TMV15C TMV22C

Thermostatic Mixing Valve

Important: Keep this document

EPH TMV's are available in 15mm and 22mm compression. These valves are designed primarily for single outlet use. They deliver safe, blended hot water to taps, showers, bidets and other water outlets, making them ideal for use in hospitals, schools and leisure centres.

CAUTION! Installation and connection should only be carried out by a qualified person and in accordance with local regulations.

- The valve is not guaranteed to function correctly to the TMV2 or TMV3 specification unless it is installed and used in accordance with these instructions (see conditions of normal use).
- These valves have been tested and certified as being in compliance with BS 7942:2000 and NHS Estates Model Engineerings Specification D08. Valves operating outside the requirement of these standards are not covered by the TMV3 Scheme and are not guaranteed to operate as type 3 Valves.

TECHNICAL SPECIFICATION

Product Range

PRODUCT CODE	DESCRIPTION	SIZE	SETTING RANGE	FLOW RATE
TMV15C	Thermostatic Valve Compression	15mm	30-46˚C	1.1 Kvs
IV15	15mm Isolation Valve	15mm	—	—
TMV22C	Thermostatic Valve Compression	22mm	30-46˚C	1.1 Kvs
IV22	22mm Isolation Valve	22mm	—	—

Table 1

Condition of normal use

	TMV2 HIGH PRESSURE BS EN 1111	TMV2 LOW PRESSURE BS EN 1287	TMV3 BS 7942: 2000 AND NHS D08
Maximum Static Pressure	10 bar	10 bar	10 bar
Flow Pressure, Hot & Cold	0.5 - 5 bar	0.1 - 1.0 bar	1.0 to 5.0 bar: High Pressure
Hot Supply Temperature	55˚C - 65˚C	55˚C - 65˚C	55˚C - 65˚C
Cold Supply Temperature	≤25˚C	≤25˚C	5˚C to 20˚C
Temperature Stability	±2˚C	±2˚C	±2˚C
Min. Temp Differential (Mix to Hot) for fail-safe	10˚C	10˚C	10˚C
Max. Pressure Inlet Differential	5:1	5:1	5:1
Outlet Temperature Adjustment Range	30˚C to 46˚C	30˚C to 46˚C	30˚C to 46˚C
Maximum Hot Inlet Temperature	85˚C	85˚C	85˚C

Table 2

NOTE: Valves operating outside these conditions cannot be guaranteed by the Scheme to operate as Type 2 & 3 valves.

Installation Guide

TMV2

The following information is required for use when the TMV15C & TMV22C thermostatic mixing valves are used in a TMV2 Applications under the requirements of BS EN 1111: 2017 Sanitary tapware. Thermostatic Mixing Valve (PN 10). General Technical Specification and BS EN 1287: 2017 Sanitary tapware. Low pressure thermostatic mixing valves. General technical specifications.

The TMV15C & TMV22C thermostatic mixing valves have been specifically designed and manufactured to meet the requirements of BS EN 1111: 2017 and BS EN 1287: 2017 and TMV2 Type scheme. The valves have been independently tested and approved as a TYPE 2 valve under the NSF TMV2 scheme by the NSF Testing & Evaluation Centre.

TMV3

The TMV15C & TMV22C thermostatic mixing valves have been specifically designed and manufactured to meet the requirements of BS 7942: 2000 and NHS D08. The valve has been independently tested and approved as a TYPE 3 valve under the TMV3 scheme.

Fail Safe Function

The TMV15C & TMV22C valves are designed to stop the mixed water flow in the event of either the hot or cold water supply failing when installed in accordance with these instructions. To ensure full closure of the mixed water flow the minimum temperature differential between the hot water inlet to the valve and the mixed water outlet MUST be at least 10˚C.

Application

TMV2 Guide

The valves designation of use, LP if tested against BS EN 1287, HP if tested against BS EN 1111 and HP and LP if tested against both standards. The TMV15C & TMV22C thermostatic mixing valves have been independently tested by NSF and certified as meeting the requirements of the BS EN 1111: 2017 and BS EN 1287: 2017 under the TMV2 Scheme as being suitable for use on the following designations.

This product is designed and certified for the following designations: Table 3

Wash Hand Basin	HP & LP
Shower	HP & LP

Table 3

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. The installation of thermostatic mixing valves must comply with the requirements of the Water Supply (Water Fittings) Regulations 1999. Valves approved for designation of use LP Tub applications that only achieve the minimum flow rate requirement at a supply pressure of 0.2 bar must indicate that the minimum supply pressure for LP Tub application is 0.2 bar.

