

## AFTER CARE

Your fitting has a high quality finish and should be treated with extra care to prevent the visible surfaces.

All surfaces will wear if not cleaned correctly. Use a soft damp cloth with clean soapy water to clean the surfaces. Stains can be removed with using washing up liquid. Do not use any other cleaning solution or abrasive cloths or wire cleaners as this may damage the surface of the tap.

If the cloth used to clean the tap has previously been used with a cleaner that contains bleach take special care to thoroughly rinse the cloth with clean water before use.

# Twyford bathrooms



## INSTALLATION AND OPERATING INSTRUCTIONS FOR THERMOSTATIC MIXING VALVES COMPLYING WITH N.H.S. ESTATES MODEL ENGINEERING SPECIFICATION D08

THE VALVE COVERED IN THIS BOOKLET HAS BEEN TESTED AND APPROVED  
TO N.H.S. ESTATES MODEL ENGINEERING SPECIFICATION D08

IT MAY PERFORM SATISFACTORILY OUTSIDE THE LIMITS SPECIFIED HOWEVER  
IT WILL NOT BE COVERED BY THE TMV3 SCHEME

**SF1151CP** - Sola Concealed Thermostatic shower valve  
**SF1152CP** - Sola Exposed Thermostatic shower valve

LP-S                      Low Pressure Shower  
HP-SE                    High Pressure Shower

**Note :** These thermostatic shower valves are supplied factory fitted with a Yellow 5.0l flow limiter (hot side) and a Green 7.0l flow limiter (cold side) to comply with TMV3 regulations. When re-configuring valve to run on Low Pressure installations these flow limiters must be removed (see page 8 for reference). When configuring valve to comply with BREEAM regulations There are additional flow regulators fitted in the specified kits, These must be used in addition to the flow limiters in the valve inlet elbows to satisfy both TMV3 and BREEAM requirements.

TMV3 approval information available on request  
WRAS approval information available on request

## TEMPERATURE STABILISED THERMOSTATIC SHOWER CONTROL

Twyford Bathrooms  
Lawton Road  
Alsager  
Stoke-on-Trent  
ST7 2DF  
UK

**UK Technical Helpline**  
Telephone: 0844 412 5951  
Fax: 0844 412 5922  
Email: [Twyford.technical@twyfordbathrooms.com](mailto:Twyford.technical@twyfordbathrooms.com)

Form No. 800523/A

## INTRODUCTION

It has been recognised that users of hot water in care establishments are at risk from scalding. This risk has been reduced by the use of thermostatic mixing valves. In order to assure the performance of thermostatic mixing valves N.H.S. Estates Model Engineering Specification DO8 was written. The valves listed in the following pages have been tested and approved to this standard by a third party as part of the BUILDCERT scheme for use within their designated applications.

The following abbreviated designation codes are used throughout this booklet. Detailed descriptions are given below:-

HP	High pressure
LP	Low pressure
S	Shower
B	Bidet
W	Washbasin
T44	Bath with fill temperature of 44°C max
T46	Bath with fill temperature of 46°C max

THE SF1151CP & SF1152CP SHOWER VALVES HAVE BEEN APPROVED FOR USE IN THE FOLLOWING TMV3 DESIGNATIONS :-

CODE	OPERATING PRESSURE	APPLICATION
LP-S	LOW PRESSURE	SHOWER
HP-SE	HIGH PRESSURE	ECONOMY SHOWER

For full installation instructions and method of temperature adjustment see General Assembly and Servicing Guide.

## INSTALLATION RECOMMENDATIONS

The following general recommendations should be observed.

- 1) The thermostatic mixing valve should be installed in such a position that maintenance and the commissioning and testing of the TMV can be undertaken.
- 2) Always flush both supply pipes fully before connecting mixing valve to ensure no pipe debris enters the inlets. Always fit filters provided.
- 3) All installations must comply with current local Water Company Regulations.

## CONDITIONS FOR NORMAL USE

In order to give compliance with N.H.S. specification DO8 scheme. The tables below list the conditions for normal use, the valves may perform adequately outside these parameters but the TMV3 scheme approval does not apply. If they are required to work with other supply conditions an engineer must carry out a risk assessment and satisfy themselves that the units are still suitable for use.

