

Commissioning Plumbing Systems

Advisory Leaflet

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WRAS
Water Regulations Advisory Scheme

1. Introduction

This leaflet provides general guidance and clarification, in accordance with the Water Supply (Water Fittings) Regulations 1999 and Scottish Water Byelaws (2004), on the requirements for commissioning, flushing and maintaining new plumbing systems that are used in households to supply water for domestic purposes. It also gives guidance on ways to maintain the quality of water which they supply.

Regardless of the materials used for plumbing systems, inadequate commissioning, flushing and maintenance can affect the quality of the water supply. Building debris or pipe trimmings (swarf) left in newly installed pipework can block or damage fittings. Debris left in poorly flushed pipework can encourage the growth of bacteria.

Excess soldering flux left inside copper pipes may lead to corrosion, causing the amount of copper in the water to exceed the permitted amount for drinking water. This could have undesirable health effects and, in extreme circumstances, result in 'blue water'. The causes of blue water corrosion are complex and poorly understood. Whilst there is no guarantee that even if the advice in this leaflet is followed a problem will not subsequently develop, the leaflet sets out recommended precautions in the light of the current knowledge.

2. Regulations

The Water Fittings Regulations and Scottish Water Byelaws 2004, referred to collectively here as 'the regulations', are national requirements for the design, installation and maintenance of plumbing systems, water fittings and water-using appliances. Their purpose is to prevent waste, misuse, undue consumption or erroneous measurement of water and, most importantly, to prevent contamination of water for domestic purposes.

3. Enforcement

Water Suppliers have a duty to enforce the regulations and provide customers with copies of their Code of Practice on Enforcement. The local Water Supplier will undertake inspection of a proportion of new and existing installations to check that the regulations are being met. Where breaches of the regulations are found, the Water Supplier will issue an enforcement notice to require compliance within a given timescale. It is a criminal offence to breach the regulations; offenders may face disconnection of their supply and prosecution.

It is recommended that an Approved Plumber be used for the installation work, as this provides the client with a measure of protection under the regulations. A list of Approved Plumbers can be obtained from your local water supplier or from the WRAS website (www.wras.co.uk).

4. Commissioning

The regulations state that

- The whole installation should be appropriately pressure tested. Details are given in the Water Regulations Guide* (Section 4: Guidance clauses G12.1 – 12.3), which requires a pressure test to 1.5 times the maximum operating pressure for the installation or relevant part.
- Every new water service pipe, cistern, distributing pipe, hot water cylinder or other appliance and any extension or modification to such a service shall be thoroughly flushed with drinking water before being put into use.
- Under certain circumstances the system should be disinfected before being put into use. (See section 6: Disinfection).

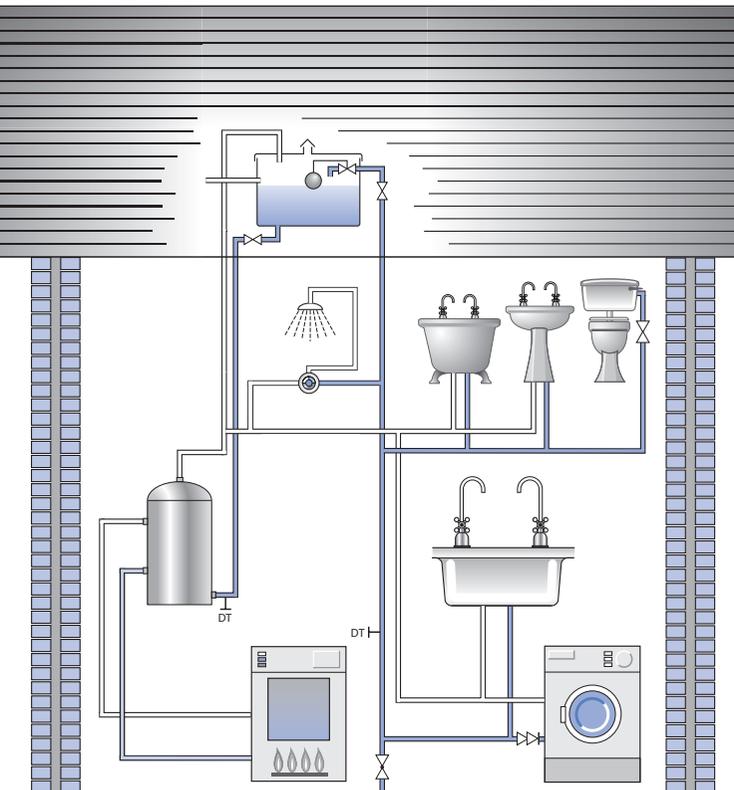
* See 10 Further Information and Advice.