Note:

- Inlet temperature must be 10˚C greater than desired mixed water temperature.
- Thermostatic Mixing Valves are temperature sensitive devices and must not be subjected to extreme temperature, either hot or cold, in use for installation.
- 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, an assessment of risk should be carried out. It is necessary to either boost one pressure or reduce the other so that both supplies are within a common pressure range.

Recommended Outlet Temperatures

The Build cert TMV scheme recommends the following set maximum mixed water:

Application	Recommended Set Mixed Water Temp
Wash Basin	41˚C
Shower	41˚C
Bidet	-----
Bath	-----

Table 4

Recommended Outlet Temperatures

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.

NOTE: 46˚C is the maximum mixed water temperature from bath taps. The maximum temperature takes account of the allowable temperature tolerances inherent in the 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˚C to 37.5˚C as a comfortable bathing temperature for children. In premises covered by Care Standards Act 2000, the maximum mixed water outlet temperature is 43˚C.

TMV3

The TMV15C & TMV22C thermostatic mixing valves have been independently tested by Build cert Limited and certified as meeting the requirements of the NHS D08 specification under the TMV3 Scheme as being suitable for use on the following designations.

Application	TMV3 Range
Wash Basin	High Press
Shower	High Press
Bidet	High Press

Table 5

In the absence of other temperatures being specified, we recommend the outlet temperatures quoted in the table below:

Application	Recommended Set Mixed Water Temp.
Wash basin	41˚C
Shower	41˚C
Bidet	38˚C

Table 6

Installation

IMPORTANT - The following instructions must be read prior to the installation of any TMV15C & TMV22C valves. The installer should also be aware of their responsibility and duty of care to ensure that all aspects of the installation comply with all current regulations and legislation.

Flushing through water systems using certain chemicals may wholly or partially remove the lubricant from the internal workings of the valve, which may adversely affect its performance. We recommend that following a flushing of the system with chemicals, valves are checked for correct operation.

The installation of thermostatic mixing valves must comply with the requirements of the Water Supply (Water Fittings) Regulations 1999.

The TMV15C & TMV22C thermostatic mixing valve MUST be installed in an accessible position to ensure that maintenance, commissioning and testing of the Thermostatic Mixing Valves can be undertaken easily.

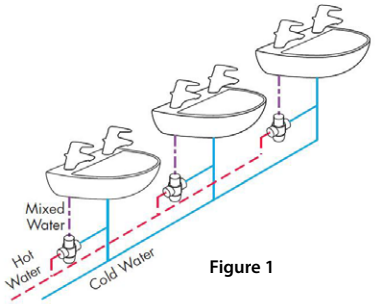

Figure 1

Installation Steps:

1. It is essential that before installing any Thermostat Mixing valve ensure that the supply conditions of the system to which the valve is intended to be fitted are checked to confirm compliance with the parameters as quoted within the Technical Specification and conditions on which the approval is granted i.e. verify supply temperatures, supply pressures, risk assessment.

2. Consideration must be made for the possibility of multiple/simultaneous demands being made on the supply system whilst the TMV15C & TMV22C valve is in use, all practical precautions must be made to ensure that the valve is not affected. Failure to make provision within the pipe sizing etc. will affect the performance of the valve.

3. The supply system to which the TMV15C & TMV22C valve is to be installed must be thoroughly flushed and cleaned to remove any debris which may have accumulated during the installation. Failure to remove any debris will affect the performance and the manufacturer's warranty of the product. Independent filters and isolation valves must be fitted in conjunction with the valve, as close as practically possible to the water supply inlets of the TMV15C & TMV22C thermostatic valve. In areas that are subject to aggressive water, provision must be made to treat the water supply prior to the supply entering the product.

4. The maximum flow rate of the valve will only be achieved when the supply conditions are achieved as quoted within the Technical Specification, with a flow condition under 1 bar differential pressure.

5. The TMV15C & TMV22C has been designed to ensure that the valve can be installed in any position whether vertical or horizontal, it can be surface mounted or within a supply duct. It is essential that the access to the valve is not obstructed for any future maintenance that may be required to the valve or associated fittings.

6. We recommend that the TMV15C & TMV22C thermostatic mixing valve be installed as close as practically possible to the outlet, which it is serving. In this situation attention must be paid to the maximum distance of pipe work from the mixed water outlet of the valve to any terminal fitting.

