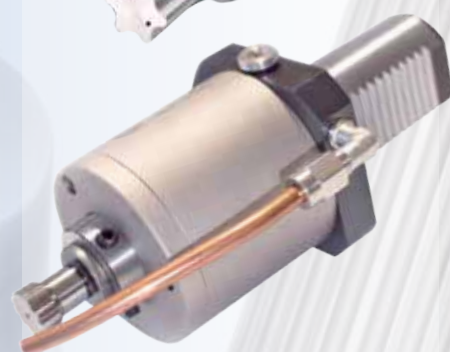




BRIGHETTI MECCANICA

*Made in Italy  
since 1977*



**CATALOGO GENERALE 11<sup>a</sup> edizione**  
**GENERAL CATALOGUE 11<sup>th</sup> edition**

12/2025

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#### UTENSILI PER FRESATURA ED ALESATURA TOOLS FOR BORING AND MILLING



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**I** La BRIGHETTI MECCANICA s.r.l. nasce nel 1972 come azienda produttrice di minuterie meccaniche nel settore della Moda.

Agli inizi degli anni 80 compie un salto qualitativo ed entra nel settore degli attrezzi per macchine utensili tradizionali e a controllo numerico.

Negli oltre trent'anni di attività la BRIGHETTI MECCANICA s.r.l. si è distinta per la elevata qualità dei suoi prodotti ed ha sempre profuso il massimo impegno, sotto il profilo sia tecnico che commerciale, per soddisfare puntualmente le richieste della propria clientela.

La BRIGHETTI MECCANICA s.r.l. si distingue inoltre per la rapidità delle consegne: infatti gli ordini relativi ad articoli codificati nel presente Catalogo Generale vengono evasi entro il giorno successivo al ricevimento dell'ordine, in quanto tutti gli articoli sono presenti a magazzino, salvo il venduto.

Il ciclo di produzione si svolge in Italia, per cui la nostra produzione è tutta rigorosamente "Made in Italy".

### I nostri prodotti

La gamma dei nostri prodotti comprende:

- > Brocciatori standard e serie BRC (con passaggio frigerante)
- > Brocche per cave poligonali (serie BR e serie BRC), per profili esterni e speciali, nelle misure metriche e in pollici
- > Brocche per chiavi TORX® e TORX® PLUS
- > Tamponi di controllo per profili poligonali interni, esterni e per sedi di chiavette
- > Sistemi di stozzatura per macchine CNC + VMC
- > Valigette
- > Bussole di riduzione
- > Bride di trascinamento

Oltre agli articoli standard presentati nel Catalogo Generale, BRIGHETTI MECCANICA s.r.l. è in grado di costruire particolari sulla base delle specifiche richieste tecniche del Cliente. Ogni nostro prodotto è sottoposto ad un opportuno trattamento termico e, se richiesto, a diversi tipi di rivestimento.

**GB** BRIGHETTI MECCANICA s.r.l. was established in 1972 as a manufacturer of small metallic items for the Fashion Industry. At the beginning of the 1980s, it took a major step forward by launching the production of components for conventional and numerically controlled machine tools.

In over thirty years of business, BRIGHETTI MECCANICA s.r.l. has earned a reputation for the high quality of its products and has always been firmly committed to promptly satisfying Customer's demands of both, a commercial and technical nature.

From a commercial point of view, BRIGHETTI MECCANICA s.r.l. stands out for fast deliveries: orders for the standard items included in this Catalogue are carried out the day after the order is received, as the whole range of products is available in stock.

All production processes take place in Italy, for this reason the entire production is to be considered "Made in Italy".

### Our products:

The products range includes:

- > Standard Broaching heads and BRC series (with internal flow of coolant)
- > Broaches for polygonal holes (BR and BRC series), surface broaches and special broaches, in metric and inch sizes
- > Broaches for TORX® and TORX® PLUS wrenches
- > Plug Gauges for internal and external polygonal profile and for key-way slots
- > Slotting tools for CNC + VMC machines
- > Tool box kits
- > Reduction bushes or reduction sleeves
- > Grinding carriers in aluminium

In addition to the standard items featured in its Catalogue, BRIGHETTI MECCANICA s.r.l. can build special parts on the basis of Customer's specifications. All products undergo suitable heat treatments, according to type.

## Condizioni generali di vendita

### General terms of sale

**I** Gli ordini vengono considerati validi solo se fatti per iscritto con la precisa indicazione del codice articolo, della quantità, della data di consegna richiesta e del trasporto.

Per ordini di quantità elevate la data di consegna deve essere preventivamente concordata.

La merce viaggia a rischio e pericolo del Committente anche se venduta franco addebito. Non si accettano reclami trascorsi otto giorni dal ricevimento della merce. I pagamenti sono validi solo se fatti direttamente alla BRIGHETTI MECCANICA s.r.l. Non sono accettati arrotondamenti o sconti ancorché non concordati.

I ritardati pagamenti fanno decorrere gli interessi commerciali di mora. Per ogni controversia è competente l'Autorità Giudiziaria di Bologna.

### Nota

I dati e le caratteristiche tecniche riportati nel presente Catalogo Generale possono subire delle modifiche senza preavviso

**GB** Orders will be considered valid only if submitted in writing, with a precise indication of the item code, quantity, delivery date and means of transport. In the case of large orders, the delivery date must be arranged in advance. The Customer will bear all the transport risks, even if the goods are delivered carriage pre-paid, with shipping charges to be debited in the sales invoice.

No claims will be accepted unless submitted within eight days of the receipt of the goods. Payments must be made directly to BRIGHETTI MECCANICA s.r.l. No rounding off or discount will be allowed unless previously agreed on.

Interests will be charged on delayed payments, according to current Bank rates. The Court of Bologna will have sole jurisdiction in any action arising from a dispute.

### Note

The technical features contained in this General Catalogue can be modified with no previous notice.

## Sistemi di Brocciatura Broaching Systems

### Brocciatori Standard serie "BR" Standard Broaching Heads "BR" series



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### Brocciatori Regolabili serie "BR" Adjustable Broaching Heads "BR" series



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### Brocciatori con passaggio refrigerante interno serie "BRC" Broaching Heads with internal flow of coolant "BRC" series



pag. 7



**I** I Brocciatori Standard **serie "BR"** e i Brocciatori con passaggio refrigerante **serie "BRC"** sono attrezzi per l'esecuzione rapida di cave poligonali a sezione regolare (quadra, esagonale, Torx®, Torx®Plus, dentata, scanalata ecc.) in fori ciechi o passanti. Inoltre, con l'ausilio dell'adattatore, sullo stesso brocciatore si possono realizzare profili esterni a sezione regolare.

**GB** The Standard Broaching Heads **"BR" series** and the Broaching heads with internal flow of coolant **"BRC" series** are a high-speed tool for forming blind or through holes with regular polygonal shapes (square, hexagonal, Torx®, Torx®Plus, spline, etc.). Installing an adaptor on the same broaching head, polygonal surface profiles can be realized.

# Brocciatori Standard serie "BR"

## Standard Broaching Heads "BR" series



**I** Il Brocciatore è un attrezzo per l'esecuzione rapida di cave poligonali a sezione regolare (quadra, esagonale, TORX®, dentata, scanalata, ecc.) in fori ciechi o passanti. Inoltre, con l'ausilio dell'adattatore, sullo stesso brocciatore si possono realizzare profili esterni a sezione regolare.

Il brocciatore può essere applicato sulla maggior parte delle macchine utensili con moto rotatorio, sia tradizionali (tornio, trapano, fresa) che a controllo numerico, quindi può lavorare sia in verticale che in orizzontale.

Il perno portabrocce è montato all'interno del corpo con una determinata inclinazione e, quando viene messo in rotazione dalla macchina utensile, conferisce alla broccia stessa un movimento rotatorio e pendolare. L'azione combinata della rotazione, dell'avanzamento forniti dalla macchina e dal movimento pendolare, permettono alla broccia di penetrare dolcemente nel pezzo da lavorare, a cui è stato precedentemente eseguito un preforo, creando così il profilo desiderato.

**GB** The Broaching Head is a high-speed tool for forming blind or through holes with regular polygonal shapes (square, hexagonal, TORX®, spline, etc.). Installing an adaptor on the same broaching head, polygonal surface profiles can be realized.

The broaching head may be applied on most rotary machine tools, both conventional (lathe, drill, milling machine) and numerically controlled ones. Thus it can work both vertically and horizontally.

The broach seat is set in the tool body at a specific inclination so that, when the machine rod starts to rotate, it transmits both, a rotary and oscillating motion to the broach. The combined action deriving from the rotation and feed function provided by the machine, allows the broach to smoothly penetrate the pre-drilled work-piece, in order to form the shape required.

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# Brocciatori con passaggio refrigerante interno serie "BRC"

## Broaching Heads with internal flow of coolant "BRC" series

**L'EVOLUZIONE NASCE DA DENTRO**  
**THE EVOLUTION COMES OUT FROM THE INSIDE**



**I** Il nuovo brocciatore serie "BRC" è stato sviluppato con le medesime caratteristiche di funzionamento dell'analogo brocciatore BM, con la differenza che al suo interno sono state apportate modifiche che permettono di convogliare i liquidi lubrorefrigeranti e/o aria compressa dalla parte posteriore del codolo di attacco verso la punta estrema della broccia. **Il liquido lubrorefrigerante fuoriesce dalla broccia da due diverse posizioni ed esattamente:**

- 1) Da due fori inclinati, posizionati in testa alla broccia, che consentono di irrorare di liquido lubrorefrigerante e/o aria compressa l'intera zona interna del tagliente sul punto esatto in cui avviene la fase di brocciatura.
- 2) Da due fori laterali, sempre inclinati, posizionati sulla rastremazione del mozzo della broccia con la funzione di scaricare parzialmente la pressione del liquido lubrorefrigerante e/o aria compressa.

**I vantaggi dell'uso del brocciatore "BRC" sono molteplici:**

- 1) il filo tagliente della broccia si preserva più a lungo assicurando una maggiore durata della vita media della broccia, con una valutazione obiettiva che varia dal 15 al 22% di maggior durata del tagliente in relazione al tipo di materiale da brocciare
- 2) la cava interna, con l'ausilio del liquido lubrorefrigerante e/o aria compressa, presenta una migliore lucentezza delle superfici con una rugosità che si attesta intorno al valore di Ra 0.5
- 3) l'impiego del brocciatore BRC è consigliabile per tutti i tipi di materiali, ma nello specifico per:
  - a) Il titanio e l'acciaio inox, in cui avviene, durante la lavorazione, un notevole aumento di temperatura a causa della tenacità dei materiali stessi.
  - b) Materiali con alto contenuto di magnesio, che a causa della loro proprietà di autocombustione potrebbero dare adito ad un principio di incendio della macchina utensile. In questi casi è consigliabile l'uso di aria compressa come refrigerante.
  - c) In generale materiali particolarmente tenaci, in cui il truciolo presenta difficoltà nello staccarsi dalle pareti.
  - d) La ghisa, il bronzo e alcune leghe di alluminio producono trucioli con effetto polvere.
  - e) Altre leghe di alluminio e la plastica, producono un truciolo che tende "ad incollarsi alla broccia"

L'utilizzo del lubrorefrigerante può essere anche sostituito da aria compressa, utilizzando un raccordo e collegando un tubo di Rilsan e/o di rame direttamente sul codolo posteriore, il quale, integra un filetto da G1/8", lo stesso foro, può essere chiuso tramite tappo a corredo per omettere il passaggio del lubrorefrigerante e/o aria compressa e quindi si può utilizzare il brocciatore Brighetti Meccanica BRC come un normale BM con l'uso delle brocche standard.

**GB** The new "BRC" broaching head has been developed with the same operating characteristics as the similar Brighetti Meccanica BM broaching head, with the difference that modifications have been made inside the tool, which allow conveying the coolants and/or compressed air from the rear of the connection shank towards the extreme tip of the broach.

**The coolant comes out of the broach from two different positions, more precisely:**

- 1) From two inclined holes, positioned at the head of the broach, which allow the sprinkling of coolant and/or compressed air the whole internal area of the cutting edge at the exact point where the broaching process takes place.
- 2) From two side holes, still inclined, positioned on the tapering of the broach hub with the function of partially releasing the pressure of the coolant and/or compressed air.

**Among the many advantages of using the "BRC" broaching head:**

- 1) the cutting edge of the broach is preserved, ensuring a longer duration of the average life of the broach, with an objective evaluation ranging from 15 to 22% of greater cutting edge durability depending on the type of material to be broached
- 2) the internal hole, with the aid of coolant and/or compressed air, has a better surface gloss with a roughness which is around the value of Ra 0.5
- 3) the use of the BRC broaching head is recommended for all types of materials, but specifically for:
  - a) Titanium and stainless steel, in which a significant increase of temperature occurs during the machining due to the tenacity of the materials themselves.
  - b) Materials with a high magnesium content which, due to their self-ignition properties, could cause a fire principle of the machine tool. In these cases, it is advisable to use compressed air as coolant.
  - c) In general, particularly tough materials, where the chip shows difficulties in detaching from the walls.
  - d) Cast iron, bronze and some aluminium alloys which produce chips with a dust effect.
  - e) Other aluminium alloys and plastics which produce a chip that tends to "stick to the broach"

The use of coolant may also be replaced by compressed air, using a fitting and connecting a Rilsan and/or copper pipe directly to the rear shank, which integrates a G1/8" thread; the same hole can be closed by means of a cap supplied to prevent the coolant flow and/or compressed air and therefore the Brighetti Meccanica BRC broaching head can be used like a normal BM with the use of standard broaches.

# Brocciatori serie "BR" e "BRC" - Descrizione

## Broaching Heads "BR" and "BRC" Series - Description

**I** I brocciatori sono composti da diversi elementi che sono descritti di seguito.

### A - Corpo.

E' costruito in acciaio bonificato e rettificato al cui interno si trovano dei cuscinetti a sfera adatti a sopportare i carichi risultanti dalla lavorazione.

### B - Mandrino porta broccia

E' montato all'interno del corpo e ruota sui cuscinetti a sfera presenti all'interno del corpo stesso. Nella parte esterna che sporge dal corpo si trova una vite per il bloccaggio della broccia e un foro filettato per il fissaggio della barretta di trascinamento.

### C - Sede innesto broccia

E' costituita da un alloggiamento all'interno del mandrino porta broccia nel quale viene inserita la broccia. Questo alloggiamento viene opportunamente lavorato e rettificato con tolleranza tale da ottenere massima precisione nella lavorazione.

### D - Fissaggio alla macchina utensile

Dalla parte opposta al mandrino si trova il codolo per il fissaggio alla macchina utensile, solidale con il corpo. Il brocciatore viene costruito con diversi tipi di codolo per poter essere applicato a una ampia gamma di macchine utensili:

- > codolo cilindrico C
- > codolo cono Morse CM
- > codolo ISO-DIN 69871 / DIN 2080
- > codolo VDI
- > codolo CAPTO ISO-26623

### E - Barretta di trascinamento

E' costituita da una barretta d'acciaio, fornita in dotazione, che viene avvitata in un apposito foro presente sul mandrino porta broccia. Per determinate operazioni di brocciatura si consiglia l'uso della barretta di trascinamento; in questo modo si assicura la perfetta linearità della figura durante l'operazione di brocciatura. Inoltre l'impiego della barretta è indispensabile quando il pezzo da lavorare richiede un preciso orientamento della figura da ottenere con la brocciatura. Nel caso di una lavorazione al tornio la barretta deve essere inserita in una forcella presente sul mandrino del tornio stesso; nel caso di una lavorazione con fresa o trapano, la barretta viene bloccata da un'asta applicata sul piano di lavoro.

**GB** The following parts compose the broaching heads.

### A - The body

The body of the broaching head is made of tempered steel. The ball bearings sustaining the machining effort are placed inside the body of the broaching head.

### B - Spindle of the broaching head

The spindle holding the broach is placed inside the body of the broaching head and turns on the ball bearings. In its outer part there is a screw used to fasten the broach and a threaded hole to install the drawrod.

### C - The broach seat

It is a housing inside the spindle of the broaching head, in which the broach is installed. This housing is properly realized and grinded in order to suit with great precision the shank of the broach.

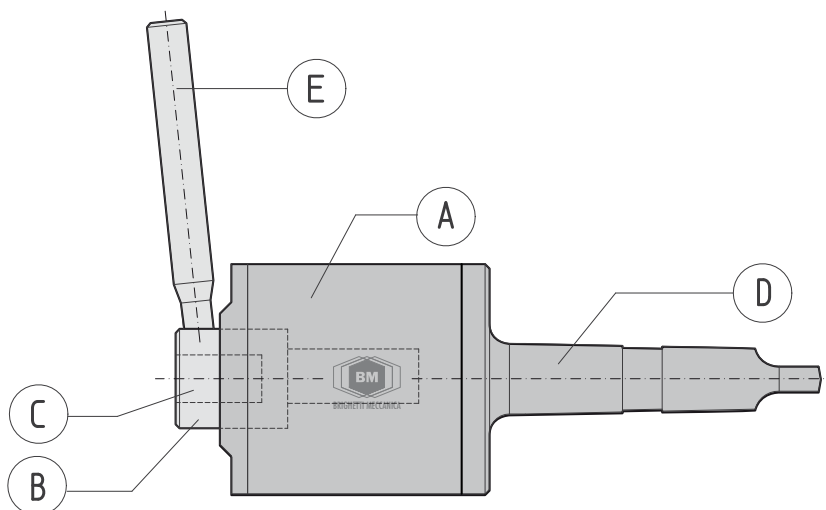
### D - Connection to the machine tool

At the opposite side of the body of the broaching head from the spindle there is the connection to the machine tool. The broaching head is available with several kind of connections in order to be installed on a wide range of machine tools:

- > Cylindrical connection
- > Morse taper connection
- > ISO-DIN 69871 / DIN 2080 connection
- > VDI connection
- > CAPTO ISO-26623 connection

### E - Drawrod

It is a little steel bar supplied together with the broaching head and it is to be installed in the special threaded hole on the spindle of the broaching head. It has the purpose to avoid the machining of twisted shapes and it guarantees a particular orientation of the shape in the work piece. If the machine used is a lathe the drawrod must be fixed on the fork of the spindle of the lathe itself, while if the machine used is a milling machine or a drill the drawrod must be fixed on a bar fastened to the working desk.

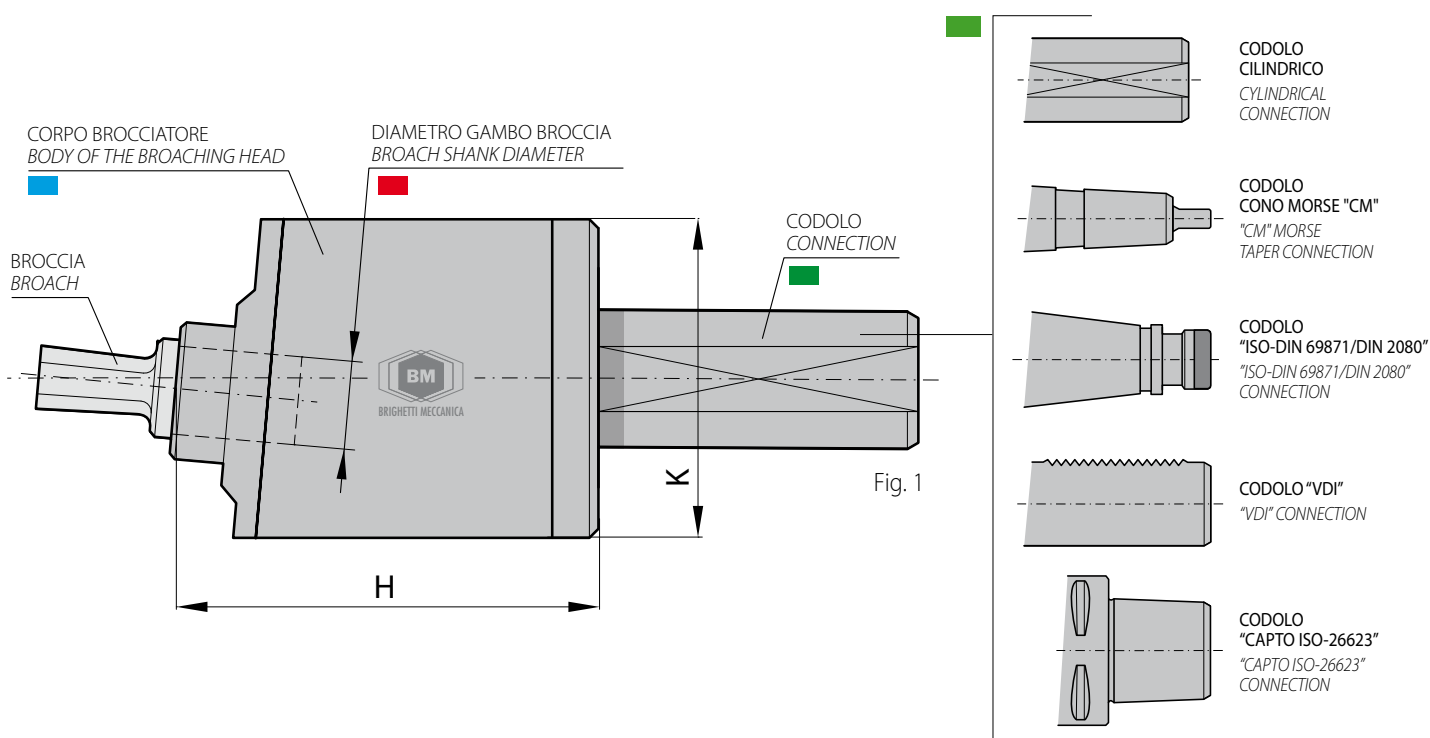
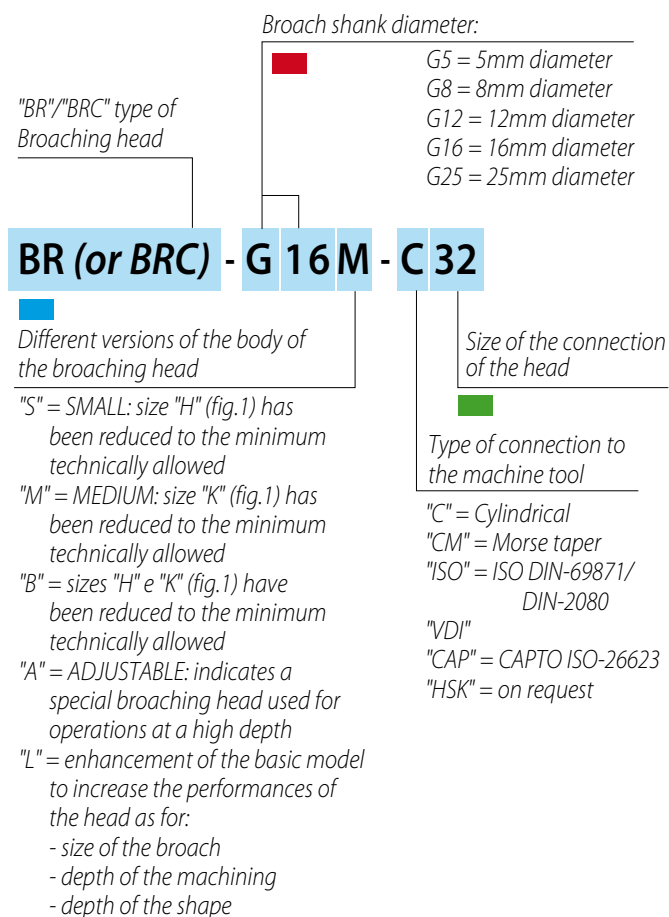
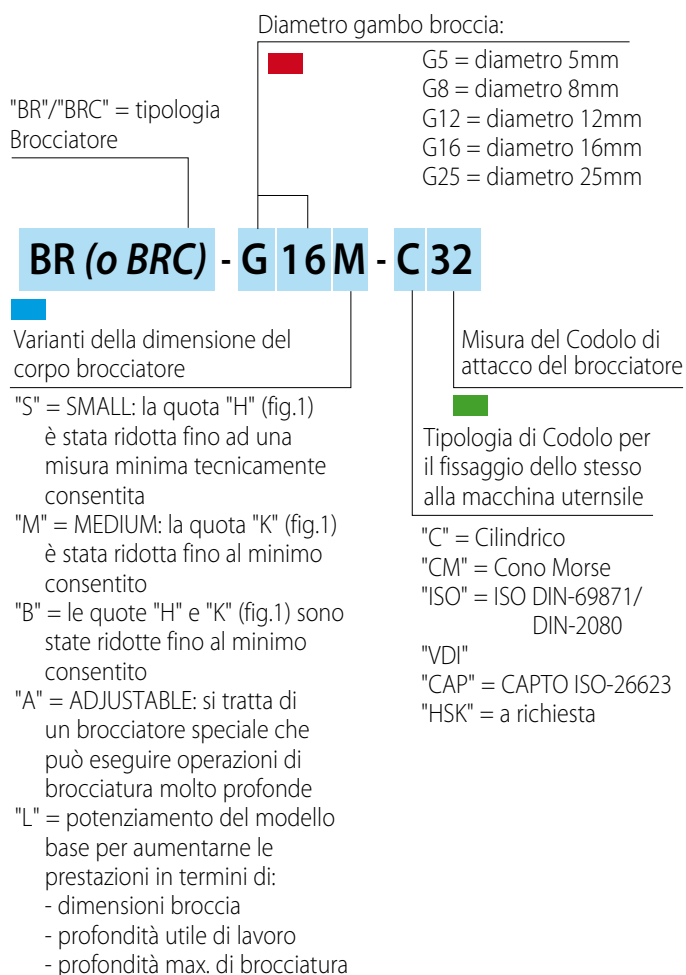


# Brocciatori serie "BR" e "BRC" - Codifica delle sigle

## Broaching Heads "BR" and "BRC" Series - Item codes

**I** Come leggere la codifica dei brocciatori BR:  
Facciamo un esempio: **BR (o BRC) - G16M - C32**

**GB** How to read broaching heads item codes.  
Let's make an example: **BR (or BRC)- G16M - C32**

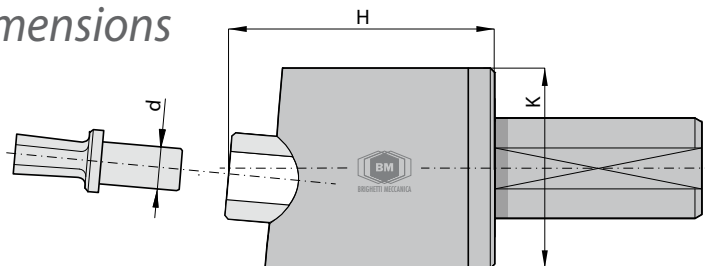


# Brocciatori Standard serie "BR"

## - Caratteristiche tecniche e dimensioni

### Standard Broaching Heads "BR" series

### - Technical characteristics and dimensions



| CARATTERISTICHE /<br>FEATURES                         | dim. | BROCCIATORE (BR) / BROACHING HEAD (BR) |        |        |       |         |        |        |         |         |        |       |
|-------------------------------------------------------|------|----------------------------------------|--------|--------|-------|---------|--------|--------|---------|---------|--------|-------|
|                                                       |      | BR-G5                                  | BR-G8  |        |       | BR-G12  |        | BR-G16 |         |         | BR-G25 |       |
|                                                       |      |                                        | BR-G8S | BR-G8M | BR-G8 | BR-G12B | BR-G12 | BR-G16 | BR-G16M | BR-G16L |        |       |
| GAMBO DELLA BROCCIA<br>SHANK OF THE BROACH            | d    | mm                                     | Ø5     | Ø8     | Ø8    | Ø8      | Ø12    | Ø12    | Ø16     | Ø16     | Ø16    | Ø25   |
| CAPACITA' CAVE ESAGONALI<br>HEXAGONAL SLOT CAPACITY   |      | mm                                     | 1÷6    | 1÷8    | 1÷8   | 1÷10    | 1÷13   | 1÷15   | 2÷25    | 5÷30    | 4÷30   | 15÷40 |
| CAPACITA' CAVE QUADRE<br>SQUARE SLOT CAPACITY         |      | mm                                     | 1÷4    | 1÷6    | 1÷6   | 1÷8     | 1÷10   | 1÷12   | 2÷15    | 5÷20    | 4÷25   | 15÷25 |
| CAPACITA' CAVE TORX®<br>TORX® SLOT CAPACITY           |      | T                                      | 3÷25   | 3÷40   | 3÷40  | 3÷40    | 3÷60   | 3÷60   | 10÷70   | 20÷70   | 30÷70  | (*)   |
| CAPACITA' CAVE TORX® PLUS<br>TORX® PLUS SLOT CAPACITY |      | IP                                     | 6÷25   | 6÷40   | 6÷40  | 6÷40    | 6÷60   | 6÷60   | 10÷70   | 20÷70   | 30÷70  | (*)   |
| PROFONDITA' MAX DI LAVORO<br>MAXIMUM WORKING DEPTH    |      | mm                                     | 7,5    | 15     | 15    | 15      | 21     | 21     | 21      | 30      | 40     | 65    |
| DIMENSIONE CORPO<br>BODY DIMENSIONS                   | H    | mm                                     | 35     | 36,5   | 47,5  | 55      | 66,5   | 81,5   | 87      | 91      | 99     | 115,5 |
| DIMENSIONE CORPO<br>BODY DIMENSIONS                   | K    | mm                                     | Ø24    | Ø37    | Ø29,5 | Ø37     | Ø47    | Ø58    | Ø68     | Ø68     | Ø79    | Ø91   |
| PESO (indicativo)<br>WEIGHT (indicative)              |      | gr.                                    | 181    | 412    | 338   | 525     | 851    | 1653   | 2628    | 1830    | 3500   | 4850  |

| TIPO DI ATTACCO /<br>CONNECTIONS                                                                          | BROCCIATORE (BR) / BROACHING HEAD (BR) |        |        |           |       |         |         |        |         |         |         |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------|--------|--------|-----------|-------|---------|---------|--------|---------|---------|---------|
|                                                                                                           |                                        | BR-G5  | BR-G8  |           |       | BR-G12  |         | BR-G16 |         |         | BR-G25  |
|                                                                                                           |                                        |        | BR-G8S | BR-G8M    | BR-G8 | BR-G12B | BR-G12  | BR-G16 | BR-G16M | BR-G16L |         |
| CODOLO CILINDRICO<br>CYLINDRICAL CONNECTION                                                               | Ø                                      | 8      | 10     | 10        | 10    | 16      | 20      | 25     | 25      | 25      | 32      |
|                                                                                                           | Ø                                      | 10     | 12     | 12        | 12    | 19,05   | 25      | 32     | 32      | 32      | 40      |
|                                                                                                           | Ø                                      | 12 (*) | 16     | 16        | 16    | 20      | 32      | 40     | 40      | 40      |         |
|                                                                                                           | Ø                                      | 16     | 19,05  | 19,05     | 19,05 | 22      |         |        |         |         |         |
|                                                                                                           | Ø                                      | 19,05  | 20     | 20        | 20    | 25      |         |        |         |         |         |
|                                                                                                           | Ø                                      | 20     | 22     | 22        | 22    | 25,40   |         |        |         |         |         |
|                                                                                                           | Ø                                      | 22 (*) | 25     | 25        | 25    |         |         |        |         |         |         |
|                                                                                                           | Ø                                      |        | 25,40  | 25,40 (*) | 25,40 |         |         |        |         |         |         |
| CODOLO CONO MORSE "CM"<br>"CM" MORSE TAPER CONNECTION                                                     |                                        |        |        |           |       | 2       | 3       | 3 - 4  | 3 - 4   | 4 - 5   | 4 - 5   |
| A RICHIESTA / On request:<br>CODOLO "ISO - DIN 69871 / DIN 2080"<br>"ISO-DIN 69871 / DIN 2080" CONNECTION |                                        |        |        |           |       |         | 30 - 40 | 40     | 40 - 50 | 40 - 50 | 40 - 50 |
| CODOLO "VDI"<br>"VDI" CONNECTION                                                                          |                                        |        |        |           |       |         | VDI 30  | VDI 30 | VDI 30  | VDI 40  | VDI 40  |
|                                                                                                           |                                        |        |        |           |       |         |         | VDI 40 | VDI 40  |         |         |
| CODOLO "CAPTO ISO-26623"<br>"CAPTO ISO-26623" CONNECTION                                                  |                                        |        |        |           |       |         | 3       | 4 - 5  | 4 - 5   | 4 - 5   |         |



(\*) a richiesta / on request

A RICHIESTA / On request:  
CODOLO "HSK"  
DIN 69893-1 / ISO-12164  
FORMA ...  
"HSK" CONNECTION  
DIN 69893-1 / ISO-12164  
SHAPE ...

In fase di richiesta  
specificare con disegno il  
tipo di attacco richiesto  
When submitting a  
request, specify the type of  
connection required with a  
drawing

**Brocciatori REGISTRABILI > vedi pag.12**  
**Adjustable Broaching Head > see page 12**



# Brocciatori con passaggio refrigerante interno serie "BRC"

## - Caratteristiche tecniche e dimensioni

Broaching Heads series "BRC" with internal coolant passage  
- Technical characteristics and dimensions



| CARATTERISTICHE / FEATURES                            | dim. | BROCCIAIORE (BRC) / BROACHING HEAD (BRC) |                                                                                                     |        |              |          |         |          |          |
|-------------------------------------------------------|------|------------------------------------------|-----------------------------------------------------------------------------------------------------|--------|--------------|----------|---------|----------|----------|
|                                                       |      |                                          | BRC-G8                                                                                              |        |              | BRC-G12  |         | BRC-G16  |          |
|                                                       |      |                                          | BRC-G8M                                                                                             | BRC-G8 | BRC-G8HP (*) | BRC-G12B | BRC-G12 | BRC-G16M | BRC-G16L |
| GAMBO DELLA BROCCIA<br>SHANK OF THE BROACH            | d    | mm                                       | Ø8                                                                                                  | Ø8     | Ø8           | Ø12      | Ø12     | Ø16      | Ø16      |
| CAPACITA' CAVE ESAGONALI<br>HEXAGONAL SLOT CAPACITY   |      | mm                                       | 3÷8                                                                                                 | 3÷10   | 3÷10         | 3÷12     | 3÷15    | 5÷30     | 8÷30     |
| CAPACITA' CAVE QUADRE<br>SQUARE SLOT CAPACITY         |      | mm                                       | 3÷6                                                                                                 | 3÷8    | 3÷8          | 3÷10     | 3÷12    | 6÷20     | 10÷25    |
| CAPACITA' CAVE TORX®<br>TORX® SLOT CAPACITY           |      | T                                        | 8÷30                                                                                                | 8÷40   | 8÷40         | 8÷40     | 8÷60    | 20÷70    | 30÷70    |
| CAPACITA' CAVE TORX® PLUS<br>TORX® PLUS SLOT CAPACITY |      | IP                                       | 8÷30                                                                                                | 8÷40   | 8÷40         | 8÷40     | 8÷60    | 20÷70    | 30÷70    |
| PROFONDITA' MAX DI LAVORO<br>MAXIMUM WORKING DEPTH    |      | mm                                       | Vedi dettaglio nelle singole tabelle delle brocche<br>See details in the individual broaches tables |        |              |          |         |          |          |
| DIMENSIONE CORPO<br>BODY DIMENSIONS                   | H    | mm                                       | 47,5                                                                                                | 55     | 55           | 66,5     | 81,5    | 91       | 99       |
| DIMENSIONE CORPO<br>BODY DIMENSIONS                   | K    | mm                                       | Ø29,5                                                                                               | Ø37    | Ø37          | Ø47      | Ø58     | Ø68      | Ø79      |
| PESO (indicativo)<br>WEIGHT (indicative)              |      | gr.                                      | 338                                                                                                 | 525    | 535          | 851      | 1653    | 1830     | 3500     |

NOVITA'  
NEW

NOVITA'  
NEW

| TIPO DI ATTACCO / CONNECTIONS               |   | BROCCIAIORE (BRC) / BROACHING HEAD (BRC) |         |        |              |          |         |          |          |
|---------------------------------------------|---|------------------------------------------|---------|--------|--------------|----------|---------|----------|----------|
|                                             |   |                                          | BRC-G8  |        |              | BRC-G12  |         | BRC-G16  |          |
|                                             |   |                                          | BRC-G8M | BRC-G8 | BRC-G8HP (*) | BRC-G12B | BRC-G12 | BRC-G16M | BRC-G16L |
| CODOLO CILINDRICO<br>CYLINDRICAL CONNECTION | Ø | 10                                       | 10      | 10     | 10           | 16       | 20      | 25       | 25       |
|                                             | Ø | 12                                       | 12      | 12     | 12           | 19,05    | 25      | 32       | 32       |
|                                             | Ø | 16                                       | 16      | 16     | 16           | 20       | 32      | 40       | 40       |
|                                             | Ø | 19,05                                    | 19,05   | 19,05  | 19,05        | 22       |         |          |          |
|                                             | Ø | 20                                       | 20      | 20     | 20           | 25       |         |          |          |
|                                             | Ø | 22                                       | 22      | 22     | 22           | 25,40    |         |          |          |
|                                             | Ø | 25                                       | 25      | 25     | 25           |          |         |          |          |
|                                             | Ø | 25,40 (*)                                | 25,40   | 25,40  | 25,40        |          |         |          |          |

Passaggio refrigerante **interno**  
Internal coolant passage

CON IL CODOLO CILINDRICO, PER POTER AVERE IL PASSAGGIO REFRIGERANTE INTERNO, E' NECESSARIO MONTARE BROCCHE SERIE "BRC" > vedi da pag. 14

WITH THE CYLINDRICAL SHANK, IN ORDER TO HAVE THE COOLANT PASSAGE IT IS NECESSARY TO USE "BRC" SERIES BROACHES > see page 14



|                                  |  |  |  |  |  |        |        |        |
|----------------------------------|--|--|--|--|--|--------|--------|--------|
| CODOLO "VDI"<br>"VDI" CONNECTION |  |  |  |  |  | VDI 30 | VDI 30 | VDI 40 |
|                                  |  |  |  |  |  |        | VDI 40 |        |



Passaggio refrigerante **esterno solo per VDI**  
External coolant passage  
only for VDI

CON IL CODOLO VDI DEVONO ESSERE UTILIZZATE ESCLUSIVAMENTE LE BROCCHE STANDARD (NON "BRC").  
WITH THE VDI SHANK, ONLY STANDARD BROACHES (NOT "BRC") SHOULD BE USED.

(\*) a richiesta / on request

# Brocciatori Registrabili serie "BR"

## - Caratteristiche tecniche e dimensioni

### *Adjustable Broaching Head "BR" series*

### *- Technical characteristics and dimensions*



**I** Nel sistema di brocciature in cave interne e per profili esterni, il **brocciatore Registrabile** rappresenta una novità rispetto ai modelli tradizionali attualmente presenti sul mercato mondiale e può essere utilizzato, come qualsiasi altro brocciatore BR, su macchine utensili tradizionali e CNC. La caratteristica principale del brocciatore registrabile consiste nella **possibilità di utilizzare brocce di qualsiasi lunghezza compresa tra L=18 e 30 mm (per versione BR-G8A) e tra L=25 e 60 mm (per versione BR-G12A).**

Questo significa che la profondità max. di lavoro L1 (vedi fig.2) può arrivare ad un massimo di 55 mm per il G12A e 25 mm per il G8A.

L'operazione di sostituzione della broccia, per ottenere brocciature con diverse profondità, avviene in modo semplice e rapido: agendo sulle viti di registro (2 su di un lato e 1 su l'altro lato) con l'ausilio del perno di azzeramento (vedi figura 3) fornito in dotazione al brocciatore, si regola il brocciatore stesso in funzione della lunghezza della broccia. Allo stesso modo si deve procedere nel caso di brocciatura per profili esterni.

Per un utilizzo ottimale del brocciatore è opportuno ricordare che, a parità di materiale e sezione della broccia, all'aumentare della lunghezza della broccia aumenta il "carico di punta". Per questo motivo è necessario ridurre la velocità di avanzamento e il numero di giri.

**GB** Among traditional broaching devices for inside holes and surface profiles present in the world market at the time being, the **Adjustable broaching head** is a great novelty. Like all the others BR broaching heads, it can be installed on both traditional and CNC machine tools.

The main feature of the adjustable broaching head is its **possibility of using broaching tools by length between L=18 to L=30 mm (to BR-G8A version) and between L=25 to L=60 mm (to BR-G12A version).**

The max depth working L1, (see fig.2), by broaches, increases MAX to L1=55mm (to the G12A) and MAX to L1=26mm (to the G8A).

The operation of replacing, by type of the broaches, to has the different depths, is simple and quickly. It will does it by adjustment screws (2 on one side, and 1 on the other side, see pag.13) also use a centesimal comparator supplied with the "0" pin, (see fig.3). The "0" working by the broaching tools will adjust according to the length of the broach. The same operation will be by broaching tools (Matrix), for external polygons.

To obtain the best working by the broaching tools, it is important to know that, with the same material and section of the broach, when will goes up the length also increases the load by the tip, for this reason, it is necessary to reduce the feed rate and spindle speed.

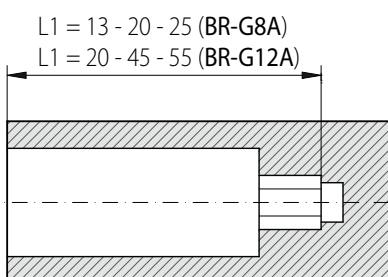
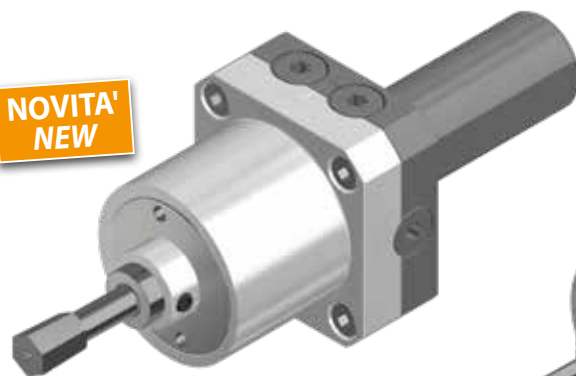


Fig. 2

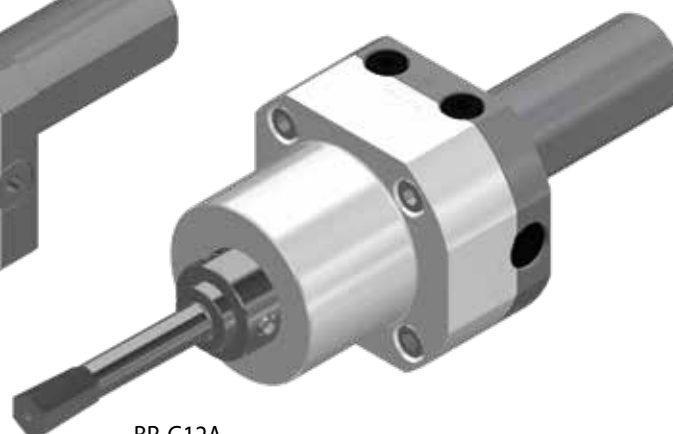


Fig. 3

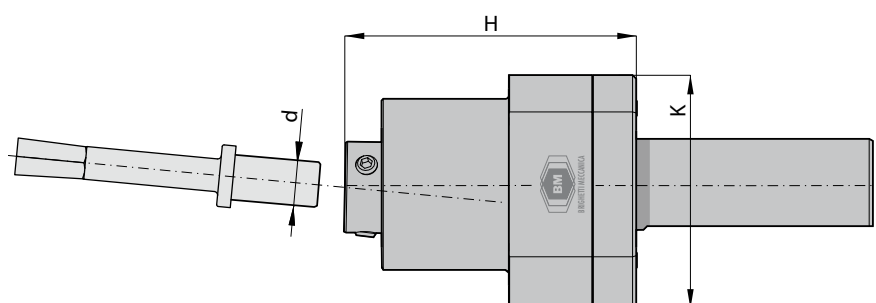
**NOVITA'  
NEW**



BR-G8A



BR-G12A



| CARATTERISTICHE /<br>FEATURES                         | dim. | BROCCIAIORE<br>BROACHING HEAD (BR) |        |         |
|-------------------------------------------------------|------|------------------------------------|--------|---------|
|                                                       |      |                                    | BR-G8A | BR-G12A |
| GAMBO DELLA BROCCIA<br>SHANK OF THE BROACH            | d    | mm                                 | Ø8     | Ø12     |
| CAPACITA' CAVE ESAGONALI<br>HEXAGONAL SLOT CAPACITY   |      | mm                                 | 1÷10   | 4÷15    |
| CAPACITA' CAVE QUADRE<br>SQUARE SLOT CAPACITY         |      | mm                                 | 1÷8    | 4÷12    |
| CAPACITA' CAVE TORX®<br>TORX® SLOT CAPACITY           |      | T                                  | 3÷40 * | 3÷60 ** |
| CAPACITA' CAVE TORX® PLUS<br>TORX® PLUS SLOT CAPACITY |      | IP                                 | 6÷40 * | 6÷60 ** |
| PROFONDITA' MAX DI LAVORO<br>MAXIMUM WORKING DEPTH    |      | mm                                 | 18÷30  | 21÷55   |
| DIMENSIONE CORPO<br>BODY DIMENSIONS                   | H    | mm                                 | 57     | 80      |
| DIMENSIONE CORPO<br>BODY DIMENSIONS                   | K    | mm                                 | 45     | 64      |
| PESO (indicativo)<br>WEIGHT (indicative)              |      | gr.                                | 700    | 1625    |

| TIPO DI ATTACCO /<br>CONNECTIONS                                             | BROCCIAIORE /<br>BROACHING HEAD (BR) |                                      |
|------------------------------------------------------------------------------|--------------------------------------|--------------------------------------|
|                                                                              | BR-G8A                               | BR-G12A                              |
| CODOLO CILINDRICO<br>CYLINDRICAL CONNECTION                                  | Ø 16                                 | 19,05                                |
|                                                                              | Ø 19,05                              | 20                                   |
|                                                                              | Ø 20                                 | 22                                   |
|                                                                              | Ø 22                                 | 25                                   |
|                                                                              | Ø 25                                 | 25,40                                |
|                                                                              | Ø 25,40                              | 32                                   |
| CODOLO CONO MORSE "CM"<br>"CM" MORSE TAPER CONNECTION                        |                                      | 3                                    |
| CODOLO "ISO - DIN 69871 / DIN 2080"<br>"ISO-DIN 69871 / DIN 2080" CONNECTION |                                      | 30 - 40<br>a richiesta<br>on request |
| CODOLO "VDI"<br>"VDI" CONNECTION                                             |                                      | 30 - 40<br>a richiesta<br>on request |
| CODOLO "CAPTO ISO-26623"<br>"CAPTO ISO-26623" CONNECTION                     |                                      | a richiesta<br>on request            |



Sul brocciatore **BR-G8A**

montare le brocche:

- metriche **G8A** > vedi pag. 22

- in pollici **GP8A** > vedi pag. 38

Broaching head **BR-G8A** can be used:

- metric broaches **G8A** > see page 22

- inches broaches **GP8A** > see page 38



Sul brocciatore **BR-G12A**

montare le brocche:

- metriche **G12A** > vedi pag. 25

- in pollici **GP12A** > vedi pag. 40

Broaching head **BR-G12A** can be used:

- metric broaches **G12A** > see page 25

- inches broaches **GP12A** > see page 40



\* Brocche standard: L = 18 / 25 / 30

\* Standard broaches: L = 18 / 25 / 30

\*\* Brocche standard: L = 25 / 50 / 60

\*\* Standard broaches: L = 25 / 50 / 60

# Brocche per cave poligonali su Brocciatori serie "BR" e "BRC"

## Broaches for polygonal holes on broaching heads "BR" and "BRC" series



**I** La BROCCIA per cave poligonali è un utensile opportunamente sagomato; da un lato viene fissata al mandrino del Brocciatore e dall'altro riporta il profilo della cava da eseguire. Le brocche di questa famiglia di prodotti sono realizzate in due tipi di acciaio:

- acciaio HSS. Si tratta di un tipo di acciaio che si distingue per l'elevata resistenza alla usura e per l'alta capacità di assorbimento delle vibrazioni che si sprigionano durante la fase di brocciatura
- acciaio SINTERIZZATO. Si distingue per l'eccellente durezza e resistenza alla compressione e in ambiente ad alte temperature. Il suo impiego è particolarmente indicato nelle lavorazioni molto gravose e in presenza di metalli molto resistenti (es: titanio).

Le brocche sono costruite in sette serie di grandezze, contraddistinte dal diametro del gambo di accoppiamento con il brocciatore: G5, G8, G8A, G12, G12A, G16, G16L, G16M, G25, ecc. Oltre agli articoli standard presentati nel Catalogo Generale, la BRIGHETTI MECCANICA S.r.l. è in grado di costruire profili particolari, sulla base delle specifiche tecniche richieste dal Cliente.

### Importante

Prima di eseguire la brocciatura è necessario praticare al pezzo un preforo leggermente maggiorato (vedere pagina 15) rispetto al diametro della broccia e più profondo (in base alla tenacità del materiale può variare dal 20% al 40% in più) in fori ciechi per consentire lo sfogo del truciolo. Per operazioni di brocciatura piuttosto gravose si consiglia l'utilizzo di un opportuno olio da taglio durante la lavorazione.

**GB** The BROACH for polygonal holes is a specially shaped tool that is fixed to the spindle of the broaching head on one end, while the other end bears the shape of the hole to be obtained. These broaches are made in two different kind of steels:

- HSS This steel has a good resistance to wear and tear and a high capacity to absorb the vibrations of the broaching machining
- SINTERED steel. This steel has a high hardness and an excellent resistance to compression, even at high temperatures. It is used for heavy machinings when hard materials are involved (i.e.: titanium).

BRIGHETTI MECCANICA S.r.l. produces seven kinds of broaches with different shanks fitting perfectly the broach seat: G5, G8, G8A, G12, G12A, G16, G16L, G16M, G25, etc.. Beside standard items mentioned in the General Catalogue, BRIGHETTI MECCANICA SRL can produce broaches with special profile and sizes, following Customer's specification.

### Important

Before starting with the broaching operation, a pre-broach hole must be drilled on the work piece. This pre-broach hole should be a little bit larger (see page 15) than the size of the broach and a little bit deeper (the pre-broach hole should be from +20% to +40% considering the hardness of the material to machine) in order to discharge the chips. It is a good habit of using a good cutting oil during the broaching operation.

# Pre-foro per brocciatura profili esagonali, quadri, Torx® e Torx® Plus

## Pre-hole broaching: exagonal, square, Torx® and Torx® Plus

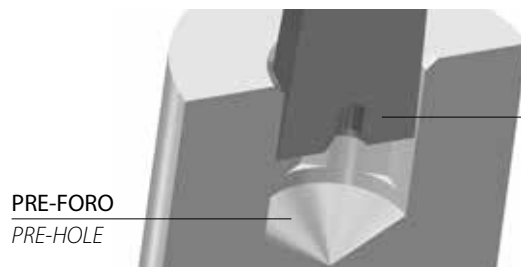
**I** Prima della procedura di brocciatura è fondamentale generare uno smusso in testa al pre foro. La profondità del pre-foro si incrementa del 20%-40% rispetto al profilo utile da eseguire. La soluzione ottimale, comunque, sarebbe quella di eseguire una gola di scarico alla fine del foro, per agevolare ulteriormente lo scarico del truciolo.

**GB** Before the broaching procedure it is essential to create a chamfer on the pre-hole. The depth of the pre-hole is increased by: 20% -40% compared to the profile to be obtained; the best solution, however, it's to get a chip discharge groove, at the end of the profile, to facilitate the chip evacuation.



