,77 |
| 8 | 6,5 | 4 | 100 | 9 | 36 | 8 | 2 | ....08009 | 102,25 |
| 10 | 8,2 | 5 | 100 | 11 | 43 | 10 | 2 | ....10009 | 149,27 |
| 12 | 9,8 | 6 | 100 | 13 | 52 | 12 | 2 | ....12009 | 185,10 |
| 16 | 13,4 | 8 | 150 | 15 | 61 | 16 | 2 | ....16009 | 352,65 |

carmon

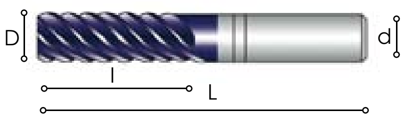
FRESE MULTITAGLIENTI PER SUPERFINITURA MULTIFLUTE SUPERFINISHING END MILLS MEHRSCHNEIDENFRÄSER ZUM UMFANGFRÄSEN ALS SCHLICHTARBEITSGANG FRAISES MULTIDENTS POUR SUPERFINITION FRESAS MULTI-LABIOS PARA SUPERACABADO

## CL 26HM

DIN 6528 — HSC — λ 45°

### LASER RING II®

CL26HM




| D e8 | L | l | d h6 | Z | CODE | Micrograin Carbide Co12 2260..... € SAPPHIRE |
|---|---|---|---|---|---|---|
| 6 | 57 | 13 | 6 | 6 | ....60009 | 38,52 |
| 8 | 63 | 19 | 8 | 6 | ....80009 | 54,10 |
| 10 | 72 | 22 | 10 | 6 | ....10009 | 79,73 |
| 12 | 83 | 26 | 12 | 6 | ....12009 | 110,47 |
| 14 | 83 | 26 | 14 | 6 | ....14009 | 134,69 |
| 16 | 92 | 32 | 16 | 6 | ....16009 | 185,10 |
| 18 | 92 | 32 | 18 | 6 | ....18009 | 250,11 |
| 20 | 104 | 38 | 20 | 8 | ....20009 | 303,64 |

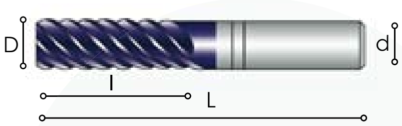
FRESE MULTITAGLIENTI PER SUPERFINITURA MULTIFLUTE SUPERFINISHING END MILLS MEHRSCHNEIDENFRÄSER ZUM UMFANGFRÄSEN ALS SCHLICHTARBEITSGANG FRAISES MULTIDENTS POUR SUPERFINITION FRESAS MULTI-LABIOS PARA SUPERACABADO

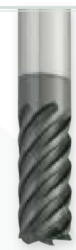
## CL 26SLHM

CARMON NORM. — HSC — λ 45°

### LASER RING II®

CL26SLHM



| D e8 | L | l | d h6 | Z | CODE | Micrograin Carbide Co12 2262..... € SAPPHIRE |
|---|---|---|---|---|---|---|
| 6 | 80 | 26 | 6 | 6 | ....60009 | 46,74 |
| 8 | 85 | 36 | 8 | 6 | ....80009 | 68,26 |
| 10 | 95 | 44 | 10 | 6 | ....10009 | 101,97 |
| 12 | 105 | 52 | 12 | 6 | ....12009 | 140,21 |
| 14 | 105 | 52 | 14 | 6 | ....14009 | 176,46 |
| 16 | 130 | 64 | 16 | 6 | ....16009 | 250,25 |
| 18 | 130 | 64 | 18 | 6 | ....18009 | 340,18 |
| 20 | 150 | 76 | 20 | 8 | ....20009 | 427,99 |

FRESE TORICHE A QUATTRO TAGLIENTI FOUR FLUTE CUTTERS WITH CORNER RADIUS
VIERSCHNEIDENFRÄSER MIT ECKENRADIUS FRAISES TORIQUES QUATRE DENTS FRESAS TORICAS DE CUATRO LABIOS

## CL 27CrHM

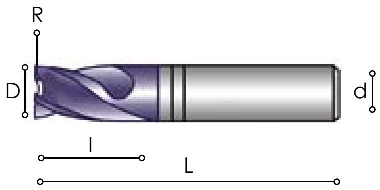
CARMON NORM.

HSC

λ 30°

### LASER RING II®

CL27CrHM




| D e8 | R | L | l | l1 | d1 | d h6 | Z | CODE | Micrograin Carbide Co12 2270..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 0,3 | 50 | 4 | | | 3 | 4 | ....30019 | 34,27 |
| 4 | 0,3 | 50 | 5 | | | 4 | 4 | ....40019 | 37,81 |
| 5 | 0,3 | 50 | 6 | | | 5 | 4 | ....50019 | 42,06 |
| 6 | 0,8 | 57 | 7 | | | 6 | 4 | ....60019 | 47,59 |
| 8 | 0,8 | 63 | 9 | | | 8 | 4 | ....80019 | 64,16 |
| 10 | 1 | 72 | 11 | | | 10 | 4 | ....10019 | 99,00 |
| 12 | 1 | 83 | 12 | 25 | 11 | 12 | 4 | ....12019 | 131,14 |
| 16 | 1,5 | 92 | 16 | 30 | 15 | 16 | 4 | ....16019 | 235,38 |

FRESE TORICHE A QUATTRO TAGLIENTI FOUR FLUTE CUTTERS WITH CORNER RADIUS
VIERSCHNEIDENFRÄSER MIT ECKENRADIUS FRAISES TORIQUES QUATRE DENTS FRESAS TORICAS DE CUATRO LABIOS

## CL 27CrSLHM

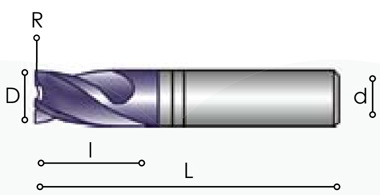
CARMON NORM.

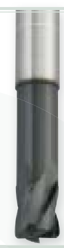
HSC

λ 30°

### LASER RING II®

CL27CrSLHM



| D e8 | R | L | l | l1 | d1 | d h6 | Z | CODE | Micrograin Carbide Co12 2272..... € SAPPHIRE |
|---|---|---|---|---|---|---|---|---|---|
| 3 | 0,3 | 80 | 4 | | | 6 | 4 | ....30019 | 54,10 |
| 4 | 0,3 | 80 | 5 | | | 6 | 4 | ....40019 | 58,07 |
| 5 | 0,3 | 80 | 6 | | | 6 | 4 | ....50019 | 62,32 |
| 6 | 0,8 | 80 | 7 | 18 | 5,5 | 6 | 4 | ....60019 | 60,90 |
| 8 | 0,8 | 80 | 9 | 21 | 7,5 | 8 | 4 | ....80019 | 75,77 |
| 10 | 1 | 100 | 11 | 35 | 9,3 | 10 | 4 | ....10019 | 121,09 |
| 12 | 1 | 110 | 12 | 35 | 11 | 12 | 4 | ....12019 | 146,72 |
| 16 | 1,5 | 120 | 16 | 40 | 15 | 16 | 4 | ....16019 | 250,39 |

Altri raggi a richiesta - We can manufacture on request

## CL 11HM

DIN 6527L | DIN 6528 | N | λ 30°

| N. PEZZI PIECES | Ø | CODE | Micrograin Carbide Co10 2119..... € SAPPHIRE |
|---|---|---|---|
| 5 | 6 - 8 - 10 12 - 16 | ....10008 | 342,11 |

## CL 16HM

DIN 6527L | DIN 6528 | N | λ 30°

| N. PEZZI PIECES | Ø | CODE | Micrograin Carbide Co10 2169..... € SAPPHIRE |
|---|---|---|---|
| 5 | 6 - 8 - 10 12 - 16 | ....20008 | 353,85 |

## CL 18HM

DIN 6527L | DIN 6528 | N | λ 30°

| N. PEZZI PIECES | Ø | CODE | Micrograin Carbide Co10 2189..... € SAPPHIRE |
|---|---|---|---|
| 5 | 6 - 8 - 10 12 - 16 | ....40008 | 429,67 |

