

How to Braze Lawton Medical Gas Tube and Fittings

Brazing copper tube to capillary fittings for medical gas and vacuum pipeline systems.



Lawton Medical Gas Tube and Fittings	Medical gas and vacuum pipelines are installed to HTM 02-01 and BS EN ISO 7396-1. Joints in copper tube shall be brazed; soft soldered joints are not permitted.
Competence	The work shall be carried out only by operatives assessed as competent under HTM 02-01.
Standards	Tube conforms to BS EN 13348 and capillary fittings to BS EN 1254.

CAUTION: the joint shall be brazed under a continuous flow of oxygen-free nitrogen. Air left in the bore forms internal oxide scale that breaks away and contaminates the gas stream. The bore must be kept clean and dry throughout, and open ends recapped between operations.

Filler Metal and Flux	The permitted filler metals for medical gas pipework are restricted by HTM 02-01 and the project specification. The filler shall be confirmed against the specification and must not be substituted. The fillers and fluxes to use, and whether flux is needed, are given in the Lawton Jointing Solutions Data Sheet.
Further Detail	Characteristics not covered here are given in the relevant datasheet. The standards above and the project specification take precedence over this guide.

Safety

- Brazing shall be carried out only in a well ventilated area. Oxygen-free nitrogen displaces air and can cause asphyxiation in confined or poorly ventilated spaces.
- Brazing goggles or a face shield and suitable gloves must be worn.
- Brazing produces fume. It must not be breathed, and local extraction shall be used where practicable.
- Hot work precautions shall be observed. Combustible materials must be cleared from the area, a fire extinguisher kept to hand and a fire watch maintained after the work.

These are general precautions. Site rules and any permit to work may differ and shall be followed.

Procedure



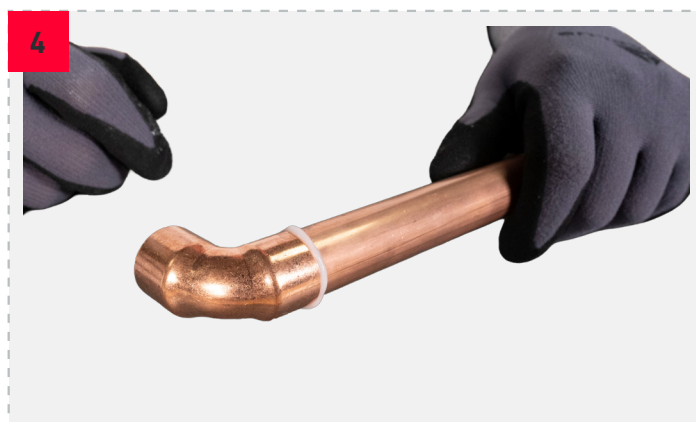
1. Cut the tube square with a tube cutter or fine hacksaw (a 32 tooth blade is recommended). Remove the burr and keep swarf out of the bore.



2. Clean the outside end of the copper tube thoroughly with sand cloth or sandpaper, to a length equal to the depth of the fitting. No dark spots shall remain.



3. Clean the inside of the fitting to the tube stop with a wire brush. Sand cloth or sandpaper may also be used. Wipe both surfaces clean.

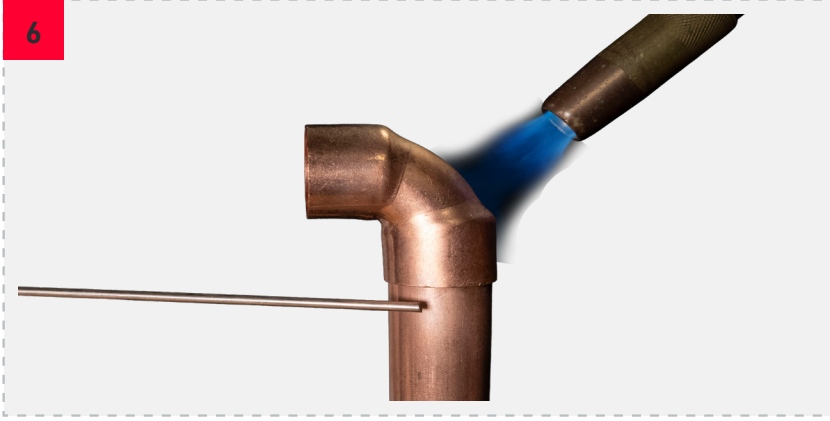


4. Assemble the tube fully into the fitting, up to the tube stop.



5. Purge the assembly with oxygen-free nitrogen in accordance with HTM 02-01. Establish a continuous flow to displace air before any heat is applied, and keep it flowing throughout brazing and until the joint has cooled.

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6. Apply heat uniformly around the fitting with the torch. When the filler metal melts on contact with the heated fitting, the brazing temperature has been reached. Feed the filler slightly off centre at the bottom of the joint and work around the fitting, overlapping the start, until a complete ring of filler shows at the mouth. Remove the heat and keep the purge running. The joint must not be disturbed until it has set.

After brazing

The oxygen-free nitrogen shall be kept flowing until the joint has cooled. The joint must not be quenched. Wipe the joint and recap any open ends to protect the bore. On completion the pipeline is pressure tested, purged and certified to HTM 02-01 and BS EN ISO 7396-1 before handover.

For more details, please refer to our website or contact us by e-mail at technical@lawtontubes.co.uk