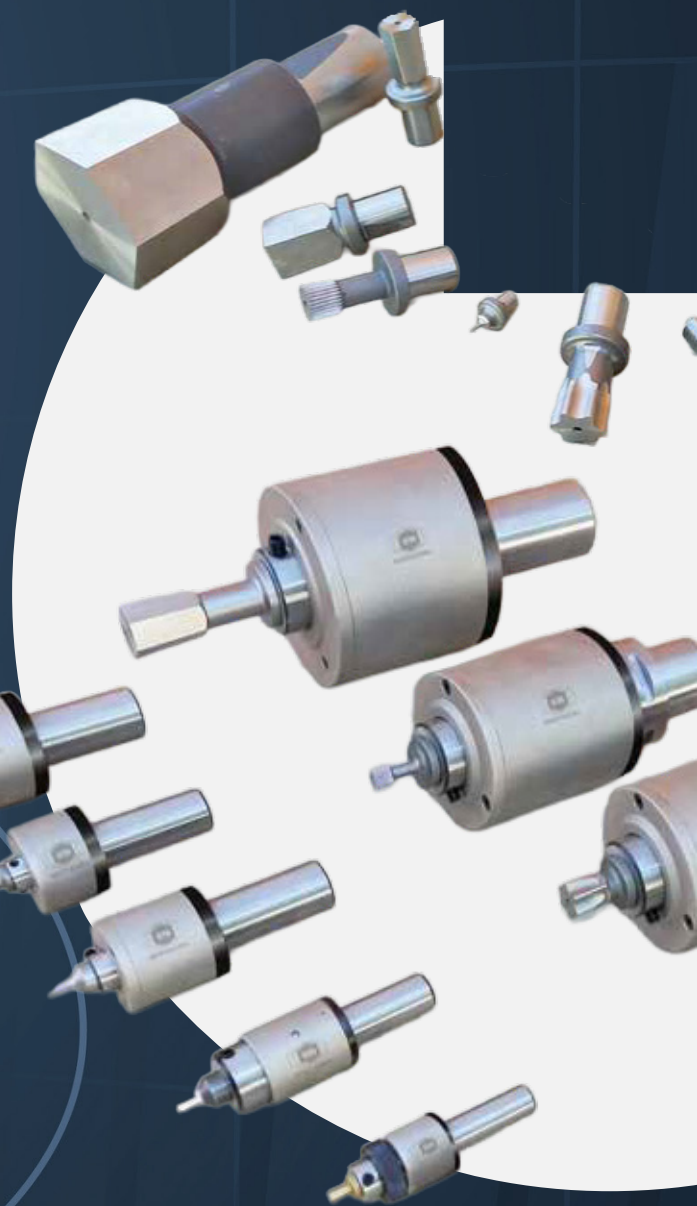


BM-250

catalogi.online



Rotatie Slagbroots Houders en
Tools:
• Standaard

BRIGHETTI MECCANICA



Sistemi di Brocciatura Broaching Systems

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



pag. 6

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



pag. 12

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.

**SCANSIONA IL QR CODE CON I TUOI DISPOSITIVI
E SCOPRI I NOSTRI BROCCIATORI "BR"**

SCAN THE QR CODE BY YOUR DEVICES AND DISCOVER
THE VIDEO ABOUT "BR" BROACHING HEADS

IT


<https://bit.ly/3OtS1tZ>

GB


<https://bit.ly/49nhaic>

**SCANSIONA IL QR CODE CON I TUOI DISPOSITIVI
E SCOPRI I NOSTRI BROCCIATORI "BRC"**

SCAN THE QR CODE BY YOUR DEVICES AND DISCOVER
THE VIDEO ABOUT "BRC" BROACHING HEADS

IT


<https://bit.ly/3w8JlLF>

GB


<https://bit.ly/3OyAocG>



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 forcilla 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.

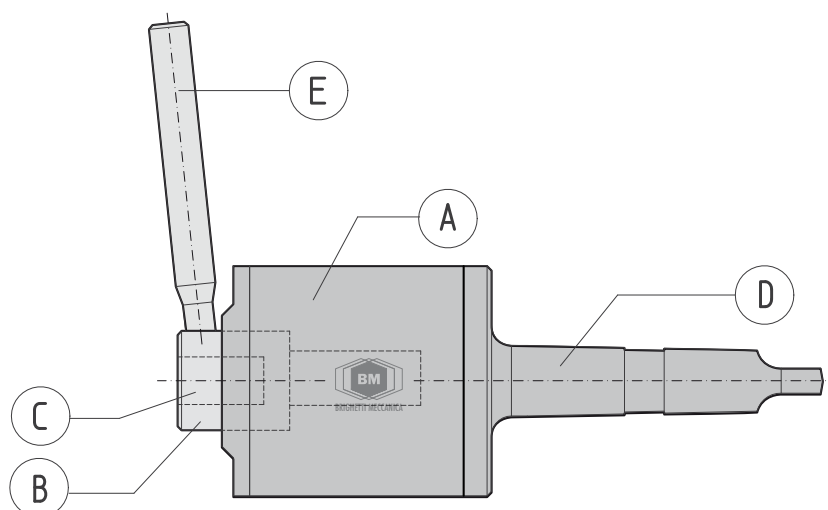
D - Connection to the machine tool

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.



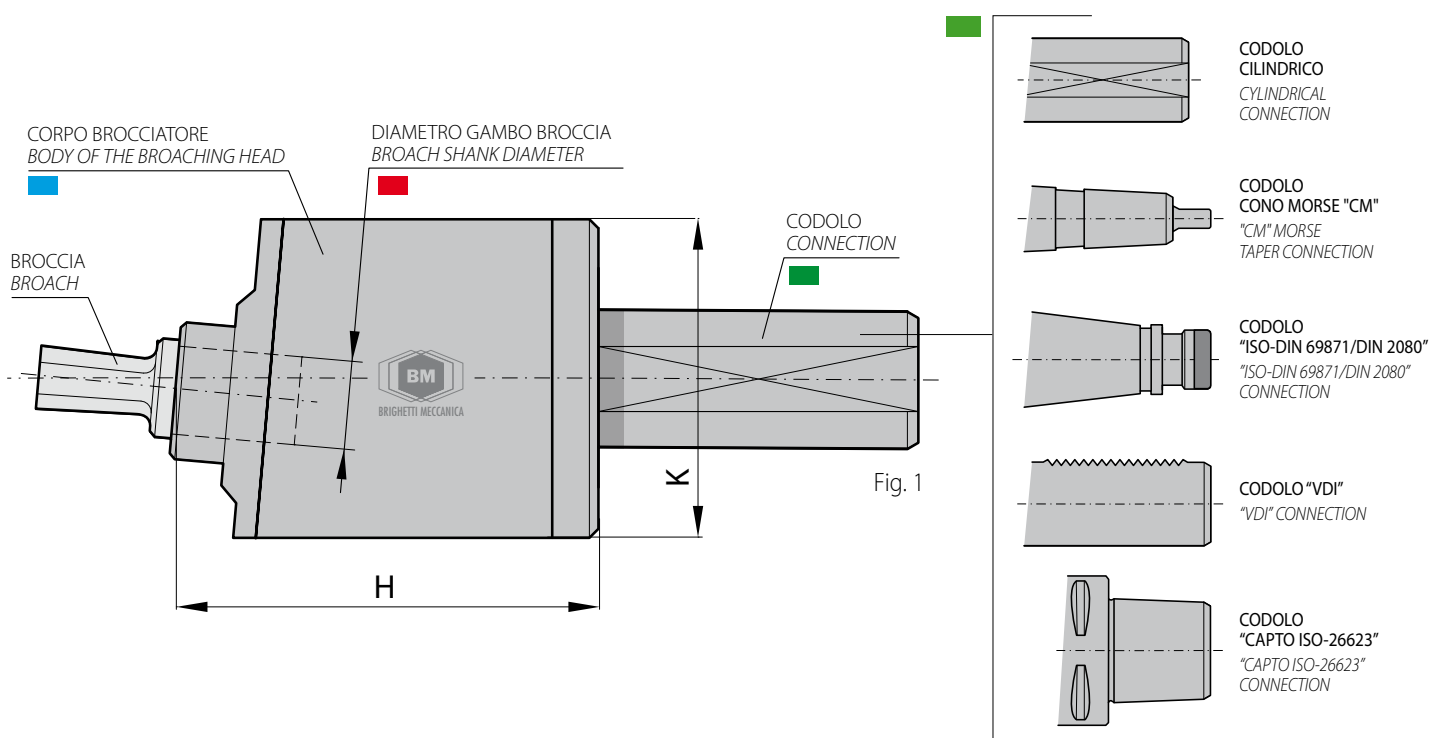
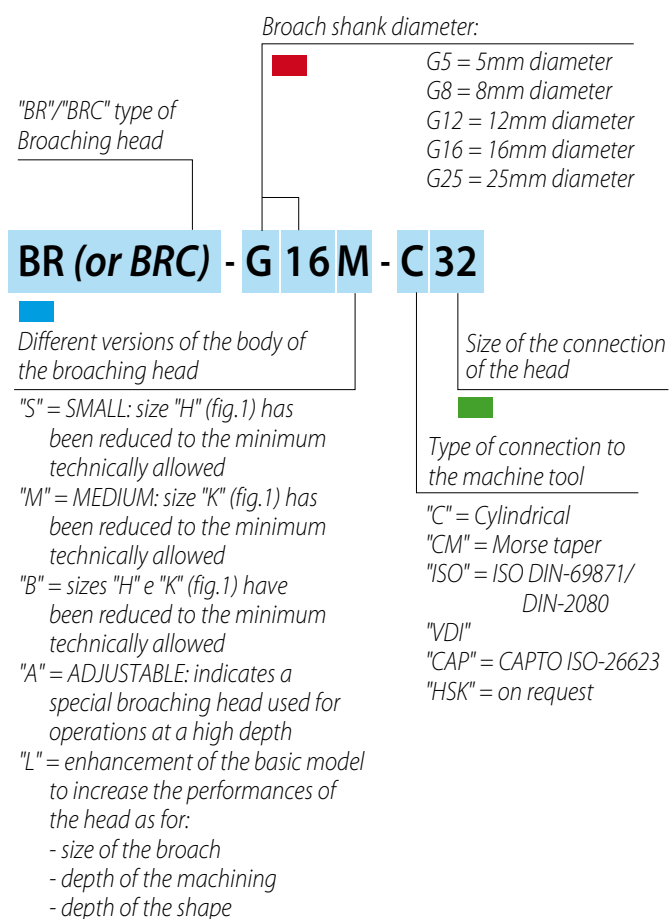
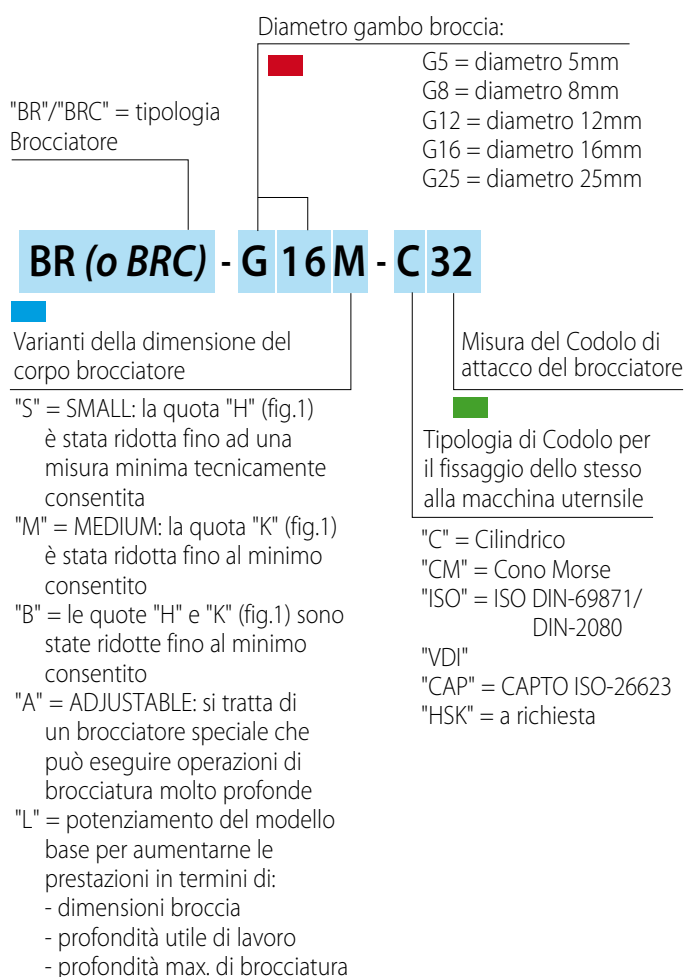