## CL 21TFHM

DIN 6527L · DIN 6528 · N · λ 30°

| N. PEZZI PIECES | Ø | CODE | Micrograin Carbide Co10 2219..... € SAPPHIRE |
|---|---|---|---|
| 5 | 6 - 8 - 10 12 - 16 | ....40008 | 353,85 |

## CL 19HM

CARMON NORM. · HSC · λ 30°

| N. PEZZI PIECES | Ø | CODE | Micrograin Carbide Co12 2199..... € SAPPHIRE |
|---|---|---|---|
| 5 | 6 - 8 - 10 12 - 16 | ....50008 | 625,29 |

## CL 26HM

DIN 6528 · HSC · λ 45°

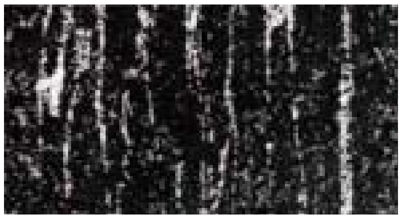
| N. PEZZI PIECES | Ø | CODE | Micrograin Carbide Co12 2269..... € SAPPHIRE |
|---|---|---|---|
| 5 | 6 - 8 - 10 12 - 16 | ....60008 | 470,93 |

## HSS-HSSCo

**L'acciaio rapido (HSS) è uno dei materiali più importanti nella produzione di utensili da taglio, poiché presenta buone caratteristiche di durezza, tenacità e resistenza all'usura, ed è quindi utilizzabile in una vasta gamma di applicazioni. Aggiungendo una % di cobalto nella sua composizione, si ha l'acciaio super-rapido (HSS-CO), che possiede una più elevata resistenza al calore senza peraltro compromettere la resistenza all'usura e la tenacità.**

*HSS steel is one of the most important materials used in the production of cutting tools because it offers good hardness features, high tensile strength and wear resistance and can be therefore used on a wide range of applications. By adding a Cobalt % in its composition you obtain High Speed Steel with higher heat resistance, thus not compromising wear resistance and tensile strength.*

| | UNI EN ISO 4957 (2002) | % | | | | | | | HRC |
|---|---|---|---|---|---|---|---|---|---|
| HSS | HS 6-5-2 | C=0,90 | Cr=4,20 | Mo=5 | W=6,50 | Co=0 | V=2 | | 62-64 |
| HSS+5%Co | HS 6-5-2-5 | C=0,93 | Cr=4,20 | Mo=5 | W=6,40 | Co=4,8 | V=1,80 | | 60-66,5 |
| HSS+8%Co | HS 2-9-1-8 | C=1,08 | Cr=3,90 | Mo=9,4 | W=1,40 | Co=8 | V=1,20 | | 64,5-67,5 |



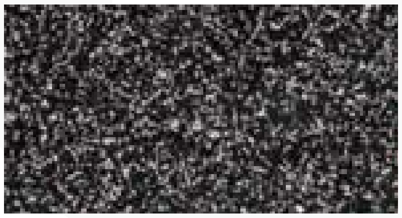
STRUTTURA HSS - *STRUCTURAL HSS*

## RESISTOR (ASP)

**La linea RESISTOR(ASP) della carmon è costruita con uno speciale acciaio ottenuto tramite un procedimento di metallurgia delle polveri il quale, rispetto alla metallurgia tradizionale, permette di ottenere una microstruttura più fine ed omogenea e quindi migliori proprietà meccaniche, in particolare elevata durezza e una migliore resistenza all'usura. Rispetto ad un acciaio rapido o super rapido, si aumentano i parametri di lavorazione, si ottiene una maggiore durata dell'utensile, e si possono lavorare acciai fino a 52 HRC.**

*Carmon line of products denominated RESISTOR is made out of a special powder metallurgically produced steel grade (ASP) which presents a finer and more homogeneous microstructure with better mechanical properties, particularly high hardness with better wear resistance. RESISTOR offers higher machining parameters and longer tool life over a conventional HSS or HSSCO, furthermore RESISTOR can machine materials up to 52 HRC.*

| | UNI EN ISO 4957 (2002) | % | | | | | | | HRC |
|---|---|---|---|---|---|---|---|---|---|
| HSS-E-PM RESISTOR | HS 10-2-5-8 | C=1,60% | Cr=4,80% | Mo=2% | W=10,50% | Co=8% | V=5% | | 65,5-67 |



STRUTTURA ASP - *STRUCTURAL ASP*

## METALLO DURO - *HARD METAL*

**Il metallo duro è essenzialmente costituito da particelle di carburo di tungsteno unite a cobalto, e si ottiene dalla metallurgia delle polveri. La micrograna si riferisce alla dimensione delle particelle di carburo.
Carmon ha introdotto nella propria gamma di utensili due qualità di metallo duro,con caratteristiche chimiche, fisiche e meccaniche diverse in funzione della lavorazione che l'utensile deve svolgere.**

**MGCo10 "extrafine" ha un grado di micro-grana con elevata durezza e buona resistenza all'usura, tale da permettere l'utilizzo dell'utensile in una gamma più ampia di materiali.**

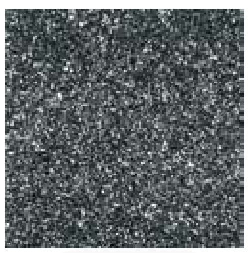
**MGCo12 "ultrafine" è caratterizzato da un'alta percentuale di carbonio e una grana ultrafine che permettono lavorazioni a velocità più elevate."**

*Hard Metal is composed by tungsten carbide particles with cobalt and is produced with a powder metallurgy process. Micro-grain refers to the size of carbide particles.
Carmon has introduced in its cutting tool range two grades of solid carbide with different chemical, physical and mechanical features in order to match the requirements of each application.*

*MGCo10 "extrafine" has a micro-grain size with high hardness and good wear resistance that allows machining of a wide range of materials.*

*MGCo12 "ultrafine" has a high carbide content and an ultrafine grain size and is specifically designed for high speed machining.*

| *Tipo/Type* | *Grandezza/Size* | *WC* | *Co* | *durezza/ Hardness HV30* | *Resistenza alla flessione/ Resistance to bending stress N/mm2* | *Densità/Density g/cm3* |
|---|---|---|---|---|---|---|
| *MicrograinCo10* | *Extrafine 0,8 micron* | *89,70%* | *10%* | *1580* | *3800* | *14,49* |
| *MicrograinCo12* | *Ultrafine <0,8 micron* | *87,70%* | *12%* | *1700* | *>3800* | *14,11* |



MICROGRAIN Co10

MICROGRAIN Co12

Tech Info

# RIVESTIMENTI A CATALOGO STANDARD - CARMON STANDARD COATINGS

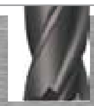
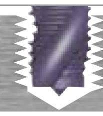
| Caratteristiche Tecniche *Technical Features* | Quartz | Pearl (NEW) | Opal | Sapphire Multi (NEW) | Sapphire | Titanite |
|---|---|---|---|---|---|---|
| **Composizione di base** ***Coating Material*** | TiN | TiCN/MoS2 | TiCN | Multilayer TiAlN | AlTiN | AlTiN/C |
| **Microdurezza (HV 0.05)** ***Microhardness (HV 0.05)*** | 2.300 | 3'500 | 3.500 | 3.500 | 3.700 | 3.700 |
| **Coefficente d'attrito contro 100 Cr 6** ***Friction Coefficient against 100 Cr 6*** | 0.6 | 0.5 | 0.5 | 0.4 | 0.5 | 0.1 |
| **Spessore (µm)** ***Thickness (µm)*** | 1 - 4 | 1 - 4 | 1 - 4 | 1 - 3 | 1 - 2 | 2 - 3 |
| **Temperatura di Deposizione (°C)** ***Deposition Temperature (°C)*** | 140 - 480 | 350-480 | 350 - 480 | 480 | 480 | 480 |
| **Resistenza all'Ossidazione (max. °C)** ***Oxidation Resistance (max. °C)*** | 600 | 400 | 400 | 700 | 800 | 800 |
| **Applicazioni** ***Applications*** | Acciai da costruzione >800 N/mm, acciai inox *Structural Steels >800 N/mm, Stainless Steels* | Acciaio inossidabile Stainless Steel | Tutti gli acciai da costruzione, acciai da cementazione, acciai da bonifica<1200 N/mm,Alluminio e sue leghe,leghe di titanio,materie plastiche. *Structural Steel, casehardening steel, Tempered Steel <1200 N/mm, Aluminium and its alloys, Plastics.* | Per ogni tipo di materiale Any type of material | Per ogni tipo di materiale Any type of material | Per ogni tipo di materiale Any type of material |
| **Colore** ***Colour*** | | | | | | |

