

Installation Instructions and Use Guide

Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)

I. IMPORTANT INTRODUCTION NOTES

TMV3-designated thermostatic mixing valves are compliant with D 08 and are used in high-risk areas of healthcare premises. This robust performance-based specification ensures the safety of vulnerable people including children, older people, those with reduced mental capacity and users who are unable to react to prevent injury while washing or bathing.

TMV2-designated thermostatic mixing valves are compliant with EN 1111 (high pressure) and/or EN 1287 (low pressure) and are used in domestic properties or other domestic type situations. The UK Building Regulations Part G requires mixing valves that are compliant with EN 1111 and/or EN 1287 to reduce the risk of scalding

The valves covered by these instructions have been tested and certified as being in compliance with requirements of TMV3(BS 7942:2000 and NHS D 08) and TMV2(EN 1111 and EN 1287).

The Department of Health (DoH) Health Technical Memorandum (HTM04-01) makes reference to three types of valve:

- Type 1- a mechanical mixing valve with or without temperature stop (i.e.manually blended)
- Type 2- a thermostatic mixing valve: BS EN 1111 and or BS EN 1287
- Type 3- a thermostatic mixing valve with enhanced performance: HTM 04-01: Supplement –‘Performance specification D 08: thermostatic mixing valves (healthcare premises)

The installer should be aware of his duty of care and responsibility in ensuring that compliance with regulation is maintained. The valve is not guaranteed to function correctly to the TMV3 or TMV2 specification unless it is installed and used in accordance with these instructions (see Conditions of normal use)

This BRYMEC Model 4001 thermostatic mixing valve, available in 15mm and 22mm size, 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.

II. APPROVALS

This BRYMEC Model 4001, 4002(Dimension see chart 1 and table 2) is certified under the NSF TMV3 scheme for the following designations of use (see table 1) and has been independently tested by the recognized test laboratory NSF Wales Ltd and is a Water Regulations Advisory Scheme(WRAS) approved product and the listed in the Water Fittings and Material Directory.

Table 1: Designations of use TMV2 and TMV3

TMV3 High Pressure HP: (1-5Bar)	TMV3 Low Pressure LP: (0.2-1Bar)	Application	Maximum temperature (°C)	TMV2 High Pressure HP: (0.5-5Bar)	TMV2 Low Pressure LP: (0.1-1Bar)
HP-B	LP-B	Bidet	38	HP-B	LP-B
HP-S	LP-S	Shower	41	HP-S	LP-S
HP-W	LP-W	Washbasin	41	HP-W	LP-W
HP-T44		Bath*	44	HP-T	

Note 1. Except 15mm and 1/2" not acceptable for LP.

Note 2. 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.

Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)

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

Chart 1:

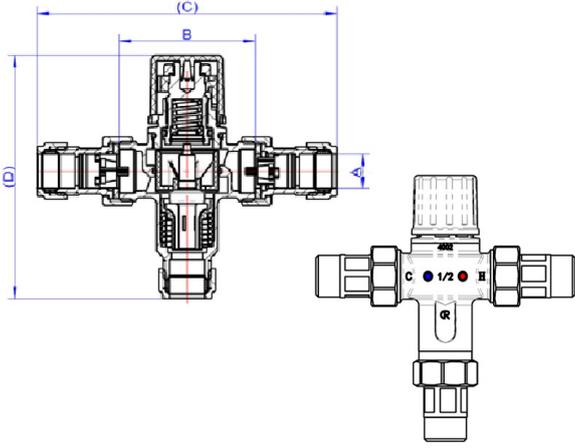
	Technical Specification	
	Factory Temperature Setting	41 °C
	Temperature adjustment range	30- 50°C
	Mix Temperature Stability	±2°C
	Cold water supply temperature	5- 20°C
	Hot water supply temperature:	55-65°C
	Temperature differential(hot inlet-Outlet)	12°C
	Supply pressure imbalance dynamic	2:1
	Maximum Static Pressure	10 Bar

Table 2:

Model	DN Size	A	B	C	D
4001	15	15.1	59	132.7	107.8
4001	22	22.1	61	154.7	109.7
4002	1/2	G1/2	59	129	133
4002	3/4	G3/4	61	139	139

III. CONDITIONS OF NORMAL USE

1. WATER REGULATIONS

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

2. CONDITIONS FOR NORMAL USE

Table 3:

Operating pressure range	BS EN 1111	BS EN 1287	D08	D08
	High Pressure	Low Pressure	High pressure	Low pressure
Maximum Static Pressure(Bar)	10	10	10	10
Hot & Cold Flow Pressure(Bar)	0.5 to 5	0.1 to 1	1.0-5.0	0.2-1
Hot supply temperature(°C)	55 to 65	55 to 65	55 to 65	55 to 65
Cold supply temperature(°C)	Less than 25	Less than 25	5 to 20	5 to 20
Maximum Temperature differential (°C)	12	12	12	12

Valves operating outside of these conditions of use cannot be guaranteed as to operate as type 2 or type 3 valves.

