TMV3 Requirements

IMPORTANT

Installer: This Manual is the property of the customer and must be retained with the product for maintenance and operational purposes.

1173533-W2-C

General

The information contained in this TMV3 Requirements Manual is supplementary to and must be read in conjunction with the Installation and User Guide (IUG) or Product Manual supplied with your thermostatic mixing valve.
Where there is conflicting information (e.g. Maximum Temperature Setting) then you must follow the instructions laid down in this manual.

Where products have been certified as a TMV3 approved valve for use in UK Healthcare premises, they shall only be used for applications covered by their approved designations. Refer to the IUG or Product Manual supplied with your valve to confirm the approved designation.

Guide to Designations

HP	High Pressure
LP	Low Pressure
S	Shower
B	Bidet
W	Washbasin
T44	Bath with fill temperature of 44°C maximum
T46	Bath with fill temperature of 46°C maximum
D44	Bath/Shower with Bath fill 44°C maximum, Shower 41°C maximum
D46	Bath/Shower with Bath fill 46°C maximum, Shower 41°C maximum
SE	Shower having an Economy flow rate
BE	Bidet having an Economy flow rate
WE	Washbasin having an Economy flow rate

Installation and commissioning must be carried out in accordance with these instructions, and must be conducted by designated, qualified and competent personnel.

The installation must comply with the “Water Supply Regulations 1999 (Water Fittings)” or any particular regulations and practices, specified by the local water company or water undertakers.

Type 3 Valves

Table 1 - Normal Conditions of use for Type 3 valves

	High Pressure (HP)	Low Pressure (LP)
Maximum Static Pressure - Bar	10	10
Flow Pressure, Hot and Cold - Bar	1 to 5	0.2 to 1
Hot Supply Temperature - ºC	55 to 65	55 to 65
Cold Supply Temperature - ºC	5 to 20	5 to 20
Minimum Temperature Differential - ºC	Refer to the IUG or Product Manual supplied with your valve	

Valves operating outside these conditions cannot be guaranteed to operate as Type 3 Valves.

Table 2 - Mixed Water Temperature

Application and Designation	Mixed Water Temperature (at point of discharge) ºC
Bidet (B)	38
Shower (S)	41
Washbasin (W)	41
Bath (44ºC fill) (T44)	44
Bath (46ºC fill) (T46)	46
Diverter Bath/Shower (D44)	Bath fill 44 max, Shower 41 max
Diverter Bath/Shower (D46)	Bath fill 46 max, Shower 41 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 its other designations.

NOTE 4: A thermostatic mixer valve having a diverter designation (D) must be capable of changing and controlling the mixed water outlet temperature as defined above when the supply path is changed from bath to shower or shower to bath.

If isolation valves are not integral to the valve then they must be fitted as close as practicable to the water supply inlets of the thermostatic mixing valve.

Method for Commissioning Thermostatic Mixing Valves

Purpose

Since the installed supply conditions are likely to be different from those applied in the laboratory tests it is appropriate, at commissioning, to carry out some simple checks and tests on each mixing valve to provide a performance reference point for future in-service tests.

Procedure

Check that:

a) The designation of the thermostatic mixing valve matches the intended application.

b) The supply pressures are within the range of operating pressures for the designation of the valve.

c) The supply temperatures are within the range permitted for the valve and in accordance with information on the prevention of legionella etc. See flow chart 'Audit of Supplies to Fittings'.

d) That isolating valves are fully open.

e) That in-line strainers and check valves are clear.

Adjust the temperature of the mixed water in accordance with the instructions within the IUG or Product Manual, and the requirement of the application and then carry out the following sequence (see flow chart 'Commissioning Test Stage 2'):

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 appromately 50%, which shall be measured.

d) Isolate the cold supply to the mixing valve and monitor the mixed water temperature.

e) Record the maximum temperature as a result of (d) and the final stabilised temperature*.

* If there is no flow after 5 seconds then restore the cold water supply and verify that the final stabilised mixed water temperature is no more than 2°C above the temperature taken at b), and does not exceed the values in Table 1. If the final stabilised mixed water temperature is more than 2°C above the set temperature b) then the valve must be adjusted and re-commissioned.

If after 5 seconds there continues to be a flow of water from the mixed water outlet then collect any water discharging into a suitably graduated measuring vessel for 60 seconds.

The volume of water collected shall be less than 120ml.

Note! The supply conditions whilst undertaking this test must be within the supply conditions stated in Table 1.