Brocciatori serie "BR" e "BRC" - Codifica delle sigle

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**



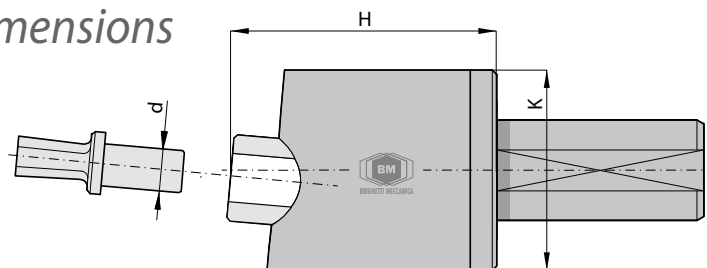


Brocciatori Standard serie "BR"

- Caratteristiche tecniche e dimensioni

Standard Broaching Heads "BR" series

- Technical characteristics and dimensions



CARATTERISTICHE / 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 SHANK OF THE BROACH	d	mm	Ø5	Ø8	Ø8	Ø8	Ø12	Ø12	Ø16	Ø16	Ø16	Ø25
CAPACITA' CAVE ESAGONALI 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 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® 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 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 MAXIMUM WORKING DEPTH		mm	7,5	15	15	15	21	21	21	30	40	65
DIMENSIONE CORPO BODY DIMENSIONS	H	mm	35	36,5	47,5	55	66,5	81,5	87	91	99	115,5
DIMENSIONE CORPO BODY DIMENSIONS	K	mm	Ø24	Ø37	Ø29,5	Ø37	Ø47	Ø58	Ø68	Ø68	Ø79	Ø91
PESO (indicativo) WEIGHT (indicative)		gr.	181	412	338	525	851	1653	2628	1830	3500	4850

TIPO DI ATTACCO / 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 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" "CM" MORSE TAPER CONNECTION						2	3	3 - 4	3 - 4	4 - 5	4 - 5
A RICHIESTA / On request: CODOLO "ISO - DIN 69871 / DIN 2080" "ISO-DIN 69871 / DIN 2080" CONNECTION							30 - 40	40	40 - 50	40 - 50	40 - 50
CODOLO "VDI" "VDI" CONNECTION							VDI 30	VDI 30	VDI 30	VDI 40	VDI 40
								VDI 40	VDI 40		
CODOLO "CAPTO ISO-26623" "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





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: acciaio inox, 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. stainless steels, 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.

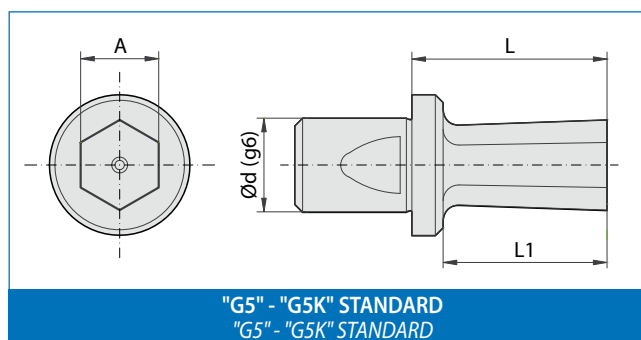


BROCCE G5 - DIAMETRO "d" DEL GAMBO: 5 mm

G5 BROACHES - 5 mm SHANK DIAMETER ("d")

Sezione ESAGONALE standard (E)

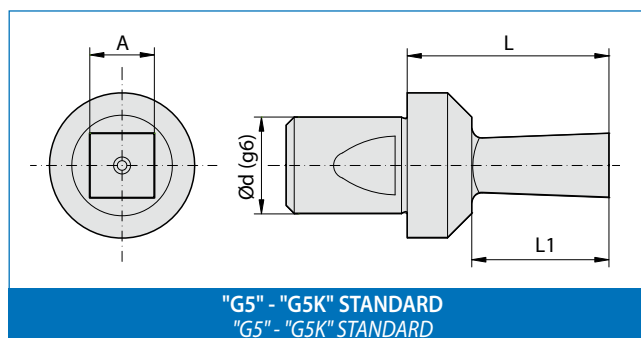
Standard HEXAGONAL section (E)



ARTICOLO (materiale) <i>ITEM (material)</i>		DIMENSIONI - DIMENSIONS				Utilizzo su Brocciatori/ <i>Use on Broaching heads</i>
HSS	SINTERIZZATO <i>SINTERED</i>					
Standard 	Standard 	d	A	L1	L	
G5-E-1	G5K-E-1	5	1 +0,04 +0,06	2	10	Standard BR-G5
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) <i>ITEM (material)</i>		DIMENSIONI - <i>DIMENSIONS</i>					Utilizzo su Brocciatori/ <i>Use on Broaching heads</i>
HSS	SINTERIZZATO <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-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

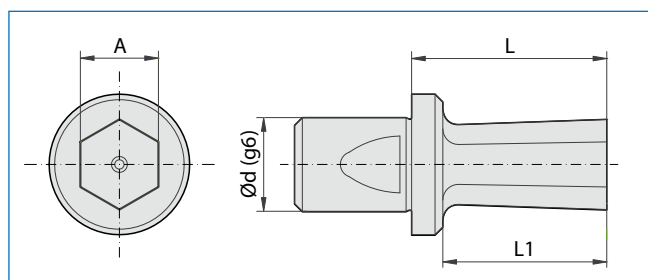
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



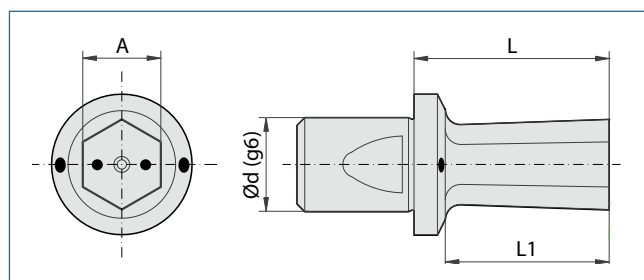


BROCCE G8 E G8C - DIAMETRO "d" DEL GAMBO: 8 mm
G8 AND G8C BROACHES - 8 mm SHANK DIAMETER ("d")

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 Brocciatori/ Use on 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-G8S BR-G8M BR-G8 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. BRC-G8M BRC-G8 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



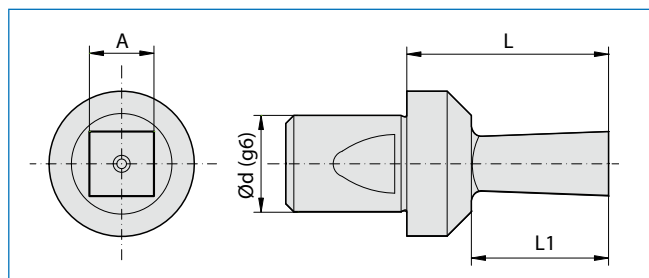


BROCCE G8 E G8C - DIAMETRO "d" DEL GAMBO: 8 mm

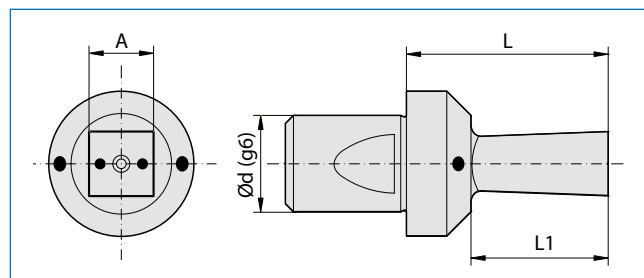
G8 AND G8C BROACHES - 8 mm SHANK DIAMETER ("d")

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/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED						
Standard 	Ref. / Cool. 	Standard 	Ref. / Cool. 	d	A	L1	L	
G8-Q-1	/	G8K-Q-1	/	8	1 +0,04 +0,06	2	18	Standard BR-G8S BR-G8M BR-G8 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. BRC-G8M BRC-G8 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

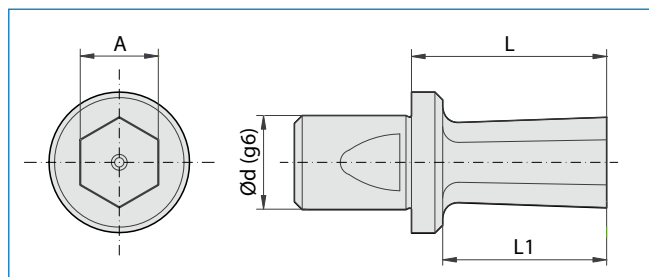




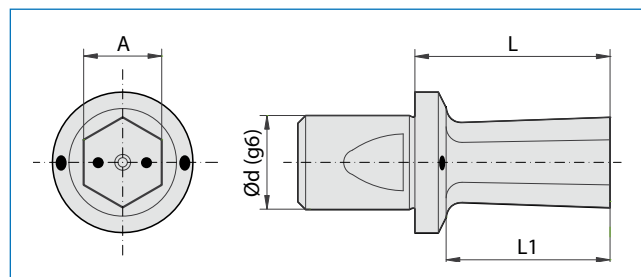
BROCCE G12 E G12C - DIAMETRO "d" DEL GAMBO: 12 mm

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 Brocciatori/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED						
Standard 	Ref. / Cool. 	Standard 	Ref. / Cool. 	d	A	L1	L	
G12-E-1	/	G12K-E-1	/	12	1 +0,04 +0,06	2	25	
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	15	25	
G12-E-8	G12C-E-8	G12K-E-8	G12KC-E-8	12	8 +0,08 +0,10	17	25	
G12-E-9	G12C-E-9	G12K-E-9	G12KC-E-9	12	9 +0,09 +0,11	19	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