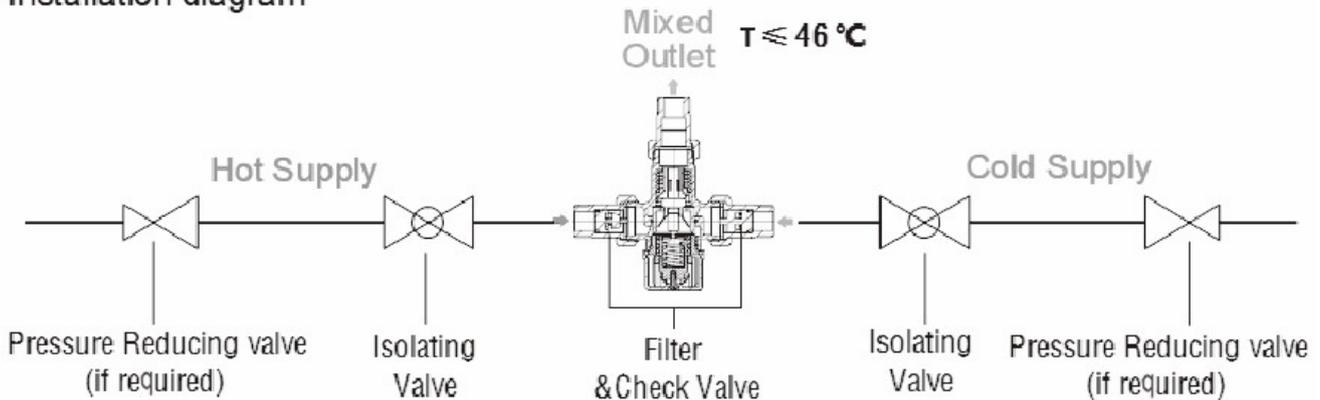
NOTE 1: For washbasins, washing under running water is assumed.

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 its other designations.

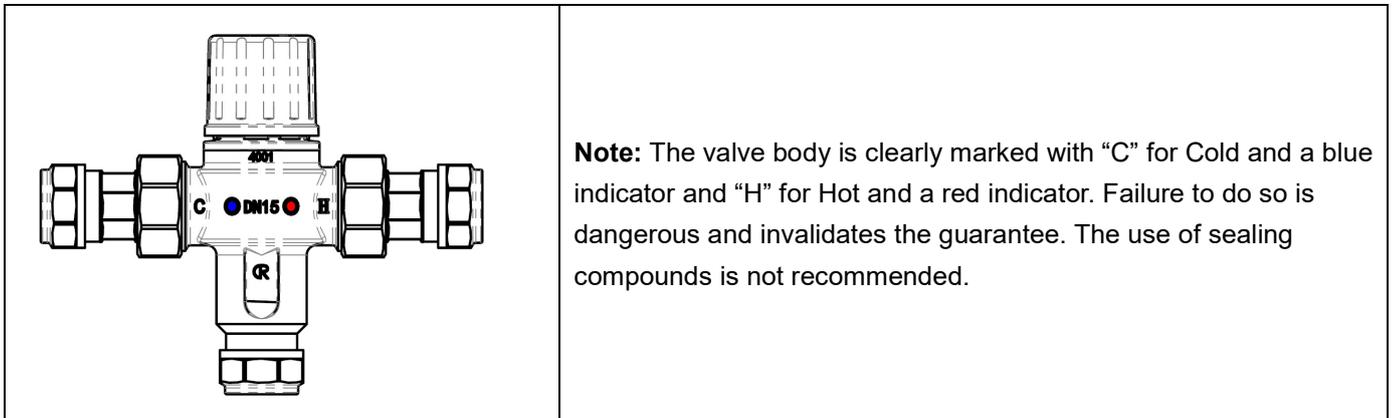
Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)