### BROCCE ESAGONALI / EXAGONAL BROACHES

| dimens. | PRE FORO / PRE-HOLE | dimens. | PRE FORO / PRE-HOLE |
|---------|---------------------|---------|---------------------|
| 1       | Ø 1,05 +0,10/0      | 19      | Ø 20,60 +0,20/0     |
| 1,5     | Ø 1,55 +0,10/0      | 20      | Ø 19,55 +0,20/0     |
| 2       | Ø 2,10 +0,10/0      | 21      | Ø 21,60 +0,20/0     |
| 2,5     | Ø 2,60 +0,10/0      | 22      | Ø 22,65 +0,20/0     |
| 3       | Ø 3,10 +0,10/0      | 23      | Ø 23,65 +0,20/0     |
| 3,5     | Ø 3,60 +0,10/0      | 24      | Ø 24,70 +0,20/0     |
| 4       | Ø 4,15 +0,10/0      | 25      | Ø 25,75 +0,30/0     |
| 4,5     | Ø 4,60 +0,10/0      | 26      | Ø 26,80 +0,30/0     |
| 5       | Ø 5,15 +0,10/0      | 27      | Ø 27,80 +0,30/0     |
| 5,5     | Ø 5,75 +0,10/0      | 28      | Ø 28,85 +0,30/0     |
| 6       | Ø 6,20 +0,10/0      | 29      | Ø 29,90 +0,30/0     |
| 7       | Ø 7,20 +0,15/0      | 30      | Ø 30,90 +0,30/0     |
| 8       | Ø 8,25 +0,15/0      | 31      | Ø 32,00 +0,30/0     |
| 9       | Ø 9,25 +0,15/0      | 32      | Ø 33,20 +0,30/0     |
| 10      | Ø 10,30 +0,15/0     | 33      | Ø 34,30 +0,30/0     |
| 11      | Ø 11,30 +0,15/0     | 34      | Ø 35,35 +0,30/0     |
| 12      | Ø 12,35 +0,15/0     | 35      | Ø 36,40 +0,40/0     |
| 13      | Ø 13,40 +0,15/0     | 36      | Ø 37,45 +0,40/0     |
| 14      | Ø 14,40 +0,15/0     | 37      | Ø 38,50 +0,40/0     |
| 15      | Ø 15,45 +0,20/0     | 38      | Ø 39,50 +0,40/0     |
| 16      | Ø 16,45 +0,20/0     | 39      | Ø 40,65 +0,45/0     |
| 17      | Ø 17,50 +0,20/0     | 40      | Ø 42,00 +0,45/0     |
| 18      | Ø 18,55 +0,20/0     |         |                     |



PRE-FORO  
PRE-HOLE

BROCCIA  
BROACH



### BROCCE QUADRE / SQUARE BROACHES

| dimens. | PRE FORO / PRE-HOLE | dimens. | PRE FORO / PRE-HOLE |
|---------|---------------------|---------|---------------------|
| 1       | Ø 1,15 +0,05/0      | 11      | Ø 12,90 +0,15/0     |
| 1,5     | Ø 1,75 +0,05/0      | 12      | Ø 14,20 +0,15/0     |
| 2       | Ø 2,40 +0,05/0      | 13      | Ø 15,50 +0,15/0     |
| 2,5     | Ø 2,85 +0,05/0      | 14      | Ø 16,90 +0,15/0     |
| 3       | Ø 3,40 +0,05/0      | 15      | Ø 18,20 +0,20/0     |
| 3,5     | Ø 3,95 +0,05/0      | 16      | Ø 19,50 +0,20/0     |
| 4       | Ø 4,50 +0,05/0      | 17      | Ø 20,60 +0,20/0     |
| 4,5     | Ø 5,20 +0,05/0      | 18      | Ø 21,70 +0,20/0     |
| 5       | Ø 5,70 +0,10/0      | 19      | Ø 23,00 +0,20/0     |
| 5,5     | Ø 6,40 +0,10/0      | 20      | Ø 24,10 +0,20/0     |
| 6       | Ø 6,80 +0,10/0      | 21      | Ø 25,30 +0,20/0     |
| 7       | Ø 8,00 +0,10/0      | 22      | Ø 26,50 +0,20/0     |
| 8       | Ø 9,00 +0,10/0      | 23      | Ø 27,70 +0,20/0     |
| 9       | Ø 10,30 +0,10/0     | 24      | Ø 28,90 +0,20/0     |
| 10      | Ø 11,50 +0,15/0     | 25      | Ø 30,00 +0,20/0     |



### BROCCE ESAGONALI IN POLLICI / EXAGONAL INCHES BROACHES

| dimens. | PRE FORO / PRE-HOLE | dimens. | PRE FORO / PRE-HOLE |
|---------|---------------------|---------|---------------------|
| 3/32"   | Ø 2,45 +0,10/0      | 3/8"    | Ø 9,80 +0,15/0      |
| 1/8"    | Ø 3,25 +0,10/0      | 7/16"   | Ø 11,50 +0,15/0     |
| 5/32"   | Ø 4,10 +0,10/0      | 1/2"    | Ø 13,10 +0,15/0     |
| 3/16"   | Ø 4,90 +0,10/0      | 9/16"   | Ø 14,70 +0,15/0     |
| 7/32"   | Ø 5,70 +0,10/0      | 5/8"    | Ø 16,35 +0,20/0     |
| 1/4"    | Ø 6,55 +0,10/0      | 3/4"    | Ø 19,60 +0,20/0     |
| 9/32"   | Ø 7,35 +0,15/0      | 7/8"    | Ø 22,90 +0,20/0     |
| 5/16"   | Ø 8,15 +0,15/0      | 1"      | Ø 26,30 +0,30/0     |



### BROCCE QUADRE IN POLLICI / SQUARE INCHES BROACHES

| dimens. | PRE FORO / PRE-HOLE | dimens. | PRE FORO / PRE-HOLE |
|---------|---------------------|---------|---------------------|
| 3/32"   | Ø 2,80 +0,05/0      | 3/8"    | Ø 11,10 +0,15/0     |
| 1/8"    | Ø 3,80 +0,05/0      | 7/16"   | Ø 13,10 +0,15/0     |
| 5/32"   | Ø 4,50 +0,05/0      | 1/2"    | Ø 15,30 +0,15/0     |
| 3/16"   | Ø 5,50 +0,10/0      | 9/16"   | Ø 17,40 +0,20/0     |
| 7/32"   | Ø 6,40 +0,10/0      | 5/8"    | Ø 19,50 +0,20/0     |
| 1/4"    | Ø 7,25 +0,10/0      | 3/4"    | Ø 23,00 +0,25/0     |
| 9/32"   | Ø 8,00 +0,10/0      | 7/8"    | Ø 27,10 +0,25/0     |
| 5/16"   | Ø 9,00 +0,10/0      | 1"      | Ø 31,00 +0,25/0     |



### BROCCE TORX / TORX BROACHES

| dimens. | PRE FORO / PRE-HOLE | dimens. | PRE FORO / PRE-HOLE |
|---------|---------------------|---------|---------------------|
| T3      | Ø 0,95 +0,05/0      | T25     | Ø 3,40 +0,10/0      |
| T4      | Ø 1,05 +0,05/0      | T27     | Ø 3,80 +0,10/0      |
| T5      | Ø 1,20 +0,05/0      | T30     | Ø 4,15 +0,10/0      |
| T6      | Ø 1,40 +0,10/0      | T40     | Ø 5,10 +0,15/0      |
| T7      | Ø 1,60 +0,10/0      | T45     | Ø 6,00 +0,15/0      |
| T8      | Ø 1,90 +0,10/0      | T50     | Ø 6,85 +0,20/0      |
| T9      | Ø 1,95 +0,10/0      | T55     | Ø 9,10 +0,20/0      |
| T10     | Ø 2,20 +0,10/0      | T60     | Ø 11,10 +0,20/0     |
| T15     | Ø 2,60 +0,10/0      | T70     | Ø 13,40 +0,20/0     |
| T20     | Ø 3,00 +0,10/0      |         |                     |



### BROCCE TORX PLUS / TORX PLUS BROACHES

| dimens. | PRE FORO / PRE-HOLE | dimens. | PRE FORO / PRE-HOLE |
|---------|---------------------|---------|---------------------|
| IP6     | Ø 1,45 +0,10/0      | IP27    | Ø 4,15 +0,10/0      |
| IP7     | Ø 1,80 +0,10/0      | IP30    | Ø 4,60 +0,10/0      |
| IP8     | Ø 1,95 +0,10/0      | IP40    | Ø 5,50 +0,10/0      |
| IP9     | Ø 2,10 +0,10/0      | IP45    | Ø 6,55 +0,10/0      |
| IP10    | Ø 2,30 +0,10/0      | IP50    | Ø 7,30 +0,15/0      |
| IP15    | Ø 2,75 +0,10/0      | IP55    | Ø 9,50 +0,15/0      |
| IP20    | Ø 3,25 +0,10/0      | IP60    | Ø 11,10 +0,20/0     |
| IP25    | Ø 3,65 +0,10/0      | IP70    | Ø 13,40 +0,20/0     |

# Smussi per brocciatura profili esagonali, quadri, Torx® e Torx® Plus

## Chamfer broaching: exagonal, square, Torx® and Torx® Plus

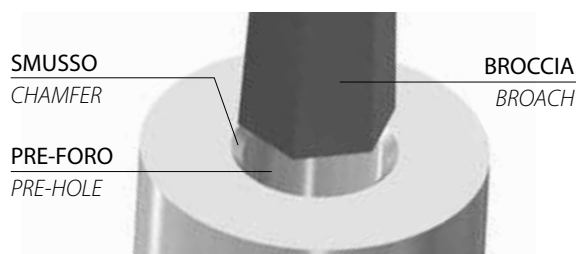
**I** Per effettuare una corretta brocciatura, è necessario realizzare uno smusso in testa al pre-foro. Questo smusso, ha la funzione di accompagnare la broccia verso il pre-foro evitando che si scheggi prima che essa cominci il lavoro di compressione del materiale. E' fondamentale appoggiare la broccia allo smusso a macchina ferma.

**GB** To carry out correct broaching, it is necessary to create a chamfer at the head of the pre-hole. This chamfer has the function of accompanying the broach towards the pre-hole, preventing it from chipping before it begins the work of compressing the material. It is essential to rest the broach on the chamfer with the machine stopped.



### ESAGONI METRICI / METRIC HEXAGONS

| dimens. | SMUSSO / CHAMFER | dimens. | SMUSSO / CHAMFER |
|---------|------------------|---------|------------------|
| 1       | Ø 1,25           | 19      | Ø 22,15          |
| 1,5     | Ø 1,90           | 20      | Ø 23,30          |
| 2       | Ø 2,40           | 21      | Ø 24,50          |
| 2,5     | Ø 3,00           | 22      | Ø 25,60          |
| 3       | Ø 3,60           | 23      | Ø 26,80          |
| 3,5     | Ø 4,15           | 24      | Ø 28,00          |
| 4       | Ø 4,75           | 25      | Ø 29,10          |
| 4,5     | Ø 5,35           | 26      | Ø 30,25          |
| 5       | Ø 5,90           | 27      | Ø 31,45          |
| 5,5     | Ø 6,50           | 28      | Ø 32,60          |
| 6       | Ø 7,05           | 29      | Ø 33,75          |
| 7       | Ø 8,20           | 30      | Ø 34,90          |
| 8       | Ø 9,35           | 31      | Ø 36,10          |
| 9       | Ø 10,50          | 32      | Ø 37,20          |
| 10      | Ø 11,67          | 33      | Ø 38,40          |
| 11      | Ø 12,85          | 34      | Ø 39,55          |
| 12      | Ø 14,00          | 35      | Ø 40,70          |
| 13      | Ø 15,15          | 36      | Ø 41,90          |
| 14      | Ø 16,30          | 37      | Ø 42,95          |
| 15      | Ø 17,50          | 38      | Ø 44,10          |
| 16      | Ø 18,65          | 39      | Ø 45,26          |
| 17      | Ø 19,80          | 40      | Ø 46,45          |
| 18      | Ø 21,00          |         |                  |



### QUADRI METRICI / METRIC SQUARE

| dimens. | SMUSSO / CHAMFER | dimens. | SMUSSO / CHAMFER |
|---------|------------------|---------|------------------|
| 1       | Ø 1,50           | 11      | Ø 15,70          |
| 1,5     | Ø 2,25           | 12      | Ø 17,10          |
| 2       | Ø 3,00           | 13      | Ø 18,55          |
| 2,5     | Ø 3,80           | 14      | Ø 19,95          |
| 3       | Ø 4,35           | 15      | Ø 21,35          |
| 3,5     | Ø 5,10           | 16      | Ø 22,80          |
| 4       | Ø 5,80           | 17      | Ø 24,20          |
| 4,5     | Ø 6,50           | 18      | Ø 25,65          |
| 5       | Ø 7,20           | 19      | Ø 27,05          |
| 5,5     | Ø 8,00           | 20      | Ø 28,50          |
| 6       | Ø 8,60           | 21      | Ø 29,90          |
| 7       | Ø 10,00          | 22      | Ø 31,35          |
| 8       | Ø 11,45          | 23      | Ø 32,75          |
| 9       | Ø 12,85          | 24      | Ø 34,15          |
| 10      | Ø 14,30          | 25      | Ø 35,60          |



### QUADRI IN POLLICI / SQUARE IN INCHES

| dimens. | SMUSSO / CHAMFER | dimens. | SMUSSO / CHAMFER |
|---------|------------------|---------|------------------|
| 3/32"   | Ø 3,50           | 3/8"    | Ø 13,80          |
| 1/8"    | Ø 4,75           | 7/16"   | Ø 16,00          |
| 5/32"   | Ø 5,80           | 1/2"    | Ø 18,30          |
| 3/16"   | Ø 7,00           | 9/16"   | Ø 20,50          |
| 7/32"   | Ø 8,10           | 5/8"    | Ø 22,80          |
| 1/4"    | Ø 9,20           | 3/4"    | Ø 27,40          |
| 9/32"   | Ø 10,30          | 7/8"    | Ø 32,00          |
| 5/16"   | Ø 11,50          | 1"      | Ø 36,50          |



### ESAGONI IN POLLICI / HEXAGONS IN INCHES

| dimens. | SMUSSO / CHAMFER | dimens. | SMUSSO / CHAMFER |
|---------|------------------|---------|------------------|
| 3/32"   | Ø 2,95           | 3/8"    | Ø 11,15          |
| 1/8"    | Ø 3,75           | 7/16"   | Ø 12,95          |
| 5/32"   | Ø 4,70           | 1/2"    | Ø 14,85          |
| 3/16"   | Ø 5,60           | 9/16"   | Ø 16,70          |
| 7/32"   | Ø 6,55           | 5/8"    | Ø 18,50          |
| 1/4"    | Ø 7,45           | 3/4"    | Ø 22,20          |
| 9/32"   | Ø 8,90           | 7/8"    | Ø 25,90          |
| 5/16"   | Ø 9,30           | 1"      | Ø 29,55          |



### TORX / TORX

| dimens. | SMUSSO / CHAMFER | dimens. | SMUSSO / CHAMFER |
|---------|------------------|---------|------------------|
| T3      | Ø 1,25           | T25     | Ø 4,60           |
| T4      | Ø 1,40           | T27     | Ø 5,15           |
| T5      | Ø 1,60           | T30     | Ø 5,65           |
| T6      | Ø 1,80           | T40     | Ø 6,85           |
| T7      | Ø 2,10           | T45     | Ø 8,00           |
| T8      | Ø 2,45           | T50     | Ø 9,00           |
| T9      | Ø 2,60           | T55     | Ø 11,40          |
| T10     | Ø 2,85           | T60     | Ø 13,50          |
| T15     | Ø 3,40           | T70     | Ø 15,80          |
| T20     | Ø 4,00           |         |                  |



### BROCCIE TORX PLUS / TORX PLUS BROACHES

| dimens. | SMUSSO / CHAMFER | dimens. | SMUSSO / CHAMFER |
|---------|------------------|---------|------------------|
| IP6     | Ø 1,80           | IP27    | Ø 5,30           |
| IP7     | Ø 2,20           | IP30    | Ø 5,70           |
| IP8     | Ø 2,50           | IP40    | Ø 7,00           |
| IP9     | Ø 2,70           | IP45    | Ø 8,20           |
| IP10    | Ø 3,00           | IP50    | Ø 9,20           |
| IP15    | Ø 3,50           | IP55    | Ø 11,50          |
| IP20    | Ø 4,10           | IP60    | Ø 13,60          |
| IP25    | Ø 4,70           | IP70    | Ø 16,00          |

# Parametri di utilizzo per lavorazioni con brocche in HSS e Sinterizzato

## Working parameters for broach machining made of HSS and sintered material

**I** La scelta se utilizzare brocche in ACCIAIO HSS o SINTERIZZATO può dipendere da alcuni aspetti:

**GB** The choice whether to use HSS STEEL or SINTERED broaches may depend on some aspects:

**VANTAGGI**  
ADVANTAGES

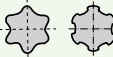
**SVANTAGGI**  
DISADVANTAGES

| ACCIAIO HSS / HSS STEEL                                                                                                                                                                                                                                                                                                                  | SINTERIZZATO / SINTERED                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Massima flessibilità per tutti i materiali. Acciaio da utensili (super rapido) indicato per qualsiasi tipo di lavorazione. <b>Rivestimenti</b> consigliati vedi pag. 18.<br><i>Maximum flexibility for all types of steel and alloys. Super high speed steel suitable for any type of processing. Recommended coatings see page. 18.</i> | Altissima tenacità e durezza adatta per la lavorazione del titanio e acciai fino a MAX 32-33 HRC. <b>Rivestimenti</b> consigliati vedi pag. 18.<br><i>Very high toughness and hardness suitable to work titanium and steels till MAX 32-33 HRC. Recommended coatings see page. 18.</i> |
| Non idoneo a lavorare il Titanio e acciai fino a MAX 28-29 HRC.<br><i>Not suitable for working titanium and steels till to MAX 28-29 HRC.</i>                                                                                                                                                                                            | Estrema fragilità agli urti e vibrazioni, non consigliato a lavorare acciai Inox e acciai semplici.<br><i>Extreme fragility to shocks and vibrations, not recommended to stainless steels and simple steels.</i>                                                                       |

### BROCCE IN ACCIAIO HSS

#### HSS STEEL BROACHES

ROTAZIONE MANDRINO: M3, M4  
SPINDLE ROTATION: M3, M4

| BROCCHE IN ACCIAIO<br>HSS<br>HSS STEEL BROACHES                                                                   |                                  | MATERIALE DA LAVORARE / MATERIAL TO WORK         |                                                            |                                                                |                                                                |                                    |                                       |                                    |                                 |                     |                                    |       |                    |                             |                |                                    |             |              |             |              |  |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------|--------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|------------------------------------|---------------------------------------|------------------------------------|---------------------------------|---------------------|------------------------------------|-------|--------------------|-----------------------------|----------------|------------------------------------|-------------|--------------|-------------|--------------|--|
| ROTAZIONE MANDRINO: M3, M4<br>SPINDLE ROTATION: M3, M4                                                            |                                  | ALLUMINIO<br>ALUMINUM                            | ACCIAI / STEELS                                            |                                                                |                                                                |                                    |                                       |                                    | ACCIAI INOX<br>STAINLESS STEELS |                     |                                    |       | GHISA<br>CAST IRON | TITANIO (*)<br>TITANIUM (*) | RAME<br>COPPER | OTTONE/<br>BRONZO                  |             |              |             |              |  |
|                                                                                                                   |                                  | Vc m/min=55<br>Rm ≤ 350<br>(N/mm²)               | TENERO<br>MILD STEEL<br>Vc m/min=40<br>Rm ≤ 510<br>(N/mm²) | COMUNE<br>COMMON STEEL<br>Vc m/min=38<br>Rm 510÷680<br>(N/mm²) | LEGATO<br>ALLOY STEEL<br>Vc m/min=30<br>Rm 680÷1050<br>(N/mm²) | Vc m/min=25<br>Rm ≤ 520<br>(N/mm²) | Vc m/min=20<br>Rm 520÷1050<br>(N/mm²) | Vc m/min=30<br>Rm ≤ 400<br>(N/mm²) | Rm ≤ 350<br>(N/mm²)             | Rm ≤ 200<br>(N/mm²) | Vc m/min=40<br>Rm ≤ 350<br>(N/mm²) |       |                    |                             |                |                                    |             |              |             |              |  |
|                                                                                                                   |                                  | LUBRIFICAZIONE NECESSARIA / LUBRICATION REQUIRED |                                                            |                                                                |                                                                |                                    |                                       |                                    |                                 |                     |                                    |       |                    |                             |                |                                    |             |              |             |              |  |
| PROFILO<br>PROFILE                                                                                                | dimensioni<br>dimensions<br>(mm) | f                                                | S                                                          | f                                                              | S                                                              | f                                  | S                                     | f                                  | S                               | f                   | S                                  | f     | S                  | f                           | S              | NON CONSIGLIATO<br>NOT RECOMMENDED | f           | S            | f           | S            |  |
| <br>ESAGONALE<br>HEXAGONAL       | 1 - 12,9                         | 0,11                                             | 1800/<br>900                                               | 0,10                                                           | 1500/<br>850                                                   | 0,08                               | 1450/<br>800                          | 0,05                               | 1400/<br>750                    | 0,07                | 1450/<br>750                       | 0,04  | 1200/<br>700       | 0,07                        | 1600/<br>700   |                                    | 0,09        | 1600/<br>950 | 0,10        | 1700/<br>950 |  |
|                                                                                                                   | 13 - 23,9                        | 0,08                                             | 900/<br>550                                                | 0,08                                                           | 850/<br>500                                                    | 0,06                               | 800/<br>400                           | 0,02                               | 750/<br>400                     | 0,06                | 750/<br>500                        | 0,03  | 700/<br>450        | 0,05                        | 700/<br>500    |                                    | 0,07        | 950/<br>600  | 0,07        | 950/<br>700  |  |
|                                                                                                                   | 24 - 40                          | 0,05                                             | 550/<br>350                                                | 0,04                                                           | 500/<br>300                                                    | 0,03                               | 400/<br>300                           | 0,01                               | 400/<br>300                     | 0,03                | 500/<br>400                        | 0,02  | 450/<br>350        | 0,03                        | 500/<br>350    |                                    | 0,04        | 600/<br>450  | 0,03        | 700/<br>450  |  |
| <br>QUADRATO<br>SQUARE         | 1 - 10,9                         | 0,10                                             | 1800/<br>900                                               | 0,06                                                           | 1500/<br>850                                                   | 0,05                               | 1450/<br>800                          | 0,02                               | 1400/<br>750                    | 0,05                | 1450/<br>750                       | 0,03  | 1200/<br>700       | 0,07                        | 1600/<br>700   |                                    | 0,10        | 1600/<br>950 | 0,08        | 1700/<br>950 |  |
|                                                                                                                   | 11 - 20,9                        | 0,06                                             | 900/<br>550                                                | 0,04                                                           | 850/<br>500                                                    | 0,03                               | 800/<br>400                           | 0,02                               | 750/<br>400                     | 0,04                | 750/<br>500                        | 0,02  | 700/<br>450        | 0,05                        | 700/<br>500    |                                    | 0,08        | 950/<br>600  | 0,06        | 950/<br>700  |  |
|                                                                                                                   | 21 - 25                          | 0,03                                             | 550/<br>350                                                | 0,02                                                           | 500/<br>300                                                    | 0,02                               | 400/<br>300                           | 0,01                               | 400/<br>300                     | 0,02                | 500/<br>400                        | 0,01  | 450/<br>350        | 0,03                        | 500/<br>350    |                                    | 0,06        | 600/<br>450  | 0,04        | 700/<br>450  |  |
| <br>TORX® (T)<br>TORX®PLUS (IP) | T3 - T6                          | 0,12                                             | 1800/<br>900                                               | 0,10                                                           | 1500/<br>850                                                   | 0,08                               | 1450/<br>800                          | 0,05                               | 1400/<br>750                    | 0,08                | 1450/<br>750                       | 0,045 | 1200/<br>700       | 0,09                        | 1600/<br>700   |                                    | 0,12        | 1600/<br>950 | 0,10        | 1700/<br>950 |  |
|                                                                                                                   | T7 - T27<br>IP6 - IP27           | 0,10                                             | 900/<br>550                                                | 0,09                                                           | 850/<br>500                                                    | 0,07                               | 800/<br>400                           | 0,04                               | 750/<br>400                     | 0,07                | 750/<br>500                        | 0,04  | 700/<br>450        | 0,08                        | 700/<br>500    |                                    | 0,11        | 950/<br>600  | 0,09        | 950/<br>700  |  |
|                                                                                                                   | T30 - T70<br>IP30 - IP70         | 0,08                                             | 550/<br>350                                                | 0,07                                                           | 500/<br>300                                                    | 0,05                               | 400/<br>300                           | 0,03                               | 400/<br>300                     | 0,06                | 500/<br>400                        | 0,03  | 450/<br>350        | 0,06                        | 500/<br>350    | 0,09                               | 600/<br>450 | 0,06         | 700/<br>450 |              |  |

f = avanzamento (mm/giro) / advancement (mm/round)

Legenda / Legend: S = velocità (giri/min) / RPM (rounds/minute)

Vc = velocità di taglio (m/min) / cutting speed (meters/minute)

### BROCCE IN ACCIAIO SINTERIZZATO

#### SINTERED STEEL BROACHES

ROTAZIONE MANDRINO: M3, M4  
SPINDLE ROTATION: M3, M4

| BROCCO IN ACCIAIO<br>SINTERIZZATO                      |  | MATERIALE DA LAVORARE / MATERIAL TO WORK |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------|--|------------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|--|
| SINTERED STEEL BROACHES                                |  |                                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| ROTAZIONE MANDRINO: M3, M4<br>SPINDLE ROTATION: M3, M4 |  |                                          |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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|                                                        |  | </                                       |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

(\*) adatto fino a classe 3, poco consigliato su classe 4, sconsigliato per classi 5 e 6 / suitable up to class 3, not recommended for class 4, not recommended for classes 5 and 6

# Rivestimenti per brocche

## Coatings for broaches

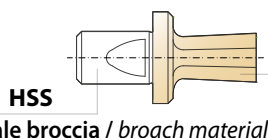


**I** A seconda della tipologia di materiale da lavorare, sulle brocche possono essere applicati rivestimenti per migliorarne la durata in termini di numero di pezzi prodotti, come **WONDER (TiAlN\*)**, **TiN**, **INOX PLUS** e **ZIRINOS**. Di seguito alcuni esempi di materiali da lavorare con i grafici che ne evidenziano la differenza fra l'utensile realizzato in HSS o SINTERIZZATO normale rispetto all'utensile rivestito.

**GB** Depending on the type of material to be machined, coatings can be applied to the broaches to improve their durability in terms of number of work-pieces produced, such as **WONDER (TiAlN\*)**, **TiN**, **INOX PLUS** and **ZIRINOS**. Here are some examples of materials to be machined with the graphs highlighting the difference between the tool made of normal HSS or SINTERED and the coated tool.

| Materiale broccia<br>Broach material | Materiale da lavorare<br>Machined material |                     |     |                    |              |         |
|--------------------------------------|--------------------------------------------|---------------------|-----|--------------------|--------------|---------|
|                                      |                                            |                     | TiN | WONDER/<br>TiAlN * | INOX<br>PLUS | ZIRINOS |
| HSS                                  | ALLUMINIO / ALUMINUM                       | Rm ≤ 350 (N/mm²)    |     |                    |              | ✓       |
| HSS                                  | ACCIAIO TENERO / MILD STEEL                | Rm ≤ 510 (N/mm²)    | ✓   |                    |              |         |
| HSS                                  | ACCIAIO COMUNE / COMMON STEEL              | Rm 510÷680 (N/mm²)  | ✓   |                    |              |         |
| HSS                                  | ACCIAIO LEGATO / ALLOY STEEL               | Rm 680÷1050 (N/mm²) |     | ✓                  |              |         |
| HSS                                  | ACCIAI INOX / STAINLESS STEELS             | Rm ≤ 520 (N/mm²)    |     |                    | ✓            |         |
| HSS                                  |                                            | Rm 520÷1050 (N/mm²) |     |                    | ✓            |         |
| HSS                                  | GHISA / CAST IRON                          | Rm ≤ 400 (N/mm²)    | ✓   |                    |              |         |
| SINTERIZZATO                         | TITANIO / TITANIUM                         | Rm ≤ 350 (N/mm²)    |     |                    |              | ✓       |
| HSS                                  | OTTONE-BRONZO / BRASS - BRONZE             | Rm ≤ 350 (N/mm²)    |     |                    |              | ✓       |

materiale da lavorare: **ALLUMINIO - OTTONE - BRONZO**  
machined material: **ALUMINUM - BRASS - BRONZE**



**ZIRINOS**

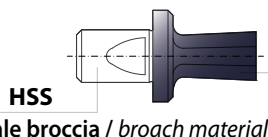
rivestimento applicato / applied coating

n°pz brocciati senza rivestimento  
n°pcs broached without broached coating

n°pz brocciati con rivestimento  
n°pcs broached coating

**+36%** rivest./coat.  
**ZIRINOS**

materiale da lavorare: **ACCIAIO BONIFICATI**  
machined material: **HARDENED STEEL**



**WONDER (TiAlN\*)**

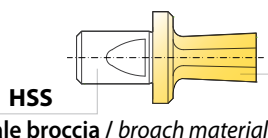
rivestimento applicato / applied coating

n°pz brocciati senza rivestimento  
n°pcs broached without broached coating

n°pz brocciati con rivestimento  
n°pcs broached coating

**+25%** rivest./coat.  
**WONDER (TiAlN\*)**

materiale da lavorare: **ACCIAIO TENERO/COMUNE - GHISA**  
machined material: **MILD/COMMON STEEL - CAST IRON**



**TiN**

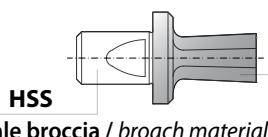
rivestimento applicato / applied coating

n°pz brocciati senza rivestimento  
n°pcs broached without broached coating

n°pz brocciati con rivestimento  
n°pcs broached coating

**+28%** rivest./coat.  
**TiN**

materiale da lavorare: **ACCIAI INOX**  
machined material: **STAINLESS STEELS**



**INOX PLUS**

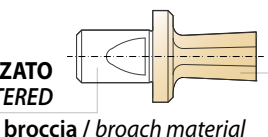
rivestimento applicato / applied coating

n°pz brocciati senza rivestimento  
n°pcs broached without broached coating

n°pz brocciati con rivestimento  
n°pcs broached coating

**+36%** rivest./coat.  
**INOX PLUS**

materiale da lavorare: **TITANIO**  
machined material: **TITANIUM**



**ZIRINOS**

rivestimento applicato / applied coating

n°pz brocciati senza rivestimento  
n°pcs broached without broached coating

n°pz brocciati con rivestimento  
n°pcs broached coating

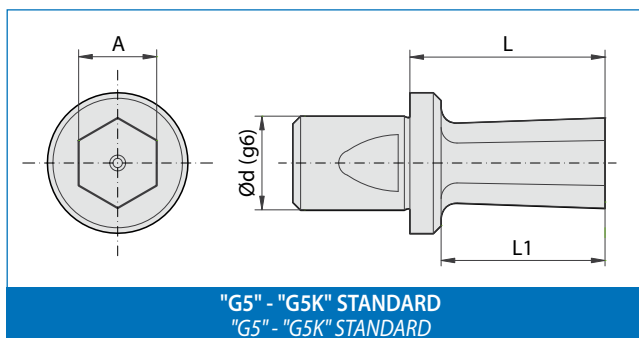
**+36%** rivest./coat.  
**ZIRINOS**

Per acciai e/o materiali non indicati in tabella, chiedere informazioni al nostro ufficio tecnico

(\*) TiAlN solo a richiesta, sostituito dal WONDER

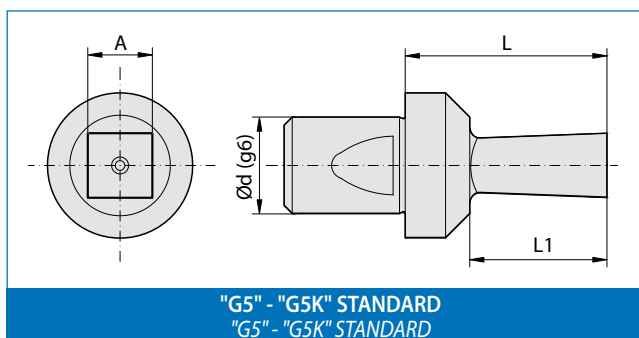
## BROCCE G5 - DIAMETRO "d" DEL GAMBO: 5 mm G5 BROACHES - 5 mm SHANK DIAMETER ("d")

### Sezione ESAGONALE standard (E) Standard HEXAGONAL section (E)



| ARTICOLO (materiale)<br>ITEM (material)                                                    |                                                                                            | DIMENSIONI - DIMENSIONS |     |             |     |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------|-----|-------------|-----|----|----------------------------------------------------------|
| HSS                                                                                        | SINTERIZZATO<br>SINTERED                                                                   |                         |     |             |     |    |                                                          |
| Standard  | Standard  | d                       | A   |             | L1  | L  |                                                          |
| G5-E-1                                                                                     | G5K-E-1                                                                                    | 5                       | 1   | +0,04 +0,06 | 2   | 10 |                                                          |
| G5-E-1,5                                                                                   | G5K-E-1,5                                                                                  | 5                       | 1,5 | +0,05 +0,07 | 3   | 10 |                                                          |
| G5-E-2                                                                                     | G5K-E-2                                                                                    | 5                       | 2   | +0,05 +0,07 | 4   | 10 |                                                          |
| G5-E-2,5                                                                                   | G5K-E-2,5                                                                                  | 5                       | 2,5 | +0,05 +0,07 | 5   | 10 |                                                          |
| G5-E-3                                                                                     | G5K-E-3                                                                                    | 5                       | 3   | +0,06 +0,08 | 6   | 10 |                                                          |
| G5-E-3,5                                                                                   | G5K-E-3,5                                                                                  | 5                       | 3,5 | +0,06 +0,08 | 6   | 10 |                                                          |
| G5-E-4                                                                                     | G5K-E-4                                                                                    | 5                       | 4   | +0,07 +0,09 | 7   | 10 |                                                          |
| G5-E-4,5                                                                                   | G5K-E-4,5                                                                                  | 5                       | 4,5 | +0,07 +0,09 | 7   | 10 |                                                          |
| G5-E-5                                                                                     | G5K-E-5                                                                                    | 5                       | 5   | +0,08 +0,10 | 7,5 | 10 |                                                          |
| G5-E-5,5                                                                                   | G5K-E-5,5                                                                                  | 5                       | 5,5 | +0,08 +0,10 | 7,5 | 10 |                                                          |
| G5-E-6                                                                                     | G5K-E-6                                                                                    | 5                       | 6   | +0,08 +0,10 | 7,5 | 10 |                                                          |

### Sezione QUADRA standard (Q) Standard SQUARE section (Q)



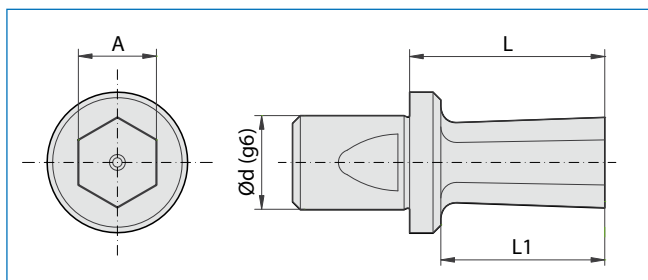
| ARTICOLO (materiale)<br><i>ITEM (material)</i>                                               |                                                                                              | DIMENSIONI - <i>DIMENSIONS</i> |     |             |    |    | Utilizzo su<br>Brocciatori/<br><i>Use on<br/>Broaching heads</i> |
|----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------|-----|-------------|----|----|------------------------------------------------------------------|
| HSS                                                                                          | SINTERIZZATO<br><i>SINTERED</i>                                                              |                                |     |             |    |    |                                                                  |
| Standard  | Standard  | d                              | A   |             | L1 | L  |                                                                  |
| G5-Q-1                                                                                       | G5K-Q-1                                                                                      | 5                              | 1   | +0,04 +0,06 | 2  | 10 | Standard<br>BR-G5                                                |
| G5-Q-1,5                                                                                     | G5K-Q-1,5                                                                                    | 5                              | 1,5 | +0,05 +0,07 | 3  | 10 |                                                                  |
| G5-Q-2                                                                                       | G5K-Q-2                                                                                      | 5                              | 2   | +0,05 +0,07 | 4  | 10 |                                                                  |
| G5-Q-2,5                                                                                     | G5K-Q-2,5                                                                                    | 5                              | 2,5 | +0,06 +0,08 | 5  | 10 |                                                                  |
| G5-Q-3                                                                                       | G5K-Q-3                                                                                      | 5                              | 3   | +0,06 +0,08 | 6  | 10 |                                                                  |
| G5-Q-3,5                                                                                     | G5K-Q-3,5                                                                                    | 5                              | 3,5 | +0,07 +0,09 | 6  | 10 |                                                                  |
| G5-Q-4                                                                                       | G5K-Q-4                                                                                      | 5                              | 4   | +0,07 +0,09 | 7  | 10 |                                                                  |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

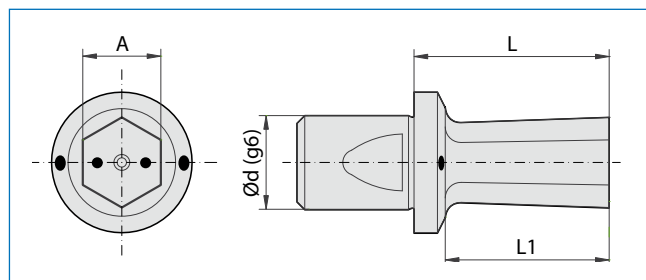


**BROCCE G8 E G8C - DIAMETRO "d" DEL GAMBO: 8 mm**  
**G8 AND G8C BROACHES - 8 mm SHANK DIAMETER ("d")**

**Sezione ESAGONALE (E)**  
**HEXAGONAL section (E)**



"G8" - "G8K" STANDARD  
"G8" - "G8K" STANDARD



"G8C" - "G8KC" CON PASSAGGIO REFRIGERANTE INTERNO  
"G8C" - "G8KC" WITH INTERNAL FLOW OF COOLANT

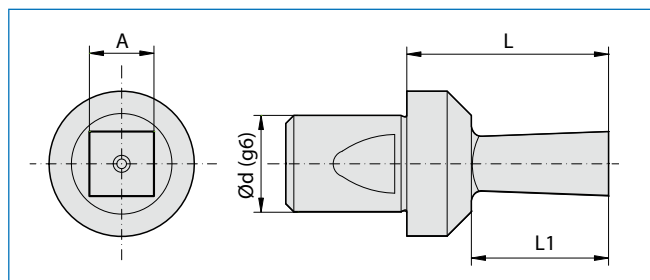
| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                 |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |                                                      |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|-----------------|----|----|----------------------------------------------------------|------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                 |    |    |                                                          |                                                      |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A               | L1 | L  |                                                          |                                                      |
| G8-E-1                                                                                     | /                                                                                              | G8K-E-1                                                                                    | /                                                                                              | 8                       | 1 +0,04 +0,06   | 2  | 18 | Standard<br><br>BR-G8S<br>BR-G8M<br>BR-G8<br>BR-G8A      |                                                      |
| G8-E-1,5                                                                                   |                                                                                                | G8K-E-1,5                                                                                  |                                                                                                | 8                       | 1,5 +0,05 +0,07 | 3  | 18 |                                                          |                                                      |
| G8-E-2                                                                                     |                                                                                                | G8K-E-2                                                                                    |                                                                                                | 8                       | 2 +0,05 +0,07   | 5  | 18 |                                                          |                                                      |
| G8-E-2,5                                                                                   |                                                                                                | G8K-E-2,5                                                                                  |                                                                                                | 8                       | 2,5 +0,05 +0,07 | 6  | 18 |                                                          |                                                      |
| G8-E-3                                                                                     | G8C-E-3                                                                                        | G8K-E-3                                                                                    | G8KC-E-3                                                                                       | 8                       | 3 +0,06 +0,08   | 7  | 18 |                                                          | Refrig. / Cool.<br><br>BRC-G8M<br>BRC-G8<br>BRC-G8HP |
| G8-E-3,5                                                                                   | G8C-E-3,5                                                                                      | G8K-E-3,5                                                                                  | G8KC-E-3,5                                                                                     | 8                       | 3,5 +0,06 +0,08 | 8  | 18 |                                                          |                                                      |
| G8-E-4                                                                                     | G8C-E-4                                                                                        | G8K-E-4                                                                                    | G8KC-E-4                                                                                       | 8                       | 4 +0,07 +0,09   | 9  | 18 |                                                          |                                                      |
| G8-E-4,5                                                                                   | G8C-E-4,5                                                                                      | G8K-E-4,5                                                                                  | G8KC-E-4,5                                                                                     | 8                       | 4,5 +0,07 +0,09 | 9  | 18 |                                                          |                                                      |
| G8-E-5                                                                                     | G8C-E-5                                                                                        | G8K-E-5                                                                                    | G8KC-E-5                                                                                       | 8                       | 5 +0,08 +0,10   | 11 | 18 |                                                          |                                                      |
| G8-E-5,5                                                                                   | G8C-E-5,5                                                                                      | G8K-E-5,5                                                                                  | G8KC-E-5,5                                                                                     | 8                       | 5,5 +0,08 +0,10 | 11 | 18 |                                                          |                                                      |
| G8-E-6                                                                                     | G8C-E-6                                                                                        | G8K-E-6                                                                                    | G8KC-E-6                                                                                       | 8                       | 6 +0,08 +0,10   | 13 | 18 |                                                          |                                                      |
| G8-E-7                                                                                     | G8C-E-7                                                                                        | G8K-E-7                                                                                    | G8KC-E-7                                                                                       | 8                       | 7 +0,08 +0,10   | 13 | 18 |                                                          |                                                      |
| G8-E-8                                                                                     | G8C-E-8                                                                                        | G8K-E-8                                                                                    | G8KC-E-8                                                                                       | 8                       | 8 +0,08 +0,10   | 13 | 18 |                                                          |                                                      |
| G8-E-9                                                                                     | G8C-E-9                                                                                        | G8K-E-9                                                                                    | G8KC-E-9                                                                                       | 8                       | 9 +0,09 +0,11   | 13 | 18 |                                                          |                                                      |
| G8-E-10                                                                                    | G8C-E-10                                                                                       | G8K-E-10                                                                                   | G8KC-E-10                                                                                      | 8                       | 10 +0,10 +0,12  | 13 | 18 |                                                          |                                                      |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

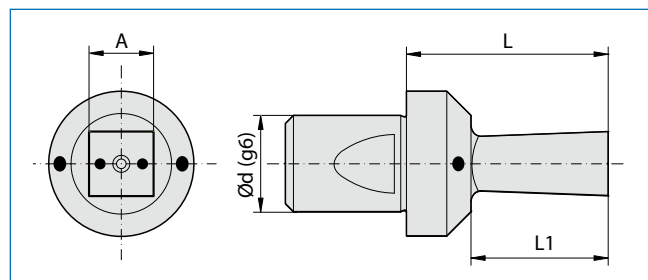


# **BROCCE G8 E G8C - DIAMETRO "d" DEL GAMBO: 8 mm** **G8 AND G8C BROACHES - 8 mm SHANK DIAMETER ("d")**

## **Sezione QUADRA (Q)** **SQUARE section (Q)**



"G8" - "G8K" STANDARD  
"G8" - "G8K" STANDARD



"G8C" - "G8KC" CON PASSAGGIO REFRIGERANTE INTERNO  
"G8C" - "G8KC" WITH INTERNAL FLOW OF COOLANT

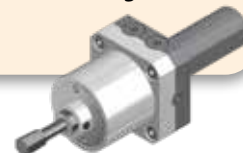
| ARTICOLO (materiale) - ITEM (material) |              |                         |              | DIMENSIONI - DIMENSIONS |                 |    |    | Utilizzo su Brocciatori/<br>Use on Broaching heads |
|----------------------------------------|--------------|-------------------------|--------------|-------------------------|-----------------|----|----|----------------------------------------------------|
| HSS                                    |              | SINTERIZZATO / SINTERED |              | d                       | A               | L1 | L  |                                                    |
| Standard                               | Ref. / Cool. | Standard                | Ref. / Cool. |                         |                 |    |    |                                                    |
| G8-Q-1                                 | /            | G8K-Q-1                 | /            | 8                       | 1 +0,04 +0,06   | 2  | 18 | Standard<br>BR-G8S<br>BR-G8M<br>BR-G8<br>BR-G8A    |
| G8-Q-1,5                               |              | G8K-Q-1,5               |              | 8                       | 1,5 +0,05 +0,07 | 3  | 18 |                                                    |
| G8-Q-2                                 |              | G8K-Q-2                 |              | 8                       | 2 +0,05 +0,07   | 5  | 18 |                                                    |
| G8-Q-2,5                               |              | G8K-Q-2,5               |              | 8                       | 2,5 +0,06 +0,08 | 6  | 18 |                                                    |
| G8-Q-3                                 | G8C-Q-3      | G8K-Q-3                 | G8KC-Q-3     | 8                       | 3 +0,06 +0,08   | 7  | 18 | Refrig. / Cool.<br>BRC-G8M<br>BRC-G8<br>BRC-G8HP   |
| G8-Q-3,5                               | G8C-Q-3,5    | G8K-Q-3,5               | G8KC-Q-3,5   | 8                       | 3,5 +0,06 +0,08 | 8  | 18 |                                                    |
| G8-Q-4                                 | G8C-Q-4      | G8K-Q-4                 | G8KC-Q-4     | 8                       | 4 +0,07 +0,09   | 9  | 18 |                                                    |
| G8-Q-4,5                               | G8C-Q-4,5    | G8K-Q-4,5               | G8KC-Q-4,5   | 8                       | 4,5 +0,07 +0,09 | 9  | 18 |                                                    |
| G8-Q-5                                 | G8C-Q-5      | G8K-Q-5                 | G8KC-Q-5     | 8                       | 5 +0,08 +0,10   | 11 | 18 |                                                    |
| G8-Q-5,5                               | G8C-Q-5,5    | G8K-Q-5,5               | G8KC-Q-5,5   | 8                       | 5,5 +0,08 +0,10 | 11 | 18 |                                                    |
| G8-Q-6                                 | G8C-Q-6      | G8K-Q-6                 | G8KC-Q-6     | 8                       | 6 +0,08 +0,10   | 13 | 18 |                                                    |
| G8-Q-7                                 | G8C-Q-7      | G8K-Q-7                 | G8KC-Q-7     | 8                       | 7 +0,08 +0,10   | 13 | 18 |                                                    |
| G8-Q-8                                 | G8C-Q-8      | G8K-Q-8                 | G8KC-Q-8     | 8                       | 8 +0,08 +0,10   | 13 | 18 |                                                    |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



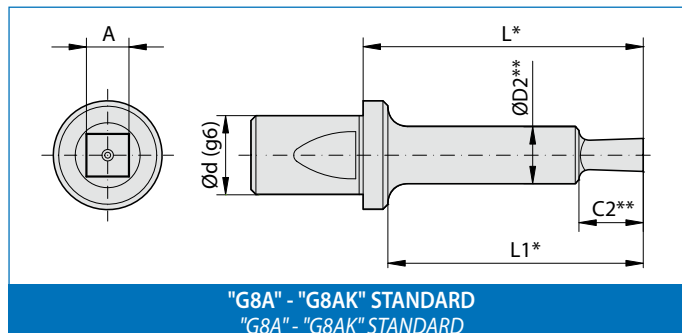
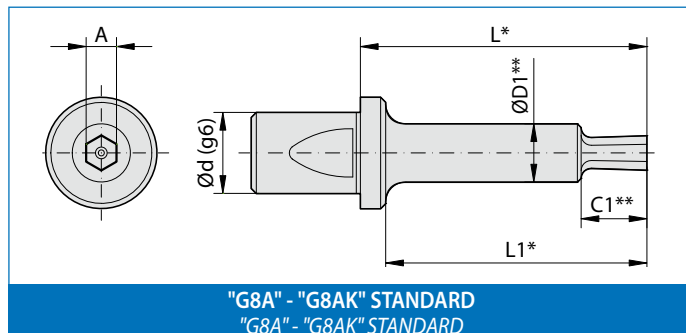
# **BROCCE G8A - DIAMETRO "d" DEL GAMBO: 8 mm** **G8A BROACHES - 8 mm SHANK DIAMETER ("d")**

**Per Brocciatori REGISTRABILI /**  
**For ADJUSTABLE Broaching Heads**  
**BR-G8A**



## **Sezione ESAGONALE standard (E)** **Standard HEXAGONAL section (E)**

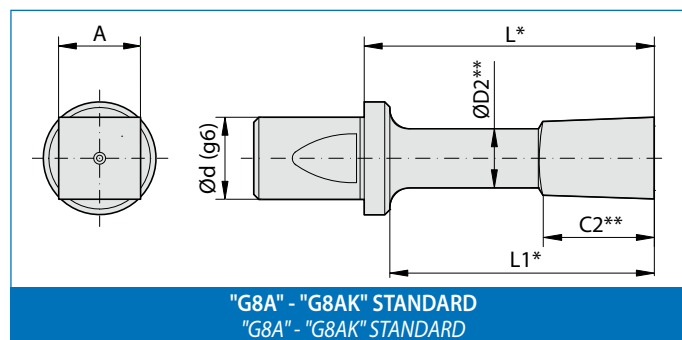
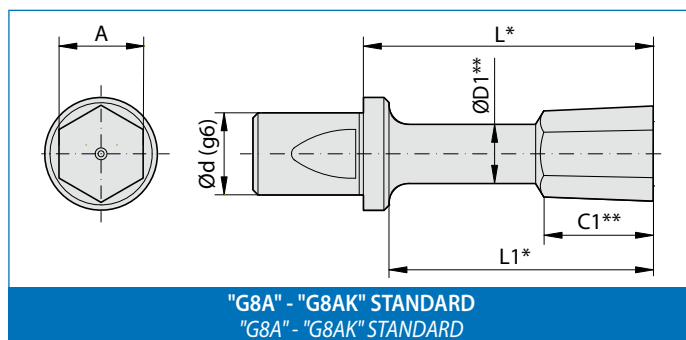
## **Sezione QUADRA standard (Q)** **Standard SQUARE section (Q)**



| ESAGONALE / HEXAGONAL                   |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| G8A-E-3                                 | G8AK-E-3                 |
| G8A-E-3,5                               | G8AK-E-3,5               |
| G8A-E-4                                 | G8AK-E-4                 |
| G8A-E-4,5                               | G8AK-E-4,5               |
| G8A-E-5                                 | G8AK-E-5                 |
| G8A-E-5,5                               | G8AK-E-5,5               |
| G8A-E-6                                 | G8AK-E-6                 |
| G8A-E-7                                 | G8AK-E-7                 |

| QUADRA / SQUARE                         |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| G8A-Q-3                                 | G8AK-Q-3                 |
| G8A-Q-3,5                               | G8AK-Q-3,5               |
| G8A-Q-4                                 | G8AK-Q-4                 |
| G8A-Q-4,5                               | G8AK-Q-4,5               |
| G8A-Q-5                                 | G8AK-Q-5                 |
| G8A-Q-5,5                               | G8AK-Q-5,5               |
| G8A-Q-6                                 | G8AK-Q-6                 |
| G8A-Q-7                                 | G8AK-Q-7                 |

| DIMENSIONI - DIMENSIONS |                 |     |    |      |      |      |      |                    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|-------------------------|-----------------|-----|----|------|------|------|------|--------------------|----------------------------------------------------------|
| d                       | A               | L1* | L* | C1** | C2** | D1** | D2** |                    |                                                          |
| 8                       | 3 +0,06 +0,08   | 26  | 30 | 7    | 7    | 6,5  | 6,5  | Standard<br>BR-G8A |                                                          |
| 8                       | 3,5 +0,06 +0,08 | 26  | 30 | 9    | 9    | 6,5  | 7,5  |                    |                                                          |
| 8                       | 4 +0,07 +0,09   | 26  | 30 | 9    | 9    | 6,5  | 7,5  |                    |                                                          |
| 8                       | 4,5 +0,07 +0,09 | 26  | 30 | 11   | 11   | 7,5  | 8,5  |                    |                                                          |
| 8                       | 5 +0,08 +0,10   | 26  | 30 | 11   | 11   | 7,5  | 8,5  |                    |                                                          |
| 8                       | 5,5 +0,08 +0,10 | 26  | 30 | 13   | 13   | 8,5  | 9,5  |                    |                                                          |
| 8                       | 6 +0,08 +0,10   | 26  | 30 | 13   | 13   | 8,5  | 9,5  |                    |                                                          |
| 8                       | 7 +0,08 +0,10   | 26  | 30 | 13   | 13   | 9,5  | 9    |                    |                                                          |



|          |           |
|----------|-----------|
| G8A-E-8  | G8AK-E-8  |
| G8A-E-9  | G8AK-E-9  |
| G8A-E-10 | G8AK-E-10 |

|         |          |
|---------|----------|
| G8A-Q-8 | G8AK-Q-8 |
| /       | /        |

|   |                |    |    |      |      |   |   |                    |  |
|---|----------------|----|----|------|------|---|---|--------------------|--|
| 8 | 8 +0,08 +0,10  | 26 | 30 | 11,5 | 11,5 | 6 | 6 | Standard<br>BR-G8A |  |
| 8 | 9 +0,09 +0,11  | 26 | 30 | 11,5 | /    | 7 | / |                    |  |
| 8 | 10 +0,10 +0,12 | 26 | 30 | 11,5 | /    | 8 | / |                    |  |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* le quote L e L1 indicate in tabella sono le misure standard, ma a richiesta sono fornibili anche con misure inferiori: L = 18 o 25mm / L1 = 14 o 21mm.  
the dimensions L and L1 show in the table is the standard sizes, but, on request, it can it also supplied with small sizes: L = 18 or 25mm / L1 = 14 or 21mm.

\*\* le quote C1, C2, D1 e D2 possono essere modificate a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimensions C1, C2, D1 and D2 can be modified according to the customer's needs. Contact Brighetti Meccanica.