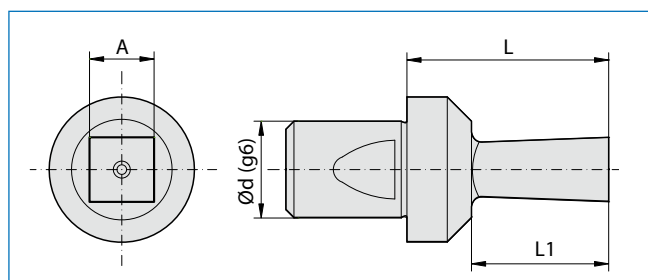


BROCCHE G12 E G12C - DIAMETRO "d" DEL GAMBO: 12 mm

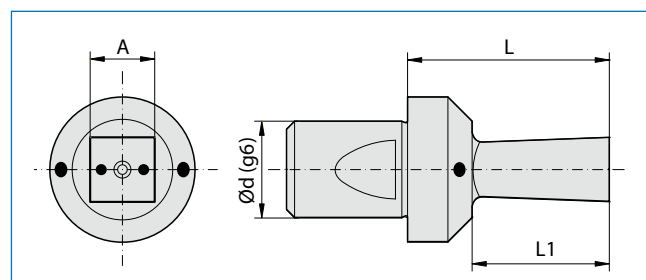
G12 AND G12C BROACHES - 12 mm SHANK DIAMETER ("d")

Sezione QUADRA (Q)

SQUARE section (Q)



"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 Brocciatori/ Use on Broaching head
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-G12B BR-G12 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. BRC-G12B 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



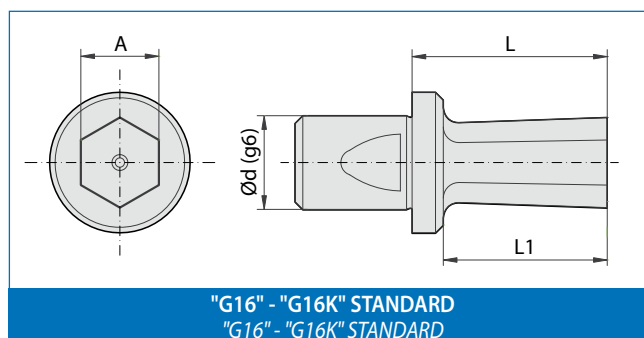


BROCCHE G16 - DIAMETRO "d" DEL GAMBO: 16 mm

G16 BROACHES - 16 mm SHANK DIAMETER ("d")

Sezione ESAGONALE standard (E)

Standard HEXAGONAL section (E)



ARTICOLO (materiale) ITEM (material)		DIMENSIONI - DIMENSIONS				Utilizzo su Brocciatori/ Use on Broaching heads
HSS	SINTERIZZATO SINTERED	d	A	L1	L	
Standard	Standard					
G16-E-2	G16K-E-2	16	2 +0,05 +0,07	5	25	Standard 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



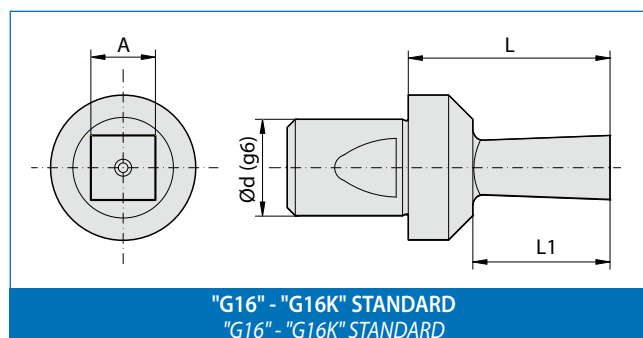


BROCCE G16 - DIAMETRO "d" DEL GAMBO: 16 mm

G16 BROACHES - 16 mm SHANK DIAMETER ("d")

Sezione QUADRA standard (Q)

Standard SQUARE section (Q)



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



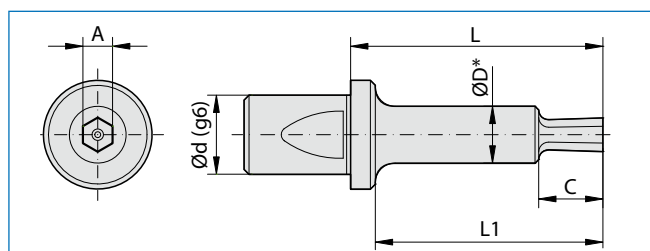


BROCCE G16M E G16MC - DIAMETRO "d" DEL GAMBO: 16 mm **G16M AND G16MC BROACHES - 16 mm SHANK DIAMETER ("d")**

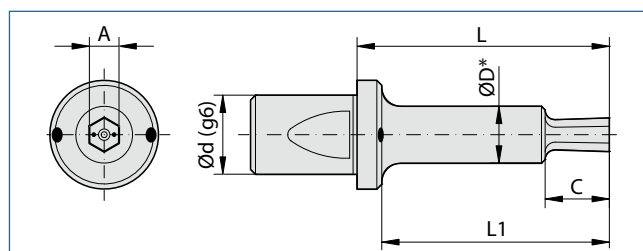
Per Brocciatori /
For Broaching Heads
BR-G16M



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

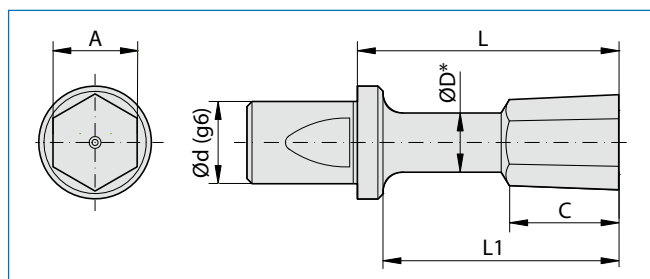


"G16M" - "G16MK" STANDARD
"G16M" - "G16MK" STANDARD

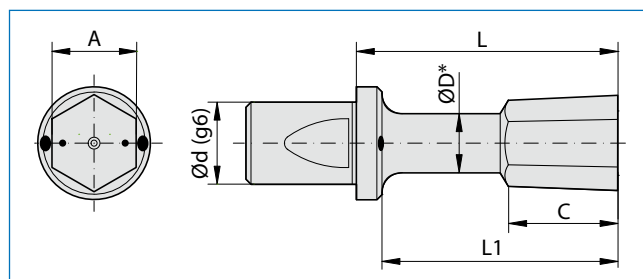


"G16MC" - "G16MKC" CON PASSAGGIO REFRIGERANTE INTERNO
"G16MC" - "G16MKC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS							Utilizzo su Brocciatori/ Use on 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		
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		
										Standard BR-G16M Refrig. / Cool. BRC-G16M	



"G16M" - "G16MK" STANDARD
"G16M" - "G16MK" STANDARD



"G16MC" - "G16MKC" CON PASSAGGIO REFRIGERANTE INTERNO
"G16MC" - "G16MKC" WITH INTERNAL FLOW OF COOLANT

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-G16M Refrig. / Cool. 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 >>

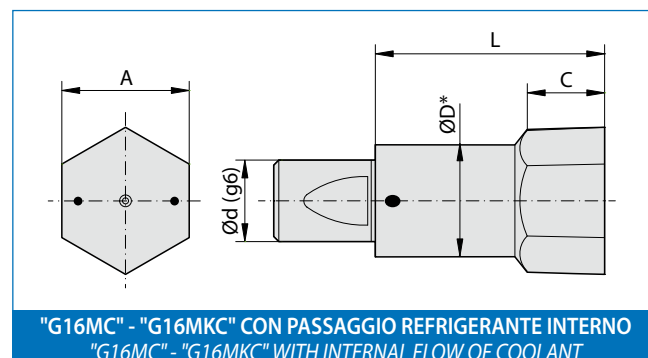
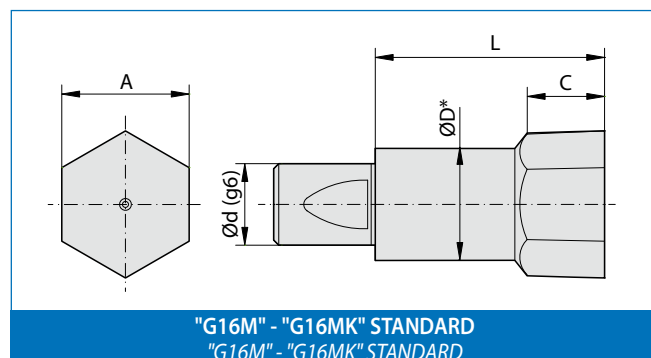
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

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





>> segue / continued

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 Brocciatori/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED		d	A	L	C	D*		
Standard 	Ref. / Cool. 	Standard 	Ref. / Cool. 							
G16M-E-23	G16MC-E-23	G16MK-E-23	G16MKC-E-23	16	23 +0,20 +0,22	35	13,2	22	Standard 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. 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





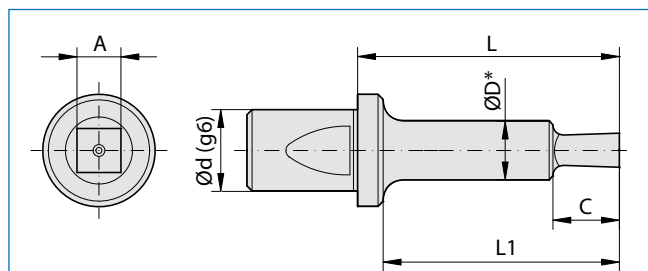
BROCCE G16M E G16MC - DIAMETRO "d" DEL GAMBO: 16 mm

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

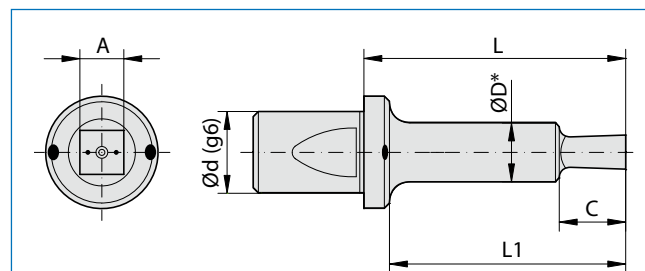
Per Brocciatori /
For Broaching Heads
BR-G16M



Sezione QUADRA (Q) SQUARE section (Q)

