

## Keyway Broaches

When using a keyway broach the use of a bush is required. The size and Style of the bush are determined by the diameter of the bore in the workpiece.

The "A", refers to the width and the depth of the slot in the bush. Obviously the depth of cut will be smaller for a 3mm broach compared to a 14mm broach.

Hence the different bushes. Also a 3mm keyway in a 16mm hole could not use a bush suited to a 16mm key way broach as it would be too big. The depth of cut will be far greater for a 16mm broach than for a 3mm broach

"A" Broaches are used with "A" Bushings, "B" Broaches with "B" Style Bushings, etc.

The Broach cuts to full width and depth is reached by adding a shim after each pass

When selecting or making a bush, insure that the length of the bush is the same length or longer than the keyway.

The workpiece must be securely fixed and perfectly square with the broach.

Before you begin the cut make sure that the broach is in the centre of the ram or anvil being used to press the broach.

When the cut is started it is important back off the pressure on the ram to allow the broach to again be centered with the ram or anvil.

### Ram Adapters

Ram adapters can provide support and guidance for the broach at the top end of the broach,

This will minimizing the possibility of deflection or breakage.

Ram adapters are recommended for situations where an high degree of accuracy and rigidity is required. Ram adapters are rarely available and usually need to be made.

### Bushes

There are two types of bushes. Plain straight bushes and bushes with a shoulder. The plain bushes are used in places where the bush is restricted from moving down by support from the bottom. The shouldered bush is used where the bush needs to be restricted from the top.

### Making a Bush

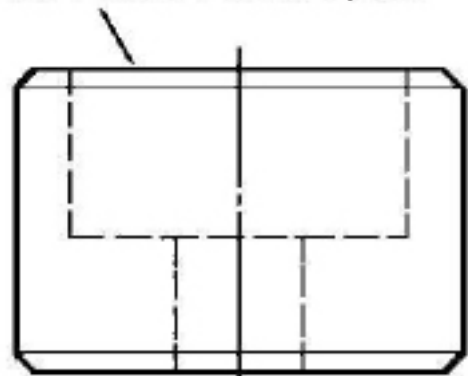
Bushes can be made from many materials such as aluminium, steel, brass, or plastic and nylon for small keyways.

The bush can be turned to the diameter of the bore and then a slot milled in the bush to the width of the body of the broach.

The depth of the slot must be deep enough so that the blind area of the broach slips into the bush when placed in the bore of the work piece yet shallow enough so that the second tooth of the broach will take a small cut. The broaches are designed so that each tooth after that will take a small amount of material from the keyway. The shims are then used to arrive at the correct depth.

The Type "A" or "B1", "C" "D" etc is determined by the width or size of the broach and the size of the bore.

Press fit on the ram or use grub screws



Size to suit the broach so that it can't slip



Plain Bush



Shoulder Bush