# A RICHIESTA - CARMON COATINGS OFFERED ON REQUEST

| Caratteristiche *Technical Features* | Sapphire Multi sleek (NEW) | Sapphire sleek (NEW) | Diamond (NEW) |
|---|---|---|---|
| **Composizione di base** *Coating Material* | Multilayer TiAlN | AlTiN | Carbonio |
| **Microdurezza (HV 0.05)** *Microhardness (HV 0.05)* | 3'500 | 3'700 | 10'000 |
| **Coefficente d'attrito contro 100 Cr 6** ***Friction Coefficient against 100 Cr 6*** | 0.1 | 0.1 | 0.6 |
| **Spessore (µm)** ***Thickness (µm)*** | 1 - 3 | 1 - 2 | 4 - 10 |
| **Temperatura di Deposizione (°C)** ***Deposition Temperature (°C)*** | 480 | 480 | |
| **Resistenza all'Ossidazione** ***Oxidation Resistance (°C)*** | 700 | 800 | 1000 |
| **Applicazioni** ***Applications*** | Per ogni tipo di materiale *Any type of material* | Per ogni tipo di materiale *Any type of material* | Grafite *Graphite* |
| **Colore** ***Colour*** | | | |

Sleek è una nuova lavorazione che avviene nel post rivestimento e serve a ridurre il coefficiente d'attrito superficiale dell'utensile.
Questo migliora notevolmente la lavorazione di materiali con scarsa evacuazione del truciolo(rame,ottone,bronzo,alluminio e sue leghe). Viene applicata principalmente ai nostri rivestimenti SAPPHIRE MULTI e SAPPHIRE.

*"SLEEK" is a new surface treatment which is applied after coating in order to reduce friction coefficient on the cutting tool surface. This treatment improves machining process on those materials which present difficult chip flow (copper, brass, bronze, aluminum and its alloys). "Sleek" is applied mainly on the coatings "Sapphire Multi" and" Sapphire".*

| LAVORAZIONI<br>*APPLICATION* |  | |  | |  |
|---|---|---|---|---|---|
| Materiali da lavorare:<br>*Materials to be machined:* | HSS-Co/RESISTOR | HM | HSS-Co | HM | HSS-Co/RESISTOR |
| Acciai non legati<br>*Unalloyed steels* | Sapphire Multi | Sapphire | Quartz | Sapphire | Quartz |
| Acciai legati:<br>*Alloyed Steels:* | Sapphire Multi | Sapphire | Quartz | Sapphire | Opal |
| Acciai < 50 HRC<br>*Steel < 50 HRC* | Sapphire Multi<br>Sapphire Multi sleek | Sapphire | Titanite | Sapphire | Pearl |
| Acciai > 50 HRC<br>*Steel > 50 HRC* | | Sapphire<br>Sapphire sleek | | Sapphire | |
| Acciai Inossidabili<br>*Stainless Steel* | Pearl | Sapphire<br>Sapphire sleek | Titanite | Sapphire | Pearl |
| Ghisa<br>*Cast Iron* | Sapphire Multi<br>Sapphire Multi sleek | Sapphire<br>Sapphire sleek | | Sapphire sleek | Titanite |
| Leghe di Titanio<br>*Titanium, alloyed* | Sapphire Multi | Sapphire | Titanite | Sapphire sleek | Titanite |
| Rame<br>*Copper* | Sapphire Multi sleek | Sapphire sleek | Titanite | Sapphire sleek | Pearl |
| Ottone / Bronzo / Alpacca<br>*Brass / Bronze / Nickel Silver* | Sapphire Multi sleek | Sapphire sleek | Titanite | Sapphire sleek | Pearl |
| Plastiche<br>*Plastics* | Sapphire Multi sleek | Sapphire sleek | Titanite | Sapphire sleek | Titanite |
| Alluminio con Si < 10%<br>*Aluminium with Si < 10%* | Sapphire Multi sleek | Sapphire sleek | Titanite | Sapphire sleek | Titanite |
| Alluminio con Si > 10%<br>*Aluminium with Si > 10%* | Sapphire Multi sleek | Sapphire<br>Diamond | Titanite | Sapphire<br>Diamond | Titanite |
| Alluminio e Magnesio<br>*Aluminium and Magnesium* | Sapphire Multi sleek | Sapphire | Titanite | Sapphire sleek | Titanite |
| Grafite<br>*Graphite* | | Sapphire Multi<br>Diamond | | Sapphire<br>Diamond | Titanite |
| Materiali Compositi<br>*Composites* | | Sapphire sleek<br>Diamond | | Sapphire<br>Diamond | Titanite |

## CLASSIFICAZIONE DEI MATERIALI
## *GROUPS OF MATERIALS*

## ESEMPI DI MATERIALI
## *MATERIAL EXAMPLE*

### 1

| Classificazione | Groups of materials | W. – Nr. | DIN | EN | B.S. | AISI/SAE | SS |
|---|---|---|---|---|---|---|---|
| -Acciai sino a 500 N/mm2 | - Steels up to 500 N/mm2 | 1.0037 | ST 37-2 | EN 10025 | FE 360 B | M 1010 | 1311 |
| - Acciai da costruzione | - Construction steels | 1.0044 | ST 44-2 | EN 10025 | FE 430 B FN | M 1015 | 1412 |
| - Acciai alta velocità | - Steels for automatic lathes | 1.0711 | 9 S 20 | 1651 | 220 M 07 | | |
| | | 1.0715 | 9 SMn 28 | 1651 | 230 M 07 | 1213 | 1912 |
| | | 1.0718 | 9 MnPb 28 | 1651 | | 12 L 13 | 1914 |

### 2

| Classificazione | Groups of materials | W. – Nr. | DIN | EN | B.S. | AISI/SAE | SS |
|---|---|---|---|---|---|---|---|
| - Acciai sopra 500 - 800 N/mm2 | - Steels more than 500 - 800 N/mm2 | | | | | | |
| - Acciai da costruzione | - Construction steels | 1.0060 | St 60-2 | EN 10025 | 4360-55E; 55C | A572 GR.65 | 1650 |
| - Acciai alta velocità | - Steels for automatic lathes | 1.0503 | C 45 | EN 10083-2 | 080 M 46 | 1045 | 1672 |
| - Acciai da cementazione | - Case hardening steels | 1.0570 | St 52-3 | EN 10025 | 4360-50 D | | 2134 |
| - Acciai da bonifica | - Tempering steels | 1.0727 | 45 S 20 | 1651 | | 1146 | |
| - Acciai da utensili nonlegati | - Non-alloyed tools steels | 1.1141 | Ck 15 | 1652T.3 | 080 M15 | 1015 | 1370 |
| - Titanio non legato | - Non-alloyed titanium | 1.1191 | Ck 45 | | 080 M 46 | 1045 | 1672 |
| - Ghisa grigia < 180 HB | - Cast iron < 180 HB | | | | | | |

### 3

| Classificazione | Groups of materials | W. – Nr. | DIN | EN | B.S. | AISI/SAE | SS |
|---|---|---|---|---|---|---|---|
| | | 0.6020 | GG 20 | | GRADE 220 | A48-30B | 0120-00 |
| | | 0.7040 | GGG 40 | | 420/12 | 60-40-18 | 0717-02 |
| | | 0.8035 | GTW-35 | | | | |
| -Acciai sopra | - Steels more than | 0.8135 | GTS-35 | | B 340/12 | 32510 | |
| 800 -1000 N/mm2 | 800 - 1000 N/mm2 | 1.1167 | 36 Mn 5 | 17204 | 150 M 36 | 1335 | 2120 |
| - Acciai da cementazione | - Case hardening steels | 1.1221 | Ck 60 | EN 10083-1 | 060 A 62 | 1060 | 1665 |
| - Acciai da bonifica | - Tempering steels | 1.2312 | 40 CrMnMoS 8 6 | 17350 | | | |
| - Acciai da nitrurazione | - Nitriding steels | 1.5732 | 14 NiCr 10 | | | | 3415 |
| - Acciai da costruzione | - Heat resistant | 1.5775 | 31 NiCr 14 | | 653 M 31 | | |
| resistenti al calore | construction steels | 1.7131 | 16 MnCr 5 | | 572 M 17 | 5115 | 2173 |
| - Ghisa grigia > 180 HB | - Cast iron > 180 HB | 1.7225 | 42 CrMo 4 | EN 10083-1 | 708 M 40 | 4140 | 2244 |
| | | 1.8504 | 34 CrAl 6 | | | | |
| | | 1.8507 | 34 CrAlMo 5 | 17211 | | A355 Cl.D | |
| | | 1.8509 | 41 CrAlMo 7 | | 905 M 39 | A355 Cl.A | 2940 |
| | | 1.8515 | 31 CrMo 12 | 17211 | 722 M 24 | | 2240 |

