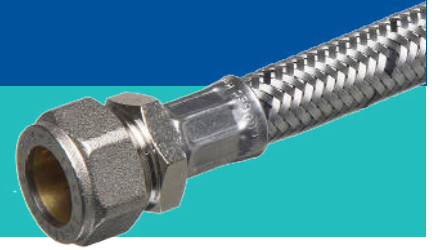


TECHNICAL DATA SHEET

FLEXIBLE HOSE

INSTALLATION GUIDE PART 1



PART 1: INSTALLATION GENERAL GUIDE

Flexible hoses should be installed by a competent plumber or qualified engineer and comply with the following guidelines:

Pre-installation checklist:

- Verify flexible hoses intended for use on potable water supplies are WRAS approved (Ferrules stamped "QWRAS")
- Verify temperature and pressure ratings do not exceed those stated for the type of hose selected
- Verify integrity of mating parts and ensure pipe work is clean and free from burrs
- Verify that chilled water applications are not exposed to corrosive contaminants

DO

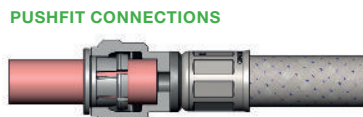


INSTALL WITH COMPRESSION OR SLACK TO ABSORB MOVEMENT OR EXPANSION

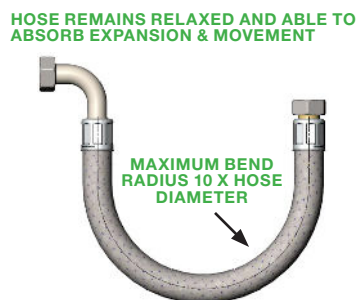


PLASTIC FITTINGS
HAND TIGHT ONLY

FEMALE BRASS HAND
TIGHT PLUS ¼ TURN



PUSHFIT CONNECTIONS
ENSURE TUBE CLEAN AND FREE FROM
BURRS, FULLY INSERT TO BACK STOP



HOSE REMAINS RELAXED AND ABLE TO
ABSORB EXPANSION & MOVEMENT

MAXIMUM BEND
RADIUS 10 X HOSE
DIAMETER

DON'T



STRETCH OR TENSION

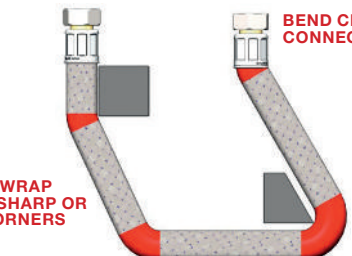


USE GRIPPER TOOLS
OR OVER TIGHTEN



USE WITH SOLDER
FLUXES OR CHEMICALS

USE NEAR HEAT SOURCE
OR SOLDER TORCH



BEND OR WRAP
AROUND SHARP OR
ACUTE CORNERS

Post-installation checklist:

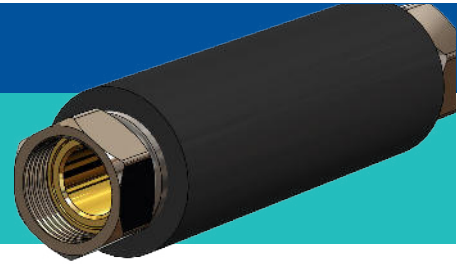
- Always verify connections are secure and tested for leaks in accordance with BS 6700:2006
- Always flush water circuits to remove solder fluxes and debris in accordance with BS 6700:2006

Failure to comply with these guidelines may compromise the hose integrity and invalidate your warranty.

TECHNICAL DATA SHEET

FLEXIBLE HOSE

INSTALLATION GUIDE PART 2



PART 2: INSTALLATION GUIDE STRESS CORROSION CRACKING

Copper alloys (Brasses) used in the mating connections of flexible hose assemblies have an excellent corrosion resistance and if installed correctly can confidently be expected to provide trouble-free service life. Many millions of flexible hoses and brass mating connections are installed every year without defect, many of which will exceed the life time of the building.

In order to achieve such longevity, designers and installers must take basic precautions. Largely these precautions have been incorporated into various standards and codes of practice such as BS6700. These include the need for protection in certain aggressive or potentially aggressive environments in order to avoid external contamination.

WHAT IS STRESS CORROSION CRACKING (SCC)?