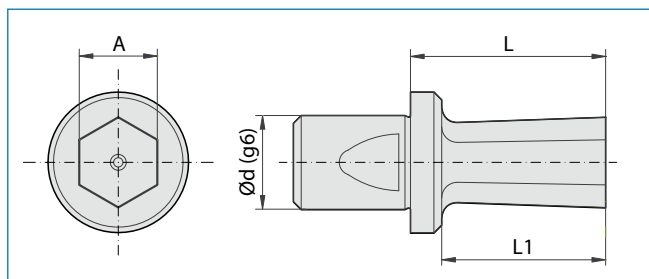
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



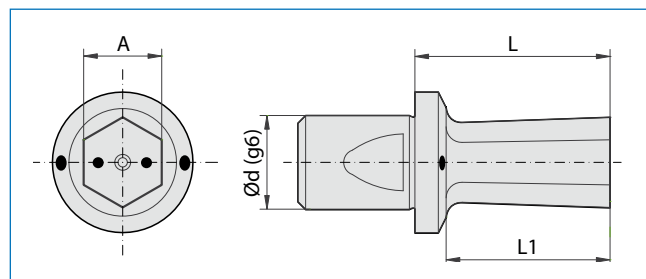
## BROCCE G12 E G12C - DIAMETRO "d" DEL GAMBO: 12 mm

### G12 AND G12C BROACHES - 12 mm SHANK DIAMETER ("d")

#### Sezione ESAGONALE (E) HEXAGONAL section (E)



"G12" - "G12K" STANDARD  
"G12" - "G12K" STANDARD



"G12C" - "G12KC" CON PASSAGGIO REFRIGERANTE INTERNO  
"G12C" - "G12KC" WITH INTERNAL FLOW OF COOLANT

| ARTICOLO (materiale) - ITEM (material) |              |                         |              | DIMENSIONI - DIMENSIONS |                 |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------|--------------|-------------------------|--------------|-------------------------|-----------------|----|----|----------------------------------------------------------|
| HSS                                    |              | SINTERIZZATO / SINTERED |              | d                       | A               | L1 | L  |                                                          |
| Standard                               | Ref. / Cool. | Standard                | Ref. / Cool. |                         |                 |    |    |                                                          |
| G12-E-1                                | /            | G12K-E-1                | /            | 12                      | 1 +0,04 +0,06   | 2  | 25 | Standard<br>BR-G12B<br>BR-G12<br>BR-G12A                 |
| G12-E-1,5                              |              | G12K-E-1,5              |              | 12                      | 1,5 +0,05 +0,07 | 3  | 25 |                                                          |
| G12-E-2                                |              | G12K-E-2                |              | 12                      | 2 +0,05 +0,07   | 5  | 25 |                                                          |
| G12-E-2,5                              |              | G12K-E-2,5              |              | 12                      | 2,5 +0,05 +0,07 | 6  | 25 |                                                          |
| G12-E-3                                | G12C-E-3     | G12K-E-3                | G12KC-E-3    | 12                      | 3 +0,06 +0,08   | 7  | 25 |                                                          |
| G12-E-3,5                              | G12C-E-3,5   | G12K-E-3,5              | G12KC-E-3,5  | 12                      | 3,5 +0,06 +0,08 | 8  | 25 |                                                          |
| G12-E-4                                | G12C-E-4     | G12K-E-4                | G12KC-E-4    | 12                      | 4 +0,07 +0,09   | 9  | 25 |                                                          |
| G12-E-4,5                              | G12C-E-4,5   | G12K-E-4,5              | G12KC-E-4,5  | 12                      | 4,5 +0,07 +0,09 | 9  | 25 |                                                          |
| G12-E-5                                | G12C-E-5     | G12K-E-5                | G12KC-E-5    | 12                      | 5 +0,08 +0,10   | 11 | 25 |                                                          |
| G12-E-5,5                              | G12C-E-5,5   | G12K-E-5,5              | G12KC-E-5,5  | 12                      | 5,5 +0,08 +0,10 | 11 | 25 |                                                          |
| G12-E-6                                | G12C-E-6     | G12K-E-6                | G12KC-E-6    | 12                      | 6 +0,08 +0,10   | 13 | 25 |                                                          |
| G12-E-7                                | G12C-E-7     | G12K-E-7                | G12KC-E-7    | 12                      | 7 +0,08 +0,10   | 21 | 25 | Refrig. / Cool.<br>BRC-G12B<br>BRC-G12                   |
| G12-E-8                                | G12C-E-8     | G12K-E-8                | G12KC-E-8    | 12                      | 8 +0,08 +0,10   | 21 | 25 |                                                          |
| G12-E-9                                | G12C-E-9     | G12K-E-9                | G12KC-E-9    | 12                      | 9 +0,09 +0,11   | 21 | 25 |                                                          |
| G12-E-10                               | G12C-E-10    | G12K-E-10               | G12KC-E-10   | 12                      | 10 +0,10 +0,12  | 21 | 25 |                                                          |
| G12-E-11                               | G12C-E-11    | G12K-E-11               | G12KC-E-11   | 12                      | 11 +0,10 +0,12  | 21 | 25 |                                                          |
| G12-E-12                               | G12C-E-12    | G12K-E-12               | G12KC-E-12   | 12                      | 12 +0,11 +0,13  | 21 | 25 |                                                          |
| G12-E-13                               | G12C-E-13    | G12K-E-13               | G12KC-E-13   | 12                      | 13 +0,11 +0,13  | 21 | 25 |                                                          |
| G12-E-14                               | G12C-E-14    | G12K-E-14               | G12KC-E-14   | 12                      | 14 +0,12 +0,14  | 21 | 25 |                                                          |
| G12-E-15                               | G12C-E-15    | G12K-E-15               | G12KC-E-15   | 12                      | 15 +0,13 +0,15  | 21 | 25 |                                                          |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

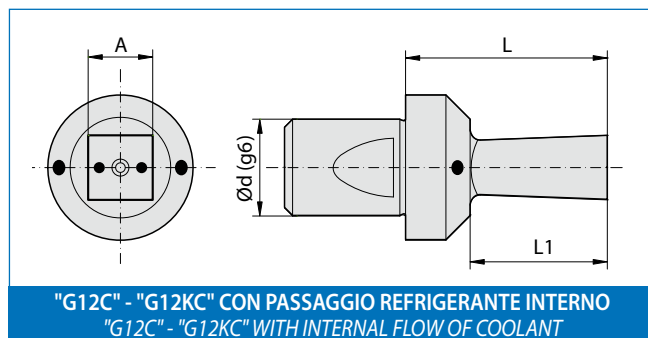
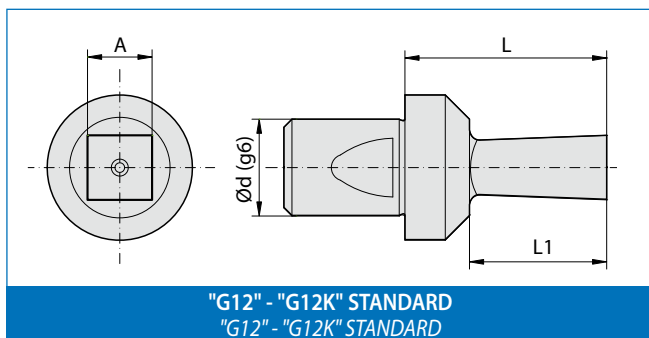


## BROCCHE G12 E G12C - DIAMETRO "d" DEL GAMBO: 12 mm

### G12 AND G12C BROACHES - 12 mm SHANK DIAMETER ("d")

#### Sezione QUADRA (Q)

#### SQUARE section (Q)



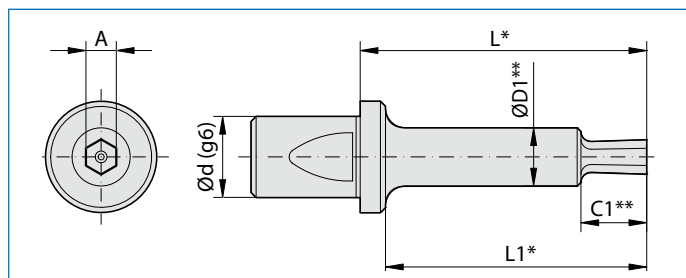
| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                 |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |                                        |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|-----------------|----|----|----------------------------------------------------------|----------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                 |    |    |                                                          |                                        |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A               | L1 | L  |                                                          |                                        |
| G12-Q-1                                                                                    | /                                                                                              | G12K-Q-1                                                                                   | /                                                                                              | 12                      | 1 +0,04 +0,06   | 2  | 25 | Standard<br>BR-G12B<br>BR-G12<br>BR-G12A                 |                                        |
| G12-Q-1,5                                                                                  |                                                                                                | G12K-Q-1,5                                                                                 |                                                                                                | 12                      | 1,5 +0,05 +0,07 | 3  | 25 |                                                          |                                        |
| G12-Q-2                                                                                    |                                                                                                | G12K-Q-2                                                                                   |                                                                                                | 12                      | 2 +0,05 +0,07   | 5  | 25 |                                                          |                                        |
| G12-Q-2,5                                                                                  |                                                                                                | G12K-Q-2,5                                                                                 |                                                                                                | 12                      | 2,5 +0,05 +0,07 | 6  | 25 |                                                          |                                        |
| G12-Q-3                                                                                    | G12C-Q-3                                                                                       | G12K-Q-3                                                                                   | G12KC-Q-3                                                                                      | 12                      | 3 +0,06 +0,08   | 7  | 25 |                                                          | Refrig. / Cool.<br>BRC-G12B<br>BRC-G12 |
| G12-Q-3,5                                                                                  | G12C-Q-3,5                                                                                     | G12K-Q-3,5                                                                                 | G12KC-Q-3,5                                                                                    | 12                      | 3,5 +0,06 +0,08 | 8  | 25 |                                                          |                                        |
| G12-Q-4                                                                                    | G12C-Q-4                                                                                       | G12K-Q-4                                                                                   | G12KC-Q-4                                                                                      | 12                      | 4 +0,07 +0,09   | 9  | 25 |                                                          |                                        |
| G12-Q-4,5                                                                                  | G12C-Q-4,5                                                                                     | G12K-Q-4,5                                                                                 | G12KC-Q-4,5                                                                                    | 12                      | 4,5 +0,07 +0,09 | 9  | 25 |                                                          |                                        |
| G12-Q-5                                                                                    | G12C-Q-5                                                                                       | G12K-Q-5                                                                                   | G12KC-Q-5                                                                                      | 12                      | 5 +0,08 +0,10   | 11 | 25 |                                                          |                                        |
| G12-Q-5,5                                                                                  | G12C-Q-5,5                                                                                     | G12K-Q-5,5                                                                                 | G12KC-Q-5,5                                                                                    | 12                      | 5,5 +0,08 +0,10 | 11 | 25 |                                                          |                                        |
| G12-Q-6                                                                                    | G12C-Q-6                                                                                       | G12K-Q-6                                                                                   | G12KC-Q-6                                                                                      | 12                      | 6 +0,08 +0,10   | 13 | 25 |                                                          |                                        |
| G12-Q-7                                                                                    | G12C-Q-7                                                                                       | G12K-Q-7                                                                                   | G12KC-Q-7                                                                                      | 12                      | 7 +0,08 +0,10   | 15 | 25 |                                                          |                                        |
| G12-Q-8                                                                                    | G12C-Q-8                                                                                       | G12K-Q-8                                                                                   | G12KC-Q-8                                                                                      | 12                      | 8 +0,08 +0,10   | 17 | 25 |                                                          |                                        |
| G12-Q-9                                                                                    | G12C-Q-9                                                                                       | G12K-Q-9                                                                                   | G12KC-Q-9                                                                                      | 12                      | 9 +0,09 +0,11   | 19 | 25 |                                                          |                                        |
| G12-Q-10                                                                                   | G12C-Q-10                                                                                      | G12K-Q-10                                                                                  | G12KC-Q-10                                                                                     | 12                      | 10 +0,10 +0,12  | 21 | 25 |                                                          |                                        |
| G12-Q-11                                                                                   | G12C-Q-11                                                                                      | G12K-Q-11                                                                                  | G12KC-Q-11                                                                                     | 12                      | 11 +0,10 +0,12  | 21 | 25 |                                                          |                                        |
| G12-Q-12                                                                                   | G12C-Q-12                                                                                      | G12K-Q-12                                                                                  | G12KC-Q-12                                                                                     | 12                      | 12 +0,11 +0,13  | 21 | 25 |                                                          |                                        |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



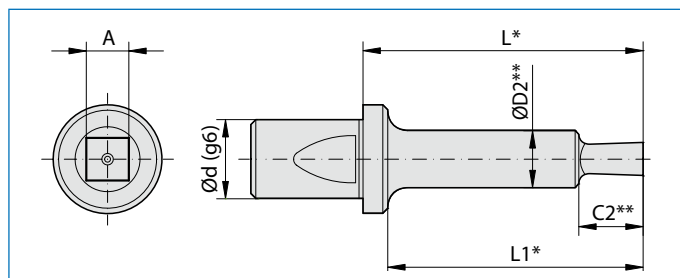
BROCCIE G12A - DIAMETRO "d" DEL GAMBO: 12 mm  
G12A BROACHES - 12 mm SHANK DIAMETER ("d")

Sezione ESAGONALE standard (E)  
Standard HEXAGONAL section (E)



"G12A" - "G12AK" STANDARD  
"G12A" - "G12AK" STANDARD

Sezione QUADRA standard (Q)  
Standard SQUARE section (Q)

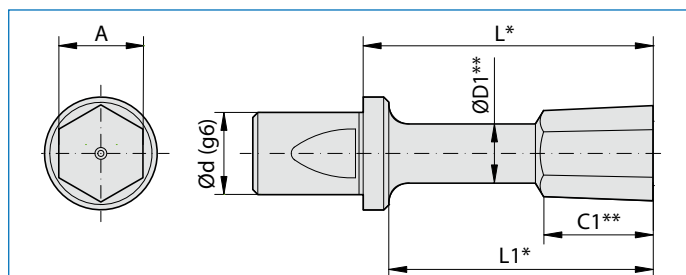


"G12A" - "G12AK" STANDARD  
"G12A" - "G12AK" STANDARD

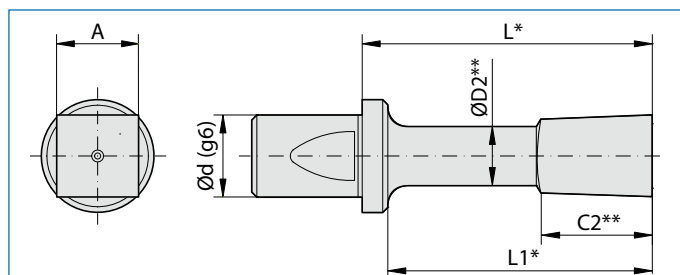
| ESAGONALE / HEXAGONAL                   |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| G12A-E-4                                | G12AK-E-4                |
| G12A-E-4,5                              | G12AK-E-4,5              |
| G12A-E-5                                | G12AK-E-5                |
| G12A-E-5,5                              | G12AK-E-5,5              |
| G12A-E-6                                | G12AK-E-6                |

| QUADRA / SQUARE                         |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| G12A-Q-4                                | G12AK-Q-4                |
| G12A-Q-4,5                              | G12AK-Q-4,5              |
| G12A-Q-5                                | G12AK-Q-5                |
| /                                       | /                        |

| DIMENSIONI - <i>DIMENSIONS</i> |     |             |     |    |      |      |      |      | Utilizzo su<br>Brocciatori/<br><i>Use on</i><br><i>Broaching heads</i> |
|--------------------------------|-----|-------------|-----|----|------|------|------|------|------------------------------------------------------------------------|
| d                              | A   |             | L1* | L* | C1** | C2** | D1** | D2** |                                                                        |
| 12                             | 4   | +0,07 +0,09 | 55  | 60 | 9    | 9    | 10   | 8    | <i>Standard</i><br><b>BR-G12A</b>                                      |
| 12                             | 4,5 | +0,07 +0,09 | 55  | 60 | 11   | 11   | 10   | 8    |                                                                        |
| 12                             | 5   | +0,08 +0,10 | 55  | 60 | 11   | 11   | 10   | 8    |                                                                        |
| 12                             | 5,5 | +0,08 +0,10 | 55  | 60 | 11   | /    | 10   | /    |                                                                        |
| 12                             | 6   | +0,08 +0,10 | 55  | 60 | 13   | /    | 10   | /    |                                                                        |



"G12A" - "G12AK" STANDARD  
"G12A" - "G12AK" STANDARD



"G12A" - "G12AK" STANDARD  
"G12A" - "G12AK" STANDARD

|           |            |
|-----------|------------|
| /         | /          |
| G12A-E-7  | G12AK-E-7  |
| G12A-E-8  | G12AK-E-8  |
| G12A-E-9  | G12AK-E-9  |
| G12A-E-10 | G12AK-E-10 |
| G12A-E-11 | G12AK-E-11 |
| G12A-E-12 | G12AK-E-12 |
| G12A-E-13 | G12AK-E-13 |
| G12A-E-14 | G12AK-E-14 |
| G12A-E-15 | G12AK-E-15 |

|            |             |
|------------|-------------|
| G12A-Q-5,5 | G12AK-Q-5,5 |
| G12A-Q-6   | G12AK-Q-6   |
| G12A-Q-7   | G12AK-Q-7   |
| G12A-Q-8   | G12AK-Q-8   |
| G12A-Q-9   | G12AK-Q-9   |
| G12A-Q-10  | G12AK-Q-10  |
| G12A-Q-11  | G12AK-Q-11  |
| G12A-Q-12  | G12AK-Q-12  |
| /          | /           |

|    |                 |    |    |    |    |      |    |                     |
|----|-----------------|----|----|----|----|------|----|---------------------|
| 12 | 5,5 +0,08 +0,10 | 55 | 60 | /  | 17 | /    | 8  | Standard<br>BR-G12A |
| 12 | 6 +0,08 +0,10   | 55 | 60 | /  | 17 | /    | 8  |                     |
| 12 | 7 +0,08 +0,10   | 55 | 60 | 15 | 19 | 6    | 8  |                     |
| 12 | 8 +0,08 +0,10   | 55 | 60 | 17 | 19 | 6,5  | 8  |                     |
| 12 | 9 +0,09 +0,11   | 55 | 60 | 19 | 21 | 7,7  | 8  |                     |
| 12 | 10 +0,10 +0,12  | 55 | 60 | 21 | 21 | 8,6  | 8  |                     |
| 12 | 11 +0,10 +0,12  | 55 | 60 | 21 | 21 | 9    | 9  |                     |
| 12 | 12 +0,11 +0,13  | 55 | 60 | 21 | 21 | 10   | 10 |                     |
| 12 | 13 +0,11 +0,13  | 55 | 60 | 21 | /  | 11   | /  |                     |
| 12 | 14 +0,12 +0,14  | 55 | 60 | 21 | /  | 11,5 | /  |                     |
| 12 | 15 +0,13 +0,15  | 55 | 60 | 21 | /  | 12,5 | /  |                     |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* le quote L e L1 indicate in tabella sono le misure standard, ma a richiesta sono fornibili anche con misure inferiori: L = 25 o 50mm / L1 = 21 o 46mm.  
the dimensions L and L1 show in the table is the standard sizes, but, on request, it can it also supplied with small sizes: L = 25 or 50mm / L1 = 21 or 46mm.

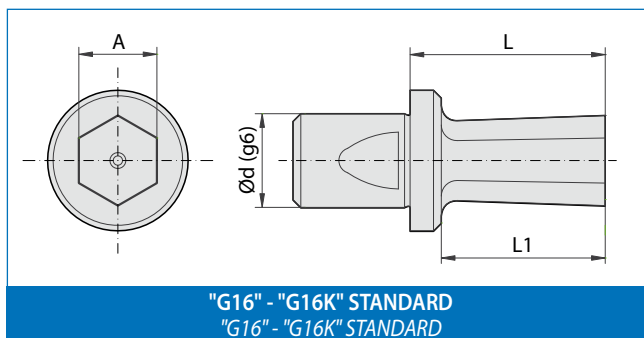
\*\* le quote C1, C2, D1 e D2 possono essere modificate a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimensions C1, C2, D1 and D2 can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



# **BROCCHE G16 - DIAMETRO "d" DEL GAMBO: 16 mm** **G16 BROACHES - 16 mm SHANK DIAMETER ("d")**

## **Sezione ESAGONALE standard (E)** **Standard HEXAGONAL section (E)**



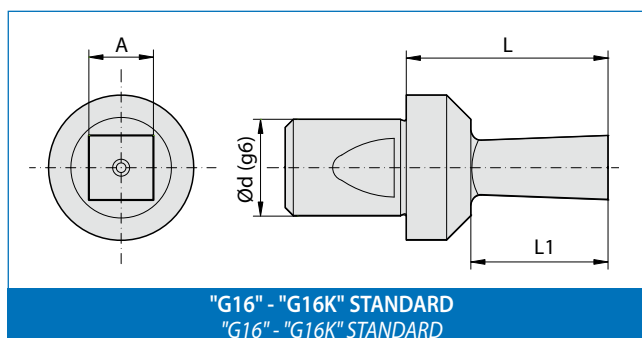
| ARTICOLO (materiale)<br>ITEM (material)                                                    |                                                                                            | DIMENSIONI - DIMENSIONS |                 |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|-------------------------|-----------------|----|----|----------------------------------------------------------|
| HSS                                                                                        | SINTERIZZATO<br>SINTERED                                                                   | d                       | A               | L1 | L  |                                                          |
| Standard  | Standard  |                         |                 |    |    |                                                          |
| G16-E-2                                                                                    | G16K-E-2                                                                                   | 16                      | 2 +0,05 +0,07   | 5  | 25 | Standard<br>BR-G16                                       |
| G16-E-2,5                                                                                  | G16K-E-2,5                                                                                 | 16                      | 2,5 +0,05 +0,07 | 6  | 25 |                                                          |
| G16-E-3                                                                                    | G16K-E-3                                                                                   | 16                      | 3 +0,06 +0,08   | 7  | 25 |                                                          |
| G16-E-3,5                                                                                  | G16K-E-3,5                                                                                 | 16                      | 3,5 +0,06 +0,08 | 8  | 25 |                                                          |
| G16-E-4                                                                                    | G16K-E-4                                                                                   | 16                      | 4 +0,07 +0,09   | 9  | 25 |                                                          |
| G16-E-4,5                                                                                  | G16K-E-4,5                                                                                 | 16                      | 4,5 +0,07 +0,09 | 9  | 25 |                                                          |
| G16-E-5                                                                                    | G16K-E-5                                                                                   | 16                      | 5 +0,08 +0,10   | 11 | 25 |                                                          |
| G16-E-5,5                                                                                  | G16K-E-5,5                                                                                 | 16                      | 5,5 +0,08 +0,10 | 11 | 25 |                                                          |
| G16-E-6                                                                                    | G16K-E-6                                                                                   | 16                      | 6 +0,08 +0,10   | 13 | 25 |                                                          |
| G16-E-7                                                                                    | G16K-E-7                                                                                   | 16                      | 7 +0,08 +0,10   | 15 | 25 |                                                          |
| G16-E-8                                                                                    | G16K-E-8                                                                                   | 16                      | 8 +0,08 +0,10   | 17 | 25 |                                                          |
| G16-E-9                                                                                    | G16K-E-9                                                                                   | 16                      | 9 +0,09 +0,11   | 19 | 25 |                                                          |
| G16-E-10                                                                                   | G16K-E-10                                                                                  | 16                      | 10 +0,10 +0,12  | 21 | 25 |                                                          |
| G16-E-11                                                                                   | G16K-E-11                                                                                  | 16                      | 11 +0,10 +0,12  | 21 | 25 |                                                          |
| G16-E-12                                                                                   | G16K-E-12                                                                                  | 16                      | 12 +0,11 +0,13  | 21 | 25 |                                                          |
| G16-E-13                                                                                   | G16K-E-13                                                                                  | 16                      | 13 +0,11 +0,13  | 21 | 25 |                                                          |
| G16-E-14                                                                                   | G16K-E-14                                                                                  | 16                      | 14 +0,12 +0,14  | 21 | 25 |                                                          |
| G16-E-15                                                                                   | G16K-E-15                                                                                  | 16                      | 15 +0,13 +0,15  | 21 | 25 |                                                          |
| G16-E-16                                                                                   | G16K-E-16                                                                                  | 16                      | 16 +0,13 +0,15  | 21 | 25 |                                                          |
| G16-E-17                                                                                   | G16K-E-17                                                                                  | 16                      | 17 +0,14 +0,16  | 21 | 25 |                                                          |
| G16-E-18                                                                                   | G16K-E-18                                                                                  | 16                      | 18 +0,15 +0,17  | 21 | 25 |                                                          |
| G16-E-19                                                                                   | G16K-E-19                                                                                  | 16                      | 19 +0,16 +0,18  | 21 | 25 |                                                          |
| G16-E-20                                                                                   | G16K-E-20                                                                                  | 16                      | 20 +0,18 +0,20  | 21 | 25 |                                                          |
| G16-E-21                                                                                   | G16K-E-21                                                                                  | 16                      | 21 +0,18 +0,20  | 21 | 25 |                                                          |
| G16-E-22                                                                                   | G16K-E-22                                                                                  | 16                      | 22 +0,19 +0,21  | 21 | 25 |                                                          |
| G16-E-23                                                                                   | G16K-E-23                                                                                  | 16                      | 23 +0,20 +0,22  | 21 | 25 |                                                          |
| G16-E-24                                                                                   | G16K-E-24                                                                                  | 16                      | 24 +0,21 +0,23  | 21 | 25 |                                                          |
| G16-E-25                                                                                   | G16K-E-25                                                                                  | 16                      | 25 +0,22 +0,24  | 21 | 25 |                                                          |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



# **BROCCE G16 - DIAMETRO "d" DEL GAMBO: 16 mm** **G16 BROACHES - 16 mm SHANK DIAMETER ("d")**

## **Sezione QUADRA standard (Q)** **Standard SQUARE section (Q)**



| ARTICOLO (materiale)<br>ITEM (material) |                                   | DIMENSIONI - DIMENSIONS |                 |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|-----------------------------------------|-----------------------------------|-------------------------|-----------------|----|----|----------------------------------------------------------|
| HSS                                     | SINTERIZZATO<br>SINTERED          | d                       | A               | L1 | L  |                                                          |
| Standard <input type="checkbox"/>       | Standard <input type="checkbox"/> |                         |                 |    |    |                                                          |
| <b>G16-Q-2</b>                          | <b>G16K-Q-2</b>                   | 16                      | 2 +0,05 +0,07   | 5  | 25 | <b>Standard<br/>BR-G16</b>                               |
| <b>G16-Q-2,5</b>                        | <b>G16K-Q-2,5</b>                 | 16                      | 2,5 +0,05 +0,07 | 6  | 25 |                                                          |
| <b>G16-Q-3</b>                          | <b>G16K-Q-3</b>                   | 16                      | 3 +0,06 +0,08   | 7  | 25 |                                                          |
| <b>G16-Q-3,5</b>                        | <b>G16K-Q-3,5</b>                 | 16                      | 3,5 +0,07 +0,09 | 8  | 25 |                                                          |
| <b>G16-Q-4</b>                          | <b>G16K-Q-4</b>                   | 16                      | 4 +0,07 +0,09   | 9  | 25 |                                                          |
| <b>G16-Q-4,5</b>                        | <b>G16K-Q-4,5</b>                 | 16                      | 4,5 +0,07 +0,09 | 9  | 25 |                                                          |
| <b>G16-Q-5</b>                          | <b>G16K-Q-5</b>                   | 16                      | 5 +0,08 +0,10   | 11 | 25 |                                                          |
| <b>G16-Q-5,5</b>                        | <b>G16K-Q-5,5</b>                 | 16                      | 5,5 +0,08 +0,10 | 11 | 25 |                                                          |
| <b>G16-Q-6</b>                          | <b>G16K-Q-6</b>                   | 16                      | 6 +0,08 +0,10   | 13 | 25 |                                                          |
| <b>G16-Q-7</b>                          | <b>G16K-Q-7</b>                   | 16                      | 7 +0,08 +0,10   | 15 | 25 |                                                          |
| <b>G16-Q-8</b>                          | <b>G16K-Q-8</b>                   | 16                      | 8 +0,08 +0,10   | 17 | 25 |                                                          |
| <b>G16-Q-9</b>                          | <b>G16K-Q-9</b>                   | 16                      | 9 +0,09 +0,11   | 19 | 25 |                                                          |
| <b>G16-Q-10</b>                         | <b>G16K-Q-10</b>                  | 16                      | 10 +0,10 +0,12  | 21 | 25 |                                                          |
| <b>G16-Q-11</b>                         | <b>G16K-Q-11</b>                  | 16                      | 11 +0,10 +0,12  | 21 | 25 |                                                          |
| <b>G16-Q-12</b>                         | <b>G16K-Q-12</b>                  | 16                      | 12 +0,11 +0,13  | 21 | 25 |                                                          |
| <b>G16-Q-13</b>                         | <b>G16K-Q-13</b>                  | 16                      | 13 +0,11 +0,13  | 21 | 25 |                                                          |
| <b>G16-Q-14</b>                         | <b>G16K-Q-14</b>                  | 16                      | 14 +0,12 +0,14  | 21 | 25 |                                                          |
| <b>G16-Q-15</b>                         | <b>G16K-Q-15</b>                  | 16                      | 15 +0,13 +0,15  | 21 | 25 |                                                          |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
 Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18





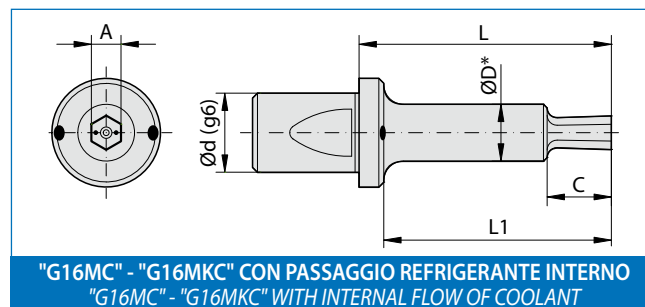
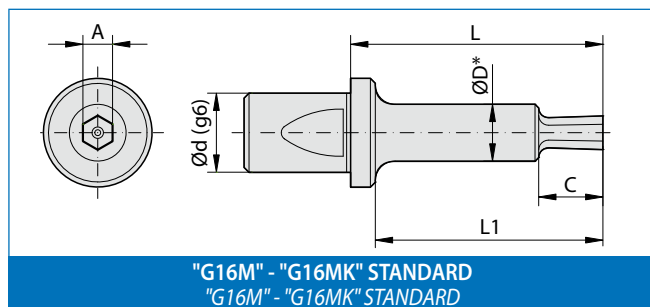
# BROCCE G16M E G16MC - DIAMETRO "d" DEL GAMBO: 16 mm G16M AND G16MC BROACHES - 16 mm SHANK DIAMETER ("d")

Per Brocciatori /  
For Broaching Heads

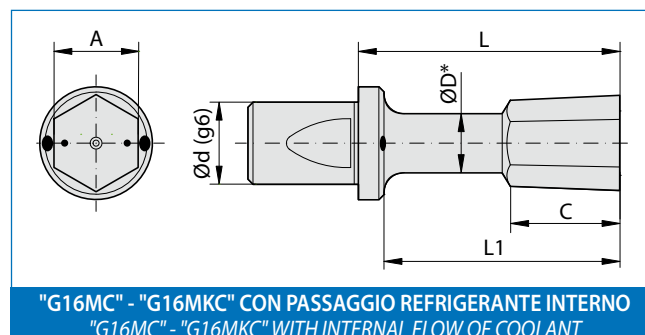
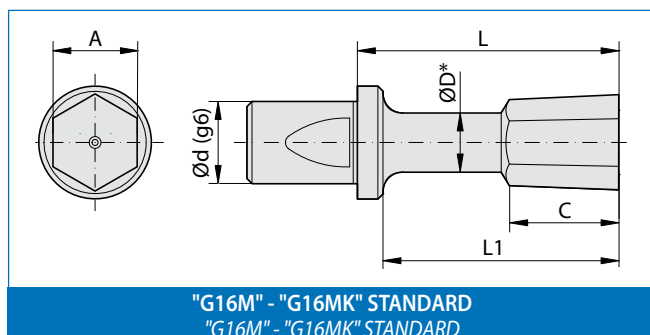
BR-G16M



## Sezione ESAGONALE (E) HEXAGONAL section (E)



| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                 |    |    |    |     |                                                    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|-----------------|----|----|----|-----|----------------------------------------------------|----------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                 |    |    |    |     |                                                    |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A               | L1 | L  | C  | D*  |                                                    |                                                          |
| G16M-E-5                                                                                   | G16MC-E-5                                                                                      | G16MK-E-5                                                                                  | G16MKC-E-5                                                                                     | 16                      | 5 +0,08 +0,10   | 31 | 35 | 11 | 9,4 | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M |                                                          |
| G16M-E-5,5                                                                                 | G16MC-E-5,5                                                                                    | G16MK-E-5,5                                                                                | G16MKC-E-5,5                                                                                   | 16                      | 5,5 +0,08 +0,10 | 31 | 35 | 11 | 9,4 |                                                    |                                                          |
| G16M-E-6                                                                                   | G16MC-E-6                                                                                      | G16MK-E-6                                                                                  | G16MKC-E-6                                                                                     | 16                      | 6 +0,08 +0,10   | 31 | 35 | 13 | 9,4 |                                                    |                                                          |
| G16M-E-7                                                                                   | G16MC-E-7                                                                                      | G16MK-E-7                                                                                  | G16MKC-E-7                                                                                     | 16                      | 7 +0,08 +0,10   | 31 | 35 | 15 | 9,4 |                                                    |                                                          |



|           |            |            |             |    |                |    |    |      |     |                                                    |
|-----------|------------|------------|-------------|----|----------------|----|----|------|-----|----------------------------------------------------|
| G16M-E-8  | G16MC-E-8  | G16MK-E-8  | G16MKC-E-8  | 16 | 8 +0,08 +0,10  | 31 | 35 | 16   | 5,8 | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M |
| G16M-E-9  | G16MC-E-9  | G16MK-E-9  | G16MKC-E-9  | 16 | 9 +0,09 +0,11  | 31 | 35 | 15   | 8   |                                                    |
| G16M-E-10 | G16MC-E-10 | G16MK-E-10 | G16MKC-E-10 | 16 | 10 +0,10 +0,12 | 31 | 35 | 15   | 8   |                                                    |
| G16M-E-11 | G16MC-E-11 | G16MK-E-11 | G16MKC-E-11 | 16 | 11 +0,10 +0,12 | 31 | 35 | 15   | 9   |                                                    |
| G16M-E-12 | G16MC-E-12 | G16MK-E-12 | G16MKC-E-12 | 16 | 12 +0,11 +0,13 | 31 | 35 | 15   | 10  |                                                    |
| G16M-E-13 | G16MC-E-13 | G16MK-E-13 | G16MKC-E-13 | 16 | 13 +0,11 +0,13 | 31 | 35 | 15   | 11  |                                                    |
| G16M-E-14 | G16MC-E-14 | G16MK-E-14 | G16MKC-E-14 | 16 | 14 +0,12 +0,14 | 31 | 35 | 15   | 12  |                                                    |
| G16M-E-15 | G16MC-E-15 | G16MK-E-15 | G16MKC-E-15 | 16 | 15 +0,13 +0,15 | 31 | 35 | 15   | 13  |                                                    |
| G16M-E-16 | G16MC-E-16 | G16MK-E-16 | G16MKC-E-16 | 16 | 16 +0,13 +0,15 | 31 | 35 | 15   | 14  |                                                    |
| G16M-E-17 | G16MC-E-17 | G16MK-E-17 | G16MKC-E-17 | 16 | 17 +0,14 +0,16 | 31 | 35 | 15   | 15  |                                                    |
| G16M-E-18 | G16MC-E-18 | G16MK-E-18 | G16MKC-E-18 | 16 | 18 +0,15 +0,17 | 31 | 35 | 15   | 16  |                                                    |
| G16M-E-19 | G16MC-E-19 | G16MK-E-19 | G16MKC-E-19 | 16 | 19 +0,16 +0,18 | 31 | 35 | 13,5 | 17  |                                                    |
| G16M-E-20 | G16MC-E-20 | G16MK-E-20 | G16MKC-E-20 | 16 | 20 +0,18 +0,20 | 31 | 35 | 13,5 | 18  |                                                    |
| G16M-E-21 | G16MC-E-21 | G16MK-E-21 | G16MKC-E-21 | 16 | 21 +0,18 +0,20 | 31 | 35 | 13   | 19  |                                                    |
| G16M-E-22 | G16MC-E-22 | G16MK-E-22 | G16MKC-E-22 | 16 | 22 +0,19 +0,21 | 31 | 35 | 13   | 20  |                                                    |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

segue / continued >>

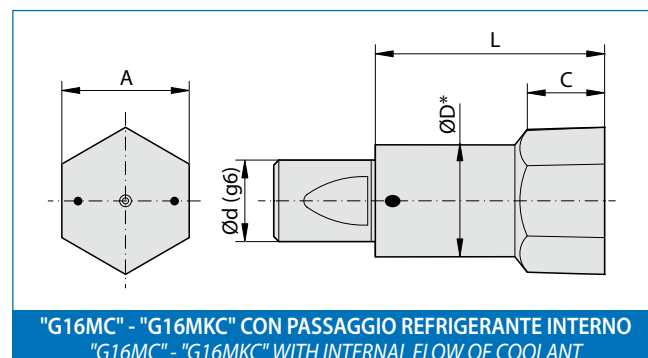
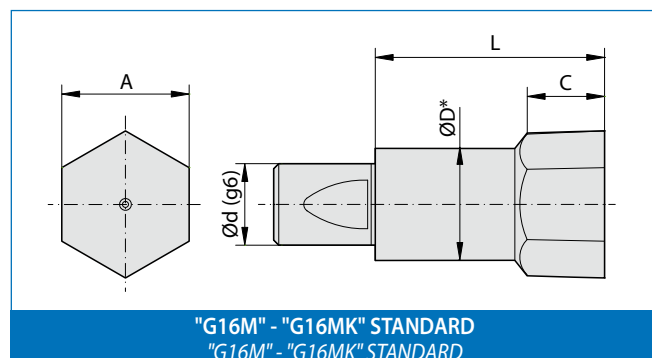
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



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# **BROCCE G16M E G16MC - DIAMETRO "d" DEL GAMBO: 16 mm**

G16M AND G16MC BROACHES - 16 mm SHANK DIAMETER ("d")



| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                |    |      |    |                             | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching head |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|----------------|----|------|----|-----------------------------|---------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                |    |      |    |                             |                                                         |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A              | L  | C    | D* |                             |                                                         |
| G16M-E-23                                                                                  | G16MC-E-23                                                                                     | G16MK-E-23                                                                                 | G16MKC-E-23                                                                                    | 16                      | 23 +0,20 +0,22 | 35 | 13,2 | 22 | Standard<br>BR-G16M         |                                                         |
| G16M-E-24                                                                                  | G16MC-E-24                                                                                     | G16MK-E-24                                                                                 | G16MKC-E-24                                                                                    | 16                      | 24 +0,21 +0,23 | 35 | 13,2 | 22 |                             |                                                         |
| G16M-E-25                                                                                  | G16MC-E-25                                                                                     | G16MK-E-25                                                                                 | G16MKC-E-25                                                                                    | 16                      | 25 +0,22 +0,24 | 35 | 11,5 | 22 |                             |                                                         |
| G16M-E-27                                                                                  | G16MC-E-27                                                                                     | G16MK-E-27                                                                                 | G16MKC-E-27                                                                                    | 16                      | 27 +0,22 +0,24 | 35 | 11,5 | 22 | Refrig. / Cool.<br>BRC-G16M |                                                         |
| G16M-E-28                                                                                  | G16MC-E-28                                                                                     | G16MK-E-28                                                                                 | G16MKC-E-28                                                                                    | 16                      | 28 +0,22 +0,24 | 35 | 11,5 | 22 |                             |                                                         |
| G16M-E-30                                                                                  | G16MC-E-30                                                                                     | G16MK-E-30                                                                                 | G16MKC-E-30                                                                                    | 16                      | 30 +0,23 +0,25 | 35 | 11,5 | 22 |                             |                                                         |

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

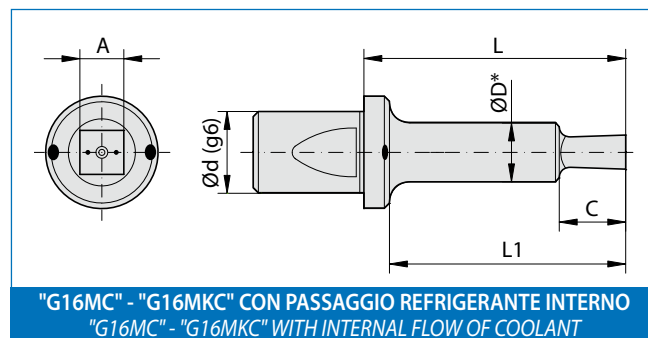
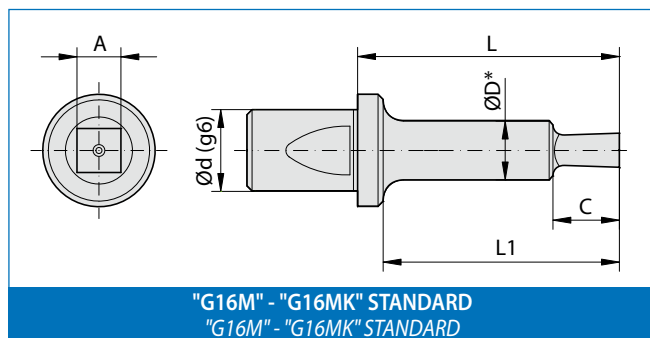


# **BROCCE G16M E G16MC - DIAMETRO "d" DEL GAMBO: 16 mm** **G16M AND G16MC BROACHES - 16 mm SHANK DIAMETER ("d")**

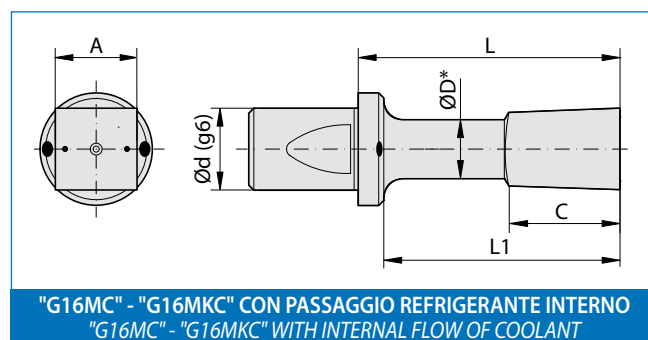
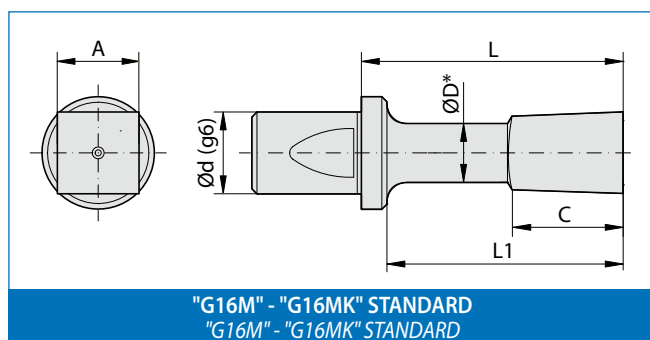
Per Brocciatori /  
For Broaching Heads  
**BR-G16M**



## **Sezione QUADRA (Q)** **SQUARE section (Q)**



| ARTICOLO (materiale) - ITEM (material) |                                       |                                   |                                       | DIMENSIONI - DIMENSIONS |     |             |    |    |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-------------------------|-----|-------------|----|----|----|----|----------------------------------------------------------|
| HSS                                    |                                       | SINTERIZZATO / SINTERED           |                                       |                         |     |             |    |    |    |    |                                                          |
| Standard <input type="checkbox"/>      | Ref. / Cool. <input type="checkbox"/> | Standard <input type="checkbox"/> | Ref. / Cool. <input type="checkbox"/> | d                       | A   | L1          | L  | C  | D* |    |                                                          |
| G16M-Q-5                               | /                                     | G16MK-Q-5                         | /                                     | 16                      | 5   | +0,08 +0,10 | 11 | 35 | 11 | 10 |                                                          |
| G16M-Q-5,5                             |                                       | G16MK-Q-5,5                       |                                       | 16                      | 5,5 | +0,08 +0,10 | 11 | 35 | 13 | 10 |                                                          |
| G16M-Q-6                               | G16MC-Q-6                             | G16MK-Q-6                         | G16MKC-Q-6                            | 16                      | 6   | +0,08 +0,10 | 13 | 35 | 13 | 10 |                                                          |



|           |            |            |             |    |    |             |    |    |      |     |                                                    |
|-----------|------------|------------|-------------|----|----|-------------|----|----|------|-----|----------------------------------------------------|
| G16M-Q-7  | G16MC-Q-7  | G16MK-Q-7  | G16MKC-Q-7  | 16 | 7  | +0,08 +0,10 | 31 | 35 | 14   | 5   | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M |
| G16M-Q-8  | G16MC-Q-8  | G16MK-Q-8  | G16MKC-Q-8  | 16 | 8  | +0,08 +0,10 | 31 | 35 | 14,5 | 6   |                                                    |
| G16M-Q-9  | G16MC-Q-9  | G16MK-Q-9  | G16MKC-Q-9  | 16 | 9  | +0,09 +0,11 | 31 | 35 | 14,5 | 6   |                                                    |
| G16M-Q-10 | G16MC-Q-10 | G16MK-Q-10 | G16MKC-Q-10 | 16 | 10 | +0,10 +0,12 | 31 | 35 | 14,5 | 7,2 |                                                    |
| G16M-Q-11 | G16MC-Q-11 | G16MK-Q-11 | G16MKC-Q-11 | 16 | 11 | +0,10 +0,12 | 31 | 35 | 15   | 8   |                                                    |
| G16M-Q-12 | G16MC-Q-12 | G16MK-Q-12 | G16MKC-Q-12 | 16 | 12 | +0,11 +0,13 | 31 | 35 | 15   | 9   |                                                    |
| G16M-Q-13 | G16MC-Q-13 | G16MK-Q-13 | G16MKC-Q-13 | 16 | 13 | +0,11 +0,13 | 31 | 35 | 13,5 | 10  |                                                    |
| G16M-Q-14 | G16MC-Q-14 | G16MK-Q-14 | G16MKC-Q-14 | 16 | 14 | +0,12 +0,14 | 31 | 35 | 13,5 | 11  |                                                    |
| G16M-Q-15 | G16MC-Q-15 | G16MK-Q-15 | G16MKC-Q-15 | 16 | 15 | +0,13 +0,15 | 31 | 35 | 13,5 | 12  |                                                    |
| G16M-Q-16 | G16MC-Q-16 | G16MK-Q-16 | G16MKC-Q-16 | 16 | 16 | +0,13 +0,15 | 31 | 35 | 13,5 | 13  |                                                    |
| G16M-Q-17 | G16MC-Q-17 | G16MK-Q-17 | G16MKC-Q-17 | 16 | 17 | +0,14 +0,16 | 31 | 35 | 13   | 14  |                                                    |
| G16M-Q-18 | G16MC-Q-18 | G16MK-Q-18 | G16MKC-Q-18 | 16 | 18 | +0,15 +0,17 | 31 | 35 | 13   | 15  |                                                    |
| G16M-Q-19 | G16MC-Q-19 | G16MK-Q-19 | G16MKC-Q-19 | 16 | 19 | +0,16 +0,18 | 31 | 35 | 13   | 16  |                                                    |
| G16M-Q-20 | G16MC-Q-20 | G16MK-Q-20 | G16MKC-Q-20 | 16 | 20 | +0,18 +0,20 | 31 | 35 | 13   | 17  |                                                    |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

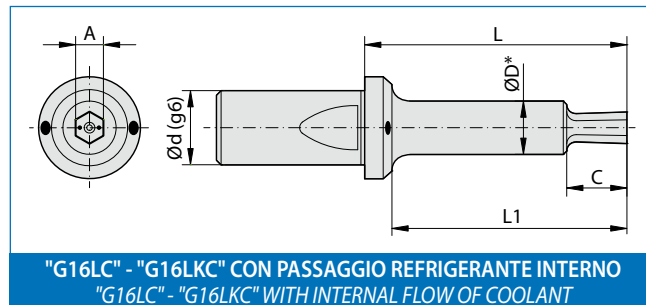
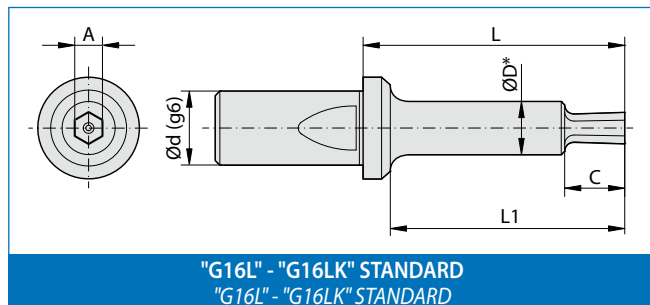
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



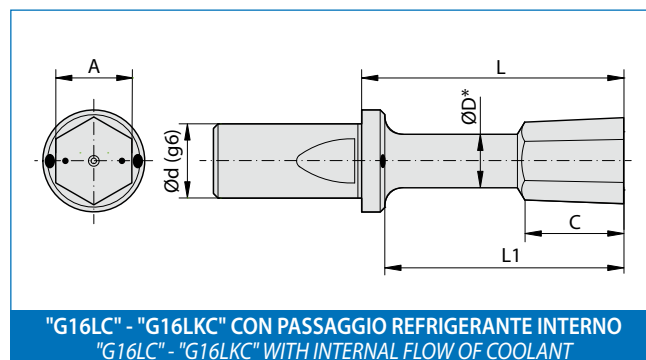
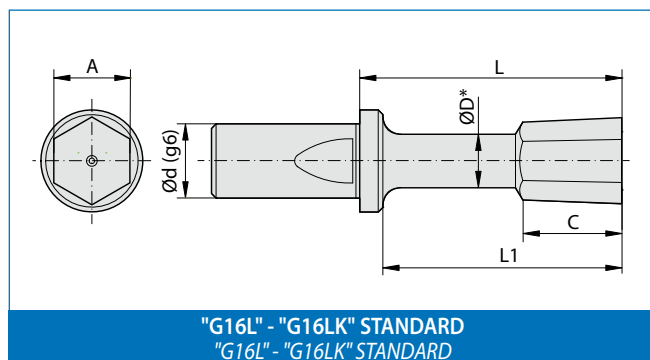


**BROCCIE G16L E G16LC - DIAMETRO "d" DEL GAMBO: 16 mm**  
G16L AND G16LC BROACHES - 16 mm SHANK DIAMETER ("d")

**Sezione ESAGONALE (E)**  
HEXAGONAL section (E)



| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |   |             |    |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|---|-------------|----|----|----|----------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |   |             |    |    |    |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A | L1          | L  | C  | D* |                                                          |
| G16L-E-4                                                                                   | /                                                                                              | G16LK-E-4                                                                                  | /                                                                                              | 16                      | 4 | +0,07 +0,09 | 41 | 45 | 9  | 7,5                                                      |
| G16L-E-5                                                                                   |                                                                                                | G16LK-E-5                                                                                  |                                                                                                | 16                      | 5 | +0,08 +0,10 | 41 | 45 | 13 | 9                                                        |
| G16L-E-6                                                                                   |                                                                                                | G16LK-E-6                                                                                  |                                                                                                | 16                      | 6 | +0,08 +0,10 | 41 | 45 | 15 | 9                                                        |
|                                                                                            |                                                                                                |                                                                                            |                                                                                                |                         |   |             |    |    |    | Standard<br>BR-G16L<br>Refrig. / Cool.<br>BRC-G16L       |



|           |            |            |             |    |    |             |    |    |    |     |                                                        |
|-----------|------------|------------|-------------|----|----|-------------|----|----|----|-----|--------------------------------------------------------|
| G16L-E-7  | /          | G16LK-E-7  | /           | 16 | 7  | +0,08 +0,10 | 41 | 45 | 16 | 6,5 | Standard<br>BR-G16L<br><br>Refrig. / Cool.<br>BRC-G16L |
| G16L-E-8  | G16LC-E-8  | G16LK-E-8  | G16LKC-E-8  | 16 | 8  | +0,08 +0,10 | 41 | 45 | 16 | 6,5 |                                                        |
| G16L-E-9  | G16LC-E-9  | G16LK-E-9  | G16LKC-E-9  | 16 | 9  | +0,09 +0,11 | 41 | 45 | 16 | 7,5 |                                                        |
| G16L-E-10 | G16LC-E-10 | G16LK-E-10 | G16LKC-E-10 | 16 | 10 | +0,10 +0,12 | 41 | 45 | 15 | 7   |                                                        |
| G16L-E-11 | G16LC-E-11 | G16LK-E-11 | G16LKC-E-11 | 16 | 11 | +0,10 +0,12 | 41 | 45 | 15 | 8   |                                                        |
| G16L-E-12 | G16LC-E-12 | G16LK-E-12 | G16LKC-E-12 | 16 | 12 | +0,11 +0,13 | 41 | 45 | 15 | 9   |                                                        |
| G16L-E-13 | G16LC-E-13 | G16LK-E-13 | G16LKC-E-13 | 16 | 13 | +0,11 +0,13 | 41 | 45 | 15 | 10  |                                                        |
| G16L-E-14 | G16LC-E-14 | G16LK-E-14 | G16LKC-E-14 | 16 | 14 | +0,12 +0,14 | 41 | 45 | 15 | 11  |                                                        |
| G16L-E-15 | G16LC-E-15 | G16LK-E-15 | G16LKC-E-15 | 16 | 15 | +0,13 +0,15 | 41 | 45 | 15 | 12  |                                                        |
| G16L-E-16 | G16LC-E-16 | G16LK-E-16 | G16LKC-E-16 | 16 | 16 | +0,13 +0,15 | 41 | 45 | 15 | 13  |                                                        |
| G16L-E-17 | G16LC-E-17 | G16LK-E-17 | G16LKC-E-17 | 16 | 17 | +0,14 +0,16 | 41 | 45 | 15 | 14  |                                                        |
| G16L-E-18 | G16LC-E-18 | G16LK-E-18 | G16LKC-E-18 | 16 | 18 | +0,15 +0,17 | 41 | 45 | 15 | 15  |                                                        |
| G16L-E-19 | G16LC-E-19 | G16LK-E-19 | G16LKC-E-19 | 16 | 19 | +0,16 +0,18 | 41 | 45 | 15 | 16  |                                                        |
| G16L-E-20 | G16LC-E-20 | G16LK-E-20 | G16LKC-E-20 | 16 | 20 | +0,18 +0,20 | 41 | 45 | 17 | 17  |                                                        |
| G16L-E-21 | G16LC-E-21 | G16LK-E-21 | G16LKC-E-21 | 16 | 21 | +0,18 +0,20 | 41 | 45 | 17 | 18  |                                                        |
| G16L-E-22 | G16LC-E-22 | G16LK-E-22 | G16LKC-E-22 | 16 | 22 | +0,19 +0,21 | 41 | 45 | 17 | 19  |                                                        |
| G16L-E-23 | G16LC-E-23 | G16LK-E-23 | G16LKC-E-23 | 16 | 23 | +0,20 +0,22 | 41 | 45 | 17 | 20  |                                                        |
| G16L-E-24 | G16LC-E-24 | G16LK-E-24 | G16LKC-E-24 | 16 | 24 | +0,21 +0,23 | 41 | 45 | 17 | 21  |                                                        |

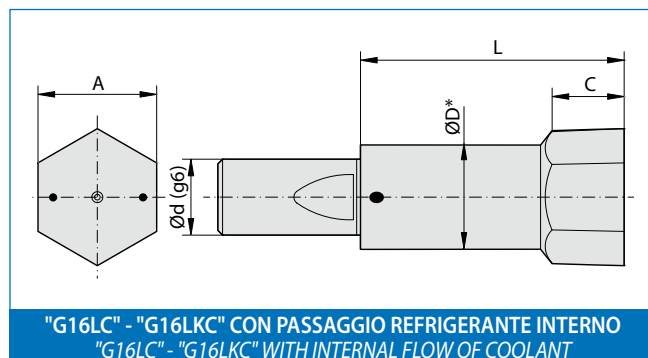
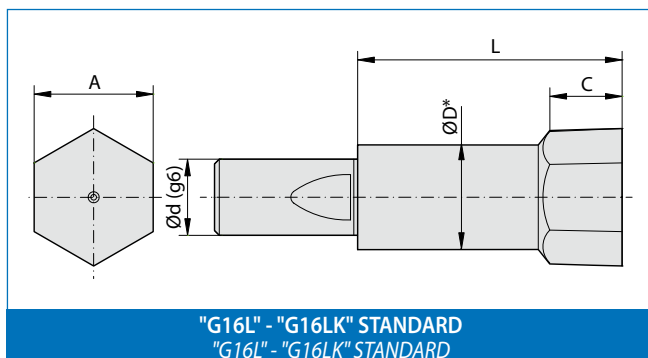
C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

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**BROCCE G16L E G16LC - DIAMETRO "d" DEL GAMBO: 16 mm**  
**G16L AND G16LC BROACHES - 16 mm SHANK DIAMETER ("d")**



| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                |    |    |    |                                                    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|----------------|----|----|----|----------------------------------------------------|----------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                |    |    |    |                                                    |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A              | L  | C  | D* |                                                    |                                                          |
| G16L-E-25                                                                                  | G16LC-E-25                                                                                     | G16LK-E-25                                                                                 | G16LKC-E-25                                                                                    | 16                      | 25 +0,22 +0,24 | 45 | 17 | 22 | Standard<br>BR-G16L<br>Refrig. / Cool.<br>BRC-G16L |                                                          |
| G16L-E-27                                                                                  | G16LC-E-27                                                                                     | G16LK-E-27                                                                                 | G16LKC-E-27                                                                                    | 16                      | 27 +0,22 +0,24 | 45 | 17 | 22 |                                                    |                                                          |
| G16L-E-28                                                                                  | G16LC-E-28                                                                                     | G16LK-E-28                                                                                 | G16LKC-E-28                                                                                    | 16                      | 28 +0,22 +0,24 | 45 | 17 | 22 |                                                    |                                                          |
| G16L-E-30                                                                                  | G16LC-E-30                                                                                     | G16LK-E-30                                                                                 | G16LKC-E-30                                                                                    | 16                      | 30 +0,23 +0,25 | 45 | 17 | 22 |                                                    |                                                          |

C = Profondità utile di brocciatura / C = Depth of the shape  
 L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
 the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

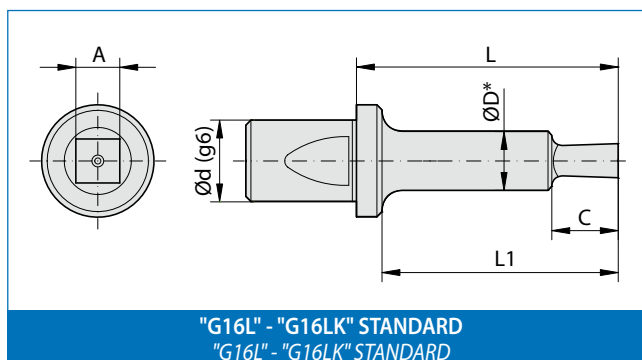
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
 Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



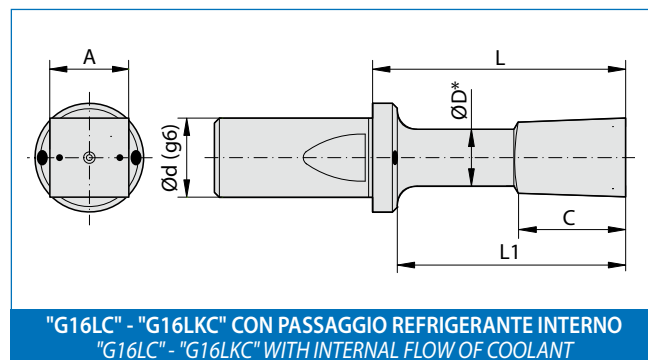
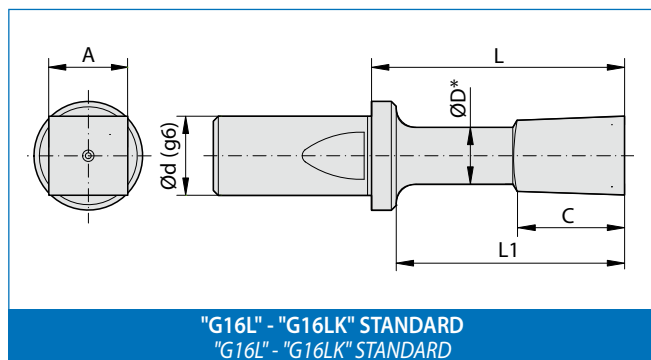