### 4

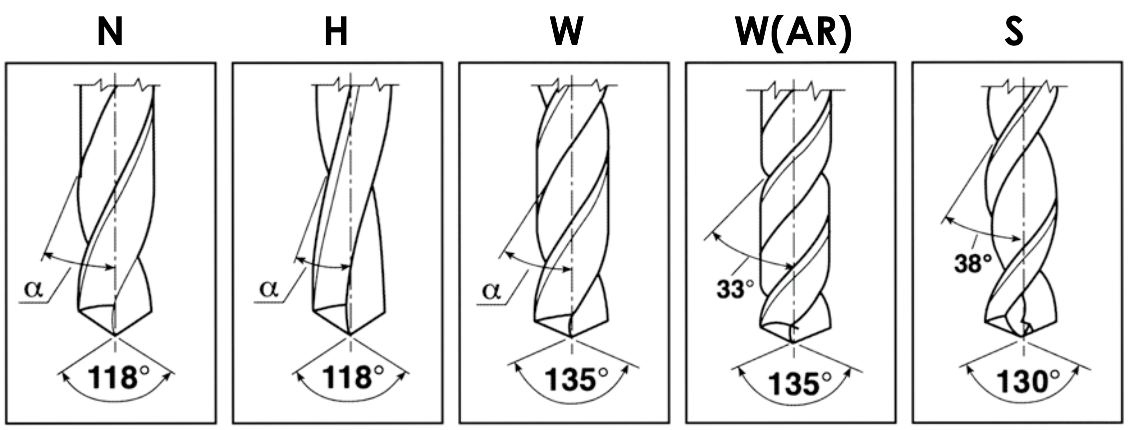
| Classificazione | Groups of materials | W. – Nr. | DIN | EN | B.S. | AISI/SAE | SS |
|---|---|---|---|---|---|---|---|
| | | 0.6030 | GG 30 | | GRADE 300 | A48-45B | 0130-00 |
| | | 0.7050 | GGG 50 | | 500/7 | 65-45-12 | 0727-02 |
| | | 0.7060 | GGG 60 | | 600/3 | 80-55-06 | 0732-03 |
| | | 0.8065 | GTW-65 | | | | |
| | | 0.8170 | GTS-70 | | P 690 | | |
| | | 1.2067 | 102 Cr 6 | 17350 | BL 3 | L 3 | |
| | | 1.2311 | 40 CrMnMo 7 | | | | |
| - Acciai sopra | - Steels more than | 1.2312 | 40 CrMnMoS 8 6 | 17350 | | | |
| 1000 - 1300 N/mm2 | 1000 - 1300 N/mm2 | 1.2343 | X 38 CrMoV 5-1 | 17350 | BH 11 | H 11 | |
| - Acciai da cementazione | - Case hardening steels | 1.2344 | X40CrMoV 5-1 | 17350 | BH13 | H13 | HARDOX600 |
| - Acciai da bonifica | - Tempering steels | 1.2510 | 100 MnCrW 4 | | BO 1 | O 1 | HARDOX400 500 |
| - Acciai da nitrurazione | - Nitriding steels | 1.2710 | 45 NiCr 6 | | | | |
| - Acciai da utensili per | - Hot working steels | 1.2711 | 54 NiCrMo V 6 | | | | |
| lavorazioni a caldo | - Ferritic Stainless steel | 1.2714 | 56 NiCrMoV 7 | 17350 | | | |
| - Acciai inossidabili | - Titanium alloys | 1.2833 | 100 V 1 | | BW 2 | W 210 | |
| ferrittici | | 1.2842 | 90 MnCrV 8 | 17350 | BO 2 | O 2 | |
| - Leghe di titanio | | 1.3565 | 48 CrMo 4 | 17230 | 817 M40 | | |
| | | 1.4002 | X 6 CrAl 13 | E EN 10088 | 405 S 17 | 405 | 2302 |
| | | 1.4006 | X 10 Cr 13 | E EN 10088 | 410 S21 | 410 | |
| | | 1.4028 | X 30 Cr 13 | E EN 10088 | 420 S 45 | 420F | 2304 |
| | | 1.6587 | 17 CrNiMo 6 | 1672 T.3 | 820 A 16 | | |
| | | 1.8519 | 31 CrMoV 9 | 17211 | | | |
| | | 1.8550 | 34 CrAlNi 7 | 17211 | | | |
| | | 1.8550 | 34 CrAlNi 7 | 172111.4301 | X 5 CrNi 18 10 | E EN 10088 | 304 S 15 |

## CLASSIFICAZIONE DEI MATERIALI
## *GROUPS OF MATERIALS*

## ESEMPI DI MATERIALI
## *MATERIAL EXAMPLE*

| Gruppo | Classificazione dei materiali | Groups of materials | W. – Nr. | DIN | EN | B.S. | AISI/SAE | SS |
|---|---|---|---|---|---|---|---|---|
| 5 | - Acciai da utensili per lavorazioni a freddo 12% Cr<br>- Acciai resistenti al calore = 17% Ni e 17% Cr<br>- Acciai inossidabili austenitici<br>- Leghe di titanio indurite<br>- Leghe a base di nichel non indurenti | - Tool steels for cold machining 12% Cr<br>- High temperature steels = 17% Ni and 17% Cr<br>- Austenitic stainless steel<br>- Titanium alloys hardened<br>- Nickel-based alloys | 1.2080 | X 210 Cr 12 | 17350 | BD 3 | D 3 | |
| | | | 1.2379 | X 155 CrVMo 12-1 | 17350 | BD 2 | D 2 | 2310 |
| | | | 1.2436 | X 210 CrW 12 | 17350 | | | 2312 |
| | | | 1.2601 | X 165 CrMoV 12 | 17350 | | | |
| | | | 1.4301 | X 5 CrNi 18 10 | E EN 10088 | 304 S 15 | 304 | 2332 |
| | | | 1.4305 | X 12 CrNi S 18 9 | E EN 10088 | 303 S 22 | 303 | 2346 |
| | | | 1.4571 | X 6CrNiMoTi 17-12-2 | E EN 10088 | 320 S 18 | 316 Ti | 2350 |
| | | | 1.4876 | Incoloy 800 | SEW 470 | NA 15 | B 163 | |
| | | | 1.4923 | X 22 CrMoV 12-1 | 17240 | | | |
| | | | 1.4945 | X 6 CrNiWNb 16 16 | | | | |
| | | | 1.4962 | X 12 CrNiWTi 16-13 | | | | |
| | | | 1.5920 | 18 CrNi 8 | | | | |
| | | | 1.6582 | 34 CrNiMo 6 | EN 10083-1 | | | |
| | | | 2.4632 | Nimonic 90 | LW | | | |
| | | | 2.4654 | Waspalloy | LW | | | |
| | | | 2.4665 | Hastelloy X | LW | | | |
| | | | 2.4670 | Inconel 713 | LW | | | |
| | | | 2.4816 | Inconel 600 | 17742 | | | |
| | | | 2.4856 | Inconel 625 | 17744 | | | |
| 6 | - Leghe resistenti al calore<br>- Leghe a base di nichel indurenti | - Higt temperature alloys<br>- Nickel-based alloys | 2.4636 | Udimet 700 | | | | |
| | | | 2.4668 | Inconel 718 | | | | |
| | | | 2.4973 | René 41 | | | | |
| | | | Astroloy | | | | | |
| | | | René 95 | | | | | |
| | | | Stellite 6 | | | | | |
| 7 | - Alluminio puro<br>- Leghe d'alluminio non bonificato<br>- Materiali malleabili | - Pure aluminium<br>- Non-hardened aluminium<br>- Forging materials | 3.0255 | Al 99,5 | | | | |
| | | | 3.2315 | AlMgSi 1 | | | | |
| | | | 3.3211 | AlMg 1 SiCu | | | | |
| | | | 3.3535 | AlMg 3 | | | | |
| | | | 3.4365 | AlZnMgCu 1,5 | | | | |
| 8 | - Leghe d'alluminio bonificato<br>- Materiali malleabili<br>- Getti in lega leggera Si ≤ 10% | - Hardened aluminium<br>- Forging materials<br>- Aluminium cast material Si ≤ 10% | 3.2151 | G-Al Si6 Cu 4 | | | | |
| | | | 3.2341 | G-AlSi 5 Mg | | | | |
| | | | 3.2373 | G-AlSi 9 Mg | | | | |
| 9 | - Getti in lega leggera Si > 10%<br>- Leghe rame - zinco (ottone)<br>- Leghe rame - stagno (bronzo)<br>- Duroplastica laminata | - Aluminium cast material Si > 10%<br>- Copper - zinc alloys (brass)<br>- Copper - zinc alloys (bronze)<br>- Duroplast laminated | 3.2381 | G-AlSi 10 Mg | | | | |
| | | | 3.2581 | G-AlSi 12 | | | | |
| | | | AlSi 17 Cu 4 | | | | | |
| | | | Al Si 21 CuNiMg | | | | | |
| | | | AlSi 25 CuNiMg | | | | | |

