



FRESE A TAZZA



## Frese a tazza

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### **Frese a tazza HSS**

Frese a tazza di acciaio rapido di alta qualità. Adatta per acciaio (come ad esempio per travi a T, lamiere di grande formato), getti di acciaio, metalli non ferrosi e leggeri.

### **Frese a tazza HSSE-Co 5**

Frese a tazza di acciaio rapido di alta qualità legato al cobalto con una resistenza più elevata al calore. Ideale per forare materiali difficilmente truciolabili e per le massime sollecitazioni. Adatta per la lavorazione di acciai legati e non legati (fino a 1200 N/mm<sup>2</sup>), acciai per lavorazione a freddo e a caldo, acciai da bonifica e cementazione.

### **Frese a tazza in metallo duro HM**

Frese a tazza con taglienti in metallo duro. Adatta soprattutto per rotaie per ferrovie, acciai Hardox / Weldox 400, acciaio, getto d'acciaio, acciai altolegati al cromo come V2A e V4A e acciai con legatura superiore.





## Panoramica sui simboli



Acciaio super rapido



Gambo: Weldon



Profondità di foratura  
ad es. 30,0 mm



Superficie lucida



Acciaio super rapido con  
5% di cobalto, lucidato



Gambo: Quick IN



Taglio destrorso



Rivestimento TiAlN



Metallo duro



Supporto: filettato



Ø-Tolleranza:  
norma aziendale



Rivestimento Tecrona

## Rivestimenti



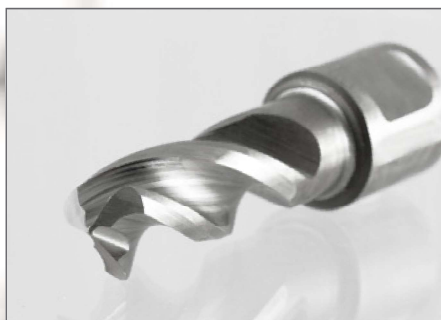
### Frese a tazza HSS-TiAlN

Frese a tazza di acciaio rapido di alta qualità con rivestimento di nitruro di titanio e alluminio. Grazie al rivestimento antiusura di TiAlN aumenta la durezza della superficie dell'utensile fino a circa 3.000 HV / microdurezza e la resistenza al calore fino a 900 °C. Si contraddistingue per le sue elevate plasticità e stabilità chimica e termica al fine di ottenere un aumento dei tempi tra le affilature e valori di taglio più elevati. Grazie al rivestimento TiAlN, la punta è adatta alle lavorazioni a secco. Adatta soprattutto per la lavorazione di acciai legati e non legati (fino a 1200 N/mm²), di acciai altolegati al cromo, come ad esempio V2A e V4A, getti di acciaio e ottone plastico.



### Frese a tazza in metallo duro Tecrona

Le nuove punte da trapano cave RUKO con rivestimento Tecrona e taglienti in metallo duro sono adatte universalmente ad acciai non temprati e superleghe (materiali ad alto contenuto di alluminio, titanio e nichel, come Inconel, Husteloy, Inox).



Panoramica  
sull'articolo e  
sul suo utilizzo:



| Materiale    | Lucida | Profondità di foratura | Gambo | Perno espulsore    | Trapano a cavalletto magnetico         | Ø mm        | No. articolo                  | Pagina          |
|--------------|--------|------------------------|-------|--------------------|----------------------------------------|-------------|-------------------------------|-----------------|
| HSS          |        |                        |       | -                  | RS 5e/10<br>RS 25e/40e<br>RS 126e/140e | 10,0 - 15,0 | 108 1210<br>-<br>108 1215     | 219             |
| HSS          |        |                        |       | 108 304            | RS 5e/10<br>RS 25e/40e<br>RS 126e/140e | 12,0 - 60,0 | 108 212<br>-<br>108 260       | 220<br>-<br>221 |
| HSSE<br>Co 5 |        |                        |       | 108 304            | RS 5e/10<br>RS 25e/40e<br>RS 126e/140e | 12,0 - 60,0 | 108 212 E<br>-<br>108 260 E   | 220<br>-<br>221 |
| HSS          |        |                        |       | 108 304            | RS 5e/10<br>RS 25e/40e<br>RS 126e/140e | 12,0 - 60,0 | 108 212 F<br>-<br>108 260 F   | 220<br>-<br>221 |
| HSS          |        |                        |       | 108 305            | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 60,0 | 108 512<br>-<br>108 560       | 222             |
| HSSE<br>Co 5 |        |                        |       | 108 305            | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 60,0 | 108 512 E<br>-<br>108 560 E   | 222             |
| HSS          |        |                        |       | 108 305            | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 60,0 | 108 512 F<br>-<br>108 560 F   | 222             |
| HSS          |        |                        |       | 108 2000           | RS 126e/140e                           | 20,0 - 50,0 | 108 2020<br>-<br>108 2050     | 223             |
| HSS          |        |                        |       | 108 2000           | RS 126e/140e                           | 20,0 - 50,0 | 108 2020 F<br>-<br>108 2050 F | 223             |
| HSS          |        |                        |       | 108 306            | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 60,0 | 108 912 E<br>-<br>108 960 E   | 224             |
| TC           |        |                        |       | 108 305<br>108 701 | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 50,0 | 108 712<br>-<br>108 750       | 227             |
| TC           |        |                        |       | 108 305<br>108 701 | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 50,0 | 108 712 C<br>-<br>108 750 C   | 227             |
| TC           |        |                        |       | 108 306<br>108 110 | RS 25e/40e<br>RS 126e/140e             | 12,0 - 80,0 | 108 1112<br>-<br>108 1180     | 228<br>-<br>229 |
| TC           |        |                        |       | 108 306<br>108 110 | RS 25e/40e<br>RS 126e/140e             | 12,0 - 80,0 | 108 1112 C<br>-<br>108 1180 C | 228<br>-<br>229 |
| TC           |        |                        |       | 108 110            | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 80,0 | 108 012<br>-<br>108 080       | 230<br>-<br>231 |
| TC           |        |                        |       | 108 110            | RS 10<br>RS 25e/40e<br>RS 126e/140e    | 12,0 - 80,0 | 108 012 C<br>-<br>108 080 C   | 230<br>-<br>231 |
| TC           |        |                        |       | 108 1510           | RS 5e/10<br>RS 25e/40e<br>RS 126e/140e | 19,0 - 36,0 | 108 1519<br>-<br>108 1536     | 232             |
| TC           |        |                        |       | 108 1510           | RS 5e/10<br>RS 25e/40e<br>RS 126e/140e | 19,0 - 36,0 | 108 1519 C<br>-<br>108 1536 C | 232             |







## Punta intera con attacco Weldon (3/4")

Applicabile in tutti i trapani a colonna e a cavalletto magnetico con cono di morse in combinazione con il portaspunto RUKO n. 108 302 / 108 303 / 108 315 / 108 316, il RUKO Easy-Lock n. 108 312 / 108 313 / 108 314 o il supporto diretto a fuso Weldon, ad esempio trapano a cavalletto magnetico RUKO RS5e / RS10.

### Istruzioni

- Spingere la punta intera nel portaspunto e serrare quindi le viti esagonali cave.
- Accertarsi che la sede della punta intera sia ben pulita nel portaspunto.
- Nel mandrino di serraggio rapido EasyLock la punta intera viene bloccata automaticamente.
- Perforare subito alla misura richiesta, non è necessario bulinare e sbazzare il foro.
- La geometria dei taglienti della punta intera consente una rapida rimozione dei trucioli verso l'alto.
- Osservare la tabella dei numeri di giri e utilizzare refrigerante.



## Frese a tazza con attacco Weldon (3/4")

Applicabile in tutti i trapani a colonna e a cavalletto magnetico con cono di morse in combinazione con il portaspunto RUKO n. 108 302 / 108 303 / 108 315 / 108 316, il RUKO Easy-Lock n. 108 312 / 108 313 / 108 314 o il supporto diretto a fuso Weldon, ad esempio trapano a cavalletto magnetico RUKO RS5e / RS10.

### Istruzioni

- Inserire la spina di guida nella frese a tazza.
- Spingere la frese a tazza nel portaspunto e serrare quindi le viti esagonali cave.
- Accertarsi che la sede della frese a tazza sia ben pulita nel portaspunto.
- Nel mandrino di serraggio rapido EasyLock la frese a tazza viene bloccata automaticamente.
- Perforare subito alla misura richiesta, non è necessario bulinare e sbazzare il foro.
- La geometria dei taglienti della frese a tazza consente una rapida rimozione dei trucioli verso l'alto.
- La spina di guida supportata elasticamente facilita il distacco dei pezzi ritagliati.
- Osservare la tabella dei numeri di giri e utilizzare refrigerante.



## Frese a tazza con attacco Quick IN

Applicabile in tutti i trapani a colonna e a cavalletto magnetico in combinazione con il portaspunto sistema Quick IN, ad esempio fine KBM 32 Q.

### Istruzioni

- Inserire la spina di guida nella frese a tazza.
- Serrare la frese a tazza nel portaspunto Quick IN.
- Perforare subito alla misura richiesta, non è necessario bulinare e sbazzare il foro.
- La geometria dei taglienti della frese a tazza consente una rapida rimozione dei trucioli verso l'alto.
- La spina di guida supportata elasticamente facilita il distacco dei pezzi ritagliati.
- Osservare la tabella dei numeri di giri e utilizzare refrigerante.



## Frese a tazza con supporto filettato

Applicabile in tutti i trapani a colonna e a cavalletto magnetico con cono morse in combinazione con il portaspunto RUKO n. 108 102 / 108 103 / 108 104 / 108 105 o con supporto diretto filettato, quale ad esempio Fein KBM 542 / KBM 65.

### Istruzioni

- Avvitare la frese a tazza sull'portaspunto.
- Perforare subito alla misura richiesta, non è necessario bulinare e sbazzare il foro.
- La geometria dei taglienti della frese a tazza consente una rapida rimozione dei trucioli verso l'alto.
- La spina di guida supportata elasticamente facilita il distacco dei pezzi ritagliati.
- Osservare la tabella dei numeri di giri e utilizzare refrigerante.



RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Punta intera „Solid 3S“ con attacco Weldon (3/4"), rettificata CBN con 3 taglienti, profondità di taglio 30,0 mm

La geometria dei 3 taglienti con scanalatura a spirale garantisce una stabilità estremamente elevata della punta intera "Solid 3S", previene in tal modo il pericolo di rottura dei taglienti in seguito ad una sollecitazione eccessiva o incastramento dei trucioli. Grazie alla elevata stabilità si aumenta notevolmente la durata utile, ciò riduce anche i costi d'intervento. La "Solid 3S" consente una perforazione centrale esatta senza bulinare o tracciare. Riaffilatura più semplice rispetto alle punte a corona.

Unità d'imballo: singolarmente in confezione di plastica



Riduce il rischio di rottura  
verso le punte del trapano fino  
a Ø 15,0 mm.