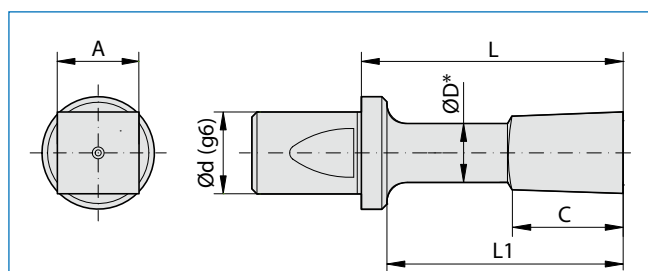


"G16M" - "G16MK" STANDARD
"G16M" - "G16MK" STANDARD

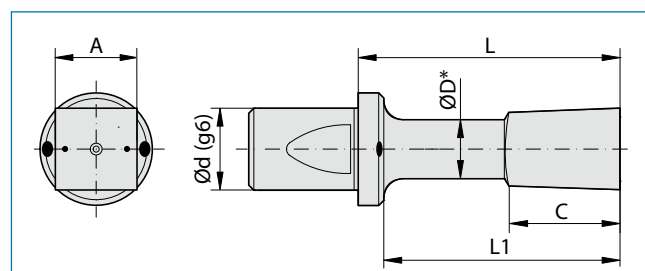


"G16MC" - "G16MKC" CON PASSAGGIO REFRIGERANTE INTERNO
"G16MC" - "G16MKC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS						Utilizzo su Brocciatori/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED		d	A	L1	L	C	D*	
Standard	☐	Ref. / Cool.	☐							
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" - "G16MK" STANDARD
"G16M" - "G16MK" STANDARD



"G16MC" - "G16MKC" CON PASSAGGIO REFRIGERANTE INTERNO
"G16MC" - "G16MKC" WITH INTERNAL FLOW OF COOLANT

G16M-Q-7	G16MC-Q-7	G16MK-Q-7	G16MKC-Q-7	16	7	+0,08 +0,10	31	35	14	4,2	Standard BR-G16M Refrig. / Cool. BRC-G16M
G16M-Q-8	G16MC-Q-8	G16MK-Q-8	G16MKC-Q-8	16	8	+0,08 +0,10	31	35	14,5	5	
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



Per Brocciatori /
For Broaching Heads

BR-G16L



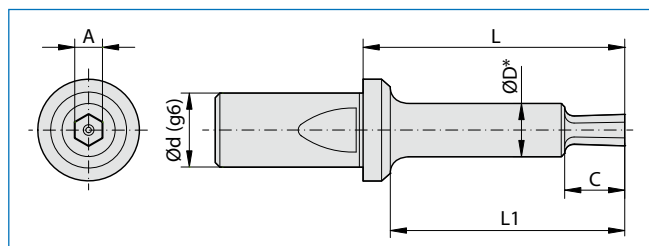
BROCCIE G16L E G16LC - DIAMETRO "d" DEL GAMBO: 16 mm

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

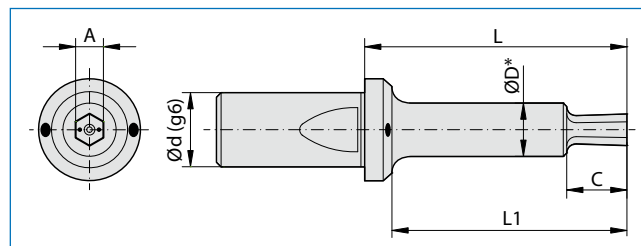


Sezione ESAGONALE (E)

HEXAGONAL section (E)

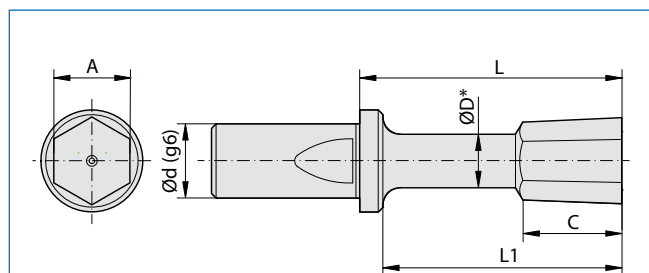


"G16L" - "G16LK" STANDARD
"G16L" - "G16LK" STANDARD

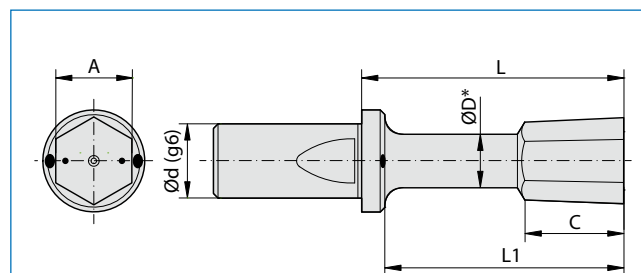


"G16LC" - "G16LKC" CON PASSAGGIO REFRIGERANTE INTERNO
"G16LC" - "G16LKC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS						Utilizzo su Brocciatori/ Use on 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



"G16L" - "G16LK" STANDARD
"G16L" - "G16LK" STANDARD



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

G16L-E-7	/	G16LK-E-7	/	16	7	+0,08 +0,10	41	45	16	6,5	Standard BR-G16L Refrig. / Cool. 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

segue / continued >>

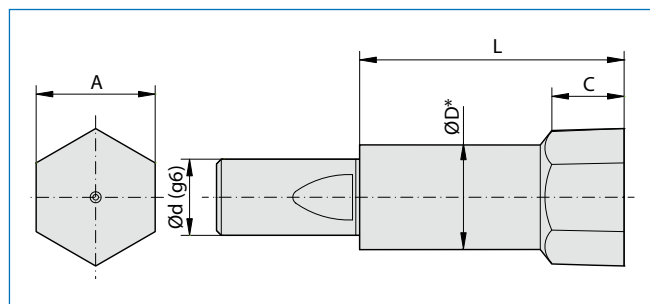
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

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

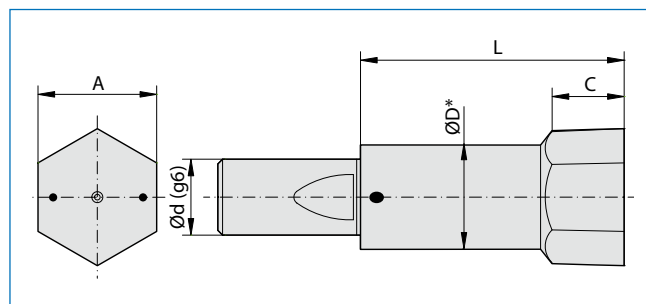




>> segue / continued

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

"G16L" - "G16LK" STANDARD
"G16L" - "G16LK" STANDARD



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

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS						Utilizzo su Brocciatori/ Use on 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-G16L Refrig. / Cool. 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.18Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18

Per Brocciatori /
For Broaching Heads

BR-G16L

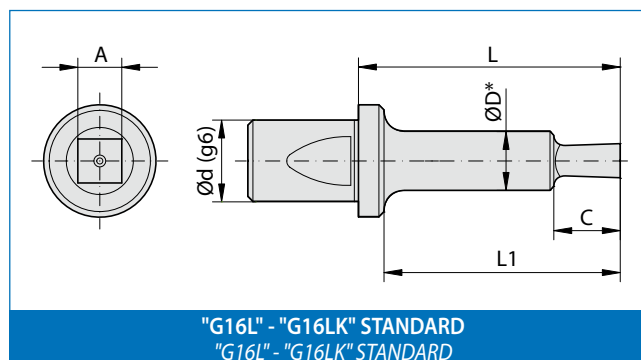


BROCCIE G16L E G16LC - DIAMETRO "d" DEL GAMBO: 16 mm

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

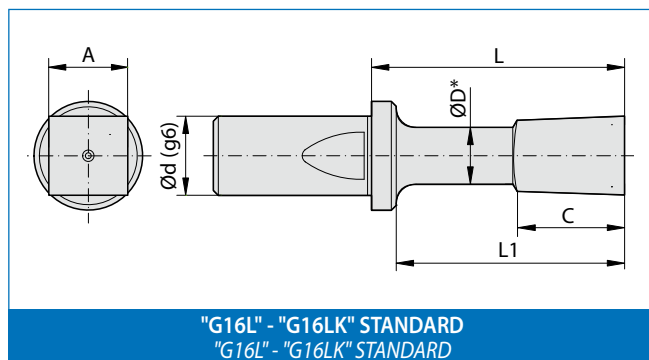
Sezione QUADRA (Q)

SQUARE section (Q)

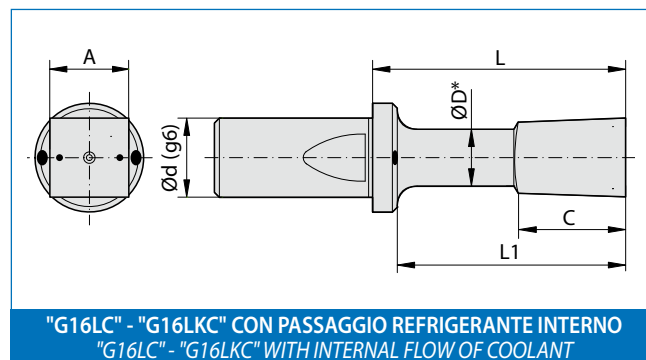


"G16L" - "G16LK" STANDARD
"G16L" - "G16LK" STANDARD

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS							Utilizzo su Brocciatori/ Use on 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-G16L Refrig. / Cool. BRC-G16L	



"G16L" - "G16LK" STANDARD
"G16L" - "G16LK" STANDARD



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

G16L-Q-7	/	G16LK-Q-7	/	16	7	+0,08 +0,10	41	45	15	6	Standard BR-G16L Refrig. / Cool. 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

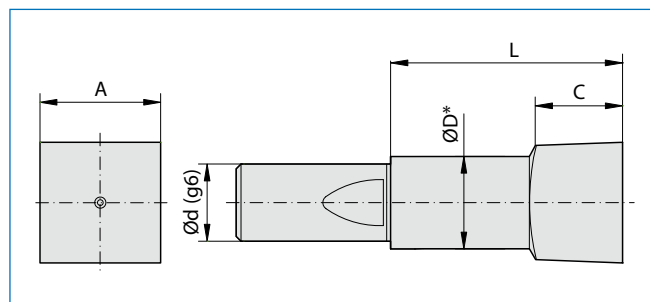
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

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

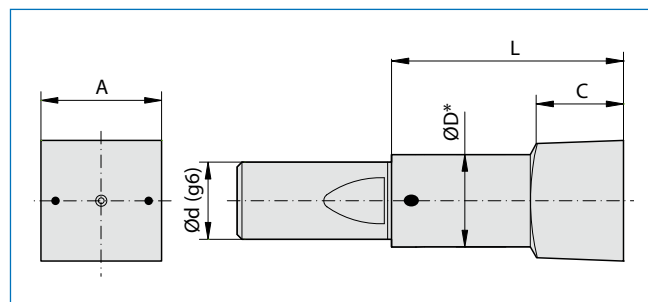




>> segue / continued

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

"G16L" - "G16LK" STANDARD
"G16L" - "G16LK" STANDARD



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

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS							Utilizzo su Brocciatori/ Use on 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		
										Standard BR-G16L Refrig. / Cool. BRC-G16L	

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

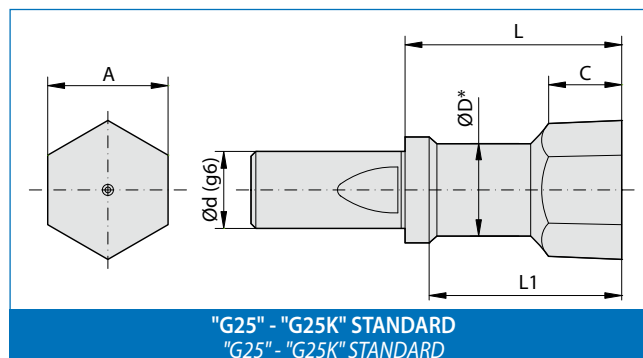


BROCCE G25 - DIAMETRO "d" DEL GAMBO: 25 mm

G25 BROACHES - 25 mm SHANK DIAMETER ("d")