**BROCCIE G16L E G16LC - DIAMETRO "d" DEL GAMBO: 16 mm**  
G16L AND G16LC BROACHES - 16 mm SHANK DIAMETER ("d")

**Sezione QUADRA (Q)**  
SQUARE section (Q)



| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                |    | DIMENSIONI - DIMENSIONS |    |    |    |     |                                                    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|----|-------------------------|----|----|----|-----|----------------------------------------------------|----------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |    |                         |    |    |    |     |                                                    |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d  | A                       | L1 | L  | C  | D*  |                                                    |                                                          |
| G16L-Q-6                                                                                   | /                                                                                              | G16LK-Q-6                                                                                  | /                                                                                              | 16 | 6 +0,08 +0,10           | 41 | 45 | 15 | 7,5 | Standard<br>BR-G16L<br>Refrig. / Cool.<br>BRC-G16L |                                                          |



|           |            |            |             |    |    |             |    |    |      |      |                                                        |
|-----------|------------|------------|-------------|----|----|-------------|----|----|------|------|--------------------------------------------------------|
| G16L-Q-7  | /          | G16LK-Q-7  | /           | 16 | 7  | +0,08 +0,10 | 41 | 45 | 15   | 6    | Standard<br>BR-G16L<br><br>Refrig. / Cool.<br>BRC-G16L |
| G16L-Q-8  |            | G16LK-Q-8  |             | 16 | 8  | +0,08 +0,10 | 41 | 45 | 15   | 7    |                                                        |
| G16L-Q-9  |            | G16LK-Q-9  |             | 16 | 9  | +0,09 +0,11 | 41 | 45 | 15   | 8    |                                                        |
| G16L-Q-10 | G16LC-Q-10 | G16LK-Q-10 | G16LKC-Q-10 | 16 | 10 | +0,10 +0,12 | 41 | 45 | 17   | 7,2  |                                                        |
| G16L-Q-11 | G16LC-Q-11 | G16LK-Q-11 | G16LKC-Q-11 | 16 | 11 | +0,10 +0,12 | 41 | 45 | 17   | 8    |                                                        |
| G16L-Q-12 | G16LC-Q-12 | G16LK-Q-12 | G16LKC-Q-12 | 16 | 12 | +0,11 +0,13 | 41 | 45 | 17   | 9    |                                                        |
| G16L-Q-13 | G16LC-Q-13 | G16LK-Q-13 | G16LKC-Q-13 | 16 | 13 | +0,11 +0,13 | 41 | 45 | 18   | 10   |                                                        |
| G16L-Q-14 | G16LC-Q-14 | G16LK-Q-14 | G16LKC-Q-14 | 16 | 14 | +0,12 +0,14 | 41 | 45 | 18   | 11   |                                                        |
| G16L-Q-15 | G16LC-Q-15 | G16LK-Q-15 | G16LKC-Q-15 | 16 | 15 | +0,13 +0,15 | 41 | 45 | 18   | 12   |                                                        |
| G16L-Q-16 | G16LC-Q-16 | G16LK-Q-16 | G16LKC-Q-16 | 16 | 16 | +0,13 +0,15 | 41 | 45 | 18   | 13   |                                                        |
| G16L-Q-17 | G16LC-Q-17 | G16LK-Q-17 | G16LKC-Q-17 | 16 | 17 | +0,14 +0,16 | 41 | 45 | 18   | 14   |                                                        |
| G16L-Q-18 | G16LC-Q-18 | G16LK-Q-18 | G16LKC-Q-18 | 16 | 18 | +0,15 +0,17 | 41 | 45 | 17   | 15   |                                                        |
| G16L-Q-19 | G16LC-Q-19 | G16LK-Q-19 | G16LKC-Q-19 | 16 | 19 | +0,16 +0,18 | 41 | 45 | 17   | 16   |                                                        |
| G16L-Q-20 | G16LC-Q-20 | G16LK-Q-20 | G16LKC-Q-20 | 16 | 20 | +0,18 +0,20 | 41 | 45 | 17   | 17   |                                                        |
| G16L-Q-21 | G16LC-Q-21 | G16LK-Q-21 | G16LKC-Q-21 | 16 | 21 | +0,18 +0,20 | 41 | 45 | 17   | 18   |                                                        |
| G16L-Q-22 | G16LC-Q-22 | G16LK-Q-22 | G16LKC-Q-22 | 16 | 22 | +0,19 +0,21 | 41 | 45 | 16,5 | 18,5 |                                                        |
| G16L-Q-23 | G16LC-Q-23 | G16LK-Q-23 | G16LKC-Q-23 | 16 | 23 | +0,20 +0,22 | 41 | 45 | 16,5 | 19,5 |                                                        |

C = Profondità utile di brocciatura / C = Depth of the shape

L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

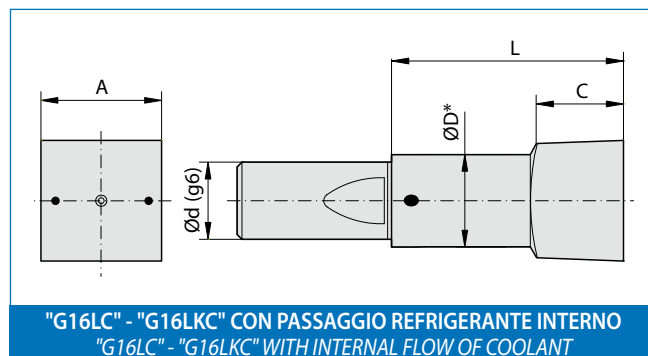
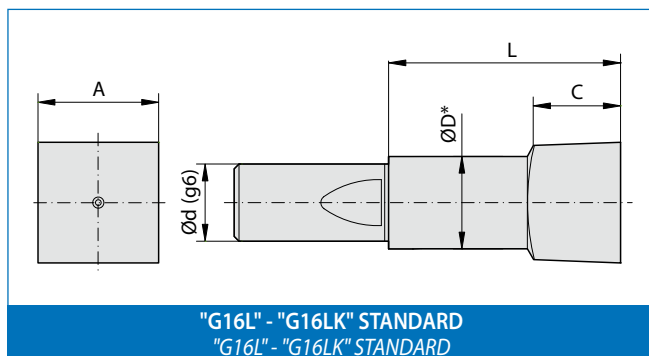
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



>> segue / continued

# **BROCCE G16L E G16LC - DIAMETRO "d" DEL GAMBO: 16 mm**

**G16L AND G16LC BROACHES - 16 mm SHANK DIAMETER ("d")**



| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                |    |    |    |    |  | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|----------------|----|----|----|----|--|----------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                |    |    |    |    |  |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A              | L1 | L  | C  | D* |  |                                                          |
| G16L-Q-24                                                                                  | G16LC-Q-24                                                                                     | G16LK-Q-24                                                                                 | G16LKC-Q-24                                                                                    | 16                      | 24 +0,21 +0,23 | /  | 45 | 16 | 20 |  |                                                          |
| G16L-Q-25                                                                                  | G16LC-Q-25                                                                                     | G16LK-Q-25                                                                                 | G16LKC-Q-25                                                                                    | 16                      | 25 +0,22 +0,24 | /  | 45 | 16 | 21 |  |                                                          |
|                                                                                            |                                                                                                |                                                                                            |                                                                                                |                         |                |    |    |    |    |  |                                                          |
|                                                                                            |                                                                                                |                                                                                            |                                                                                                |                         |                |    |    |    |    |  |                                                          |

C = Profondità utile di brocciatura / C = Depth of the shape

L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

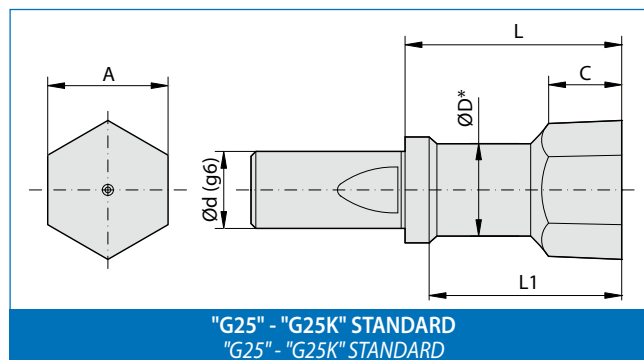
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



# **BROCCE G25 - DIAMETRO "d" DEL GAMBO: 25 mm** **G25 BROACHES - 25 mm SHANK DIAMETER ("d")**

## **Sezione ESAGONALE standard (E)** **Standard HEXAGONAL section (E)**

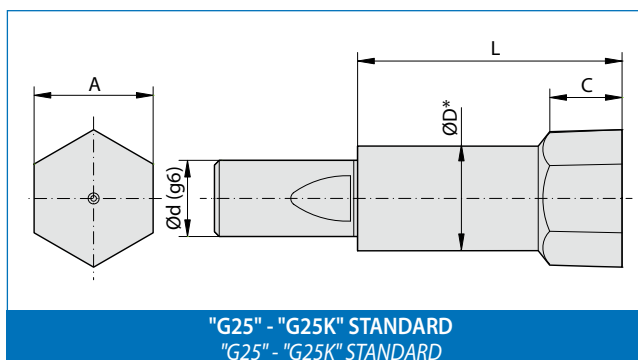


| ARTICOLO (materiale)<br><i>ITEM (material)</i>                                             |                                                                                            | DIMENSIONI - <i>DIMENSIONS</i> |                |    |    |    |    |                    | Utilizzo su<br>Brocciatori/<br><i>Use on<br/>Broaching heads</i> |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|--------------------------------|----------------|----|----|----|----|--------------------|------------------------------------------------------------------|
| HSS                                                                                        | SINTERIZZATO<br><i>SINTERED</i>                                                            |                                |                |    |    |    |    |                    |                                                                  |
| Standard  | Standard  | d                              | A              | L1 | L  | C  | D* |                    |                                                                  |
| G25-E-15                                                                                   | G25K-E-15                                                                                  | 25                             | 15 +0,13 +0,15 | 65 | 70 | 30 | 10 | Standard<br>BR-G25 |                                                                  |
| G25-E-16                                                                                   | G25K-E-16                                                                                  | 25                             | 16 +0,13 +0,15 | 65 | 70 | 30 | 11 |                    |                                                                  |
| G25-E-17                                                                                   | G25K-E-17                                                                                  | 25                             | 17 +0,14 +0,16 | 65 | 70 | 30 | 12 |                    |                                                                  |
| G25-E-18                                                                                   | G25K-E-18                                                                                  | 25                             | 18 +0,15 +0,17 | 65 | 70 | 30 | 13 |                    |                                                                  |
| G25-E-19                                                                                   | G25K-E-19                                                                                  | 25                             | 19 +0,16 +0,18 | 65 | 70 | 30 | 14 |                    |                                                                  |
| G25-E-20                                                                                   | G25K-E-20                                                                                  | 25                             | 20 +0,18 +0,20 | 65 | 70 | 30 | 15 |                    |                                                                  |
| G25-E-21                                                                                   | G25K-E-21                                                                                  | 25                             | 21 +0,18 +0,20 | 65 | 70 | 25 | 16 |                    |                                                                  |
| G25-E-22                                                                                   | G25K-E-22                                                                                  | 25                             | 22 +0,20 +0,22 | 65 | 70 | 25 | 17 |                    |                                                                  |
| G25-E-23                                                                                   | G25K-E-23                                                                                  | 25                             | 23 +0,20 +0,22 | 65 | 70 | 25 | 18 |                    |                                                                  |
| G25-E-24                                                                                   | G25K-E-24                                                                                  | 25                             | 24 +0,21 +0,23 | 65 | 70 | 25 | 19 |                    |                                                                  |
| G25-E-25                                                                                   | G25K-E-25                                                                                  | 25                             | 25 +0,22 +0,24 | 65 | 70 | 25 | 20 |                    |                                                                  |
| G25-E-26                                                                                   | G25K-E-26                                                                                  | 25                             | 26 +0,22 +0,24 | 65 | 70 | 25 | 21 |                    |                                                                  |
| G25-E-27                                                                                   | G25K-E-27                                                                                  | 25                             | 27 +0,22 +0,24 | 65 | 70 | 25 | 22 |                    |                                                                  |
| G25-E-28                                                                                   | G25K-E-28                                                                                  | 25                             | 28 +0,22 +0,24 | 65 | 70 | 28 | 23 |                    |                                                                  |
| G25-E-29                                                                                   | G25K-E-29                                                                                  | 25                             | 29 +0,22 +0,24 | 65 | 70 | 25 | 24 |                    |                                                                  |
| G25-E-30                                                                                   | G25K-E-30                                                                                  | 25                             | 30 +0,23 +0,25 | 65 | 70 | 25 | 25 |                    |                                                                  |
| G25-E-31                                                                                   | G25K-E-31                                                                                  | 25                             | 31 +0,23 +0,25 | 65 | 70 | 25 | 26 |                    |                                                                  |
| G25-E-32                                                                                   | G25K-E-32                                                                                  | 25                             | 32 +0,23 +0,25 | 65 | 70 | 25 | 27 |                    |                                                                  |
| G25-E-33                                                                                   | G25K-E-33                                                                                  | 25                             | 33 +0,23 +0,25 | 65 | 70 | 25 | 28 |                    |                                                                  |
| G25-E-34                                                                                   | G25K-E-34                                                                                  | 25                             | 34 +0,23 +0,25 | 65 | 70 | 25 | 29 |                    |                                                                  |
| G25-E-35                                                                                   | G25K-E-35                                                                                  | 25                             | 35 +0,24 +0,26 | 65 | 70 | 25 | 30 |                    |                                                                  |
| G25-E-36                                                                                   | G25K-E-36                                                                                  | 25                             | 36 +0,24 +0,26 | 65 | 70 | 25 | 31 |                    |                                                                  |

ARTICOLI SPECIALI  
A RICHIESTA  
SPECIAL ITEMS ON  
REQUEST

\* la quota D può essere modificata a seconda delle  
necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's  
needs. Contact Brighetti Meccanica.

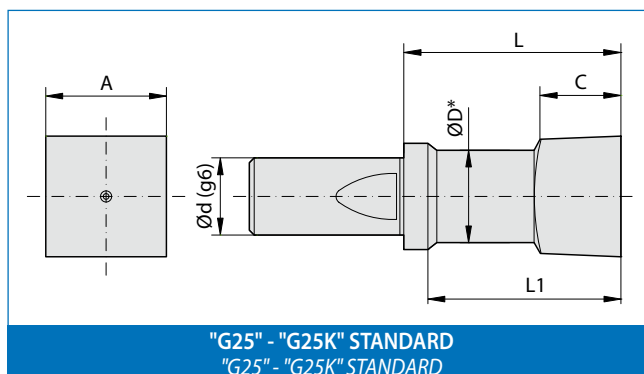
ARTICOLI SPECIALI  
A RICHIESTA  
SPECIAL ITEMS ON  
REQUEST



|          |           |    |                |   |    |    |    |                    |
|----------|-----------|----|----------------|---|----|----|----|--------------------|
| G25-E-37 | G25K-E-37 | 25 | 37 +0,24 +0,26 | - | 70 | 22 | 32 | Standard<br>BR-G25 |
| G25-E-38 | G25K-E-38 | 25 | 38 +0,24 +0,26 | - | 70 | 22 | 32 |                    |
| G25-E-39 | G25K-E-39 | 25 | 39 +0,24 +0,26 | - | 70 | 22 | 32 |                    |
| G25-E-40 | G25K-E-40 | 25 | 40 +0,24 +0,26 | - | 70 | 22 | 32 |                    |

## BROCCHE G25 - DIAMETRO "d" DEL GAMBO: 25 mm G25 BROACHES - 25 mm SHANK DIAMETER ("d")

### Sezione QUADRA standard (Q) Standard SQUARE section (Q)



| ARTICOLO (materiale)<br><i>ITEM (material)</i>                          |                                   | DIMENSIONI - <i>DIMENSIONS</i> |                |    |    |    |      |                    | Utilizzo su<br>Brocciatori/<br><i>Use on<br/>Broaching heads</i> |
|-------------------------------------------------------------------------|-----------------------------------|--------------------------------|----------------|----|----|----|------|--------------------|------------------------------------------------------------------|
| HSS                                                                     | SINTERIZZATO<br><i>SINTERED</i>   |                                |                |    |    |    |      |                    |                                                                  |
| Standard <input type="checkbox"/>                                       | Standard <input type="checkbox"/> | d                              | A              | L1 | L  | C  | D*   |                    |                                                                  |
| G25-Q-15                                                                | G25K-Q-15                         | 25                             | 15 +0,13 +0,15 | 65 | 70 | 30 | 10,5 | Standard<br>BR-G25 |                                                                  |
| G25-Q-16                                                                | G25K-Q-16                         | 25                             | 16 +0,13 +0,15 | 65 | 70 | 30 | 11,5 |                    |                                                                  |
| G25-Q-17                                                                | G25K-Q-17                         | 25                             | 17 +0,14 +0,16 | 65 | 70 | 30 | 12,5 |                    |                                                                  |
| G25-Q-18                                                                | G25K-Q-18                         | 25                             | 18 +0,15 +0,17 | 65 | 70 | 30 | 13,5 |                    |                                                                  |
| G25-Q-19                                                                | G25K-Q-19                         | 25                             | 19 +0,16 +0,18 | 65 | 70 | 30 | 14,5 |                    |                                                                  |
| G25-Q-20                                                                | G25K-Q-20                         | 25                             | 20 +0,18 +0,20 | 65 | 70 | 30 | 15,5 |                    |                                                                  |
| G25-Q-21                                                                | G25K-Q-21                         | 25                             | 21 +0,18 +0,20 | 65 | 70 | 30 | 16,5 |                    |                                                                  |
| G25-Q-22                                                                | G25K-Q-22                         | 25                             | 22 +0,20 +0,22 | 65 | 70 | 30 | 17,5 |                    |                                                                  |
| G25-Q-23                                                                | G25K-Q-23                         | 25                             | 23 +0,20 +0,22 | 65 | 70 | 30 | 18,5 |                    |                                                                  |
| G25-Q-24                                                                | G25K-Q-24                         | 25                             | 24 +0,21 +0,23 | 65 | 70 | 30 | 19,5 |                    |                                                                  |
| G25-Q-25                                                                | G25K-Q-25                         | 25                             | 25 +0,22 +0,24 | 65 | 70 | 30 | 20,5 |                    |                                                                  |
| ARTICOLI SPECIALI<br>A RICHIESTA<br><i>SPECIAL ITEMS ON<br/>REQUEST</i> |                                   |                                |                |    |    |    |      |                    |                                                                  |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

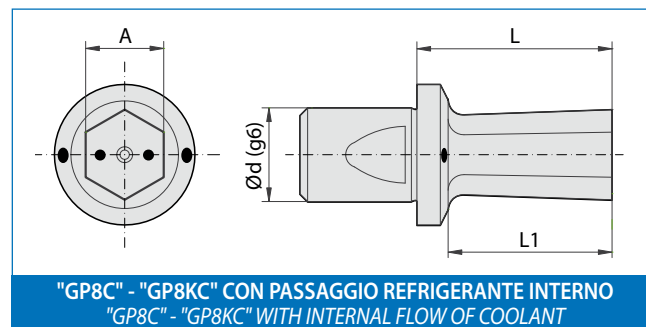
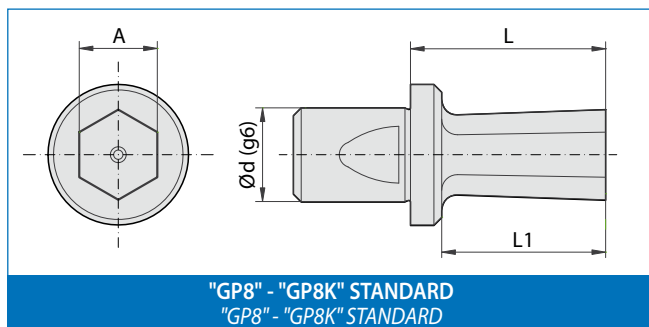


# Brocche Standard per cave poligonali su Brocciatori serie "BR" e "BRC" - Misure in pollici

## Standard Broaches for polygonal holes on broaching heads "BR" and "BRC" series - Size in inches

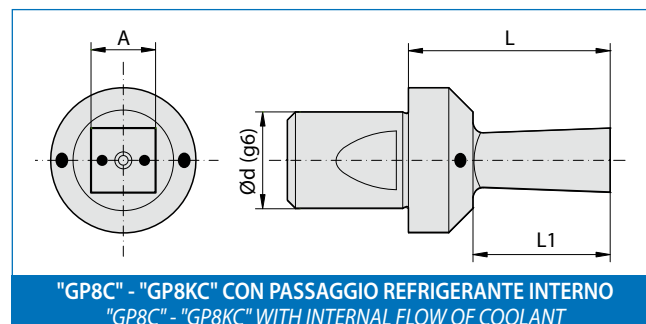
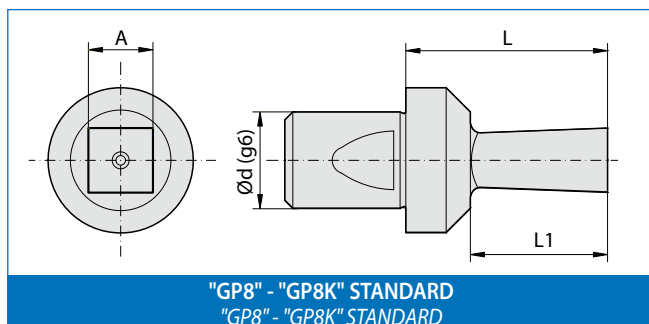
**BROCCE GP8 E GP8C - DIAMETRO "d" DEL GAMBO: 8 mm - MISURE IN POLLICI**  
**GP8 AND GP8C BROACHES - 8 mm SHANK DIAMETER ("d") - SIZES IN INCHES**

### Sezione ESAGONALE (E) / HEXAGONAL section (E)



| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                  |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|------------------|----|----|----------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                  |    |    |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A                | L1 | L  |                                                          |
| GP8-E-3/32"                                                                                | /                                                                                              | GP8K-E-3/32"                                                                               | /                                                                                              | 8                       | 2,38 +0,06 +0,08 | 5  | 18 | Standard<br>BR-G8S<br>BR-G8M<br>BR-G8<br>BR-G8A          |
| GP8-E-1/8"                                                                                 | GP8C-E-1/8"                                                                                    | GP8K-E-1/8"                                                                                | GP8KC-E-1/8"                                                                                   | 8                       | 3,17 +0,07 +0,09 | 6  | 18 |                                                          |
| GP8-E-5/32"                                                                                | GP8C-E-5/32"                                                                                   | GP8K-E-5/32"                                                                               | GP8KC-E-5/32"                                                                                  | 8                       | 3,97 +0,08 +0,10 | 8  | 18 |                                                          |
| GP8-E-3/16"                                                                                | GP8C-E-3/16"                                                                                   | GP8K-E-3/16"                                                                               | GP8KC-E-3/16"                                                                                  | 8                       | 4,76 +0,08 +0,10 | 9  | 18 | Refrig. / Cool.<br>BRC-G8M<br>BRC-G8<br>BRC-G8HP         |
| GP8-E-7/32"                                                                                | GP8C-E-7/32"                                                                                   | GP8K-E-7/32"                                                                               | GP8KC-E-7/32"                                                                                  | 8                       | 5,55 +0,08 +0,10 | 11 | 18 |                                                          |
| GP8-E-1/4"                                                                                 | GP8C-E-1/4"                                                                                    | GP8K-E-1/4"                                                                                | GP8KC-E-1/4"                                                                                   | 8                       | 6,35 +0,08 +0,10 | 13 | 18 |                                                          |
|                                                                                            |                                                                                                |                                                                                            |                                                                                                |                         |                  |    |    |                                                          |

### Sezione QUADRA (Q) / SQUARE section (Q)



| ARTICOLO (materiale) - ITEM (material)                                                       |                                                                                                  |                                                                                              |                                                                                                  | DIMENSIONI - DIMENSIONS |                  |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------|------------------|----|----|----------------------------------------------------------|
| HSS                                                                                          |                                                                                                  | SINTERIZZATO / SINTERED                                                                      |                                                                                                  |                         |                  |    |    |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A                | L1 | L  |                                                          |
| GP8-Q-3/32"                                                                                  | /                                                                                                | GP8K-Q-3/32"                                                                                 | /                                                                                                | 8                       | 2,38 +0,06 +0,08 | 5  | 18 | Standard<br>BR-G8S<br>BR-G8M<br>BR-G8<br>BR-G8A          |
| GP8-Q-1/8"                                                                                   | GP8C-Q-1/8"                                                                                      | GP8K-Q-1/8"                                                                                  | GP8KC-Q-1/8"                                                                                     | 8                       | 3,17 +0,07 +0,09 | 6  | 18 |                                                          |
| GP8-Q-5/32"                                                                                  | GP8C-Q-5/32"                                                                                     | GP8K-Q-5/32"                                                                                 | GP8KC-Q-5/32"                                                                                    | 8                       | 3,97 +0,08 +0,10 | 8  | 18 |                                                          |
| GP8-Q-3/16"                                                                                  | GP8C-Q-3/16"                                                                                     | GP8K-Q-3/16"                                                                                 | GP8KC-Q-3/16"                                                                                    | 8                       | 4,76 +0,08 +0,10 | 9  | 18 | Refrig. / Cool.<br>BRC-G8M<br>BRC-G8<br>BRC-G8HP         |
| GP8-Q-7/32"                                                                                  | GP8C-Q-7/32"                                                                                     | GP8K-Q-7/32"                                                                                 | GP8KC-Q-7/32"                                                                                    | 8                       | 5,55 +0,08 +0,10 | 11 | 18 |                                                          |
| GP8-Q-1/4"                                                                                   | GP8C-Q-1/4"                                                                                      | GP8K-Q-1/4"                                                                                  | GP8KC-Q-1/4"                                                                                     | 8                       | 6,35 +0,08 +0,10 | 13 | 18 |                                                          |
|                                                                                              |                                                                                                  |                                                                                              |                                                                                                  |                         |                  |    |    |                                                          |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
 Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

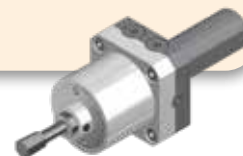


# BROCCE GP8A - DIAMETRO "d" DEL GAMBO: 8 mm MISURE IN POLLICI

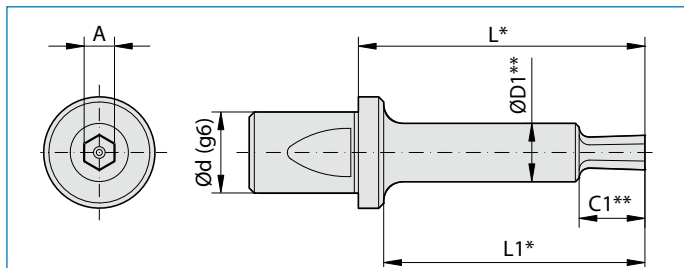
GP8A BROACHES - 8 mm SHANK DIAMETER ("d")  
SIZES IN INCHES

**NOVITA'  
NEW**

Per Brocciatori REGISTRABILI /  
For ADJUSTABLE Broaching Heads  
**BR-G8A**

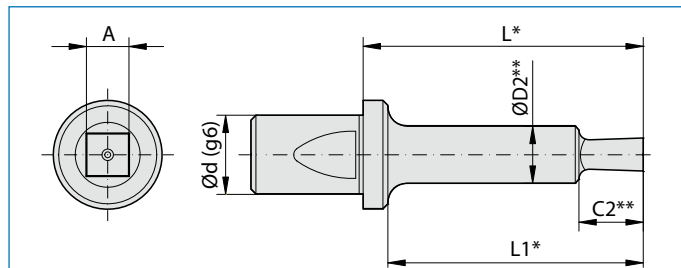


## Sezione ESAGONALE standard (E) Standard HEXAGONAL section (E)



"GP8A" - "GP8AK" STANDARD  
"GP8A" - "GP8AK" STANDARD

## Sezione QUADRA standard (Q) Standard SQUARE section (Q)

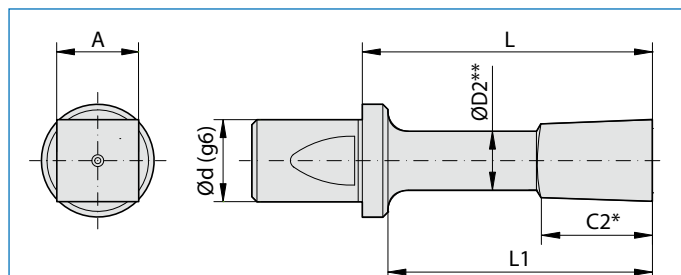


"GP8A" - "GP8AK" STANDARD  
"GP8A" - "GP8AK" STANDARD

| ESAGONALE / HEXAGONAL                   |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| GP8A-E-3/32"                            | GP8AK-E-3/32"            |
| GP8A-E-1/8"                             | GP8AK-E-1/8"             |
| GP8A-E-5/32"                            | GP8AK-E-5/32"            |
| GP8A-E-3/16"                            | GP8AK-E-3/16"            |
| GP8A-E-7/32"                            | GP8AK-E-7/32"            |
| GP8A-E-1/4"                             | GP8AK-E-1/4"             |

| QUADRA / SQUARE                         |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| GP8A-Q-3/32"                            | GP8AK-Q-3/32"            |
| GP8A-Q-1/8"                             | GP8AK-Q-1/8"             |
| GP8A-Q-5/32"                            | GP8AK-Q-5/32"            |
| GP8A-Q-3/16"                            | GP8AK-Q-3/16"            |
| GP8A-Q-7/32"                            | GP8AK-Q-7/32"            |
| /                                       | /                        |

| DIMENSIONI - DIMENSIONS |                  |     |    |      |      |      |      | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|-------------------------|------------------|-----|----|------|------|------|------|----------------------------------------------------------|
| d                       | A                | L1* | L* | C1** | C2** | D1** | D2** |                                                          |
| 8                       | 2,38 +0,06 +0,08 | 26  | 30 | 7    | 7    | 6,5  | 6,5  | Standard<br>BR-G8A                                       |
| 8                       | 3,17 +0,07 +0,09 | 26  | 30 | 7    | 7    | 6,5  | 6,5  |                                                          |
| 8                       | 3,97 +0,08 +0,10 | 26  | 30 | 9    | 9    | 6,5  | 7,5  |                                                          |
| 8                       | 4,76 +0,08 +0,10 | 26  | 30 | 11   | 11   | 7,5  | 8,5  |                                                          |
| 8                       | 5,55 +0,08 +0,10 | 26  | 30 | 13   | 13   | 8,5  | 9,5  |                                                          |
| 8                       | 6,35 +0,08 +0,10 | 26  | 30 | 13   | /    | 8,5  | /    |                                                          |



"GP8A" - "GP8AK" STANDARD  
"GP8A" - "GP8AK" STANDARD

|             |              |
|-------------|--------------|
| GP8A-Q-1/4" | GP8AK-Q-1/4" |
|             |              |
|             |              |

|   |                  |    |    |   |    |   |   |                    |
|---|------------------|----|----|---|----|---|---|--------------------|
| 8 | 6,35 +0,08 +0,10 | 26 | 30 | / | 13 | / | 6 | Standard<br>BR-G8A |
|   |                  |    |    |   |    |   |   |                    |
|   |                  |    |    |   |    |   |   |                    |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* le quote L e L1 indicate in tabella sono le misure standard, ma a richiesta sono fornibili anche con misure inferiori: L = 18 o 25mm / L1 = 14 o 21mm.  
the dimensions L and L1 show in the table is the standard sizes, but, on request, it can it also supplied with small sizes: L = 18 or 25mm / L1 = 14 or 21mm.

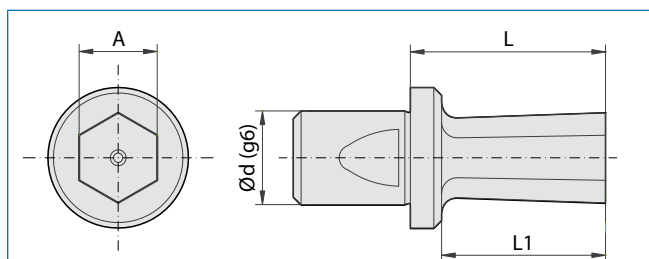
\*\* le quote C1, C2, D1 e D2 possono essere modificate a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimensions C1, C2, D1 and D2 can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

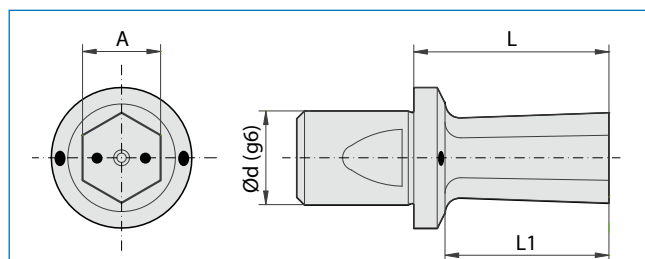


# **BROCCE GP12 E GP12C - DIAMETRO "d" DEL GAMBO: 12 mm - MISURE IN POLLICI** **GP12 E GP12C BROACHES - 12 mm SHANK DIAMETER ("d") - SIZES IN INCHES**

## **Sezione ESAGONALE (E) / HEXAGONAL section (E)**



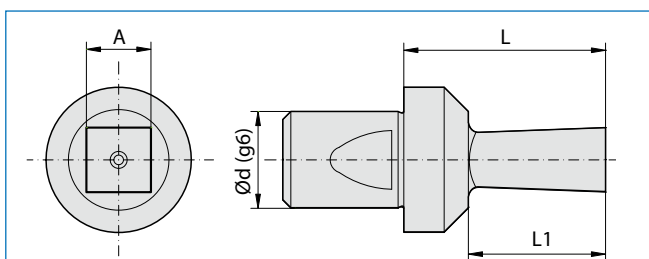
"GP12" - "GP12K" STANDARD  
 "GP12" - "GP12K" STANDARD



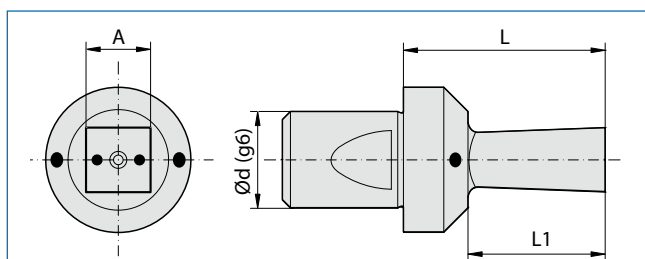
"GP12C" - "GP12KC" CON PASSAGGIO REFRIGERANTE INTERNO  
 "GP12C" - "GP12KC" WITH INTERNAL FLOW OF COOLANT

| ARTICOLO (materiale) - ITEM (material)                                                     |                                                                                                |                                                                                            |                                                                                                | DIMENSIONI - DIMENSIONS |                   |    |    |                                          | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|-------------------------|-------------------|----|----|------------------------------------------|----------------------------------------------------------|
| HSS                                                                                        |                                                                                                | SINTERIZZATO / SINTERED                                                                    |                                                                                                |                         |                   |    |    |                                          |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A                 | L1 | L  |                                          |                                                          |
| GP12-E-3/32"                                                                               | /                                                                                              | GP12K-E-3/32"                                                                              | /                                                                                              | 12                      | 2,38 +0,06 +0,08  | 5  | 25 | Standard<br>BR-G12B<br>BR-G12<br>BR-G12A |                                                          |
| GP12-E-1/8"                                                                                | GP12C-E-1/8"                                                                                   | GP12K-E-1/8"                                                                               | GP12KC-E-1/8"                                                                                  | 12                      | 3,17 +0,07 +0,09  | 6  | 25 |                                          |                                                          |
| GP12-E-5/32"                                                                               | GP12C-E-5/32"                                                                                  | GP12K-E-5/32"                                                                              | GP12KC-E-5/32"                                                                                 | 12                      | 3,97 +0,08 +0,10  | 8  | 25 |                                          |                                                          |
| GP12-E-3/16"                                                                               | GP12C-E-3/16"                                                                                  | GP12K-E-3/16"                                                                              | GP12KC-E-3/16"                                                                                 | 12                      | 4,76 +0,08 +0,10  | 9  | 25 |                                          |                                                          |
| GP12-E-7/32"                                                                               | GP12C-E-7/32"                                                                                  | GP12K-E-7/32"                                                                              | GP12KC-E-7/32"                                                                                 | 12                      | 5,55 +0,08 +0,10  | 11 | 25 |                                          |                                                          |
| GP12-E-1/4"                                                                                | GP12C-E-1/4"                                                                                   | GP12K-E-1/4"                                                                               | GP12KC-E-1/4"                                                                                  | 12                      | 6,35 +0,08 +0,10  | 13 | 25 |                                          |                                                          |
| GP12-E-9/32"                                                                               | GP12C-E-9/32"                                                                                  | GP12K-E-9/32"                                                                              | GP12KC-E-9/32"                                                                                 | 12                      | 7,14 +0,09 +0,11  | 16 | 25 | Refrig. / Cool.<br>BRC-G12B<br>BRC-G12   |                                                          |
| GP12-E-5/16"                                                                               | GP12C-E-5/16"                                                                                  | GP12K-E-5/16"                                                                              | GP12KC-E-5/16"                                                                                 | 12                      | 7,93 +0,09 +0,11  | 16 | 25 |                                          |                                                          |
| GP12-E-3/8"                                                                                | GP12C-E-3/8"                                                                                   | GP12K-E-3/8"                                                                               | GP12KC-E-3/8"                                                                                  | 12                      | 9,52 +0,10 +0,12  | 18 | 25 |                                          |                                                          |
| GP12-E-7/16"                                                                               | GP12C-E-7/16"                                                                                  | GP12K-E-7/16"                                                                              | GP12KC-E-7/16"                                                                                 | 12                      | 11,11 +0,11 +0,13 | 21 | 25 |                                          |                                                          |
| GP12-E-1/2"                                                                                | GP12C-E-1/2"                                                                                   | GP12K-E-1/2"                                                                               | GP12KC-E-1/2"                                                                                  | 12                      | 12,70 +0,12 +0,14 | 21 | 25 |                                          |                                                          |
| GP12-E-9/16"                                                                               | GP12C-E-9/16"                                                                                  | GP12K-E-9/16"                                                                              | GP12KC-E-9/16"                                                                                 | 12                      | 14,28 +0,12 +0,14 | 21 | 25 |                                          |                                                          |

## **Sezione QUADRA (Q) / SQUARE section (Q)**



"GP12" - "GP12K" STANDARD  
 "GP12" - "GP12K" STANDARD



"GP12C" - "GP12KC" CON PASSAGGIO REFRIGERANTE INTERNO  
 "GP12C" - "GP12KC" WITH INTERNAL FLOW OF COOLANT

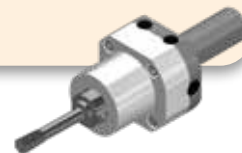
| ARTICOLO (materiale) - ITEM (material)                                                       |                                                                                                  |                                                                                              |                                                                                                  | DIMENSIONI - DIMENSIONS |                   |    |    |                                          | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|-------------------------|-------------------|----|----|------------------------------------------|----------------------------------------------------------|
| HSS                                                                                          |                                                                                                  | SINTERIZZATO / SINTERED                                                                      |                                                                                                  |                         |                   |    |    |                                          |                                                          |
| Standard  | Ref. / Cool.  | Standard  | Ref. / Cool.  | d                       | A                 | L1 | L  |                                          |                                                          |
| GP12-Q-3/32"                                                                                 | /                                                                                                | GP12K-Q-3/32"                                                                                | /                                                                                                | 12                      | 2,38 +0,06 +0,08  | 5  | 25 | Standard<br>BR-G12B<br>BR-G12<br>BR-G12A |                                                          |
| GP12-Q-1/8"                                                                                  | GP12C-Q-1/8"                                                                                     | GP12K-Q-1/8"                                                                                 | GP12KC-Q-1/8"                                                                                    | 12                      | 3,17 +0,07 +0,09  | 6  | 25 |                                          |                                                          |
| GP12-Q-5/32"                                                                                 | GP12C-Q-5/32"                                                                                    | GP12K-Q-5/32"                                                                                | GP12KC-Q-5/32"                                                                                   | 12                      | 3,97 +0,08 +0,10  | 8  | 25 |                                          |                                                          |
| GP12-Q-3/16"                                                                                 | GP12C-Q-3/16"                                                                                    | GP12K-Q-3/16"                                                                                | GP12KC-Q-3/16"                                                                                   | 12                      | 4,76 +0,08 +0,10  | 9  | 25 |                                          |                                                          |
| GP12-Q-7/32"                                                                                 | GP12C-Q-7/32"                                                                                    | GP12K-Q-7/32"                                                                                | GP12KC-Q-7/32"                                                                                   | 12                      | 5,55 +0,08 +0,10  | 11 | 25 |                                          |                                                          |
| GP12-Q-1/4"                                                                                  | GP12C-Q-1/4"                                                                                     | GP12K-Q-1/4"                                                                                 | GP12KC-Q-1/4"                                                                                    | 12                      | 6,35 +0,08 +0,10  | 15 | 25 |                                          |                                                          |
| GP12-Q-9/32"                                                                                 | GP12C-Q-9/32"                                                                                    | GP12K-Q-9/32"                                                                                | GP12KC-Q-9/32"                                                                                   | 12                      | 7,14 +0,09 +0,11  | 16 | 25 | Refrig. / Cool.<br>BRC-G12B<br>BRC-G12   |                                                          |
| GP12-Q-5/16"                                                                                 | GP12C-Q-5/16"                                                                                    | GP12K-Q-5/16"                                                                                | GP12KC-Q-5/16"                                                                                   | 12                      | 7,93 +0,09 +0,11  | 16 | 25 |                                          |                                                          |
| GP12-Q-3/8"                                                                                  | GP12C-Q-3/8"                                                                                     | GP12K-Q-3/8"                                                                                 | GP12KC-Q-3/8"                                                                                    | 12                      | 9,52 +0,10 +0,12  | 18 | 25 |                                          |                                                          |
| GP12-Q-7/16"                                                                                 | GP12C-Q-7/16"                                                                                    | GP12K-Q-7/16"                                                                                | GP12KC-Q-7/16"                                                                                   | 12                      | 11,11 +0,11 +0,13 | 21 | 25 |                                          |                                                          |
| GP12-Q-1/2"                                                                                  | GP12C-Q-1/2"                                                                                     | GP12K-Q-1/2"                                                                                 | GP12KC-Q-1/2"                                                                                    | 12                      | 12,70 +0,12 +0,14 | 21 | 25 |                                          |                                                          |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
 Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

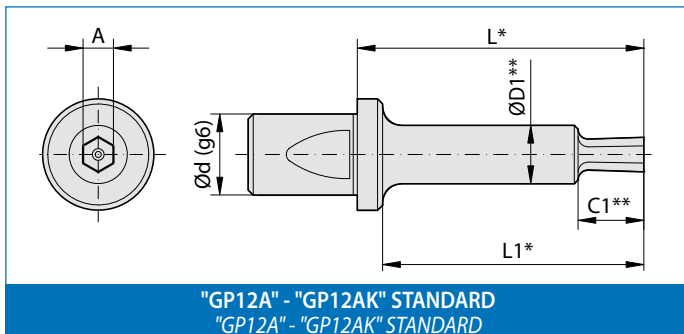


**BROCCE GP12A - DIAMETRO "d" DEL GAMBO: 12 mm**  
**MISURE IN POLLICI**  
**GP12A BROACHES - 12 mm SHANK DIAMETER ("d")**  
**SIZES IN INCHES**

Per Brocciatori REGISTRABILI /  
For ADJUSTABLE Broaching Heads  
**BR-G12A**

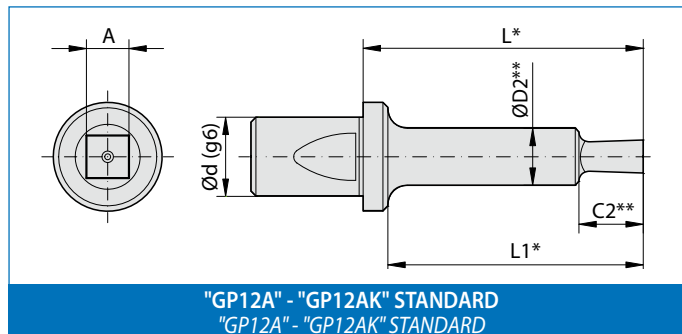


**Sezione ESAGONALE standard (E)**  
**Standard HEXAGONAL section (E)**



"GP12A" - "GP12AK" STANDARD  
"GP12A" - "GP12AK" STANDARD

**Sezione QUADRA standard (Q)**  
**Standard SQUARE section (Q)**

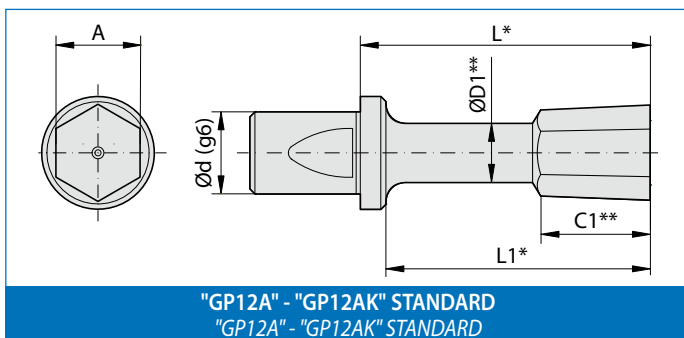


"GP12A" - "GP12AK" STANDARD  
"GP12A" - "GP12AK" STANDARD

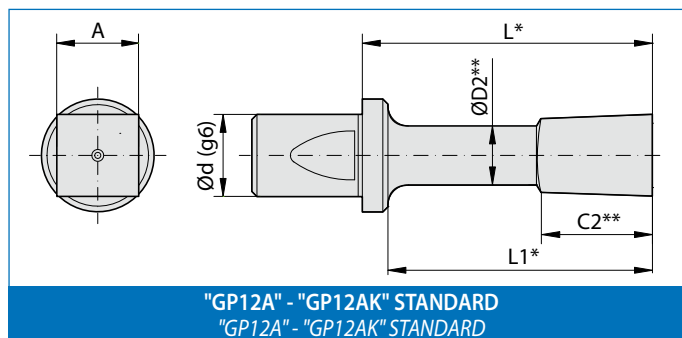
| ESAGONALE / HEXAGONAL                   |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| GP12A-E-1/8"                            | GP12AK-E-1/8"            |
| GP12A-E-5/32"                           | GP12AK-E-5/32"           |
| GP12A-E-3/16"                           | GP12AK-E-3/16"           |
| GP12A-E-7/32"                           | GP12AK-E-7/32"           |
| GP12A-E-1/4"                            | GP12AK-E-1/4"            |

| QUADRA / SQUARE                         |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| GP12A-Q-1/8"                            | GP12AK-Q-1/8"            |
| GP12A-Q-5/32"                           | GP12AK-Q-5/32"           |
| GP12A-Q-3/16"                           | GP12AK-Q-3/16"           |
| GP12A-Q-7/32"                           | GP12AK-Q-7/32"           |
| /                                       | /                        |

| DIMENSIONI - DIMENSIONS |                 |     |    |      |      |      |      |                     | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|-------------------------|-----------------|-----|----|------|------|------|------|---------------------|----------------------------------------------------------|
| d                       | A               | L1* | L* | C1** | C2** | D1** | D2** |                     |                                                          |
| 12                      | 3,17 +0,07+0,09 | 55  | 60 | 9    | 9    | 10   | 8    | Standard<br>BR-G12A |                                                          |
| 12                      | 3,97 +0,08+0,10 | 55  | 60 | 9    | 9    | 10   | 8    |                     |                                                          |
| 12                      | 4,76 +0,08+0,10 | 55  | 60 | 11   | 11   | 10   | 8    |                     |                                                          |
| 12                      | 5,55 +0,08+0,10 | 55  | 60 | 11   | 11   | 10   | 8    |                     |                                                          |
| 12                      | 6,35 +0,08+0,10 | 55  | 60 | 17   | /    | 10   | /    |                     |                                                          |



"GP12A" - "GP12AK" STANDARD  
"GP12A" - "GP12AK" STANDARD



"GP12A" - "GP12AK" STANDARD  
"GP12A" - "GP12AK" STANDARD

|               |                |
|---------------|----------------|
| /             | /              |
| GP12A-E-9/32" | GP12AK-E-9/32" |
| GP12A-E-5/16" | GP12AK-E-5/16" |
| GP12A-E-3/8"  | GP12AK-E-3/8"  |
| GP12A-E-1/2"  | GP12AK-E-1/2"  |

|               |                |
|---------------|----------------|
| GP12A-Q-1/4"  | GP12AK-Q-1/4"  |
| GP12A-Q-9/32" | GP12AK-Q-9/32" |
| GP12A-Q-5/16" | GP12AK-Q-5/16" |
| GP12A-Q-3/8"  | GP12AK-Q-3/8"  |
| GP12A-Q-1/2"  | GP12AK-Q-1/2"  |

|    |                  |    |    |    |    |     |    |                     |  |
|----|------------------|----|----|----|----|-----|----|---------------------|--|
| 12 | 6,35 +0,08+0,10  | 55 | 60 | /  | 19 | /   | 8  | Standard<br>BR-G12A |  |
| 12 | 7,14 +0,09+0,11  | 55 | 60 | 17 | 19 | 6   | 8  |                     |  |
| 12 | 7,93 +0,09+0,11  | 55 | 60 | 17 | 19 | 6,5 | 8  |                     |  |
| 12 | 9,52 +0,10+0,12  | 55 | 60 | 21 | 21 | 8,6 | 8  |                     |  |
| 12 | 12,70 +0,12+0,14 | 55 | 60 | 21 | 21 | 11  | 10 |                     |  |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* le quote L e L1 indicate in tabella sono le misure standard, ma a richiesta sono fornibili anche con misure inferiori: L = 25 o 50mm / L1 = 21 o 46mm.  
the dimensions L and L1 show in the table is the standard sizes, but, on request, it can it also supplied with small sizes: L = 25 or 50mm / L1 = 21 or 46mm.