Raffreddamento necessario

|                                     |  |
|-------------------------------------|--|
|                                     |  |
| Acciaio (N/mm <sup>2</sup> ) < 900  |  |
| Acciaio (N/mm <sup>2</sup> ) < 1100 |  |
| Acciaio (N/mm <sup>2</sup> ) < 1300 |  |
| Acciaio inossidabile                |  |
| Alluminio                           |  |

|                   |  |
|-------------------|--|
|                   |  |
| Ottone            |  |
| Bronzo            |  |
| Materie plastiche |  |
| Ghisa             |  |
| Lega di titanio   |  |

| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità di<br>taglio mm | HSS      |   |  |
|----------|----------|----------|----------------------------|----------|---|--|
| 10,0     | 19,0     | 64,0     | 30,0                       | 108 1210 | 1 |  |
| 11,0     | 19,0     | 64,0     | 30,0                       | 108 1211 | 1 |  |
| 12,0     | 19,0     | 64,0     | 30,0                       | 108 1212 | 1 |  |
| 13,0     | 19,0     | 64,0     | 30,0                       | 108 1213 | 1 |  |
| 14,0     | 19,0     | 64,0     | 30,0                       | 108 1214 | 1 |  |
| 15,0     | 19,0     | 64,0     | 30,0                       | 108 1215 | 1 |  |



RS5e / RS10 / RS25e / RS40e  
RS126e / RS140e

## Punta intera „Solid 3S“ con attacco Weldon (3/4") con 3 taglienti, in cassetta industriale

| Descrizione                                                                                     | HSS     |  |
|-------------------------------------------------------------------------------------------------|---------|--|
| 6 Punta intera „Solid 3S“ HSS<br>Ø 10,0 mm - 11,0 mm - 12,0 mm - 13,0 mm -<br>14,0 mm - 15,0 mm | 108 830 |  |



## Frese a tazza HSS e HSSE-Co 5 con attacco Weldon (3/4"), rettificata CBN, profondità di taglio 30,0 mm

Perno espulsore: No. articolo 108 304 (Ø 6,35 x 77,0 mm)

Unità d'imballo: singolarmente in confezione di plastica

|                        |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Acciaio (N/mm2) < 900  |  |  |  |
| Acciaio (N/mm2) < 1100 |  |  |  |
| Acciaio (N/mm2) < 1300 |  |  |  |
| Acciaio inossidabile   |  |  |  |
| Alluminio              |  |  |  |

|                   |  |  |  |
|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Ottone            |  |  |  |
| Bronzo            |  |  |  |
| Materie plastiche |  |  |  |
| Ghisa             |  |  |  |
| Lega di titanio   |  |  |  |



| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità di<br>taglio mm |   |   |   |  |
|----------|----------|----------|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 12,0     | 19,0     | 63,0     | 30,0                       | 108 212                                                                                                                                                              | 108 212 E                                                                                                                                                               | 108 212 F                                                                                                                                                               | 1                                                                                   |
| 13,0     | 19,0     | 63,0     | 30,0                       | 108 213                                                                                                                                                              | 108 213 E                                                                                                                                                               | 108 213 F                                                                                                                                                               | 1                                                                                   |
| 14,0     | 19,0     | 63,0     | 30,0                       | 108 214                                                                                                                                                              | 108 214 E                                                                                                                                                               | 108 214 F                                                                                                                                                               | 1                                                                                   |
| 15,0     | 19,0     | 63,0     | 30,0                       | 108 215                                                                                                                                                              | 108 215 E                                                                                                                                                               | 108 215 F                                                                                                                                                               | 1                                                                                   |
| 16,0     | 19,0     | 63,0     | 30,0                       | 108 216                                                                                                                                                              | 108 216 E                                                                                                                                                               | 108 216 F                                                                                                                                                               | 1                                                                                   |
| 17,0     | 19,0     | 63,0     | 30,0                       | 108 217                                                                                                                                                              | 108 217 E                                                                                                                                                               | 108 217 F                                                                                                                                                               | 1                                                                                   |
| 18,0     | 19,0     | 63,0     | 30,0                       | 108 218                                                                                                                                                              | 108 218 E                                                                                                                                                               | 108 218 F                                                                                                                                                               | 1                                                                                   |
| 19,0     | 19,0     | 63,0     | 30,0                       | 108 219                                                                                                                                                              | 108 219 E                                                                                                                                                               | 108 219 F                                                                                                                                                               | 1                                                                                   |
| 20,0     | 19,0     | 63,0     | 30,0                       | 108 220                                                                                                                                                              | 108 220 E                                                                                                                                                               | 108 220 F                                                                                                                                                               | 1                                                                                   |
| 21,0     | 19,0     | 63,0     | 30,0                       | 108 221                                                                                                                                                              | 108 221 E                                                                                                                                                               | 108 221 F                                                                                                                                                               | 1                                                                                   |
| 22,0     | 19,0     | 63,0     | 30,0                       | 108 222                                                                                                                                                              | 108 222 E                                                                                                                                                               | 108 222 F                                                                                                                                                               | 1                                                                                   |
| 23,0     | 19,0     | 63,0     | 30,0                       | 108 223                                                                                                                                                              | 108 223 E                                                                                                                                                               | 108 223 F                                                                                                                                                               | 1                                                                                   |
| 24,0     | 19,0     | 63,0     | 30,0                       | 108 224                                                                                                                                                              | 108 224 E                                                                                                                                                               | 108 224 F                                                                                                                                                               | 1                                                                                   |
| 25,0     | 19,0     | 63,0     | 30,0                       | 108 225                                                                                                                                                              | 108 225 E                                                                                                                                                               | 108 225 F                                                                                                                                                               | 1                                                                                   |
| 26,0     | 19,0     | 63,0     | 30,0                       | 108 226                                                                                                                                                              | 108 226 E                                                                                                                                                               | 108 226 F                                                                                                                                                               | 1                                                                                   |
| 27,0     | 19,0     | 63,0     | 30,0                       | 108 227                                                                                                                                                              | 108 227 E                                                                                                                                                               | 108 227 F                                                                                                                                                               | 1                                                                                   |
| 28,0     | 19,0     | 63,0     | 30,0                       | 108 228                                                                                                                                                              | 108 228 E                                                                                                                                                               | 108 228 F                                                                                                                                                               | 1                                                                                   |
| 29,0     | 19,0     | 63,0     | 30,0                       | 108 229                                                                                                                                                              | 108 229 E                                                                                                                                                               | 108 229 F                                                                                                                                                               | 1                                                                                   |
| 30,0     | 19,0     | 63,0     | 30,0                       | 108 230                                                                                                                                                              | 108 230 E                                                                                                                                                               | 108 230 F                                                                                                                                                               | 1                                                                                   |
| 31,0     | 19,0     | 63,0     | 30,0                       | 108 231                                                                                                                                                              | 108 231 E                                                                                                                                                               | 108 231 F                                                                                                                                                               | 1                                                                                   |
| 32,0     | 19,0     | 63,0     | 30,0                       | 108 232                                                                                                                                                              | 108 232 E                                                                                                                                                               | 108 232 F                                                                                                                                                               | 1                                                                                   |
| 33,0     | 19,0     | 63,0     | 30,0                       | 108 233                                                                                                                                                              | 108 233 E                                                                                                                                                               | 108 233 F                                                                                                                                                               | 1                                                                                   |
| 34,0     | 19,0     | 63,0     | 30,0                       | 108 234                                                                                                                                                              | 108 234 E                                                                                                                                                               | 108 234 F                                                                                                                                                               | 1                                                                                   |
| 35,0     | 19,0     | 63,0     | 30,0                       | 108 235                                                                                                                                                              | 108 235 E                                                                                                                                                               | 108 235 F                                                                                                                                                               | 1                                                                                   |
| 36,0     | 19,0     | 63,0     | 30,0                       | 108 236                                                                                                                                                              | 108 236 E                                                                                                                                                               | 108 236 F                                                                                                                                                               | 1                                                                                   |
| 37,0     | 19,0     | 63,0     | 30,0                       | 108 237                                                                                                                                                              | 108 237 E                                                                                                                                                               | 108 237 F                                                                                                                                                               | 1                                                                                   |
| 38,0     | 19,0     | 63,0     | 30,0                       | 108 238                                                                                                                                                              | 108 238 E                                                                                                                                                               | 108 238 F                                                                                                                                                               | 1                                                                                   |
| 39,0     | 19,0     | 63,0     | 30,0                       | 108 239                                                                                                                                                              | 108 239 E                                                                                                                                                               | 108 239 F                                                                                                                                                               | 1                                                                                   |
| 40,0     | 19,0     | 63,0     | 30,0                       | 108 240                                                                                                                                                              | 108 240 E                                                                                                                                                               | 108 240 F                                                                                                                                                               | 1                                                                                   |
| 41,0     | 19,0     | 63,0     | 30,0                       | 108 241                                                                                                                                                              | 108 241 E                                                                                                                                                               | 108 241 F                                                                                                                                                               | 1                                                                                   |
| 42,0     | 19,0     | 63,0     | 30,0                       | 108 242                                                                                                                                                              | 108 242 E                                                                                                                                                               | 108 242 F                                                                                                                                                               | 1                                                                                   |
| 43,0     | 19,0     | 63,0     | 30,0                       | 108 243                                                                                                                                                              | 108 243 E                                                                                                                                                               | 108 243 F                                                                                                                                                               | 1                                                                                   |
| 44,0     | 19,0     | 63,0     | 30,0                       | 108 244                                                                                                                                                              | 108 244 E                                                                                                                                                               | 108 244 F                                                                                                                                                               | 1                                                                                   |
| 45,0     | 19,0     | 63,0     | 30,0                       | 108 245                                                                                                                                                              | 108 245 E                                                                                                                                                               | 108 245 F                                                                                                                                                               | 1                                                                                   |
| 46,0     | 19,0     | 63,0     | 30,0                       | 108 246                                                                                                                                                              | 108 246 E                                                                                                                                                               | 108 246 F                                                                                                                                                               | 1                                                                                   |
| 47,0     | 19,0     | 63,0     | 30,0                       | 108 247                                                                                                                                                              | 108 247 E                                                                                                                                                               | 108 247 F                                                                                                                                                               | 1                                                                                   |
| 48,0     | 19,0     | 63,0     | 30,0                       | 108 248                                                                                                                                                              | 108 248 E                                                                                                                                                               | 108 248 F                                                                                                                                                               | 1                                                                                   |
| 49,0     | 19,0     | 63,0     | 30,0                       | 108 249                                                                                                                                                              | 108 249 E                                                                                                                                                               | 108 249 F                                                                                                                                                               | 1                                                                                   |
| 50,0     | 19,0     | 63,0     | 30,0                       | 108 250                                                                                                                                                              | 108 250 E                                                                                                                                                               | 108 250 F                                                                                                                                                               | 1                                                                                   |
| 51,0     | 19,0     | 63,0     | 30,0                       | 108 251                                                                                                                                                              | 108 251 E                                                                                                                                                               | 108 251 F                                                                                                                                                               | 1                                                                                   |
| 52,0     | 19,0     | 63,0     | 30,0                       | 108 252                                                                                                                                                              | 108 252 E                                                                                                                                                               | 108 252 F                                                                                                                                                               | 1                                                                                   |
| 53,0     | 19,0     | 63,0     | 30,0                       | 108 253                                                                                                                                                              | 108 253 E                                                                                                                                                               | 108 253 F                                                                                                                                                               | 1                                                                                   |
| 54,0     | 19,0     | 63,0     | 30,0                       | 108 254                                                                                                                                                              | 108 254 E                                                                                                                                                               | 108 254 F                                                                                                                                                               | 1                                                                                   |
| 55,0     | 19,0     | 63,0     | 30,0                       | 108 255                                                                                                                                                              | 108 255 E                                                                                                                                                               | 108 255 F                                                                                                                                                               | 1                                                                                   |
| 56,0     | 19,0     | 63,0     | 30,0                       | 108 256                                                                                                                                                              | 108 256 E                                                                                                                                                               | 108 256 F                                                                                                                                                               | 1                                                                                   |
| 57,0     | 19,0     | 63,0     | 30,0                       | 108 257                                                                                                                                                              | 108 257 E                                                                                                                                                               | 108 257 F                                                                                                                                                               | 1                                                                                   |
| 58,0     | 19,0     | 63,0     | 30,0                       | 108 258                                                                                                                                                              | 108 258 E                                                                                                                                                               | 108 258 F                                                                                                                                                               | 1                                                                                   |
| 59,0     | 19,0     | 63,0     | 30,0                       | 108 259                                                                                                                                                              | 108 259 E                                                                                                                                                               | 108 259 F                                                                                                                                                               | 1                                                                                   |
| 60,0     | 19,0     | 63,0     | 30,0                       | 108 260                                                                                                                                                              | 108 260 E                                                                                                                                                               | 108 260 F                                                                                                                                                               | 1                                                                                   |





RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

## Set di frese a tazza HSS e HSSE-Co 5 con attacco Weldon (3/4"), rettificata CBN, profondità di taglio 30,0 mm, in valigia plastica

| Descrizione                                                                                                                                                                                                                                                                                          | HSS     | HSSE Co 5 |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|
| Set di frese a tazza con attacco Weldon (3/4")<br>8 frese a tazza<br>Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm - 20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm<br>1 Spray per taglio 50 ml No. articolo 101 010<br>1 Perno espulsore Ø 6,35 mm x 77,0 mm per profondità di taglio 30,0 mm No. articolo 108 304 | 108 810 | 108 810 E |
| Set di frese a tazza con attacco Weldon (3/4")<br>8 frese a tazza<br>Ø 2 x 14,0 mm - 2 x 16,0 mm - 2 x 18,0 mm - 1 x 20,0 mm - 1 x 22,0 mm<br>1 Spray per taglio 50 ml No. articolo 101 010<br>1 Perno espulsore Ø 6,35 mm x 77,0 mm per profondità di taglio 30,0 mm No. articolo 108 304           | 108 813 | —         |