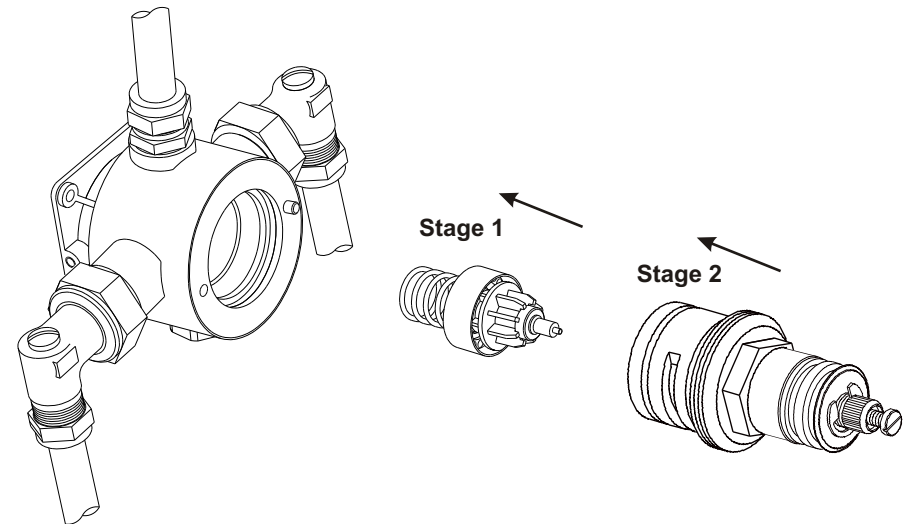
## CLEANING AND LUBRICATION

- 1) Soak all metal parts in descaler, wash off in clean water.
- 2) Examine all seals and replace if necessary.
- 3) Use silicon based grease on all seals (light smear only). A maintenance kit is available, which contains all seals and grease from your local stockist or Manufacturer.

## RE-ASSEMBLY

- 1) Place the spring in the bottom of the piston assembly, then place the thermostat in the top. FIG E.
- 2) Place the piston assembly in the bottom of the cartridge and screw back into the valve.
- 3) Re-assembly the valve sleeve, Lever and concealing plate (where applicable) in reverse order of dismantling. Refer to the temperature setting section if required

FIG E

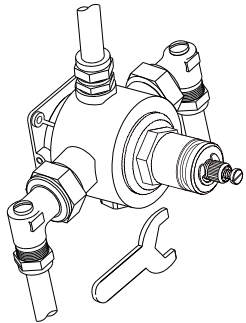


## SERVICE / MAINTENANCE

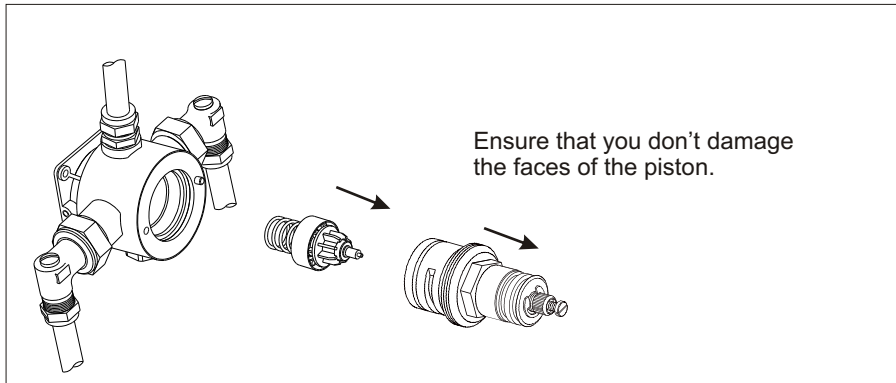
If your Thermostatic Mixing Valve fails to operate it could be the result of incorrect installation. Please refer to installation and site requirements.  
If the valve has operated correctly for a time, but no longer performs acceptably, it may require servicing/cleaning. Proceed as follows;

- 1) Ensure the shower valve lever is in the off position and then Isolate hot and cold supplies.
- 2) Remove the lever and sleeve to expose the shower valve cartridge.
- 3) For concealed models, you can remove the concealing surround by inserting a thin blade at the back of the plate and rotating the blade round the back, you can then proceed to pull the plate off the valve.
- 4) Unscrew the cartridge (standard right hand thread).
- 5) Remove the thermostat, distributor assembly and spring.
- 6) Remove all visible 'o' rings and washers from the body.