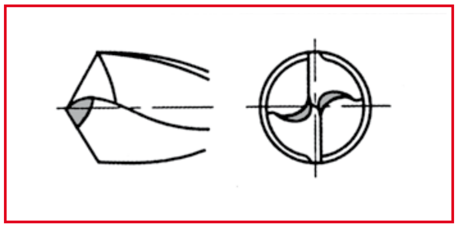
## TIPO DI ESECUZIONE DELLE PUNTE ELICOIDALI - *TWIST DRILLS EXECUTIONS*




$\alpha$ = Inclinazione dell'elica /*Helix angle*

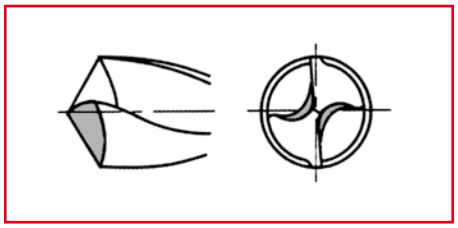
| Gruppi di diametri - ***Diameter groups*** | Esecuzione - ***Execution*** α | | |
|---|---|---|---|
| mm | N | H | W |
| 0 ÷ 0,6 | 18°÷20° | - | - |
| 0,6 ÷ 1 | 20°÷26° | - | - |
| 1 ÷ 3,2 | 22°÷28° | 12°÷15° | 30°÷38° |
| 3,2 ÷ 5 | 24°÷30° | 14°÷15° | 30°÷40° |
| 5 ÷ 10 | 25°÷32° | 16°÷18° | 35°÷42° |
| 10 ÷ > | 26°÷34° | 18°÷20° | 35°÷42° |

## AFFILATURE SPECIALI - *SPECIAL SHARPENING*



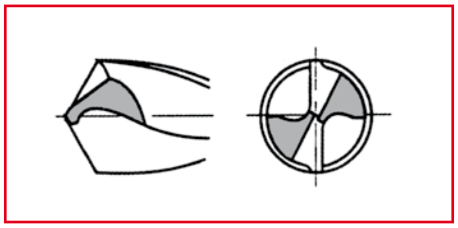
**DIN 1412 forma A**
Assottigliamento del nucleo; riduce lo spessore del nucleo e quindi la pressione di penetrazione, migliorando le condizioni di taglio. Viene utilizzata per punte riaffilate e per punte lunghe.

***DIN 1412 shape A***
*Web thinning; reduces web thickness and therefore feed pressure thereby improving cutting conditions.*
*Used for re-sharpened and long bits.*



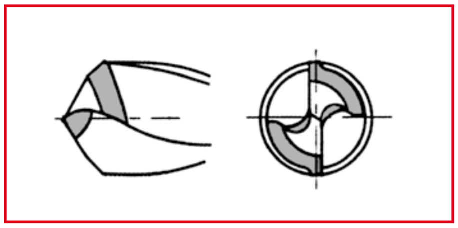
**DIN 1412 forme B**
Assottigliamento del nucleo con correzione del tagliente; riduce lo spessore del nucleo permettendo la correzione del tagliente.

***DIN1412 forma B***
*Web thinning with cutting edge correction; reduces web thickness to enable cutting edge correction.*



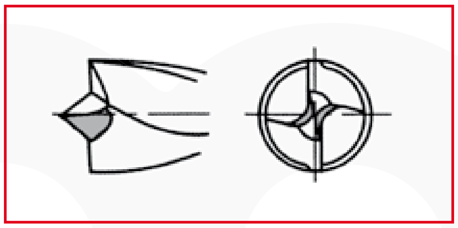
**DIN1412 forma C**
Affilatura a croce o affilatura a diamante; utilizzata su punte per fori profondi. La forma dell'angolo in punta favorisce l'asportazione del truciolo e riduce la pressione di penetrazione.

***DIN1412 shape C***
*Split point or diamond type sharpening; used on bits for deep drilling. The point angle geometry facilitates chip removal and feed pressure.*



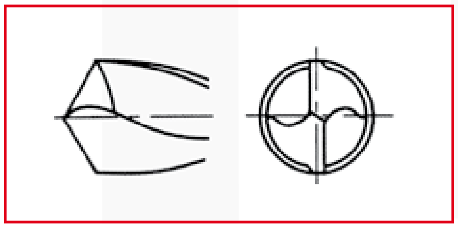
**DIN1412 forma D**
Affilatura per ghisa grigia; la smussatura degli spigoli esterni consente di irrobustire il tagliente. Viene usata per ghisa di durezza media o elevata e per materiali abrasivi.

***DIN1412 shape D***
*Gray cast iron sharpening; bevelling of external edges strengthens the cutting edge. Used for medium to high gray cast iron hardness and for abrasives*



**DIN1412 forma E**
Affilatura per punta a centrare; consente una buona centratura, non lascia bava nei fori passanti. Poiché la punta e i lati taglienti sono delicati, conviene utilizzarla per forature di lamiere sottili.

***DIN1412 shape E***
*Centre drill bit sharpening; ensures optimal centre drilling and does not leave burs in through-holes. As the bit and cutting edges are delicate, this bit should be used for drilling thin sheet metal.*



**AFFILATURA STANDARD**

***STANDARD SHARPENING***

## ANELLI COLORATI PER MASCHI A MACCHINA - *COLOURED RINGS FOR MACHINE TAPS*

I maschi con anello rosso sono costruiti per la maschiatura di acciai tenaci, leghe di Titanio, Nichel.
Si consiglia l'utilizzo di refrigerante; olio da taglio integrale o emulsione al 4% – 5%

*Main Application: Tough Steels (1200-1400 N/mm2), Titanium and Nickel Alloys.*
*Coolant: full cutting oil or emulsion at 4 – 5%*

I maschi con anello blu, sono costruiti per la maschiatura di acciai inox, acciai pastosi (teneri) fino a 750 N/mm2.
Come refrigerante si consiglia l'uso di olio da taglio integrale.

Main Application: Stainless steels and soft steels up to 750 N/mm2.
Coolant: full cutting oil.

I maschi con anello verde sono costruiti per la maschiatura di leghe e derivati alluminio, rame, ottone, bronzo.
Refrigerante olio da taglio integrale, emulsione al 6% – 8%

Main application: Aluminium and its alloys, copper, brass, bronze.
Coolant: full cutting oil or emulsion at 6 – 8%

I maschi con anello bianco sono costruiti per la maschiatura di ghisa grigia, sferoidale (GG-GGG), materiali abrasivi a truciolo corto.

Main application: Cast Iron, Spheroidal Cast Iron (GG-GGG), abrasives materials with short chips.