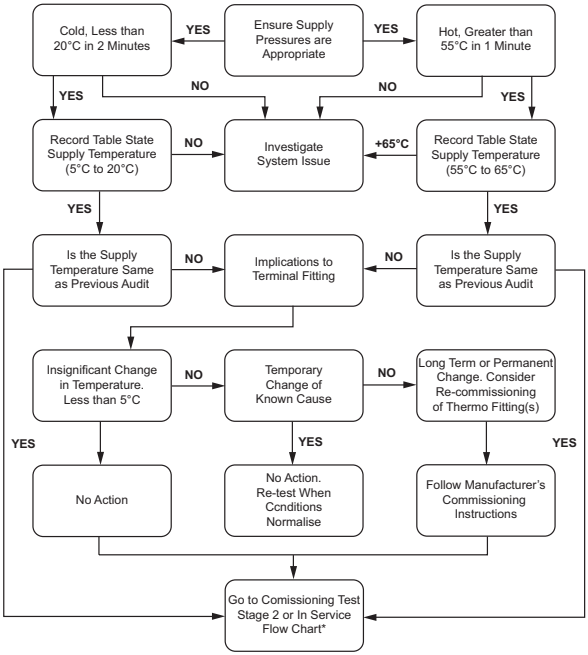
Restore the cold water supply and record the stabilised mixed water outlet temperature and verify that the final stabilised mixed water temperature is no more than 2°C above the set temperature b). If the final stabilised mixed water temperature is more than 2°C above the set temperature b) then the valve must be adjusted and re-commissioned.

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

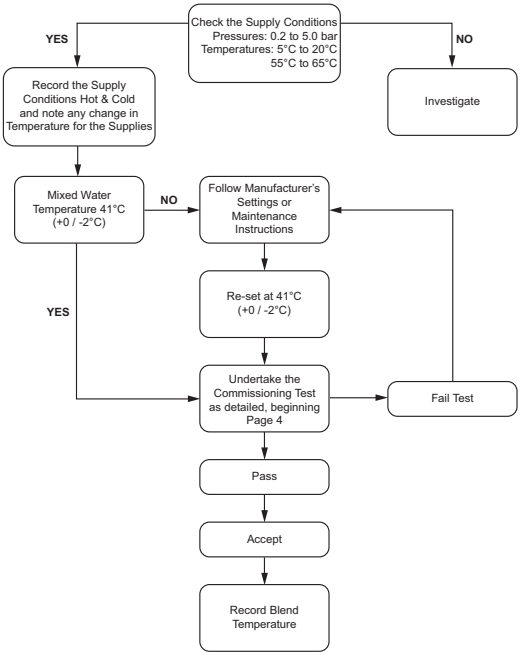
Table 3 - Guide to maximum stabilised temperatures recorded during site tests

Application	Mixed Water Temperature °C
Bidet	40
Shower	43
Washbasin	43
Bath (44ºC fill)	46
Bath (46ºC fill)	48

Audit of Supplies to Fittings



Commissioning Test Stage 2 (example shown Washbasin Set at 41°C)



In Service Testing

Purpose

The purpose of in-service tests 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.

The water supply conditions must be confirmed and compared with previous inservicetest audits or commissioning test results as the supply conditions will have an impact upon the results of the test. See flow chart ‘Audit of Supplies to Fittings’.

Procedure

Using the same measuring equipment or equipment to the same specification as used in the commissioning of the valve (see In-service flow chart), adjust the temperature of the mixed water in accordance with the instructions in section: ‘Operation’ and the requirement of the application. Carry out the following sequence:

a) Record the temperature and pressure of the hot and cold water steady state supplies.
b) Record the temperature of the mixed water at the maximum available flow.
c) Record the temperature of the mixed water at approximately 50% of the available flow.
d) Isolate the cold water supply to the mixing valve and monitor the mixed water outlet.

If there is no flow after 5 seconds then restore the cold water supply and verify that the final stabilised mixed water temperature is no more than 2°C above the temperature taken at b).

If after 5 seconds there continues to be a flow of water from the mixed water outlet then collect any water discharging into a suitably graduated measuring vessel for 60 seconds.

The volume of water collected shall be less than 120ml.

Restore the cold water supply and record the stabilised mixed water outlet temperature and verify that the final stabilised mixed water temperature is no more than 2°C above the set temperature b).

If the mixed water temperature has changed significantly from the previous test results (e.g. >1°C) record the change and before re-adjusting the mixed water temperature check:

a) That any in-line or integral filters are clean.
b) That any in-line or integral non return valves or other anti-back siphonage devices are in good working order.
c) That any isolating valves are fully open.