Installation diagram



IV. ASSEMBLY PROCEDURE

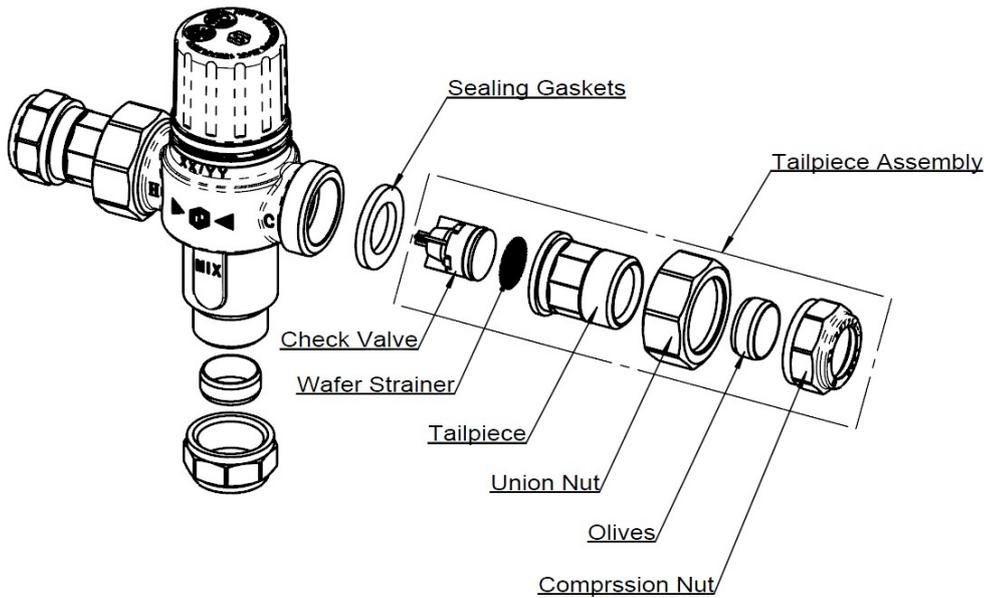
Chart 2:



1. Before installation, the hot and cold water inlet of the mixing valve must be cleared and confirmed. The valve must be correctly connected to the respective supplies and must be fitted in an accessible position in order to commission and maintain the valve
2. The fitting of isolation valves is required as close as is practicable to the water supply inlets of the thermostatic mixing valve.
3. Check the main valve assembly bores are free of debris and the end sealing faces are clean
4. Check the two inlet tailpieces and confirm they are complete with union nuts and compression nuts and olives
5. Insert the sealing washer into the inlets and outlet and screw the inlet and outlet fittings onto the valve body, taking care not to over tighten
6. 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.
7. Assemble the valve to the pipe work and ensure the hot and cold water pipes have full penetration into the tailpiece. The compression fittings supplied allow for direct connection to BS 22mm OD tube or BS 15mm OD tube (see chart 1 and table 1).
8. Tighten the compression nuts ensuring that the end of the pipe remains in contact with the filter element
9. After installation check carefully for leaks.
10. Ensure check valves fitted into the tailpiece to prevent backflow of water.

Chart 3: Exploded view of tail pipe assembly

Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)



V. ADJUSTMENT AND COMMISSIONING

The BRYMEC thermostatic mixing valve is supplied factory pre set at 41--43°C. However, installation conditions will dictate, that the product must be adjusted on site.

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

1. The designation of the thermostatic mixing valve matches the application
2. The supply pressures and temperatures are within the operating range of the valve
3. Isolating valves and filters are fitted
4. The supply temperatures are within the range permitted for the valve and by guidance information on the prevention of legionella etc.

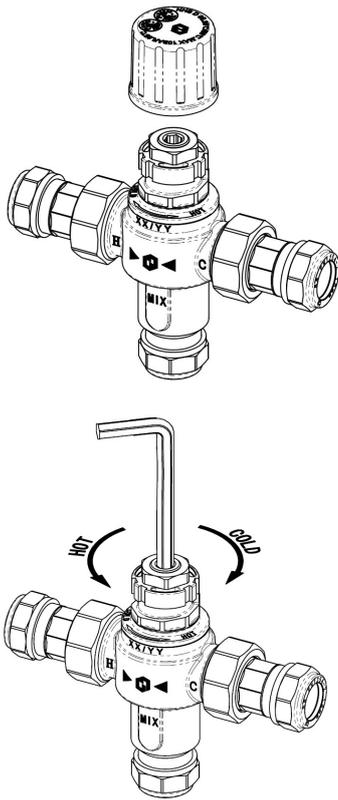
Note:

5. 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.
6. 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.
7. The thermostatic mixing valve will be installed in such a position that maintenance of the TMV and its valves and the commissioning and testing of the TMV can be undertaken.

