

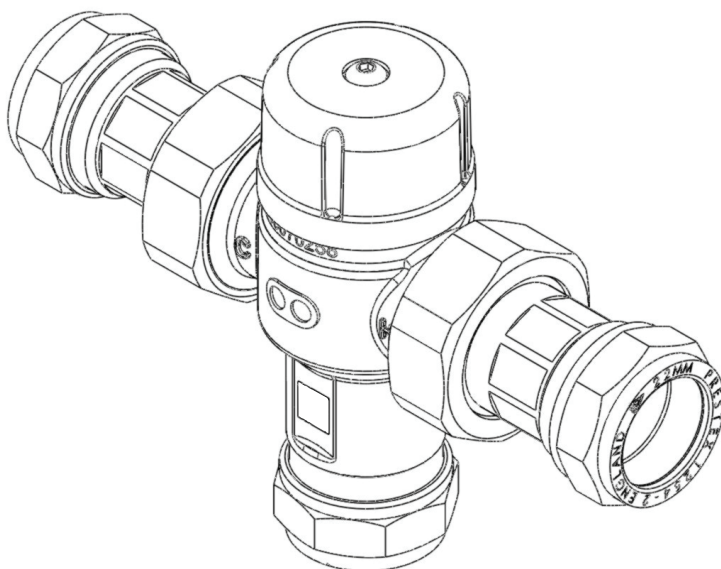
PRESTEX

DOMESTIC VALVE SOLUTIONS

Installation Instructions and User Guide

15mm & 22mm
In-Line Thermostatic Mixing Valve-TMV3

Model P402



It is important that these guidance notes are read and fully understood prior to product installation



IMPORTANT INTRODUCTION NOTES

The valves covered by these instructions have been tested and certified as being in compliance with BS 7942:2000 and NHS Estates Model Engineering Specification D 08.

Valves operating outside the requirements of these standards are not covered by the TMV3 Scheme and are not guaranteed to operate as Type 3 valves.

The installer should be aware of his duty of care and responsibility in ensuring that compliance with regulations is maintained. The valve is not guaranteed to function correctly to the TMV3 specification unless it is installed and used in accordance with these instructions. Regular servicing is essential to ensure continued safe operation of this thermostatic mixing valve. The recommended service interval must be based on the valve response to the in-service cold water failure test results (see page 6)

This Prestex Model P402 in-line thermostatic mixing valve, available in 15mm and 22mm sizes, is intended to be fitted into applications where the reliable control of hot water temperature is necessary to prevent scalding. In the event of cold water supply failure, the product will shut off the hot water supply.

Water Regulations

The Prestex Model P402 mixing valve must be installed in accordance with the regulations of the local water company and the Water Supply (Water Fittings) Regulations 1999.

Approvals

This product is certified under the BuildCert TMV3 scheme and has been independently tested by the recognised test laboratory WRc-NSF and is a Water Regulations Advisory Scheme (WRAS) approved product and listed in the Water Fittings and Materials Directory.

Installation

Separate isolation valves must be installed on the hot and cold water inlet supplies. To ensure proper performance of the thermostatic mixing valve, the isolating valves should preferably be full bore and always be fully open during operation.

The mixing valve is supplied with filter elements but it is advisable to additionally install Y-strainers on the hot and cold water supplies. The isolating valves and strainers should be installed as close as practicable to the location of the mixing valve and should always be in an accessible location.

Before installation, the hot and cold water supply systems must be thoroughly flushed to remove any dirt/debris that may have accumulated. Failure to do so may adversely affect the performance of the mixing valve.

CONDITIONS OF NORMAL USE

Table 1

Operating Range	High Pressure	Low Pressure
Maximum static pressure - bar	10	10
Hot & cold flow pressure - bar	1.0 to 5	0.2 to 1
Hot supply temperature - °C	52 to 65	52 to 65
Cold supply temperature - °C	5 to 20	5 to 20

Minimum hot inlet to mixed outlet temperature differential = 10°C

Note: Valves operating outside these conditions can not be guaranteed by the Scheme to operate as Type 3 valves. The highest flow rates will be achieved under balanced pressure conditions, but the pressure at the valve inlets must be within a ratio of 5:1 under flow conditions and the size and layout of pipework and fittings must take this into account.

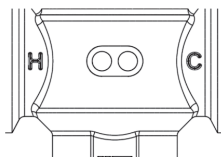
FITTING

Before installation, the system operating conditions of inlet pressures, hot water temperature and hot and cold water flow rates should be determined and confirmed to be within the expected conditions of normal use.