Stress corrosion cracking occurs in duplex brasses and is commonly referred to as season cracking. In the case of copper alloy fittings, it is manifested by the appearance of inter-granular cracking, along lines of material thinning or stress. The essential elements for stress corrosion cracking are:

- **Residual Stress**
- **Stress Cracking Agent**
- **Moisture**
- **Alkaline environment**

RESIDUAL STRESS:

The more common cause of stress is introduced through the installation process such as tightening tapered male and compression fittings. In the case of compression fittings, tightening the nut will introduce a hoop stress, which, if of a sufficiently high magnitude, can trigger SCC. Joints made between taper male and female threads will always result in a stressed region at the mouth of the female end of the adaptor, especially if subjected to over tightening. Similarly the application of jointing compound to the threads should be avoided, as this tends to pack in the gap and increase the stress levels.

STRESS CRACKING AGENTS:

There are specific stress-cracking agents for brasses, these are usually ammonia or ammoniacal compounds, other less common contaminants are sulphur dioxide and mercury. These agents are common place in building materials such as concrete additives, insulating materials especially foams and flame retarding treatments.

MOISTURE:

Moisture can arise from various sources including soils, cement or concrete, condensation, etc. However, it should be noted that moisture generally poses no problems for copper alloys; it is only when the moisture absorbs aggressive constituents from component surroundings that problems may arise. Particular problem areas are in chilled water installations when the pipe work is usually covered with insulating material especially phenolic foams and flame retarding treatments, which allow the condensed moisture to be retained and kept in close contact with the end fitting. The contaminants will collect in the condensation and promote SCC.

TECHNICAL DATA SHEET

FLEXIBLE HOSE INSTALLATION GUIDE PART 2

ALKALINE ENVIRONMENT:

Alkalinity in itself does not cause stress corrosion cracking and indeed copper alloys generally have good corrosion resistance in alkaline environments. Nevertheless, for stress corrosion cracking to occur, the environment needs to be of an alkaline nature. Thus with plaster and concrete being predominantly based on alkaline cement, most construction sites can be considered to be alkaline. Also certain insulation materials have an alkaline reaction if they become wet.

INSTALLATION GUIDELINES TO AVOID STRESS CORROSION CRACKING:

Adherence to good installation practice will normally prevent the necessary combination of factors,

- **Use flat faced spanners, avoid serrated jaw wrenches as these can damage the surface and induce stress**
- **Do not over tighten fittings, be especially careful to avoid over tightening male taped and compression joints**
- **Use PTFE tape or approved liquid sealant, avoid use of hemp**
- **For chilled water application, ensure all joints are protected from condensation by way of moisture barrier**

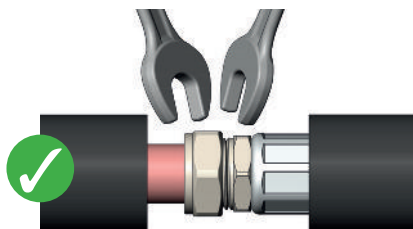
PRE- INSTALLATION CHECK LIST:

1. Verify temperature and pressure rating is correct for application (Technical Documents www.hydraelectric.com)
2. Verify water quality has been checked in accordance with BS6700
3. Verify pipe insulation complies with BS 5422 and other relevant British Standards for construction and avoidance of potentially harmful contaminants

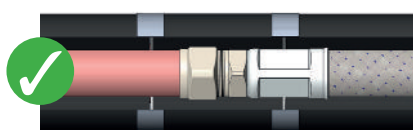
DO



EXPOSE ALL JOINTS BEFORE LEAK TESTING

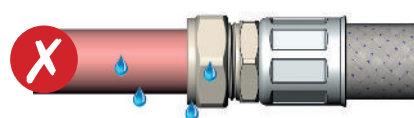


ONLY USE CORRECTLY SIZED SPANNERS

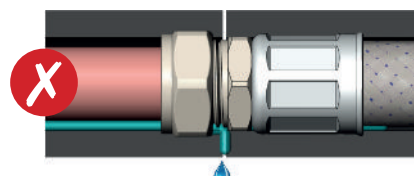


ENSURE JOINTS INSULATED AND SEALED

DON'T



EXPOSE HOSE TO CONDENSATION



AVOID COVERING LEAKS WITH INSULATION



LEAVE JOINTS EXPOSED TO CONDENSATE

Failure to comply with these guidelines may compromise the flexible hose integrity and invalidate your warranty.