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

chart 4:

Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)



1. Remove the protective cap on top of the valve.
2. Back-out the nut using a hexagon wrench:
 - To increase the temperature turn anti-clockwise
 - To decrease the temperature turn clockwise
 - To set the valve to a maximum mixed water Temperature in accordance with the valve application.(see Table 1)
3. 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.
4. With the valve at the full cold position bring the valve to the correct application temperature by turning the 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 lowered temperature as this will not provide consistent operation.
5. After adjustment replace the cap to lock the valve in position and prevent tampering.

6. Commissioning Test sequence

After adjusting the temperature of the mixed water in accordance with the valve application (see table 1) carry out the following sequence:

- 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 recording the maximum temperature achieved and the final stabilized temperature.
- e. Record the equipment, thermometer etc. use for the measurements

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.

Note : The final stabilized temperature should not exceed the values in Table 4

Table 4:

application	Maximum temperature $^{\circ}\text{C}$
Bidet	40
Shower	43
Washbasin	43
Bath fill at 44*	46
Bath*(assisted)	48

Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)

VI. Maintenance & in-service testing

Purpose 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 supply.

Procedure 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. >1K), record the change and before re-adjusting the mixed water temperature carry out the following checks;

1. All in-line or integral filters are clean
2. Any in-line or integral non-return valves or other anti-backsiphonage devices are in good working condition
3. Any isolation valves are fully open

With an acceptable mixed water temperature, complete the test sequence detailed above.

If at step V6.(d), the final mixed water temperature is greater than the value in table 4. 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.

4. TMV2: In the absence of any other instruction or guidance, it is recommended that In-Service Tests are carried out once every 12 months as a maximum. If the temperature is outside of the expected range it will be necessary to remove and clean the valve in accordance with the following instructions.
5. TMV3: for Healthcare facilities frequency of in-service testing can be determined as following table 5

Table 5:

Temperature Variation (°C)	Comment	Service Frequency (week)
±1°C	/	24-28 weeks
±1°C-2°C	On either visit	24-28 weeks
±1°C-2°C	At both visits	18-21 weeks
± Exceed 2°C	At either visit service is required	18-21 weeks

Note 1: If there is a residual flow during the commissioning (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

Note 2: 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.

Note 3: The fitting of isolation valves is required as close as is practicable to the water supply inlets of the thermostatic mixing valve

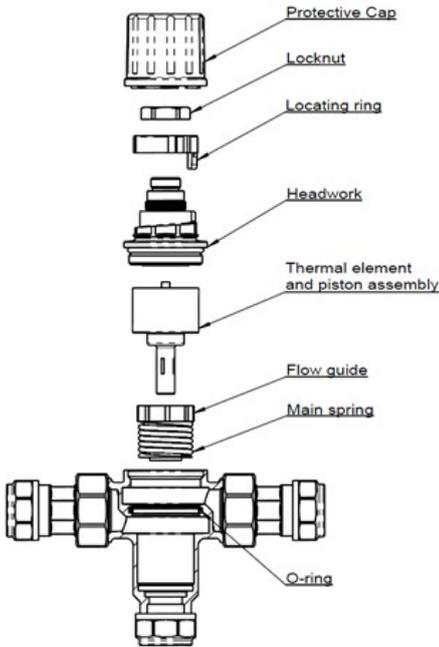
Note 4: Temperature readings should be taken at the normal flow rate after allowing the system to stabilize. The sensing part of the thermometer probe must be fully submerged in the water that is to be tested. Any TMV that has been adjusted or serviced must be re-commissioned and re-tested in accordance 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.

Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)