## Set di frese a tazza HSS e HSSE-Co 5 con attacco Weldon (3/4"), rettificata CBN, profondità di taglio 30,0 mm, in cassetta industriale

| Descrizione                                                                                                                                                                                                                     | HSS     | HSSE Co 5 | HSS TITAIN |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|-----------|------------|
| Set di frese a tazza con attacco Weldon (3/4")<br>6 frese a tazza<br>Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm - 20,0 mm - 22,0 mm<br>1 Perno espulsore Ø 6,35 mm x 77,0 mm per profondità di taglio 30,0 mm No. articolo 108 304 | 108 820 | —         | 108 820 F  |
| Set di frese a tazza con attacco Weldon (3/4")<br>6 frese a tazza<br>Ø 2 x 14,0 mm - 2 x 18,0 mm - 2 x 22,0 mm<br>1 Perno espulsore Ø 6,35 mm x 77,0 mm per profondità di taglio 30,0 mm No. articolo 108 304                   | 108 840 | 108 840 E | 108 840 F  |



## Frese a tazza HSS e HSSE-Co 5 con attacco Weldon (3/4"), rettificata CBN, profondità di taglio 55,0 mm

Perno espulsore: No. articolo 108 305 (Ø 6,35 x 102,0 mm)

Unità d'imballo: singolarmente in confezione di plastica

|                        |  |  |  |
|------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Acciaio (N/mm2) < 900  |  |  |  |
| Acciaio (N/mm2) < 1100 |  |  |  |
| Acciaio (N/mm2) < 1300 |  |  |  |
| Acciaio inossidabile   |  |  |  |
| Alluminio              |  |  |  |

|                   |  |  |  |
|-------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Ottone            |  |  |  |
| Bronzo            |  |  |  |
| Materie plastiche |  |  |  |
| Ghisa             |  |  |  |
| Leghe di titanio  |  |  |  |



| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità di<br>taglio mm | HSS     | HSSE<br>Co 5 | HSS       | 108 305 |
|----------|----------|----------|----------------------------|---------|--------------|-----------|---------|
| 12,0     | 19,0     | 88,0     | 55,0                       | 108 512 | 108 512 E    | 108 512 F | 1       |
| 13,0     | 19,0     | 88,0     | 55,0                       | 108 513 | 108 513 E    | 108 513 F | 1       |
| 14,0     | 19,0     | 88,0     | 55,0                       | 108 514 | 108 514 E    | 108 514 F | 1       |
| 15,0     | 19,0     | 88,0     | 55,0                       | 108 515 | 108 515 E    | 108 515 F | 1       |
| 16,0     | 19,0     | 88,0     | 55,0                       | 108 516 | 108 516 E    | 108 516 F | 1       |
| 17,0     | 19,0     | 88,0     | 55,0                       | 108 517 | 108 517 E    | 108 517 F | 1       |
| 18,0     | 19,0     | 88,0     | 55,0                       | 108 518 | 108 518 E    | 108 518 F | 1       |
| 19,0     | 19,0     | 88,0     | 55,0                       | 108 519 | 108 519 E    | 108 519 F | 1       |
| 20,0     | 19,0     | 88,0     | 55,0                       | 108 520 | 108 520 E    | 108 520 F | 1       |
| 21,0     | 19,0     | 88,0     | 55,0                       | 108 521 | 108 521 E    | 108 521 F | 1       |
| 22,0     | 19,0     | 88,0     | 55,0                       | 108 522 | 108 522 E    | 108 522 F | 1       |
| 23,0     | 19,0     | 88,0     | 55,0                       | 108 523 | 108 523 E    | 108 523 F | 1       |
| 24,0     | 19,0     | 88,0     | 55,0                       | 108 524 | 108 524 E    | 108 524 F | 1       |
| 25,0     | 19,0     | 88,0     | 55,0                       | 108 525 | 108 525 E    | 108 525 F | 1       |
| 26,0     | 19,0     | 88,0     | 55,0                       | 108 526 | 108 526 E    | 108 526 F | 1       |
| 27,0     | 19,0     | 88,0     | 55,0                       | 108 527 | 108 527 E    | 108 527 F | 1       |
| 28,0     | 19,0     | 88,0     | 55,0                       | 108 528 | 108 528 E    | 108 528 F | 1       |
| 29,0     | 19,0     | 88,0     | 55,0                       | 108 529 | 108 529 E    | 108 529 F | 1       |
| 30,0     | 19,0     | 88,0     | 55,0                       | 108 530 | 108 530 E    | 108 530 F | 1       |
| 31,0     | 19,0     | 88,0     | 55,0                       | 108 531 | 108 531 E    | 108 531 F | 1       |
| 32,0     | 19,0     | 88,0     | 55,0                       | 108 532 | 108 532 E    | 108 532 F | 1       |
| 33,0     | 19,0     | 88,0     | 55,0                       | 108 533 | 108 533 E    | 108 533 F | 1       |
| 34,0     | 19,0     | 88,0     | 55,0                       | 108 534 | 108 534 E    | 108 534 F | 1       |
| 35,0     | 19,0     | 88,0     | 55,0                       | 108 535 | 108 535 E    | 108 535 F | 1       |
| 36,0     | 19,0     | 88,0     | 55,0                       | 108 536 | 108 536 E    | 108 536 F | 1       |
| 37,0     | 19,0     | 88,0     | 55,0                       | 108 537 | 108 537 E    | 108 537 F | 1       |
| 38,0     | 19,0     | 88,0     | 55,0                       | 108 538 | 108 538 E    | 108 538 F | 1       |
| 39,0     | 19,0     | 88,0     | 55,0                       | 108 539 | 108 539 E    | 108 539 F | 1       |
| 40,0     | 19,0     | 88,0     | 55,0                       | 108 540 | 108 540 E    | 108 540 F | 1       |
| 41,0     | 19,0     | 88,0     | 55,0                       | 108 541 | 108 541 E    | 108 541 F | 1       |
| 42,0     | 19,0     | 88,0     | 55,0                       | 108 542 | 108 542 E    | 108 542 F | 1       |
| 43,0     | 19,0     | 88,0     | 55,0                       | 108 543 | 108 543 E    | 108 543 F | 1       |
| 44,0     | 19,0     | 88,0     | 55,0                       | 108 544 | 108 544 E    | 108 544 F | 1       |
| 45,0     | 19,0     | 88,0     | 55,0                       | 108 545 | 108 545 E    | 108 545 F | 1       |
| 46,0     | 19,0     | 88,0     | 55,0                       | 108 546 | 108 546 E    | 108 546 F | 1       |
| 47,0     | 19,0     | 88,0     | 55,0                       | 108 547 | 108 547 E    | 108 547 F | 1       |
| 48,0     | 19,0     | 88,0     | 55,0                       | 108 548 | 108 548 E    | 108 548 F | 1       |
| 49,0     | 19,0     | 88,0     | 55,0                       | 108 549 | 108 549 E    | 108 549 F | 1       |
| 50,0     | 19,0     | 88,0     | 55,0                       | 108 550 | 108 550 E    | 108 550 F | 1       |
| 51,0     | 19,0     | 88,0     | 55,0                       | 108 551 | 108 551 E    | 108 551 F | 1       |
| 52,0     | 19,0     | 88,0     | 55,0                       | 108 552 | 108 552 E    | 108 552 F | 1       |
| 53,0     | 19,0     | 88,0     | 55,0                       | 108 553 | 108 553 E    | 108 553 F | 1       |
| 54,0     | 19,0     | 88,0     | 55,0                       | 108 554 | 108 554 E    | 108 554 F | 1       |
| 55,0     | 19,0     | 88,0     | 55,0                       | 108 555 | 108 555 E    | 108 555 F | 1       |
| 56,0     | 19,0     | 88,0     | 55,0                       | 108 556 | 108 556 E    | 108 556 F | 1       |
| 57,0     | 19,0     | 88,0     | 55,0                       | 108 557 | 108 557 E    | 108 557 F | 1       |
| 58,0     | 19,0     | 88,0     | 55,0                       | 108 558 | 108 558 E    | 108 558 F | 1       |
| 59,0     | 19,0     | 88,0     | 55,0                       | 108 559 | 108 559 E    | 108 559 F | 1       |
| 60,0     | 19,0     | 88,0     | 55,0                       | 108 560 | 108 560 E    | 108 560 F | 1       |



RS125e / RS126e  
RS140e



## Frese a tazza HSS con attacco Weldon (3/4"), rettificata CBN, profondità di taglio 110,0 mm

Perno espulsore: No. articolo 108 2000 (Ø 8,0 x 155,0 mm)

Unità d'imballo: singolarmente in confezione di plastica



Conducendo la punta del trapano fuori dal foro, rimuovere i trucioli dal foro. Ripetere con cura la procedura.

Diminuisce il rischio di rottura e aumenta il ciclo di vita della punta del trapano.

| Acciaio (N/mm2) < 900  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
|------------------------|-------------------------------------|-------------------------------------|
| Acciaio (N/mm2) < 1100 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Acciaio (N/mm2) < 1300 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Acciaio inossidabile   | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Alluminio              | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Ottone                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Bronzo                 | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Materie plastiche      | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Ghisa                  | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Lega di titanio        | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |



| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità di<br>taglio mm | HSS      | HSS        | TiAIN |  |
|----------|----------|----------|----------------------------|----------|------------|-------|--|
| 20,0     | 19,0     | 145,0    | 110,0                      | 108 2020 | 108 2020 F | 1     |  |
| 21,0     | 19,0     | 145,0    | 110,0                      | 108 2021 | 108 2021 F | 1     |  |
| 22,0     | 19,0     | 145,0    | 110,0                      | 108 2022 | 108 2022 F | 1     |  |
| 24,0     | 19,0     | 145,0    | 110,0                      | 108 2024 | 108 2024 F | 1     |  |
| 25,0     | 19,0     | 145,0    | 110,0                      | 108 2025 | 108 2025 F | 1     |  |
| 26,0     | 19,0     | 145,0    | 110,0                      | 108 2026 | 108 2026 F | 1     |  |
| 28,0     | 19,0     | 145,0    | 110,0                      | 108 2028 | 108 2028 F | 1     |  |
| 30,0     | 19,0     | 145,0    | 110,0                      | 108 2030 | 108 2030 F | 1     |  |
| 32,0     | 19,0     | 145,0    | 110,0                      | 108 2032 | 108 2032 F | 1     |  |
| 33,0     | 19,0     | 145,0    | 110,0                      | 108 2033 | 108 2033 F | 1     |  |
| 34,0     | 19,0     | 145,0    | 110,0                      | 108 2034 | 108 2034 F | 1     |  |
| 35,0     | 19,0     | 145,0    | 110,0                      | 108 2035 | 108 2035 F | 1     |  |
| 36,0     | 19,0     | 145,0    | 110,0                      | 108 2036 | 108 2036 F | 1     |  |
| 38,0     | 19,0     | 145,0    | 110,0                      | 108 2038 | 108 2038 F | 1     |  |
| 40,0     | 19,0     | 145,0    | 110,0                      | 108 2040 | 108 2040 F | 1     |  |
| 41,0     | 19,0     | 145,0    | 110,0                      | 108 2041 | 108 2041 F | 1     |  |
| 42,0     | 19,0     | 145,0    | 110,0                      | 108 2042 | 108 2042 F | 1     |  |
| 45,0     | 19,0     | 145,0    | 110,0                      | 108 2045 | 108 2045 F | 1     |  |
| 50,0     | 19,0     | 145,0    | 110,0                      | 108 2050 | 108 2050 F | 1     |  |





RS5e / RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

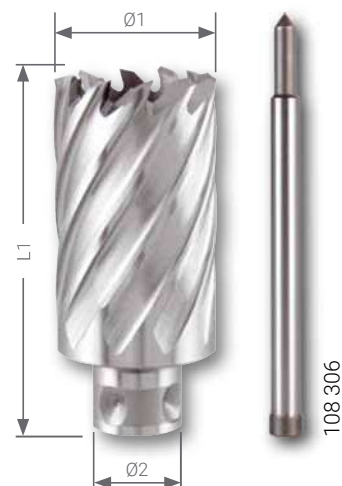
## Frese a tazza HSSE-Co 5 on attacco Quick IN, rettificata CBN, profondità di taglio 35,0 mm

Perno espulsore: No. articolo 108 306 (Ø 6,35 x 87,0 mm)