**FIG D**



30mm spanner required (standard thread).  
Ensure that you DO NOT damaged the valve, pipe work or backplate when undoing the headwork.



**Table 1: Conditions for normal use**

Operating Pressure Range	Low Pressure	High Pressure
Maximum Static Pressure (bar)	10	10
Flow Pressure , Hot & Cold (bar)	0.2 to 1	1 to 5
Hot Supply Temperature (°C)	52 to 65	52 to 65
Cold Supply Temperature (°C)	5 to 20	5 to 20
Minimum temperature differential between mixed temperature and either supply	10°C	10°C

## COMMISSIONING

Since the installed supply conditions may differ from those used in testing and setting the valves during final inspection and a valve may have several designations, it is necessary to reset the mix temperature. The following procedure should be used after ensuring:-

- a) The designation of the thermostatic mixing valve matches the intended application (i.e. if a shower is to be supplied at 2 bar then the valve must have a HP-S designation).
- b) The supply pressures match those for which the valve has been approved, see table1 and valve details.
- c) The supply temperatures are such that they are within the permitted range (see table1) and comply with guidance information on the prevention of legionella.

Note:-

If the supply conditions are not within the parameters for normal use the valve may still be suitable, but individual engineers must carry out their own risk assessment and satisfy themselves that the units are still suitable for use. Adjust the mixed water temperature in accordance with table 2, the method of adjustment is covered in the section Temperature Setting.

**Table 2: Mixed Water Temperature**

Application	Abbreviated Designation	Mixed water temperature °C
Bidet	-HP-B, BE,-LP-B, BE	38 max
Shower	-HP-S,SE;-LP-S, SE	41 max
Washbasin	-HP-W,WE: -LP-W, WE	41 max
Bath (44°C fill)	-HP-T44; -LP-T44	44 max
Bath (46°C fill)	-HP-T46; -LP-T46	46 max

Note 1: For washbasins, washing under running water is assumed.

Note 2: Bath fill temperatures of more than 44°C should only be available when the bather is always under the supervision of a competent person (e.g. nurse or care assistant)

Note 3: A thermostatic mixing valve having multiple designations (i.e. it is capable of satisfying the requirements of this specification for more than one application) should be re-set on site to suit the designation required.

The following set of tests should be carried out.

- a) record the temperature of the hot and cold water supplies.
- b) record the temperature of the mixed water at the largest draw-off flow rate
- c) record the temperature of the mixed water at a smaller draw-off flow rate, which shall be measured.
- d) isolate the cold water supply to the mixing valve and monitor the mixed water temperature.
- e) record the maximum temperature achieved as a result of (d) and the final temperature.
- f) record the equipment, thermometer etc. used for the measurements.

### IN-SERVICE TESTING

The purpose of in-service testing is to regularly monitor the thermal performance of the thermostatic mixing valve. Deterioration in performance can indicate the need for service work to be carried out on the system.

If the authority concerned does not have a planned test and maintenance schedule then the suggestions below should form the basis of a new system.

At intervals of 6 - 8 weeks and 12 - 15 weeks after commissioning:-

1. Check supply parameters are still within the expected values if not check system for faults.
2. Carry out commissioning procedures a) to c) using the same test equipment, if the mixed water temperature has changed a significant amount (by more than 1K) check to ensure in-line filters are clean, that the check valves are working and all isolating valves are fully open. If no fault can be found check and record the mixed water temperatures and re-adjust mixed water temperature to the values in table 2.