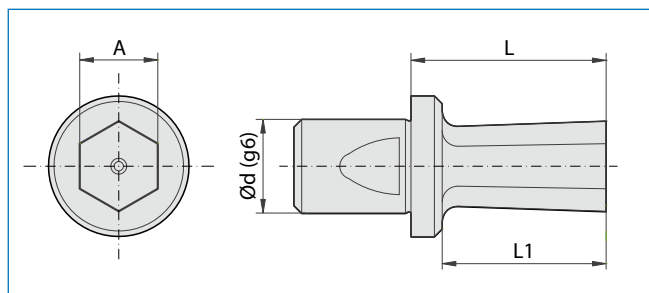
\*\* le quote C1, C2, D1 e D2 possono essere modificate a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimensions C1, C2, D1 and D2 can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



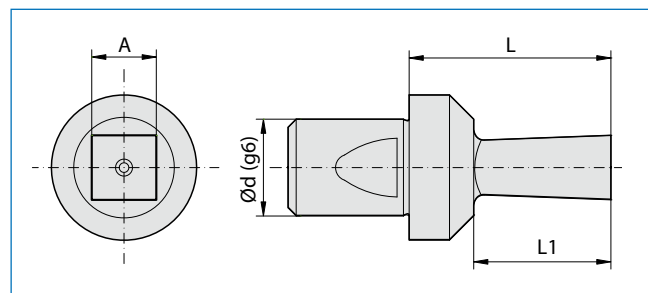
# **BROCCE GP16 - DIAMETRO "d" DEL GAMBO: 16 mm - MISURE IN POLLICI** **GP16 BROACHES - 16 mm SHANK DIAMETER ("d") - SIZES IN INCHES**

## **Sezione ESAGONALE standard (E)** **Standard HEXAGONAL section (E)**



"GP16" - "GP16K" STANDARD  
"GP16" - "GP16K" STANDARD

## **Sezione QUADRA standard (Q)** **Standard SQUARE section (Q)**



"GP16" - "GP16K" STANDARD  
"GP16" - "GP16K" STANDARD

| ESAGONALE / HEXAGONAL                   |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| GP16-E-3/32"                            | GP16K-E-3/32"            |
| GP16-E-1/8"                             | GP16K-E-1/8"             |
| GP16-E-5/32"                            | GP16K-E-5/32"            |
| GP16-E-3/16"                            | GP16K-E-3/16"            |
| GP16-E-7/32"                            | GP16K-E-7/32"            |
| GP16-E-1/4"                             | GP16K-E-1/4"             |
| GP16-E-9/32"                            | GP16K-E-9/32"            |
| GP16-E-5/16"                            | GP16K-E-5/16"            |
| GP16-E-3/8"                             | GP16K-E-3/8"             |
| GP16-E-7/16"                            | GP16K-E-7/16"            |
| GP16-E-1/2"                             | GP16K-E-1/2"             |
| GP16-E-9/16"                            | GP16K-E-9/16"            |
| GP16-E-5/8"                             | GP16K-E-5/8"             |
| GP16-E-3/4"                             | GP16K-E-3/4"             |
| GP16-E-7/8"                             | GP16K-E-7/8"             |
| GP16-E-1"                               | GP16K-E-1"               |

| QUADRA / SQUARE                         |                          |
|-----------------------------------------|--------------------------|
| ARTICOLO (materiale)<br>ITEM (material) |                          |
| HSS                                     | SINTERIZZATO<br>SINTERED |
| Standard                                | Standard                 |
| GP16-Q-3/32"                            | GP16K-Q-3/32"            |
| GP16-Q-1/8"                             | GP16K-Q-1/8"             |
| GP16-Q-5/32"                            | GP16K-Q-5/32"            |
| GP16-Q-3/16"                            | GP16K-Q-3/16"            |
| GP16-Q-7/32"                            | GP16K-Q-7/32"            |
| GP16-Q-1/4"                             | GP16K-Q-1/4"             |
| GP16-Q-9/32"                            | GP16K-Q-9/32"            |
| GP16-Q-5/16"                            | GP16K-Q-5/16"            |
| GP16-Q-3/8"                             | GP16K-Q-3/8"             |
| GP16-Q-7/16"                            | GP16K-Q-7/16"            |
| GP16-Q-1/2"                             | GP16K-Q-1/2"             |
| GP16-Q-9/16"                            | GP16K-Q-9/16"            |
| GP16-Q-5/8"                             | GP16K-Q-5/8"             |
| /                                       | /                        |

| DIMENSIONI - DIMENSIONS |                   |    |    |  | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|-------------------------|-------------------|----|----|--|----------------------------------------------------------|
| d                       | A                 | L1 | L  |  |                                                          |
| 16                      | 2,38 +0,06 +0,08  | 5  | 25 |  | Standard<br>BR-G16                                       |
| 16                      | 3,17 +0,07 +0,09  | 6  | 25 |  |                                                          |
| 16                      | 3,97 +0,08 +0,10  | 8  | 25 |  |                                                          |
| 16                      | 4,76 +0,08 +0,10  | 9  | 25 |  |                                                          |
| 16                      | 5,55 +0,08 +0,10  | 11 | 25 |  |                                                          |
| 16                      | 6,35 +0,08 +0,10  | 15 | 25 |  |                                                          |
| 16                      | 7,14 +0,09 +0,11  | 16 | 25 |  |                                                          |
| 16                      | 7,93 +0,09 +0,11  | 16 | 25 |  |                                                          |
| 16                      | 9,52 +0,10 +0,12  | 18 | 25 |  |                                                          |
| 16                      | 11,11 +0,11 +0,13 | 21 | 25 |  |                                                          |
| 16                      | 12,70 +0,12 +0,14 | 21 | 25 |  |                                                          |
| 16                      | 14,28 +0,12 +0,14 | 21 | 25 |  |                                                          |
| 16                      | 15,87 +0,13 +0,15 | 21 | 25 |  |                                                          |
| 16                      | 19,05 +0,17 +0,19 | 21 | 25 |  |                                                          |
| 16                      | 22,22 +0,21 +0,23 | 21 | 25 |  |                                                          |
| 16                      | 25,40 +0,22 +0,24 | 21 | 25 |  |                                                          |

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18





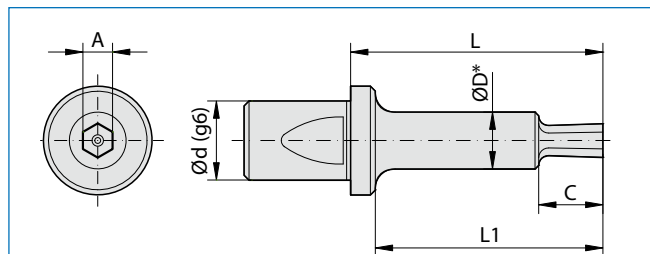
**BROCCE GP16M E GP16MC - DIAMETRO "d" DEL GAMBO: 16 mm**  
**MISURE IN POLLICI**  
**GP16M AND GP16MC BROACHES - 16 mm SHANK DIAMETER ("d")**  
**SIZES IN INCHES**

**Per Brocciatori /**  
**For Broaching Heads**

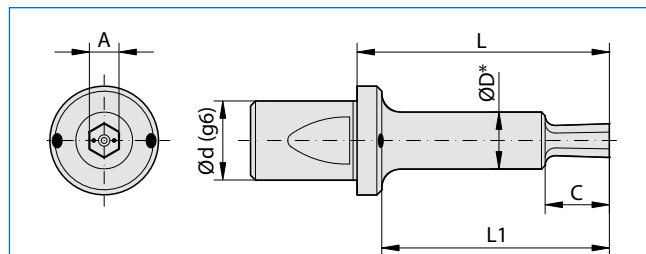
**BR-G16M**



**Sezione ESAGONALE (E)**  
**HEXAGONAL section (E)**

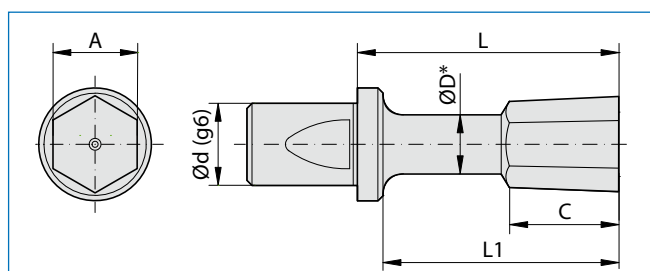


"GP16M" - "GP16MK" STANDARD  
 "GP16M" - "GP16MK" STANDARD

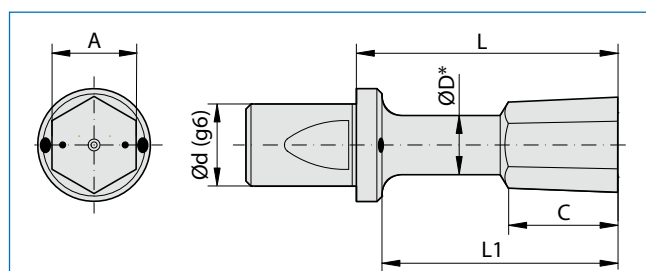


"GP16MC" - "GP16MKC" CON PASSAGGIO REFRIGERANTE INTERNO  
 "GP16MC" - "GP16MKC" WITH INTERNAL FLOW OF COOLANT

| ARTICOLO (materiale) - ITEM (material) |                |                         |                 | DIMENSIONI - DIMENSIONS |                  |    |    |    |     | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------|----------------|-------------------------|-----------------|-------------------------|------------------|----|----|----|-----|----------------------------------------------------------|
| HSS                                    |                | SINTERIZZATO / SINTERED |                 | d                       | A                | L1 | L  | C  | D*  |                                                          |
| Standard                               | Ref. / Cool.   | Standard                | Ref. / Cool.    |                         |                  |    |    |    |     |                                                          |
| GP16M-E-1/4"                           | GP16MC-E-1/4"  | GP16MK-E-1/4"           | GP16MKC-E-1/4"  | 16                      | 6,35 +0,08 +0,10 | 15 | 35 | 13 | 9,4 | Standard                                                 |
| GP16M-E-9/32"                          | GP16MC-E-9/32" | GP16MK-E-9/32"          | GP16MKC-E-9/32" | 16                      | 7,14 +0,09 +0,11 | 16 | 35 | 15 | 9,4 | BR-G16M                                                  |
|                                        |                |                         |                 |                         |                  |    |    |    |     | Refrig. / Cool.                                          |
|                                        |                |                         |                 |                         |                  |    |    |    |     | BRC-G16M                                                 |



"GP16M" - "GP16MK" STANDARD  
 "GP16M" - "GP16MK" STANDARD



"GP16MC" - "GP16MKC" CON PASSAGGIO REFRIGERANTE INTERNO  
 "GP16MC" - "GP16MKC" WITH INTERNAL FLOW OF COOLANT

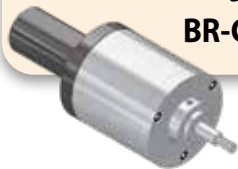
|               |                |                |                 |    |                   |    |    |      |     |                             |
|---------------|----------------|----------------|-----------------|----|-------------------|----|----|------|-----|-----------------------------|
| GP16M-E-5/16" | GP16MC-E-5/16" | GP16MK-E-5/16" | GP16MKC-E-5/16" | 16 | 7,93 +0,09 +0,11  | 16 | 35 | 16   | 5,8 | Standard<br>BR-G16M         |
| GP16M-E-3/8"  | GP16MC-E-3/8"  | GP16MK-E-3/8"  | GP16MKC-E-3/8"  | 16 | 9,52 +0,10 +0,12  | 18 | 35 | 15   | 8   |                             |
| GP16M-E-7/16" | GP16MC-E-7/16" | GP16MK-E-7/16" | GP16MKC-E-7/16" | 16 | 11,11 +0,11 +0,13 | 31 | 35 | 15   | 9   |                             |
| GP16M-E-1/2"  | GP16MC-E-1/2"  | GP16MK-E-1/2"  | GP16MKC-E-1/2"  | 16 | 12,70 +0,12 +0,14 | 31 | 35 | 15   | 11  |                             |
| GP16M-E-9/16" | GP16MC-E-9/16" | GP16MK-E-9/16" | GP16MKC-E-9/16" | 16 | 14,28 +0,12 +0,14 | 31 | 35 | 15   | 12  | Refrig. / Cool.<br>BRC-G16M |
| GP16M-E-5/8"  | GP16MC-E-5/8"  | GP16MK-E-5/8"  | GP16MKC-E-5/8"  | 16 | 15,87 +0,13 +0,15 | 31 | 35 | 15   | 14  |                             |
| GP16M-E-3/4"  | GP16MC-E-3/4"  | GP16MK-E-3/4"  | GP16MKC-E-3/4"  | 16 | 19,05 +0,17 +0,19 | 31 | 35 | 13,5 | 17  |                             |
| GP16M-E-7/8"  | GP16MC-E-7/8"  | GP16MK-E-7/8"  | GP16MKC-E-7/8"  | 16 | 22,22 +0,21 +0,23 | 31 | 35 | 13   | 20  |                             |
| GP16M-E-1"    | GP16MC-E-1"    | GP16MK-E-1"    | GP16MKC-E-1"    | 16 | 25,40 +0,22 +0,24 | 31 | 35 | 11,5 | 22  |                             |

C = Profondità utile di brocciatura / C = Depth of the shape  
 L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
 the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
 Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

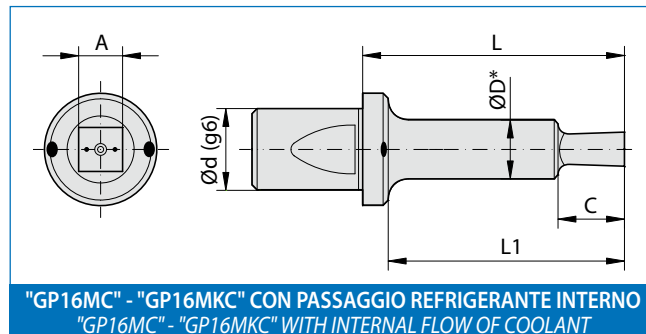
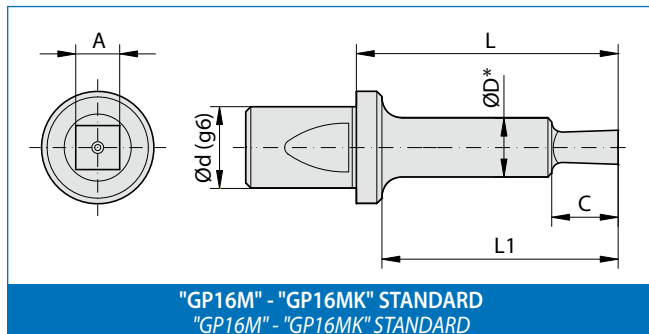




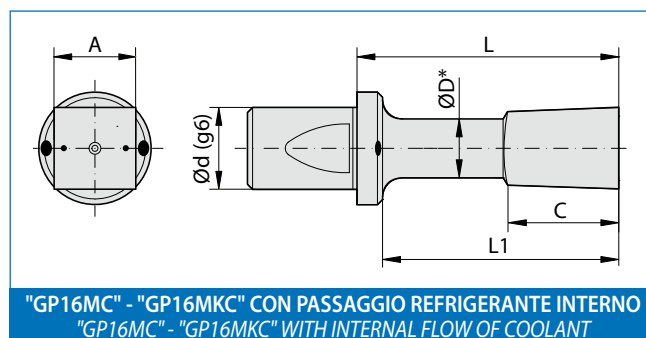
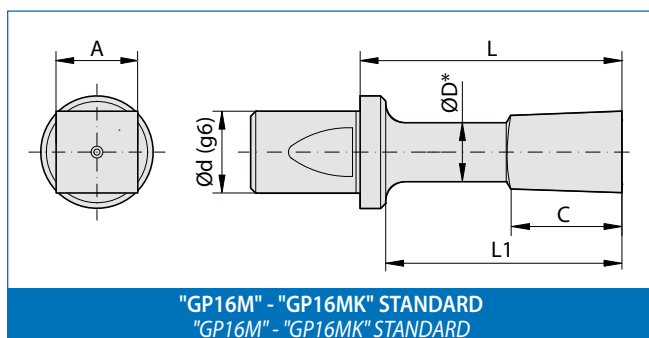
**BROCCE GP16M E GP16MC - DIAMETRO "d" DEL GAMBO: 16 mm**  
**MISURE IN POLLICI**

**GP16M AND GP16MC BROACHES - 16 mm SHANK DIAMETER ("d")**  
**SIZES IN INCHES**

**Sezione QUADRA (Q)**  
**SQUARE section (Q)**



| ARTICOLO (materiale) - ITEM (material) |                                       |                                   |                                       | DIMENSIONI - DIMENSIONS |                  |    |    |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------|---------------------------------------|-----------------------------------|---------------------------------------|-------------------------|------------------|----|----|----|----|----------------------------------------------------------|
| HSS                                    |                                       | SINTERIZZATO / SINTERED           |                                       | d                       | A                | L1 | L  | C  | D* |                                                          |
| Standard <input type="checkbox"/>      | Ref. / Cool. <input type="checkbox"/> | Standard <input type="checkbox"/> | Ref. / Cool. <input type="checkbox"/> |                         |                  |    |    |    |    |                                                          |
| GP16M-Q-1/4"                           | GP16MC-Q-1/4"                         | GP16MK-Q-1/4"                     | GP16MKC-Q-1/4"                        | 16                      | 6,35 +0,08 +0,10 | 15 | 35 | 13 | 10 | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M       |
|                                        |                                       |                                   |                                       |                         |                  |    |    |    |    |                                                          |
|                                        |                                       |                                   |                                       |                         |                  |    |    |    |    |                                                          |
|                                        |                                       |                                   |                                       |                         |                  |    |    |    |    |                                                          |



|               |                |                |                 |    |                   |    |    |      |     |                                                    |
|---------------|----------------|----------------|-----------------|----|-------------------|----|----|------|-----|----------------------------------------------------|
| GP16M-Q-9/32" | GP16MC-Q-9/32" | GP16MK-Q-9/32" | GP16MKC-Q-9/32" | 16 | 7,14 +0,09 +0,11  | 16 | 35 | 14   | 4,2 | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M |
| GP16M-Q-5/16" | GP16MC-Q-5/16" | GP16MK-Q-5/16" | GP16MKC-Q-5/16" | 16 | 7,93 +0,09 +0,11  | 16 | 35 | 14,5 | 5   |                                                    |
| GP16M-Q-3/8"  | GP16MC-Q-3/8"  | GP16MK-Q-3/8"  | GP16MKC-Q-3/8"  | 16 | 9,52 +0,10 +0,12  | 18 | 35 | 14,5 | 7,2 | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M |
| GP16M-Q-7/16" | GP16MC-Q-7/16" | GP16MK-Q-7/16" | GP16MKC-Q-7/16" | 16 | 11,11 +0,11 +0,13 | 31 | 35 | 15   | 8   |                                                    |
| GP16M-Q-1/2"  | GP16MC-Q-1/2"  | GP16MK-Q-1/2"  | GP16MKC-Q-1/2"  | 16 | 12,70 +0,12 +0,14 | 31 | 35 | 13,5 | 10  | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M |
| GP16M-Q-9/16" | GP16MC-Q-9/16" | GP16MK-Q-9/16" | GP16MKC-Q-9/16" | 16 | 14,28 +0,12 +0,14 | 31 | 35 | 13,5 | 11  |                                                    |
| GP16M-Q-5/8"  | GP16MC-Q-5/8"  | GP16MK-Q-5/8"  | GP16MKC-Q-5/8"  | 16 | 15,87 +0,13 +0,15 | 31 | 35 | 13,5 | 13  | Standard<br>BR-G16M<br>Refrig. / Cool.<br>BRC-G16M |
| GP16M-Q-3/4"  | GP16MC-Q-3/4"  | GP16MK-Q-3/4"  | GP16MKC-Q-3/4"  | 16 | 19,05 +0,17 +0,19 | 31 | 35 | 13   | 16  |                                                    |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



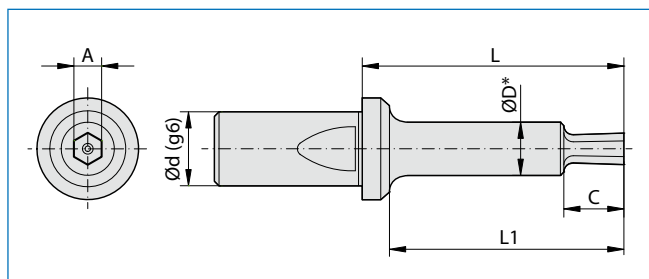
**BROCCE GP16L E GP16LC - DIAMETRO "d" DEL GAMBO: 16 mm**  
**MISURE IN POLLICI**  
**GP16L AND GP16LC BROACHES - 16 mm SHANK DIAMETER ("d")**  
**SIZES IN INCHES**

Per Brocciatori /  
For Broaching Heads

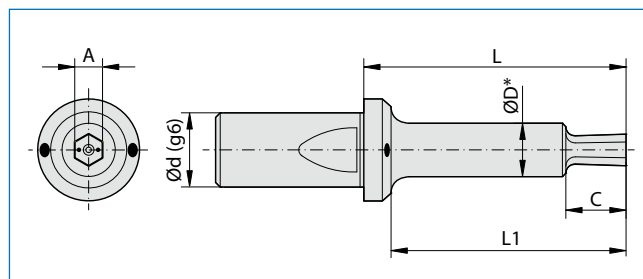
**BR-G16L**



**Sezione ESAGONALE (E) / HEXAGONAL section (E)**

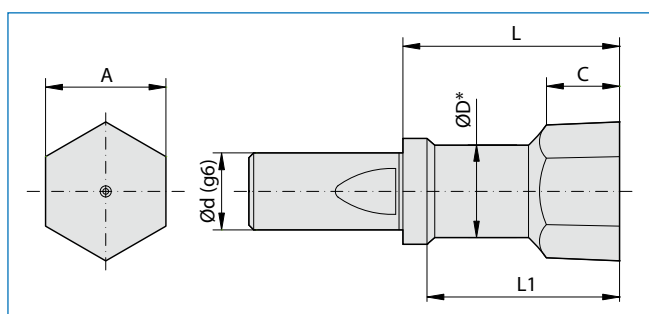


"GP16L" - "GP16LK" STANDARD  
"GP16L" - "GP16LK" STANDARD

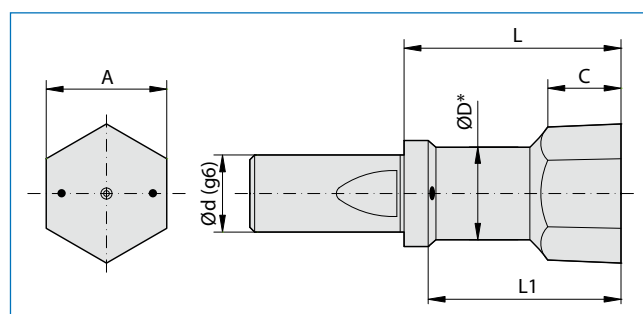


"GP16LC" - "GP16LKC" CON PASSAGGIO REFRIGERANTE INTERNO  
"GP16LC" - "GP16LKC" WITH INTERNAL FLOW OF COOLANT

| ARTICOLO (materiale) - ITEM (material) |                |                         |                 | DIMENSIONI - DIMENSIONS |                  |    |    |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------|----------------|-------------------------|-----------------|-------------------------|------------------|----|----|----|----|----------------------------------------------------------|
| HSS                                    |                | SINTERIZZATO / SINTERED |                 | d                       | A                | L1 | L  | C  | D* |                                                          |
| Standard                               | Ref. / Cool.   | Standard                | Ref. / Cool.    |                         |                  |    |    |    |    |                                                          |
| GP16L-E-1/4"                           | GP16LC-E-1/4"  | GP16LK-E-1/4"           | GP16LKC-E-1/4"  | 16                      | 6,35 +0,08 +0,10 | 41 | 45 | 13 | 9  | Standard<br>BR-G16L<br>Refrig. / Cool.<br>BRC-G16L       |
| GP16L-E-9/32"                          | GP16LC-E-9/32" | GP16LK-E-9/32"          | GP16LKC-E-9/32" | 16                      | 7,14 +0,09 +0,11 | 41 | 45 | 15 | 9  |                                                          |
| GP16L-E-5/16"                          | GP16LC-E-5/16" | GP16LK-E-5/16"          | GP16LKC-E-5/16" | 16                      | 7,93 +0,09 +0,11 | 41 | 45 | 16 | 9  |                                                          |
| GP16L-E-3/8"                           | GP16LC-E-3/8"  | GP16LK-E-3/8"           | GP16LKC-E-3/8"  | 16                      | 9,52 +0,10 +0,12 | 41 | 45 | 17 | 9  |                                                          |



"GP16L" - "GP16LK" STANDARD  
"G16L" - "G16LK" STANDARD



"GP16LC" - "GP16LKC" CON PASSAGGIO REFRIGERANTE INTERNO  
"G16LC" - "G16LKC" WITH INTERNAL FLOW OF COOLANT

|               |                |                |                 |    |                   |    |    |    |      |                                                    |
|---------------|----------------|----------------|-----------------|----|-------------------|----|----|----|------|----------------------------------------------------|
| GP16L-E-7/16" | GP16LC-E-7/16" | GP16LK-E-7/16" | GP16LKC-E-7/16" | 16 | 11,11 +0,11 +0,13 | 41 | 45 | 17 | 9    | Standard<br>BR-G16L<br>Refrig. / Cool.<br>BRC-G16L |
| GP16L-E-1/2"  | GP16LC-E-1/2"  | GP16LK-E-1/2"  | GP16LKC-E-1/2"  | 16 | 12,70 +0,12 +0,14 | 41 | 45 | 17 | 10,5 |                                                    |
| GP16L-E-9/16" | GP16LC-E-9/16" | GP16LK-E-9/16" | GP16LKC-E-9/16" | 16 | 14,28 +0,12 +0,14 | 41 | 45 | 17 | 12,5 |                                                    |
| GP16L-E-5/8"  | GP16LC-E-5/8"  | GP16LK-E-5/8"  | GP16LKC-E-5/8"  | 16 | 15,87 +0,13 +0,15 | 41 | 45 | 17 | 13,5 |                                                    |
| GP16L-E-3/4"  | GP16LC-E-3/4"  | GP16LK-E-3/4"  | GP16LKC-E-3/4"  | 16 | 19,05 +0,17 +0,19 | 41 | 45 | 17 | 16,5 |                                                    |
| GP16L-E-7/8"  | GP16LC-E-7/8"  | GP16LK-E-7/8"  | GP16LKC-E-7/8"  | 16 | 22,22 +0,21 +0,23 | 41 | 45 | 17 | 19,5 |                                                    |
| GP16L-E-1"    | GP16LC-E-1"    | GP16LK-E-1"    | GP16LKC-E-1"    | 16 | 25,40 +0,22 +0,24 | 41 | 45 | 17 | 21,5 |                                                    |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

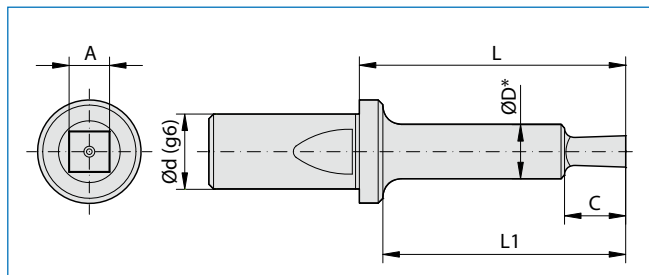




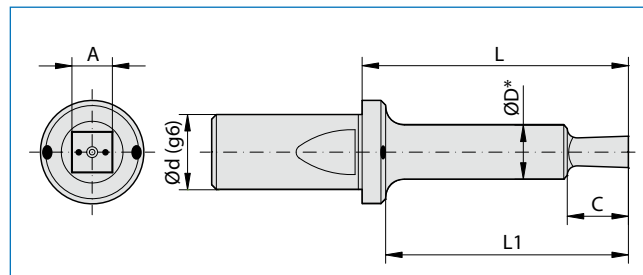
**BROCCE GP16L E GP16LC - DIAMETRO "d" DEL GAMBO: 16 mm  
MISURE IN POLLICI**

**GP16L AND GP16LC BROACHES - 16 mm SHANK DIAMETER ("d")  
SIZES IN INCHES**

**Sezione QUADRA (Q) / SQUARE section (Q)**

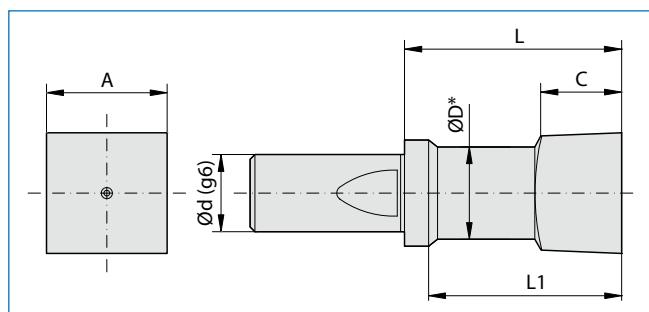


"GP16L" - "GP16LK" STANDARD  
"GP16L" - "GP16LK" STANDARD

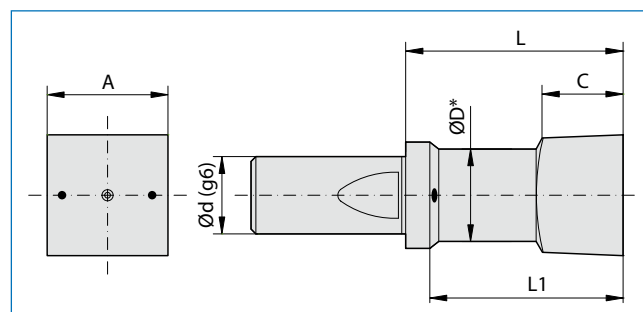


"GP16LC" - "GP16LKC" CON PASSAGGIO REFRIGERANTE INTERNO  
"GP16LC" - "GP16LKC" WITH INTERNAL FLOW OF COOLANT

| ARTICOLO (materiale) - ITEM (material) |               |                         |                | DIMENSIONI - DIMENSIONS |                  |    |    |    |    | Utilizzo su<br>Brocciatori/<br>Use on<br>Broaching heads |
|----------------------------------------|---------------|-------------------------|----------------|-------------------------|------------------|----|----|----|----|----------------------------------------------------------|
| HSS                                    |               | SINTERIZZATO / SINTERED |                | d                       | A                | L1 | L  | C  | D* |                                                          |
| Standard                               | Ref. / Cool.  | Standard                | Ref. / Cool.   |                         |                  |    |    |    |    |                                                          |
| GP16L-Q-1/4"                           |               | GP16LK-Q-1/4"           |                | 16                      | 6,35 +0,08 +0,10 | 41 | 45 | 13 | 9  | Standard<br>BR-G16L<br>Refrig. / Cool.<br>BRC-G16L       |
| GP16L-Q-9/32"                          | /             | GP16LK-Q-9/32"          | /              | 16                      | 7,14 +0,09 +0,11 | 41 | 45 | 15 | 9  |                                                          |
| GP16L-Q-5/16"                          |               | GP16LK-Q-5/16"          |                | 16                      | 7,93 +0,09 +0,11 | 41 | 45 | 16 | 9  |                                                          |
| GP16L-Q-3/8"                           | GP16LC-Q-3/8" | GP16LK-Q-3/8"           | GP16LKC-Q-3/8" | 16                      | 9,52 +0,10 +0,12 | 41 | 45 | 17 | 9  |                                                          |



"GP16L" - "GP16LK" STANDARD  
"G16L" - "G16LK" STANDARD



"GP16LC" - "GP16LKC" CON PASSAGGIO REFRIGERANTE INTERNO  
"G16LC" - "G16LKC" WITH INTERNAL FLOW OF COOLANT

|               |                |                |                 |    |                   |    |    |    |      |                                                    |
|---------------|----------------|----------------|-----------------|----|-------------------|----|----|----|------|----------------------------------------------------|
| GP16L-Q-7/16" | GP16LC-Q-7/16" | GP16LK-Q-7/16" | GP16LKC-Q-7/16" | 16 | 11,11 +0,11 +0,13 | 41 | 45 | 17 | 9    | Standard<br>BR-G16L<br>Refrig. / Cool.<br>BRC-G16L |
| GP16L-Q-1/2"  | GP16LC-Q-1/2"  | GP16LK-Q-1/2"  | GP16LKC-Q-1/2"  | 16 | 12,70 +0,12 +0,14 | 41 | 45 | 17 | 10,5 |                                                    |
| GP16L-Q-9/16" | GP16LC-Q-9/16" | GP16LK-Q-9/16" | GP16LKC-Q-9/16" | 16 | 14,28 +0,12 +0,14 | 41 | 45 | 17 | 12,5 |                                                    |
| GP16L-Q-5/8"  | GP16LC-Q-5/8"  | GP16LK-Q-5/8"  | GP16LKC-Q-5/8"  | 16 | 15,87 +0,13 +0,15 | 41 | 45 | 17 | 13,5 |                                                    |
| GP16L-Q-3/4"  | GP16LC-Q-3/4"  | GP16LK-Q-3/4"  | GP16LKC-Q-3/4"  | 16 | 19,05 +0,17 +0,19 | 41 | 45 | 17 | 16,5 |                                                    |
| GP16L-Q-7/8"  | GP16LC-Q-7/8"  | GP16LK-Q-7/8"  | GP16LKC-Q-7/8"  | 16 | 22,22 +0,21 +0,23 | 41 | 45 | 17 | 19,5 |                                                    |
| GP16L-Q-1"    | GP16LC-Q-1"    | GP16LK-Q-1"    | GP16LKC-Q-1"    | 16 | 25,40 +0,22 +0,24 | 41 | 45 | 17 | 21,5 |                                                    |

C = Profondità utile di brocciatura / C = Depth of the shape  
L1 = Profondità max. di lavoro / L1 = Maximum broaching depth

\* la quota D può essere modificata a seconda delle necessità del cliente. Contattare la Brighetti Meccanica.  
the dimension D can be modified according to the customer's needs. Contact Brighetti Meccanica.

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



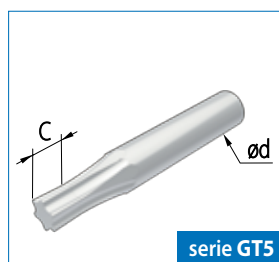
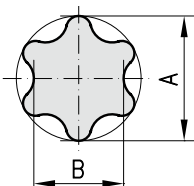
# Brocche Standard e con passaggio refrigerante per chiavi TORX® Standard Broaches and with internal flow of coolant for TORX® wrenches

per Brocciatori Standard serie "BR"  
for "BR" Standard Broaching Heads series



**I** L'originale disegno delle cave per chiavi TORX® consente, in dimensioni contenute, di esercitare una coppia di serraggio molto elevata senza compromettere l'integrità della cava.

**GB** The original design of the holes for TORX® wrenches makes it possible to exert a very high torque, despite the limited dimensions, without damaging the hole.

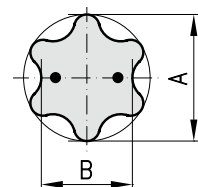


per Brocciatori serie "BRC"  
for Broaching Heads "BRC" series



**I** Brocche per realizzazione di cave per chiavi TORX® per utilizzo su brocciatori serie "BRC" con passaggio refrigerante interno per poter avere una maggiore durata della broccia, una minore rugosità e poter lavorare materiali molto tenaci.

**GB** Broaches for TORX profiles suitable for broaching heads BRC series with internal flow of coolant. The flow of coolant increases the broach productivity, assures a minor roughness on the work-piece and helps to machine harder materials.



per brocciatori serie  
for broaching heads

BR-G5

ød = 5

ARTICOLO (materiale)  
ITEM (material)

HSS  
Standard

SINTERIZ.  
Standard

per brocciatori serie  
for broaching heads

BR-G8S / BR-G8M / BR-G8 / BR-G8A  
BRC-G8M / BRC-G8 / BRC-G8HP

ød = 8 / L = 18

ARTICOLO (materiale)  
ITEM (material)

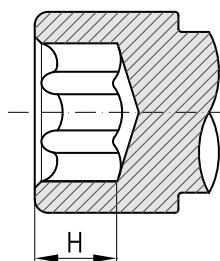
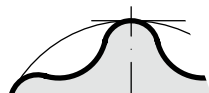
HSS  
Standard

Ref. / Cool.

SINTERIZZATO / SINTERED  
Standard

Ref. / Cool.

| A     | B     | C   | H max<br>(*) | TORX® | GT5-T3  | GT5K-T3  | GT8-T3  | GT8C-T8  | GT8K-T8  | GT8KC-T8  |
|-------|-------|-----|--------------|-------|---------|----------|---------|----------|----------|-----------|
| 1,214 | 0,884 | 1,2 | 0,40         | 3     | GT5-T3  | GT5K-T3  | GT8-T3  | GT8C-T8  | GT8K-T8  | GT8KC-T8  |
| 1,374 | 0,996 | 1,2 | 0,50         | 4     | GT5-T4  | GT5K-T4  | GT8-T4  | GT8C-T9  | GT8K-T9  | GT8KC-T9  |
| 1,499 | 1,097 | 1,5 | 1,00         | 5     | GT5-T5  | GT5K-T5  | GT8-T5  | GT8C-T10 | GT8K-T10 | GT8KC-T10 |
| 1,778 | 1,293 | 1,7 | 1,20         | 6     | GT5-T6  | GT5K-T6  | GT8-T6  | GT8C-T11 | GT8K-T11 | GT8KC-T11 |
| 2,095 | 1,521 | 1,7 | 1,50         | 7     | GT5-T7  | GT5K-T7  | GT8-T7  | GT8C-T12 | GT8K-T12 | GT8KC-T12 |
| 2,418 | 1,756 | 2,0 | 1,70         | 8     | GT5-T8  | GT5K-T8  | GT8-T8  | GT8C-T13 | GT8K-T13 | GT8KC-T13 |
| 2,603 | 1,889 | 2,0 | 1,70         | 9     | GT5-T9  | GT5K-T9  | GT8-T9  | GT8C-T14 | GT8K-T14 | GT8KC-T14 |
| 2,844 | 2,057 | 2,0 | 2,00         | 10    | GT5-T10 | GT5K-T10 | GT8-T10 | GT8C-T15 | GT8K-T15 | GT8KC-T15 |
| 3,378 | 2,438 | 3,0 | 3,00         | 15    | GT5-T15 | GT5K-T15 | GT8-T15 | GT8C-T16 | GT8K-T16 | GT8KC-T16 |
| 3,962 | 2,857 | 3,5 | 3,00         | 20    | GT5-T20 | GT5K-T20 | GT8-T20 | GT8C-T17 | GT8K-T17 | GT8KC-T17 |
| 4,559 | 3,276 | 4,0 | 3,50         | 25    | GT5-T25 | GT5K-T25 | GT8-T25 | GT8C-T18 | GT8K-T18 | GT8KC-T18 |
| 5,118 | 3,672 | 4,0 | 3,50         | 27    | /       | /        | GT8-T27 | GT8C-T19 | GT8K-T19 | GT8KC-T19 |
| 5,651 | 4,064 | 4,5 | 3,50         | 30    | /       | /        | GT8-T30 | GT8C-T20 | GT8K-T20 | GT8KC-T20 |
| 6,807 | 4,889 | 5,0 | 4,00         | 40    | /       | /        | GT8-T40 | GT8C-T21 | GT8K-T21 | GT8KC-T21 |



|        |        |     |              |       | per brocciatori serie<br>for broaching heads<br><b>BR-G12 / BR-G12B / BR-G12A / BRC-G12 / BRC-G12B</b> |              |                         |              | per brocciatori serie<br>for broaching heads<br><b>BR-G16</b> |           |
|--------|--------|-----|--------------|-------|--------------------------------------------------------------------------------------------------------|--------------|-------------------------|--------------|---------------------------------------------------------------|-----------|
|        |        |     |              |       | ød = 12 / L = 25                                                                                       |              |                         |              | ød = 16 / L = 25                                              |           |
|        |        |     |              |       | ARTICOLO (materiale)<br>ITEM (material)                                                                |              |                         |              | ARTICOLO (materiale)<br>ITEM (material)                       |           |
| A      | B      | C   | H max<br>(*) | TORX® | HSS                                                                                                    |              | SINTERIZZATO / SINTERED |              | HSS                                                           |           |
|        |        |     |              |       | Standard                                                                                               | Ref. / Cool. | Standard                | Ref. / Cool. | Standard                                                      | Standard  |
| 1,214  | 0,884  | 1,2 | 0,40         | 3     | GT12-T3                                                                                                | /            | GT12K-T3                | /            | /                                                             | /         |
| 1,374  | 0,996  | 1,2 | 0,50         | 4     | GT12-T4                                                                                                |              | GT12K-T4                |              |                                                               |           |
| 1,499  | 1,097  | 1,5 | 1,00         | 5     | GT12-T5                                                                                                |              | GT12K-T5                |              |                                                               |           |
| 1,778  | 1,293  | 1,7 | 1,20         | 6     | GT12-T6                                                                                                |              | GT12K-T6                |              |                                                               |           |
| 2,095  | 1,521  | 1,7 | 1,50         | 7     | GT12-T7                                                                                                |              | GT12K-T7                |              |                                                               |           |
| 2,418  | 1,756  | 2,0 | 1,70         | 8     | GT12-T8                                                                                                | GT12C-T8     | GT12K-T8                | GT12KC-T8    | /                                                             | /         |
| 2,603  | 1,889  | 2,0 | 1,70         | 9     | GT12-T9                                                                                                | GT12C-T9     | GT12K-T9                | GT12KC-T9    |                                                               |           |
| 2,844  | 2,057  | 2,0 | 2,00         | 10    | GT12-T10                                                                                               | GT12C-T10    | GT12K-T10               | GT12KC-T10   | GT16-T10                                                      | GT16K-T10 |
| 3,378  | 2,438  | 3,0 | 3,00         | 15    | GT12-T15                                                                                               | GT12C-T15    | GT12K-T15               | GT12KC-T15   | GT16-T15                                                      | GT16K-T15 |
| 3,962  | 2,857  | 3,5 | 3,00         | 20    | GT12-T20                                                                                               | GT12C-T20    | GT12K-T20               | GT12KC-T20   | GT16-T20                                                      | GT16K-T20 |
| 4,559  | 3,276  | 4,0 | 3,50         | 25    | GT12-T25                                                                                               | GT12C-T25    | GT12K-T25               | GT12KC-T25   | GT16-T25                                                      | GT16K-T25 |
| 5,118  | 3,672  | 4,0 | 3,50         | 27    | GT12-T27                                                                                               | GT12C-T27    | GT12K-T27               | GT12KC-T27   | GT16-T27                                                      | GT16K-T27 |
| 5,651  | 4,064  | 4,5 | 3,50         | 30    | GT12-T30                                                                                               | GT12C-T30    | GT12K-T30               | GT12KC-T30   | GT16-T30                                                      | GT16K-T30 |
| 6,807  | 4,889  | 5,0 | 4,00         | 40    | GT12-T40                                                                                               | GT12C-T40    | GT12K-T40               | GT12KC-T40   | GT16-T40                                                      | GT16K-T40 |
| 7,975  | 5,689  | 5,5 | 5,20         | 45    | GT12-T45                                                                                               | GT12C-T45    | GT12K-T45               | GT12KC-T45   | GT16-T45                                                      | GT16K-T45 |
| 8,991  | 6,502  | 6,0 | 6,00         | 50    | GT12-T50                                                                                               | GT12C-T50    | GT12K-T50               | GT12KC-T50   | GT16-T50                                                      | GT16K-T50 |
| 11,404 | 8,089  | 7,0 | 7,00         | 55    | GT12-T55                                                                                               | GT12C-T55    | GT12K-T55               | GT12KC-T55   | GT16-T55                                                      | GT16K-T55 |
| 13,487 | 9,677  | 7,5 | 7,50         | 60    | GT12-T60                                                                                               | GT12C-T60    | GT12K-T60               | GT12KC-T60   | GT16-T60                                                      | GT16K-T60 |
| 15,773 | 11,264 | 8,0 | 8,00         | 70    | /                                                                                                      | /            | /                       | /            | GT16-T70                                                      | GT16K-T70 |

|        |        |     |              |       | per brocciatori serie<br>for broaching heads<br><b>BR-G16M / BRC-G16M</b> |              |                         |              | per brocciatori serie<br>for broaching heads<br><b>BR-G16L / BRC-G16L</b> |              |                         |              |
|--------|--------|-----|--------------|-------|---------------------------------------------------------------------------|--------------|-------------------------|--------------|---------------------------------------------------------------------------|--------------|-------------------------|--------------|
|        |        |     |              |       | ød = 16 / L = 35                                                          |              |                         |              | ød = 16 / L = 45                                                          |              |                         |              |
|        |        |     |              |       | ARTICOLO (materiale)<br>ITEM (material)                                   |              |                         |              | ARTICOLO (materiale)<br>ITEM (material)                                   |              |                         |              |
| A      | B      | C   | H max<br>(*) | TORX® | HSS                                                                       |              | SINTERIZZATO / SINTERED |              | HSS                                                                       |              | SINTERIZZATO / SINTERED |              |
|        |        |     |              |       | Standard                                                                  | Ref. / Cool. | Standard                | Ref. / Cool. | Standard                                                                  | Ref. / Cool. | Standard                | Ref. / Cool. |
| 3,962  | 2,857  | 3,5 | 3,00         | 20    | GT16M-T20                                                                 | GT16MC-T20   | GT16MK-T20              | GT16MKC-T20  | /                                                                         | /            | /                       | /            |
| 4,559  | 3,276  | 4,0 | 3,50         | 25    | GT16M-T25                                                                 | GT16MC-T25   | GT16MK-T25              | GT16MKC-T25  |                                                                           |              |                         |              |
| 5,118  | 3,672  | 4,0 | 3,50         | 27    | GT16M-T27                                                                 | GT16MC-T27   | GT16MK-T27              | GT16MKC-T27  |                                                                           |              |                         |              |
| 5,651  | 4,064  | 4,5 | 3,50         | 30    | GT16M-T30                                                                 | GT16MC-T30   | GT16MK-T30              | GT16MKC-T30  | GT16L-T30                                                                 | GT16LC-T30   | GT16LK-T30              | GT16LKC-T30  |
| 6,807  | 4,889  | 5,0 | 4,00         | 40    | GT16M-T40                                                                 | GT16MC-T40   | GT16MK-T40              | GT16MKC-T40  | GT16L-T40                                                                 | GT16LC-T40   | GT16LK-T40              | GT16LKC-T40  |
| 7,975  | 5,689  | 5,5 | 5,20         | 45    | GT16M-T45                                                                 | GT16MC-T45   | GT16MK-T45              | GT16MKC-T45  | GT16L-T45                                                                 | GT16LC-T45   | GT16LK-T45              | GT16LKC-T45  |
| 8,991  | 6,502  | 6,0 | 6,00         | 50    | GT16M-T50                                                                 | GT16MC-T50   | GT16MK-T50              | GT16MKC-T50  | GT16L-T50                                                                 | GT16LC-T50   | GT16LK-T50              | GT16LKC-T50  |
| 11,404 | 8,089  | 7,0 | 7,00         | 55    | GT16M-T55                                                                 | GT16MC-T55   | GT16MK-T55              | GT16MKC-T55  | GT16L-T55                                                                 | GT16LC-T55   | GT16LK-T55              | GT16LKC-T55  |
| 13,487 | 9,677  | 7,5 | 7,50         | 60    | GT16M-T60                                                                 | GT16MC-T60   | GT16MK-T60              | GT16MKC-T60  | GT16L-T60                                                                 | GT16LC-T60   | GT16LK-T60              | GT16LKC-T60  |
| 15,773 | 11,264 | 8,0 | 8,00         | 70    | GT16M-T70                                                                 | GT16MC-T70   | GT16MK-T70              | GT16MKC-T70  | GT16L-T70                                                                 | GT16LC-T70   | GT16LK-T70              | GT16LKC-T70  |

(\*) = quota di profondità MAX standard su impronta di vite commerciale / Measure of MAX standard depth imprint by commercial screws

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



# Brocche Standard e con passaggio refrigerante per chiavi TORX® PLUS Standard Broaches and with internal flow of coolant for TORX® PLUS wrenches

per Brocciatori Standard serie "BR"  
for "BR" Standard Broaching Heads series

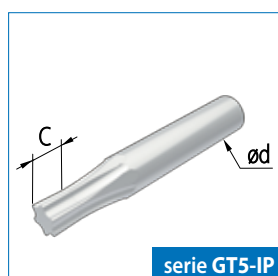
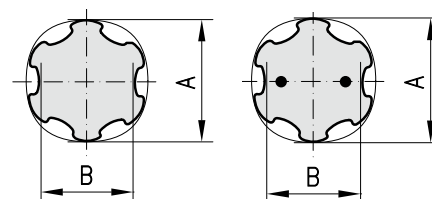


per Brocciatori serie "BRC"  
for Broaching Heads "BRC" series



**I** Il profilo TORX® PLUS è un'evoluzione della precedente impronta TORX®. La variante TORX® PLUS consente una maggiore forza di presa sul pezzo e conseguentemente una elevata tenuta della coppia di serraggio. Ciò significa che l'impronta esalobata richiede una profondità della cava relativamente inferiore rispetto alla versione TORX® e nello stesso tempo garantisce più a lungo l'integrità della figura stessa. La geometria ellittica del profilo TORX® PLUS amplia la superficie di contatto consentendo un migliore e più efficace accoppiamento della chiave con la cava esalobata. In questo modo si garantisce una riduzione dello stress di torsione e di conseguenza una vita più lunga dell'utensile. Anche per il profilo TORX e TORX PLUS esiste la versione per brocciatori serie "BRC" che consente di poter lavorare materiali molto tenaci e avere una maggiore durata della brocca e una minore rugosità della cava.

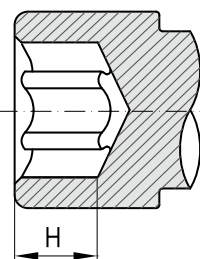
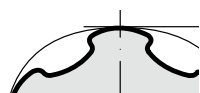
**GB** TORX® PLUS profile is an enhancement of the older TORX® shape. TORX® PLUS drive system maximizes engagement between driver and fastener and optimizes torque transmission. This means the depth of the profile can be shorter than TORX® old version, even if at the same time TORX® PLUS assures a much longer life of the tools. The elliptically based geometry of the TORX® PLUS profile broadens contact surface guaranteeing a better engagement between driver and fastener than old TORX® shape. This feature virtually eliminates radial stresses and increase tool life. Broaches suitable for broaching heads with internal flow of coolant BRC series are available with TORX PLUS profiles too. The internal flow of coolant helps to machine harder materials and assures a higher broach productivity and a minor roughness on the work-piece.



serie GT5-IP



serie GT8-IP / GT12-IP / GT16-IP



| per brocciatori serie<br>for broaching heads<br>BR-G5 |       |           |      |    | per brocciatori serie<br>for broaching heads<br>BR-G8S / BR-G8M / BR-G8 / BR-G8A<br>BRC-G8M / BRC-G8 / BRC-G8HP |              |                         |              |            |
|-------------------------------------------------------|-------|-----------|------|----|-----------------------------------------------------------------------------------------------------------------|--------------|-------------------------|--------------|------------|
| Ød = 5                                                |       |           |      |    | Ød = 8 / L = 18                                                                                                 |              |                         |              |            |
| ARTICOLO (materiale)<br>ITEM (material)               |       |           |      |    | ARTICOLO (materiale)<br>ITEM (material)                                                                         |              |                         |              |            |
| HSS                                                   |       | SINTERIZ. |      |    | HSS                                                                                                             |              | SINTERIZZATO / SINTERED |              |            |
| Standard                                              |       | Standard  |      |    | Standard                                                                                                        | Ref. / Cool. | Standard                | Ref. / Cool. |            |
| 1,778                                                 | 1,381 | 1,7       | 1,20 | 6  | GT5-IP6                                                                                                         | GT5K-IP6     | GT8-IP6                 | GT8K-IP6     | /          |
| 2,095                                                 | 1,606 | 1,7       | 1,50 | 7  | GT5-IP7                                                                                                         | GT5K-IP7     | GT8-IP7                 | GT8K-IP7     | /          |
| 2,418                                                 | 1,860 | 2,0       | 1,70 | 8  | GT5-IP8                                                                                                         | GT5K-IP8     | GT8-IP8                 | GT8K-IP8     | GT8KC-IP8  |
| 2,603                                                 | 2,014 | 2,0       | 1,70 | 9  | GT5-IP9                                                                                                         | GT5K-IP9     | GT8-IP9                 | GT8K-IP9     | GT8KC-IP9  |
| 2,844                                                 | 2,174 | 2,0       | 2,00 | 10 | GT5-IP10                                                                                                        | GT5K-IP10    | GT8-IP10                | GT8K-IP10    | GT8KC-IP10 |
| 3,378                                                 | 2,606 | 3,0       | 3,00 | 15 | GT5-IP15                                                                                                        | GT5K-IP15    | GT8-IP15                | GT8K-IP15    | GT8KC-IP15 |
| 3,962                                                 | 3,088 | 3,5       | 3,00 | 20 | GT5-IP20                                                                                                        | GT5K-IP20    | GT8-IP20                | GT8K-IP20    | GT8KC-IP20 |
| 4,559                                                 | 3,492 | 4,0       | 3,50 | 25 | GT5-IP25                                                                                                        | GT5K-IP25    | GT8-IP25                | GT8K-IP25    | GT8KC-IP25 |
| 5,651                                                 | 4,391 | 4,5       | 3,50 | 30 | /                                                                                                               | /            | GT8-IP30                | GT8K-IP30    | GT8KC-IP30 |
| 6,807                                                 | 5,283 | 5,0       | 4,00 | 40 | /                                                                                                               | /            | GT8-IP40                | GT8K-IP40    | GT8KC-IP40 |

|        |        |     |              |       | per brocciatori serie<br>for broaching heads<br><b>BR-G12 / BR-G12B / BR-G12A / BRC-G12 / BRC-G12B</b> |              |                         |              | per brocciatori serie<br>for broaching heads<br><b>BR-G16</b> |            |
|--------|--------|-----|--------------|-------|--------------------------------------------------------------------------------------------------------|--------------|-------------------------|--------------|---------------------------------------------------------------|------------|
|        |        |     |              |       | ød = 12 / L = 25                                                                                       |              |                         |              | ød = 16 / L = 25                                              |            |
| A      | B      | C   | H max<br>(*) | TORX® | ARTICOLO (materiale)<br>ITEM (material)                                                                |              |                         |              | ARTICOLO (materiale)<br>ITEM (material)                       |            |
|        |        |     |              |       | HSS                                                                                                    |              | SINTERIZZATO / SINTERED |              | HSS                                                           |            |
|        |        |     |              |       | Standard                                                                                               | Ref. / Cool. | Standard                | Ref. / Cool. | Standard                                                      | Standard   |
| 1,778  | 1,381  | 1,7 | 1,20         | 6     | GT12-IP6                                                                                               | /            | GT12K-IP6               | /            | /                                                             | /          |
| 2,095  | 1,606  | 1,7 | 1,50         | 7     | GT12-IP7                                                                                               |              | GT12K-IP7               |              |                                                               |            |
| 2,418  | 1,860  | 2,0 | 1,70         | 8     | GT12-IP8                                                                                               |              | GT12K-IP8               |              |                                                               |            |
| 2,603  | 2,014  | 2,0 | 1,70         | 9     | GT12-IP9                                                                                               |              | GT12K-IP9               |              |                                                               |            |
| 2,844  | 2,174  | 2,0 | 2,00         | 10    | GT12-IP10                                                                                              | GT12C-IP10   | GT12K-IP10              | GT12KC-IP10  | GT16-IP10                                                     | GT16K-IP10 |
| 3,378  | 2,606  | 3,0 | 3,00         | 15    | GT12-IP15                                                                                              | GT12C-IP15   | GT12K-IP15              | GT12KC-IP15  | GT16-IP15                                                     | GT16K-IP15 |
| 3,962  | 3,088  | 3,5 | 3,00         | 20    | GT12-IP20                                                                                              | GT12C-IP20   | GT12K-IP20              | GT12KC-IP20  | GT16-IP20                                                     | GT16K-IP20 |
| 4,559  | 3,492  | 4,0 | 3,50         | 25    | GT12-IP25                                                                                              | GT12C-IP25   | GT12K-IP25              | GT12KC-IP25  | GT16-IP25                                                     | GT16K-IP25 |
| 5,651  | 4,391  | 4,5 | 3,50         | 30    | GT12-IP30                                                                                              | GT12C-IP30   | GT12K-IP30              | GT12KC-IP30  | GT16-IP30                                                     | GT16K-IP30 |
| 6,807  | 5,283  | 5,0 | 4,00         | 40    | GT12-IP40                                                                                              | GT12C-IP40   | GT12K-IP40              | GT12KC-IP40  | GT16-IP40                                                     | GT16K-IP40 |
| 7,975  | 6,141  | 5,5 | 5,20         | 45    | GT12-IP45                                                                                              | GT12C-IP45   | GT12K-IP45              | GT12KC-IP45  | GT16-IP45                                                     | GT16K-IP45 |
| 8,991  | 6,923  | 6,0 | 6,00         | 50    | GT12-IP50                                                                                              | GT12C-IP50   | GT12K-IP50              | GT12KC-IP50  | GT16-IP50                                                     | GT16K-IP50 |
| 11,385 | 8,766  | 7,0 | 7,00         | 55    | GT12-IP55                                                                                              | GT12C-IP55   | GT12K-IP55              | GT12KC-IP55  | GT16-IP55                                                     | GT16K-IP55 |
| 13,442 | 10,350 | 7,5 | 7,50         | 60    | GT12-IP60                                                                                              | GT12C-IP60   | GT12K-IP60              | GT12KC-IP60  | GT16-IP60                                                     | GT16K-IP60 |
| 15,773 | 12,156 | 8,0 | 8,00         | 70    | /                                                                                                      | /            | /                       | /            | GT16-IP70                                                     | GT16K-IP70 |

|        |        |     |              |       | per brocciatori serie<br>for broaching heads<br><b>BR-G16M / BRC-G16M</b> |              |                         |              | per brocciatori serie<br>for broaching heads<br><b>BR-G16L / BRC-G16L</b> |              |                         |              |
|--------|--------|-----|--------------|-------|---------------------------------------------------------------------------|--------------|-------------------------|--------------|---------------------------------------------------------------------------|--------------|-------------------------|--------------|
|        |        |     |              |       | ød = 16 / L = 35                                                          |              |                         |              | ød = 16 / L = 45                                                          |              |                         |              |
| A      | B      | C   | H max<br>(*) | TORX® | ARTICOLO (materiale)<br>ITEM (material)                                   |              |                         |              | ARTICOLO (materiale)<br>ITEM (material)                                   |              |                         |              |
|        |        |     |              |       | HSS                                                                       |              | SINTERIZZATO / SINTERED |              | HSS                                                                       |              | SINTERIZZATO / SINTERED |              |
|        |        |     |              |       | Standard                                                                  | Ref. / Cool. | Standard                | Ref. / Cool. | Standard                                                                  | Ref. / Cool. | Standard                | Ref. / Cool. |
| 3,962  | 3,088  | 3,5 | 3,00         | 20    | GT16M-IP20                                                                | GT16MC-IP20  | GT16MK-IP20             | GT16MKC-IP20 | /                                                                         | /            | /                       | /            |
| 4,559  | 3,492  | 4,0 | 3,50         | 25    | GT16M-IP25                                                                | GT16MC-IP25  | GT16MK-IP25             | GT16MKC-IP25 |                                                                           |              |                         |              |
| 5,651  | 4,391  | 4,5 | 3,50         | 30    | GT16M-IP30                                                                | GT16MC-IP30  | GT16MK-IP30             | GT16MKC-IP30 | GT16L-IP30                                                                | GT16LC-IP30  | GT16LK-IP30             | GT16LKC-IP30 |
| 6,807  | 5,283  | 5,0 | 4,00         | 40    | GT16M-IP40                                                                | GT16MC-IP40  | GT16MK-IP40             | GT16MKC-IP40 | GT16L-IP40                                                                | GT16LC-IP40  | GT16LK-IP40             | GT16LKC-IP40 |
| 7,975  | 6,141  | 5,5 | 5,20         | 45    | GT16M-IP45                                                                | GT16MC-IP45  | GT16MK-IP45             | GT16MKC-IP45 | GT16L-IP45                                                                | GT16LC-IP45  | GT16LK-IP45             | GT16LKC-IP45 |
| 8,991  | 6,923  | 6,0 | 6,00         | 50    | GT16M-IP50                                                                | GT16MC-IP50  | GT16MK-IP50             | GT16MKC-IP50 | GT16L-IP50                                                                | GT16LC-IP50  | GT16LK-IP50             | GT16LKC-IP50 |
| 11,385 | 8,766  | 7,0 | 7,00         | 55    | GT16M-IP55                                                                | GT16MC-IP55  | GT16MK-IP55             | GT16MKC-IP55 | GT16L-IP55                                                                | GT16LC-IP55  | GT16LK-IP55             | GT16LKC-IP55 |
| 13,442 | 10,350 | 7,5 | 7,50         | 60    | GT16M-IP60                                                                | GT16MC-IP60  | GT16MK-IP60             | GT16MKC-IP60 | GT16L-IP60                                                                | GT16LC-IP60  | GT16LK-IP60             | GT16LKC-IP60 |
| 15,773 | 12,156 | 8,0 | 8,00         | 70    | GT16M-IP70                                                                | GT16MC-IP70  | GT16MK-IP70             | GT16MKC-IP70 | GT16L-IP70                                                                | GT16LC-IP70  | GT16LK-IP70             | GT16LKC-IP70 |

(\*) = quota di profondità MAX standard su impronta di vite commerciale / Measure of MAX standard depth imprint by commercial screws

In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18  
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



# Brocche per profili esterni

## Surface broaches

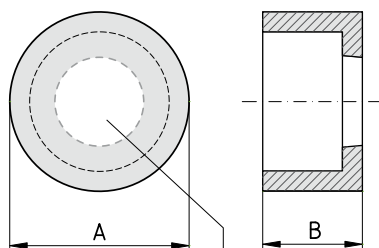


**I** Sono costituite da dischi in acciaio di robusta struttura che riportano al centro il foro con il profilo da ottenere. Possiamo realizzare una vasta gamma di figure al centro del foro della broccia sulla base di specifiche tecniche del Cliente. La realizzazione di un profilo esterno non richiede uno specifico brocciatore ma semplicemente un adattatore applicabile ad un qualsiasi nostro brocciatore. Sull'adattatore viene fissata la matrice della broccia per l'esterno.

**GB** They consist of sturdy steel disks with a hole at the centre duly shaped according to the profile to be obtained. Following the technical details supplied by the Customer we can produce surface broaches for a wide range of profiles. To use surface broaches there is no need to have a particular broaching head. In fact the broach can be installed on every kind of broaching head thanks to a special adaptor.

In questi articoli possiamo eseguire i seguenti rivestimenti: WONDER, TiN, INOX PLUS e ZIRINOS > vedi pag.18

Available coatings for the up above mentioned items: WONDER, TiN, INOX PLUS and ZIRINOS > see page 18



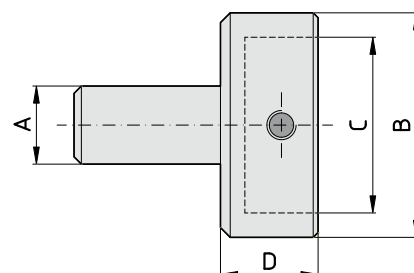
Profili eseguiti su richiesta del cliente. Specificare caratteristiche e misure necessarie.