I maschi con anello giallo sono costruiti per la maschiatura di  acciai con resistenza medio/bassa. Possono essere impiegati per acciai da costruzione, acciai legati-bonificati, rame, leghe di rame e ottone.
Si consiglia l'utilizzo di refrigerante; olio da taglio integrale o emulsione al 4% – 5%.

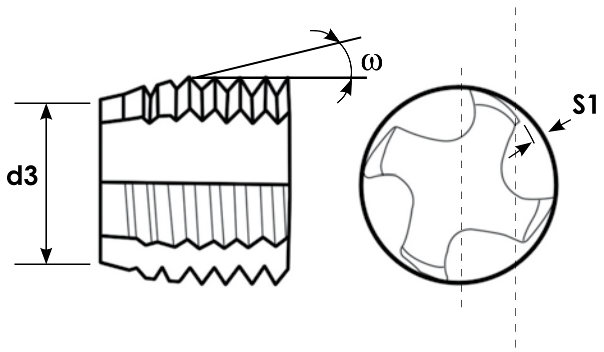
Main application: low resistance steel. These taps can be used on construction steel, tempered and alloyed steel, copper, copper alloys and brass..
Coolant:   we suggest the use of full oil or 4%-5% emulsion.

M512 – M508   RESISTOR (ASP2052)

Maschi M512 / 508 Resistor di nuova produzione, sono costruiti per la maschiatura di acciai tenaci si consiglia l'utilizzo in maschiatura rigida con refrigerante olio da taglio integrale o emulsione allo 4% – 5%

New products M512 / M508 RESISTOR (powdermetallurgy)
Main application: Tough Steels.
We suggest the use in rigid working conditions
Coolant: full cutting oil or emulsion at 4 – 5%

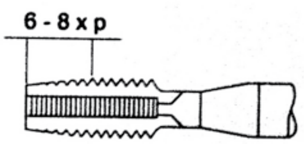
## IMBOCCO / *CHAMFER*



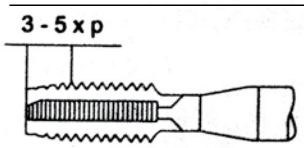

**d3)** **diametro imbocco**
**chamfer diameter**

**ω** **Angolo d'imbocco**
**Chamfer angle**

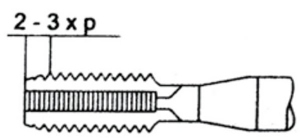
**S1)** **Spoglia radiale sull'imbocco**
**Chamfer radial relief**



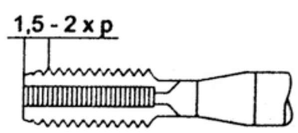

**form A**
**ω = 5°**



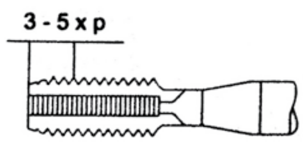

**form B**
**ω = 8°**




**form c**
**ω = 15°**




**form E**
**ω = 23°**




**form D**
**ω = 8°**

# TOLLERANZE - *TOLERANCES* ( µm = 0,001 mm )

| D | H7 | H8 | H11 | d9 | d11 | e8 | f8 | h6 | h8 | h10 | h11 | h12 | js14 | js16 | k11 | k16 | m7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1÷3 | 0 | 0 | 0 | -20 | -20 | -14 | -7 | 0 | 0 | 0 | 0 | 0 | + 125 | + 300 | + 60 | + 600 | +12 |
| | + 9 | +14 | +60 | -45 | -80 | -28 | -21 | -7 | -14 | -40 | -60 | -100 | -125 | -300 | 0 | 0 | +1 |
| 3÷6 | 0 | 0 | 0 | -30 | -30 | -20 | -10 | 0 | 0 | 0 | 0 | 0 | +150 | +375 | +75 | +750 | +16 |
| | +12 | +18 | +75 | -60 | -105 | -38 | -28 | -8 | -18 | -48 | -75 | -120 | -150 | -375 | 0 | 0 | +4 |
| 6÷10 | 0 | 0 | 0 | -40 | -40 | -25 | -13 | 0 | 0 | 0 | 0 | 0 | +180 | +450 | +90 | +900 | +21 |
| | +15 | +22 | +90 | -76 | -130 | -47 | -35 | -9 | -22 | -58 | -90 | -150 | -180 | -450 | 0 | 0 | +6 |
| 10÷18 | 0 | 0 | 0 | -50 | -50 | -32 | -16 | 0 | 0 | 0 | 0 | 0 | +215 | +550 | +110 | +1100 | +25 |
| | +18 | +27 | +110 | -93 | -160 | -59 | -43 | -11 | -27 | -70 | -110 | -180 | -215 | -550 | 0 | 0 | +7 |
| 18÷30 | 0 | 0 | 0 | -65 | -65 | -40 | -20 | 0 | 0 | 0 | 0 | 0 | +260 | +650 | +130 | +1300 | +29 |
| | +21 | +33 | +130 | -117 | -195 | -73 | -53 | -13 | -33 | -84 | -130 | -210 | -260 | -650 | 0 | 0 | +8 |
| 30÷50 | 0 | 0 | 0 | -80 | -80 | -50 | -25 | 0 | 0 | 0 | 0 | 0 | +310 | +800 | +160 | +1600 | +34 |
| | +25 | +39 | +160 | -142 | -240 | -89 | -64 | -16 | -39 | -100 | -160 | -250 | -310 | -800 | 0 | 0 | +9 |
| 50÷65 | 0 | 0 | 0 | -100 | -100 | -60 | -30 | 0 | 0 | 0 | 0 | 0 | +370 | +950 | +190 | +1900 | +41 |
| | +30 | +46 | +190 | -174 | -290 | -106 | -76 | -19 | -46 | -120 | -190 | -300 | -370 | -950 | 0 | 0 | +11 |
| 65÷80 | 0 | 0 | 0 | -100 | -100 | -60 | -30 | 0 | 0 | 0 | 0 | | +370 | +950 | +190 | +1900 | +41 |
| | +30 | +46 | +190 | -174 | -290 | -106 | -76 | -19 | -46 | -120 | -190 | | -370 | -950 | 0 | 0 | +11 |
| 80÷100 | 0 | 0 | 0 | -120 | -120 | -72 | -36 | 0 | 0 | 0 | 0 | | +435 | +1100 | +220 | +2200 | +48 |
| | +35 | +54 | +220 | -207 | -340 | -126 | -90 | -22 | -54 | -140 | -220 | | -435 | -1100 | 0 | 0 | +13 |
| 100÷120 | 0 | 0 | 0 | -120 | -120 | -72 | -36 | 0 | 0 | 0 | 0 | | +435 | +1100 | +220 | +2200 | +48 |
| | +35 | +54 | +220 | -207 | -340 | -126 | -90 | -22 | -54 | -140 | -220 | | -435 | -1100 | 0 | 0 | +13 |
| 120÷140 | 0 | 0 | 0 | -145 | -145 | -85 | -43 | 0 | 0 | 0 | 0 | | +500 | +1250 | +250 | +2500 | +55 |
| | +40 | +63 | +250 | -245 | -395 | -148 | -106 | -25 | -63 | -160 | -250 | | -500 | -1250 | 0 | 0 | +15 |
| 140÷160 | 0 | 0 | 0 | -145 | -145 | -85 | -43 | 0 | 0 | 0 | 0 | | +500 | +1250 | +250 | +2500 | +55 |
| | +40 | +63 | +250 | -245 | -395 | -148 | -106 | -25 | -63 | -160 | -250 | | -500 | -1250 | 0 | 0 | +15 |
| 160÷180 | 0 | 0 | 0 | -145 | -145 | -85 | -43 | 0 | 0 | 0 | 0 | | +500 | +1250 | +250 | +2500 | +55 |
| | +40 | +63 | +250 | -245 | -395 | -48 | -106 | -25 | -63 | -160 | -250 | | -500 | -1250 | 0 | 0 | +15 |
| 180÷200 | 0 | 0 | 0 | -170 | -170 | -100 | -52 | 0 | 0 | 0 | 0 | | +575 | +1450 | +290 | +2900 | +63 |
| | +46 | +72 | +290 | -285 | -460 | -172 | -122 | -29 | -72 | -185 | -290 | | -575 | -1450 | 0 | 0 | +17 |

