



Domestic Gas Pipework

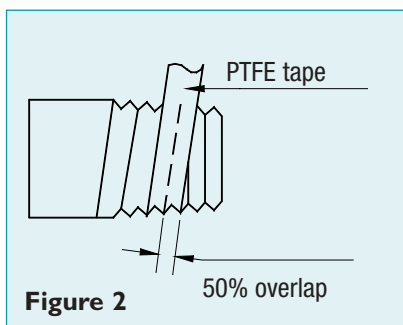
Part 2 - Installation and Testing

Copper tube and fittings

Copper tube to EN 1057 can be used for gas installations. It can be jointed using EN 1254 capillary or compression fittings. According to BS 6891 compression fittings should only be used where they are readily accessible for tightening and inspection. This means that they cannot be buried underground, buried in the structure or used in ducts or under floors.

Jointing

When using capillary fittings it is important to visually examine every joint to ensure that the solder has run. The flux used must only be corrosive during heating and any residue should be removed after making the joint. Apply a thin coating of flux to the outside of the cleaned tube only, not into the mouth of the fitting. Twist the tube as it is assembled into the cleaned fitting to spread the flux and then wipe off any excess before completing the joint. Use only EN 751 approved non-setting jointing compound on threads or the thicker type of approved PTFE tape wrapped with a 50% overlap, as in Figure 2.



Installation

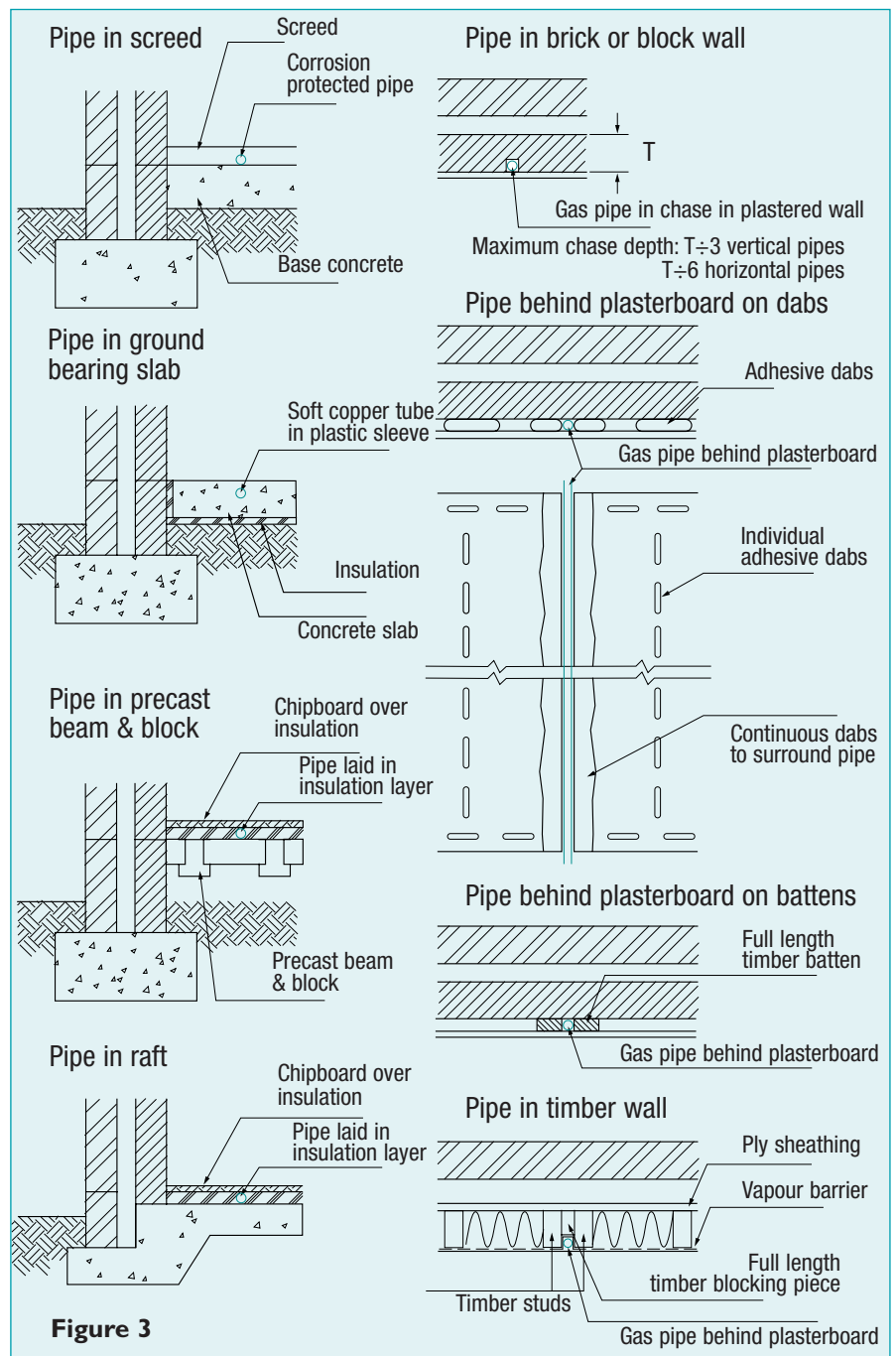
During installation prevent dirt and water entering the tube by use of adhesive tape over the ends. Remove burrs left by tube cutters to minimise pressure drop due to turbulent flow.