Sezione ESAGONALE standard (E)

Standard HEXAGONAL section (E)

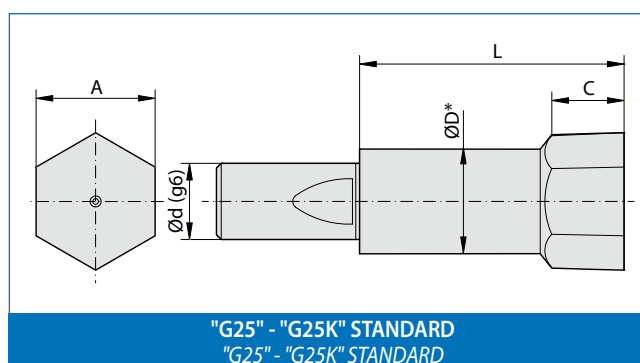


ARTICOLO (materiale) ITEM (material)		DIMENSIONI - DIMENSIONS							Utilizzo su Brocciatori/ Use on Broaching heads
HSS	SINTERIZZATO SINTERED								
Standard 	Standard 	d	A		L1	L	C	D*	
G25-E-15	G25K-E-15	25	15	+0,13 +0,15	65	70	30	10	Standard BR-G25
G25-E-16	G25K-E-16	25	16	+0,13 +0,15	65	70	30	11	
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-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	

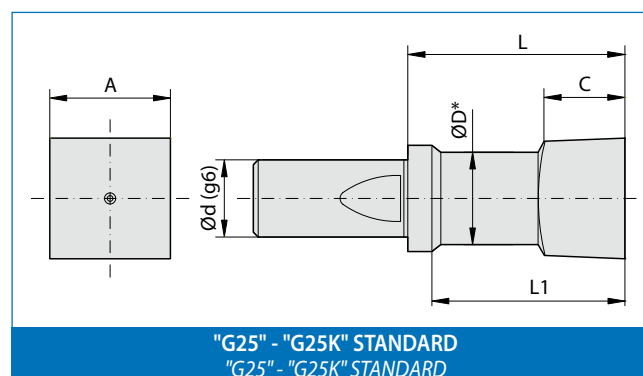


BROCCIE G25 - DIAMETRO "d" DEL GAMBO: 25 mm

G25 BROACHES - 25 mm SHANK DIAMETER ("d")

Sezione QUADRA standard (Q)

Standard SQUARE section (Q)



ARTICOLO (materiale) <i>ITEM (material)</i>		DIMENSIONI - <i>DIMENSIONS</i>							Utilizzo su Brocciatori/ <i>Use on</i> <i>Broaching heads</i>
HSS	SINTERIZZATO <i>SINTERED</i>								
Standard ☐	Standard ☐	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-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 A RICHIESTA <i>SPECIAL ITEMS ON 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





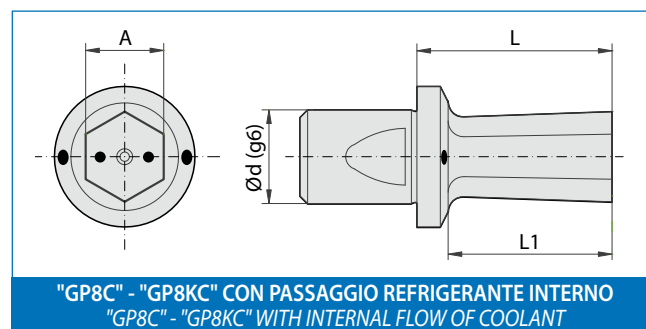
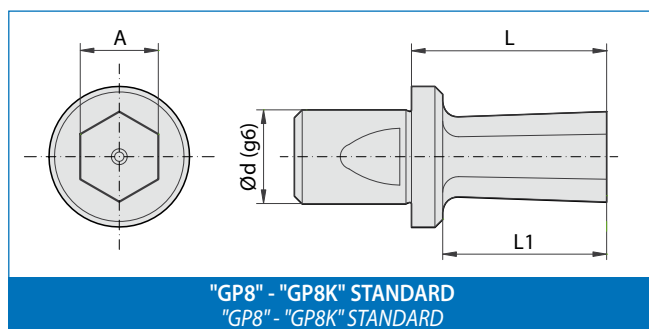
Brocche Standard per cave poligonali su Brocciatori serie "BR" e "BRC" - Misure in pollici

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

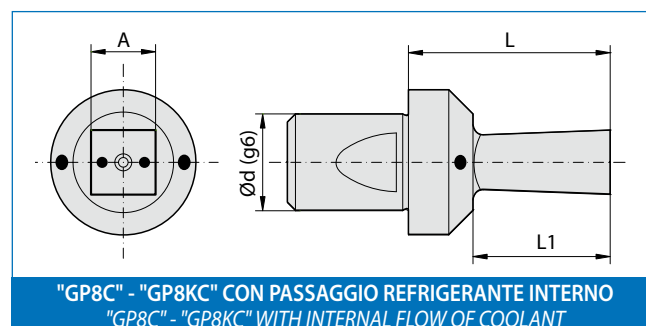
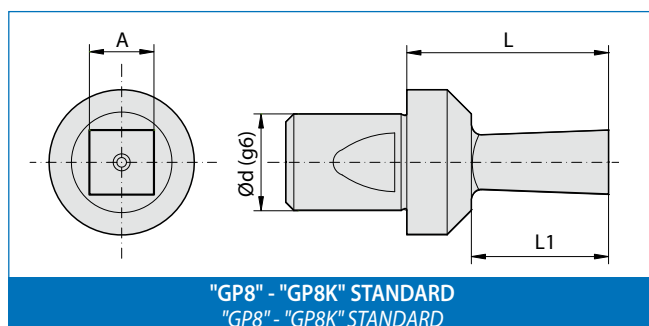
GP8 AND GP8C BROACHES - 8 mm SHANK DIAMETER ("d") - SIZES IN INCHES

Sezione ESAGONALE (E) / HEXAGONAL section (E)



ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS				Utilizzo su Brocciatori/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED		d	A	L1	L	
Standard	Ref. / Cool.	Standard	Ref. / Cool.					
GP8-E-3/32"	/	GP8K-E-3/32"	/	8	2,38 +0,06 +0,08	5	18	Standard BR-G8S BR-G8M BR-G8 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	Refrig. / Cool. BRC-G8M BRC-G8 BRC-G8HP
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	
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 Brocciatori/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED		d	A	L1	L	
Standard	Ref. / Cool.	Standard	Ref. / Cool.					
GP8-Q-3/32"	/	GP8K-Q-3/32"	/	8	2,38 +0,06 +0,08	5	18	Standard BR-G8S BR-G8M BR-G8 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	Refrig. / Cool. BRC-G8M BRC-G8 BRC-G8HP
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	
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

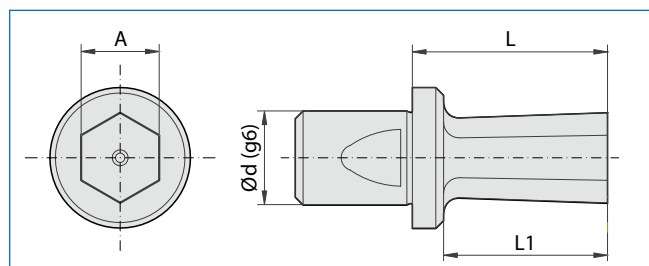
Available coatings for the up above mentioned items: **WONDER, TiN, INOX PLUS and ZIRINOS** > see page 18



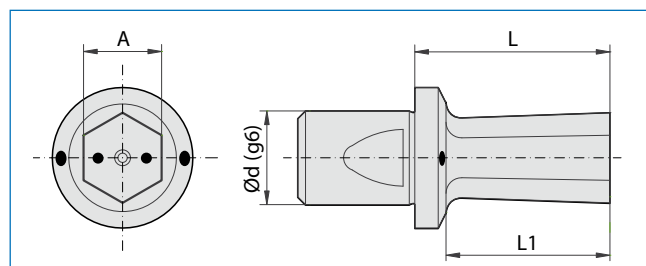


BROCCHE GP12 E GP12C - DIAMETRO "d" DEL GAMBO: 12 mm - MISURE IN POLLICI GP12 E GP12C BROACHES - 12 mm SHANK DIAMETER ("d") - SIZES IN INCHES

Sezione ESAGONALE (E) / HEXAGONAL section (E)



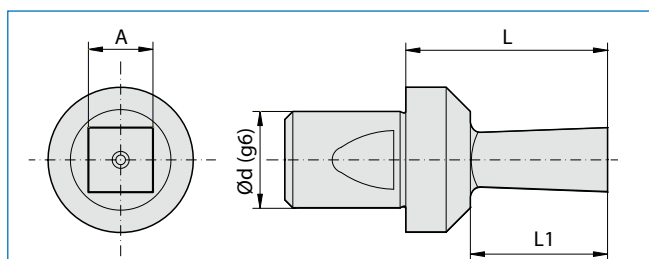
"GP12" - "GP12K" STANDARD
"GP12" - "GP12K" STANDARD



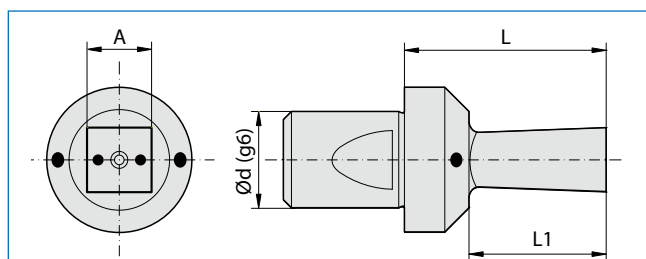
"GP12C" - "GP12KC" CON PASSAGGIO REFRIGERANTE INTERNO
"GP12C" - "GP12KC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS					Utilizzo su Brocciatori/ Use on 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-G12B BR-G12 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		
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	Refrig. / Cool. BRC-G12B BRC-G12	
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 Brocciatori/ Use on 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-G12B BR-G12 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. BRC-G12B 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



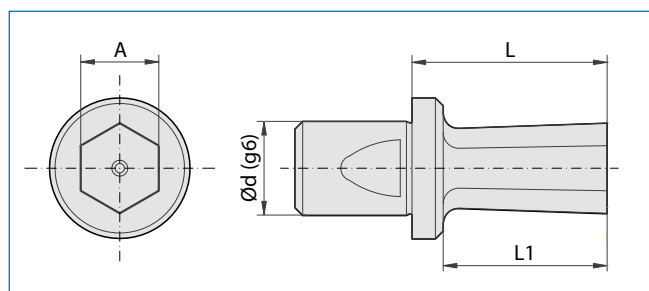


BROCCE GP16 - DIAMETRO "d" DEL GAMBO: 16 mm - MISURE IN POLLICI

GP16 BROACHES - 16 mm SHANK DIAMETER ("d") - SIZES IN INCHES

Sezione ESAGONALE standard (E)