Valves must operate in either a high pressure setting or a low pressure setting. Valves are not capable of operation with, for instance hot water supply in one pressure range and cold water supply in the other pressure range. In these conditions it is necessary to either boost one pressure or reduce the other so that both supplies are within a common pressure range.

Correct location of the mixing valve is important to ensure that it is accessible for commissioning and servicing.

- The valve body is clearly marked with 'C' for Cold and a blue indicator and 'H' for Hot and a red indicator.



The valve must be correctly connected to the respective supplies

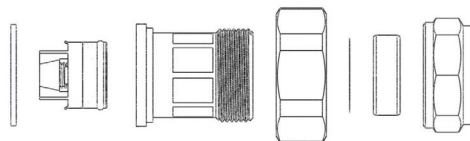
- The use of sealing compounds must be avoided since they may intrude into the water supply and impair the valve performance.

The Prestex Model P402 thermostatic mixing valve is supplied with the tail pieces, inlet filter screen and main body gasket seals separately located in the packing box. Each tail piece comprises: a housing with union nut and an internally fitted, WRAS approved non return valve.

Assembly Procedure

- Unpack the main valve assembly, remove the three plastic protection caps and check that the bores are free of debris and the end sealing faces are clean.
- Unpack the two tailpieces and confirm they are complete with union nuts and compression nuts and olives.
- Locate the sealing gaskets, insert them into the union nuts against the faces of the tailpieces and screw the union nuts onto the valve until a tight seal has been made.
- Remove the compression nuts and olives from the tailpieces. Locate the inlet filter screens and insert them into the bore of the tailpieces up to the shoulder.
- Assemble the valve to the pipework and ensure the hot and cold water pipes have full penetration into the tailpiece.
- Tighten the compression nuts ensuring that the end of the pipe remains in contact with the filter element.

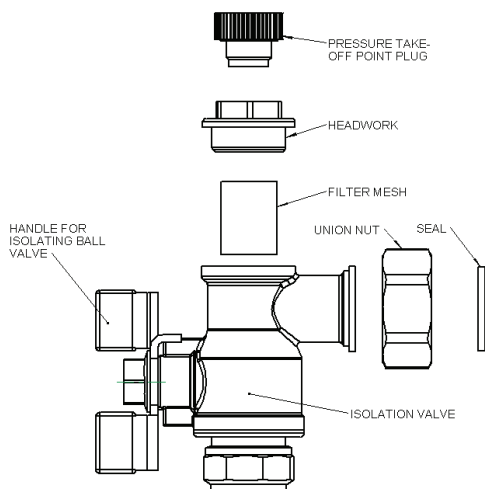
Exploded view of tailpiece assembly



The Prestex Model P402UA mixing valve is optionally provided with angled assemblies in lieu of the tailpiece arrangement shown above. This allows the connections of the hot and cold water supplies to be parallel to the mixed water outlet for ease of piping layouts. The angled valve assemblies incorporate non-return valves, filters, isolation valves and test points.

The assemblies comprise an integral full bore ball valve and in-line strainer in an angled housing. When this arrangement is used, the requirements for isolation valves and Y-strainers previously mentioned are regarded as fulfilled.

Exploded view of angled valve assembly



APPLICATION

The Prestex Model P402 thermostatic mixing valve has been independently tested by WRc-NSF against the requirements of BS 7942:2000 and NHS D08 and certified as complying with the requirements of the TMV3 Scheme and is suitable for use in the designations shown in the table below.

Valves approved for designation for use 'HP' only:- If a water supply is fed by gravity then the supply pressure should be verified to ensure the conditions of use are appropriate for the valve.

Table 2 - Required maximum set outlet temperatures at commissioning.

Application	Designation	Maximum Set Mixed Water Temperature
Bidet	HP-B LP-B	38°C
Shower	HP-S LP-S	41°C
Washbasin	HP-W LP-W	41°C
Bath*	HP-T44	44°C
Bath* (assisted)	HP-T46	46°C

*22mm only

The range of available temperature adjustment is 35°C to 48°C **BUT the mixed water temperature at the terminal fitting must never exceed the temperature value for the particular application (i.e. the maximum mixed water temperature may be 2°C above the recommended maximum set outlet temperatures).**

Note:

46°C is the maximum recommended 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

46°C is not a safe bathing temperature for adults or children.

The British Burns Association recommends 37°C 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.

COMMISSIONING

The valve must be commissioned under normal site system conditions and after establishing supply conditions with the hot and cold water supplies open, leave the system running to allow temperatures and pressures to stabilise and be checked.