Profiles performed upon customer request. Specify necessary characteristics and measures.

| ARTICOLO (materiale) - ITEM (material) |                            | per brocciatori/<br>for broaching heads | A<br>(toll. g6)          | B  |
|----------------------------------------|----------------------------|-----------------------------------------|--------------------------|----|
| HSS                                    | SINTERIZZATO /<br>SINTERED |                                         |                          |    |
| GE5-□                                  | GEK5-□                     | G5                                      | a richiesta / on request | 7  |
| GE8-□                                  | GEK8-□                     | G8                                      |                          |    |
| GE8A-□                                 | GEK8A-□                    | G8A                                     |                          |    |
| GE12-□                                 | GEK12-□                    | G12                                     | 32                       | 20 |
| GE12A-□                                | GEK12A-□                   | G12A                                    |                          |    |
| GE16-□                                 | GEK16-□                    | G16 / G16M                              | 36                       | 20 |
| GE16L-□                                | GEK16L-□                   | G16L                                    | 42                       | 20 |
| GE25-□                                 | GEK25-□                    | G25                                     | 62                       | 25 |

## ADATTATORI PER BROCCHE PER PROFILI ESTERNI

### ADAPTERS FOR SURFACE BROACHES



| ARTICOLO<br>ITEM | A<br>(toll. g6)          | B  | C<br>(toll. H7) | D  |
|------------------|--------------------------|----|-----------------|----|
| A-05             | a richiesta / on request |    |                 |    |
| A-08             | 8                        | 26 | 16              | 18 |
| A-08-A           | 8                        | 26 | 16              | 30 |
| A-12             | 12                       | 42 | 32              | 18 |
| A-12-A           | 12                       | 42 | 32              | 53 |
| A-16             | 16                       | 46 | 36              | 18 |
| A-16-L           | 16                       | 54 | 42              | 40 |
| A-16-M           | 16                       | 46 | 36              | 28 |
| A-25             | 25                       | 79 | 62              | 65 |

# Brocche speciali per profili interni/esterni

## Special broaches for inner/outer profiles

### I BROCCE SPECIALI PER PROFILI DENTATI

Si possono realizzare per cave interne e profili esterni  
Se siete interessati a brocche speciali, non comprese nel presente Catalogo Generale, inviateci questa pagina debitamente compilata.  
Sarà nostra cura rispondervi con la massima tempestività.

### GB SPECIAL BROACHES FOR TOOTHED PROFILES

We can produce special broaches for holes or surface profiles.  
If you did not find in this Catalogue the kind of broach you are interested in, please fill this page in and send it to us. We will answer you as soon as possible.

#### BRIGHETTI MECCANICA S.r.L.

Tel./Phone.: 0039 51 728168 E-mail: info@brighetti.it

Data/Date: \_\_\_\_\_

Società/Company: \_\_\_\_\_

Indirizzo/Address: \_\_\_\_\_

Tel./Phone: \_\_\_\_\_

E-mail: \_\_\_\_\_

Contattare il Sig./Attention: \_\_\_\_\_

Tel./Phone: \_\_\_\_\_

Materiale da brocciare/Material to broach: \_\_\_\_\_ Q.tà/Q.ty: \_\_\_\_\_

Indicare se si tratta di broccia  
Special broach for

☐ per interni  
Internal form

☐ per esterni  
External form

#### Broccia a denti scanalati

N° denti (Z) \_\_\_\_\_  
Diametro Interno (DI) \_\_\_\_\_  
Diametro Esterno (DE) \_\_\_\_\_  
Misura del dente su DE (L1) \_\_\_\_\_  
Misura del dente su DI (L2) \_\_\_\_\_  
\*Raggio di punta (R1) \_\_\_\_\_

#### Spline broach

N° of teeth (Z) \_\_\_\_\_  
Inside diameter (DI) \_\_\_\_\_  
Outside diameter (DE) \_\_\_\_\_  
Measure of the teeth on DE (L1) \_\_\_\_\_  
Measure of the teeth on DI (L2) \_\_\_\_\_  
\*Internal Radius (R1) \_\_\_\_\_

#### Broccia a denti evolventi

N° denti (Z) \_\_\_\_\_  
Diametro Interno (DI) \_\_\_\_\_  
Diametro Esterno (DE) \_\_\_\_\_  
Modulo (M) \_\_\_\_\_  
Angolo di pressione \_\_\_\_\_  
\*Raggio di punta (R1) \_\_\_\_\_

#### Involute broach

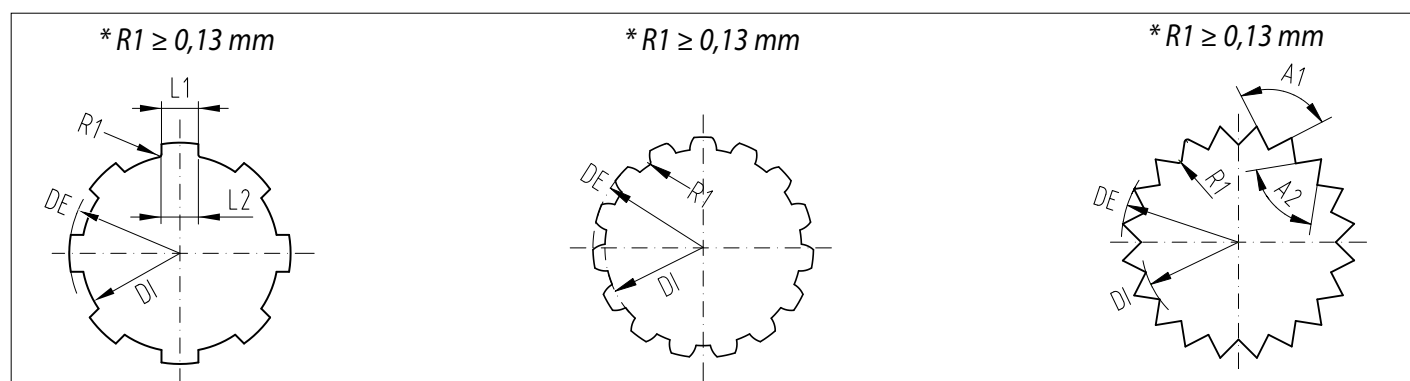
N° of teeth (Z) \_\_\_\_\_  
Inside diameter (DI) \_\_\_\_\_  
Outside diameter (DE) \_\_\_\_\_  
Module (M) \_\_\_\_\_  
Pressure angle \_\_\_\_\_  
\*Internal Radius (R1) \_\_\_\_\_

#### Broccia dentata

N° denti (Z) \_\_\_\_\_  
Diametro Interno (DI) \_\_\_\_\_  
Diametro Esterno (DE) \_\_\_\_\_  
Raggio di punta (R1) \_\_\_\_\_  
Angolo fra i denti (A1) \_\_\_\_\_  
Angolo del dente (A2) \_\_\_\_\_

#### Serration broach

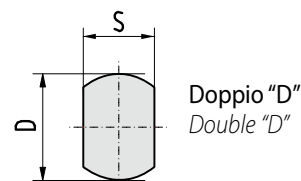
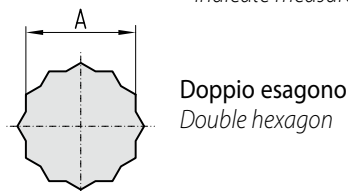
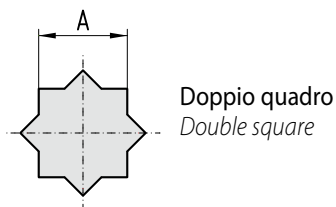
N° of teeth (Z) \_\_\_\_\_  
Inside diameter (DI) \_\_\_\_\_  
Outside diameter (DE) \_\_\_\_\_  
Internal Radius (R1) \_\_\_\_\_  
Angle between teeth (A1) \_\_\_\_\_  
Angle of the tooth (A2) \_\_\_\_\_



## Brocche speciali derivate dalle brocche STD

### STD derived special broaches

**I** Per questo tipo di figura è sufficiente indicare le quote "A" per il doppio quadro o doppio esagono, e le quote "D" e "S" per il doppio "D".



**GB** For double hexagon or double square broaches it is enough to indicate measure "A", while for double "D" broaches it is necessary to indicate measures "D" and "S".

## Brocche speciali per viti antimanomissione

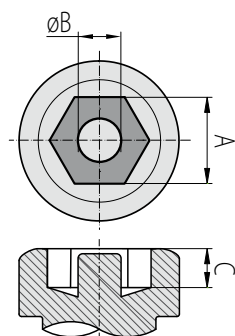
### Special broaches to anti-tamper screws



**I** Produciamo brocche speciali che creano nella testa della vite una figura poligonale Esagonale (G...V) o Torx® (G...TV) con al centro un perno. L'accesso a questo tipo di viti antimanomissione, è consentito solo con chiavi speciali. Sono disponibili a magazzino alcune misure di brocche speciali, come da seguente tabella.

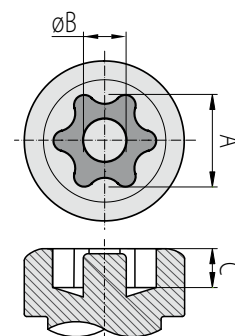
**GB** Anti-tamper screws is a special configuration of the screw heads that it's can be try only with a special keys for their handling. We can supply special broaches and milling tools, to obtain the hollow and the pin to the polygonal figure Hexagonal (G...V) or Torx (G...TV) Check, with the tables below, which kind of profile may to get.

| ARTICOLO (materiale)<br>ITEM (material) | A | øB  | C   |
|-----------------------------------------|---|-----|-----|
| HSS                                     |   |     |     |
| G □ V-E-3                               | 3 | 1,5 | 2,5 |
| G □ V-E-4                               | 4 | 2   | 2,4 |
| G □ V-E-5                               | 5 | 2,8 | 3,5 |
| G □ V-E-6                               | 6 | 2,9 | 4   |
| G □ V-E-8                               | 8 | 3,9 | 6   |



specificare la misura della broccia (es.: G8V..., G12V..., ecc)  
specify the size of the broach (es.: G8V..., G12V..., etc)

| ARTICOLO (materiale)<br>ITEM (material) | A   | øB  | C   |
|-----------------------------------------|-----|-----|-----|
| HSS                                     |     |     |     |
| GT □ V - T15                            | T15 | 1   | 1,4 |
| GT □ V - T20                            | T20 | 1,4 | 1,6 |
| GT □ V - T25                            | T25 | 1,8 | 2   |
| GT □ V - T27                            | T27 | 2   | 2,4 |
| GT □ V - T30                            | T30 | 2,5 | 3   |
| GT □ V - T40                            | T40 | 3   | 3,3 |
| GT □ V - T45                            | T45 | 3,2 | 4   |
| GT □ V - T50                            | T50 | 3,6 | 4,5 |



specificare la misura della broccia (es.: GT8V..., GT12V..., ecc)  
specify the size of the broach (es.: GT8V..., GT12V..., etc)

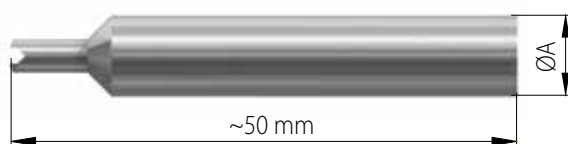
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

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## Mini fresa a carotare per cava viti antimanomissione

Mini milling core drilling for anti tampering screws



| ARTICOLO<br>ITEM | per vite<br>for screw | ØA (mm) |
|------------------|-----------------------|---------|
| FG8-T            | Torx                  | 8       |
| FG8-E            | Esag. / Hex.          | 8       |

# Calibri e tamponi di controllo G/NG per profili poligonali interni, esterni e per sedi di chiavette

*G/NG plug gauges and ring gauges for internal and external polygonal profile and for keyway slots*



## I LA NOSTRA NUOVA ESPERIENZA:

### STRUMENTI DI CONTROLLO PER PROFILI POLIGONALI

Proseguendo nella politica di innovazione e aggiornamento del nostro parco macchine, ci siamo attrezzati con i più recenti strumenti di controllo per la gestione dei processi di produzione in grado di operare nel campo delle attrezzature per il controllo dimensionale del pezzo.

Il primo passaggio è stato l'acquisizione di **programmi software 3D** per lo sviluppo di disegni esecutivi bidimensionali e tridimensionali in un ambiente di massima precisione.

Il sistema software 3D ci consente di offrire ai nostri Clienti un servizio di assistenza gratuita nella fase di definizione dimensionale dell'utensile (brocche, inserti, calibri e tamponi di controllo) mediante progettazione del disegno esecutivo da sottoporre all'approvazione del Cliente.

Il secondo passaggio è stato l'acquisizione di un **proiettore di profili che combina le tecnologie di misura ottica/video ad**

## GB

### OUR NEW EXPERIENCE:

#### CONTROL INSTRUMENTS FOR POLYGONAL PROFILES

*Continuing with our policy of innovation and updating of our machinery pool, we equipped ourselves with the most state-of-the-art control instruments for the management of production processes able to operate in the field of piece dimensional control equipment.*

*The first step was the acquisition of **3D software programs** for the development of bi-dimensional and three-dimensional executive drawings in an environment requiring absolute precision.*

*The 3D software system allows us to offer our Clients a free support service at the tool's dimensional definition stage (broaching heads, inserts, gauges and control buffers) by designing the executive drawing to be submitted to the Client for approval.*

*The second stage was the acquisition of a **profile projector, which combines high-resolution optical/video measurement technologies**, guaranteeing a "measurement uncertainty" of  $\mu\text{m}$ .*

*The metrological software allows acquisition of the profile image*

**alta risoluzione** garantendo una "incertezza di misura" di 2 µm.

Il software metrologico permette l'acquisizione immagine del profilo dell'utensile lavorato e la creazione di un report contenente le caratteristiche dimensionali complete di tolleranze e la gestione di file dxf per misure comparative mediante sovrapposizione dei due profili.



of the tool worked and the generation of a report containing the dimensional characteristics complete of tolerances as well as the management of a dxf file for comparative measurements by the two profiles being superimposed.

## **CALIBRI E TAMPONI DI CONTROLLO G/NG PER PROFILI POLIGONALI INTERNI E ESTERNI**

Dopo tanti anni di esperienza maturata sul mercato degli utensili per la brocciatura/stozzatura abbiamo pensato di metterci al servizio di tutte le problematiche relative ai sistemi di controllo per profili poligonali interni/esterni secondo le normative nazionali e internazionali vigenti.

Per questo abbiamo realizzato una serie di calibri a tampone G/NG per profili TORX, esagonali, quadri e per sedi di chiavette.

Ci siamo cimentati anche nel campo dei profili scanalati sia con anelli G/NG per il controllo di alberi scanalati a denti diritti ed evoluti e tamponi G/NG per assicurare una corretta costruzione dimensionale del profilo interno.

Normalmente per i calibri a tampone di controllo realizzati secondo le normative più in uso sono disponibili a magazzino. Negli altri casi vengono prodotti nelle forme e caratteristiche dimensionali secondo le esigenze del Cliente.

A richiesta possiamo fornire la certificazione di taratura.

La costruzione di tamponi di controllo nei profili TORX e TORX PLUS per interni ed esterni, tamponi esagonali, tamponi quadri e tamponi per il controllo sedi di chiavette, avvengono nel rispetto delle tolleranze previste dalle normative ISO-DIN.

I tamponi: esagonali, quadri e gli altri poligoni possono avere dimensioni e tolleranze speciali, tali prodotti esulano dalle normative internazionali, e sono quindi definite dai clienti.

Per quanto riguardano i tamponi ad anello per profili esterni e tamponi per profili interni, relativamente alla verifica di profili scanalati o dentature, la costruzione degli stessi avviene nel rispetto della misure richieste dai clienti o dalle normative internazionali.

Tali anelli e calibri, per lo più, vengono eseguiti singolarmente per verificare la correttezza esecuzioni dei profili.



## **G/NG PLUG GAUGES AND RING GAUGES FOR INTERNAL AND EXTERNAL POLYGONAL PROFILES**

After many years of experience gained in the market of tooling for broaching/slotting, we thought of making ourselves available for all problems relative to control systems for internal/external polygonal profiles according to ruling national and international standards.

For this, we implemented a series of G/NG plug gauges for hexagonal and square TORX profiles and for keyway slots.

We also engaged in the field of splined profiles both with G/NG rings gauges for the control of straight teeth, splined and evolving shafts and G/NG plug gauges to ensure a correct dimensional construction of the internal profile.

Normally, for control plug gauges and ring gauges implemented according to the most used regulations these are available ex stock. In other cases, they get constructed with the forms and dimensional characteristics according to Client needs.

On request, we are able to provide a calibration certification.

Plug gauges for TORX, TORX PLUS, hexagons, squares and keyways are compliant with ISO-DIN standards.

Plug gauges: hexagonal, square and all other polygons it's has special dimensions and tolerances, these products doesn't follows the international standards, and are therefore defined by the customers.

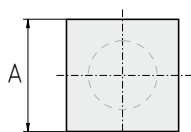
As regards the ring gauges to external profiles and plug gauges to internal profiles, They will control spline or toothings profiles, the manufacturing of its is on compliance with the measures required by customers or international standards.

These rings and gauges, obviously, it's executed alone to verifies the correct executions of the profiles.



## CALIBRI A TAMPONE DI CONTROLLO PER PROFILI POLIGONALI

### PLUG GAUGES FOR POLYGONAL PROFILES



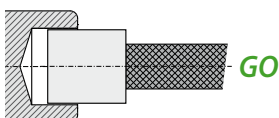
#### TAMPONE DI CONTROLLO PER IMPRONTA QUADRA

PLUG GAUGE  
FOR SQUARE MARK

Il tampone "passa" DEVE entrare liberamente nell'impronta poligonale di tipo quadro alla profondità stabilita secondo la normativa di riferimento.

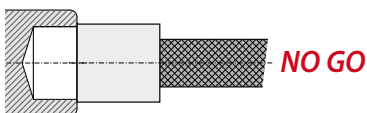
| tamponi quadri<br>passa-non-passa<br>normati ISO<br>Square plug gauges<br>GO - NO GO compliant<br>with ISO standard |       |
|---------------------------------------------------------------------------------------------------------------------|-------|
| A                                                                                                                   | A     |
| TQ 1                                                                                                                | TQ 10 |
| TQ 1,5                                                                                                              | TQ 11 |
| TQ 2                                                                                                                | TQ 12 |
| TQ 2,5                                                                                                              | TQ 13 |
| TQ 3                                                                                                                | TQ 14 |
| TQ 3,5                                                                                                              | TQ 15 |
| TQ 4                                                                                                                | TQ 16 |
| TQ 4,5                                                                                                              | TQ 17 |
| TQ 5                                                                                                                | TQ 18 |
| TQ 5,5                                                                                                              | TQ 19 |
| TQ 6                                                                                                                | TQ 20 |
| TQ 7                                                                                                                | TQ 21 |
| TQ 8                                                                                                                | TQ 22 |
| TQ 9                                                                                                                |       |

The "GO" plug gauge MUST freely enter the square-type polygonal mark at the depth established according to the reference standard.



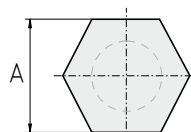
Il tampone "non passa" NON deve entrare nell'impronta poligonale di tipo quadro.

The "NO GO" plug gauge MUST NOT enter the square-type polygonal mark.



Le misure NON indicate nella tabella sono da considerarsi speciali.

The measures NOT indicated on the table are to be considered special.



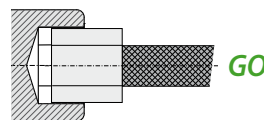
#### TAMPONE DI CONTROLLO PER IMPRONTA ESAGONALE

PLUG GAUGE  
FOR HEXAGONAL MARK

Il tampone "passa" DEVE entrare liberamente nell'impronta poligonale di tipo esagonale alla profondità stabilita secondo la normativa di riferimento.

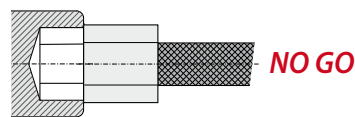
The "GO" plug gauge MUST freely enter the hexagonal-type polygonal mark at the depth established according to the reference standard.

| tamponi esagonali<br>passa-non-passa<br>normati ISO<br>Hexagonal plug gauges<br>GO - NO GO compliant<br>with ISO standard |       |
|---------------------------------------------------------------------------------------------------------------------------|-------|
| A                                                                                                                         | A     |
| TE 1,5                                                                                                                    | TE 10 |
| TE 2                                                                                                                      | TE 12 |
| TE 2,5                                                                                                                    | TE 14 |
| TE 3                                                                                                                      | TE 17 |
| TE 4                                                                                                                      | TE 19 |
| TE 5                                                                                                                      | TE 22 |
| TE 6                                                                                                                      | TE 27 |
| TE 8                                                                                                                      |       |



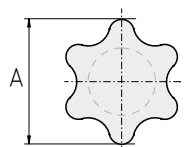
Il tampone "non passa" NON deve entrare nell'impronta poligonale di tipo esagonale.

The "NO GO" plug gauge MUST NOT enter the hexagonal-type polygonal mark.



Le misure NON indicate nella tabella sono da considerarsi speciali.

The measures NOT indicated on the table are to be considered special.



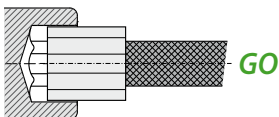
#### TAMPONE DI CONTROLLO PER IMPRONTA TORX (\*)

PLUG GAUGE  
FOR TORX MARK (\*)

Il tampone "passa" DEVE entrare liberamente nell'impronta poligonale di tipo Torx alla profondità stabilita secondo la normativa di riferimento.

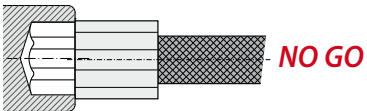
The "GO" plug gauge MUST freely enter the Torx-type polygonal mark at the depth established according to the reference standard.

| tamponi Torx<br>passa-non-passa<br>normati ISO<br>Torx plug gauges<br>GO - NO GO compliant<br>with ISO standard |       |
|-----------------------------------------------------------------------------------------------------------------|-------|
| A                                                                                                               | A     |
| TT 5                                                                                                            | TT 30 |
| TT 6                                                                                                            | TT 40 |
| TT 8                                                                                                            | TT 45 |
| TT 10                                                                                                           | TT 50 |
| TT 15                                                                                                           | TT 55 |
| TT 20                                                                                                           | TT 60 |
| TT 25                                                                                                           | TT 70 |
| TT 27                                                                                                           |       |



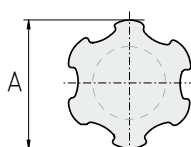
Il tampone "non passa" NON deve entrare nell'impronta poligonale di tipo Torx.

The "NO GO" plug gauge MUST NOT enter the Torx-type polygonal mark.



Le misure NON indicate nella tabella sono da considerarsi speciali.

The measures NOT indicated on the table are to be considered special.



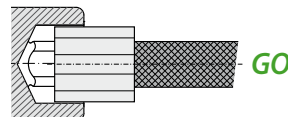
#### TAMPONE DI CONTROLLO PER IMPRONTA TORX-PLUS (\*)

PLUG GAUGE  
FOR TORX-PLUS MARK (\*)

Il tampone "passa" DEVE entrare liberamente nell'impronta poligonale di tipo Torx Plus alla profondità stabilita secondo la normativa di riferimento.

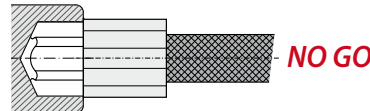
The "GO" plug gauge MUST freely enter the Torx Plus-type polygonal mark at the depth established according to the reference standard.

| tamponi Torx-Plus<br>passa-non-passa<br>normati ISO<br>Torx Plus plug gauges<br>GO - NO GO compliant<br>with ISO standard |        |
|---------------------------------------------------------------------------------------------------------------------------|--------|
| A                                                                                                                         | A      |
| TIP 6                                                                                                                     | TIP 40 |
| TIP 8                                                                                                                     | TIP 45 |
| TIP 10                                                                                                                    | TIP 50 |
| TIP 15                                                                                                                    | TIP 55 |
| TIP 20                                                                                                                    | TIP 60 |
| TIP 25                                                                                                                    | TIP 70 |
| TIP 30                                                                                                                    |        |



Il tampone "non passa" NON deve entrare nell'impronta poligonale di tipo Torx-Plus.

The "NO GO" plug gauge MUST NOT enter the Torx Plus-type polygonal mark.



Le misure NON indicate nella tabella sono da considerarsi speciali.

The measures NOT indicated on the table are to be considered special.

\* Per i calibri TORX® e TORX®-PLUS il profilo della figura si sviluppa in 5 lobi anziché 6 lobi. Questa soluzione contribuisce a migliorare sensibilmente la precisione e la stessa finitura del tampone.

\* For TORX® and TORX®-PLUS gauges, the figure profile is developed in 5 lobes instead of 6 lobes. This solution helps to sensitively improve the accuracy and finish of the gauge itself.

## TAMPONI DI CONTROLLO PER SEDI DI CHIAVETTE PLUG GAUGES FOR KEYWAY SLOTS

Possiamo realizzare questa tipologia di tamponi  
con dimensione a richiesta  
*We can manufacture plug gauges  
with dimensions on request*



## ANELLE DI CONTROLLO PER PROFILI DENTATI ESTERNI RING GAUGES FOR EXTERNAL TOOTHED PROFILES

Misure a richiesta / Measures at request

| tampone "GO"<br>"GO" ring gauges | tampone "NO GO"<br>"NO GO" ring gauges |
|----------------------------------|----------------------------------------|
| TES-G                            | TES-NG                                 |



Possiamo realizzare tamponi di controllo per dentature secondo le normative internazionali più diffuse.  
*We can manufacture ring gauges for tothing according to the most common international standards.*

# Sistemi di stozzatura per macchine CNC + VMC

*Slotting tools for CNC + VMC machines*



**PORTA INSERTO (UT)**

INSERT HOLDER (UT)

>> pag.60

**INSERTO**  
INSERT

>> pag.58

## I INFORMAZIONI GENERALI

Il **sistema di stozzatura BRIGHETTI MECCANICA** è stato progettato per l'esecuzione, sia su macchine stozzatrici tradizionali che su CNC e VMC, di sedi di chiavette e dentature interne/esterne di dimensioni e lunghezze anche importanti. Questa opportunità permette di evitare sprechi di tempo e perdita di precisione nelle lavorazioni dovuti alla ripresa del pezzo su altre macchine.

Il sistema di stozzatura BRIGHETTI MECCANICA è estremamente versatile e si adatta ad ogni tipo di chiavetta e dentatura/ingranaggio grazie alla possibilità di sagomare l'inserto con il profilo desiderato.

## GB GENERAL INFORMATION

**Brighetti Meccanica slotting system** has been designed to machine keyway and spline on both traditional slotting machine and CNC or VMC. Thanks to these tools it's not necessary to change machine to get the keyway or the spline done, with a huge save in time and precision of the part.

Brighetti Meccanica slotting system is extremely versatile as the insert can be shaped following any customer's need, even if the keyway or spline have large sizes and length.



**misura metrica / metric size**

| ARTICOLO<br>ITEM (material) | TOLLER.<br>TOLER. | L1<br>min - max<br>(mm) | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | L6<br>(mm) | UTENSILE<br>HOLDER      |
|-----------------------------|-------------------|-------------------------|------------|------------|------------|------------|------------|-------------------------|
| SINTERIZ.                   |                   |                         |            |            |            |            |            |                         |
| IBM-02                      | P9                | 1,994 - 1,969           | 5          | 6,5        | 5,7        | 6          | 1,09       | HBM-2<br>HBML-2         |
|                             | P9 SM             |                         |            |            |            |            | 1,09       |                         |
|                             | H7                | 2,000 - 2,009           |            |            |            |            | 1,09       |                         |
|                             | H7 SM             |                         |            |            |            |            | 1,09       |                         |
|                             | D10               | 2,020 - 2,060           |            |            |            |            | 1,09       |                         |
|                             | C11               | 2,060 - 2,120           |            |            |            |            | 1,09       |                         |
| IBM-03                      | P9                | 2,994 - 2,958           | 6,08       | 6,5        | 5,5        | 7,5        | 2          | HBM-3<br>HBML-3         |
|                             | P9 SM             |                         |            |            |            |            | 1,42       |                         |
|                             | H7                | 3,000 - 3,012           |            |            |            |            | 2          |                         |
|                             | H7 SM             |                         |            |            |            |            | 1,42       |                         |
|                             | D10               | 3,020 - 3,060           |            |            |            |            | 2          |                         |
|                             | C11               | 3,060 - 3,120           |            |            |            |            | 2          |                         |
| IBM-04                      | P9                | 3,988 - 3,658           | 6,08       | 7          | 5,5        | 8          | 2,6        | HBM-4<br>HBML-4         |
|                             | P9 SM             |                         |            |            |            |            | 2,07       |                         |
|                             | H7                | 4,000 - 4,012           |            |            |            |            | 2,6        |                         |
|                             | H7 SM             |                         |            |            |            |            | 2,07       |                         |
|                             | D10               | 4,030 - 4,078           |            |            |            |            | 2,6        |                         |
|                             | C11               | 4,070 - 4,145           |            |            |            |            | 2,6        |                         |
| IBM-05                      | P9                | 4,988 - 4,958           | 6,08       | 7          | 5,5        | 8          | 3          | HBM-5<br>HBML-5         |
|                             | P9 SM             |                         |            |            |            |            | 2,74       |                         |
|                             | H7                | 5,000 - 5,012           |            |            |            |            | 3          |                         |
|                             | H7 SM             |                         |            |            |            |            | 2,74       |                         |
|                             | D10               | 5,030 - 5,078           |            |            |            |            | 3          |                         |
|                             | C11               | 5,070 - 5,145           |            |            |            |            | 3          |                         |
| IBM-06                      | P9                | 5,988 - 5,958           | 10,08      | 9          | 7,1        | 13,5       | 4          | HBM-6<br>HBML-6         |
|                             | P9 SM             |                         |            |            |            |            | 3          |                         |
|                             | H7                | 6,000 - 6,012           |            |            |            |            | 4          |                         |
|                             | H7 SM             |                         |            |            |            |            | 3          |                         |
|                             | D10               | 6,030 - 6,078           |            |            |            |            | 4          |                         |
|                             | C11               | 6,070 - 6,145           |            |            |            |            | 4          |                         |
| IBM-08                      | P9                | 7,985 - 7,949           | 10,08      | 9          | 7,1        | 13,5       | 4,5        | HBM-8<br>HBML-8         |
|                             | P9 SM             |                         |            |            |            |            | 3,78       |                         |
|                             | H7                | 8,000 - 8,015           |            |            |            |            | 4,5        |                         |
|                             | H7 SM             |                         |            |            |            |            | 3,78       |                         |
|                             | D10               | 8,040 - 8,098           |            |            |            |            | 4,5        |                         |
|                             | C11               | 8,080 - 8,170           |            |            |            |            | 4,5        |                         |
| IBM-10                      | P9                | 9,985 - 9,949           | 13,1       | 14         | 10,6       | 18,5       | 6          | HBM-10<br>HBML-10       |
|                             | P9 SM             |                         |            |            |            |            | 3,88       |                         |
|                             | H7                | 10,000 - 10,015         |            |            |            |            | 3,88       |                         |
|                             | H7 SM             |                         |            |            |            |            | 6          |                         |
|                             | D10               | 10,040 - 10,098         |            |            |            |            | 6          |                         |
|                             | C11               | 10,080 - 10,170         |            |            |            |            | 6          |                         |
| IBM-12                      | P9                | 11,982 - 11,939         | 13,1       | 14         | 10,6       | 18,5       | 6,5        | HBM-12<br>HBML-12       |
|                             | P9 SM             |                         |            |            |            |            | 3,89       |                         |
|                             | H7                | 12,000 - 12,018         |            |            |            |            | 6,5        |                         |
|                             | H7 SM             |                         |            |            |            |            | 3,89       |                         |
|                             | D10               | 12,050 - 12,120         |            |            |            |            | 6,5        |                         |
|                             | C11               | 12,095 - 12,205         |            |            |            |            | 6,5        |                         |
| IBM-14                      | P9                | 13,982 - 13,939         | 18         | 14         | 10,6       | 22         | 7          | HBM-14/16<br>HBML-14/16 |
|                             | P9 SM             |                         |            |            |            |            | 4,71       |                         |
|                             | H7                | 14,000 - 14,018         |            |            |            |            | 7          |                         |
|                             | H7 SM             |                         |            |            |            |            | 4,71       |                         |
|                             | D10               | 14,050 - 14,120         |            |            |            |            | 7          |                         |
|                             | C11               | 14,095 - 14,205         |            |            |            |            | 7          |                         |
| IBM-16                      | P9                | 15,982 - 15,939         | 18         | 14         | 10,6       | 22         | 8          | HBM-14/16<br>HBML-14/16 |
|                             | P9 SM             |                         |            |            |            |            | 5,53       |                         |
|                             | H7                | 16,000 - 16,018         |            |            |            |            | 8          |                         |
|                             | H7 SM             |                         |            |            |            |            | 5,53       |                         |
|                             | D10               | 16,050 - 16,120         |            |            |            |            | 8          |                         |
|                             | C11               | 16,095 - 16,205         |            |            |            |            | 8          |                         |
| IBM-18                      | P9 *              | 17,939 - 17,982         | 26         | 18         | 11         | 30         | 9          | HBM-18/25<br>HBML-18/25 |
|                             | P9 SM *           |                         |            |            |            |            | 5,67       |                         |
|                             | H7 *              | 18,000 - 18,018         |            |            |            |            | 9          |                         |
|                             | H7 SM *           |                         |            |            |            |            | 5,67       |                         |
|                             | D10 *             | 18,050 - 18,120         |            |            |            |            | 9          |                         |
|                             | C11 *             | 18,095 - 18,205         |            |            |            |            | 9          |                         |
| IBM-20                      | P9 *              | 19,978 - 19,926         | 26         | 18         | 11         | 30         | 10         | HBM-18/25<br>HBML-18/25 |
|                             | P9 SM *           |                         |            |            |            |            | 6,29       |                         |
|                             | H7 *              | 20,000 - 20,021         |            |            |            |            | 10         |                         |
|                             | H7 SM *           |                         |            |            |            |            | 6,29       |                         |
|                             | D10 *             | 20,065 - 20,149         |            |            |            |            | 10         |                         |
|                             | C11 *             | 20,110 - 20,240         |            |            |            |            | 10         |                         |

segue / continued &gt;&gt;

**I INSERTI MONOTAGLIANTE PER SEDI CHIAVETTE (IBM)**

Sono realizzati in acciaio sinterizzato **con rivestimento ZRN**. Il tipo di acciaio e il rivestimento conferiscono all'inserto una alta durezza che permette di resistere ottimamente ai ripetuti urti che questo tipo di lavorazione comporta.

E' importante rilevare che per taluni inserti, in particolare per inserti con **tolleranze P9 e H7**, si possono realizzare smussi di 0,2x45° (versione "SM"). In questo modo durante e contemporaneamente la esecuzione della sede della chiave viene eliminata ogni tipo di bava formatasi durante la lavorazione. La particolare forma degli inserti consente di eseguire 2/3 volte la riaffilatura con conseguente riduzione dei costi. Le misure degli inserti espressi nella fig. 1 sono sempre disponibili a magazzino. Gli inserti sono prodotti in misura metrica e in pollici.

**GB ONE CUTTING EDGE FOR INTERNAL KEYWAY (IBM)**

Inserts are made in sintered steel **with a ZRN coating**. The material and the coating give to the insert a great hardness and let it bear in the best way possible the great number of hits that are typical of this kind of machining. It's important to point out that for some inserts (in particular inserts with **P9 and H7 tolerances**), a 0,2x45° chamfer can be realized ("SM" versions). This chamfer prevents the flash from forming during the machining of the keyseat.

Inserts can be re-grinded twice or three times. This feature reduces production costs. All insert sizes indicated in picture 1 are always available in stock. Inserts are produced with metric and inches sizes.

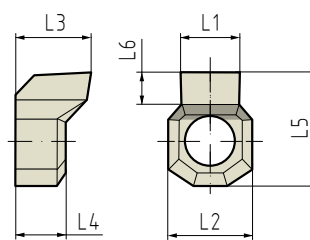
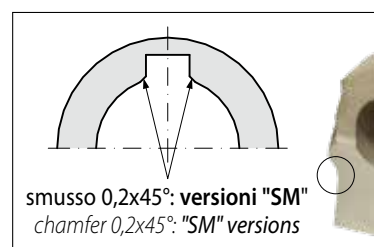


figura 1 - INSERTO PER SEDI DI CHIAVETTE (IBM)

picture 1 - INSERT FOR INTERNAL KEYWAY (IBM)

**Rivestimento standard ZRN.**  
A richiesta disponibili altri rivestimenti.

**Standard ZRN coating**  
Other coverings available on request.

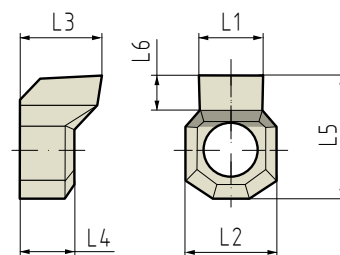
| ARTICOLO<br>ITEM (material) | TOLLER.<br>TOLER. | L1<br>min - max<br>(mm) | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | L6<br>(mm) | UTENSILE<br>HOLDER |                |
|-----------------------------|-------------------|-------------------------|------------|------------|------------|------------|------------|--------------------|----------------|
| SINTERIZ.                   |                   |                         |            |            |            |            |            |                    |                |
| IBM-22                      | P9 *              | 21,978 - 21,926         | 26         | 18         | 11         | 30         | 11         | HBM-<br>18/25      |                |
|                             | P9 SM *           |                         |            |            |            |            | 6,79       |                    |                |
|                             | H7 *              |                         |            |            |            |            | 11         |                    |                |
|                             | H7 SM *           | 22,000 - 22,021         |            |            |            |            | 6,79       |                    | HBML-<br>18/25 |
|                             | D10 *             | 22,065 - 22,149         |            |            |            |            | 11         |                    |                |
|                             | C11 *             | 22,110 - 22,240         |            |            |            |            | 11         |                    |                |
| IBM-25                      | P9 *              | 24,978 - 24,926         | 26         | 18         | 11         | 30         | 12         | HBM-<br>18/25      |                |
|                             | P9 SM *           |                         |            |            |            |            | 7,02       |                    |                |
|                             | H7 *              |                         |            |            |            |            | 12         |                    |                |
|                             | H7 SM *           | 25,000 - 25,021         |            |            |            |            | 7,02       |                    | HBML-<br>18/25 |
|                             | D10 *             | 25,065 - 25,149         |            |            |            |            | 12         |                    |                |
|                             | C11 *             | 25,110 - 25,240         |            |            |            |            | 12         |                    |                |

\* Per queste misure di inserti si consiglia di suddividere la lavorazione in due fasi: sgrossatura e finitura.

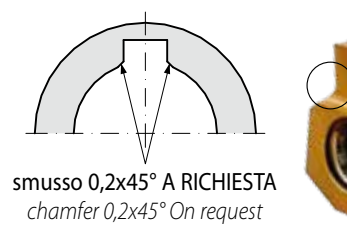
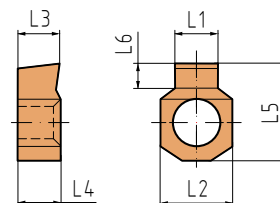
\* For these insert sizes, we recommend machining in two steps: roughing and finishing.

misura in pollici / inches size

| ARTICOLO<br>ITEM (material) | TOLLER.<br>TOLER. | L1<br>min - max<br>(mm) | L1<br>min - max<br>(inch) | L2<br>(inch) | L3<br>(inch) | L4<br>(inch) | L5<br>(inch) | L6<br>(inch) | UTENSILE<br>HOLDER      |
|-----------------------------|-------------------|-------------------------|---------------------------|--------------|--------------|--------------|--------------|--------------|-------------------------|
| SINTERIZ.                   |                   |                         |                           |              |              |              |              |              |                         |
| IBM-3/32"                   | P9                | 2,350 - 2,375           | 0,093 - 0,094             | 0,197        | 0,236        | 0,205        | 0,256        | 0,055        | HBM-2<br>HBML-2         |
|                             | H7                | 2,381 - 2,391           | 0,094 - 0,095             |              |              |              |              |              |                         |
|                             | D10               | 2,401 - 2,441           | 0,095 - 0,096             |              |              |              |              |              |                         |
|                             | C11               | 2,441 - 2,501           | 0,096 - 0,098             |              |              |              |              |              |                         |
| IBM-1/8"                    | P9                | 3,133 - 3,163           | 0,123 - 0,125             | 0,239        | 0,276        | 0,205        | 0,315        | 0,091        | HBM-3<br>HBML-3         |
|                             | H7                | 3,175 - 3,187           | 0,123 - 0,125             |              |              |              |              |              |                         |
|                             | D10               | 3,205 - 3,253           | 0,126 - 0,128             |              |              |              |              |              |                         |
|                             | C11               | 3,245 - 3,320           | 0,128 - 0,131             |              |              |              |              |              |                         |
| IBM-5/32"                   | P9                | 3,926 - 3,969           | 0,155 - 0,156             | 0,239        | 0,276        | 0,205        | 0,315        | 0,114        | HBM-4<br>HBML-4         |
|                             | H7                | 3,968 - 3,981           | 0,156 - 0,157             |              |              |              |              |              |                         |
|                             | D10               | 3,998 - 4,047           | 0,157 - 0,159             |              |              |              |              |              |                         |
|                             | C11               | 4,038 - 4,114           | 0,159 - 0,162             |              |              |              |              |              |                         |
| IBM-3/16"                   | P9                | 4,720 - 4,750           | 0,186 - 0,187             | 0,239        | 0,276        | 0,217        | 0,315        | 0,130        | HBM-5<br>HBML-5         |
|                             | H7                | 4,762 - 4,775           | 0,187 - 0,188             |              |              |              |              |              |                         |
|                             | D10               | 4,792 - 4,841           | 0,189 - 0,191             |              |              |              |              |              |                         |
|                             | C11               | 4,832 - 4,908           | 0,190 - 0,193             |              |              |              |              |              |                         |
| IBM-1/4"                    | P9                | 6,299 - 6,335           | 0,248 - 0,249             | 0,396        | 0,354        | 0,280        | 0,531        | 0,159        | HBM-6<br>HBML-6         |
|                             | H7                | 6,350 - 6,365           | 0,250 - 0,251             |              |              |              |              |              |                         |
|                             | D10               | 6,390 - 6,448           | 0,252 - 0,254             |              |              |              |              |              |                         |
|                             | C11               | 6,430 - 6,520           | 0,253 - 0,257             |              |              |              |              |              |                         |
| IBM-9/32"                   | P9                | 7,092 - 7,129           | 0,279 - 0,281             | 0,396        | 0,354        | 0,280        | 0,531        | 0,169        | HBM-8<br>HBML-8         |
|                             | H7                | 7,143 - 7,159           | 0,281 - 0,282             |              |              |              |              |              |                         |
|                             | D10               | 7,183 - 7,242           | 0,283 - 0,285             |              |              |              |              |              |                         |
|                             | C11               | 7,223 - 7,314           | 0,284 - 0,288             |              |              |              |              |              |                         |
| IBM-5/16"                   | P9                | 7,886 - 7,923           | 0,310 - 0,312             | 0,396        | 0,354        | 0,280        | 0,531        | 0,188        | HBM-8<br>HBML-8         |
|                             | H7                | 7,937 - 7,953           | 0,312 - 0,313             |              |              |              |              |              |                         |
|                             | D10               | 7,977 - 8,036           | 0,314 - 0,316             |              |              |              |              |              |                         |
|                             | C11               | 8,017 - 8,108           | 0,316 - 0,319             |              |              |              |              |              |                         |
| IBM-3/8"                    | P9                | 9,474 - 9,510           | 0,373 - 0,374             | 0,516        | 0,551        | 0,417        | 0,728        | 0,250        | HBM-10<br>HBML-10       |
|                             | H7                | 9,525 - 9,540           | 0,375 - 0,376             |              |              |              |              |              |                         |
|                             | D10               | 9,529 - 9,623           | 0,377 - 0,379             |              |              |              |              |              |                         |
|                             | C11               | 9,605 - 9,695           | 0,378 - 0,382             |              |              |              |              |              |                         |
| IBM-7/16"                   | P9                | 11,051 - 11,095         | 0,435 - 0,437             | 0,516        | 0,551        | 0,417        | 0,728        | 0,250        | HBM-12<br>HBML-12       |
|                             | H7                | 11,112 - 11,131         | 0,437 - 0,438             |              |              |              |              |              |                         |
|                             | D10               | 11,162 - 11,233         | 0,439 - 0,442             |              |              |              |              |              |                         |
|                             | C11               | 11,207 - 11,318         | 0,441 - 0,446             |              |              |              |              |              |                         |
| IBM-1/2"                    | P9                | 12,639 - 12,682         | 0,498 - 0,499             | 0,516        | 0,551        | 0,417        | 0,728        | 0,300        | HBM-12<br>HBML-12       |
|                             | H7                | 12,700 - 12,718         | 0,500 - 0,501             |              |              |              |              |              |                         |
|                             | D10               | 12,750 - 12,820         | 0,502 - 0,505             |              |              |              |              |              |                         |
|                             | C11               | 12,795 - 12,905         | 0,504 - 0,508             |              |              |              |              |              |                         |
| IBM-9/16"                   | P9                | 14,226 - 14,270         | 0,560 - 0,562             | 0,709        | 0,551        | 0,417        | 0,866        | 0,275        | HBM-14/16<br>HBML-14/16 |
|                             | H7                | 14,287 - 14,306         | 0,562v0,563               |              |              |              |              |              |                         |
|                             | D10               | 14,337 - 14,408         | 0,564 - 0,567             |              |              |              |              |              |                         |
|                             | C11               | 14,382 - 14,493         | 0,566 - 0,571             |              |              |              |              |              |                         |
| IBM-5/8"                    | P9                | 15,814 - 15,857         | 0,623 - 0,624             | 0,709        | 0,551        | 0,417        | 0,866        | 0,315        | HBM-14/16<br>HBML-14/16 |
|                             | H7                | 15,875 - 15,893         | 0,625 - 0,626             |              |              |              |              |              |                         |
|                             | D10               | 15,925 - 15,995         | 0,627 - 0,630             |              |              |              |              |              |                         |
|                             | C11               | 15,970 - 16,080         | 0,629 - 0,633             |              |              |              |              |              |                         |
| IBM-3/4"                    | P9                | 18,976 - 19,028         | 0,747 - 0,749             | 1,024        | 0,709        | 0,433        | 1,181        | 0,393        | HBM-18/25<br>HBML-18/25 |
|                             | H7                | 19,050 - 19,071         | 0,750 - 0,751             |              |              |              |              |              |                         |
|                             | D10               | 19,115 - 19,199         | 0,753 - 0,756             |              |              |              |              |              |                         |
|                             | C11               | 19,160 - 19,290         | 0,754 - 0,759             |              |              |              |              |              |                         |



## I INSERTI IN METALLO DURO GB HARD METAL INSERTS



Rivestimento standard HDP RED  
Standard HDP RED coating

MISURE IN POLLICI a richiesta  
INCHES SIZES on request

misura metrica / metric size

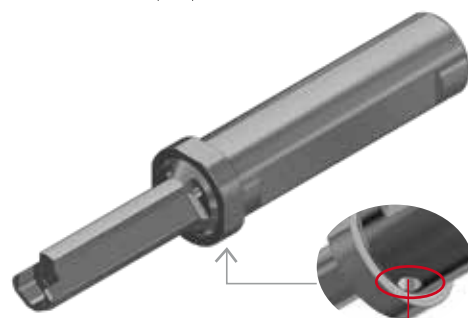
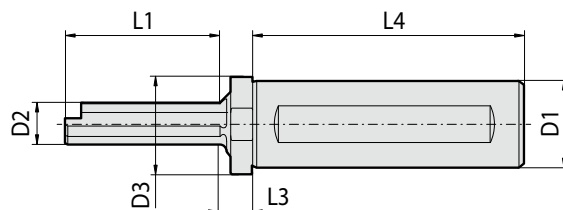
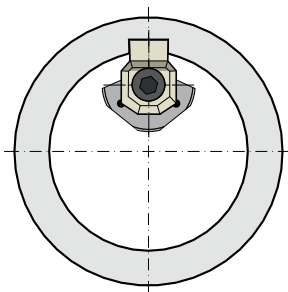
| ARTICOLO<br>ITEM (material) | TOLLER.<br>TOLER. | L1<br>min - max<br>(mm) | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | L6<br>(mm) | UTENSILE<br>HOLDER |
|-----------------------------|-------------------|-------------------------|------------|------------|------------|------------|------------|--------------------|
| HARD METAL                  |                   |                         |            |            |            |            |            |                    |
| IHM-03                      | H7                | 3,000 - 3,009           | 6,08       | 4,7        | 4,7        | 7          | 2          | HBM-3<br>HBML-3    |
|                             | D10               | 3,020 - 3,060           |            |            |            |            |            |                    |
|                             | C11               | 3,060 - 3,120           |            |            |            |            |            |                    |
| IHM-04                      | H7                | 4,000 - 4,012           | 6,08       | 4,7        | 4,7        | 8          | 3          | HBM-4<br>HBML-4    |
|                             | D10               | 4,030 - 4,078           |            |            |            |            |            |                    |
|                             | C11               | 4,070 - 4,145           |            |            |            |            |            |                    |
| IHM-05                      | H7                | 5,000 - 5,012           | 6,08       | 4,7        | 4,7        | 8          | 3,2        | HBM-4<br>HBML-4    |
|                             | D10               | 5,030 - 5,078           |            |            |            |            |            |                    |
|                             | C11               | 5,070 - 5,145           |            |            |            |            |            |                    |
| IHM-06                      | H7                | 6,000 - 6,012           | 10,08      | 6,3        | 6,3        | 13,8       | 4,9        | HBM-6<br>HBML-6    |
|                             | D10               | 6,030 - 6,078           |            |            |            |            |            |                    |
|                             | C11               | 6,070 - 6,145           |            |            |            |            |            |                    |

| ARTICOLO<br>ITEM (material) | TOLLER.<br>TOLER. | L1<br>min - max<br>(mm) | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | L6<br>(mm) | UTENSILE<br>HOLDER |
|-----------------------------|-------------------|-------------------------|------------|------------|------------|------------|------------|--------------------|
| HARD METAL                  |                   |                         |            |            |            |            |            |                    |
| IHM-08                      | H7                | 8,000 - 8,015           | 10,08      | 6,3        | 6,3        | 13,8       | 5,2        | HBM-8<br>HBML-8    |
|                             | D10               | 8,040 - 8,098           |            |            |            |            |            |                    |
|                             | C11               | 8,080 - 8,170           |            |            |            |            |            |                    |
| IHM-10                      | H7                | 10,000 - 10,015         | 13,1       | 9,4        | 9,4        | 18,5       | 6,2        | HBM-10<br>HBML-10  |
|                             | D10               | 10,040 - 10,098         |            |            |            |            |            |                    |
|                             | C11               | 10,080 - 10,170         |            |            |            |            |            |                    |
| IHM-12                      | H7                | 12,000 - 12,018         | 13,1       | 9,4        | 9,4        | 18,5       | 7,2        | HBM-12<br>HBML-12  |
|                             | D10               | 12,050 - 12,120         |            |            |            |            |            |                    |
|                             | C11               | 12,095 - 12,205         |            |            |            |            |            |                    |

segue / continued >>

# Utensili per MACCHINE A CONTROLLO

## Tools for CNC MACHINES



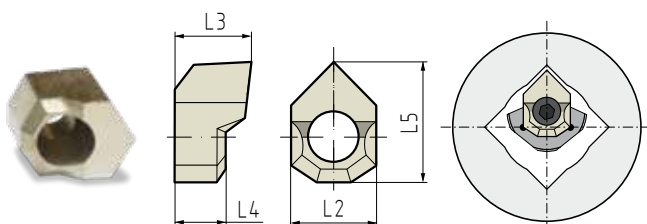
A richiesta, foro per spina per macchine stozzatrici (articolo speciale)  
On request, pin hole for slotting machines (special production)

| ARTICOLO-ITEM<br>(material) | GAMBO<br>SHANK | L1<br>(mm) | L3<br>(mm) | L4<br>(mm) | D1<br>(mm) | D2<br>(mm) | D3<br>(mm) | rif.<br>IBM | foro minimo -<br>minimum hole<br>(mm) |
|-----------------------------|----------------|------------|------------|------------|------------|------------|------------|-------------|---------------------------------------|
| HARDENED                    |                |            |            |            |            |            |            |             |                                       |
| HBM-225                     | 25             | 26         | 12         | 90         | 25         | 6          | 30         | 02          | 7,4                                   |
| HBML-225                    | 25-L           | 35         |            | 100        | 32         |            | 38         |             |                                       |
| HBM-232                     | 32             | 26         |            |            |            |            |            |             |                                       |
| HBML-232                    | 32-L           | 35         |            |            |            |            |            |             |                                       |
| HBM-325                     | 25             | 31         | 12         | 90         | 25         | 7,25       | 30         | 03          | 8,5                                   |
| HBML-325                    | 25-L           | 41         |            | 100        | 32         |            | 38         |             |                                       |
| HBM-332                     | 32             | 31         |            |            |            |            |            |             |                                       |
| HBML-332                    | 32-L           | 41         |            |            |            |            |            |             |                                       |
| HBM-425                     | 25             | 41         | 12         | 90         | 25         | 10         | 30         | 04          | 10,5                                  |
| HBML-425                    | 25-L           | 57         |            | 100        | 32         |            | 38         |             |                                       |
| HBM-432                     | 32             | 41         |            |            |            |            |            |             |                                       |
| HBML-432                    | 32-L           | 57         |            |            |            |            |            |             |                                       |
| HBM-525                     | 25             | 47         | 12         | 90         | 25         | 12         | 30         | 05          | 12,5                                  |
| HBML-525                    | 25-L           | 67         |            | 100        | 32         |            | 38         |             |                                       |
| HBM-532                     | 32             | 47         |            |            |            |            |            |             |                                       |
| HBML-532                    | 32-L           | 67         |            |            |            |            |            |             |                                       |
| HBM-625                     | 25             | 57         | 12         | 90         | 25         | 16         | 30         | 06          | 17                                    |
| HBML-625                    | 25-L           | 82         |            | 100        | 32         |            | 38         |             |                                       |
| HBM-632                     | 32             | 57         |            |            |            |            |            |             |                                       |
| HBML-632                    | 32-L           | 82         |            |            |            |            |            |             |                                       |
| HBM-825                     | 25             | 69         | 12         | 90         | 25         | 20         | 30         | 08          | 21                                    |
| HBML-825                    | 25-L           | 101        |            | 100        | 32         |            | 38         |             |                                       |
| HBM-832                     | 32             | 69         |            |            |            |            |            |             |                                       |
| HBML-832                    | 32-L           | 101        |            |            |            |            |            |             |                                       |
| HBM-1025                    | 25             | 86         | 12         | 90         | 25         | 25         | 34         | 10          | 27,5                                  |
| HBML-1025                   | 25-L           | 127        |            | 100        | 32         |            | 38         |             |                                       |
| HBM-1032                    | 32             | 86         |            |            |            |            |            |             |                                       |
| HBML-1032                   | 32-L           | 127        |            |            |            |            |            |             |                                       |
| HBM-1225                    | 25             | 105        | 12         | 90         | 25         | 30         | 39         | 12          | 31,5                                  |
| HBML-1225                   | 25-L           | 162        |            | 100        | 32         |            | 39         |             |                                       |
| HBM-1232                    | 32             | 105        |            |            |            |            |            |             |                                       |
| HBML-1232                   | 32-L           | 162        |            |            |            |            |            |             |                                       |
| HBM-14/1625                 | 25             | 129        | 12         | 90         | 25         | 35         | 43         | 14/16       | 36,5                                  |
| HBML-14/1625                | 25-L           | 183        |            | 100        | 32         |            | 43         |             |                                       |
| HBM-14/1632                 | 32             | 129        |            |            |            |            |            |             |                                       |
| HBML-14/1632                | 32-L           | 183        |            |            |            |            |            |             |                                       |
| HBM-18/2532                 | 32             | 143        | 12         | 100        | 32         | 40         | 45         | 18/25       | 44,5                                  |
| HBML-18/2532                | 32-L           | 205        |            |            |            |            |            |             |                                       |

## I INSERTI PER PROFILI QUADRI INTERNI

Questa serie di utensili serve per la realizzazione di quadri interni. Ciascun inserto può realizzare quadri di dimensioni diverse (es: l'inserto IBM-Q-27/37 può realizzare quadri dal 27 al 37mm).

La **misura del pre-foro** dovrà essere calcolata secondo questa formula: misura del quadro (mm) x 1,06 e quindi, nel caso di un quadro 12, il diametro del pre-foro sarà  $12 \times 1,06 = 12,72$  mm.



## GB INSERTS FOR INTERNAL SQUARE PROFILES

This series of tools is used to produce internal squares. Each insert can make squares of different sizes (e.g. insert IBM-Q-27/37 can make squares from 27 to 37mm A/F).