Macchina: con portasuportto Sistema Quick IN

Unità d'imballo: singolarmente in confezione di plastica

|                                     |  |                   |  |
|-------------------------------------|--|-------------------|--|
|                                     |  |                   |  |
| Acciaio (N/mm <sup>2</sup> ) < 900  |  | Ottone            |  |
| Acciaio (N/mm <sup>2</sup> ) < 1100 |  | Bronzo            |  |
| Acciaio (N/mm <sup>2</sup> ) < 1300 |  | Materie plastiche |  |
| Acciaio inossidabile                |  | Ghisa             |  |
| Alluminio                           |  | Lega di titanio   |  |



| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità di<br>taglio mm |   |  |
|----------|----------|----------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 12,0     | 18,0     | 77,0     | 35,0                       | 108 912 E                                                                                                                                                               | 1                                                                                   |
| 13,0     | 18,0     | 77,0     | 35,0                       | 108 913 E                                                                                                                                                               | 1                                                                                   |
| 14,0     | 18,0     | 77,0     | 35,0                       | 108 914 E                                                                                                                                                               | 1                                                                                   |
| 15,0     | 18,0     | 77,0     | 35,0                       | 108 915 E                                                                                                                                                               | 1                                                                                   |
| 16,0     | 18,0     | 77,0     | 35,0                       | 108 916 E                                                                                                                                                               | 1                                                                                   |
| 17,0     | 18,0     | 77,0     | 35,0                       | 108 917 E                                                                                                                                                               | 1                                                                                   |
| 18,0     | 18,0     | 77,0     | 35,0                       | 108 918 E                                                                                                                                                               | 1                                                                                   |
| 19,0     | 18,0     | 77,0     | 35,0                       | 108 919 E                                                                                                                                                               | 1                                                                                   |
| 20,0     | 18,0     | 77,0     | 35,0                       | 108 920 E                                                                                                                                                               | 1                                                                                   |
| 21,0     | 18,0     | 77,0     | 35,0                       | 108 921 E                                                                                                                                                               | 1                                                                                   |
| 22,0     | 18,0     | 77,0     | 35,0                       | 108 922 E                                                                                                                                                               | 1                                                                                   |
| 23,0     | 18,0     | 77,0     | 35,0                       | 108 923 E                                                                                                                                                               | 1                                                                                   |
| 24,0     | 18,0     | 77,0     | 35,0                       | 108 924 E                                                                                                                                                               | 1                                                                                   |
| 25,0     | 18,0     | 77,0     | 35,0                       | 108 925 E                                                                                                                                                               | 1                                                                                   |
| 26,0     | 18,0     | 77,0     | 35,0                       | 108 926 E                                                                                                                                                               | 1                                                                                   |
| 27,0     | 18,0     | 77,0     | 35,0                       | 108 927 E                                                                                                                                                               | 1                                                                                   |
| 28,0     | 18,0     | 77,0     | 35,0                       | 108 928 E                                                                                                                                                               | 1                                                                                   |
| 29,0     | 18,0     | 77,0     | 35,0                       | 108 929 E                                                                                                                                                               | 1                                                                                   |
| 30,0     | 18,0     | 77,0     | 35,0                       | 108 930 E                                                                                                                                                               | 1                                                                                   |
| 32,0     | 18,0     | 77,0     | 35,0                       | 108 932 E                                                                                                                                                               | 1                                                                                   |
| 35,0     | 18,0     | 77,0     | 35,0                       | 108 935 E                                                                                                                                                               | 1                                                                                   |
| 36,0     | 18,0     | 77,0     | 35,0                       | 108 936 E                                                                                                                                                               | 1                                                                                   |
| 40,0     | 18,0     | 77,0     | 35,0                       | 108 940 E                                                                                                                                                               | 1                                                                                   |
| 45,0     | 18,0     | 77,0     | 35,0                       | 108 945 E                                                                                                                                                               | 1                                                                                   |
| 50,0     | 18,0     | 77,0     | 35,0                       | 108 950 E                                                                                                                                                               | 1                                                                                   |
| 55,0     | 18,0     | 77,0     | 35,0                       | 108 955 E                                                                                                                                                               | 1                                                                                   |
| 60,0     | 18,0     | 77,0     | 35,0                       | 108 960 E                                                                                                                                                               | 1                                                                                   |

## Set di frese a tazza HSSE-Co 5 con attacco Quick IN, rettificata CBN, in valigia plastica

|                                                                                                                                                                                                                                                                                                                      |              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
|                                                                                                                                                                                                                                                                                                                      | HSSE<br>Co 5 |
| Set di frese a tazza HSSE-Co 5 con attacco Quick IN<br>8 frese a tazza HSSE-Co 5<br>Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm<br>20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm<br>1 Spray per taglio 50 ml No. articolo 101 010<br>1 Perno espulsore Ø 6,35 x 87,0 mm<br>per profondità di taglio 35,0 mm No. articolo 108 306 | 108 811 E    |



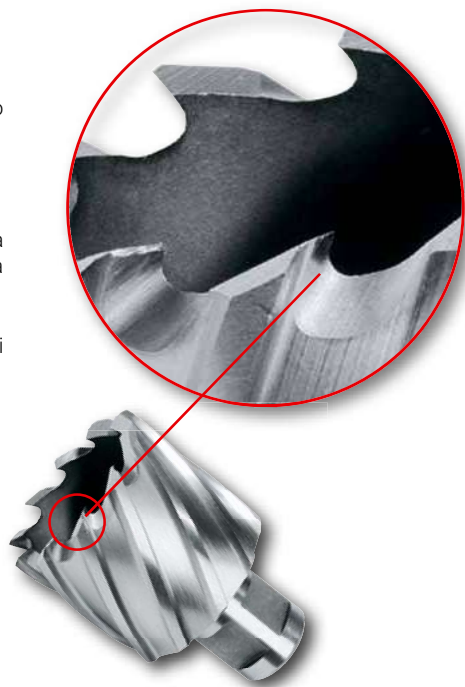


## Tutto dipende dal tagliente ...

08

Grazie alla nuova geometria del tagliente RUKO è stato possibile migliorare notevolmente le prestazioni della fresa, garantendo una qualità maggiore del taglio e tempi di attesa minori.

1. Geometria di taglio ottimizzata per una maggiore asportazione del materiale e forze di taglio ridotte.
2. Gli angoli di spoglia superiori sono realizzati per l'impiego universale su diversi tipi di acciaio.
3. Migliore estrazione dei trucioli grazie all'estrazione a forma di U. La speciale geometria dell'estrazione riduce il carico termico della punta a corona HSS poiché il calore che si forma durante l'estrazione del materiale sarà estratto ampiamente con i trucioli.
4. Riduzione dello strofinio tra punta a corona HSS ed il pezzo da lavorare grazie a delle fasi di guida ottimizzate e precedenti in modo elicoidale.



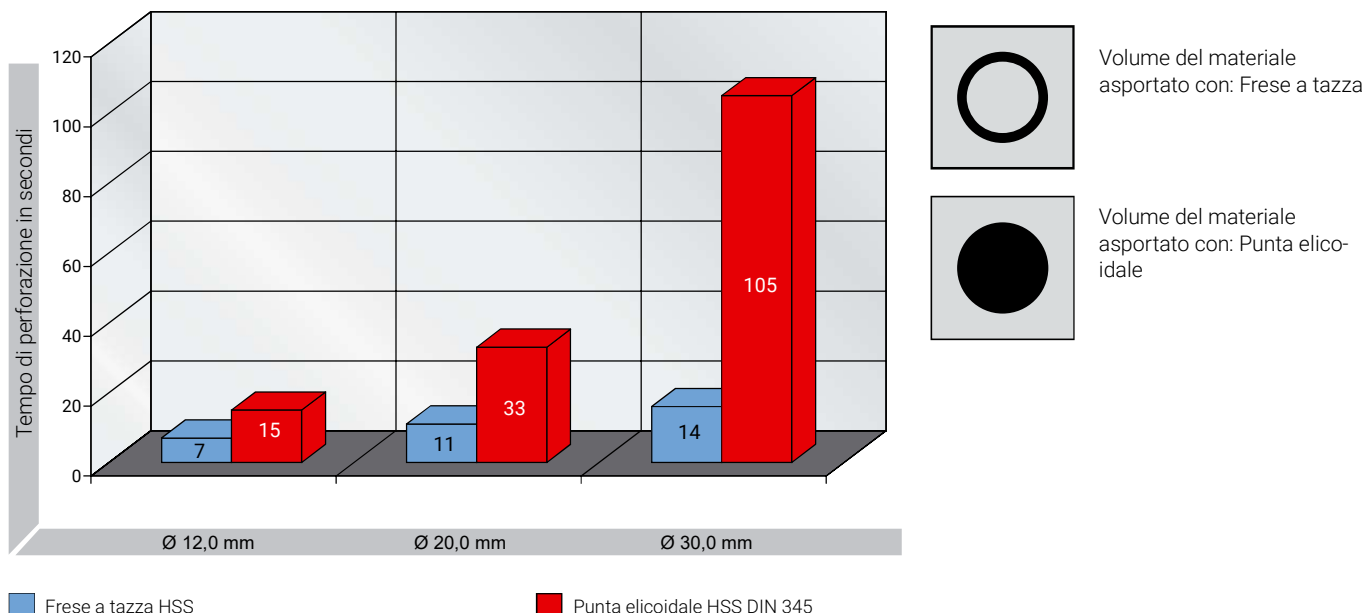
## Confronto tempo di perforazione fra frese a tazza HSS e punta elicoidale HSS DIN 345

Pezzo da lavorare: Trave in acciaio  
Materiale: comune acciaio da costruzione S235JR  
Profondità perforazione: 12,0 mm

Macchina: RUKO Trapano a colonna con magnete RS140  
Con le punte a elicoidali è stato possibile perforare nel metallo pieno senza preforare.  
Non è stato raffreddato o lubrificato.

Con le frese a tazza RUKO si ottiene una riduzione dei costi e del tempo di lavorazione. Poiché le frese a tazza estraggono soltanto un anello e non il diametro di perforazione completo, come per le punte elicoidali, queste sono molto più veloci (vedi grafico). Non sono necessarie centratura, preforazione e alesatura.

Le frese a tazza hanno una velocità di taglio 10 volte superiore alle punte elicoidali. Le frese a corona tagliano solo lo spessore del metallo duro, il truciolo viene poi espulso. Basso consumo di energia e lenta usura della fresa. Le punte elicoidali devono forare tutto il diametro, e ciò comporta alto consumo di energia e maggiore forza nella penetrazione.







Tecrona

## Descrizione del prodotto:

Le nuove punte da trapano cave RUKO con rivestimento Tecrona e taglienti in metallo duro sono adatte universalmente ad acciai non temprati e superleghe (materiali ad alto contenuto di alluminio, titanio e nichel, come Inconel, Husteloy, Inox).

## Dati tecnici:

**Colori:** blu-grigio  
**Durezza:** 4200 HV  
**Spessore:** 1µm - 7µm  
**Coefficiente di attrito:** 0,35

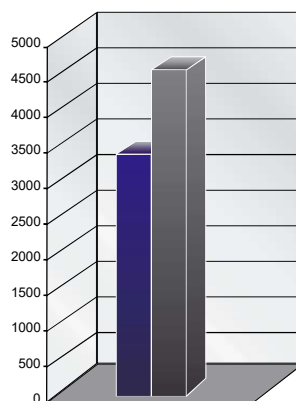
## Vantaggi del rivestimento Tecrona:

Il rivestimento Tecrona è l'ideale per tutti i lavori di foratura che sfruttano in modo estremo l'utensile. Aderisce molto bene all'utensile; inoltre il rivestimento protettivo aumenta la durezza della superficie a circa 4200 HV. Con questo rivestimento il coefficiente di attrito è minimo, quindi l'usura è ridotta e la durata di funzionamento è maggiore.

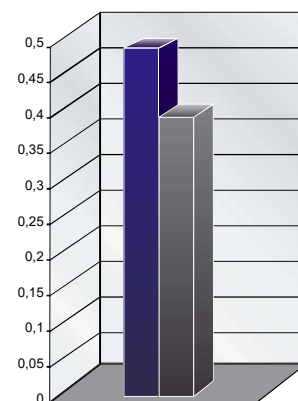
### Campi d'applicazione:

Adatta soprattutto per rotaie per ferrovie, acciai Hardox / Weldox, acciaio, getto d'acciaio, acciai altolegati al cromo come V2A e V4A e acciai con legatura superiore.