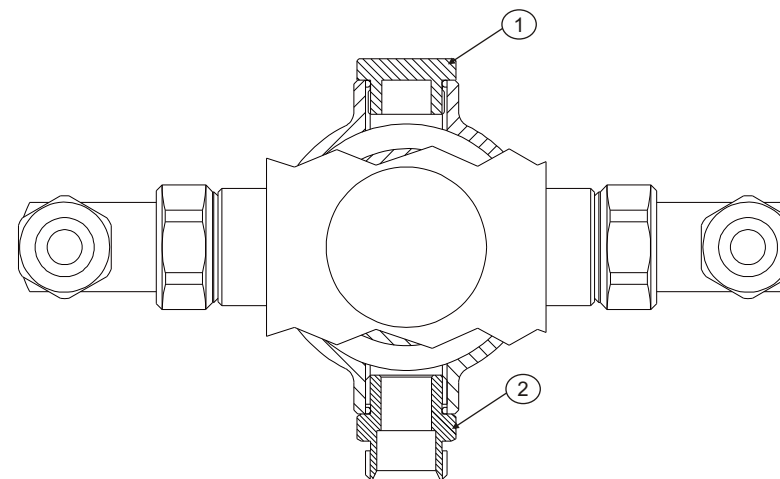
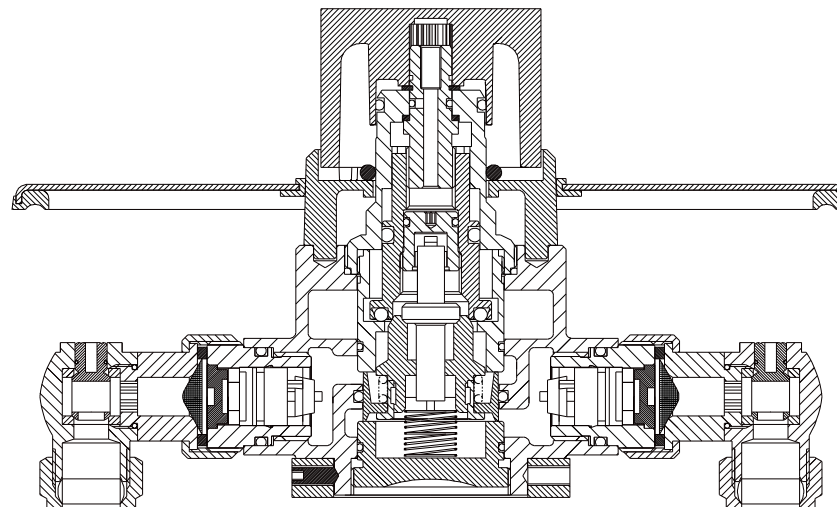
Complete the commissioning procedure a) to f) if the mixed water temperature exceeds the values of the maximum recorded temperature by more than 2K the need for service work is indicated (see relevant instruction leaflet.)

Depending on the results of these two tests the following should be adopted

- a) If a small change (e.g. 1K to 2K) occurs in one of these tests or there is no significant change (e.g. 1K maximum) then the next in service test should be 24 to 28 weeks after commissioning.
- b) If small changes occur in both test or a larger change occurs in one test (exceeding 2K) then the next in service test should be carried out 18 to 21 weeks after commissioning.

These results can then be used to set a service interval which tests have shown can be used with no more than a small change in mixed water temperature. This method of determining service intervals is used to take into account various in-service conditions (i.e. water condition) that the valve may experience.

**NOTE:** Valves operating outside these conditions cannot be guaranteed by the Scheme to operate as Type 3 valves.

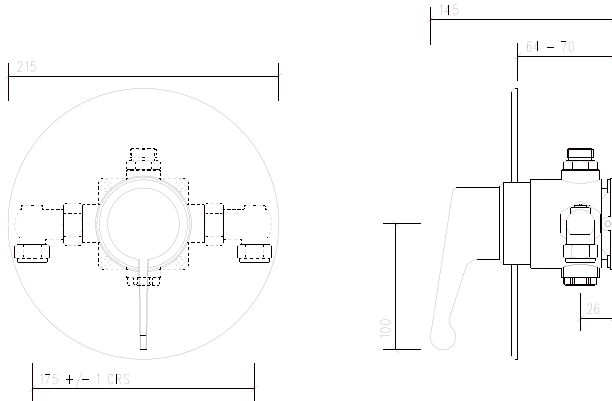


**NOTE:** Items 1 (Outlet plug) and 2 (Adaptor) may be reversed depending on whether the installation requires top or bottom mixed water outlet.