Prior to commencing commissioning, the following checks should be carried out.

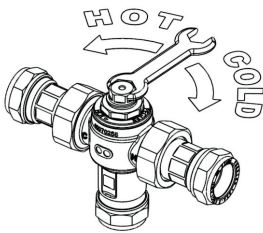
- The designation of the thermostatic mixing valve matches the application.
- The supply pressures and temperatures are within the operating range of the valve.
- Isolating valves and strainers are provided.
- The supply temperatures are within the range permitted for the valve and by guidance information on the prevention of legionella etc.

If all these conditions are met, proceed to set the temperature as described below.

The Prestex thermostatic mixing valve is supplied factory set at 43°C but the valve may be simply adjusted after installation.

The mixed water temperature at the terminal fitting must never exceed the maximum temperature setting for the particular application. Note, It is not possible to install one thermostatic mixing valve to supply two differing applications unless the temperature of the higher setting is limited to that of the lower application.

- Remove the plastic protective cap on top of the valve with an allen key.



- using a close fitting spanner, reduce the mixed outlet temperature by turning clockwise.
- increase the mixed water outlet temperature by turning counterclockwise.

When the valve has been installed with the correct conditions of use it is advised that the valve is subjected to exercise prior to the commissioning at the application temperature. Operate the valve from full cold to full hot at least three times.

With the valve at the full cold position bring the valve to the correct application temperature by turning the spanner clockwise. If the valve overshoots this temperature, return the valve to the full cold condition, and reset it to the correct temperature $\pm 0.2^{\circ}\text{C}$. Do not set a valve on a lowered temperature as this will not provide consistent operation.

When the valve is set to the required temperature for the application carry out 5 cold water isolation tests to further exercise the valve.

Commissioning Test sequence

After adjusting the temperature of the mixed water in accordance with the valve application (see Table 2) carry out the following sequence:

1. Record the temperature of the hot and cold water supplies.
2. Record the temperature of the mixed water at the largest draw-off flow rate.
3. Record the temperature of the mixed water flow at a smaller draw-off flow rate, which shall be measured.
4. Isolate the cold water supply to the mixing valve and monitor the mixed water temperature recording the maximum temperature achieved and the final stabilised temperature.
5. Record the equipment, thermometer etc. used for the measurements.

Note: The final stabilised temperature should not exceed the values in Table 3

Table 3 - Maximum mixed water temperatures

Application	Mixed water temperature $^{\circ}\text{C}$
Bidet	40
Shower	43
Washbasin	43
Bath (44 $^{\circ}\text{C}$ fill)	46
Bath (46 $^{\circ}\text{C}$ fill)	48

In Service Testing

The purpose of in-service testing is to regularly monitor and record the performance of the thermostatic mixing valve. Deterioration in performance can indicate the need for service work on the valve and/or water supplies.

Carry out the test sequence detailed above using the same or equivalent equipment used for commissioning the valve.

If the mixed water temperature has changed significantly from the previous test results (e.g. $>1\text{K}$), record the change and before re-adjusting the mixed water temperature carry out the following checks;

- All in-line or integral strainers are clean
- Any in-line or integral non-return valves or other anti-backsiphonage devices are in good working order.
- Any isolation valves are fully open.

With an acceptable mixed water temperature complete the test sequence detailed above. If the final mixed water temperature is greater than the values in Table 3 and/ or the maximum temperature exceeds the corresponding value from the previous test results by more than about 2K the need for service work is indicated.

In-service tests should be carried out with a frequency which identifies a need for service work before an unsafe water temperature can result.

Frequency of in-service testing

6 to 8 weeks after commissioning carry out the test sequence detailed above 12 to 15 weeks after commissioning carry out the test sequence detailed above. Depending on the results obtained, the following course of actions must be followed:

- If no significant changes (e.g. <1 K) in mixed water temperature are recorded between commissioning and testing at 6 to 8 weeks, or between commissioning and testing at 12 to 15 weeks, the next in-service test can be deferred to 24 to 28 weeks after commissioning.
- If small changes (e.g. 1 to 2 K) in mixed water temperature are recorded in only one of these periods, necessitating adjustment of the mixed water temperature, then the next in-service test can be deferred to 24 to 28 weeks after commissioning.
- If small changes (e.g. 1 to 2 K) in mixed water temperature are recorded in both of these periods, necessitating adjustment of the mixed water temperature, then the next in-service test should be carried out at 18 to 21 weeks after commissioning.
- If significant changes (e.g. >2 K) in mixed water temperature are recorded in both of these periods, necessitating service work, then the next in-service test should be carried out at 18 to 21 weeks after commissioning.