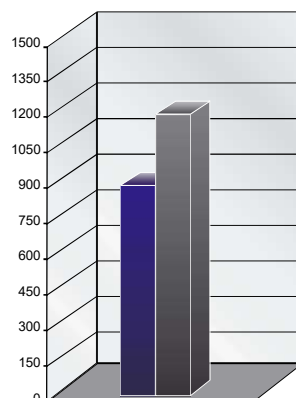
### Confronto durezza



### Confronto coefficiente d'attrito



### Resistenza termica



■ TiAlN  
■ Tecrona



■ Uso principale

□ Uso secondario



RS10 / RS25e / RS40e  
RS125e / RS126e / RS140e

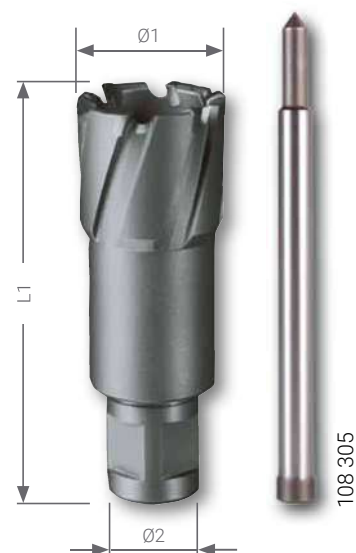
## Frese a tazza con taglienti in metallo duro e attacco Weldon (3/4"), profondità di taglio 50,0 mm

Adatto per Hardox / Weldom 400 acciaio

Perno espulsore:

Ø 12,0 mm fino Ø 17,0, No. articolo 108 305 (Ø 6,35 x 102,0 mm)

Ø 18,0 mm fino Ø 50,0, No. articolo 108 701 (Ø 8,0 x 112,0 mm)



Unità d'imballo: singolarmente in confezione di plastica

| Acciaio (N/mm <sup>2</sup> ) < 900  |  |  |
|-------------------------------------|--|--|
| Acciaio (N/mm <sup>2</sup> ) < 1100 |  |  |
| Acciaio (N/mm <sup>2</sup> ) < 1300 |  |  |
| Acciaio inossidabile                |  |  |
| Alluminio                           |  |  |

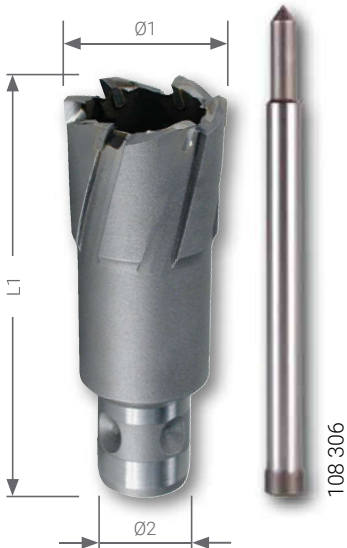
| Ottone            |  |  |
|-------------------|--|--|
| Bronzo            |  |  |
| Materie plastiche |  |  |
| Ghisa             |  |  |
| Lega di titanio   |  |  |

| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità di<br>taglio mm | TC      | TC        |   |
|----------|----------|----------|----------------------------|---------|-----------|---|
| 12,0     | 19,0     | 84,0     | 50,0                       | 108 712 | 108 712 C | 1 |
| 13,0     | 19,0     | 84,0     | 50,0                       | 108 713 | 108 713 C | 1 |
| 14,0     | 19,0     | 84,0     | 50,0                       | 108 714 | 108 714 C | 1 |
| 15,0     | 19,0     | 84,0     | 50,0                       | 108 715 | 108 715 C | 1 |
| 16,0     | 19,0     | 84,0     | 50,0                       | 108 716 | 108 716 C | 1 |
| 17,0     | 19,0     | 84,0     | 50,0                       | 108 717 | 108 717 C | 1 |
| 18,0     | 19,0     | 84,0     | 50,0                       | 108 718 | 108 718 C | 1 |
| 19,0     | 19,0     | 84,0     | 50,0                       | 108 719 | 108 719 C | 1 |
| 20,0     | 19,0     | 84,0     | 50,0                       | 108 720 | 108 720 C | 1 |
| 21,0     | 19,0     | 84,0     | 50,0                       | 108 721 | 108 721 C | 1 |
| 22,0     | 19,0     | 84,0     | 50,0                       | 108 722 | 108 722 C | 1 |
| 23,0     | 19,0     | 84,0     | 50,0                       | 108 723 | 108 723 C | 1 |
| 24,0     | 19,0     | 84,0     | 50,0                       | 108 724 | 108 724 C | 1 |
| 25,0     | 19,0     | 84,0     | 50,0                       | 108 725 | 108 725 C | 1 |
| 26,0     | 19,0     | 84,0     | 50,0                       | 108 726 | 108 726 C | 1 |
| 27,0     | 19,0     | 84,0     | 50,0                       | 108 727 | 108 727 C | 1 |
| 28,0     | 19,0     | 84,0     | 50,0                       | 108 728 | 108 728 C | 1 |
| 29,0     | 19,0     | 84,0     | 50,0                       | 108 729 | 108 729 C | 1 |
| 30,0     | 19,0     | 84,0     | 50,0                       | 108 730 | 108 730 C | 1 |
| 31,0     | 19,0     | 84,0     | 50,0                       | 108 731 | 108 731 C | 1 |
| 32,0     | 19,0     | 84,0     | 50,0                       | 108 732 | 108 732 C | 1 |
| 33,0     | 19,0     | 84,0     | 50,0                       | 108 733 | 108 733 C | 1 |
| 34,0     | 19,0     | 84,0     | 50,0                       | 108 734 | 108 734 C | 1 |
| 35,0     | 19,0     | 84,0     | 50,0                       | 108 735 | 108 735 C | 1 |
| 36,0     | 19,0     | 84,0     | 50,0                       | 108 736 | 108 736 C | 1 |
| 37,0     | 19,0     | 84,0     | 50,0                       | 108 737 | 108 737 C | 1 |
| 38,0     | 19,0     | 84,0     | 50,0                       | 108 738 | 108 738 C | 1 |
| 39,0     | 19,0     | 84,0     | 50,0                       | 108 739 | 108 739 C | 1 |
| 40,0     | 19,0     | 84,0     | 50,0                       | 108 740 | 108 740 C | 1 |
| 41,0     | 19,0     | 84,0     | 50,0                       | 108 741 | 108 741 C | 1 |
| 42,0     | 19,0     | 84,0     | 50,0                       | 108 742 | 108 742 C | 1 |
| 43,0     | 19,0     | 84,0     | 50,0                       | 108 743 | 108 743 C | 1 |
| 44,0     | 19,0     | 84,0     | 50,0                       | 108 744 | 108 744 C | 1 |
| 45,0     | 19,0     | 84,0     | 50,0                       | 108 745 | 108 745 C | 1 |
| 46,0     | 19,0     | 84,0     | 50,0                       | 108 746 | 108 746 C | 1 |
| 47,0     | 19,0     | 84,0     | 50,0                       | 108 747 | 108 747 C | 1 |
| 48,0     | 19,0     | 84,0     | 50,0                       | 108 748 | 108 748 C | 1 |
| 49,0     | 19,0     | 84,0     | 50,0                       | 108 749 | 108 749 C | 1 |
| 50,0     | 19,0     | 84,0     | 50,0                       | 108 750 | 108 750 C | 1 |

# Frese a tazza con taglienti in metallo duro e attacco Quick IN, rettificata CBN, profondità di taglio 35,0 / 50,0 mm

Ø 12,0 mm fino Ø 32,0 mm con gambo fisso.  
 Ø 33,0 mm fino Ø 80,0 mm incluso adattatore con attacco Quick IN n. 108 111.

Macchina: con portasuportto Sistema Quick IN  
 Perno espulsore: Ø 12,0 mm fino Ø 32,0 mm, no. articolo 108 306 (Ø 6,35 x 87,0 mm)  
 Ø 33,0 mm fino Ø 80,0 mm, no. articolo 108 110 (Ø 6,35 x 123,0 mm)



Unità d’imballo: singolarmente in confezione di plastica

| Acciaio (N/mm2) < 900  |  |  |
|------------------------|--|--|
| Acciaio (N/mm2) < 1100 |  |  |
| Acciaio (N/mm2) < 1300 |  |  |
| Acciaio inossidabile   |  |  |
| Alluminio              |  |  |

| Ottone            |  |  |
|-------------------|--|--|
| Bronzo            |  |  |
| Materie plastiche |  |  |
| Ghisa             |  |  |
| Lega di titanio   |  |  |

| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità<br>di taglio mm | TC       | TC         |   |
|----------|----------|----------|----------------------------|----------|------------|---|
| 12,0     | 18,0     | 83,0     | 35,0                       | 108 1112 | 108 1112 C | 1 |
| 13,0     | 18,0     | 83,0     | 35,0                       | 108 1113 | 108 1113 C | 1 |
| 14,0     | 18,0     | 83,0     | 35,0                       | 108 1114 | 108 1114 C | 1 |
| 15,0     | 18,0     | 83,0     | 35,0                       | 108 1115 | 108 1115 C | 1 |
| 16,0     | 18,0     | 83,0     | 35,0                       | 108 1116 | 108 1116 C | 1 |
| 17,0     | 18,0     | 83,0     | 35,0                       | 108 1117 | 108 1117 C | 1 |
| 18,0     | 18,0     | 83,0     | 35,0                       | 108 1118 | 108 1118 C | 1 |
| 19,0     | 18,0     | 83,0     | 35,0                       | 108 1119 | 108 1119 C | 1 |
| 20,0     | 18,0     | 83,0     | 35,0                       | 108 1120 | 108 1120 C | 1 |
| 21,0     | 18,0     | 83,0     | 35,0                       | 108 1121 | 108 1121 C | 1 |
| 22,0     | 18,0     | 83,0     | 35,0                       | 108 1122 | 108 1122 C | 1 |
| 23,0     | 18,0     | 83,0     | 35,0                       | 108 1123 | 108 1123 C | 1 |
| 24,0     | 18,0     | 83,0     | 35,0                       | 108 1124 | 108 1124 C | 1 |
| 25,0     | 18,0     | 83,0     | 35,0                       | 108 1125 | 108 1125 C | 1 |
| 26,0     | 18,0     | 83,0     | 35,0                       | 108 1126 | 108 1126 C | 1 |
| 27,0     | 18,0     | 83,0     | 35,0                       | 108 1127 | 108 1127 C | 1 |
| 28,0     | 18,0     | 83,0     | 35,0                       | 108 1128 | 108 1128 C | 1 |
| 29,0     | 18,0     | 83,0     | 35,0                       | 108 1129 | 108 1129 C | 1 |
| 30,0     | 18,0     | 83,0     | 35,0                       | 108 1130 | 108 1130 C | 1 |
| 31,0     | 18,0     | 83,0     | 35,0                       | 108 1131 | 108 1131 C | 1 |
| 32,0     | 18,0     | 83,0     | 35,0                       | 108 1132 | 108 1132 C | 1 |
| 33,0     | 18,0     | 112,0    | 50,0                       | 108 1133 | 108 1133 C | 1 |
| 34,0     | 18,0     | 112,0    | 50,0                       | 108 1134 | 108 1134 C | 1 |
| 35,0     | 18,0     | 112,0    | 50,0                       | 108 1135 | 108 1135 C | 1 |
| 36,0     | 18,0     | 112,0    | 50,0                       | 108 1136 | 108 1136 C | 1 |
| 37,0     | 18,0     | 112,0    | 50,0                       | 108 1137 | 108 1137 C | 1 |
| 38,0     | 18,0     | 112,0    | 50,0                       | 108 1138 | 108 1138 C | 1 |
| 39,0     | 18,0     | 112,0    | 50,0                       | 108 1139 | 108 1139 C | 1 |
| 40,0     | 18,0     | 112,0    | 50,0                       | 108 1140 | 108 1140 C | 1 |
| 41,0     | 18,0     | 112,0    | 50,0                       | 108 1141 | 108 1141 C | 1 |
| 42,0     | 18,0     | 112,0    | 50,0                       | 108 1142 | 108 1142 C | 1 |
| 43,0     | 18,0     | 112,0    | 50,0                       | 108 1143 | 108 1143 C | 1 |
| 44,0     | 18,0     | 112,0    | 50,0                       | 108 1144 | 108 1144 C | 1 |
| 45,0     | 18,0     | 112,0    | 50,0                       | 108 1145 | 108 1145 C | 1 |
| 46,0     | 18,0     | 112,0    | 50,0                       | 108 1146 | 108 1146 C | 1 |
| 47,0     | 18,0     | 112,0    | 50,0                       | 108 1147 | 108 1147 C | 1 |
| 48,0     | 18,0     | 112,0    | 50,0                       | 108 1148 | 108 1148 C | 1 |
| 49,0     | 18,0     | 112,0    | 50,0                       | 108 1149 | 108 1149 C | 1 |
| 50,0     | 18,0     | 112,0    | 50,0                       | 108 1150 | 108 1150 C | 1 |

| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità<br>di taglio mm | TC  | TC  |  |
|----------|----------|----------|----------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 51,0     | 18,0     | 112,0    | 50,0                       | 108 1151                                                                              | 108 1151 C                                                                            | 1                                                                                  |
| 52,0     | 18,0     | 112,0    | 50,0                       | 108 1152                                                                              | 108 1152 C                                                                            | 1                                                                                  |
| 53,0     | 18,0     | 112,0    | 50,0                       | 108 1153                                                                              | 108 1153 C                                                                            | 1                                                                                  |
| 54,0     | 18,0     | 112,0    | 50,0                       | 108 1154                                                                              | 108 1154 C                                                                            | 1                                                                                  |
| 55,0     | 18,0     | 112,0    | 50,0                       | 108 1155                                                                              | 108 1155 C                                                                            | 1                                                                                  |
| 60,0     | 18,0     | 112,0    | 50,0                       | 108 1160                                                                              | 108 1160 C                                                                            | 1                                                                                  |
| 61,0     | 18,0     | 112,0    | 50,0                       | 108 1161                                                                              | 108 1161 C                                                                            | 1                                                                                  |
| 63,0     | 18,0     | 112,0    | 50,0                       | 108 1163                                                                              | 108 1163 C                                                                            | 1                                                                                  |
| 65,0     | 18,0     | 112,0    | 50,0                       | 108 1165                                                                              | 108 1165 C                                                                            | 1                                                                                  |
| 68,0     | 18,0     | 112,0    | 50,0                       | 108 1168                                                                              | 108 1168 C                                                                            | 1                                                                                  |
| 70,0     | 18,0     | 112,0    | 50,0                       | 108 1170                                                                              | 108 1170 C                                                                            | 1                                                                                  |
| 71,0     | 18,0     | 112,0    | 50,0                       | 108 1171                                                                              | 108 1171 C                                                                            | 1                                                                                  |
| 75,0     | 18,0     | 112,0    | 50,0                       | 108 1175                                                                              | 108 1175 C                                                                            | 1                                                                                  |
| 80,0     | 18,0     | 112,0    | 50,0                       | 108 1180                                                                              | 108 1180 C                                                                            | 1                                                                                  |



Set di frese a tazza con taglienti in metallo duro e attacco Quick IN, rettificata CBN, in valigia plastica

|                                                                                                                                                                                                                                                                                                                                                            | TC  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Set di frese a tazza con taglienti in metallo duro e attacco Quick IN<br>8 frese a tazza con taglienti in metallo duro<br>Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm<br>20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm<br>1 Spray per taglio 50 ml No. articolo 101 010<br>1 Perno espulsore Ø 6,35 x 87,0 mm<br>per profondità di taglio 35,0 mm No. articolo 108 306 | 108 822                                                                                 |



## Refrigeranti e lubrificanti

I refrigeranti e lubrificanti RUKO garantiscono una eccezionale azione di separazione e raffreddamento. Il risultato è una elevata qualità superficiale e maggiori tempi utili degli utensili anche in materiali duri e fragili.

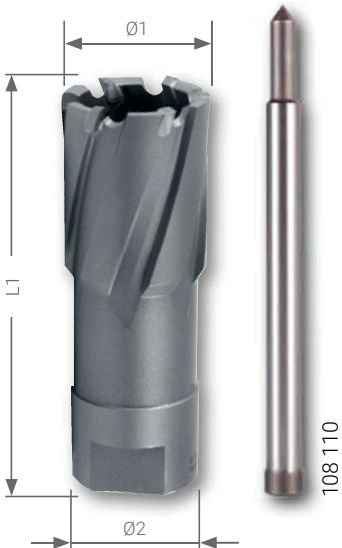
Adattata specificamente al nostro assortimento trovate la nuova serie di refrigeranti e lubrificanti nel nostro nuovo capitolo 14 a partire dalla pagina 319.





# Frese a tazza con taglienti in metallo duro e supporto filettato, profondità di taglio 50,0 mm

Perno espulsore: no. articolo 108 110 (Ø 6,35 x 123,0 mm)  
Supporto: filettato M18 x 6 P1,5



Unità d’imballo: singolarmente in confezione di plastica

|                        |  |  |                   |  |  |
|------------------------|--|--|-------------------|--|--|
|                        |  |  |                   |  |  |
| Acciaio (N/mm2) < 900  |  |  | Ottone            |  |  |
| Acciaio (N/mm2) < 1100 |  |  | Bronzo            |  |  |
| Acciaio (N/mm2) < 1300 |  |  | Materie plastiche |  |  |
| Acciaio inossidabile   |  |  | Ghisa             |  |  |
| Alluminio              |  |  | Lega di titanio   |  |  |

| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità<br>di taglio mm | TC      | TC        |   |
|----------|----------|----------|----------------------------|---------|-----------|---|
| 12,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 012 | 108 012 C | 1 |
| 13,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 013 | 108 013 C | 1 |
| 14,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 014 | 108 014 C | 1 |
| 15,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 015 | 108 015 C | 1 |
| 16,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 016 | 108 016 C | 1 |
| 17,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 017 | 108 017 C | 1 |
| 18,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 018 | 108 018 C | 1 |
| 19,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 019 | 108 019 C | 1 |
| 20,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 020 | 108 020 C | 1 |
| 21,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 021 | 108 021 C | 1 |
| 22,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 022 | 108 022 C | 1 |
| 23,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 023 | 108 023 C | 1 |
| 24,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 024 | 108 024 C | 1 |
| 25,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 025 | 108 025 C | 1 |
| 26,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 026 | 108 026 C | 1 |
| 27,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 027 | 108 027 C | 1 |
| 28,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 028 | 108 028 C | 1 |
| 29,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 029 | 108 029 C | 1 |
| 30,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 030 | 108 030 C | 1 |
| 31,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 031 | 108 031 C | 1 |
| 32,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 032 | 108 032 C | 1 |
| 33,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 033 | 108 033 C | 1 |
| 34,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 034 | 108 034 C | 1 |
| 35,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 035 | 108 035 C | 1 |
| 36,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 036 | 108 036 C | 1 |
| 37,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 037 | 108 037 C | 1 |
| 38,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 038 | 108 038 C | 1 |
| 39,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 039 | 108 039 C | 1 |
| 40,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 040 | 108 040 C | 1 |
| 41,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 041 | 108 041 C | 1 |
| 42,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 042 | 108 042 C | 1 |
| 43,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 043 | 108 043 C | 1 |
| 44,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 044 | 108 044 C | 1 |
| 45,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 045 | 108 045 C | 1 |
| 46,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 046 | 108 046 C | 1 |
| 47,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 047 | 108 047 C | 1 |
| 48,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 048 | 108 048 C | 1 |
| 49,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 049 | 108 049 C | 1 |
| 50,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 050 | 108 050 C | 1 |



| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità<br>di taglio mm | TC  | TC  |  |
|----------|----------|----------|----------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| 51,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 051                                                                               | 108 051 C                                                                             | 1                                                                                  |
| 52,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 052                                                                               | 108 052 C                                                                             | 1                                                                                  |
| 53,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 053                                                                               | 108 053 C                                                                             | 1                                                                                  |
| 54,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 054                                                                               | 108 054 C                                                                             | 1                                                                                  |
| 55,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 055                                                                               | 108 055 C                                                                             | 1                                                                                  |
| 60,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 060                                                                               | 108 060 C                                                                             | 1                                                                                  |
| 61,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 061                                                                               | 108 061 C                                                                             | 1                                                                                  |
| 63,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 063                                                                               | 108 063 C                                                                             | 1                                                                                  |
| 65,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 065                                                                               | 108 065 C                                                                             | 1                                                                                  |
| 68,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 068                                                                               | 108 068 C                                                                             | 1                                                                                  |
| 70,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 070                                                                               | 108 070 C                                                                             | 1                                                                                  |
| 71,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 071                                                                               | 108 071 C                                                                             | 1                                                                                  |
| 75,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 075                                                                               | 108 075 C                                                                             | 1                                                                                  |
| 80,0     | CM 2 / 3 | 84,0     | 50,0                       | 108 080                                                                               | 108 080 C                                                                             | 1                                                                                  |



Set di frese a tazza con taglienti in metallo duro e attacco filettato, in valigia plastica

|                                                                                                                                                                                                             |                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
|                                                                                                                                                                                                             | TC  |
| Set di frese a tazza con taglienti in metallo duro e attacco filettato<br>8 frese a tazza con taglienti in metallo duro<br>Ø 12,0 mm - 14,0 mm - 16,0 mm - 18,0 mm<br>20,0 mm - 22,0 mm - 24,0 mm - 26,0 mm | 108 823                                                                                 |



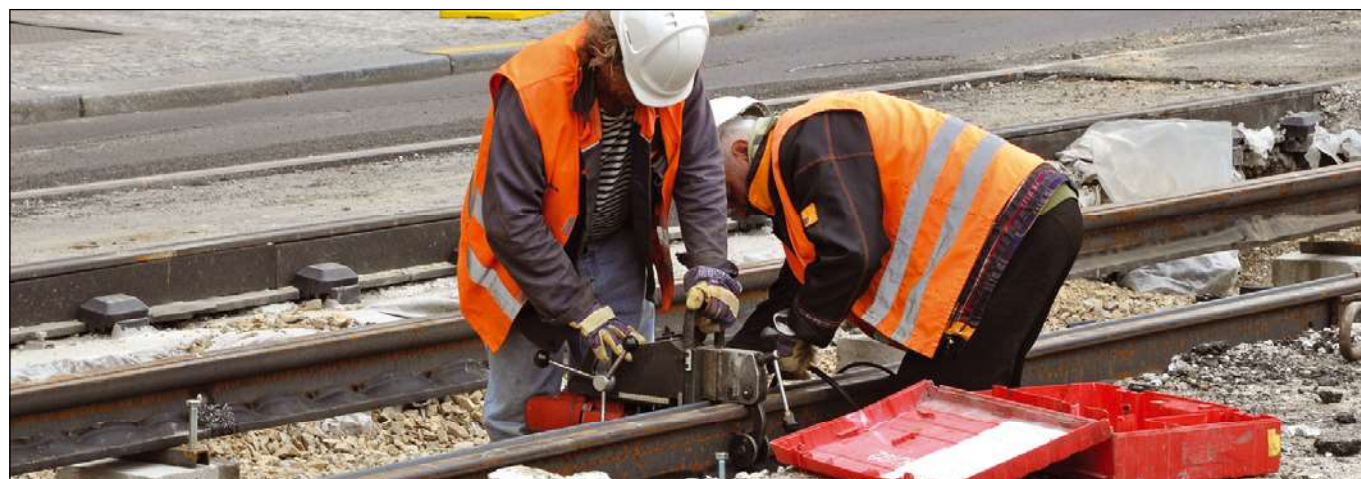
Applicabile su tutte le trapanatrici per rotaie. La geometria di taglio è stata ottimizzata appositamente per l'asportazione difficoltosa di trucioli di rotaie per ferrovie, rendendo l'utilizzo economicamente vantaggioso.

