

Broaching Head



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 machined.

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 is set in the tool body at a specific inclination so that, when the machine 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.

Broaching Head - Description

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.

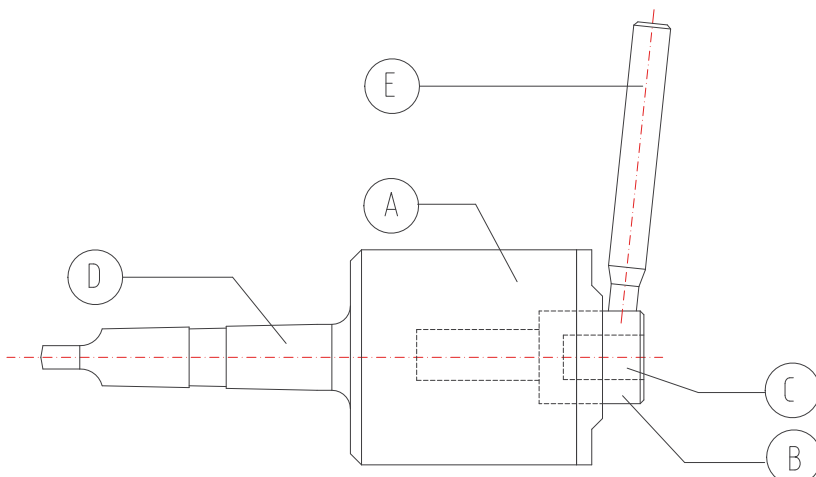
D – Connection to the machine tool

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
- > HSK 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.



Broaching Head - Item codes

How to read broaching heads item codes.

Let's make an example: **BR - G8S - C20**

BR: means BRIGHETTI MECCANICA Srl

G8: it is the diameter of the shank of the broach which fits the broach seat of the broaching head ("d" in picture 1)

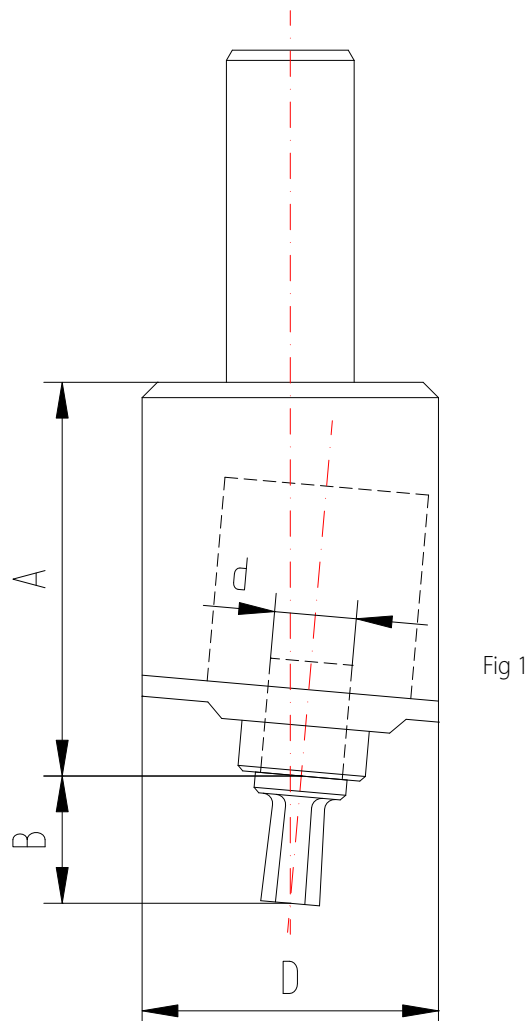
S (small): in broaching heads BR-G8S-..., measure "A" in picture 1 is smaller than the same measure of the standard broaching heads BR-G8-...

M (medium): in broaching heads BR-G8M-..., measure "D" in picture 1 is smaller than the same measure of the standard broaching heads BR-G8-... **B**: in broaching heads BR-G12B-... both measures "A" and "D" in picture 1 are smaller than the same measures of the standard broaching heads (BR-G12-...)

A (adjustable): this broaching head can be used even if the shape to broach is inside a chamber placed deep in the work piece. The maximum broaching depth achievable is 60 mm.

L: this broaching head is more powerful than the standard version (BR-G16). Practically it can be used with bigger broaches and it can broach deeper shapes placed at a higher depth in the work piece.

C20: indicates the kind of connection of the broaching head to the machine tool.