   Current guidelines recommend a maximum distance of 2 meters from the outlet of any mixing valve to the furthest terminal fitting/outlet to which the mixing valve is to serve.

7. The hot and cold water supplies must be connected to the valve strictly in accordance with the indications on the body of the valve i.e. hot water supply to the hot port of the valve.

8. In a situation where one or both of the water supplies are excessive, it is possible to fit a pressure reducing valve to reduce the pressure(s) to within the limits as quoted previously.

9. Any thermostatic mixing valve must be fitted with a back flow prevention device, such as check valves to prevent the cross contamination of supplies. The TMV15C & TMV22C valve is complete with integral insert check valves and strainers.

10. Y Pattern strainers and full-bore isolation valves must be installed in conjunction with the TMV15C & TMV22C fail-safe thermostatic mixing valve, as close as is practically possible to the location of the valve. Alternatively, the use of the thermostatic mixing valve with the IV15 & IV22 end pieces removes the need for additional filters and isolation valves.

11. It is essential that the TMV15C & TMV22C thermostatic mixing valve should not be installed in situations where there is a possibility of the valve being deprived of water or where demands for water are greater than the actual stored supplies.

12. To ensure that the performance levels of the TMV15C & TMV22C thermostatic mixing valve are maintained (in the event of cold water failure), the temperature of the hot water supply at the point of entry to the valve must be a minimum of 10˚C above the commissioned mixed water discharge temperature.

13. The TMV15C & TMV22C thermostatic mixing valve must not be subject to any extreme temperature variations either during the installation or under normal operating conditions.

Method of Adjusting the Mixed Water Outlet Temperature

IMPORTANT: The following instructions must be read and understood prior to the adjustment of the mixed water outlet temperature and this action MUST only be carried out by a suitably qualified person.

When commissioning it is the temperature of the water from the outlet(s) that is important.

1. Remove the cap from the valve.

2. Remove the temperature locking ring from the spindle using a suitably sized spanner. See figure 2.

3. Open the outlet to which the mixing valve is supplying and establish a stable flow and temperature.

4. Using a calibrated thermometer place the sensing part of the thermometer probe under the flowing water.

5. Using the top of the TMV Cap, turn the temperature adjustment spindle anticlockwise to increase the mixed water temperature or clockwise to reduce the mixed water temperature at all times ensuring the probe of the thermometer is under the flowing water. See figure 3.

6. Once the desired temperature is reached – replace the temperature locking ring on the spindle and fit the cap of the valve.

7. The temperature at the terminal fitting must never exceed 46˚C.

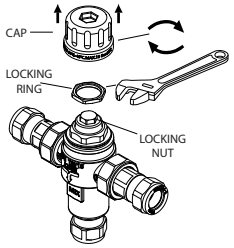

Figure 2

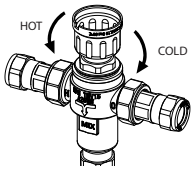

Figure 3

Commissioning

IMPORTANT - The following instructions must be read and understood prior to commissioning the TMV15C & TMV22C fail-safe thermostatic mixing valve. If under any circumstances there are aspects to the installation / system which do not comply with the specification laid down, the valve MUST NOT be put into operation until the installation / system complies with our specification. However if all these conditions are met, proceed to set the temperature as follows:

1. Ensure the designation of thermostatic mixing valve matches the application and that the system is thoroughly cleaned and free from any debris prior to the commissioning of the TMV15C & TMV22C thermostatic mixing valve. The supply temperatures and pressures are within the valves operating range specified. Providing that all of these conditions are met, please follow the following steps to commission this product
2. The commissioning of the temperatures must be carried out using a suitably calibrated thermometer – preferably a digital thermometer the sensing part of the thermometer probe must be fully submerged in the water when testing.
3. Each valve must be commissioned taking into consideration any fluctuations, which may occur within the system due to simultaneous demands. It is advisable that any outlets which are connected to the same supply as the mixing valve is connected to are open during the setting of the mixed water temperature. During commissioning it is advisable to ensure that the water temperatures are established before any attempt to commission.
4. Once the supply temperatures are stable and the normal operating conditions are established, the valve can be commissioned (see method of adjusting mixed water temperature). We suggest that the following sequence is followed when commissioning the valve;
    a. Set the mixed water temperature to the required temperature, the temperature at the terminal fitting must never exceed 46˚C.
    b. Measure and record the temperature of the hot and cold water supplies at the connection to the valve.
    c. Measure and record the temperature of the water discharging from the valve.
    d. Isolate the cold water supply to the valve and monitor the mixed water temperature.
    e. Measure and record the maximum mixed water temperature and the final temperature. The final temperature found during the test should not exceed the values quoted.
    f. Record all the equipment used during the commissioning.
    g. The mixed water temperature at the terminal fitting must never exceed 2˚C above set temperature.
    h. The maximum mixed water supply temperature at the terminal fitting should not exceed 46˚C.
5. Once the desired temperature is established remove the cap and secure the temperature spindle with the locking ring and replace the cap into its original position to prevent tampering by unauthorized persons. Ensure that the application, in which the valve will be used, is appropriate for the approved designation.
6. The above information must be recorded and updated on every occasion when any work is carried out on the valve.