Unità d'imballo: singolarmente in confezione di plastica

|                                     |                                                                                   |                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
|                                     |  |  |
| Acciaio (N/mm <sup>2</sup> ) < 900  |                                                                                   |                                                                                   |
| Acciaio (N/mm <sup>2</sup> ) < 1100 |  |  |
| Acciaio (N/mm <sup>2</sup> ) < 1300 |  |  |
| Acciaio inossidabile                |                                                                                   |                                                                                   |
| Alluminio                           |                                                                                   |                                                                                   |

|                   |                                                                                     |                                                                                     |
|-------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                   |  |  |
| Ottone            |                                                                                     |                                                                                     |
| Bronzo            |                                                                                     |                                                                                     |
| Materie plastiche |                                                                                     |                                                                                     |
| Ghisa             |                                                                                     |                                                                                     |
| Lega di titanio   |                                                                                     |                                                                                     |

| Ø1<br>mm | Ø2<br>mm | L1<br>mm | Profondità di<br>taglio mm |   |   |  |
|----------|----------|----------|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 19,0     | 19,0     | 63,0     | 30,0                       | 108 1519                                                                                                                                                                | 108 1519 C                                                                                                                                                                  | 1                                                                                     |
| 20,0     | 19,0     | 63,0     | 30,0                       | 108 1520                                                                                                                                                                | 108 1520 C                                                                                                                                                                  | 1                                                                                     |
| 21,0     | 19,0     | 63,0     | 30,0                       | 108 1521                                                                                                                                                                | 108 1521 C                                                                                                                                                                  | 1                                                                                     |
| 22,0     | 19,0     | 63,0     | 30,0                       | 108 1522                                                                                                                                                                | 108 1522 C                                                                                                                                                                  | 1                                                                                     |
| 23,0     | 19,0     | 63,0     | 30,0                       | 108 1523                                                                                                                                                                | 108 1523 C                                                                                                                                                                  | 1                                                                                     |
| 24,0     | 19,0     | 63,0     | 30,0                       | 108 1524                                                                                                                                                                | 108 1524 C                                                                                                                                                                  | 1                                                                                     |
| 25,0     | 19,0     | 63,0     | 30,0                       | 108 1525                                                                                                                                                                | 108 1525 C                                                                                                                                                                  | 1                                                                                     |
| 26,0     | 19,0     | 63,0     | 30,0                       | 108 1526                                                                                                                                                                | 108 1526 C                                                                                                                                                                  | 1                                                                                     |
| 26,5     | 19,0     | 63,0     | 30,0                       | 108 15265                                                                                                                                                               | 108 15265 C                                                                                                                                                                 | 1                                                                                     |
| 27,0     | 19,0     | 63,0     | 30,0                       | 108 1527                                                                                                                                                                | 108 1527 C                                                                                                                                                                  | 1                                                                                     |
| 27,5     | 19,0     | 63,0     | 30,0                       | 108 15275                                                                                                                                                               | 108 15275 C                                                                                                                                                                 | 1                                                                                     |
| 28,0     | 19,0     | 63,0     | 30,0                       | 108 1528                                                                                                                                                                | 108 1528 C                                                                                                                                                                  | 1                                                                                     |
| 29,0     | 19,0     | 63,0     | 30,0                       | 108 1529                                                                                                                                                                | 108 1529 C                                                                                                                                                                  | 1                                                                                     |
| 30,0     | 19,0     | 63,0     | 30,0                       | 108 1530                                                                                                                                                                | 108 1530 C                                                                                                                                                                  | 1                                                                                     |
| 31,0     | 19,0     | 63,0     | 30,0                       | 108 1531                                                                                                                                                                | 108 1531 C                                                                                                                                                                  | 1                                                                                     |
| 32,0     | 19,0     | 63,0     | 30,0                       | 108 1532                                                                                                                                                                | 108 1532 C                                                                                                                                                                  | 1                                                                                     |
| 33,0     | 19,0     | 63,0     | 30,0                       | 108 1533                                                                                                                                                                | 108 1533 C                                                                                                                                                                  | 1                                                                                     |
| 34,0     | 19,0     | 63,0     | 30,0                       | 108 1534                                                                                                                                                                | 108 1534 C                                                                                                                                                                  | 1                                                                                     |
| 36,0     | 19,0     | 63,0     | 30,0                       | 108 1536                                                                                                                                                                | 108 1536 C                                                                                                                                                                  | 1                                                                                     |



# Perno espulsore per frese a tazza

Unità d'imballo: singolarmente in confezione di plastica



## 1 Centatura:

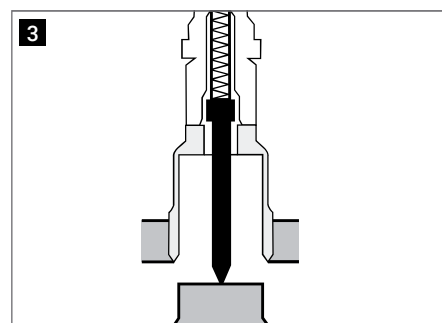
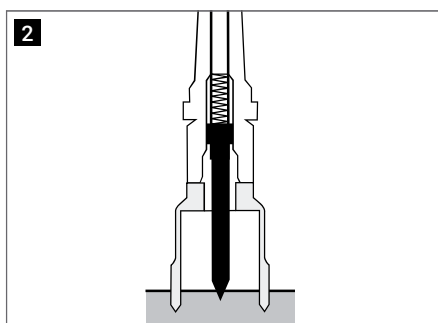
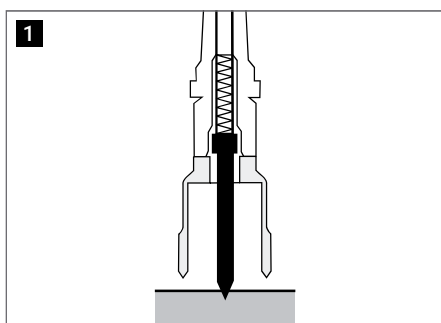
Posizionare l'estrattore al centro sul punzone. Ora la macchina si trova nella posizione di foratura corretta. Ora attivare il magnete.

## 2 Introduzione del refrigerante:

L'olio da taglio viene introdotto automaticamente attraverso il sistema di lubrificazione interno tramite l'estrattore e rilasciato nella dose ottimale sulle lame.

## 3 Estrazione:

Nella fase finale della foratura, la carota viene pressata tramite l'estrattore precompresso da un cuscinetto.



## Perno espulsore per frese a tazza HSS

|                                                                                                | Prof. di taglio<br>frese a tazza mm |  |  |
|------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Perno espulsore Ø 6,35 x 77,0 mm per frese a tazza HSS con attacco Weldon 3/4"                 | 30,0                                | 108 304                                                                               | 1                                                                                     |
| Perno espulsore Ø 6,35 x 87,0 mm per frese a tazza HSS / metallo duro con attacco Quick IN     | 35,0 / 50,0                         | 108 306                                                                               | 1                                                                                     |
| Perno espulsore Ø 6,35 x 102,0 mm per frese a tazza HSS / metallo duro con attacco Weldon 3/4" | 55,0                                | 108 305                                                                               | 1                                                                                     |
| Perno espulsore Ø 8,0 x 155,0 mm per frese a tazza HSS con attacco Weldon 3/4"                 | 110,0                               | 108 2000                                                                              | 1                                                                                     |
| Perno espulsore Ø 6,35 x 70,0 mm per frese a tazza HSS con attacco Weldon 3/4" - RS5e          | 30,0                                | 108 344                                                                               | 1                                                                                     |

## Perno espulsore per frese a tazza HM

|                                                                                                                   | Prof. di taglio<br>frese a tazza mm |  |  |
|-------------------------------------------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| Perno espulsore Ø 8,0 x 81,0 mm per frese a tazza in metallo duro con attacco Weldon 3/4" per rotaie per ferrovie | 30,0                                | 108 1510                                                                              | 1                                                                                     |
| Perno espulsore Ø 6,35 x 87,0 mm per frese a tazza HSS / metallo duro con attacco Quick IN                        | 35,0 / 50,0                         | 108 306                                                                               | 1                                                                                     |
| Perno espulsore Ø 8,0 x 112,0 mm per frese a tazza in metallo duro con attacco Weldon 3/4"                        | 50,0                                | 108 701                                                                               | 1                                                                                     |
| Perno espulsore Ø 6,35 x 123,0 mm per frese a tazza in metallo duro con attacco Weldon 3/4" e Quick IN            | 50,0<br>+ Adapter                   | 108 110                                                                               | 1                                                                                     |
| Perno espulsore Ø 6,35 x 102,0 mm per frese a tazza HSS / metallo duro con attacco Weldon 3/4"                    | 55,0                                | 108 305                                                                               | 1                                                                                     |

Tabella valori indicativi numero giri per  
frese a tazza HSS

| Materiale:    |           | Acciaio da<br>costr. n. legato<br>fino a<br>700 N/mm² | Acciaio<br>legato<br>fino a<br>1000 N/mm² | Ghisa<br>oltre<br>250 N/mm² | Lega in<br>CuZn<br>fragile | Lega in<br>CuZn<br>malleabile | Lega in<br>alluminio<br>fino a<br>11% Si | Termo-<br>plastiche | Duro-<br>plastiche |
|---------------|-----------|-------------------------------------------------------|-------------------------------------------|-----------------------------|----------------------------|-------------------------------|------------------------------------------|---------------------|--------------------|
| Vc = m/min    |           | 30                                                    | 20                                        | 10                          | 60                         | 35                            | 30                                       | 20                  | 15                 |
| Refrigerante: |           | Spray da taglio                                       | Spray da taglio                           | Aria compressa              | Aria compressa             | Aria compressa                | Spray da taglio                          | Acqua               | Aria compressa     |
| Ø mm          | Ø pollici | r.p.m.                                                | r.p.m.                                    | r.p.m.                      | r.p.m.                     | r.p.m.                        | r.p.m.                                   | r.p.m.              | r.p.m.             |
| 12,0          | 15/32     | 796                                                   | 531                                       | 265                         | 1592                       | 929                           | 796                                      | 531                 | 398                |
| 13,0          | 33/64     | 735                                                   | 490                                       | 245                         | 1470                       | 857                           | 735                                      | 490                 | 367                |
| 14,0          | 35/64     | 682                                                   | 455                                       | 227                         | 1365                       | 796                           | 682                                      | 455                 | 341                |
| 15,0          | 19/32     | 637                                                   | 425                                       | 212                         | 1274                       | 743                           | 637                                      | 425                 | 318                |
| 16,0          | 5/8       | 597                                                   | 398                                       | 199                         | 1194                       | 697                           | 597                                      | 398                 | 299                |
| 17,0          | 43/64     | 562                                                   | 375                                       | 187                         | 1124                       | 656                           | 562                                      | 375                 | 281                |
| 18,0          | 45/64     | 531                                                   | 354                                       | 177                         | 1062                       | 619                           | 531                                      | 354                 | 265                |
| 19,0          | 3/4       | 503                                                   | 335                                       | 168                         | 1006                       | 587                           | 503                                      | 335                 | 251                |
| 20,0          | 25/32     | 478                                                   | 318                                       | 159                         | 955                        | 557                           | 478                                      | 318                 | 239                |
| 21,0          | 53/64     | 455                                                   | 303                                       | 152                         | 910                        | 531                           | 455                                      | 303                 | 227                |
| 22,0          | 7/8       | 434                                                   | 290                                       | 145                         | 869                        | 507                           | 434                                      | 290                 | 217                |
| 23,0          | 29/32     | 415                                                   | 277                                       | 138                         | 831                        | 485                           | 415                                      | 277                 | 208                |
| 24,0          | 15/16     | 398                                                   | 265                                       | 133                         | 796                        | 464                           | 398                                      | 265                 | 199                |
| 25,0          | 63/64     | 382                                                   | 255                                       | 127                         | 764                        | 446                           | 382                                      | 255                 | 191                |
| 26,0          | 1 1/32    | 367                                                   | 245                                       | 122                         | 735                        | 429                           | 367                                      | 245                 | 184                |
| 27,0          | 1 1/16    | 354                                                   | 236                                       | 118                         | 708                        | 413                           | 354                                      | 236                 | 177                |
| 28,0          | 1 3/32    | 341                                                   | 227                                       | 114                         | 682                        | 398                           | 341                                      | 227                 | 171                |
| 29,0          | 1 9/64    | 329                                                   | 220                                       | 110                         | 659                        | 384                           | 329                                      | 220                 | 165                |
| 30,0          | 1 3/16    | 318                                                   | 212                                       | 106                         | 637                        | 372                           | 318                                      | 212                 | 159                |
| 31,0          | 1 7/32    | 308                                                   | 205                                       | 103                         | 616                        | 360                           | 308                                      | 205                 | 154                |
| 32,0          | 1 17/64   | 299                                                   | 199                                       | 100                         | 597                        | 348                           | 299                                      | 199                 | 149                |
| 33,0          | 1 19/64   | 290                                                   | 193                                       | 97                          | 579                        | 338                           | 290                                      | 193                 | 145                |
| 34,0          | 1 11/32   | 281                                                   | 187                                       | 94                          | 562                        | 328                           | 281                                      | 187                 | 141                |
| 35,0          | 1 3/8     | 273                                                   | 182                                       | 91                          | 546                        | 318                           | 273                                      | 182                 | 136                |
| 36,0          | 1 27/64   | 265                                                   | 177                                       | 88                          | 531                        | 310                           | 265                                      | 177                 | 133                |
| 37,0          | 1 29/64   | 258                                                   | 172                                       | 86                          | 516                        | 301                           | 258                                      | 172                 | 129                |
| 38,0          | 1 1/2     | 251                                                   | 168                                       | 84                          | 503                        | 293                           | 251                                      | 168                 | 126                |
| 39,0          | 1 17/32   | 245                                                   | 163                                       | 82                          | 490                        | 286                           | 245                                      | 163                 | 122                |
| 40,0          | 1 37/64   | 239                                                   | 159                                       | 80                          | 478                        | 279                           | 239                                      | 159                 | 119                |
| 41,0          | 1 39/64   | 233                                                   | 155                                       | 78                          | 466                        | 272                           | 233                                      | 155                 | 117                |
| 42,0          | 1 21/32   | 227                                                   | 152                                       | 76                          | 455                        | 265                           | 227                                      | 152                 | 114                |
| 43,0          | 1 11/16   | 222                                                   | 148                                       | 74                          | 444                        | 259                           | 222                                      | 148                 | 111                |
| 44,0          | 1 47/64   | 217                                                   | 145                                       | 72                          | 434                        | 253                           | 217                                      | 145                 | 109                |
| 45,0          | 1 25/32   | 212                                                   | 142                                       | 71                          | 425                        | 248                           | 212                                      | 142                 | 106                |
| 46,0          | 1 13/16   | 208                                                   | 138                                       | 69                          | 415                        | 242                           | 208                                      | 138                 | 104                |
| 47,0          | 1 55/64   | 203                                                   | 136                                       | 68                          | 407                        | 237                           | 203                                      | 136                 | 102                |
| 48,0          | 1 57/64   | 199                                                   | 133                                       | 66                          | 398                        | 232                           | 199                                      | 133                 | 100                |
| 49,0          | 1 15/16   | 195                                                   | 130                                       | 65                          | 390                        | 227                           | 195                                      | 130                 | 97                 |
| 50,0          | 1 31/32   | 191                                                   | 127                                       | 64                          | 382                        | 223                           | 191                                      | 127                 | 96                 |
| 51,0          | 2         | 187                                                   | 125                                       | 62                          | 375                        | 219                           | 187                                      | 125                 | 94                 |
| 52,0          | 2 3/64    | 184                                                   | 122                                       | 61                          | 367                        | 214                           | 184                                      | 122                 | 92                 |
| 53,0          | 2 3/32    | 180                                                   | 120                                       | 60                          | 361                        | 210                           | 180                                      | 120                 | 90                 |
| 54,0          | 2 1/8     | 177                                                   | 118                                       | 59                          | 354                        | 206                           | 177                                      | 118                 | 88                 |
| 55,0          | 2 5/32    | 174                                                   | 116                                       | 58                          | 347                        | 203                           | 174                                      | 116                 | 87                 |
| 60,0          | 2 3/8     | 159                                                   | 106                                       | 53                          | 318                        | 186                           | 159                                      | 106                 | 80                 |
|               |           |                                                       |                                           |                             |                            |                               |                                          |                     |                    |
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## Tabella valori indicativi numero giri per frese a tazza in metallo duro

