

## I.C.H.'s Procedure For Bending Copper Pipe With a Spring or Machine Using a Bending Spring

Revised by G.R.Pinder 01.03.19

There is little difficulty bending light gauge copper tubes once the necessary skills have been developed and practiced.

During internal spring bending, the use of a little lubricating oil or grease greatly assists the bending operation and prolongs the life of the spring by preventing rusting.

As with any equipment, bending springs must be kept in good condition and when worn they should be replaced. Internal bending springs are normally used for half-hard, 12, 15 and 22mm tubing. Bends can usually be made by hand, bending gradually but firmly around the knee, to a minimum radius of around 5 times the diameter of the tubing in question.

Although you can use internal springs for larger pipes, it should be noted that this practice is not recommended or indeed allowed for in BS 5431 (the British Standard for bending springs). Hence consistently satisfactory spring bending of tubes in sizes above 22mm cannot be guaranteed.

Check the work area is clear and there are no trip hazards, insert the spring into the pipe so that it is positioned evenly across the area of the required bend. If the spring is a tight fit in the pipe, rotate the spring anticlockwise as it is inserted, this will cause the spring to wind up so that it will have a slightly smaller overall diameter. If the pipe has been cut before bending, the end of the pipe may have become slightly reduced, don't try to force the spring, but carefully remove the burr so that the spring will freely enter.

With the spring correctly positioned, place the pipe across the knee and slowly pull both ends to form the bend. Slightly over bend the pipe, then reverse the pipe and bend it back to the required angle, this will release the pipe from the spring and make it easier to remove the spring. Take care not to overbalance or lose footing, take a good wide stance and keep both feet firmly on the floor.

### Using a Machine

As above and:

Bending machines form a significantly tighter bends (minimum root/inside radius approximately 3 x o.d. of tube) than are possible using a spring.

Check machine is in good condition and read manufacturer's instructions before use.

The pipe is held at one end of a channel in a curved former and a shaped roller is used to force the pipe around the curve. As the point of the bend is held between the former and the roller, the wall of the pipe is prevented from distorting. Different formers and rollers are required for each size of pipe.

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