5. Flushing Procedure

It is essential that each length of pipe within the system is flushed to remove any debris including excess flux that may have collected in the pipework during installation. The following guidance is given as to the procedure which should be employed.

- Open all terminal fittings to produce as high a flow of water as possible.
- Allow water to run until visually clear.
- Continue to allow water to run for a further two minutes.
- Confirm that the water is visually clear by filling an appropriate clean container such as a clear plastic bottle or washbasin with at least one litre of water.
- If the water appears cloudy, discoloured or contains any debris then repeat the flushing process.

If after repeated flushing the water is not visually clear then contact your local Water Supplier.



6. Disinfection

- (a) Disinfection where underground services are installed, renovated or modified is normally only required for pipes above 50 mm internal diameter, although this must be confirmed with the local Water Supplier. Where disinfection of incoming pipework to buildings is required, the service pipe between the boundary of the property and its entry into the premises should be disinfected by arrangement with the Water Supplier.
- (b) Disinfection of newly installed internal plumbing systems is not normally required for private dwellings occupied by a single family. It is usually sufficient for the system only to be pressure tested and flushed out. For other types of new installations, and for major extensions or alterations to existing systems in properties in multiple occupation (for example flats, offices, hotels etc.), disinfection of the internal plumbing systems is required before use.
- (c) In all types of premises, where there is any suspicion of contamination of the plumbing installation by sewage, ground water or the entry into pipes by insects or vermin, disinfection must be carried out.
- (d) Details on methods for disinfection of plumbing are given in BS 6700 (See Section 10 Further Information and Advice).

7. Stagnation

Stagnation of water in installed pipework can occur in

- Newly constructed properties which are awaiting occupancy;
- Show homes on new developments where not all parts of the system are in normal use;
- En-suite bathrooms that are not regularly used;
- Infrequently used taps, for example in cloakrooms;
- Redundant pipework following modification to the plumbing installation.

Water which is left to stagnate in pipework can lead to a general deterioration in water quality which for both plastic and metallic pipes can give rise to taste and odour problems. It may also be involved in causing 'blue water' corrosion.

8. 'Blue Water' corrosion of copper plumbing

Stagnation is suspected as one of the causes of 'blue water' corrosion in newly installed copper pipework. This happens when the natural protective layer, which normally forms quickly on new copper pipework, fails to do so and the pipe starts to corrode. This releases copper into the water and can lead to a characteristic blue cloudy appearance of water drawn from the outlet.

To minimise water quality problems caused by stagnation it is recommended that:

- a) Where newly completed copper pipework is unlikely to be used within a few days after flushing or pressure testing, it should be drained down to prevent it being left with water standing in it.
- b) If this is impracticable, the water system should be flushed once or twice per week to prevent the water stagnating. It is also sensible to do this where existing copper pipework is unlikely to be used on a regular basis.
- c) In newly-occupied premises, each day for a fortnight occupants should ensure that the taps used for drinking purposes are run briefly until the water becomes noticeably cooler to clear standing water from the pipes serving them.

9. Maintaining excellent water quality

After the successful commissioning of any new plumbing installation there are steps the occupier should take to ensure that drinking water quality is not affected by the way the system is used.

- a) Water from hot water taps should not be used for drinking or cooking purposes.
- b) Water from storage cisterns should not be used for drinking unless the cisterns are designed and maintained to ensure the water remains wholesome.
- c) It is strongly advised only to use the cold-water tap in the kitchen for all drinking and cooking purposes. Water that has stood in pipework overnight or longer can pick up abnormal tastes and odours and minute traces of metallic substances. In such cases, before water is used for drinking or cooking purposes, the taps should be run for a few seconds until the water becomes noticeably cooler. This water can be used for other purposes, e.g. washing, watering plants etc.

10. Further information and advice

Further information and advice can be found in the following publications:

BS 6700: 2006. Design, installation, testing and maintenance of services supplying water for domestic use within buildings and their curtilages – Specification. Available from the British Standards Institute.

The Water Regulations Guide, available from WRAS, contains the Regulations and technical Schedules, the Government Guidance and the Water Industry's recommendations for complying with the regulations.

Water Industry Approved Installation Method (AIM): 9-04-02 Solders & Fluxes, available from WRAS and on the WRAS website.

WRAS offers a free technical enquiry service for advice on interpretation of the regulations and related matters.



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