| Materiale:    |           | Acciaio da<br>costr. n. legato<br>fino a<br>700 N/mm <sup>2</sup> | Acciaio<br>legato<br>fino a<br>1000 N/mm <sup>2</sup> | Ghisa<br>oltre<br>250 N/mm <sup>2</sup> | Lega in<br>CuZn<br>fragile | Lega in<br>CuZn<br>malleabile | Lega in<br>alluminio<br>fino a<br>11% Si | Termo-<br>plastiche | Duro-<br>plastiche |
|---------------|-----------|-------------------------------------------------------------------|-------------------------------------------------------|-----------------------------------------|----------------------------|-------------------------------|------------------------------------------|---------------------|--------------------|
| Vc = m/min    |           | 50                                                                | 35                                                    | 40                                      | 60                         | 40                            | 60                                       | 45                  | 40                 |
| Refrigerante: |           | Spray da taglio                                                   | Spray da taglio                                       | Aria compressa                          | Aria compressa             | Aria compressa                | Spray da taglio                          | Acqua               | Aria compressa     |
| Ø mm          | Ø pollici | r.p.m.                                                            | r.p.m.                                                | r.p.m.                                  | r.p.m.                     | r.p.m.                        | r.p.m.                                   | r.p.m.              | r.p.m.             |
| 12,0          | 15/32     | 1327                                                              | 929                                                   | 1062                                    | 1592                       | 265                           | 1592                                     | 1194                | 1062               |
| 13,0          | 33/64     | 1225                                                              | 857                                                   | 980                                     | 1470                       | 245                           | 1470                                     | 1102                | 980                |
| 14,0          | 35/64     | 1137                                                              | 796                                                   | 910                                     | 1365                       | 227                           | 1365                                     | 1024                | 910                |
| 15,0          | 19/32     | 1062                                                              | 743                                                   | 849                                     | 1274                       | 212                           | 1274                                     | 955                 | 849                |
| 16,0          | 5/8       | 995                                                               | 697                                                   | 796                                     | 1194                       | 199                           | 1194                                     | 896                 | 796                |
| 17,0          | 34/64     | 937                                                               | 656                                                   | 749                                     | 1124                       | 187                           | 1124                                     | 843                 | 749                |
| 18,0          | 45/64     | 885                                                               | 619                                                   | 708                                     | 1062                       | 177                           | 1062                                     | 796                 | 708                |
| 19,0          | 3/4       | 838                                                               | 587                                                   | 670                                     | 1006                       | 168                           | 1006                                     | 754                 | 670                |
| 20,0          | 25/32     | 796                                                               | 557                                                   | 637                                     | 955                        | 159                           | 955                                      | 717                 | 637                |
| 21,0          | 3/4       | 758                                                               | 531                                                   | 607                                     | 910                        | 152                           | 910                                      | 682                 | 607                |
| 22,0          | 7/8       | 724                                                               | 507                                                   | 579                                     | 869                        | 145                           | 869                                      | 651                 | 579                |
| 23,0          | 13/16     | 692                                                               | 485                                                   | 554                                     | 831                        | 138                           | 831                                      | 623                 | 554                |
| 24,0          | 15/16     | 663                                                               | 464                                                   | 531                                     | 796                        | 133                           | 796                                      | 597                 | 531                |
| 25,0          | 63/64     | 637                                                               | 446                                                   | 510                                     | 764                        | 127                           | 764                                      | 573                 | 510                |
| 26,0          | 1 1/32    | 612                                                               | 429                                                   | 490                                     | 735                        | 122                           | 735                                      | 551                 | 490                |
| 27,0          | 1 1/16    | 590                                                               | 413                                                   | 472                                     | 708                        | 118                           | 708                                      | 531                 | 472                |
| 28,0          | 1 3/32    | 569                                                               | 398                                                   | 455                                     | 682                        | 114                           | 682                                      | 512                 | 455                |
| 29,0          | 1 9/64    | 549                                                               | 384                                                   | 439                                     | 659                        | 110                           | 659                                      | 494                 | 439                |
| 30,0          | 1 3/16    | 531                                                               | 372                                                   | 425                                     | 637                        | 106                           | 637                                      | 478                 | 425                |
| 31,0          | 1 7/32    | 514                                                               | 360                                                   | 411                                     | 616                        | 103                           | 616                                      | 462                 | 411                |
| 32,0          | 1 17/64   | 498                                                               | 348                                                   | 398                                     | 597                        | 100                           | 597                                      | 448                 | 398                |
| 33,0          | 1 19/64   | 483                                                               | 338                                                   | 386                                     | 579                        | 97                            | 579                                      | 434                 | 386                |
| 34,0          | 1 11/32   | 468                                                               | 328                                                   | 375                                     | 562                        | 94                            | 562                                      | 422                 | 375                |
| 35,0          | 1 3/8     | 455                                                               | 318                                                   | 364                                     | 546                        | 91                            | 546                                      | 409                 | 364                |
| 36,0          | 1 27/64   | 442                                                               | 310                                                   | 354                                     | 531                        | 88                            | 531                                      | 398                 | 354                |
| 37,0          | 1 29/64   | 430                                                               | 301                                                   | 344                                     | 516                        | 86                            | 516                                      | 387                 | 344                |
| 38,0          | 1 1/2     | 419                                                               | 293                                                   | 335                                     | 503                        | 84                            | 503                                      | 377                 | 335                |
| 39,0          | 1 17/32   | 408                                                               | 286                                                   | 327                                     | 490                        | 82                            | 490                                      | 367                 | 327                |
| 40,0          | 1 37/64   | 398                                                               | 279                                                   | 318                                     | 478                        | 80                            | 478                                      | 358                 | 318                |
| 41,0          | 1 39/64   | 388                                                               | 272                                                   | 311                                     | 466                        | 78                            | 466                                      | 350                 | 311                |
| 42,0          | 1 21/32   | 379                                                               | 265                                                   | 303                                     | 455                        | 76                            | 455                                      | 341                 | 303                |
| 43,0          | 1 11/16   | 370                                                               | 259                                                   | 296                                     | 444                        | 74                            | 444                                      | 333                 | 296                |
| 44,0          | 1 47/64   | 362                                                               | 253                                                   | 290                                     | 434                        | 72                            | 434                                      | 326                 | 290                |
| 45,0          | 1 25/32   | 354                                                               | 248                                                   | 283                                     | 425                        | 71                            | 425                                      | 318                 | 283                |
| 46,0          | 1 13/16   | 346                                                               | 242                                                   | 277                                     | 415                        | 69                            | 415                                      | 312                 | 277                |
| 47,0          | 1 55/64   | 339                                                               | 237                                                   | 271                                     | 407                        | 68                            | 407                                      | 305                 | 271                |
| 48,0          | 1 57/64   | 332                                                               | 232                                                   | 265                                     | 398                        | 66                            | 398                                      | 299                 | 265                |
| 49,0          | 1 15/16   | 325                                                               | 227                                                   | 260                                     | 390                        | 65                            | 390                                      | 292                 | 260                |
| 50,0          | 1 31/32   | 318                                                               | 223                                                   | 255                                     | 382                        | 64                            | 382                                      | 287                 | 255                |
| 51,0          | 2         | 312                                                               | 219                                                   | 250                                     | 375                        | 62                            | 375                                      | 281                 | 250                |
| 52,0          | 2 3/64    | 306                                                               | 214                                                   | 245                                     | 367                        | 61                            | 367                                      | 276                 | 245                |
| 53,0          | 2 3/32    | 300                                                               | 210                                                   | 240                                     | 361                        | 60                            | 361                                      | 270                 | 240                |
| 54,0          | 2 1/8     | 295                                                               | 206                                                   | 236                                     | 354                        | 59                            | 354                                      | 265                 | 236                |
| 55,0          | 2 5/32    | 290                                                               | 203                                                   | 232                                     | 347                        | 58                            | 347                                      | 261                 | 232                |
| 60,0          | 2 3/8     | 265                                                               | 186                                                   | 212                                     | 318                        | 53                            | 318                                      | 239                 | 212                |
| 61,0          | 2 13/32   | 261                                                               | 183                                                   | 209                                     | 313                        | 52                            | 313                                      | 235                 | 209                |
| 65,0          | 2 9/16    | 245                                                               | 171                                                   | 196                                     | 294                        | 49                            | 294                                      | 220                 | 196                |
| 68,0          | 2 43/64   | 234                                                               | 164                                                   | 187                                     | 281                        | 47                            | 281                                      | 211                 | 187                |
| 70,0          | 2 3/4     | 227                                                               | 159                                                   | 182                                     | 273                        | 45                            | 273                                      | 205                 | 182                |
| 71,0          | 2 51/64   | 224                                                               | 157                                                   | 179                                     | 269                        | 45                            | 269                                      | 202                 | 179                |
| 75,0          | 2 61/64   | 212                                                               | 149                                                   | 170                                     | 255                        | 42                            | 255                                      | 191                 | 170                |
| 80,0          | 3 5/32    | 199                                                               | 139                                                   | 159                                     | 239                        | 40                            | 239                                      | 179                 | 159                |
| 85,0          | 3 11/32   | 187                                                               | 131                                                   | 150                                     | 225                        | 37                            | 225                                      | 169                 | 150                |
| 90,0          | 3 35/64   | 177                                                               | 124                                                   | 142                                     | 212                        | 35                            | 212                                      | 159                 | 142                |
| 95,0          | 3 47/64   | 168                                                               | 117                                                   | 134                                     | 201                        | 34                            | 201                                      | 151                 | 134                |
| 100,0         | 3 15/16   | 159                                                               | 111                                                   | 127                                     | 191                        | 32                            | 191                                      | 143                 | 127                |