VII. TMV Cleaning Instructions

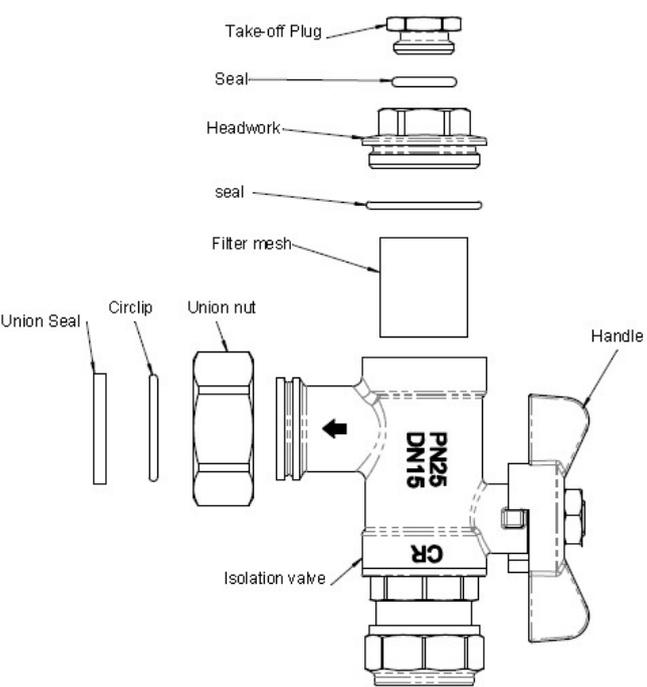
Most domestic water supplies contain calcium which will separate out when the water is heated in a system. The degree and speed of scaling may vary depending on factors such as water flow rates, system design, the hardness of the water and the temperature to which the water is heated.

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 service.

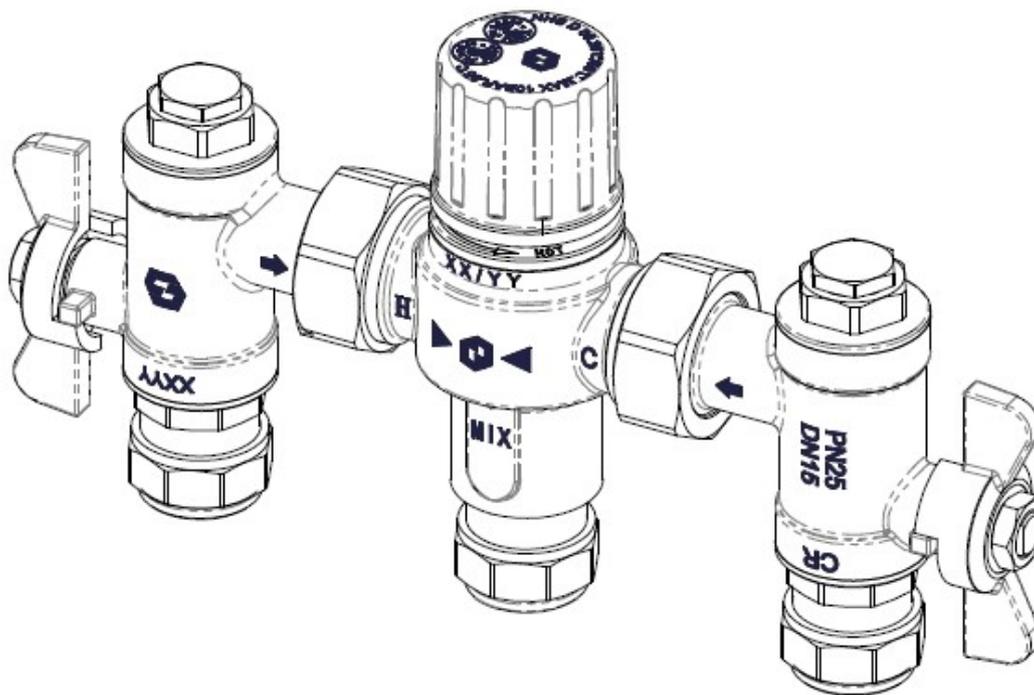
	<p>Cleaning Procedure</p> <ol style="list-style-type: none">1. Isolate the hot and cold supply2. Remove the valve to a clean working area3. Remove the protective cap4. Unscrew the headwork of the valve5. Carefully remove the temperature-sensitive and piston assembly and put to one side.6. Remove the main spring and flow guide and carefully put to one side.7. Inspect the components for contamination or damage8. Clean or replace as necessary9. Remove the O-ring.10. Clean the valve body and headwork using a propriety de-scaler.11. Thoroughly rinse the body and headwork in clean water12. Carefully fit new O-ring to body.13. Carefully re-fit all components and perform the commissioning 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.

VIII. Exploded view of Isolation valve assembly

	<p>The BRYMEC mixing valve is optionally provided with Isolation valve in lieu of the tailpiece arrangement shown left. This allows the connections of the hot and cold water supplies to be parallel to the mixed water outlet for ease of piping layouts.</p> <p>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 strainers previously mentioned are regarded as fulfilled</p>
---	--

Thermostatic Mixing Valve Brymec Model 4001 & 4002 - TMV2 & TMV3 (V2.0)



-- END