Broaching Head - Features and dimensions

FEATURES

TYPE OF BROACHING HEAD: BR		G5	G8S	G8M	G8	G12B	G12	G12A*	G16	G16L	G25
SHANK OF THE BROACH	Ø	5	8	8	8	12	12	12	16	16	25
HEXAGONAL SLOT CAPACITY	MM	1 - 6	1 - 8	1 - 8	1 - 10	1 - 14	1 - 14	1 - 14	1 - 24	5 - 28	10 - 40
SQUARE SLOT CAPACITY	MM	1 - 4	1 - 6	1 - 6	1 - 8	1 - 10	1 - 12	1 - 12	1 - 16	5 - 22	10 - 25
TORX® SLOT CAPACITY	T		T5-T15	T5-T15	T5-T20	T5-T30	T5-T50	T5-T50	T5-T60		
DEPTH OF THE SHAPE ("L1" picture 2)	MM	≤7	≤10	≤12	≤12	≤20	≤20	≤20	≤22	≤40	≤65
MAXIMUM BROACHING DEPTH ("L", picture 2)	MM	7	14	14	14	20	20	25 - 60	21	40	65

CONNECTIONS

TYPE OF BROACHING HEAD: BR		G5	G8S	G8M	G8	G12B	G12	G12A*	G16	G16L	G25
CYLINDRICAL CONNECTION	Ø	8	10	10	12	19,05	25	19,05	25	32	32
	Ø	10	12	12	16	20	32	20	32	40	40
	Ø	12	15,875	16	19,05	22		25			
	Ø	15,875	16	19,05	20	25		25,40			
	Ø	16	19,05	20	22	25,40		30			
	Ø	19,05	20	25	25						
	Ø	20	25	25,40	25,40			32			
	Ø	22	25,40								

MORSE TAPER CONNECTION							2 - 3	2 - 3	3	4	4
------------------------	--	--	--	--	--	--	-------	-------	---	---	---

ISO-DIN 69871 / DIN 2080 CONNECTION							30-40	30-40	40	40-50	40-50
-------------------------------------	--	--	--	--	--	--	-------	-------	----	-------	-------

VDI CONNECTION							VDI 20	VDI 30	VDI 30	VDI 40	VDI 40
							VDI 30	VDI 40	VDI 40		

HSK CONNECTION							HSK 40	HSK 40			
							HSK 50	HSK 50	HSK 50	HSK 50	HSK 50
							HSK 63	HSK 63	HSK 63	HSK 63	HSK 63

DIMENSIONS AND WEIGHT

TYPE OF BROACHING HEAD: BR		G5	G8S	G8M	G8	G12B	G12	G12A*	G16	G16L	G25
BROACH SEAT ("d", picture 1)	Ø	5	8	8	8	12	12	12	16	16	25
BODY DIMENSIONS ("AxD" in picture 1)	mm	34x22	27,5x35	48x28	46x35	55x45	78x58	80x72	95x70	105x90	105x98
BROACH JUT ("B", picture 1)	mm	10	18	18	18	25	25	25-60	25	45	70
WEIGHT	gr/rp.	110	410	225	470	750	1460	1580	2550	4400	5100

*see next page for broaching head BR-G12A features

Broaching head BR-G12A - Features



Among traditional broaching devices for inside holes and surface profiles present in the world market at the time being, the broaching head **BR-G12A** is a great novelty. Like all the others BR broaching heads, it can be installed on both traditional and CNC machine tools.

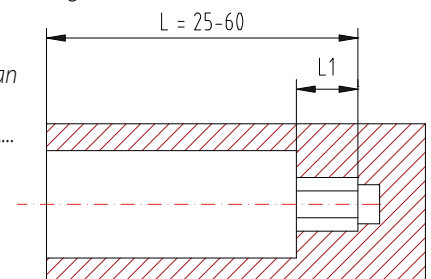
The main feature of the broaching head **BR-G12A** is its suitability for every kind of broach with a length between 25 and 60 mm. This means that the maximum broaching depth achievable by this holder is 60 mm (L in picture 2), while the maximum depth of the shape is 20 mm (L1 in picture 2).

The broaching head BR-G12A must be adjusted every time a broach with a different length is used. This operation is easy and fast: using a special gauging tool, supplied together with the holder, it is possible to regulate the setting screw on the basis of the broach length. The same process is valid for surface broaches.

To use correctly a broaching head is very important to always keep in mind that, even if the material to machine and the requested shape are the same, the more a broach is long the greater the effort of the machining at the end of the broach is. For this reason it is a good habit of reducing feed and speed if long broaches are used.



Fig 2



Broaching head BR-G12A can be used with broaches G12A...and broaches GP12A...