The **size of the bore** should be calculated following this formula: size of the square x 1,06. For instance for a 12 mm square the bore should be  $12 \times 1,06 = 12,72$  mm.

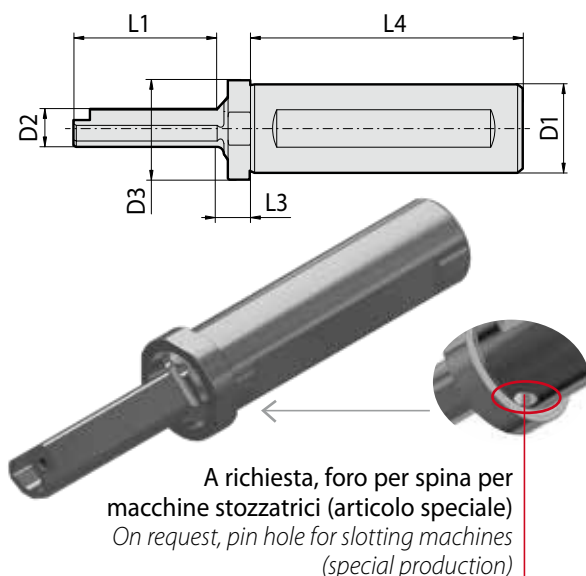
| ARTICOLO-ITEM<br>(materiale - material) | AREA DI LAVORO<br>WORKING AREA |    |        | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | UTENSILE<br>HOLDER |
|-----------------------------------------|--------------------------------|----|--------|------------|------------|------------|------------|--------------------|
|                                         | SINTERIZ.                      | mm | inches |            |            |            |            |                    |
| IBM-Q-08/10                             | min                            | 8  | 0,314  | 6,08       | 7          | 5,3        | 7          | HBM-Q-08/10        |
|                                         | max                            | 10 | 0,393  |            |            |            |            |                    |
| IBM-Q-10/13                             | min                            | 10 | 0,393  | 6,08       | 7          | 5,3        | 7,5        | HBM-Q-10/13        |
|                                         | max                            | 13 | 0,511  |            |            |            |            |                    |
| IBM-Q-13/16                             | min                            | 13 | 0,511  | 10,08      | 8          | 6,5        | 12         | HBM-Q-13/16        |
|                                         | max                            | 16 | 0,629  |            |            |            |            |                    |
| IBM-Q-16/19                             | min                            | 16 | 0,629  | 10,08      | 8          | 6,5        | 12,5       | HBM-Q-16/19        |
|                                         | max                            | 19 | 0,748  |            |            |            |            |                    |
| IBM-Q-19/27                             | min                            | 19 | 0,748  | 13,1       | 13         | 10,5       | 17         | HBM-Q-19/27        |
|                                         | max                            | 27 | 1,062  |            |            |            |            |                    |
| IBM-Q-27/37                             | min                            | 27 | 1,062  | 18         | 14         | 11         | 22         | HBM-Q-27/37        |
|                                         | max                            | 37 | 1,456  |            |            |            |            |                    |
| IBM-Q-37/50                             | min                            | 37 | 1,456  | 26         | 18         | 11         | 30         | HBM-Q-37/50        |
|                                         | max                            | 50 | 1,968  |            |            |            |            |                    |

## I PORTA-INSERTO PER PROFILI QUADRI INTERNI

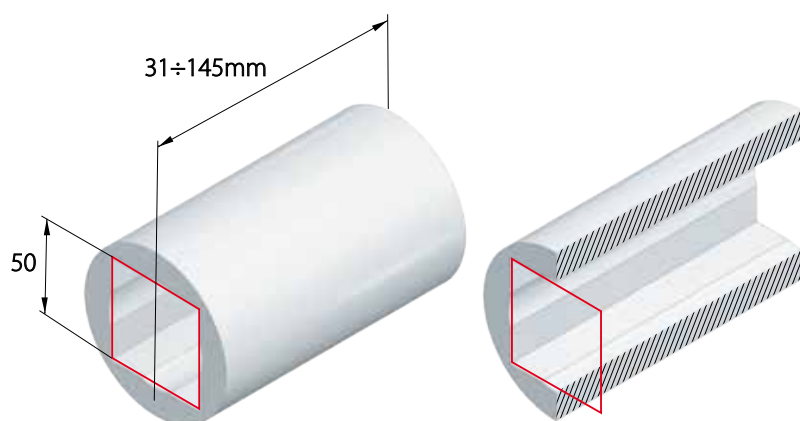
È realizzato in acciaio bonificato e temprato: in questo modo viene garantita una ottima resistenza alla compressione.

## GB INSERT HOLDER FOR INTERNAL SQUARE PROFILES

The insert holder is made in hardened and quenched steel: these treatments assure a great resistance to compression.



| ARTICOLO-ITEM<br>(materiale - material) | GAMBO<br>SHANK | L1<br>(mm) | L3<br>(mm) | L4<br>(mm) | D1<br>(mm) | D2<br>(mm) | D3<br>(mm) | foro minimo -<br>minimum hole<br>(mm) |
|-----------------------------------------|----------------|------------|------------|------------|------------|------------|------------|---------------------------------------|
| HBMQ-08/10                              | 25             | 31         | 12         | 90         | 25         | 7,25       | 30         | 8                                     |
|                                         | 32             |            |            | 100        | 32         |            | 38         |                                       |
| HBMQ-10/13                              | 25             | 41         | 12         | 90         | 25         | 8,6        | 30         | 9,5                                   |
|                                         | 32             |            |            | 100        | 32         |            | 38         |                                       |
| HBMQ-13/16                              | 25             | 51         | 12         | 90         | 25         | 12         | 30         | 13                                    |
|                                         | 32             |            |            | 100        | 32         |            | 38         |                                       |
| HBMQ-16/19                              | 25             | 53         | 12         | 90         | 25         | 15         | 30         | 15,5                                  |
|                                         | 32             |            |            | 100        | 32         |            | 38         |                                       |
| HBMQ-19/27                              | 25             | 87         | 12         | 90         | 25         | 18,50      | 30         | 18,5                                  |
|                                         | 32             |            |            | 100        | 32         |            | 38         |                                       |
| HBMQ-27/37                              | 25             | 103        | 12         | 90         | 25         | 25         | 35         | 26,5                                  |
|                                         | 32             |            |            | 100        | 32         |            | 38         |                                       |
| HBMQ-37/50                              | 32             | 145        | 12         | 100        | 32         | 35         | 45         | 26,5                                  |



Per materiali particolarmente tenaci (HRC>30) possiamo fornire inserti e porta-inserti per realizzare figure quadre di dimensioni più piccole.  
For particularly hard materials (HRC > 30) we can supply inserts and insert holders to make squares of smaller dimensions.

## I INSERTI PER PROFILI ESAGONALI INTERNI

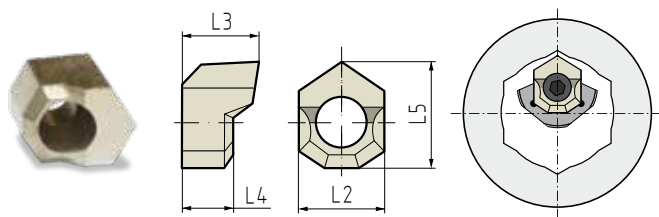
Questa serie di utensili serve per la realizzazione di esagoni interni. Ciascun inserto può realizzare esagoni di dimensioni diverse (es: l'inserto IBM-E-28/37 può realizzare esagoni dal 28 al 37mm).

La **misura del pre-foro** dovrà essere calcolata secondo questa formula: misura dell'esagono (mm) x 1,03 e quindi, nel caso di un esagono 12, il calcolo sarà:  $12 \times 1,03 = 12,36$  mm

## GB INSERTS FOR INTERNAL HEXAGONAL PROFILES

This series of tools is used to produce internal hexagons. Each insert can make hexagons of different sizes (e.g. insert IBM-E-28/37 can produce hexagons from 28 to 37mm A/F).

The **size of the bore** should be calculated following this formula: size of the hexagon x 1,03. For instance for a 12 mm hexagon the bore should be  $12 \times 1,03 = 12,36$  mm.



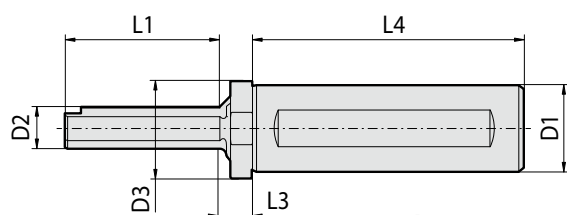
| ARTICOLO-ITEM<br>(materiale - material) | AREA DI LAVORO<br>WORKING AREA |           | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | UTENSILE<br>HOLDER |
|-----------------------------------------|--------------------------------|-----------|------------|------------|------------|------------|--------------------|
|                                         | SINTERIZ.                      | mm inches |            |            |            |            |                    |
| IBM-E-09/11                             | min                            | 9 0,354   | 6,08       | 7          | 5,3        | 7,5        | HBM-E-09/11        |
|                                         | max                            | 11 0,433  |            |            |            |            |                    |
| IBM-E-11/17                             | min                            | 11 0,433  | 6,08       | 7          | 5,3        | 8          | HBM-E-11/17        |
|                                         | max                            | 17 0,669  |            |            |            |            |                    |
| IBM-E-17/28                             | min                            | 17 0,669  | 10,08      | 9          | 6,5        | 13,5       | HBM-E-17/28        |
|                                         | max                            | 28 1,102  |            |            |            |            |                    |
| IBM-E-28/37                             | min                            | 28 1,102  | 13,1       | 14         | 10,5       | 18,5       | HBM-E-28/37        |
|                                         | max                            | 37 1,456  |            |            |            |            |                    |
| IBM-E-37/45                             | min                            | 37 1,456  | 18         | 14         | 11         | 22         | HBM-E-37/45        |
|                                         | max                            | 45 1,771  |            |            |            |            |                    |
| IBM-E-45/70                             | min                            | 45 1,771  | 26         | 16         | 11         | 30         | HBM-E-45/70        |
|                                         | max                            | 70 2,755  |            |            |            |            |                    |

## I PORTA-INSERTO PER PROFILI ESAGONALI INTERNI

È realizzato in acciaio bonificato e temprato: in questo modo viene garantita una ottima resistenza alla compressione.

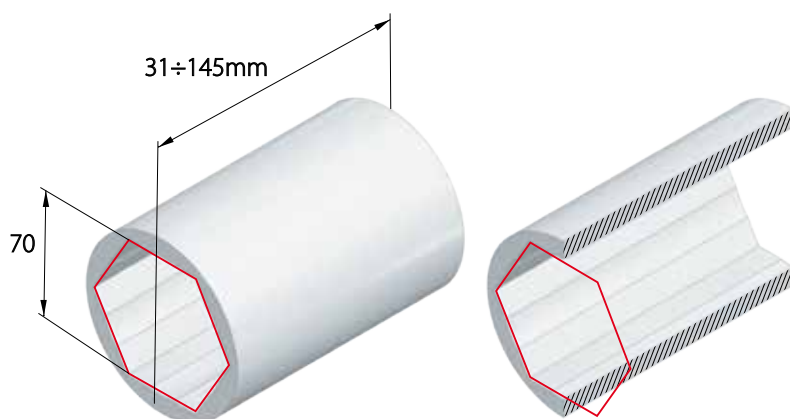
## GB INSERT HOLDER FOR INTERNAL HEXAGONAL PROFILES

The insert holder is made in hardened and quenched steel: these treatments assure a great resistance to compression.



A richiesta, foro per spina per macchine stozzatrici (articolo speciale)  
On request, pin hole for slotting machines (special production)

| ARTICOLO - ITEM<br>(materiale - material) | GAMBO<br>SHANK | L1<br>(mm) | L3<br>(mm) | L4<br>(mm) | D1<br>(mm) | D2<br>(mm) | D3<br>(mm) | foro minimo -<br>minimum hole<br>(mm) |
|-------------------------------------------|----------------|------------|------------|------------|------------|------------|------------|---------------------------------------|
| HARDENED                                  |                |            |            |            |            |            |            |                                       |
|                                           | 25             |            |            |            |            |            |            |                                       |
| HBME-09/11                                | 32             | 31         | 12         | 90<br>100  | 25<br>32   | 8          | 30<br>38   | 8,5                                   |
|                                           |                |            |            |            |            |            |            |                                       |
| HBME-11/17                                | 25             | 41         | 12         | 90<br>100  | 25<br>32   | 10         | 30<br>38   | 10,5                                  |
|                                           | 32             |            |            |            |            |            |            |                                       |
| HBME-17/28                                | 25             | 57         | 12         | 90<br>100  | 25<br>32   | 15         | 30<br>38   | 16                                    |
|                                           | 32             |            |            |            |            |            |            |                                       |
| HBME-28/37                                | 25             | 87         | 12         | 90<br>100  | 25<br>32   | 25         | 35<br>38   | 26                                    |
|                                           | 32             |            |            |            |            |            |            |                                       |
| HBME-37/45                                | 25             | 129        | 12         | 90<br>100  | 25<br>32   | 35         | 45<br>45   | 36,4                                  |
|                                           | 32             |            |            |            |            |            |            |                                       |
| HBME-45/70                                | 32             | 145        | 12         | 100        | 32         | 37         | 45         | 37                                    |



Per materiali particolarmente tenaci (HRC>30) possiamo fornire inserti e porta-inserti per realizzare figure esagonali di dimensioni più piccole.  
For particularly hard materials (HRC> 30) we can supply inserts and insert holders to make hexagons of smaller dimensions.

## **I** ALLINEATORI PER FRESATRICI

Gli allineatori vengono utilizzati su centri di lavoro e su macchine fresatrici al fine di assicurare il corretto montaggio dell'utensile sulla macchina CNC.

Il montaggio consiste nell'avvitare il piattino nella stessa posizione dell'inserto. Grazie alla forma del piattino, dotato di un piano rettilineo, è possibile effettuare, con strumenti di controllo quali il tastatore o il comparatore, un fissaggio corretto rispetto agli assi di riferimento del pezzo da brocciare. Sono prodotti in cinque misure diverse a seconda del tipo di porta-inserto:

**Prodotto fornibile a richiesta / Product available on request**

## **GB** ALIGNMENT PLATES FOR MILLING MACHINES

*Alignment plates are used to assure the correct concentricity between the tools and the piece on a CNC machine.*

*The alignment plate is installed on the holder in the insert-seat; thanks to its shape, it is possible to check the correct alignment with the reference axes, with a simple gauge or a comparator.*

*Alignment plates are available in five different sizes, each suitable for one particular insert holder:*

## **I** FLESSIBILITÀ DEL SISTEMA E TEMPI DI ESECUZIONE LAVORO

La possibilità di applicare inserti delle più diverse misure e forme consente di ottenere profili interni che altrimenti non sarebbe possibile se non a costi elevati.

Si sottolinea che la velocità di taglio e l'incremento per ogni corsa dipendono essenzialmente dal tipo di materiale da lavorare.

Quando non esistono esigenze di produzione di quantità elevate, il sistema di stozzatura è particolarmente indicato per eseguire dentature interne a denti evolventi.

## **GB** SYSTEM FLEXIBILITY AND MACHINING TIME

*The chance to produce inserts with the most different shapes makes it possible to machine inner profiles which can otherwise obtained only at high costs.*

*It is understood that the cutting speed and the cutting increase at every hit depend on the kind of material to machine.*

*When a high quantity production is not required, the slotting tools system can be used to machine inner splines and involute splines.*

## **I** PROGRAMMAZIONE MACCHINA CNC

Per dubbi e/o necessità relativi alla programmazione CNC potete contattarci telefonicamente o via mail.

## **GB** CNC MACHINE TOOL PROGRAMMING

*For doubts and questions regarding the CNC program you can contact us by phone or mail.*

## I VELOCITÀ DI TAGLIO E INCREMENTO DI TAGLIO DA UN PASSAGGIO AL SUCCESSIVO

Di seguito diamo alcune indicazioni relativamente ai seguenti parametri in relazione al materiale da lavorare.

## GB CUTTING SPEED AND CUTTING INCREASE HIT BY HIT

Down below there are our suggestions about machining parameters with regards to the material to machine.

Legenda:

**f** = avanzamento (mm)

**asportazione** (mm)

Legend:

**f** = advancement (mm)

**chip removal** (mm)

| PARAMETRI DI UTILIZZO<br>PER TIPOLOGIA DI INSERTO /<br><br>USAGE PARAMETERS BY TYPES OF INSERT             |                                                                                                                       |                                                                                                                           |                                       | MATERIALE DA LAVORARE / MATERIAL TO WORK |                 |      |      |                                        |                    |                                                                 |                                         |
|------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|---------------------------------------|------------------------------------------|-----------------|------|------|----------------------------------------|--------------------|-----------------------------------------------------------------|-----------------------------------------|
|                                                                                                            |                                                                                                                       |                                                                                                                           |                                       | ALLUMINIO<br>ALUMINUM                    | ACCIAI / STEELS |      |      | ACCIAIO<br>INOX<br>STAINLESS<br>STEELS | GHISA<br>CAST IRON | TITANIO<br>TITANIUM<br>NON<br>CONSIGLIATO<br>NOT<br>RECOMMENDED | OTTONE /<br>BRONZO<br>BRASS /<br>BRONZE |
| codice/code:<br>IBM<br><br>inserti per<br>sede chiavetta<br><i>inserts for internal<br/>keyway</i><br>(mm) | codice/code:<br>IBM-Q<br><br>inserti per<br>quadro interno<br><i>inserts for internal<br/>square profiles</i><br>(mm) | codice/code:<br>IBM-E<br><br>inserti per<br>esagono interno<br><i>inserts for internal<br/>hexagonal profiles</i><br>(mm) | f                                     | 10000                                    | 8000            | 6000 | 5000 | 5000                                   | 6000               | 4500                                                            | 7000                                    |
| 2 - 5                                                                                                      | 8 - 10                                                                                                                | 9 - 11                                                                                                                    | asportazione (mm) / chip removal (mm) | 0,20                                     | 0,18            | 0,08 | 0,05 | 0,05                                   | 0,13               | 0,015                                                           | 0,10                                    |
| 6                                                                                                          | 10 - 13                                                                                                               | 11 - 17                                                                                                                   |                                       | 0,18                                     | 0,15            | 0,07 | 0,04 | 0,04                                   | 0,11               | 0,01                                                            | 0,09                                    |
| 8                                                                                                          | 13 - 16                                                                                                               | 17 - 28                                                                                                                   |                                       | 0,15                                     | 0,14            | 0,06 | 0,04 | 0,04                                   | 0,10               | 0,01                                                            | 0,08                                    |
| 10                                                                                                         | 16 - 19                                                                                                               | 28 - 32                                                                                                                   |                                       | 0,14                                     | 0,12            | 0,05 | 0,04 | 0,04                                   | 0,09               | 0,01                                                            | 0,07                                    |
| 12                                                                                                         | 19 - 27                                                                                                               | 32 - 37                                                                                                                   |                                       | 0,12                                     | 0,10            | 0,05 | 0,03 | 0,03                                   | 0,08               | 0,01                                                            | 0,06                                    |
| 14 - 16                                                                                                    | 27 - 37                                                                                                               | 37 - 45                                                                                                                   |                                       | 0,10                                     | 0,08            | 0,04 | 0,03 | 0,03                                   | 0,07               | 0,01                                                            | 0,05                                    |
| 18                                                                                                         | 37 - 42                                                                                                               | 45 - 57                                                                                                                   |                                       | 0,07                                     | 0,06            | 0,03 | 0,02 | 0,02                                   | 0,05               | 0,01                                                            | 0,03                                    |
| 20 - 25                                                                                                    | 42 - 50                                                                                                               | 57-70                                                                                                                     |                                       | 0,05                                     | 0,05            | 0,02 | 0,02 | 0,02                                   | 0,04               | 0,01                                                            | 0,03                                    |

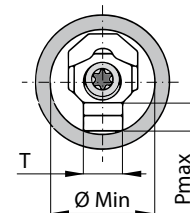
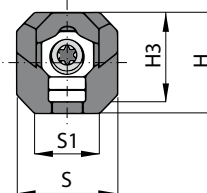
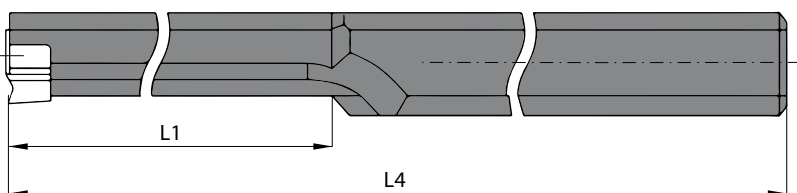
# Utensili per MACCHINE STOZZATRICI

## Tools for SLOTTING MACHINES

### I PORTA INSERTI MONOTAGLIANTI

### GB ONE CUTTING EDGE HOLDER

INSERTO  
IHM / IBM  
INSERT  
IHM / IBM



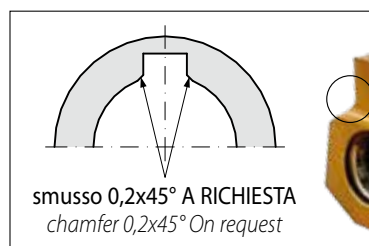
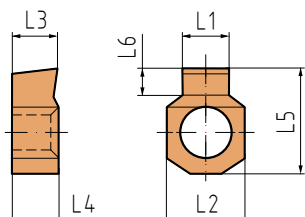
| ARTICOLO<br>ITEM | H<br>(mm) | H3<br>(mm) | S<br>(mm) | S1<br>(mm) | L1<br>(mm) | L4<br>(mm) | T<br>(mm) | Ø Min<br>(mm) | P max<br>(mm) | INSERTO<br>INSERT  |
|------------------|-----------|------------|-----------|------------|------------|------------|-----------|---------------|---------------|--------------------|
| HSZ-03120        | 11,3      | 9,3        | 11,3      | 8,2        | 35         | 165        | 3         | 9,9           | 2             | IHM-03120 / IBM-03 |
| HSZ-04/05120     | 11,3      | 10         | 11,3      | 7          | 60         | 200        | 4         | 10,4          | 3             | IHM-04120 / IBM-04 |
|                  |           |            |           |            |            |            | 5         | 10,8          | 3,2           | IHM-05120 / IBM-05 |
| HSZ-06/08        | 15,5      | 16,2       | 12        | -          | -          | 220        | 6         | 17,9          | 4,9           | IHM-06 / IBM-06    |
|                  |           |            |           |            |            |            | 8         | 18,4          | 5,2           | IHM-08 / IBM-08    |
| HSZ-10/12        | 20,6      | 21,5       | 14        | -          | -          | 250        | 10        | 23,8          | 6,2           | IHM-10 / IBM-10    |
|                  |           |            |           |            |            |            | 12        | 24,2          | 7,2           | IHM-12 / IBM-12    |
| HSZ-14/16        | 35        | 36         | 30        | -          | -          | 350        | 14        | 43            | 8,5           | IHM-14             |
|                  |           |            |           |            |            |            | 16        | 44            |               | IHM-16             |
| HSZ-18/20/22     | 45        | 46         | 35        | -          | -          | 400        | 18        | 53            | 8,5           | IHM-18             |
|                  |           |            |           |            |            |            | 20        | 54            |               | IHM-20             |
|                  |           |            |           |            |            |            | 22        | 55            |               | IHM-22             |

**IHM**  
METALLO DURO  
vedi pag. 65  
**HARD METAL**  
see page 65

**IBM**  
SINTERIZZATO  
vedi pag. 58  
**SINTERED**  
see page 58

### I INSERTI IN METALLO DURO

### GB HARD METAL INSERTS



MISURE IN POLLICI  
a richiesta  
INCHES SIZES  
on request

Rivestimento standard  
HDP RED  
Standard HDP RED coating

misura metrica / metric size

| ARTICOLO<br>ITEM (material) | TOLLER.<br>TOLER. | L1<br>min - max<br>(mm) | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | L6<br>(mm) | UTENSILE<br>HOLDER                                   |
|-----------------------------|-------------------|-------------------------|------------|------------|------------|------------|------------|------------------------------------------------------|
| <b>HARD METAL</b>           |                   |                         |            |            |            |            |            |                                                      |
| <b>IHM-03</b>               | <b>H7</b>         | 3,000 - 3,009           | 6,08       | 4,7        | 4,7        | 7          | 2          | <b>HBM-3</b><br><b>HBML-3</b><br><b>HSZ-3120</b>     |
|                             | <b>D10</b>        | 3,020 - 3,060           |            |            |            |            |            |                                                      |
|                             | <b>C11</b>        | 3,060 - 3,120           |            |            |            |            |            |                                                      |
| <b>IHM-04</b>               | <b>H7</b>         | 4,000 - 4,012           | 6,08       | 4,7        | 4,7        | 8          | 3          | <b>HBM-4</b><br><b>HBML-4</b><br><b>HSZ-04/05120</b> |
|                             | <b>D10</b>        | 4,030 - 4,078           |            |            |            |            |            |                                                      |
|                             | <b>C11</b>        | 4,070 - 4,145           |            |            |            |            |            |                                                      |
| <b>IHM-05</b>               | <b>H7</b>         | 5,000 - 5,012           | 6,08       | 4,7        | 4,7        | 8          | 3,2        | <b>HBM-6</b><br><b>HBML-6</b><br><b>HSZ-06/08</b>    |
|                             | <b>D10</b>        | 5,030 - 5,078           |            |            |            |            |            |                                                      |
|                             | <b>C11</b>        | 5,070 - 5,145           |            |            |            |            |            |                                                      |
| <b>IHM-06</b>               | <b>H7</b>         | 6,000 - 6,012           | 10,08      | 6,3        | 6,3        | 13,8       | 4,9        | <b>HBM-8</b><br><b>HBML-8</b><br><b>HSZ-06/08</b>    |
|                             | <b>D10</b>        | 6,030 - 6,078           |            |            |            |            |            |                                                      |
|                             | <b>C11</b>        | 6,070 - 6,145           |            |            |            |            |            |                                                      |
| <b>IHM-08</b>               | <b>H7</b>         | 8,000 - 8,015           | 10,08      | 6,3        | 6,3        | 13,8       | 5,2        | <b>HBM-10</b><br><b>HBML-10</b><br><b>HSZ-10/12</b>  |
|                             | <b>D10</b>        | 8,040 - 8,098           |            |            |            |            |            |                                                      |
|                             | <b>C11</b>        | 8,080 - 8,170           |            |            |            |            |            |                                                      |
| <b>IHM-10</b>               | <b>H7</b>         | 10,000 - 10,015         | 13,1       | 9,4        | 9,4        | 18,5       | 6,2        | <b>HBM-12</b><br><b>HBML-12</b><br><b>HSZ-10/12</b>  |
|                             | <b>D10</b>        | 10,040 - 10,098         |            |            |            |            |            |                                                      |
|                             | <b>C11</b>        | 10,080 - 10,170         |            |            |            |            |            |                                                      |

| ARTICOLO<br>ITEM (material) | TOLLER.<br>TOLER. | L1<br>min - max<br>(mm) | L2<br>(mm) | L3<br>(mm) | L4<br>(mm) | L5<br>(mm) | L6<br>(mm) | UTENSILE<br>HOLDER                                  |
|-----------------------------|-------------------|-------------------------|------------|------------|------------|------------|------------|-----------------------------------------------------|
| <b>HARD METAL</b>           |                   |                         |            |            |            |            |            |                                                     |
| <b>IHM-12</b>               | <b>H7</b>         | 12,000 - 12,018         | 13,1       | 9,4        | 9,4        | 18,5       | 7,2        | <b>HBM-12</b><br><b>HBML-12</b><br><b>HSZ-10/12</b> |
|                             | <b>D10</b>        | 12,050 - 12,120         |            |            |            |            |            |                                                     |
|                             | <b>C11</b>        | 12,095 - 12,205         |            |            |            |            |            |                                                     |
| <b>IHM-14</b>               | <b>H7</b>         | 14,000 - 14,018         | 20         | 12,5       | 12,5       | 30,2       | 8,8        | <b>HSZ-14/16</b><br><b>HSZ-14/16</b>                |
|                             | <b>D10</b>        | 14,050 - 14,120         |            |            |            |            |            |                                                     |
|                             | <b>C11</b>        | 14,095 - 14,205         |            |            |            |            |            |                                                     |
| <b>IHM-16</b>               | <b>H7</b>         | 16,000 - 16,018         | 20         | 12,5       | 12,5       | 30,2       | 8,8        | <b>HSZ-18/20/22</b>                                 |
|                             | <b>D10</b>        | 16,050 - 16,120         |            |            |            |            |            |                                                     |
|                             | <b>C11</b>        | 16,095 - 16,205         |            |            |            |            |            |                                                     |
| <b>IHM-18</b>               | <b>H7</b>         | 18,000 - 18,018         | 25         | 12,5       | 12,5       | 30,2       | 8,8        | <b>HSZ-10/12</b>                                    |
|                             | <b>D10</b>        | 18,050 - 18,120         |            |            |            |            |            |                                                     |
|                             | <b>C11</b>        | 18,095 - 18,205         |            |            |            |            |            |                                                     |
| <b>IHM-20</b>               | <b>H7</b>         | 20,000 - 20,021         | 25         | 12,5       | 12,5       | 30,2       | 8,8        | <b>HSZ-10/12</b>                                    |
|                             | <b>D10</b>        | 20,065 - 20,149         |            |            |            |            |            |                                                     |
|                             | <b>C11</b>        | 20,110 - 20,240         |            |            |            |            |            |                                                     |
| <b>IHM-22</b>               | <b>H7</b>         | 22,000 - 22,021         | 25         | 12,5       | 12,5       | 30,2       | 8,8        | <b>HSZ-10/12</b>                                    |
|                             | <b>D10</b>        | 22,065 - 22,149         |            |            |            |            |            |                                                     |
|                             | <b>C11</b>        | 22,110 - 22,240         |            |            |            |            |            |                                                     |

segue / continued >>

# I INSERTI A DOPPIO TAGLIENTE

# GB DOUBLE CUTTING EDGE INSERTS



| ARTICOLO - ITEM<br>(materiale - material) | TOLLER.<br>TOLER. | T (mm)          | L<br>(mm) | Ød<br>(mm) |
|-------------------------------------------|-------------------|-----------------|-----------|------------|
| SINTERIZ.                                 |                   |                 |           |            |
| IST-0404                                  | H7                | 4,000 - 4,012   | 11        | 4          |
|                                           | C11               | 4,070 - 4,145   |           |            |
| IST-0505                                  | H7                | 5,000 - 5,012   | 12        | 5          |
|                                           | C11               | 5,070 - 5,145   |           |            |
| IST-0606                                  | H7                | 6,000 - 6,012   | 18        | 6          |
|                                           | C11               | 6,070 - 6,145   |           |            |
| IST-0808                                  | H7                | 8,000 - 8,015   | 21        | 8          |
|                                           | C11               | 8,080 - 8,170   |           |            |
| IST-1010                                  | H7                | 10,000 - 10,015 | 30        | 10         |
|                                           | C11               | 10,080 - 10,170 |           |            |
| IST-1212                                  | H7                | 12,000 - 12,018 | 38        | 12         |
|                                           | C11               | 12,095 - 12,205 |           |            |

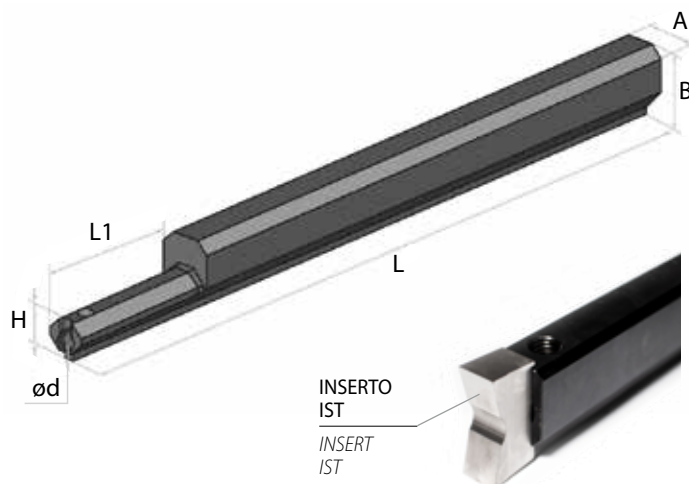
| ARTICOLO - ITEM<br>(materiale - material) | TOLLER.<br>TOLER. | T (mm)          | L<br>(mm) | Ød<br>(mm) |
|-------------------------------------------|-------------------|-----------------|-----------|------------|
| SINTERIZ.                                 |                   |                 |           |            |
| IST-1414                                  | H7                | 14,000 - 14,018 | 40        | 14         |
|                                           | C11               | 14,095 - 14,205 |           |            |
| IST-1616                                  | H7                | 16,000 - 16,018 | 45        | 16         |
|                                           | C11               | 16,095 - 16,205 |           |            |
| IST-1818                                  | H7                | 18,000 - 18,018 | 55        | 18         |
|                                           | C11               | 18,095 - 18,205 |           |            |
| IST-2020                                  | H7                | 20,000 - 20,021 | 65        | 20         |
|                                           | C11               | 20,110 - 20,240 |           |            |
| IST-2222                                  | H7                | 22,000 - 22,021 | 65        | 20         |
|                                           | C11               | 22,110 - 22,240 |           |            |

segue / continued >>

# I PORTA INSERTI A DOPPIO TAGLIENTE

# GB DOUBLE CUTTING EDGE HOLDER

| ARTICOLO<br>ITEM | A<br>(mm) | B<br>(mm) | L<br>(mm) | Ød<br>(mm) | H<br>(mm) | L1<br>(mm) | INSERTO<br>INSERT |
|------------------|-----------|-----------|-----------|------------|-----------|------------|-------------------|
| HDC-0404         | 14        | 19        | 200       | 4          | 10,5      | 42         | IST-0404          |
| HDC-0505         | 14        | 19        | 200       | 5          | 11,5      | 52         | IST-0505          |
| HDC-0606         | 14        | 19        | 220       | 6          | 17        | 62         | IST-0606          |
| HDC-0808         | 14        | 19        | 220       | 8          | -         | -          | IST-0808          |
| HDC-1010         | 18        | 28        | 250       | 10         | -         | -          | IST-1010          |
| HDC-1212         | 22        | 34        | 250       | 12         | -         | -          | IST-1212          |
| HDC-1414         | 22        | 34        | 300       | 14         | -         | -          | IST-1414          |
| HDC-1616         | 24        | 39        | 350       | 16         | -         | -          | IST-1616          |
| HDC-1818         | 29        | 45        | 375       | 18         | -         | -          | IST-1818          |
| HDC-2020         | 35        | 54        | 430       | 20         | -         | -          | IST-2020          |



# Valigette kit

## Tool box kits

**I** Per andare incontro alle richieste di alcuni nostri clienti, abbiamo realizzato n.4 valigette con all'interno i KIT DI PORTAINSERTI E INSERTI per l'utilizzo su CNC, centri di lavoro e macchine stozzatrici. Le valigette sono disponibili con inserti in acciaio sinterizzato (IBM) o metallo duro (IHM).

**GB** To meet the demands of some of our customers, we have created 4 tool box kits with the INSERT HOLDER KITS AND INSERTS for use on CNCs, machining centers and slotting machines. The tool box kits are available with sintered steel (IBM) or hard metal (IHM) inserts.



### Lavorazione su torni CNC E CENTRI DI LAVORO / Operation on CNC LATHES AND MACHINING CENTERS



|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Codice / Code                        | <b>HBMKITS</b>                       |
| Materiale inserti / Inserts material | <b>Sinterizzato / Sintered (IBM)</b> |

Contenuto, montaggio e utilizzo / Content, assembly and use  
 su/on HBM-03: IBM-03  
 su/on HBM-04: IBM-04 oppure/or IBM-05  
 su/on HBM-06: IBM-06 oppure/or IBM-08  
 su/on HBM-10: IBM-10 oppure/or IBM-12

Tolleranze inserti "IBM" / Tolerance "IBM" inserts  
 P9 / H7 / D10 / C11

Rivestimenti PVD / PVD coatings  
 TIN

Quantità / Quantity  
 n.2 pezzi per ogni misura di inserto / no. 2 pieces for each insert size



|                                      |                                        |
|--------------------------------------|----------------------------------------|
| Codice / Code                        | <b>UTKITHM</b>                         |
| Materiale inserti / Inserts material | <b>Metallo duro / Hard metal (IHM)</b> |

Contenuto, montaggio e utilizzo / Content, assembly and use  
 su/on HBM-03: IHM-03  
 su/on HBM-04: IHM-04 oppure/or IHM-05  
 su/on HBM-06: IHM-06 oppure/or IHM-08  
 su/on HBM-10: IHM-10 oppure/or IHM-12

Tolleranze inserti "IHM" / Tolerance "IHM" inserts  
 H7 / D10 / C11

Rivestimenti PVD / PVD coatings  
 RED SPEED

Quantità / Quantity  
 n.2 pezzi per ogni misura di inserto / no. 2 pieces for each insert size



### Lavorazione su torni STOZZATRICI / Operation on SLOTTING MACHINES



|                                      |                                      |
|--------------------------------------|--------------------------------------|
| Codice / Code                        | <b>HSZKITS</b>                       |
| Materiale inserti / Inserts material | <b>Sinterizzato / Sintered (IBM)</b> |

Contenuto, montaggio e utilizzo / Content, assembly and use  
 su/on HSZ-03120: IBM-03  
 su/on HSZ-04120: IBM-04 oppure/or IBM-05  
 su/on HSZ-06: IBM-06 oppure/or IBM-08  
 su/on HSZ-10: IBM-10 oppure/or IBM-12

Tolleranze inserti "IBM" / Tolerance "IBM" inserts  
 P9 / H7 / D10 / C11

Rivestimenti PVD / PVD coatings  
 TIN

Quantità / Quantity  
 n.2 pezzi per ogni misura di inserto / no. 2 pieces for each insert size



|                                      |                                        |
|--------------------------------------|----------------------------------------|
| Codice / Code                        | <b>HSZKITHM</b>                        |
| Materiale inserti / Inserts material | <b>Metallo duro / Hard metal (IHM)</b> |

Contenuto, montaggio e utilizzo / Content, assembly and use  
 su/on HSZ-03120: IHM-03  
 su/on HSZ-04120: IHM-04 oppure/or IHM-05  
 su/on HSZ-06: IHM-06 oppure/or IHM-08  
 su/on HSZ-10: IHM-10 oppure/or IHM-12

Tolleranze inserti "IHM" / Tolerance "IHM" inserts  
 H7 / D10 / C11

Rivestimenti PVD / PVD coatings  
 RED SPEED

Quantità / Quantity  
 n.2 pezzi per ogni misura di inserto / no. 2 pieces for each insert size



# Bussole di riduzione

## *Reduction bushes*



**I** Le bussole di riduzione con battuta consentono il fissaggio di barili o punte con codolo cilindrico o a cono morse su portautensili di macchine a controllo numerico.

La nostra produzione di bussole si articola su diversi tipi:

- > bussole cilindriche con fissaggio dell'utensile a mezzo di grani
- > bussole cilindriche asolate con fissaggio diretto dell'utensile
- > bussole coniche
- > bussole con passaggio del refrigerante
- > bussole elastiche
- > bussole elastiche per barre antivibranti

Per ogni tipo sono previste diverse misure formando così una gamma completa che può soddisfare le più svariate esigenze.

**GB** The reduction bushes with flanges allow boring bars or drills with a cylindrical shaft or clamp cone to be fixed to the tool holders of numerically controlled machine tools.

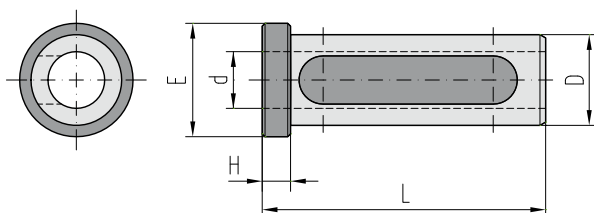
Five different types of bushes are available:

- > Cylindrical bushes to be fixed to tool by means of screws
- > Cylindrical slotted bushes to be directly fastened to tool
- > Conical bushes
- > Bushes with flow of cooling liquid
- > Elastic bushes
- > Elastic bushes for vibration damper bar

We manufacture each type of bush in different sizes, in order to offer a complete range capable of meeting every need.

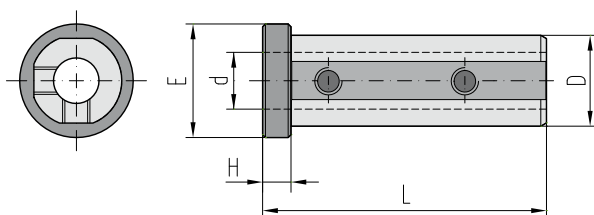
## BUSSOLE CILINDRICHE CYLINDRICAL BUSHES

D=16 mm

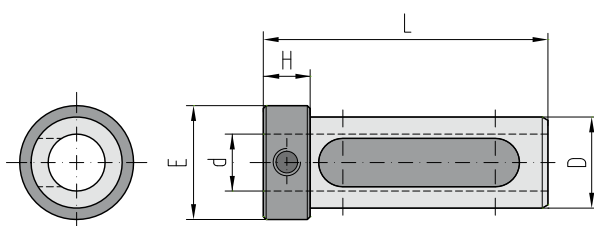


| ARTICOLO-ITEM     | D h7 | d H7 | L  | H | E  |
|-------------------|------|------|----|---|----|
| <b>B-16-6-50</b>  | 16   | 6    | 50 | 5 | 20 |
| <b>B-16-8-50</b>  | 16   | 8    | 50 | 5 | 20 |
| <b>B-16-10-50</b> | 16   | 10   | 50 | 5 | 20 |
| <b>B-16-12-50</b> | 16   | 12   | 50 | 5 | 20 |

D=19,05 mm (3/4")

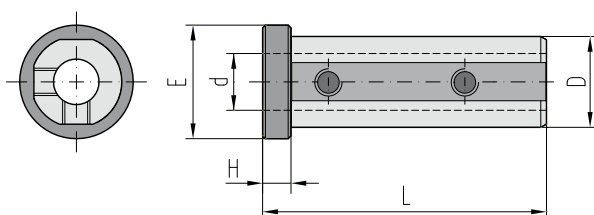


| ARTICOLO-ITEM       | D h7  | d H7 | L  | H | E  |
|---------------------|-------|------|----|---|----|
| <b>B19,05-6-60</b>  | 19,05 | 6    | 60 | 6 | 27 |
| <b>B19,05-8-60</b>  | 19,05 | 8    | 60 | 6 | 27 |
| <b>B19,05-10-60</b> | 19,05 | 10   | 60 | 6 | 27 |

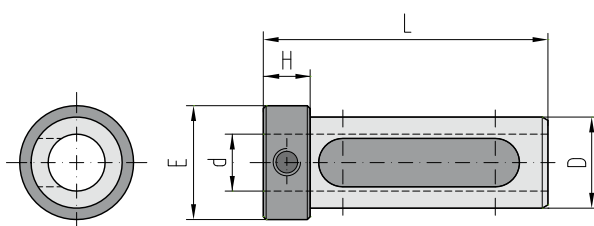


| ARTICOLO-ITEM       | D h7  | d H7 | L  | H  | E  |
|---------------------|-------|------|----|----|----|
| <b>B19,05-12-60</b> | 19,05 | 12   | 60 | 10 | 27 |
| <b>B19,05-14-60</b> | 19,05 | 14   | 60 | 10 | 27 |
| <b>B19,05-16-60</b> | 19,05 | 16   | 60 | 10 | 27 |

D=20 mm

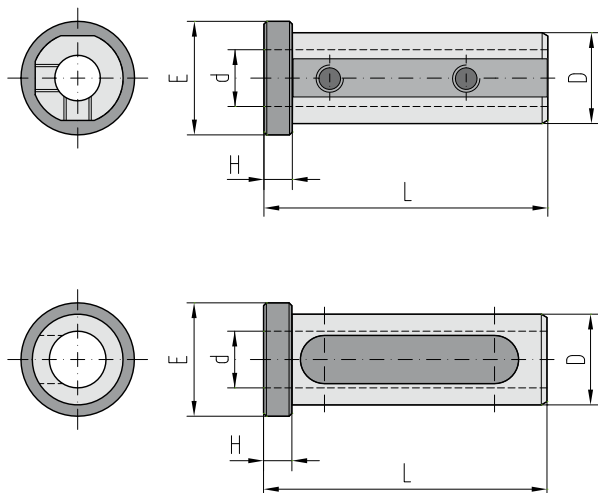


| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B20-6-60</b>  | 20   | 6    | 60 | 6 | 27 |
| <b>B20-8-60</b>  | 20   | 8    | 60 | 6 | 27 |
| <b>B20-10-60</b> | 20   | 10   | 60 | 6 | 27 |



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H  | E  |
|------------------|------|------|----|----|----|
| <b>B20-12-60</b> | 20   | 12   | 60 | 10 | 27 |
| <b>B20-14-60</b> | 20   | 14   | 60 | 10 | 27 |
| <b>B20-16-60</b> | 20   | 16   | 60 | 10 | 27 |

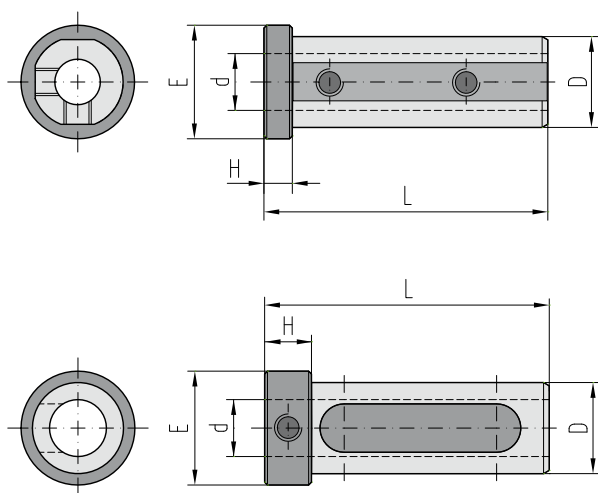
D=22 mm



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B22-6-60</b>  | 22   | 6    | 60 | 6 | 28 |
| <b>B22-8-60</b>  | 22   | 8    | 60 | 6 | 28 |
| <b>B22-10-60</b> | 22   | 10   | 60 | 6 | 28 |

| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B22-12-60</b> | 22   | 12   | 60 | 6 | 28 |
| <b>B22-14-60</b> | 22   | 14   | 60 | 6 | 28 |
| <b>B22-16-60</b> | 22   | 16   | 60 | 6 | 28 |

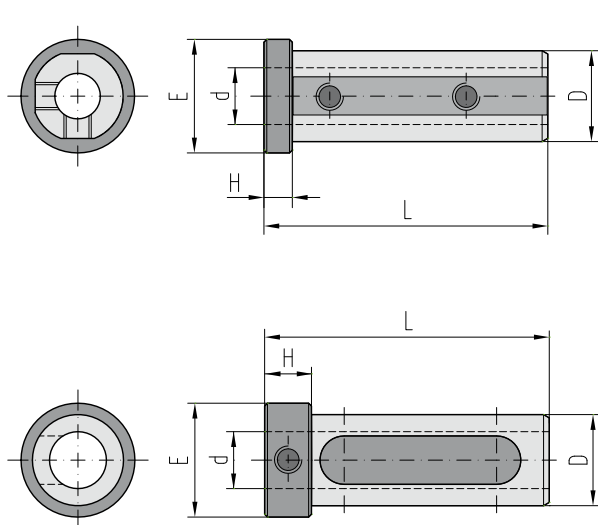
D=25 mm



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B25-6-60</b>  | 25   | 6    | 60 | 6 | 33 |
| <b>B25-8-60</b>  | 25   | 8    | 60 | 6 | 33 |
| <b>B25-10-60</b> | 25   | 10   | 60 | 6 | 33 |
| <b>B25-12-60</b> | 25   | 12   | 60 | 6 | 33 |

| ARTICOLO-ITEM    | D h7 | d H7 | L  | H  | E  |
|------------------|------|------|----|----|----|
| <b>B25-14-70</b> | 25   | 14   | 70 | 13 | 33 |
| <b>B25-16-70</b> | 25   | 16   | 70 | 13 | 33 |
| <b>B25-18-70</b> | 25   | 18   | 70 | 13 | 33 |
| <b>B25-20-70</b> | 25   | 20   | 70 | 13 | 33 |

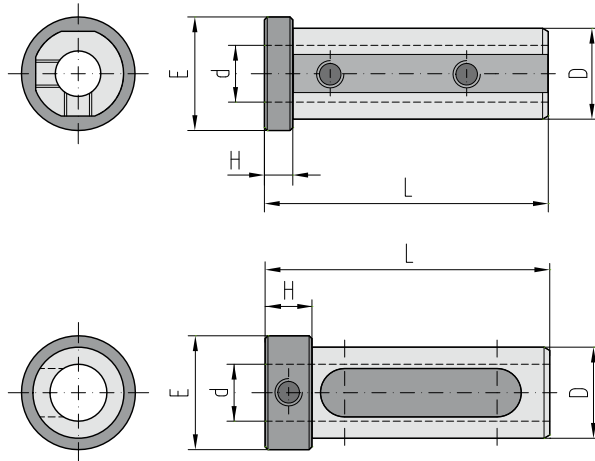
D=25,40 mm (1")



| ARTICOLO-ITEM       | D h7  | d H7 | L  | H | E  |
|---------------------|-------|------|----|---|----|
| <b>B25,40-6-60</b>  | 25,40 | 6    | 60 | 6 | 33 |
| <b>B25,40-8-60</b>  | 25,40 | 8    | 60 | 6 | 33 |
| <b>B25,40-10-60</b> | 25,40 | 10   | 60 | 6 | 33 |
| <b>B25,40-12-60</b> | 25,40 | 12   | 60 | 6 | 33 |

| ARTICOLO-ITEM       | D h7  | d H7 | L  | H  | E  |
|---------------------|-------|------|----|----|----|
| <b>B25,40-14-70</b> | 25,40 | 14   | 70 | 13 | 33 |
| <b>B25,40-16-70</b> | 25,40 | 16   | 70 | 13 | 33 |
| <b>B25,40-18-70</b> | 25,40 | 18   | 70 | 13 | 33 |
| <b>B25,40-20-70</b> | 25,40 | 20   | 70 | 13 | 33 |

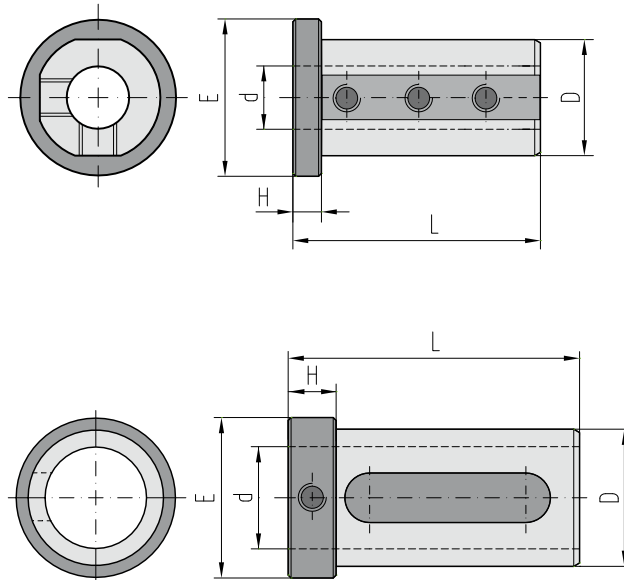
D=32 mm



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B32-6-60</b>  | 32   | 6    | 60 | 6 | 39 |
| <b>B32-8-70</b>  | 32   | 8    | 70 | 8 | 39 |
| <b>B32-10-70</b> | 32   | 10   | 70 | 8 | 39 |
| <b>B32-12-70</b> | 32   | 12   | 70 | 8 | 39 |
| <b>B32-14-70</b> | 32   | 14   | 70 | 8 | 39 |
| <b>B32-16-70</b> | 32   | 16   | 70 | 8 | 39 |
| <b>B32-18-70</b> | 32   | 18   | 70 | 8 | 39 |
| <b>B32-20-70</b> | 32   | 20   | 70 | 8 | 39 |

| ARTICOLO-ITEM    | D h7 | d H7 | L  | H  | E  |
|------------------|------|------|----|----|----|
| <b>B32-25-80</b> | 32   | 25   | 80 | 15 | 39 |

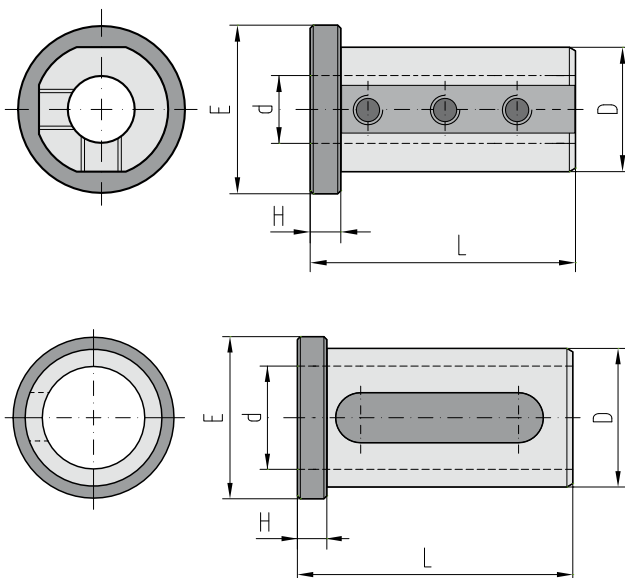
D=40 mm



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B40-6-60</b>  | 40   | 6    | 60 | 6 | 49 |
| <b>B40-8-80</b>  | 40   | 8    | 80 | 8 | 49 |
| <b>B40-10-80</b> | 40   | 10   | 80 | 8 | 49 |
| <b>B40-12-80</b> | 40   | 12   | 80 | 8 | 49 |
| <b>B40-14-80</b> | 40   | 14   | 80 | 8 | 49 |
| <b>B40-16-80</b> | 40   | 16   | 80 | 8 | 49 |
| <b>B40-18-80</b> | 40   | 18   | 80 | 8 | 49 |
| <b>B40-20-80</b> | 40   | 20   | 80 | 8 | 49 |
| <b>B40-25-80</b> | 40   | 25   | 80 | 8 | 49 |

| ARTICOLO-ITEM    | D h7 | d H7 | L  | H  | E  |
|------------------|------|------|----|----|----|
| <b>B40-20-90</b> | 40   | 20   | 90 | 15 | 49 |
| <b>B40-25-90</b> | 40   | 25   | 90 | 15 | 49 |
| <b>B40-32-90</b> | 40   | 32   | 90 | 15 | 49 |

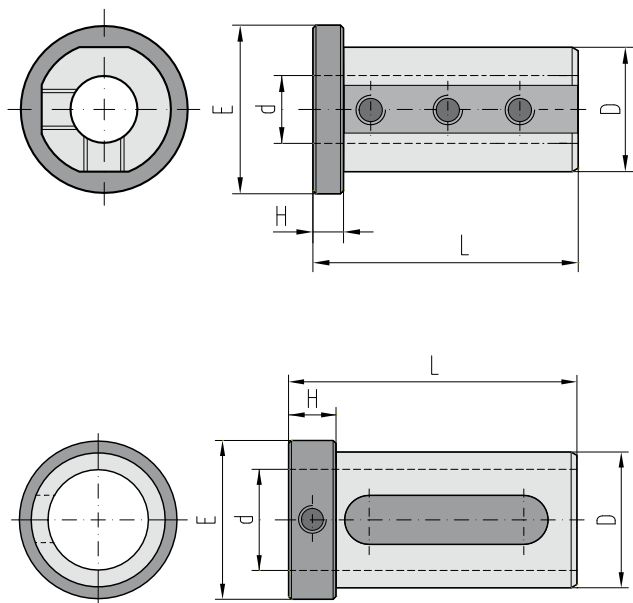
D=45 mm



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B45-8-80</b>  | 45   | 8    | 80 | 8 | 54 |
| <b>B45-10-80</b> | 45   | 10   | 80 | 8 | 54 |
| <b>B45-12-80</b> | 45   | 12   | 80 | 8 | 54 |
| <b>B45-16-80</b> | 45   | 16   | 80 | 8 | 54 |
| <b>B45-20-80</b> | 45   | 20   | 80 | 8 | 54 |
| <b>B45-25-80</b> | 45   | 25   | 80 | 8 | 54 |

| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B45-32-80</b> | 45   | 32   | 80 | 8 | 54 |
| <b>B45-40-80</b> | 45   | 40   | 80 | 8 | 54 |