## RECESSED MOUNTING

It is essential that when installing a concealed mixing valve, full access to the valve can be achieved for servicing purposes. Isolating valves are supplied as standard on concealed models and should be fitted with the filter provided.

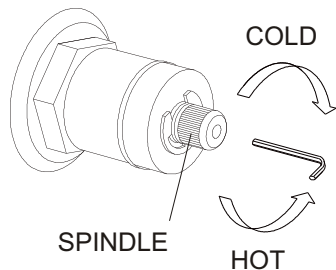
Rear access to the mixing valve is always preferred wherever possible (e.g... an airing cupboard or panelled walls), as this removes the need to disturb any tiling or decorating features at the front of the valve.



## MAXIMUM TEMPERATURE SETTING

The maximum mixed water temperature should be limited to ensure no undesirable temperature is obtained. If necessary adjust as follows -

- 1) Turn the lever anti-clockwise to the maximum flow/temperature position (9 O'clock)
- 2) Remove chrome button on the lever to expose the grub screw which secures the lever to the spindle, release the grub screw using an allen key and remove lever from spindle
- 3) Using a 2.5 a/f hexagonal wrench through the spindle centre, turn the adjusting screw to alter the temperature. Note - Do not alter the position of the spindle.
- 4) Once correct temperature is achieved, Re-fit lever in the same position from where Removed, tighten the grub screw to secure the lever to the spindle and replace the chrome button in the lever.



Turn the adjusting screw clockwise for cooler temperature

Turn the adjusting screw anti-clockwise for warmer temperature

## Recommended outlet temperatures

The BuildCert TMV scheme recommends the following set maximum mixed water outlet temperatures for use in all premises:

44°C for bath fill but see notes below;

41°C for showers;

41°C for washbasins;

38°C for bidets.

The mixed water temperatures must never exceed 46°C.

The maximum mixed water temperature can be 2°C above the recommended maximum set outlet temperatures.

46°C is the maximum mixed water temperature from the bath tap. The maximum temperature takes account of the allowable temperature tolerances inherent in thermostatic mixing valves and temperature losses in metal baths.

### It is not a safe bathing temperature for adults or children.

The British Burns Association recommends 37 to 37.5°C as a comfortable bathing temperature for children. In premises covered by the Care Standards Act 2000, the maximum mixed water outlet temperature is 43°C.

The fitting of isolation valves is required as close as is practicable to the water supply inlets of the thermostatic mixing valve.

The fitting of strainers is recommended as close as is practicable to the water supply inlets of the thermostatic mixing valve.

## Commissioning notes for Thermostatic Mixing Valves.

The first step in commissioning a thermostatic mixing valve is to check the following:

The designation of the thermostatic mixing valve matches the application.

The supply pressures are within the valves operating range.

The supply temperatures are within the valves operating range.

Isolating valves with strainers are preferred.

If all these conditions are met, proceed to set the valve outlet temperature as stipulated in the manufacturer installation instructions.

The mixed water temperature at the terminal fitting must never exceed 46°C.

It is a requirement that all TMV3 approved valves shall be verified against the original set temperature results once a year. When commissioning/testing is due the following performance checks shall be carried out.

Measure the mixed water temperature at the outlet.

Carry out the cold water supply isolation test by isolating the cold water supply to the TMV, wait for five seconds if water is still flowing check that the temperature is below 46°C.

If there is no significant change to the set outlet temperature ( $\pm 2^\circ\text{C}$  or less change from the original settings) and the fail-safe shut off is functioning, then the valve is working correctly and no further service work is required.

## Notes

If there is a residual flow during the commissioning or the annual verification (cold water supply isolation test), then this is acceptable providing the temperature of the water seeping from the valve is no more than 2°C above the designated maximum mixed water outlet temperature setting of the valve.

Temperature readings should be taken at the normal flow rate after allowing for the system to stabilise.

The sensing part of the thermometer probe must be fully submerged in the water that is to be tested.

Any TMV that has been adjusted or serviced must be re-commissioned and re-tested in accordance with the manufacturers' instructions.