With an acceptable mixed water temperature, complete the following procedure:

a) Record the temperature and pressure of the hot and cold water steady state supplies.

b) Record the temperature of the mixed water at the maximum available flow.

c) Record the temperature of the mixed water at approximately 50% of the available flow.

d) Isolate the cold water supply to the mixing valve and monitor the mixed water outlet.

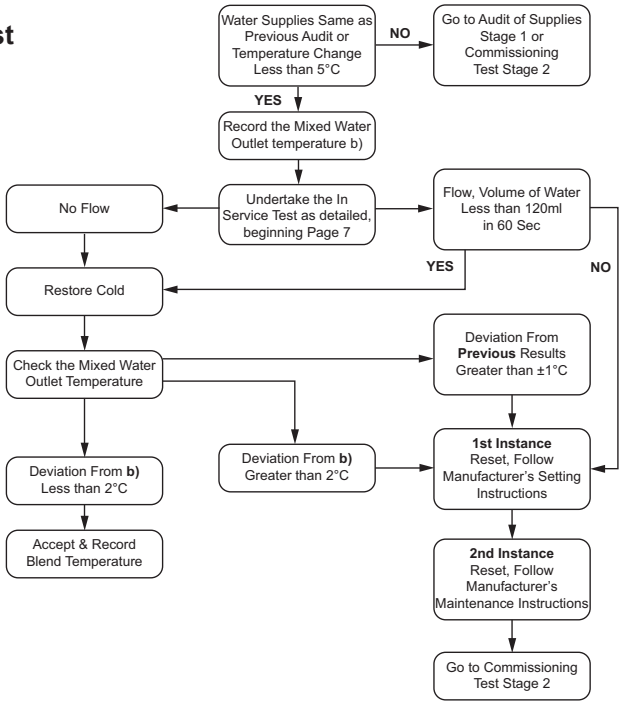
e) Record the maximum temperature as a result of (d) and the final stabilised temperature.

f) Record the equipment, thermometer etc. used for the measurements.

If at step (e) 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 results by more than about 2°C, the need for service work is indicated.

Note! In-service tests should be carried out with a frequency, which identifies a need for service work before an unsafe water temperature can result. In the absence of any other instruction or guidance, the procedure described in Annex F of D 08 may be used.

In Service Test



Annex F of D 08 (informative) Frequency of In-service Tests

General

In the absence of any other instruction or guidance on the means of determining the appropriate frequency of in-service testing, the following procedure may be used:

a) 6 to 8 weeks after commissioning carry out the tests detailed in “Inservice Tests”

b) 12 to 15 weeks after commissioning carry out the tests detailed in “Inservice Tests”

Depending on the results of the above tests, several possibilities exist:

a) If no significant changes (e.g. ≤1°C) in mixed water temperatures are recorded between commissioning and 6 to 8 week testing, or between commissioning and 12 to 15 week testing, the next in-service test can be deferred to 24 to 28 weeks after commissioning.

b) If small changes (e.g. 1 to 2°C) in mixed water temperatures are recorded in only one of these periods, necessitating adjustment of the mixed water temperature, the the next in-service test can be deferred to 24 to 28 weeks after commissioning.

c) If small changes (e.g. 1 to 2°C) in mixed water temperatures 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.

d) If significant changes (e.g. >2°C) in mixed water temperatures are recorded in either 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 tests 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.

Maintenance

Planned Maintenance

Malfunction of Thermostatic Mixing Valves is almost always progressive in nature and will be detected by the use of proper temperature checking and maintenance routines.

Certain types of system can result in the valve having excessive ‘dead-legs’ of pipework, or auxiliary cold water supply added to the mixed water from the valve Such systems can disguise the onset of thermostatic mixing valve malfunction and should not be used.

We recommend a preventative maintenance procedure based on site conditions and the risk to the user. All results must be recorded in a log book.

Healthcare

Healthcare applications are hospitals, aged person facilities, residential care homes, etc. and any other applications where the user is similarly at risk.

Ultimately, the user or attendant must exercise diligence to make sure that the delivery of warm water is at a stable, safe temperature. This is particularly important in such procedures as supervised bathing where patients are unable to respond immediately to unsafe temperatures.

Commercial

Check for correct blend setting every 6 months.

Follow the In-Service Test Procedure every 12 months.

Critical Components

Irrespective of supply and usage conditions or the evidence of in-service tests, critical components should be replaced at intervals of no more than 5 years.

Note! During the replacement of critical components, it may be necessary to replace other non-critical components.

References

National Health Service Model Engineering Specifications D08, Thermostatic Mixing Valves (Healthcare premises).

HTM-04 (Health Technical Memorandum): The control of Legionella, hygiene, “safe” hot water, cold water and drinking water systems.

Notes

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