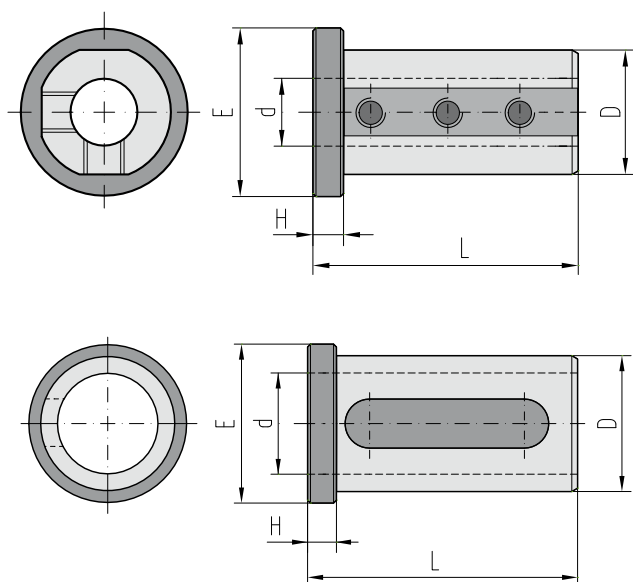
D=50 mm



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B50-8-90</b>  | 50   | 8    | 90 | 8 | 59 |
| <b>B50-10-90</b> | 50   | 10   | 90 | 8 | 59 |
| <b>B50-12-90</b> | 50   | 12   | 90 | 8 | 59 |
| <b>B50-14-90</b> | 50   | 14   | 90 | 8 | 59 |
| <b>B50-16-90</b> | 50   | 16   | 90 | 8 | 59 |
| <b>B50-18-90</b> | 50   | 18   | 90 | 8 | 59 |
| <b>B50-20-90</b> | 50   | 20   | 90 | 8 | 59 |
| <b>B50-25-90</b> | 50   | 25   | 90 | 8 | 59 |
| <b>B50-32-90</b> | 50   | 32   | 90 | 8 | 59 |

| ARTICOLO-ITEM     | D h7 | d H7 | L   | H  | E  |
|-------------------|------|------|-----|----|----|
| <b>B50-40-100</b> | 50   | 40   | 100 | 15 | 59 |

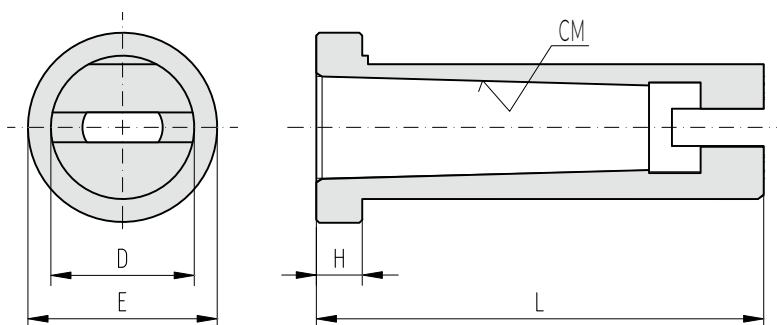
D=60 mm



| ARTICOLO-ITEM    | D h7 | d H7 | L  | H | E  |
|------------------|------|------|----|---|----|
| <b>B60-12-97</b> | 60   | 12   | 97 | 8 | 69 |
| <b>B60-16-97</b> | 60   | 16   | 97 | 8 | 69 |
| <b>B60-20-97</b> | 60   | 20   | 97 | 8 | 69 |
| <b>B60-25-97</b> | 60   | 25   | 97 | 8 | 69 |
| <b>B60-32-97</b> | 60   | 32   | 97 | 8 | 69 |

| ARTICOLO-ITEM    | D h7 | d H7 | L  | H  | E  |
|------------------|------|------|----|----|----|
| <b>B60-40-97</b> | 60   | 40   | 97 | 15 | 69 |
| <b>B60-50-97</b> | 60   | 50   | 97 | 15 | 69 |

## BUSSOLE CONICHE CONICAL BUSHES



### D=25 mm

| ARTICOLO-ITEM | D h7 | CM | L  | H | E  |
|---------------|------|----|----|---|----|
| BC25-1-65     | 25   | 1  | 65 | 6 | 33 |
| BC25-2-78     | 25   | 2  | 78 | 8 | 33 |

### D=25,40 mm (1")

| ARTICOLO-ITEM | D h7  | CM | L  | H | E  |
|---------------|-------|----|----|---|----|
| BC25,40-1-65  | 25,40 | 1  | 65 | 6 | 33 |
| BC25,40-2-78  | 25,40 | 2  | 78 | 8 | 33 |

### D=32 mm

| ARTICOLO-ITEM | D h7 | CM | L  | H | E  |
|---------------|------|----|----|---|----|
| BC32-1-65     | 32   | 1  | 65 | 6 | 39 |
| BC32-2-78     | 32   | 2  | 78 | 8 | 39 |
| BC32-3-97     | 32   | 3  | 97 | 8 | 39 |

### D=40 mm

| ARTICOLO-ITEM | D h7 | CM | L   | H | E  |
|---------------|------|----|-----|---|----|
| BC40-1-65     | 40   | 1  | 65  | 6 | 49 |
| BC40-2-78     | 40   | 2  | 78  | 8 | 49 |
| BC40-3-97     | 40   | 3  | 97  | 8 | 49 |
| BC40-4-120    | 40   | 4  | 120 | 8 | 49 |

### D=45 mm

| ARTICOLO-ITEM | D h7 | CM | L   | H | E  |
|---------------|------|----|-----|---|----|
| BC45-2-78     | 45   | 2  | 78  | 8 | 54 |
| BC45-3-97     | 45   | 3  | 97  | 8 | 54 |
| BC45-4-120    | 45   | 4  | 120 | 8 | 54 |

### D=50 mm

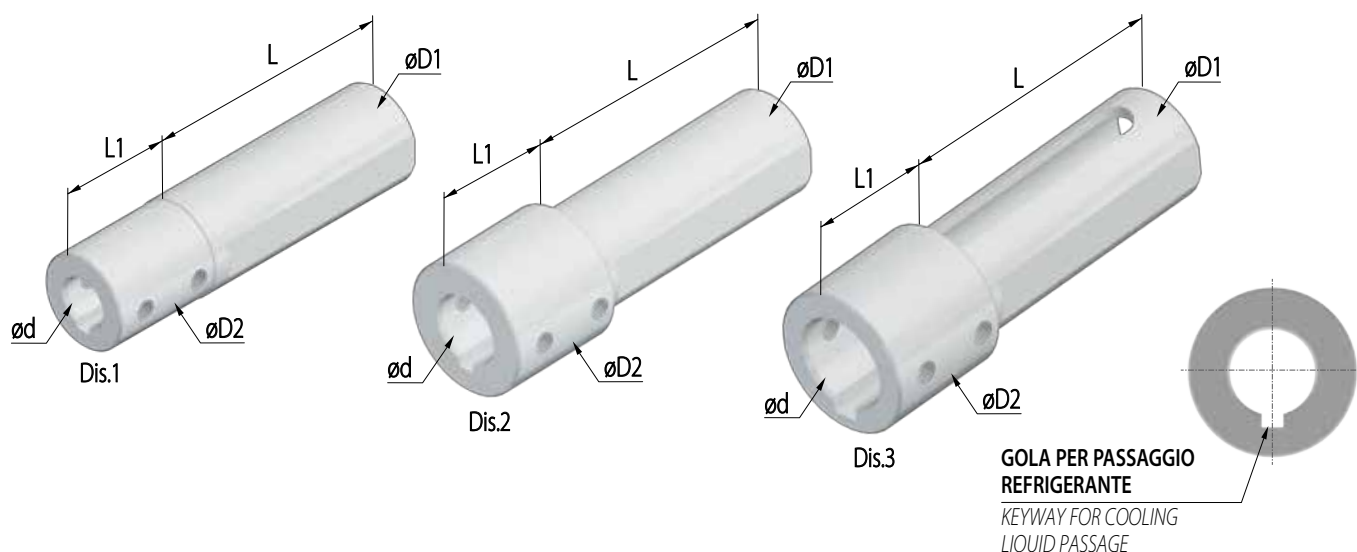
| ARTICOLO-ITEM | D h7 | CM | L   | H | E  |
|---------------|------|----|-----|---|----|
| BC50-2-78     | 50   | 2  | 78  | 8 | 59 |
| BC50-3-97     | 50   | 3  | 97  | 8 | 59 |
| BC50-4-120    | 50   | 4  | 120 | 8 | 59 |

### D=60 mm

| ARTICOLO-ITEM | D h7 | CM | L   | H | E  |
|---------------|------|----|-----|---|----|
| BC60-2-78     | 60   | 2  | 78  | 8 | 69 |
| BC60-3-97     | 60   | 3  | 97  | 8 | 69 |
| BC60-4-120    | 60   | 4  | 120 | 8 | 69 |
| BC60-5-155    | 60   | 5  | 155 | 8 | 69 |

## BUSSE CON PASSAGGIO DEL REFRIGERANTE

### BUSHES WITH FLOW OF COOLING LIQUID



#### D=25 mm

| ARTICOLO-ITEM | D1 h7 | D2   | d H7 | L  | L1 | Rif.-Ref. |
|---------------|-------|------|------|----|----|-----------|
| BL 25-6       | 25    | 24,5 | 6    | 65 | 30 | Dis.1     |
| BL 25-8       | 25    | 24,5 | 8    | 65 | 30 | Dis.1     |
| BL 25-10      | 25    | 24,5 | 10   | 65 | 30 | Dis.1     |
| BL 25-12      | 25    | 24,5 | 12   | 65 | 30 | Dis.1     |
| BL 25-16      | 25    | 32   | 16   | 65 | 30 | Dis.2     |
| BL 25-20      | 25    | 32   | 20   | 65 | 30 | Dis.3     |

#### D=40 mm

| ARTICOLO-ITEM | D1 h7 | D2   | d H7 | L  | L1 | Rif.-Ref. |
|---------------|-------|------|------|----|----|-----------|
| BL 40-6       | 40    | 31,5 | 6    | 65 | 30 | Dis.1     |
| BL 40-8       | 40    | 31,5 | 8    | 65 | 30 | Dis.1     |
| BL 40-10      | 40    | 31,5 | 10   | 65 | 30 | Dis.1     |
| BL 40-12      | 40    | 31,5 | 12   | 65 | 30 | Dis.1     |
| BL 40-14      | 40    | 31,5 | 14   | 65 | 30 | Dis.1     |
| BL 40-16      | 40    | 31,5 | 16   | 65 | 30 | Dis.1     |
| BL 40-18      | 40    | 47,5 | 18   | 65 | 30 | Dis.2     |
| BL 40-20      | 40    | 47,5 | 20   | 65 | 30 | Dis.2     |
| BL 40-25      | 40    | 47,5 | 25   | 65 | 30 | Dis.2     |
| BL 40-32      | 40    | 47,5 | 32   | 65 | 30 | Dis.3     |

#### D=32 mm

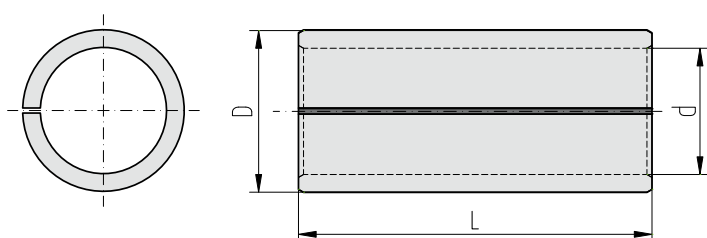
| ARTICOLO-ITEM | D1 h7 | D2 | d H7 | L  | L1 | Rif.-Ref. |
|---------------|-------|----|------|----|----|-----------|
| BL 32-6       | 32    | 28 | 6    | 65 | 30 | Dis.1     |
| BL 32-8       | 32    | 28 | 8    | 65 | 30 | Dis.1     |
| BL 32-10      | 32    | 28 | 10   | 65 | 30 | Dis.1     |
| BL 32-12      | 32    | 28 | 12   | 65 | 30 | Dis.1     |
| BL 32-14      | 32    | 28 | 14   | 65 | 30 | Dis.1     |
| BL 32-16      | 32    | 28 | 16   | 65 | 30 | Dis.1     |
| BL 32-18      | 32    | 38 | 18   | 65 | 30 | Dis.2     |
| BL 32-20      | 32    | 38 | 20   | 65 | 30 | Dis.2     |
| BL 32-25      | 32    | 43 | 25   | 65 | 30 | Dis.3     |

#### D=50 mm

| ARTICOLO-ITEM | D1 h7 | D2 | d H7 | L  | L1 | Rif.-Ref. |
|---------------|-------|----|------|----|----|-----------|
| BL 50-12      | 50    | 40 | 12   | 65 | 30 | Dis.1     |
| BL 50-14      | 50    | 40 | 14   | 65 | 30 | Dis.1     |
| BL 50-16      | 50    | 40 | 16   | 65 | 30 | Dis.1     |
| BL 50-18      | 50    | 40 | 18   | 65 | 30 | Dis.1     |
| BL 50-20      | 50    | 40 | 20   | 65 | 30 | Dis.1     |
| BL 50-25      | 50    | 40 | 25   | 65 | 30 | Dis.1     |
| BL 50-32      | 50    | 56 | 32   | 65 | 30 | Dis.2     |
| BL 50-40      | 50    | 56 | 40   | 65 | 30 | Dis.3     |

## BUSSE ELASTICHE

### ELASTIC BUSHES



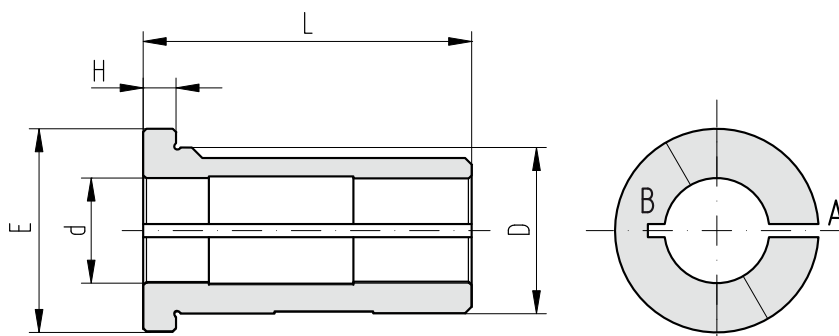
| ARTICOLO-ITEM | D h7 | d H7 | L  |
|---------------|------|------|----|
| BE-16-12-40   | 16   | 12   | 40 |
| BE-20-16-50   | 20   | 16   | 50 |
| BE-25-20-60   | 25   | 20   | 60 |
| BE-32-25-70   | 32   | 25   | 70 |
| BE-40-32-80   | 40   | 32   | 80 |
| BE-50-40-90   | 50   | 40   | 90 |

## BUSSOLE ELASTICHE PER BARRE ANTIVIBRANTI

### ELASTIC BUSHES FOR VIBRATION DAMPER BARS

**I** Questo tipo di bussola è stata studiata per eliminare le vibrazioni dell'utensile inserito nella bussola durante la lavorazione. Una speciale gomma antivibrante viene inserita nelle fessure "A" e "B" allo scopo di ammortizzare le vibrazioni che crea l'utensile durante la lavorazione in fori profondi.

**GB** This kind of bush has been developed to eliminate every vibration caused by the tool during the machining. "A" and "B" slots are filled with a special rubber in order to dampen the vibrations the tool creates when it works in deep holes.



#### D=25 mm

| ARTICOLO-ITEM | D h6 | d H7 | L  | H | E  |
|---------------|------|------|----|---|----|
| BG 25-8-50    | 25   | 8    | 50 | 5 | 31 |
| BG 25-10-50   | 25   | 10   | 50 | 5 | 31 |
| BG 25-12-50   | 25   | 12   | 50 | 5 | 31 |
| BG 25-16-50   | 25   | 16   | 50 | 5 | 31 |
| BG 25-20-50   | 25   | 20   | 50 | 5 | 31 |

#### D=32 mm

| ARTICOLO-ITEM | D h6 | d H7 | L  | H | E  |
|---------------|------|------|----|---|----|
| BG 32-8-60    | 32   | 8    | 60 | 5 | 39 |
| BG 32-10-60   | 32   | 10   | 60 | 5 | 39 |
| BG 32-12-60   | 32   | 12   | 60 | 5 | 39 |
| BG 32-16-60   | 32   | 16   | 60 | 5 | 39 |
| BG 32-20-60   | 32   | 20   | 60 | 5 | 39 |
| BG 32-25-60   | 32   | 25   | 60 | 5 | 39 |

#### D=40 mm

| ARTICOLO-ITEM | D h6 | d H7 | L  | H | E  |
|---------------|------|------|----|---|----|
| BG 40-8-75    | 40   | 8    | 75 | 5 | 48 |
| BG 40-10-75   | 40   | 10   | 75 | 5 | 48 |
| BG 40-12-75   | 40   | 12   | 75 | 5 | 48 |
| BG 40-16-75   | 40   | 16   | 75 | 5 | 48 |
| BG 40-20-75   | 40   | 20   | 75 | 5 | 48 |
| BG 40-25-75   | 40   | 25   | 75 | 5 | 48 |
| BG 40-32-75   | 40   | 32   | 75 | 5 | 48 |

## DISEGNO PER ORDINI DI BUSSOLE SPECIALI

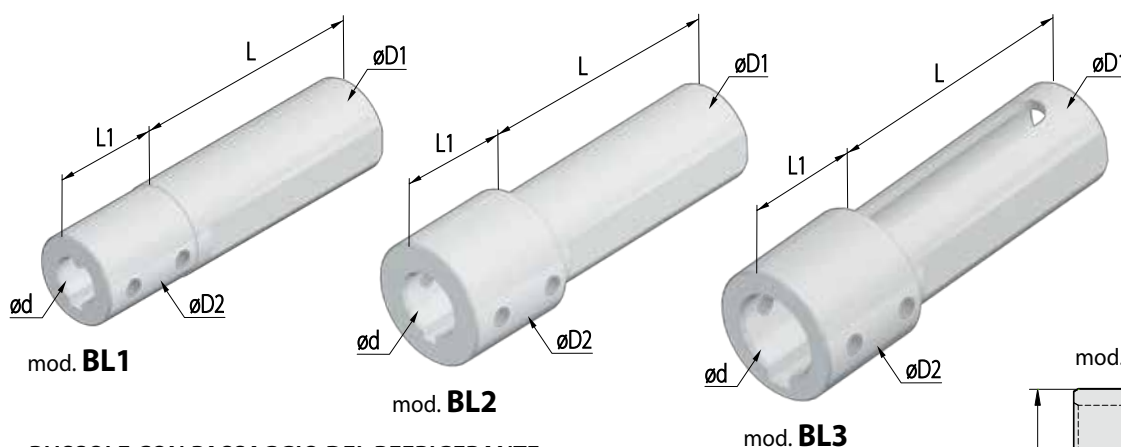
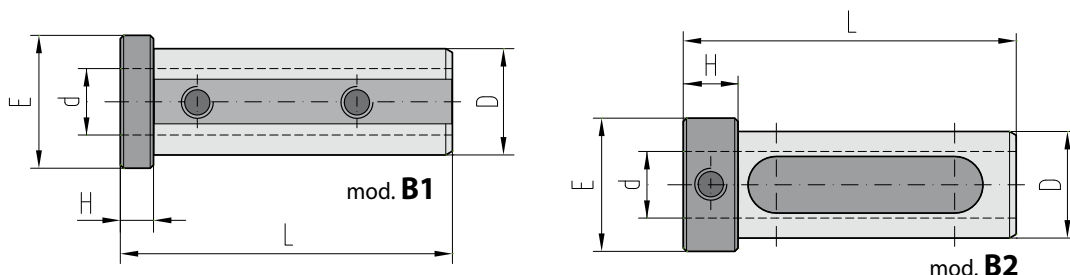
### TECHNICAL DRAWING FOR ORDERING SPECIAL BUSHES

**I** Se siete interessati a bussole speciali non comprese nel presente Catalogo, inviateci questa pagina debitamente compilata; sarà nostra cura servirVi al meglio e con la massima tempestività.

**GB** If you are interested in special bushes, not included in this Catalogue, please fill this page in and send it to us: we shall do our best to provide you with prompt efficient service.

BRIGHETTI MECCANICA S.r.L.    Tel./Phone: 0039 51 728168    E.mail: info@brighetti.it  
 Società/Company: \_\_\_\_\_ Indirizzo/Address: \_\_\_\_\_  
 Tel./Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_  
 Q.tà/Q.ty: \_\_\_\_\_

#### BUSSOLE CILINDRICHE CYLINDRICAL BUSHES

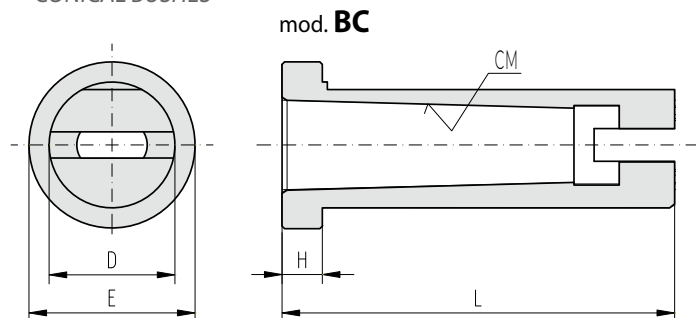


#### BUSSOLE CON PASSAGGIO DEL REFRIGERANTE BUSHES WITH FLOW OF COOLING LIQUID

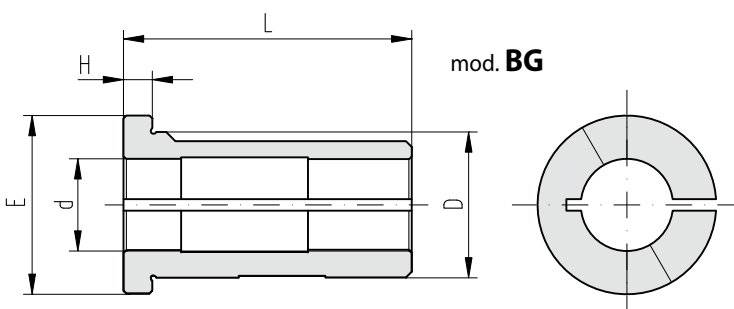
#### BUSSOLE ELASTICHE ELASTIC BUSHES



#### BUSSOLE CONICHE CONICAL BUSHES



#### BUSSOLE ELASTICHE PER BARRE ANTIVIBRANTI ELASTIC BUSHES FOR VIBRATION DAMPER BARS



| mod. | d | L | L1 | H | E | D | D1 | D2 | CM |
|------|---|---|----|---|---|---|----|----|----|
|      |   |   |    |   |   |   |    |    |    |

Compilare la tabella, scegliendo il modello di Bussola di riduzione a cui si è interessati con la sua relativa sigla.

Compilare poi manualmente il resto della tabella indicando le quote da ottenere

Fill in the table, choosing the type of reduction Bush you are interested in with its relative code,  
 then fill in manually and indicate the dimensions to obtain

# Tiranti-Codoli

## Puller-Pull studs



**I** Il Tirante, o Codolo, viene prodotto secondo le seguenti specifiche:

- > norma DIN 69872
- > norma ISO 7388/2A - 7388/2B
- > norma MAS 403 BT
- > norma MAS 403 BT TYPE I
- > norma MAS BT ANSI TYPE
- > norma CAT ANSI TYPE
- > norma ANSI BT 5.50 CATERPILLAR
- > norma BT (JIS B 6339)
- > FAMUP e CB FERRARI

Vengono inoltre prodotti, su richiesta, tiranti per altre tipologie di macchine CNC.

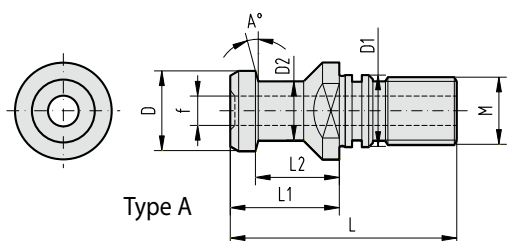
**GB** The pull studs are manufactured according to the following specifications:

- > Standard DIN 69872
- > Standard ISO 7388/2A - 7388/2B
- > Standard MAS 403 BT
- > Standard MAS 403 BT TYPE I
- > Standard MAS BT ANSI TYPE
- > Standard CAT ANSI TYPE
- > Standard ANSI BT 5.50 CATERPILLAR
- > Standard BT (JIS B 6339)
- > FAMUP and CB FERRARI

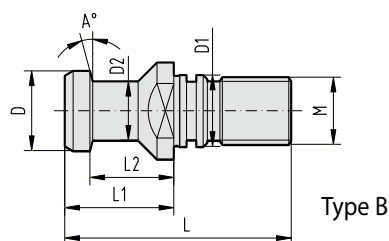
Pull studs for other types of CNC machines are also available on request.

### CODOLI A NORMA DIN 69872

#### STANDARD DIN 69872 PULL STUDS



Type A



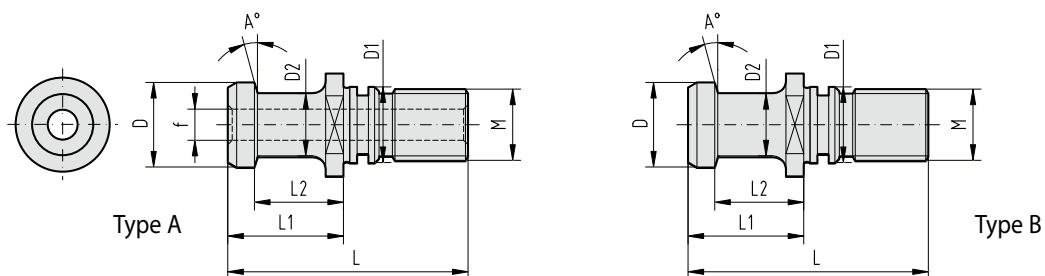
Type B

| ARTICOLO-ITEM   | TIPO-TYPE | f    | CONO-SIZE | M  | L  | L1 +/-0,1 | L2 +/-0,1 | D f7 | D1 f7 | D2 -0,1 | A°  |
|-----------------|-----------|------|-----------|----|----|-----------|-----------|------|-------|---------|-----|
| C12DIN69872/A * | A         | 3    | 30        | 12 | 44 | 24        | 19        | 13   | 13    | 9       | 15° |
| C12DIN69872/B * | B         | -    |           |    |    |           |           |      |       |         |     |
| C16DIN69872/A   | A         | 7    | 40        | 16 | 54 | 26        | 20        | 19   | 17    | 14      | 15° |
| C16DIN69872/B   | B         | -    |           |    |    |           |           |      |       |         |     |
| C20DIN69872/A   | A         | 9,5  | 45        | 20 | 65 | 30        | 23        | 23   | 21    | 17      | 15° |
| C20DIN69872/B   | B         | -    |           |    |    |           |           |      |       |         |     |
| C24DIN69872/A   | A         | 11,5 | 50        | 24 | 74 | 34        | 25        | 28   | 25    | 21      | 15° |
| C24DIN69872/B   | B         | -    |           |    |    |           |           |      |       |         |     |

\* Questo tirante è senza sede per O-Ring / \* These pull studs do not have the O-Ring seat

## CODOLI A NORMA ISO 7388/2A

### STANDARD ISO 7388/2A PULL STUDS

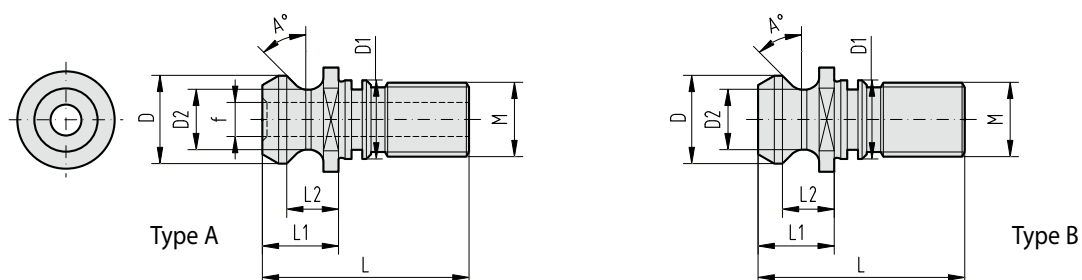


| ARTICOLO-ITEM            | TIPO-TYPE | f    | CONO-SIZE | M  | L  | L1 +/-0,1 | L2 +/-0,1 | D f7 | D1 h6 | D2 -0,1 | A°  |
|--------------------------|-----------|------|-----------|----|----|-----------|-----------|------|-------|---------|-----|
| <b>C12ISO7388/2A/B *</b> | <b>B</b>  | -    | 30        | 12 | 44 | 24        | 19        | 12   | 13    | 8       | 15° |
| <b>C16ISO7388/2A/A</b>   | <b>A</b>  | 7    | 40        | 16 | 54 | 26        | 20        | 19   | 17    | 14      | 15° |
| <b>C16ISO7388/2A/B</b>   | <b>B</b>  | -    |           |    |    |           |           |      |       |         |     |
| <b>C20ISO7388/2A/A</b>   | <b>A</b>  | 9,5  | 45        | 20 | 65 | 30        | 23        | 23   | 21    | 17      | 15° |
| <b>C20ISO7388/2A/B</b>   | <b>B</b>  | -    |           |    |    |           |           |      |       |         |     |
| <b>C24ISO7388/2A/A</b>   | <b>A</b>  | 11,5 | 50        | 24 | 74 | 34        | 25        | 28   | 25    | 21      | 15° |
| <b>C24ISO7388/2A/B</b>   | <b>B</b>  | -    |           |    |    |           |           |      |       |         |     |

\* Questo tirante è senza sede per O-Ring / \* These pull studs do not have the O-Ring seat

## CODOLI A NORMA ISO 7388/2B

### STANDARD ISO 7388/2B PULL STUDS

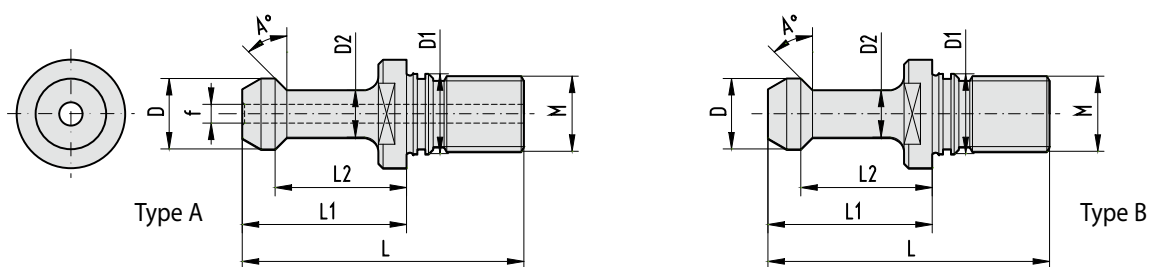


| ARTICOLO-ITEM            | TIPO-TYPE | f     | CONO-SIZE | M  | L     | L1 +/-0,15 | L2 +/-0,15 | D -0,3 | D1 h6 | D2 -0,3 | A°  |
|--------------------------|-----------|-------|-----------|----|-------|------------|------------|--------|-------|---------|-----|
| <b>C12ISO7388/2B/A *</b> | <b>A</b>  | 4     | 30        | 12 | 34,00 | 11,65      | 8          | 13,35  | 13    | 9,3     | 45° |
| <b>C16ISO7388/2B/A</b>   | <b>A</b>  | 7,35  | 40        | 16 | 44,25 | 16,25      | 11         | 18,95  | 17    | 12,95   | 45° |
| <b>C16ISO7388/2B/B</b>   | <b>B</b>  | -     |           |    |       |            |            |        |       |         |     |
| <b>C20ISO7388/2B/A</b>   | <b>A</b>  | 9,25  | 45        | 20 | 56,00 | 20,95      | 14,85      | 24,05  | 21    | 16,30   | 45° |
| <b>C20ISO7388/2B/B</b>   | <b>B</b>  | -     |           |    |       |            |            |        |       |         |     |
| <b>C24ISO7388/2B/A</b>   | <b>A</b>  | 11,55 | 50        | 24 | 65,40 | 25,40      | 17,80      | 29,00  | 25    | 19,60   | 45° |
| <b>C24ISO7388/2B/B</b>   | <b>B</b>  | -     |           |    |       |            |            |        |       |         |     |

\* Questo tirante è senza sede per O-Ring / \* These pull studs do not have the O-Ring seat

## CODOLI A NORMA MAS 403 BT

### STANDARD MAS 403 BT PULL STUDS



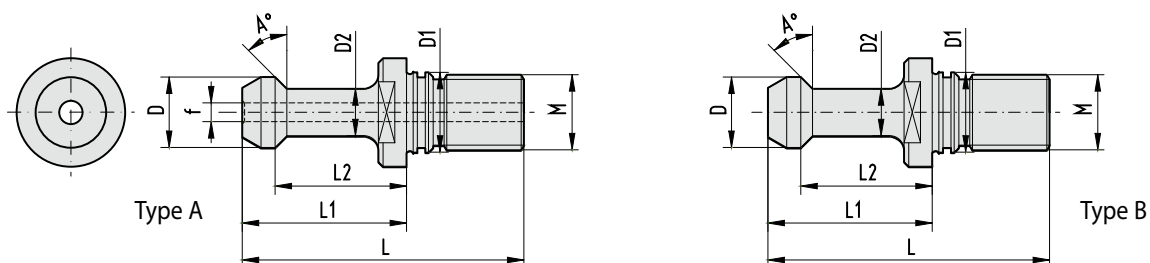
| ARTICOLO-ITEM       | TIPO-TYPE | f | CONO-SIZE | M  | L  | L1 -0,1 | L2 -0,1 | D -0,1 | D1 h7 | D2 -0,1 | A° |
|---------------------|-----------|---|-----------|----|----|---------|---------|--------|-------|---------|----|
| C12MAS403BT30B30 *  | B         | - | 30        | 12 | 43 | 23      | 18      | 11     | 12,5  | 7       | 30 |
| C12MAS403BT30B45 *  | B         | - | 30        | 12 | 43 | 23      | 18      | 11     | 12,5  | 7       | 45 |
| C16MAS403BT40A30    | A         | 4 | 40        | 16 | 60 | 35      | 28      | 15     | 17    | 10      | 30 |
| C16MAS403BT40B30    | B         | - |           |    |    |         |         |        |       |         | 45 |
| C16MAS403BT40A45    | A         | 4 | 40        | 16 | 60 | 35      | 28      | 15     | 17    | 10      | 30 |
| C16MAS403BT40B45    | B         | - |           |    |    |         |         |        |       |         | 45 |
| C16MAS403BT40A90    | A         | 4 | 40        | 16 | 60 | 35      | 28      | 15     | 17    | 10      | 90 |
| C16MAS403BT40B90    | B         | - |           |    |    |         |         |        |       |         | 90 |
| C20MAS403BT45B30 ** | B         | - | 45        | 20 | 70 | 40      | 31      | 19     | 21    | 14      | 30 |
| C20MAS403BT45B45 ** | B         | - | 45        | 20 | 70 | 40      | 31      | 19     | 21    | 14      | 45 |
| C24MAS403BT50A30    | A         | 6 | 50        | 24 | 85 | 45      | 35      | 23     | 25    | 17      | 30 |
| C24MAS403BT50B30    | B         | - |           |    |    |         |         |        |       |         | 45 |
| C24MAS403BT50A45    | A         | 6 | 50        | 24 | 85 | 45      | 35      | 23     | 25    | 17      | 30 |
| C24MAS403BT50B45    | B         | - |           |    |    |         |         |        |       |         | 45 |
| C24MAS403BT50A90    | A         | 6 | 50        | 24 | 85 | 45      | 35      | 23     | 25    | 17      | 90 |
| C24MAS403BT50B90    | B         | - |           |    |    |         |         |        |       |         | 90 |

\* Questo tirante è senza sede per O-Ring / \* These pull studs do not have the O-Ring seat

\*\* a richiesta / on request

## CODOLI A NORMA MAS 403 BT TYPE I

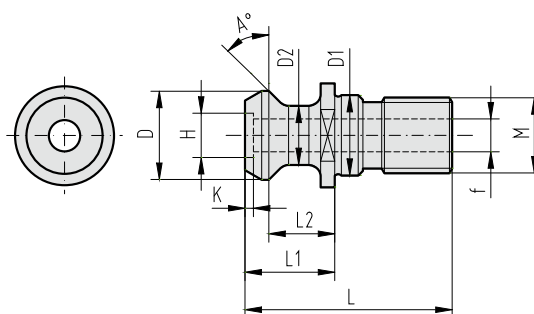
### STANDARD MAS 403 BT TYPE I PULL STUDS



| ARTICOLO-ITEM   | TIPO-TYPE | f | CONO-SIZE | M  | L +/-0,5 | L1 -0,1 | L2 -0,1 | D -0,1 | D1 h7 | D2 -0,1 | A° |
|-----------------|-----------|---|-----------|----|----------|---------|---------|--------|-------|---------|----|
| C16MAS403I40A45 | A         | 4 | 40        | 16 | 57       | 32,15   | 25,15   | 15     | 17    | 10      | 45 |
| C16MAS403I40B45 | B         | - |           |    |          |         |         |        |       |         | 90 |
| C16MAS403I40B90 | B         | - |           |    |          |         |         |        |       |         | 90 |

## CODOLI A NORMA MAS BT ANSI TYPE

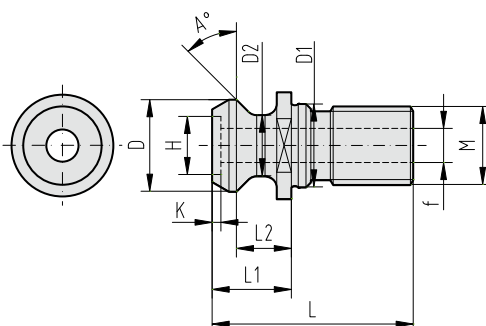
### STANDARD MAS BT ANSI TYPE PULL STUDS



| ARTICOLO-ITEM          | TIPO-TYPE | f  | CONO-SIZE | M  | L      | L1 +/-0,127 | L2 +/-0,127 | D +/-0,127 | D1 h7 | D2 +/-0,127 | A° | H +0,06 | K +/-0,05 |
|------------------------|-----------|----|-----------|----|--------|-------------|-------------|------------|-------|-------------|----|---------|-----------|
| <b>C16MASBTANSI40A</b> | <b>A</b>  | 7  | 40        | 16 | 44,106 | 19,106      | 13,85       | 18,78      | 17    | 12,95       | 45 | -       | -         |
| <b>C24MASBTANSI50A</b> | <b>A</b>  | 10 | 50        | 24 | 65,20  | 25,20       | 17,58       | 28,956     | 25    | 20,828      | 45 | 16      | 1,80      |

## CODOLI A NORMA CAT ANSI TYPE

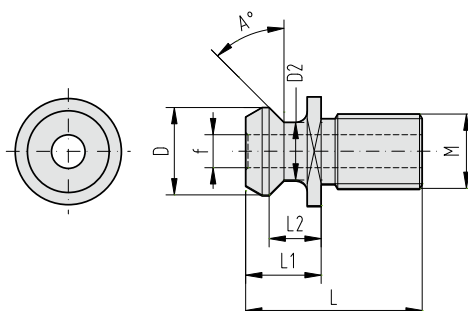
### STANDARD CAT ANSI TYPE PULL STUDS



| ARTICOLO-ITEM        | CONO-SIZE | f  | M  | L      | L1 +/-0,127 | L2 +/-0,127 | D +/-0,127 | D1 h7 | D2 +/-0,127 | A° | H +0,06 | K +/-0,05 |
|----------------------|-----------|----|----|--------|-------------|-------------|------------|-------|-------------|----|---------|-----------|
| <b>C16CATANSI40A</b> | 40        | 7  | 16 | 41,256 | 16,256      | 11,176      | 18,796     | 17    | 12,446      | 45 | -       | -         |
| <b>C24CATANSI50A</b> | 50        | 10 | 24 | 65,40  | 25,40       | 17,78       | 28,956     | 25    | 20,828      | 45 | 16      | 1,80      |

## CODOLI A NORMA ANSI 5.50 CATERPILLAR

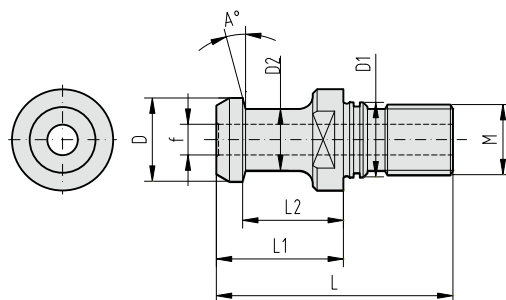
### STANDARD ANSI 5.50 CATERPILLAR PULL STUDS



| ARTICOLO-ITEM           | CONO-SIZE | M  | L     | L1 +/-0,1 | L2 +/-0,1 | D +/-0,1 | D2 +/-0,1 | A° | f     |
|-------------------------|-----------|----|-------|-----------|-----------|----------|-----------|----|-------|
| <b>C16ANSIB5,50/40A</b> | 40        | 16 | 38    | 16,25     | 11,20     | 18,80    | 12,40     | 45 | 7,1   |
| <b>C24ANSIB5,50/50A</b> | 50        | 24 | 58,40 | 25,40     | 17,80     | 28,95    | 20,80     | 45 | 11,90 |

## CODOLI A NORMA BT (JIS B 6339)

### STANDARD BT (JIS B 6339) PULL STUDS



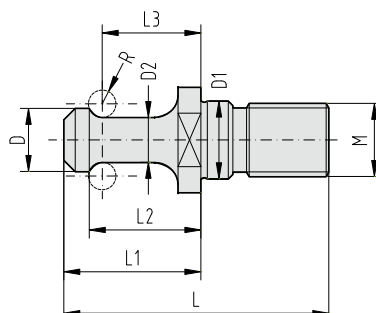
| ARTICOLO-ITEM          | CONO-SIZE | f  | M  | L  | L1 -0,1 | L2 -0,1 | D f7 | D1 h7 | D2 -0,1 | A° |
|------------------------|-----------|----|----|----|---------|---------|------|-------|---------|----|
| <b>C16BTJISB40/A5</b>  | 40        | 5  | 16 | 54 | 29      | 23      | 19   | 17    | 14      | 15 |
| <b>C16BTJISB40/A7</b>  | 40        | 7  | 16 | 54 | 29      | 23      | 19   | 17    | 14      | 15 |
| <b>C24BTJISB50/A10</b> | 50        | 10 | 24 | 74 | 34      | 25      | 28   | 25    | 21      | 15 |

## CODOLI PER VARIE TIPOLOGIE DI MACCHINE A CNC

### PULL STUDS FOR DIFFERENT TYPE OF CNC MACHINES

#### CODOLI FAMUP

#### FAMUP PULL STUDS



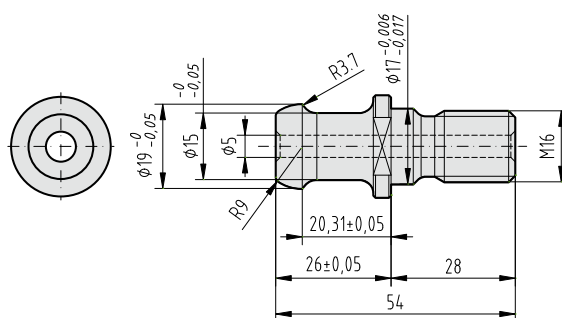
| ARTICOLO-ITEM      | CONO-SIZE | f | M  | L  | L1 | L2    | L3   | D -0,1 | D1 h6 | D2 -0,1 | R   |
|--------------------|-----------|---|----|----|----|-------|------|--------|-------|---------|-----|
| <b>C12FAMUPL40</b> | 30        | - | 12 | 40 | 20 | 16,65 | 14,2 | 9,8    | 13    | 5,8     | 2,5 |
| <b>C16FAMUPL55</b> | 40        | - | 16 | 55 | 27 | 21,43 | 18,6 | 13,8   | 17    | 9,8     | 3   |
| <b>C16FAMUPL58</b> | 40        | - | 16 | 58 | 30 | 24,43 | 21,6 | 13,8   | 17    | 9,8     | 3   |

#### CODOLO CB FERRARI

#### CB FERRARI PULL STUD

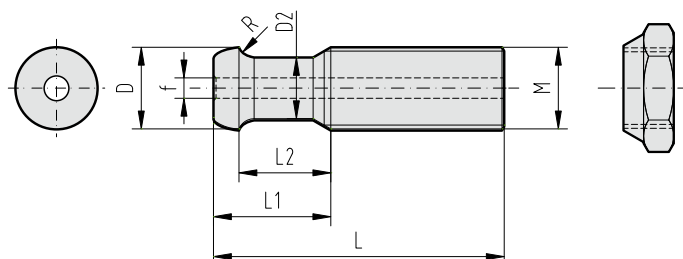
#### ARTICOLO-ITEM: C16FERRL54A

#### CONO-SIZE: 40



#### CODOLI CB FERRARI

#### CB FERRARI PULL STUDS



| ARTICOLO-ITEM      | CONO-SIZE | f | M  | L  | L1 | L2 | D -0,05/0,1 | D1 | D2 -0,1 | R   |
|--------------------|-----------|---|----|----|----|----|-------------|----|---------|-----|
| <b>C16FERRL57A</b> | 40        | 4 | 16 | 57 | 23 | 18 | 16          | -  | 12      | 3,2 |
| <b>C16FERRL57B</b> | 40        | - | 16 | 57 | 23 | 18 | 16          | -  | 12      | 3,2 |

## DISEGNO PER ORDINI DI CODOLI SPECIALI

### TECHNICAL DRAWING FOR ORDERING SPECIAL PULL STUDS

**I** Se siete interessati a codoli speciali non compresi nel presente catalogo, inviateci questa pagina debitamente compilata; sarà nostra cura servirVi al meglio e con la massima tempestività.

**GB** If you are interested in special Pull Studs not included in this Catalogue, please fill this page in and send it to us: we shall do our best to provide you with prompt, efficient service.

BRIGHETTI MECCANICA S.r.L.

Tel./Phone: 0039 51 728168

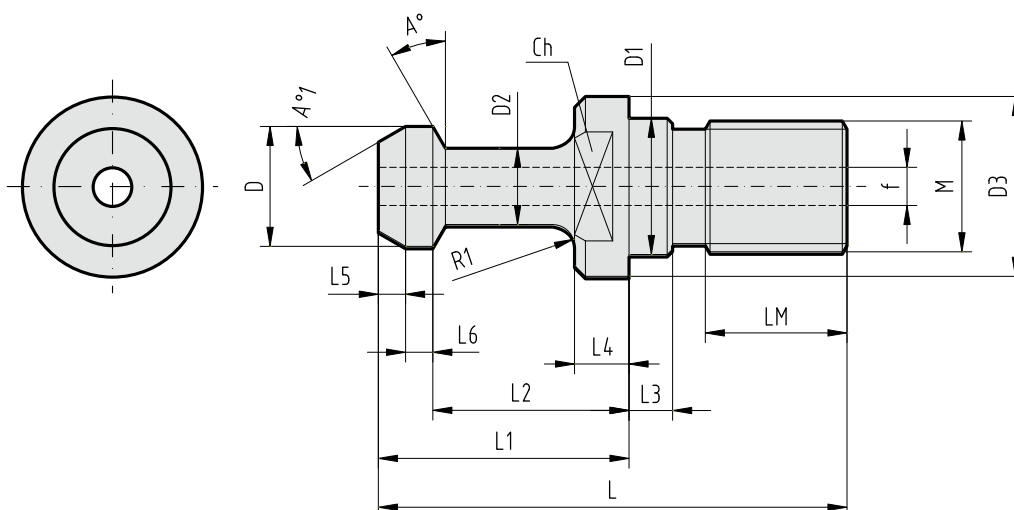
E.mail: [info@brighetti.it](mailto:info@brighetti.it)

Società/Company: \_\_\_\_\_

Indirizzo/Address: \_\_\_\_\_

Tel./Phone: \_\_\_\_\_ E-mail: \_\_\_\_\_

Q.tà/Q.ty: \_\_\_\_\_



| M | L | L1 | L2 | L3 | L4 | L5 | L6 | LM |
|---|---|----|----|----|----|----|----|----|
|   |   |    |    |    |    |    |    |    |

| D | D1 | D2 | D3 | f | $A^\circ$ | $A^{\circ 1}$ | R1 | Ch |
|---|----|----|----|---|-----------|---------------|----|----|
|   |    |    |    |   |           |               |    |    |

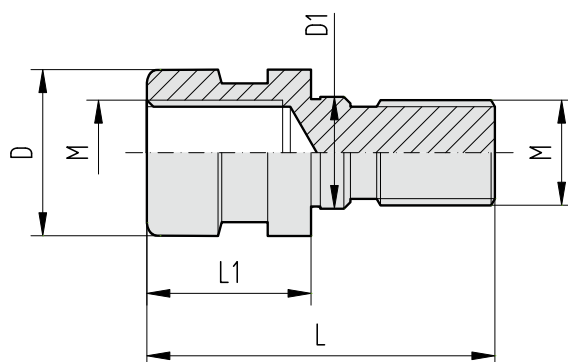
# Adattatori

## Adaptors

**I** L'Adattatore serve per la trasformazione di mandrini a norma DIN 69871 e BT a norma DIN 2080.

Nello stesso tempo è anche tirante di riduzione tipo OTT SYSTEM.

**GB** The adaptor changes the boring bars from Standard DIN 69871 and BT to Standard DIN 2080. In the mean time, the adaptor is also a reduction pull stud type OTT SYSTEM.



| ARTICOLO-ITEM         | CONO-SIZE | M  | L  | L1 | D                      | D1 h7 |
|-----------------------|-----------|----|----|----|------------------------|-------|
| <b>C16 OTT SYS 40</b> | 40        | 16 | 53 | 25 | 25,3<br>-0,30<br>-0,38 | 17    |
| <b>C16 OTT SYS 50</b> | 50        | 24 | 65 | 25 | 39,6<br>-0,31<br>-0,41 | 25    |

# Bride di trascinamento

## Grinding carriers



**I** Le Bride di trascinamento a bloccaggio rapido servono per il trascinamento del pezzo da lavorare quando è fissato fra le due punte della macchina utensile.

Il loro impiego risulta molto vantaggioso nelle lavorazioni di rettifica in serie; infatti con la loro rapidità di apertura e chiusura si riduce notevolmente il tempo di sostituzione del pezzo in macchina, con conseguenti risparmi economici.

Vengono prodotte in acciaio e in una vasta gamma di misure.

Ne viene prodotta anche una versione in alluminio, più leggera, e per piccole misure.

**GB** The fast clamp grinding carriers are used to pull the work piece when it is fixed between two drills.

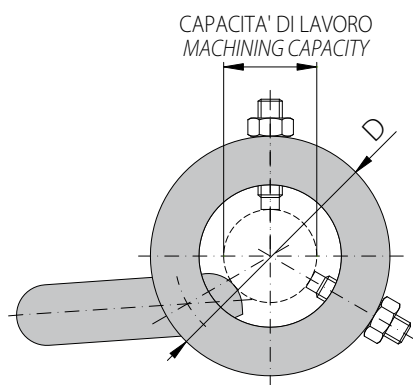
They are highly useful in mass grinding processes; in fact their high speed opening and closing allows a significant reduction in the time necessary for changing the piece on the machine tool, which also means cost savings.

They are made in steel, in a wide range of sizes.

A version in aluminium is also available, lighter, for small sizes.

### BRIDE DI TRASCINAMENTO IN ACCIAIO

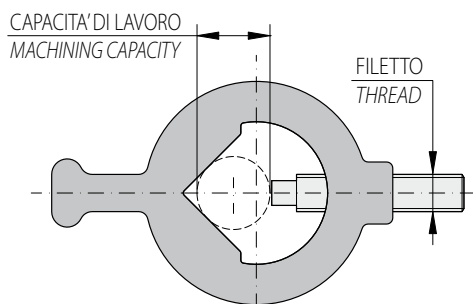
#### GRINDING CARRIERS IN STEEL



| ARTICOLO<br>ITEM  | D   | SPESSORE (mm)<br>THICKNESS (mm) | CAPACITA' DI LAVORO (mm)<br>MACHINING CAPACITY (mm) | LEVA<br>LEVER | MOLLA<br>SPRING |
|-------------------|-----|---------------------------------|-----------------------------------------------------|---------------|-----------------|
| <b>BRI-0008</b>   | 33  | 10                              | da/from 00 a/to 08                                  | L0008         | M0016           |
| <b>BRI-0816</b>   | 45  | 12,6                            | da/from 08 a/to 16                                  | L0816         | M0016           |
| <b>BRI-1624</b>   | 56  | 12,6                            | da/from 16 a/to 24                                  | L1632         | M1632           |
| <b>BRI-2432</b>   | 65  | 12,6                            | da/from 24 a/to 32                                  | L1632         | M1632           |
| <b>BRI-3240</b>   | 79  | 14,6                            | da/from 32 a/to 40                                  | L3240         | M32120          |
| <b>BRI-4048</b>   | 90  | 14,6                            | da/from 40 a/to 48                                  | L4048         | M32120          |
| <b>BRI-4856</b>   | 102 | 16,5                            | da/from 48 a/to 56                                  | L48120        | M32120          |
| <b>BRI-5664</b>   | 110 | 16,5                            | da/from 56 a/to 64                                  | L48120        | M32120          |
| <b>BRI-6472</b>   | 118 | 16,5                            | da/from 64 a/to 72                                  | L48120        | M32120          |
| <b>BRI-7280</b>   | 126 | 16,5                            | da/from 72 a/to 80                                  | L48120        | M32120          |
| <b>BRI-8090</b>   | 138 | 19,6                            | da/from 80 a/to 90                                  | L48120        | M32120          |
| <b>BRI-90100</b>  | 148 | 19,6                            | da/from 90 a/to 100                                 | L48120        | M32120          |
| <b>BRI-100110</b> | 158 | 19,6                            | da/from 100 a/to 110                                | L48120        | M32120          |
| <b>BRI-110120</b> | 168 | 19,6                            | da/from 110 a/to 120                                | L48120        | M32120          |

## BRIDE DI TRASCINAMENTO IN ALLUMINIO

### GRINDING CARRIERS IN ALUMINIUM



| ARTICOLO<br>ITEM | SPESSORE (mm)<br>THICKNESS (mm) | FILETTO<br>THREAD | CAPACITA' DI LAVORO (mm)<br>MACHINING CAPACITY (mm) |
|------------------|---------------------------------|-------------------|-----------------------------------------------------|
| <b>BRIL-0205</b> | 5,5                             | M4x30             | da/from 2 a/to 5                                    |
| <b>BRIL-0610</b> | 6,5                             | M5x30             | da/from 6 a/to 10                                   |
| <b>BRIL-1116</b> | 7                               | M5x30             | da/from 11 a/to 16                                  |
| <b>BRIL-1725</b> | 9                               | M8x35             | da/from 17 a/to 25                                  |

## LEVE PER BRIDE

### LEVERS FOR GRINDING CARRIERS



| ARTICOLO<br>ITEM | CAPACITA' DI LAVORO (mm)<br>MACHINING CAPACITY (mm) |
|------------------|-----------------------------------------------------|
| <b>L0008</b>     | da/from 0 a/to 8                                    |
| <b>L0816</b>     | da/from 8 a/to 16                                   |
| <b>L1632</b>     | da/from 16 a/to 32                                  |
| <b>L3240</b>     | da/from 32 a/to 40                                  |
| <b>L4048</b>     | da/from 40 a/to 48                                  |
| <b>L48120</b>    | da/from 48 a/to 120                                 |

## MOLLE PER BRIDE

### SPRINGS FOR GRINDING CARRIERS



| ARTICOLO<br>ITEM | CAPACITA' DI LAVORO (mm)<br>MACHINING CAPACITY (mm) |
|------------------|-----------------------------------------------------|
| <b>M0016</b>     | da/from 0 a/to 16                                   |
| <b>M1632</b>     | da/from 16 a/to 32                                  |
| <b>M32120</b>    | da/from 32 a/to 120                                 |





BRIGHETTI MECCANICA

*Made in Italy*  
*since 1977*



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