If work has to be done on existing pipes already connected to a meter, a temporary earth continuity bond should

be fitted before the meter is disconnected, dust caps fitted, and the end of the pipework sealed. The existing pipes should be purged out of service to remove fuel gas before using a blow lamp. Any open ends of pipework must be sealed before the work is left unattended.

Installing tube in walls and floors

Typical methods of installing gas piping in walls and floors are shown in Figure 3. Where copper tube is to be buried in solid floors or walls, the number of joints should be kept to a minimum. Ideally the tube should be run in a preformed duct with a suitable



protective cover. Use plastic sheathed copper laid on top of the base concrete and soundness test the installation piping before wrapping any joints and covering with a suitable screed.

Alternatively, pass plastic sheathed soft coiled copper through a larger tube that has been previously set into the concrete. Try to run vertical pipes in walls in ducts, with access if possible, never inside the cavity. If the wall is thick enough to provide proper cover the pipe can be run in a chase. If the pipe is to be installed behind plasterboards, timber battens or continuous adhesive dabs should be used to surround the pipe.

Where tube is to be laid in timber floors running across the joists, these should be notched or drilled to accommodate the tube. Care should be taken to mark floor boards so that fixing nails and screws do not damage the tube. Tubes installed parallel to the joists should be properly supported. If tube has to be installed in purpose-designed ducts, these must be sealed to prevent the passage of gas into the wall cavity. If the duct has a cross-sectional area of more than 10,000mm² it should be vented at high level to allow any escape of natural gas to dissipate into the rooms, and if possible cover the duct with a metal plate to minimise the risk from nail punctures.

Sleeves

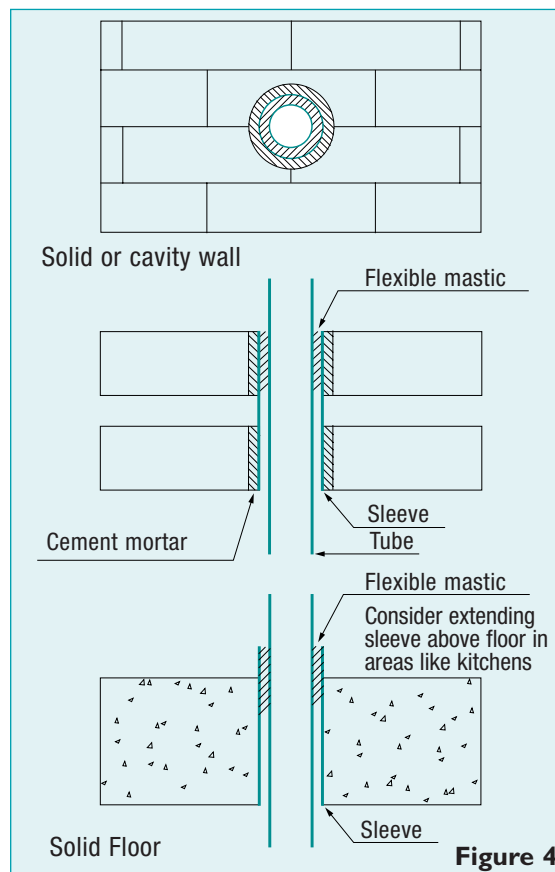
Always sleeve the pipe where it passes through solid walls or floors. Build the sleeve into the wall or floor and seal the gap between the gas pipe and sleeve with flexible fire-resistant compound at least one end, as in Figure 4.

Other services

Keep a gap of at least 25mm between gas pipes and other services and keep at least 150mm away from electricity meters and fuse boxes. Where electrical cross bonding is necessary, a clamp is used to connect the protective conductor near (ideally within 600mm) the outlet side of the meter in accordance with BS 7671 Requirements for Electrical Installations.

Testing for soundness

The Gas Safety Regulations require that new installations be installed and tested for gas tightness by a competent



person before the meter is connected. If work is to be carried out on an existing installation it must be tested before starting and any faults traced and rectified or the installation made safe. On completion of the work a further test must be carried out and if satisfactory the installation purged into service. The testing and purging of domestic installations must be carried out in accordance with BS 6891.

Dynamic performance testing gas installations

Note that once the gas piping installation is completed and the installation has been tightness tested, purged and brought into service the gas appliances must also be tested to make sure that they operate in accordance with the manufacturer's instructions and the Gas Safety Regulations. In cases where the correct burner pressure or gas rate cannot be achieved, taking pressure readings at the meter and the inlet pressure test points on the appliances can identify the likely source of the problem.

Checking the service entry piping and meter installation for pressure drop

Turn off all appliances and connect a mano-meter to the meter outlet test

point. Slowly turn on the gas and note the reading; this should be 20mbar or a little above. If the pressure reading is above 25mbar the meter governor may be faulty and the gas supplier should be informed. The reading should then be checked with the appliances operating, this gives the meter outlet working pressure. If the pressure drop across the meter and governor is greater than 1.25mbar there could be a problem, due perhaps to overloading the meter or an inadequate or partially blocked service pipe. In any event the gas supplier should be informed.

Checking the installation piping for pressure drop

Once the meter outlet working pressure is known,

the installation pipework can be checked for pressure drop. Attach a manometer to the inlet pressure test point before the appliance governor and, with the appliances lit, take a reading. If this is more than 1mbar below the meter outlet working pressure, the pipework is either too small in diameter for its length, or a section of piping may have been crushed or be partially blocked by debris.

Whatever the cause, the problem is within the installation. If the installation pressure drop is satisfactory, and the burner pressure cannot be achieved, then the problem lies within the appliance, possibly in the appliance governor.

Brian Curry: March 2008.