The general principle to be observed after the first 2 or 3 in-service test is that the intervals of future tests should be set to those which previous tests have shown can be achieved with no more than a small change in mixed water temperature.

Note:

If there is a residual flow during the commissioning or bi-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 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 manufacturer's instructions.

In the absence of any other instruction or guidance, it is recommended that In-Service Tests are carried out once every 6 months as a minimum.

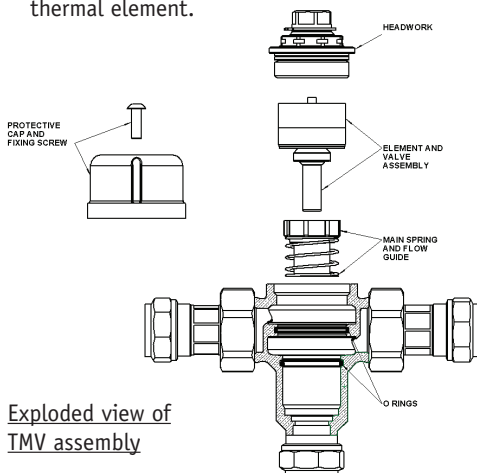
TMV Cleaning and Servicing Instructions

Most domestic water supplies contain calcium which will separate out when the water is heated in a system. The degree and speed of scaling may vary depending on factors such as water flow rates, system design, the hardness of the water and the temperature to which the water is heated.

Deposits of scale may over time form in the valve, particularly at the hot inlet. The formation of the scale may adversely affect the performance of the valve which will be detected during the in-service testing. If this occurs it will be necessary to remove the valve for de-scaling and servicing.

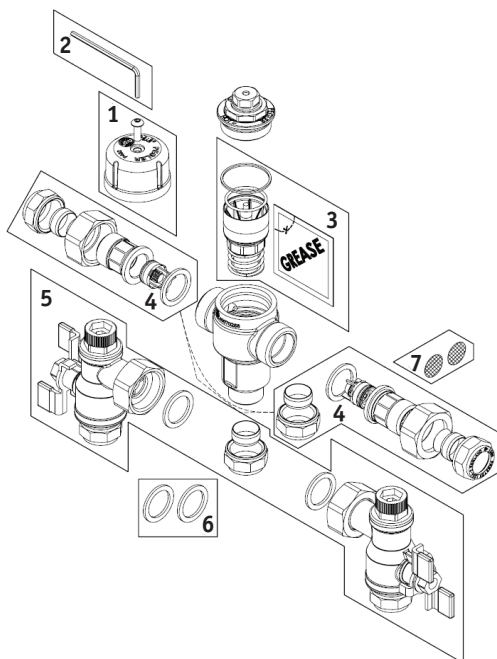
TO SERVICE THE VALVE:

- Isolate the hot and cold supply.
- Remove the valve to a clean working area.
- Remove the protective cap.
- Unscrew the headwork of the valve.
- Carefully remove the element and valve assembly and put to one side.
- Remove the main spring and flow guide and carefully put to one side.
- Inspect the components for contamination or damage.
- Clean or replace as necessary
- Remove the two o rings
- Clean the valve body and headwork using a propriety de-scaler
- Thoroughly rinse the body and headwork in clean water.
- Carefully fit new o rings from the service kit taking care to ensure they are not damaged and are correctly located.
- Lubricate the o rings with the lubricant provided.
- Re-fit the flow guide and spring lubricating the flow guide around the greatest diameter with the lubricant provided
- Lubricate the shuttle valve with the lubricant provided
- Re-fit the shuttle valve and element assembly.
- Re-fit the headwork ensuring correct tightening
- Re-fit the assembled valve and perform the comissioning sequence.
- If after cleaning the valve, and replacing the o ring seals, the valve does not function correctly, it may be necessary to replace the thermal element.



SPARES

In order to ensure that the Prestex Model P402 thermostatic mixing valve continues to provide satisfactory service, only GENUINE Pegler spare parts must be used.



	Spare part order code	Description
1	854446	Protective cap complete with screw
2	854447	Hexagon key
3	854448	Service kit
4	854449 (15mm) 854450 (22mm)	Tailpiece Strainer kit
5	854451 (15mm) 854452 (22mm)	Angle valve strainer kit
6	854456 (15mm), 854457 (22mm)	Sealing washer
7	854455 (15mm), 817012 (22mm)	Wafer Strainer



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