The installation of thermostatic mixing valves must comply with the local and national water bylaws

## Specifications

Minimum pressure drop through fitting for mixing	0.1 bar
Maximum pressure drop through fitting for mixing	5 bar
Maximum static pressure to be applied to fitting	10 bar
Maximum pressure loss ratio	20:1 either supply
Temperature stability with normal variation of supply temperatures and pressures	± 2°C from set temperature
Factory standard blend temperature	43°C
Maximum hot supply temperature	80°C

The sensitive wax capsule will shut down the operation of the valve if either the hot or cold water supply fails, provided a minimum differential of 10°C exists between the mixed water temperature and the remaining supply.

## Flow Rates

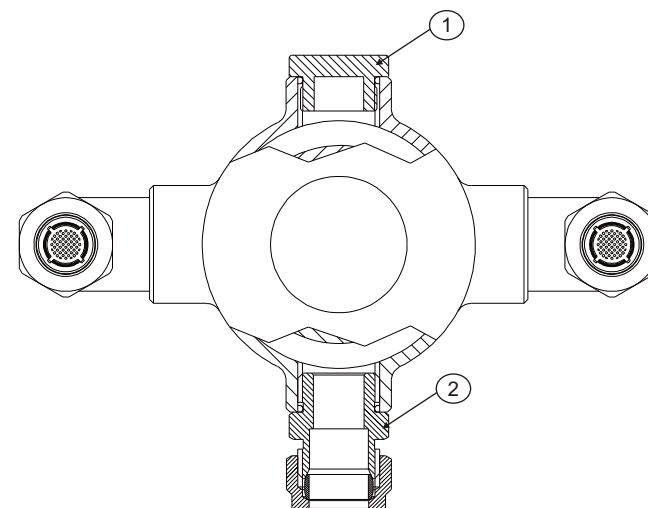
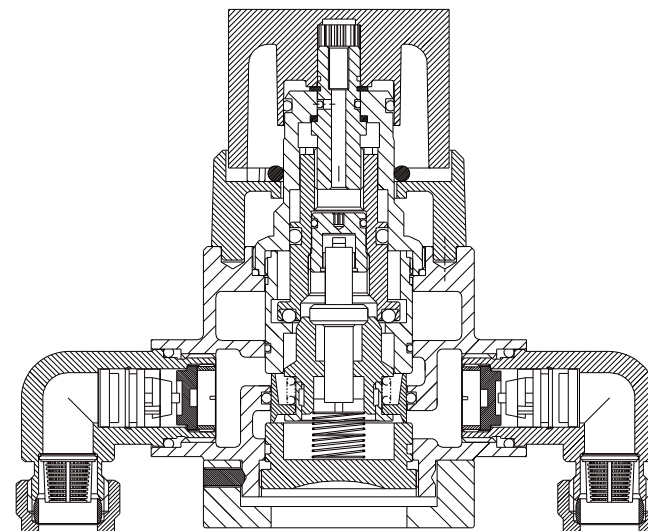
Performance with open outlet with flow limiter fitted (This does not allow for losses through pipes or fittings)

Pressure Drop (bar)	0.1	0.2	0.4	0.6	0.8	1	2	3	4	5
Flow Rate (Litres/Min)	8	12	17	22	26	29	42	52	60	66

Flow rates in litre/min. On equal pressure drops.

## Operation

Turn the control lever anti-clockwise, almost immediately full flow will be achieved. The temperature is controlled progressively warmer as you continue to rotate the lever. The maximum temperature is factory set at 41 °C at the No.6 position on the lever. However, the units maximum temperature must be re-calibrated after installation as site conditions vary (See page 11).



**NOTE:** Items 1 (Outlet plug) and 2 (Adaptor) may be reversed depending on whether the installation requires top or bottom mixed water outlet.

