Copper pipework

Joining copper pipe

Copper has to be shaped with pipe benders and requires a high degree of skill to shape correctly. On many occasions fitting will be required to either:

- Join lengths of copper together
- Change the direction of pipework
- Add a connection
- Connect to an outlet

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Types of fitting

The types of fittings vary according to the application but common fittings are:

- Solder
- Push-fit
- Compression

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Solder fittings

These fittings require the copper to the cleaned, fluxed and then soldered in position. Once cooled they need cleaning to prevent corrosion. Achieving a water-tight seal is dependent on the quality of soldering.

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End-feed

The first type of solder fitting we will look at is the end-feed fitting. The name comes from the fact that, when heated, this fitting requires solder to be fed in at the end. The solder flows into the fitting by capillary action and when cooled off creates the water-tight seal.

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End-feed components

Tee: These allow a connection to be made to the pipework run.

Coupling: These allow two pieces of copper tube to be connected together.

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End-feed components

Elbow:
Named after the shape of the fitting, it allows the pipework to change direction by 90º.

Reducer:
This allows the connection of a smaller diameter of pipe.

Stop end:
This is basically a cap that can seal the end of a piece of copper pipe/

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Solder ring

These fittings are classified as non-reusable because once they have been soldered in position they cannot be moved.

If necessary, they can however be re-heated to release the pipe from the fitting.

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Push-fit

These fittings require care when being installed as they rely on an internal rubber O-ring to create the water-tight seal. They are simply pushed on to the copper pipe, where the grab teeth inside the fitting keep it in place.

A square and clean-cut end to the pipe is needed to avoid damaging the O-ring.

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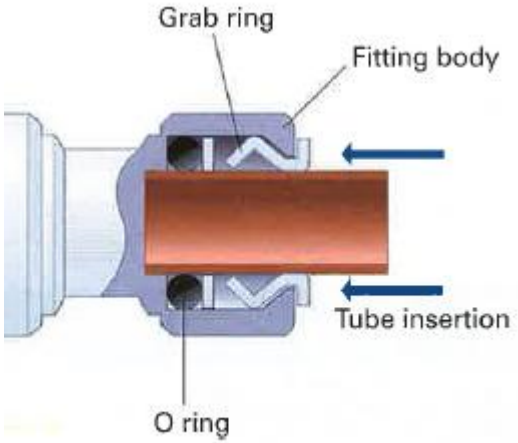
Push-fit

These components are produced by many manufacturers and come in different finishes.



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Push-fit

Tee:

Coupling:

Elbow:

Reducer:

Stop-end:

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Push-fit

These fittings are classified as reusable because they can easily be removed with the use of a release key. The style of release key varies according to the manufacturer.

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Push-fit

When installing these push-fit fittings onto copper pipe there is no need for the use of a sleeve or insert as the copper pipe is rigid. If they are used on plastic pressure pipe then a sleeve is required to give the pipe added rigidity.

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Compression

These rely on a copper or brass ‘olive’ that is compressed (tightened) in position to keep the water-tight seal. Sometimes a small amount of seal paste can be used around the olive.

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Compression

Tee:

Coupling:

Elbow:

Reducer:

Stop-end:

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Compression

These fittings are classified as reusable because they can easily be released by the use of an adjustable spanner.

The olive is compressed to the pipe and will need to be removed to allow the back nut to be released. A replacement olive will be required next time.

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A tap connector can be straight or bent, and solder, push-fit or compression as shown:

The water-tight seal is achieved with the use of a small fiber washer between the tap connector and the base of the tap or float-operated valve.

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The two most common sizes for domestic pipework and fitting are:

- 15mm
- 22mm

Both sizes of pipe can be purchased in 3.0m or 6.0m lengths, either in a bundle of 10 lengths or as a single length.

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Installation

When copper pipe is installed in a property, it is required to be correctly supported to avoid any sagging or movement of the pipe, whether vertically or horizontally.

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Clipping distances

Required clipping distances for copper pipe:

Tube size	Horizontal distance between the clips	Vertical distance between the clips
10mm	0.8m	1.2m
15mm	1.2m	1.8m
22mm	1.8m	2.4m
28mm	1.8m	2.4m
35mm	2.4m	3.0m
42mm	2.4m	3.0m
54mm	2.7m	3.0m

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Clips

There are many different types of clip available for copper pipe and each is designed for use in specific situations. They all perform the same functions, however:

- To prevent sagging
- To prevent noise
- To prevent movement and damage to the pipe and fitting

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Plastic interlocking pipe clip

This allows clips of this type to be ‘locked’ side by side.

Plastic single push-in pipe clip

This is used independently of other clips and is available as double clip.

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Double plastic push-in clip with saddle clips

This is used if two pipes run in the same direction. It is also available as a single clip.

Plastic nail-on clip

This type is less favoured among plumbers because it can work loose. It is sometimes used under floorboards

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Copper saddle clips

When fixing copper tubes to a skirting board, the use of copper saddle clips is recommended because it helps make the tube a little less noticeable.

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Brass school board clips

Brass school board clips are used when installations require a more rigid fixing (for example, light commercial/industrial installations). This type of tube bracket gives more resistance to tube movement and subsequent damage.