# INDICE ANALITICO - *ANALYTICAL INDEX*

## PUNTE - *DRILLS*



## ALESATORI - *REAMERS*



## MASCHI - *TAPS*

## FRESE - *END MILLS*



## FRESE HM - *END MILLS H*

## CONDIZIONI GENERALI DI VENDITA

I prezzi del presente listino si intendono alle condizioni di sconto vigenti al momento della spedizione. Eventuali variazioni di sconto saranno comunicate preventivamente.
La spedizione della merce si intende, salvo condizioni precedentemente pattuite, franco ns. stabilimento o deposito. La merce viaggia sempre, in ogni caso, ad esclusivo rischio del committente. Non si accettano reclami se non pervenuti entro sette giorni dal ricevimento della merce.
La consegna del materiale è generalmente pronta a magazzino, salvo casi particolari.
In questi casi i tempi di consegna sono indicativi e comunque non impegnativi.
Tutte le ordinazioni, anche se verbali, si intendono sempre date ed eseguite alle condizioni sopra esposte.
Ogni eventuale clausola contenuta nel Vs. ordine, in contrario con quanto sopra, si intende priva di valore.
A richiesta si producono utensili con forme e dimensioni speciali; in questo caso sarà ns. cura comunicarVi i prezzi unitamente ai quantitativi minimi e ai tempi di consegna.
Nessun ritardo può costituire causa di annullamento dell'ordine o di rivalsa qualsiasi.
Non rispondiamo perciò di nessun danno dipendente da un ns. ritardo e la merce non può essere rifiutata per nessun motivo.
Il compratore è tenuto al pagamento integrale anche in casi di contestazione o controversia.
I pagamenti dovranno avvenire nei termini e negli accordi previsti; in caso di ritardato pagamento ci riserviamo di addebitarVi una penale pari al tasso bancario vigente in quel momento .
Gli utensili potranno essere sostituiti, previa autorizzazione della Direzione Commerciale.
La garanzia decade nel momento in cui gli utensili presentino una normale usura, un errato impiego oppure segni di manomissione.
Risponderemo comunque solamente della qualità e della tolleranza dei pezzi da noi prodotti e non del lavoro che da essi verrà eseguito.
Si esclude quindi ogni indennizzo a ns. carico all'infuori della sostituzione degli utensili riconosciuti difettosi.
Per ogni controversia che dovesse sorgere sarà competente il Foro di Brescia.
Tutti i dati sono stati redatti e controllati con la massima cura.
Non ci assumiamo comunque nessuna responsabilità per eventuali errori od omissioni.
La CARMON può a suo insindacabile giudizio cambiare in qualsiasi momento le caratteristiche ed i prezzi dei prodotti venduti.

## GENERAL SALES CONDITIONS

The prices in the present list are applicable with discount conditions valid at the time of delivery.
Customers will be notified of any price variations in advance.
Goods delivery is ex our works/warehouse unless otherwise agreed. In any event goods transport remains the completely responsibility of the purchaser.
Claims will only be accepted if delivered within seven days of receipt of the said goods. Goods are generally ready for delivery from the warehouse, with the exception of special cases. In special cases delivery times are to be considered guideline only and not binding.
All orders, even if verbal, are considered issued and processed on the conditions specified above. Clauses in the customer's order that contradict the above, will be considered null and void.
Special tools with specific shapes and dimensions can be manufactured on request; in this case we will notify the customer of prices, minimum order quantities, and delivery times.
No delay constitutes cause for cancellation of the order or other recourse.
Therefore we shall not be held liable for damage caused by any delays and goods may not be refused under any circumstances.
The purchaser is obliged to fulfil total payment, also in the event of dispute or controversy.
Payments must be made within the agreed terms and methods; in the event of delayed payment, we reserve the right to make an extra charge equal to the current applicable bank rate.
Tools may be replaced with prior authorisation from the Sales Management.
The guarantee does not apply in the event of normal tool wear, incorrect use or evidence of tampering.
We shall be responsible exclusively for quality and tolerance of the tools we produce and not for the relative application.
Therefore all damages are excluded with the exception of piece replacement when acknowledged as defective.
The present conditions are subject to the exclusive jurisdiction of the Court of Brescia.
All the present information has been drawn up and checked thoroughly.
However we shall not be held liable for any errors or omissions.
CARMON reserves the right to modify prices and products at any time without notice.

## ALLGEMEINE VERKAUFSBEDINGUNGEN

Die in dieser Preisliste enthaltenen Preise verstehen sich zu den im Moment des Versandes gültigen Rabattbedingungen. Eventuelle Änderungen des Rabattes werden voran bekanntgegeben.
Der Versand der Ware erfolgt, sofern nicht anders vereinbart, ab unserem Werk oder Lager. Die Ware ist stets und in jedem Fall auf die ausschließliche Gefahr des Auftraggebers unterwegs. Reklamationen müssen innerhalb von sieben Tagen ab Empfang der Ware geltend gemacht werden. Die Lieferung des Materials steht in der Regel auf Lager bereit, außer in Sonderfällen.
In diesen Fällen sind die Lieferzeiten richtungsweisend und nicht verbindlich. Alle, auch die mündlichen Aufträge, verstehen sich stets zu den oben angegebenen Bedingungen erteilt und ausgeführt.
Jede eventuelle in Ihrem Auftrag enthaltene Klausel, die im Widerspruch zu o.g. steht, wird als wertlos angesehen.
Auf Anfrage stellen wir Werkzeuge mit Sonderformen und –größen her; in diesem Fall werden wir Ihnen die Preise, Mindestmenge und Lieferzeiten mitteilen. Keinerlei Verspätung kann zu einer Annullierung des Auftrags oder zu Regreßansprüchen irgendeiner Art führen.
Wir haften daher nicht für Schäden jedweder Art infolge unserer Verspätung und die Ware kann aus keinerlei Gründen verweigert werden.
Der Käufer ist auch bei Beanstandungen oder einer Streitigkeit zur vollständigen Zahlung verpflichtet.
Die Zahlungen müssen entsprechend den vorgesehenen Fristen und Vereinbarungen erfolgen; bei Zahlungsverzug behalten wir uns das Recht vor, Ihnen ein Strafgeld entsprechend dem zum jeweiligen Zeitpunkt geltenden Banksatz anzulasten.
Die Werkzeuge können nach vorheriger Genehmigung durch die Verkaufsleitung ausgetauscht werden.
Die Garantie erlischt sofort, wenn die Werkzeuge normale Verschleißerscheinungen aufweisen, wenn ein falscher Gebrauch der Werkzeuge vorliegt oder Veränderungen an ihnen durchgeführt werden.
Wir haften nur für Qualität und Toleranz der von uns gefertigten Stücke und nicht für die durch sie ausgeführte Arbeit. Jede Schadenersatzleistung zu unseren Lasten außer dem Austausch der als defekt anerkannten Werkzeuge wird daher ausgeschlossen.
Bei einem eventuellen Streitfall ist der Gerichtsstand von Brescia zuständig.
Alle Daten wurden mit größter Sorgfalt verfaßt und überprüft.
Für eventuelle Fehler oder Auslassungen übernehmen wir keine Verantwortung.
Die CARMON kann nach ihrem ausschließlichen Ermessen Merkmale und Preise der verkauften Produkte jederzeit ändern.