## INSTALLATION

### GENERAL

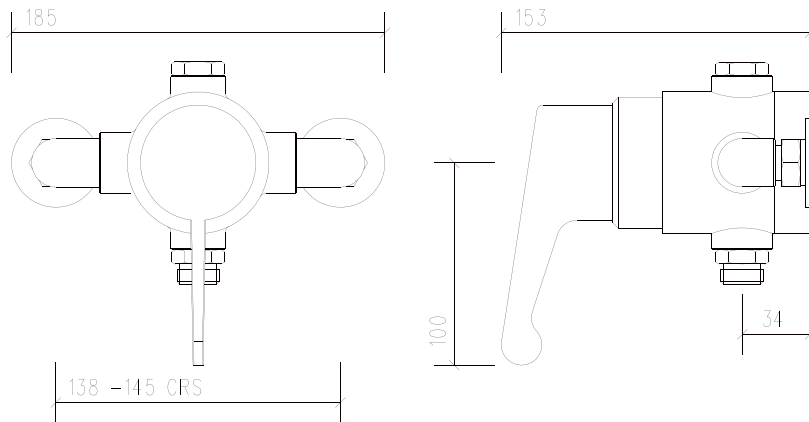
- 1) Before commencing isolating valves should be installed on both hot and cold supplies for flushing out and servicing purpose.
- 2) It is important that both supply pipes are flushed before connecting mixing valves to ensure no pipe/plumbing debris enters the mixing valve.
- 3) A simple way of flushing out the pipes is to fit the outlet adaptor to the pipe and secure with the compression nut and olive, fit the hose to the adaptor and flush out pipes to the waste.
- 4) Please fit strainers as supplied to ensure no debris enters the mixing valve.
- 5) In hard water areas the mixing valve may require more frequent cleaning and servicing.

### PIPE POSITION

Before mounting the valve to the wall, the position for the pipe work should be decided. Three inlet positions - top, bottom and rear are possible simply by rotating the elbows in the valve body. With the elbow screwed fully against the valve body it can be unscrewed a maximum of 1.5 turns to allow for lateral tolerance.

### SURFACE MOUNTING

- 1) Use the exposed backplate as a template for the fixing holes.
- 2) Drill and plug the wall to suit, screws are provided.
- 3) Fit the grubscrew loosely to the backplate and secure the backplate to the wall.
- 4) Locate the valve body to the wall and lock with the grubscrew. Fit the outlet adaptor to the valve - exchange with the blanking plug for top outlet.
- 5) Connect the inlet pipes to the valve with compression fittings, please ensure the hot supply is connected to the inlet port 'H'.



## General Installation and operating instructions for the Thermostatic Mixing Valve.

The valve is supplied with the hot inlet on the left and the cold inlet on the right when viewed from the front. The hot supply must be connected to the inlet port marked 'H'.

Please read these instructions carefully, and ensure the shower valve is installed to Local Water Authority Regulations. If in doubt, contact a registered plumber or the Secretary of Institute of Plumbing, address as follows -

Institute of Plumbing  
64 Station Lane  
Hornchurch  
Essex  
RM12 6NB

Tel: 01708 472791

### SITE REQUIREMENTS

To ensure the correct operation of your shower mixing valve it is important to fully Understand your site installation. This thermostatic mixing valve will suit the following -

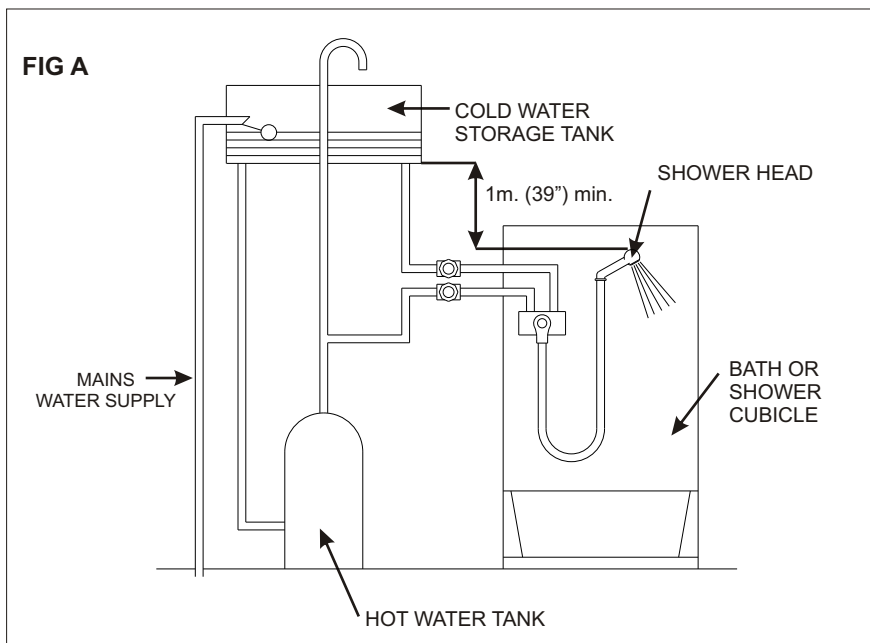
HIGH PRESSURE  
LOW PRESSURE  
MAINS PRESSURE  
PUMPED PRESSURE  
UNEQUAL PRESSURE  
GRAVITY PRESSURE