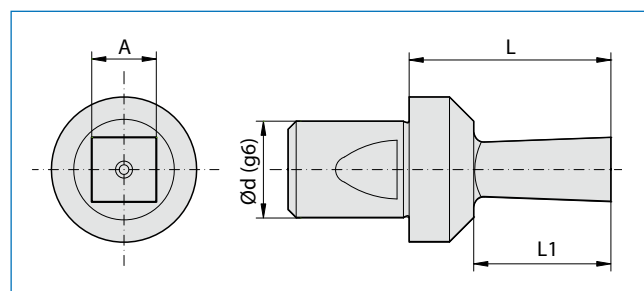
Standard HEXAGONAL section (E)



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

Sezione QUADRA standard (Q)

Standard SQUARE section (Q)



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

ESAGONALE / HEXAGONAL	
ARTICOLO (materiale) ITEM (material)	
HSS	SINTERIZZATO 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) ITEM (material)	
HSS	SINTERIZZATO 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 Brocciatori/ Use on Broaching heads
d	A	L1	L		
16	2,38 +0,06 +0,08	5	25		Standard 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



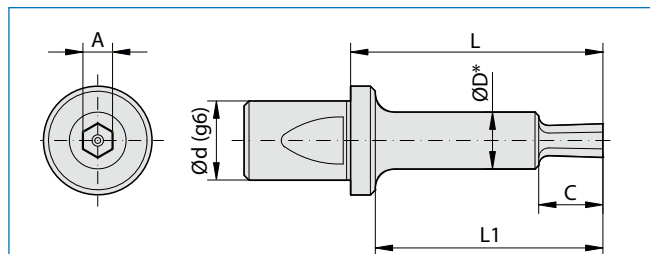


BROCCE GP16M E GP16MC - DIAMETRO "d" DEL GAMBO: 16 mm
MISURE IN POLLICI
GP16M AND GP16MC BROACHES - 16 mm SHANK DIAMETER ("d")
SIZES IN INCHES

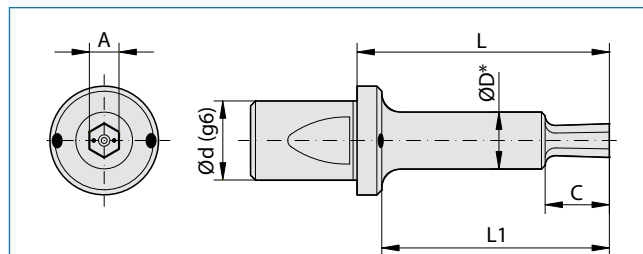
Per Brocciatori /
For Broaching Heads
BR-G16M



Sezione ESAGONALE (E)
HEXAGONAL section (E)

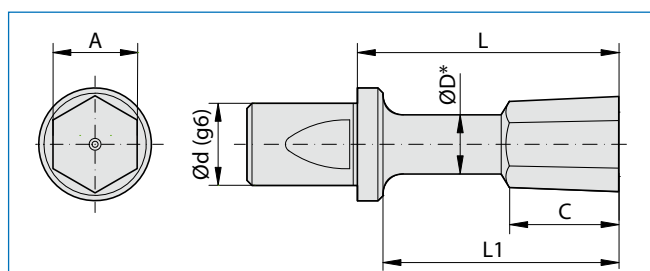


"GP16M" - "GP16MK" STANDARD
 "GP16M" - "GP16MK" STANDARD

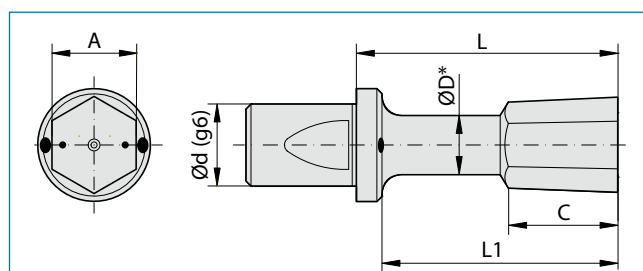


"GP16MC" - "GP16MKC" CON PASSAGGIO REFRIGERANTE INTERNO
 "GP16MC" - "GP16MKC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS						Utilizzo su Brocciatori/ Use on 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 BR-G16M
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	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-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. 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.

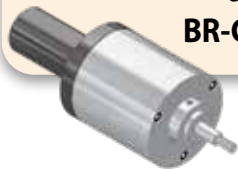
In questi articoli possiamo eseguire i seguenti rivestimenti: **WONDER, TiN, INOX PLUS e ZIRINOS** > vedi pag.18

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



**Per Brocciatori /
For Broaching Heads**

BR-G16M



BROCCE GP16M E GP16MC - DIAMETRO "d" DEL GAMBO: 16 mm

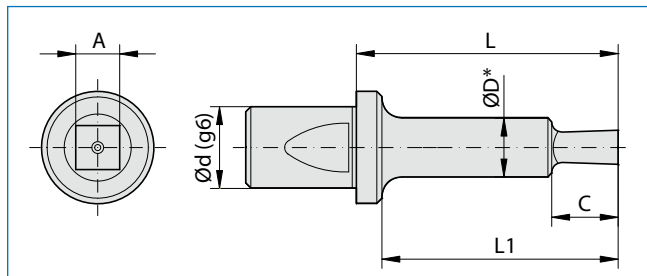
MISURE IN POLLICI

GP16M AND GP16MC BROACHES - 16 mm SHANK DIAMETER ("d")

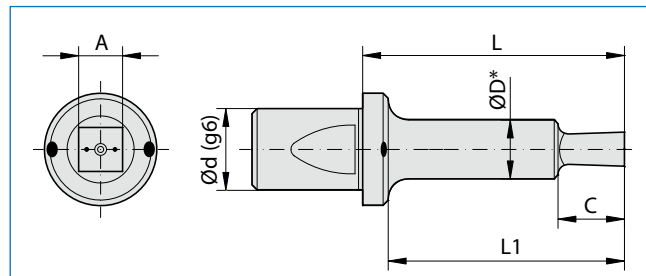
SIZES IN INCHES

Sezione QUADRA (Q)

SQUARE section (Q)

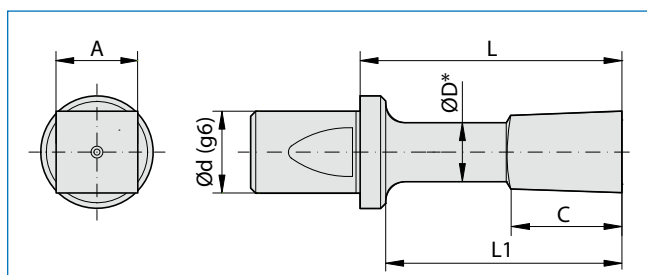


"GP16M" - "GP16MK" STANDARD
"GP16M" - "GP16MK" STANDARD

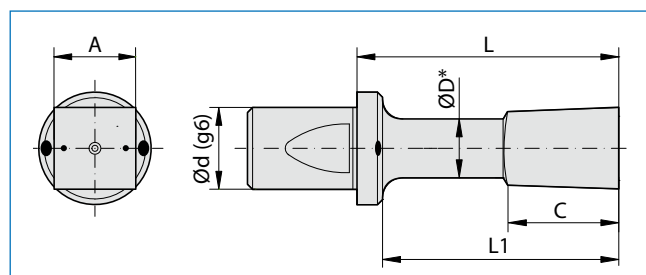


"GP16MC" - "GP16MKC" CON PASSAGGIO REFRIGERANTE INTERNO
"GP16MC" - "GP16MKC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS							Utilizzo su Brocciatori/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED									
Standard ☐	Ref. / Cool. ☐	Standard ☐	Ref. / Cool. ☐	d	A	L1	L	C	D*		
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	



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



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

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-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	
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	Refrig. / Cool. 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	
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



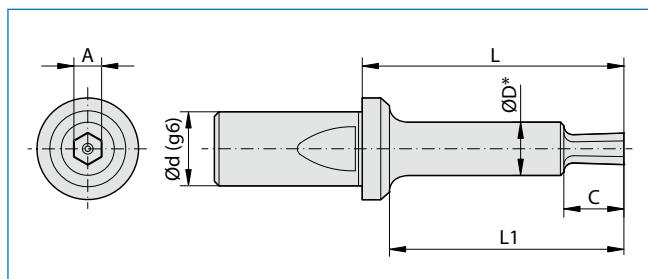


BROCCE GP16L E GP16LC - DIAMETRO "d" DEL GAMBO: 16 mm
MISURE IN POLLICI
GP16L AND GP16LC BROACHES - 16 mm SHANK DIAMETER ("d")
SIZES IN INCHES

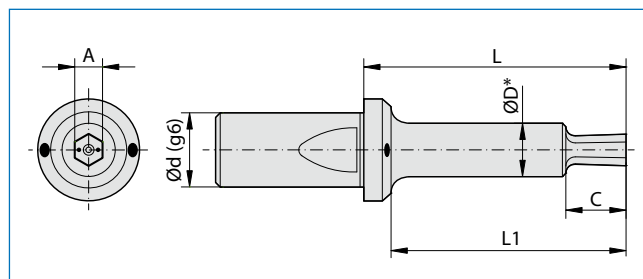
Per Brocciatori /
For Broaching Heads
BR-G16L



Sezione ESAGONALE (E) / HEXAGONAL section (E)

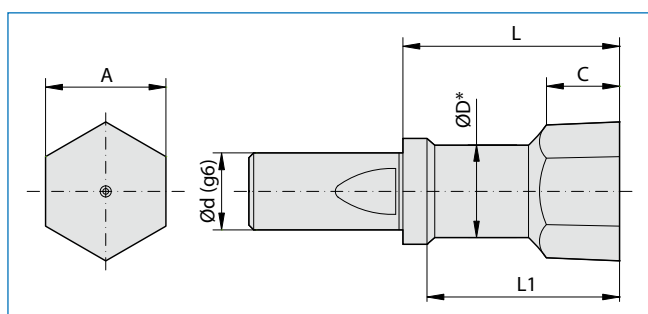


"GP16L" - "GP16LK" STANDARD
 "GP16L" - "GP16LK" STANDARD

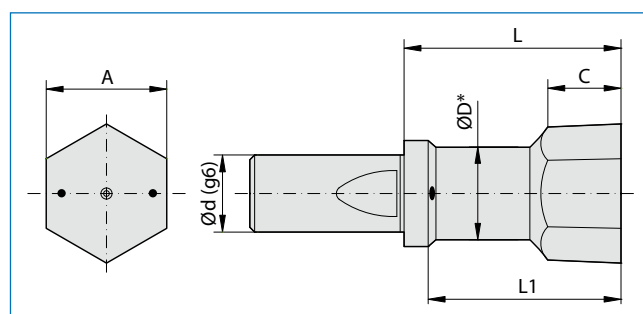


"GP16LC" - "GP16LKC" CON PASSAGGIO REFRIGERANTE INTERNO
 "GP16LC" - "GP16LKC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS						Utilizzo su Brocciatori/ Use on 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-G16L Refrig. / Cool. 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-G16L Refrig. / Cool. 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