TMV2 Maintenance guide:

The TMV15C & TMV22C thermostatic mixing valve should be tested against the original set temperature results once a year. It is a requirement that all TMV2 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. When measuring any mixed water outlet temperature reading the sensing part of the thermometer probe must be fully submerged in the water

When testing is due the following performance checks shall be carried out:

1. Measure the mixed water temperature at the outlet.
2. 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.
3. If there is no significant change to the set outlet temperature (±2˚C or less change from the original settings) and the fail-safe shut off is functioning, then the valve is working correctly, no further service work is required.
4. 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
5. If the TMV15C & TMV22C thermostatic mixing valve has been adjusted or serviced it must be re-commissioned and re-tested in accordance with these instructions.

TMV3 Maintenance guide:

To ensure that the TMV15C & TMV22C valves maintain a high level of protection, we advise the following in service testing is conducted (the same equipment used to commission the valve initially must be used in the following tasks).

1. After a period of between 6 and 8 weeks from commissioning carry out the following:
   - **1.1** Record the temperature of the hot and cold water supplies.
   - **1.2** Record the temperature of the mixed water at the largest draw off flow rate.
   - **1.3** Record the temperature of the mixed water at the smallest draw off flow rate.
2. If the mixed water temperature has changed significantly from the previous test results (e.g. >1˚C), record the change and before resetting the mixed water temperature check that:
   - **2.1** All the strainers are clean (see Installation 3).
   - **2.2** All the check valves are in good working order (see Installation 9??).
   - **2.3** The isolation valves are fully open
3. If the mixed water temperatures are acceptable, carry out the following:
   - **3.1** Record the temperature of the hot and cold water supplies.
   - **3.2** Record the temperature of the mixed water at the largest draw off flow rate.
   - **3.3** Record the temperature of the mixed water at the smallest draw off flow rate.
   - **3.4** Isolate the cold water supply to the mixing valve and monitor the mixed water temperature.

TMV3 Maintenance guide continued:

3.5 Record the maximum temperature achieved as a result of step 3.4 and the final temperature (the final temperature should not exceed 2˚C above set temperature)

3.6 Record the equipment used during these tests

4. If the mixed water temperature is greater than the maximum the corresponding values from previous test results by more than 2˚C, the valve must be serviced.

5. After a period of between 12 to 15 weeks from commissioning, carry out the sequence of tests as described in Maintenance sections 1, 2, 3 and 4.

6. Dependant on the results obtained from the first two series of tests; there are several possible outcomes:

6.1 If no significant change in the mixed water temperatures (e.g. ≤ 1˚C) is recorded between commissioning and maintenance sections 1 or between commissioning and Maintenance sections 5, the next in service testing should be carried out at a period of 24 to 28 weeks after initial commissioning.

6.2 If a small change (e.g. 1 to 2˚C) in the mixed water temperature is recorded in only one of these periods, necessitating adjustment of the mixed water temperature, then the next in service can be deferred to 24 to 28 weeks after commissioning.

6.3 If small changes (e.g. 1 to 2˚C) in the mixed water temperature are recorded in both of these periods, necessitating adjustment of the mixed water temperature, then the next in-service test can be deferred to 18 to 21 weeks after commissioning.

6.4 If significant changes (e.g. > 2˚C) in the 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.

7. The general principle to observe after the first 2 or 3 in-service tests is that the intervals for 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.

8. In all areas periodic maintenance of the valve and associated fittings i.e. strainers, check valves will ensure optimum performance levels are maintained.