## CONDITIONS GENERALES DE VENTE

Les prix de ce catalogue doivent être considérés aux conditions de remise en vigueur au moment de l'expédition . D'éventuelles modifications seront communiquées préalablement. A moins d'accord préalable prévoyant des conditions différentes, l'expédition de la marchandise sera effectuée franco notre usine ou dépôt. La marchandise est toujours transportée aux risques exclusifs du commettant. Aucune réclamation n'est acceptée au-delà des sept jours suivant la réception de la marchandise. La livraison du matériel est généralement préparée au magasin, sauf cas particuliers. Dans ces cas, les délais de livraison sont indicatifs et non contraignants. Toutes les commandes, même verbales, sont faites et exécutées aux conditions mentionnées ci-dessus.
Toute clause éventuellement contenue dans votre commande et contraire à ce qui est mentionné ci-dessus n'a aucune valeur. Sur demande, il est possible de produire des outils présentant des formes et des dimensions particulières. Dans ce cas, nous vous communiquerons les prix, les quantités minimales et les temps de livraison.
Aucun retard ne peut donner prétexte à une annulation de la commande ou à une demande de remboursement. Nous ne répondons donc d'aucun dommage dépendant d'un retard de notre part et la marchandise ne peut être refusée pour aucune raison quelle qu'elle soit.
L'acquéreur est tenu au paiement intégral, même en cas de contestation ou de controverse. Les paiements devront avoir lieu dans les délais et selon les accords préétablis; en cas de retard dans les paiements, nous nous réservons la faculté de porter à votre charge une pénalité égale au taux bancaire en vigueur à ce moment. Les outils pourront être remplacés, avec le consentement de la Direction Commerciale.
La garantie perd sa valeur lorsque les outils présentent une usure normale ou des marques dues à une mauvaise utilisation ou à une altération non autorisée.
Nous ne répondrons donc que de la qualité et de la tolérance des pièces que nous produisons et non du travail qu'elles accompliront.
Toute sorte d'indemnité à notre charge est exclue au-delà du remplacement des outils reconnus comme étant défectueux.
Pour toute controverse susceptible d'apparaître, le tribunal compétent sera celui de Brescia. Toutes les données ont été rédigées et contrôlées avec le plus grand soin.Toutefois, nous n'assumons aucune responsabilité en cas d'erreurs ou d'omissions.
A son jugement sans appel, CARMON peut modifier à tout moment les caractéristiques et les prix des produits vendus.

## CONDICIONES GENERALES DE VENTA

Los precios de la presente lista se entienden con las condiciones de descuento vigentes en la fecha de expedición.
Toda variación importante será comunicada con antelación.
La expedición de la mercancía se efectúa, salvo acuerdo previo, con porte por pagar desde el establecimiento o almacén del fabricante.
La mercadería viaja siempre y en cualquier caso por cuenta y riesgo del receptor.
No se aceptan reclamaciones pasados siete días desde la recepción de la mercancía. Las mercancías están en existencia y listas para la entrega, salvo en casos particulares.
En tales casos, los plazos de entrega son indicativos y no implican ningún compromiso para el fabricante.
Todos los pedidos, aunque sean verbales, se entienden efectuados y despachados en las condiciones arriba mencionadas. Toda cláusula, incluida en el pedido, que sea contraria a las condiciones citadas se considerará nula. A petición, se fabrican herramientas de formas y dimensiones especiales. En este caso, CARMON notificará los precios, cantidades mínimas y plazos de entrega. Ningún retardo da derecho a la anulación del pedido o compensaciones de naturaleza alguna.
CARMON no responde ante daños emergentes de un retardo, y la mercancía no puede ser rechazada por ningún motivo.
El comprador debe satisfacer el pago completo, aun en caso de reclamación o controversia.
Los pagos se efectuarán en los términos y condiciones prevlistas.
En caso de mora, CARMON aplicará intereses conforme al tipo bancario vigente a la fecha. Las herramientas pueden cambiarse, previa autorización de la Dirección Comercial. La garantía caduca cuando las herramientas presentan un desgaste normal, o en el caso de que sean utilizadas incorrectamente o alteradas.
CARMON responde solamente por la calidad y tolerancia de las herramientas que produce, no por el trabajo realizado con ellas.
Se excluye toda indemnización por parte de CARMON, excepto la sustitución de las herramientas que se prueben defectuosas.
Ante cualquier controversia, entenderá el Tribunal de Brescia.
Todos los datos han sido escritos y controlados con el mayor esmero.
Aun así, CARMON no asume ninguna responsabilidad ante eventuales errores ou omisiones.
CARMON se reserva la facultad de modificar, a su juicio inapelable y en cualquier momento, los precios y características de sus productos.

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È severamente vietata la riproduzione anche parziale del presente catalogo

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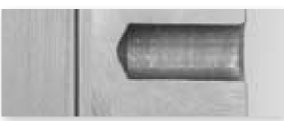
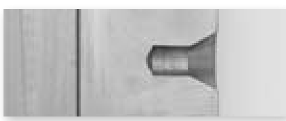
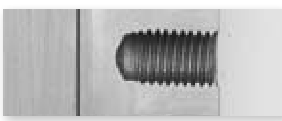
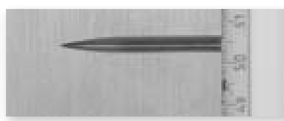
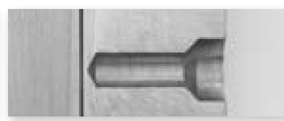
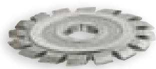
     

**TECH INFO**



**Legenda** ***Legend***

# PUNTE DRILLS

GEOMETRIA DELLA GOLA - *FLUTE GEOMETRY* (pag 230)

N W H S

INCLINAZIONE ELICA - *HELIX ANGLE*

λ

ANGOLO AL VERTICE - *POINT ANGLE*

δ

AFFILATURA - *POINT GRINDING* (pag 231)

standard | DIN1412A | DIN1412C | A-GRIND | S-GRIND | S-GRIND

LUNGHEZZA - *LENGTH*

extra corta *stub lenght* | corta *short* | lunga *long* | extra lunga *extra long*

# ALESATORI - *REAMERS*

INCLINAZIONE ELICA
*HELIX ANGLE*

λ

VISTA FRONTALE
*FRONT VIEW*

# MASCHI - *TAPS*

fori ciechi *blind holes* | fori passanti *trought holes*

INCLINAZIONE ELICA - *HELIX ANGLE*

λ

LUNGHEZZA - *LENGHTH*

2XD

TOLLERANZA - *TOLLERANCE* (ISODIN13)

6H A 2B 6HX 6g

ANELLI - *RINGS* (pag 232)

ANGOLO DEL DENTE - *TOOTH ANGLE*

60° 55°

1 sbozzatore - *rougher*

2 semifinitore - *semifinisher*

3 finitore - *finisher*

B imbocco B
B chamfer

C imbocco C
C chamfer

TAGLIO - *CUT*

dx sx

# FRESE - *END MILLS*

TAGLIENTI A FINIRE
*FINISHING CUTTING EDGE PROFILE*

N H W

INCLINAZIONE ELICA - *HELIX ANGLE*

λ

TAGLIENTI A SGROSSARE E SEMIFINIRE
*ROUGHING AND SEMI-FINISHING CUTTING EDGE PROFILE*

| Ø | NR HR WR | NF |
|---|---|---|
| Ø 6 - Ø19 | P. 2 | P.1,25 |
| Ø20 - Ø30 | P. 3 | |
| Ø32 – Ø75 | P.4 | |

LUNGHEZZA
*LENGTH*

corta *short* | normale *normal* | lunga *long* | extra lunga *extra long*

VISTA FRONTALE - *FRONT VIEW*

WELDON
*DIN 1835 FORM B*

CILINDRICO - STRAIGHT
*DIN 1835 FORM A*

FILETTATO - THREADED
*DIN 1835 FORM D*

CONO MORSE
*MORSE TAPER TAPPED SHANK*
*DIN 228 FORM A*

# FRESE HM - *END MILLS HM*

TAGLIENTI A FINIRE
*FINISHING CUTTING EDGE PROFILE*

N W

LAVORAZIONI AD ALTA VELOCITÀ
*HIGH SPEED CUTTING*

HSC

TAGLIENTI A SGROSSARE E SEMIFINIRE
*ROUGHING AND SEMI-FINISCHING CUTTING EDGE PROFILE*

HR NF

INCLINAZIONE ELICA - *HELIX ANGLE*

λ

LASER RING I®
STANDARD SPEED
MICROGRAIN Co10

LASER RING II®
HIGH SPEED
MICROGRAIN Co12

pag 225

LUNGHEZZA - *LENGTH*

corta *short* | normale *normal* | lunga *long* | extra lunga *extra long*

VISTA FRONTALE - *FRONT VIEW*

CILINDRICO - STRAIGHT
*DIN 1835 FORM A*

DIN 6535
Form HA

# TECH INFO

| HSS | HSS+5%Co | HSS+8%Co | RESISTOR | HM |
|---|---|---|---|---|

pag
224 - 225

| QUARTZ | PEARL | OPAL | SAPPHIRE MULTI | SAPPHIRE | TITANITE |
|---|---|---|---|---|---|

pag
226 - 227

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