**Per Brocciatori /
For Broaching Heads**

BR-G16L

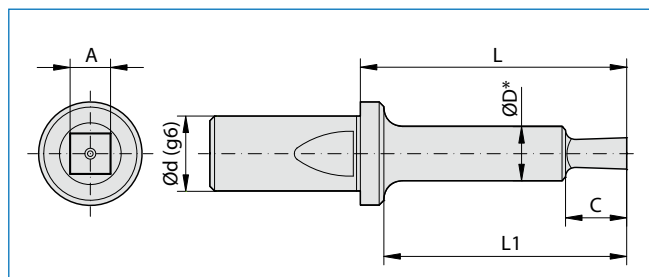


BROCCE GP16L E GP16LC - DIAMETRO "d" DEL GAMBO: 16 mm MISURE IN POLLICI

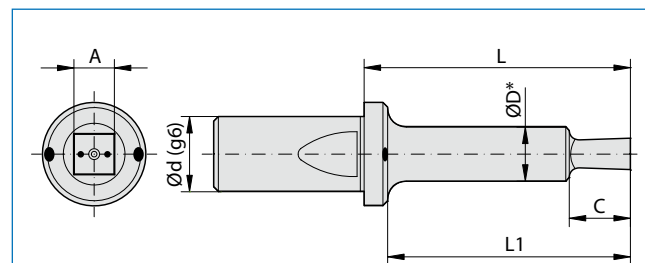
GP16L AND GP16LC BROACHES - 16 mm SHANK DIAMETER ("d")
SIZES IN INCHES



Sezione QUADRA (Q) / SQUARE section (Q)

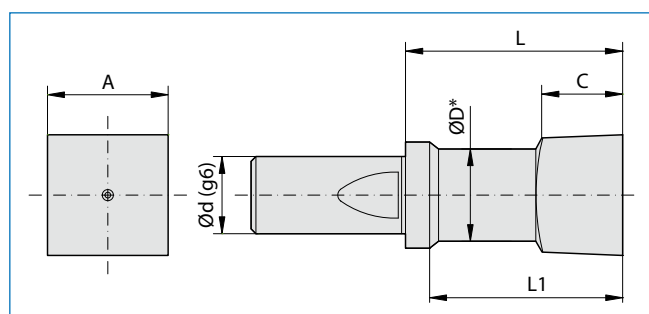


"GP16L" - "GP16LK" STANDARD
"GP16L" - "GP16LK" STANDARD

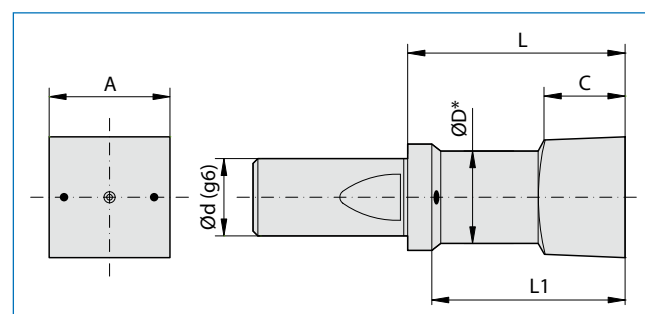


"GP16LC" - "GP16LKC" CON PASSAGGIO REFRIGERANTE INTERNO
"GP16LC" - "GP16LKC" WITH INTERNAL FLOW OF COOLANT

ARTICOLO (materiale) - ITEM (material)				DIMENSIONI - DIMENSIONS							Utilizzo su Brocciatori/ Use on Broaching heads
HSS		SINTERIZZATO / SINTERED									
Standard 	Ref. / Cool. 	Standard 	Ref. / Cool. 	d	A	L1	L	C	D*		
GP16L-Q-1/4"	/	GP16LK-Q-1/4"	/	16	6,35	+0,08 +0,10	41	45	13	9	
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-G16L Refrig. / Cool. 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





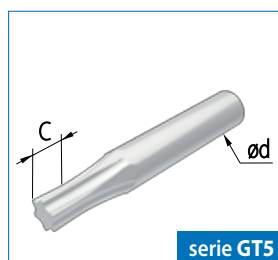
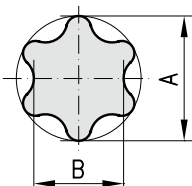
Brocche Standard e con passaggio refrigerante per chiavi TORX® Standard Broaches and with internal flow of coolant for TORX® wrenches

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.

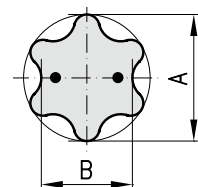


per Brocciatori serie "BRC"
for Broaching Heads "BRC" series



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**

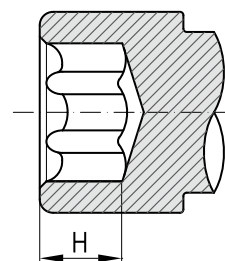
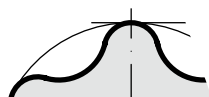
ød = 8 / L = 18

ARTICOLO (materiale)
ITEM (material)

HSS
Standard

SINTERIZZATO / SINTERED
Standard

A	B	C	H max (*)	TORX®	ARTICOLO (materiale) ITEM (material)	ARTICOLO (materiale) ITEM (material)	ARTICOLO (materiale) ITEM (material)	ARTICOLO (materiale) ITEM (material)	ARTICOLO (materiale) ITEM (material)	ARTICOLO (materiale) ITEM (material)
					HSS	SINTERIZ.	HSS	SINTERIZZATO / SINTERED		
					Standard	Standard	Standard	Ref. / Cool.	Standard	Ref. / Cool.
1,214	0,884	1,2	0,40	3	GT5-T3	GT5K-T3	GT8-T3		GT8K-T3	
1,374	0,996	1,2	0,50	4	GT5-T4	GT5K-T4	GT8-T4		GT8K-T4	
1,499	1,097	1,5	1,00	5	GT5-T5	GT5K-T5	GT8-T5		GT8K-T5	
1,778	1,293	1,7	1,20	6	GT5-T6	GT5K-T6	GT8-T6		GT8K-T6	
2,095	1,521	1,7	1,50	7	GT5-T7	GT5K-T7	GT8-T7		GT8K-T7	
2,418	1,756	2,0	1,70	8	GT5-T8	GT5K-T8	GT8-T8	GT8C-T8	GT8K-T8	GT8KC-T8
2,603	1,889	2,0	1,70	9	GT5-T9	GT5K-T9	GT8-T9	GT8C-T9	GT8K-T9	GT8KC-T9
2,844	2,057	2,0	2,00	10	GT5-T10	GT5K-T10	GT8-T10	GT8C-T10	GT8K-T10	GT8KC-T10
3,378	2,438	3,0	3,00	15	GT5-T15	GT5K-T15	GT8-T15	GT8C-T15	GT8K-T15	GT8KC-T15
3,962	2,857	3,5	3,00	20	GT5-T20	GT5K-T20	GT8-T20	GT8C-T20	GT8K-T20	GT8KC-T20
4,559	3,276	4,0	3,50	25	GT5-T25	GT5K-T25	GT8-T25	GT8C-T25	GT8K-T25	GT8KC-T25
5,118	3,672	4,0	3,50	27			GT8-T27	GT8C-T27	GT8K-T27	GT8KC-T27
5,651	4,064	4,5	3,50	30	/	/	GT8-T30	GT8C-T30	GT8K-T30	GT8KC-T30
6,807	4,889	5,0	4,00	40			GT8-T40	GT8C-T40	GT8K-T40	GT8KC-T40





					per brocciatori serie for broaching heads BR-G12 / BR-G12B / BR-G12A / BRC-G12 / BRC-G12B				per brocciatori serie for broaching heads BR-G16	
					ød = 12 / L = 25				ød = 16 / L = 25	
A	B	C	H max (*)	TORX®	ARTICOLO (materiale) ITEM (material)				ARTICOLO (materiale) ITEM (material)	
					HSS		SINTERIZZATO / SINTERED		HSS	SINTERIZ.
					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 for broaching heads BR-G16M / BRC-G16M				per brocciatori serie for broaching heads BR-G16L / BRC-G16L			
					ød = 16 / L = 35				ød = 16 / L = 45			
A	B	C	H max (*)	TORX®	ARTICOLO (materiale) ITEM (material)				ARTICOLO (materiale) ITEM (material)			
					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

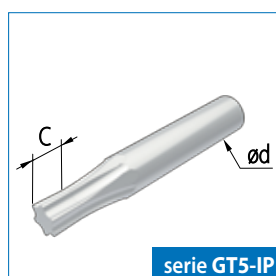
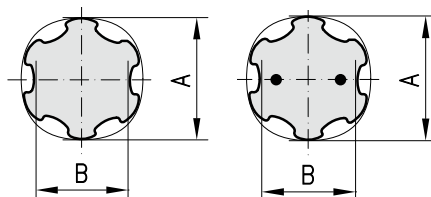


per Brocciatori serie "BRC"
for Broaching Heads "BRC" series



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 broccia e una minore rugosità della cava.

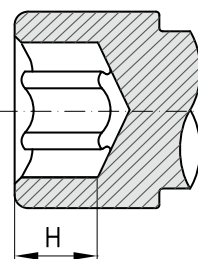
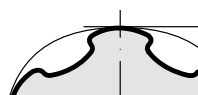
GB TORX® PLUS profile is an enhancement of the older TORX® shape. TORX® PLUS drive system maximizes engagement between driver and fastener and optimizes torque transmission. This means the depth of the profile can be shorter than TORX® old version, even if at the same time TORX® PLUS assures a much longer 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 for broaching heads BR-G5		per brocciatori serie for broaching heads BR-G8S / BR-G8M / BR-G8 / BR-G8A BRC-G8M / BRC-G8 / BRC-G8HP			
					Ød = 5		Ød = 8 / L = 18			
					ARTICOLO (materiale) ITEM (material)		ARTICOLO (materiale) ITEM (material)			
	A	B	C	H max (*)	TORX®	HSS	SINTERIZ.	HSS	SINTERIZZATO / SINTERED	
						Standard	Standard	Standard	Ref. / Cool.	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 for broaching heads BR-G12 / BR-G12B / BR-G12A / BRC-G12 / BRC-G12B				per brocciatori serie for broaching heads BR-G16	
					ød = 12 / L = 25				ød = 16 / L = 25	
A	B	C	H max (*)	TORX®	ARTICOLO (materiale) ITEM (material)				ARTICOLO (materiale) 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 for broaching heads BR-G16M / BRC-G16M				per brocciatori serie for broaching heads BR-G16L / BRC-G16L			
					ød = 16 / L = 35				ød = 16 / L = 45			
A	B	C	H max (*)	TORX®	ARTICOLO (materiale) ITEM (material)				ARTICOLO (materiale) 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





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

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

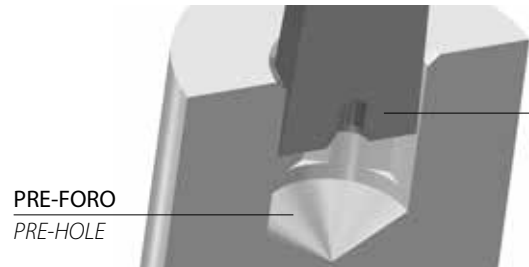
I Prima della procedura di brocciatura è fondamentale generare uno smusso in testa al pre foro. La profondità del pre-foro si incrementa del 20%-40% rispetto al profilo utile da eseguire. La soluzione ottimale, comunque, sarebbe quella di eseguire una gola di scarico alla fine del foro, per agevolare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