Dimensions:

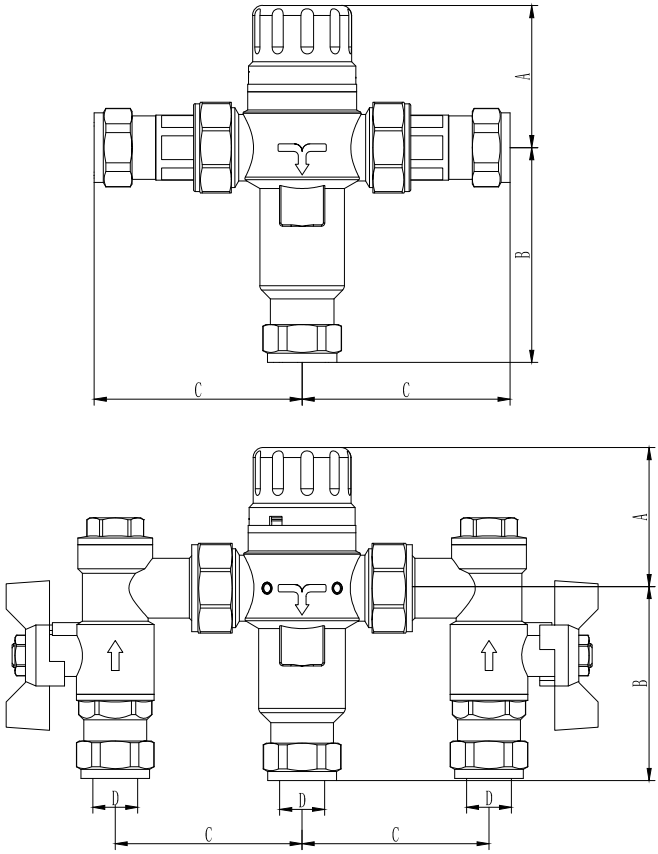

Figure 4

PRODUCT CODE	A (MM)	B (MM)	C (MM)	Ø D (MM)
TMV15C	47	71	68.75	Ø15mm
TMV15C & IV15	47	65	62.5	Ø15mm
TMV22C	47	65.5	80	Ø22mm
TMV22C & IV22	47	64.5	62.5	Ø22mm

Units in mm

Table 7

Problem Solving & Accessories

For component identification and for resolving on site problems see the below:

The following details are supplied for on site queries, should you require any further assistance contact our Technical Department.

1. Hot water at the cold tap

- Operation of the insert check valves is hindered, check the valve is seated correctly.
- Check valves not fitted.
- Unbalanced hot/cold supply pressure.

2. Fluctuating mixed water temperature

- Erratic supply temperatures at the inlets of the valve.
- Starvation of the water supplied at the inlets of the valve.
- Incorrect commissioning of the valve.

3. Erratic flow

- Insufficient water supplies.
- Fluctuations in the supply pressures/temperatures.
- Adverse effect created by other draw off points on the system.

4. No flow/reduced flow from valve

- In line filters are blocked.
- Insufficient supply pressure
- Debris obstructing valve operation
- Valve requires servicing (Servicing kits available on request).

5. Valve does not fail safe when tested

- Installation not in accordance with our recommendations.
- The minimum temperature differential not achieved.
- Internal mechanism hindered by debris.

Accessories

Isolation valves are available from EPH Controls.
IV15 & IV22 are sold as a set with a red & blue lever.

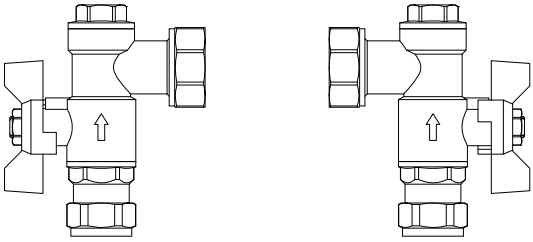

Figure 5

Drawing: Product Components

Exploded view:

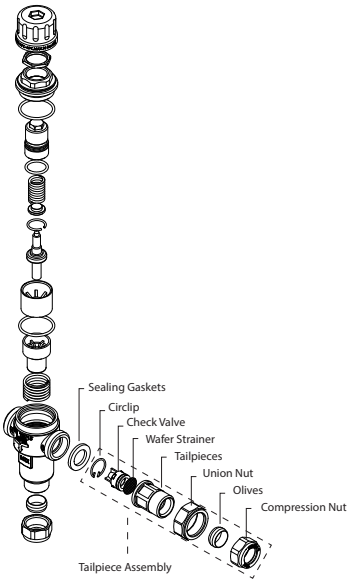

Figure 6

Notes

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