The shower mixing valve may require slight adjustment depending on your site installation the following may apply.

### GRAVITY FED

Fig A shows a typical layout. The distance between the bottom of the cold water tank and the shower head must be a minimum of 1 metre (0.1 bar).

The cold water supply for the valve must be connected directly to the cold water tank and the hot water supply connected to a Essex or Sussex Flange in the side of the cylinder or to the vent and draw off pipe of the hot water cylinder, as close to the top of the cylinder as possible.



The above installation is recommended for most showers, if however your cold supply is mains pressure then the following will be required;

#### MAINS COLD SUPPLY

- A) \*Hot supply between 1 to 4 metres (0.1-0.4 bar)  
Mains cold supply up to 10 bar.  
\*Fit 7 litre (green) limiter into cold inlet elbow only. FIG B.
- B) \*Hot supply above 5 metre (0.5 bar)  
Mains cold supply up to 10 bar.  
\*Fit 5 litre (yellow) limiter into hot inlet elbow.  
\*Fit 7 litre (green) limiter into cold inlet elbow.

#### UNVENTED SYSTEM

Fit 5 litre (yellow) limiter into hot inlet elbow.  
Fit 7 litre (green) limiter into cold inlet elbow.

This will give a shower outlet of approximately 10litres/min. (2.2 gallons per min).  
(Cold supply to shower from same source as hot).

#### INSTANTANEOUS GAS WATER HEATER & COMBINATION BOILER (UNVENTED)

The hot supply from the heater is to be connected to the hot inlet elbow and cold inlet elbow connected to the cold supply. Fit 7 litre flow limiter (as supplied) into the cold inlet elbow.

#### INSTANTANEOUS (NON STORAGE)

7 - 9kw Electric Water Heaters (Unvented)

This will require a 5 litre (yellow) flow limiter as supplied into Cold inlet only.

**IMPORTANT** - It is a requirement of Instantaneous Electric Water Heaters that a stable flow of water passes through the heater. The flow is regulated at the outlet of the heater to provide a stable temperature.

#### PUMPED SHOWERS

Your Thermostatic shower is also ideal for power shower installation and can be matched to most makes of booster pump. For further information contact your local stockist.

#### WATER BYLAWS

When connecting a mixing valve to gravity hot supply and mains cold water, water company regulations will apply. "Shower installation in all respects must meet with the requirement of Water Bylaws". If in doubt you should contact your local Water Authority for advice or a registered member of the Institute of Plumbers Tel: 0170 847 2791 for a list of your nearest plumbers.

#### FITTING THE FLOW LIMITERS

Fitting the flow limiter in concealed installations	Fitting the flow limiter in exposed installations	Flow Limiters Used

**Note** :- For both Exposed and Concealed High Pressure installations at 1.0 bar and above the products are supplied factory fitted with a Green 7 Litre flow limiter in the cold side and a Yellow 5 Litre flow limiter in the hot side, for low pressure installations at below 1.0 bar remove the flow limiters from both the hot and cold inlet elbows.

**Breem Compliance:** This product will conform with Breem regulations when using 1 of 3 Twyford's approved kit options:-

- SF1251CP (Sola Shower Rail Hose/Head)
- SF1253CP (Sola Vandal Resistant Shower Head)
- SF1202CP (Sola Fixed Head)

These kits have an additional flow limiter fitted into them to make them BREEAM compliant and must be used in **addition** to the flow limiters in the inlet elbows of this valve when used in high pressure applications (above 1 bar)