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

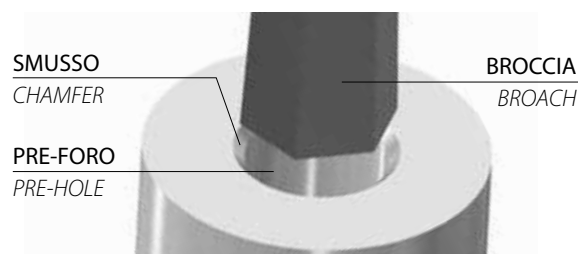
I Per effettuare una corretta brocciatura, è necessario realizzare uno smusso in testa al pre-foro. Questo smusso, ha la funzione di accompagnare la broccia verso il pre-foro evitando che si scheggi prima che essa cominci il lavoro di compressione del materiale. E' fondamentale appoggiare la broccia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



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



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



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		



BROCCE 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

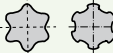
SVANTAGGI
DISADVANTAGES

ACCIAIO HSS / HSS STEEL	SINTERIZZATO / SINTERED
Massima flessibilità per tutti i materiali. Acciaio da utensili (super rapido) indicato per qualsiasi tipo di lavorazione. Rivestimenti consigliati vedi pag. 18. <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. Rivestimenti consigliati vedi pag. 18. <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. <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. <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 HSS HSS STEEL BROACHES ROTAZIONE MANDRINO: M3, M4 SPINDLE ROTATION: M3, M4		MATERIALE DA LAVORARE / MATERIAL TO WORK																						
		ALLUMINIO ALUMINUM		ACCIAI / STEELS				ACCIAI INOX STAINLESS STEELS				GHISA CAST IRON		TITANIO (*) TITANIUM (*)		RAME COPPER		OTTONE/ BRONZO BRASS / BRONZE						
		Vc m/min=55 Rm ≤ 350 (N/mm²)		TENERO MILD STEEL Vc m/min=40 Rm ≤ 510 (N/mm²)		COMUNE COMMON STEEL Vc m/min=38 Rm 510÷680 (N/mm²)		LEGATO ALLOY STEEL Vc m/min=30 Rm 680÷1050 (N/mm²)		Vc m/min=25 Rm ≤ 520 (N/mm²)	Vc m/min=20 Rm 520÷1050 (N/mm²)	Vc m/min=30 Rm ≤ 400 (N/mm²)		Rm ≤ 350 (N/mm²)		Rm ≤ 200 (N/mm²)		Vc m/min=40 Rm ≤ 350 (N/mm²)						
PROFILO PROFILE	dimensioni dimensions (mm)	LUBRIFICAZIONE NECESSARIA / LUBRICATION REQUIRED																		NON CONSIGLIATO NOT RECOMMENDED				
		f	S	f	S	f	S	f	S	f	S	f	S	f	S		f	S	f					S
 ESAGONALE HEXAGONAL	1 - 12,9	0,11	1800/ 900	0,10	1500/ 850	0,08	1450/ 800	0,05	1400/ 750	0,07	1450/ 750	0,04	1200/ 700	0,07	1600/ 700		0,09	1600/ 950	0,10					1700/ 950
	13 - 23,9	0,08	900/ 550	0,08	850/ 500	0,06	800/ 400	0,02	750/ 400	0,06	750/ 500	0,03	700/ 450	0,05	700/ 500		0,07	950/ 600	0,07					950/ 700
	24 - 40	0,05	550/ 350	0,04	500/ 300	0,03	400/ 300	0,01	400/ 300	0,03	500/ 400	0,02	450/ 350	0,03	500/ 350		0,04	600/ 450	0,03					700/ 450
 QUADRATO SQUARE	1 - 10,9	0,10	1800/ 900	0,06	1500/ 850	0,05	1450/ 800	0,02	1400/ 750	0,05	1450/ 750	0,03	1200/ 700	0,07	1600/ 700		0,10	1600/ 950	0,08					1700/ 950
	11 - 20,9	0,06	900/ 550	0,04	850/ 500	0,03	800/ 400	0,02	750/ 400	0,04	750/ 500	0,02	700/ 450	0,05	700/ 500		0,08	950/ 600	0,06					950/ 700
	21 - 25	0,03	550/ 350	0,02	500/ 300	0,02	400/ 300	0,01	400/ 300	0,02	500/ 400	0,01	450/ 350	0,03	500/ 350		0,06	600/ 450	0,04					700/ 450
 TORX® (T) TORX® PLUS (IP)	T3 - T6	0,12	1800/ 900	0,10	1500/ 850	0,08	1450/ 800	0,05	1400/ 750	0,08	1450/ 750	0,045	1200/ 700	0,09	1600/ 700		0,12	1600/ 950	0,10					1700/ 950
	T7 - T27 IP6 - IP27	0,10	900/ 550	0,09	850/ 500	0,07	800/ 400	0,04	750/ 400	0,07	750/ 500	0,04	700/ 450	0,08	700/ 500		0,11	950/ 600	0,09	950/ 700				
	T30 - T70 IP30 - IP70	0,08	550/ 350	0,07	500/ 300	0,05	400/ 300	0,03	400/ 300	0,06	500/ 400	0,03	450/ 350	0,06	500/ 350		0,09	600/ 450	0,06	700/ 450				

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

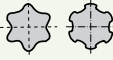
Legenda / Legend: S = velocità (giri/min) / RPM (rounds/minute)

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

BROCCIE IN ACCIAIO SINTERIZZATO		MATERIALE DA LAVORARE / MATERIAL TO WORK																			
SINTERED STEEL BROACHES		ALLUMINIO ALUMINUM		ACCIAI / STEELS				ACCIAI INOX STAINLESS STEELS				GHISA CAST IRON		PARTICOLARMENTE CONSIGLIATO		RAME COPPER		OTTONE BRASS			
ROTAZIONE MANDRINO: M3, M4 SPINDLE ROTATION: M3, M4				TENERO MILD STEEL		COMUNE COMMON STEEL								LEGATO ALLOY STEEL						TITANIO (*) TITANIUM (*)	
		Rm ≤ 350 (N/mm²)		Rm ≤ 510 (N/mm²)		Rm 510÷680 (N/mm²)		Rm 680÷1050 (N/mm²)		Rm ≤ 520 (N/mm²)		Rm 520÷1050 (N/mm²)		Rm ≤ 400 (N/mm²)		Rm ≤ 350 (N/mm²)		Rm ≤ 200 (N/mm²)		Rm ≤ 350 (N/mm²)	
PROFILO PROFILE	dimensioni dimensions (mm)	LUBRIFICAZIONE NECESSARIA / LUBRICATION REQUIRED																			
		f	S	f	S	f	S	f	S	f	S	f	S	f	S	f	S	f	S	f	S
 ESAGONALE HEXAGONAL	1 - 12,9	0,14	2000/ 1000	0,12	1600/ 950	0,10	1600/ 900	0,07	1400/ 850	0,09	1600/ 850	0,055	1200/ 800	0,12	1700/ 1000	0,05	1000/ 750	0,16	1800/ 900	0,12	1800/ 1000
	13 - 23,9	0,11	1000/ 700	0,10	950/ 650	0,08	900/ 700	0,04	850/ 550	0,07	850/ 600	0,045	800/ 550	0,08	1000/ 650	0,04	750/ 550	0,12	900/ 750	0,09	1000/ 600
	24 - 40	0,08	700/ 500	0,07	650/ 450	0,05	700/ 400	0,015	550/ 400	0,05	600/ 450	0,025	550/ 350	0,05	650/ 350	0,02	550/ 400	0,08	750/ 500	0,06	600/ 400
 QUADRATO SQUARE	1 - 10,9	0,11	2000/ 1000	0,08	1600/ 950	0,07	1600/ 900	0,05	1400/ 850	0,07	1600/ 850	0,045	1200/ 800	0,10	1700/ 1000	0,04	1000/ 750	0,12	1800/ 900	0,09	1800/ 1000
	11 - 20,9	0,08	1000/ 700	0,06	950/ 650	0,06	900/ 700	0,04	850/ 550	0,06	850/ 600	0,035	800/ 550	0,07	1000/ 650	0,04	750/ 550	0,10	900/ 750	0,07	1000/ 600
	21 - 25	0,06	700/ 500	0,04	650/ 450	0,04	700/ 400	0,02	550/ 400	0,04	600/ 450	0,015	550/ 350	0,04	650/ 350	0,02	550/ 400	0,07	750/ 500	0,04	600/ 400
 TORX® (T) TORX® PLUS (IP)	T3 - T6	0,16	2000/ 1000	0,12	1600/ 950	0,10	1600/ 900	0,07	1400/ 850	0,09	1600/ 850	0,06	1200/ 800	0,12	1700/ 1000	0,05	1000/ 750	0,16	1800/ 900	0,13	1800/ 1000
	T7 - T27 IP6 - IP27	0,13	1000/ 700	0,11	950/ 650	0,09	900/ 700	0,06	850/ 550	0,08	850/ 600	0,045	800/ 550	0,10	1000/ 650	0,045	750/ 550	0,15	900/ 750	0,11	1000/ 600
	T30 - T70 IP30 - IP70	0,11	700/ 500	0,10	650/ 450	0,08	700/ 400	0,05	550/ 400	0,07	600/ 450	0,04	550/ 350	0,09	650/ 350	0,04	550/ 400	0,12	750/ 500	0,09	600/ 400

(*) 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

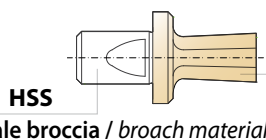


I A seconda della tipologia di materiale da lavorare, sulle brocche possono essere applicati rivestimenti per migliorarne la durata in termini di numero di pezzi prodotti, come **WONDER (TiAlN*)**, **TiN**, **INOX PLUS** e **ZIRINOS**. Di seguito alcuni esempi di materiali da lavorare con i grafici che 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 Broach material	Materiale da lavorare Machined material					
			TiN	WONDER/ TiAlN *	INOX 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

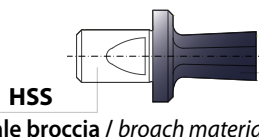
rivestimento applicato / applied coating

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*)

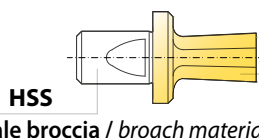
rivestimento applicato / applied coating

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

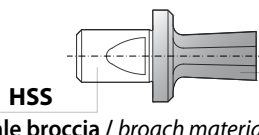
rivestimento applicato / applied coating

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



info@aiebv.com

T +31 (0)165 224140

www.aiebv.com

AKKERMANS INDUSTRIAL ENGINEERING B.V.

Vijfhuizenberg 103A • 4708AJ Roosendaal (Noord-Brabant) Nederland • T (+31) 0165 224140 • info@aiebv.com • www.aiebv.com
KvK 20040320 • BTW nr. 005358012B01 • IBAN NL33 RABO 0141 2525 10 • BIC RABONL2U