

CliniMix® Mini Lead Safe™ 1/2" Thermostatic Mixing Valve

Product Code: 201.71.00.00



Installation

The CliniMix® Mini Lead Safe™ 1/2" Thermostatic Mixing Valve (TMV) is designed to provide safe and controlled hot water temperatures by blending hot and cold water. While it includes strainers and non-return valves fitted into both inlets, it does not include isolating stop taps / valves. Isolation stop taps / valves must be fitted on the supplies to allow for servicing and maintenance purposes in accordance with AS/NZS 3500.4 Section 3.3.

Location

- Orientation:** The CliniMix® Mini Lead Safe™ 1/2: TMV can be installed in any orientation, meaning it can be mounted vertically, horizontally, or at an angle. The important aspect is to ensure that the hot and cold water supplies are connected to the correct indicated inlets on the TMV. This allows for proper blending and temperature control.
- Support:** The TMV must be supported using the plastic bracket that is supplied with it. This bracket serves as a support mechanism and helps to ensure the stability and secure positioning of the TMV.
- Independent of Piping:** The TMV should be supported independently of any piping or plumbing connections. This means that the support provided by the plastic bracket should be sufficient to hold the TMV in place without relying on the surrounding piping for support. This helps to minimise stress on the TMV and ensures its proper functioning.

It is crucial to refer to the specific installation instructions and guidelines provided by the manufacturer for the CliniMix® Mini Lead Safe™ TMV to ensure correct and safe installation. These instructions will provide detailed information on the recommended procedures and any additional considerations specific to this particular model.

Connecting the Water Supply

It is important to ensure that the pipework is thoroughly flushed with clean water before installing the mixing valve as per AS/NZS3500.1. Flushing the pipework serves two purposes: removing physical contaminants and ensuring trouble-free operation. Here are the key points to consider:

- Flushing Procedure:** The flushing procedure involves running clean water through the pipework to remove any debris, sediment, or contaminants that may be present. This step is crucial to prevent any particles from entering and potentially causing blockages or affecting the operation of the mixing valve.
- Thorough Flushing:** It is essential to flush the entire length of the pipework, including both hot and cold water supplies that will be connected to the mixing valve. Flushing should be done with sufficient water flow and duration to effectively clean the pipes. The exact duration may vary depending on the specific situation, but an adequate flush usually involves several minutes of running clean water.

By thoroughly flushing the pipework with clean water before installation, you help eliminate potential contaminants and ensure the trouble-free operation of the mixing valve.

Maintaining appropriate supply pressure is crucial for the proper functioning of the mixing valve. In the case of the CliniMix® Mini Lead Safe™ TMV, it is specified that both inlet dynamic supply pressure should be 500kPa or less. If either supply pressure exceeds this limit, it is necessary to install a suitable pressure reducing valve.

If the hot water supply temperature exceeds 90°C, a suitable temperature limiting valve must be installed on the hot water supply prior to the inlet fitting of the mixing valve. This is to prevent potential damage to the valve and ensure safe operation.

Checking and maintaining water quality within the specified limits is important to ensure the proper functioning and longevity of the mixing valve. It is recommended to assess water quality conditions in accordance with AS3500.4, Section 1.6. If the water quality exceeds the limits specified in that section, the installation of a water softener or water treatment device may be necessary.

Installation Procedure

To install the CliniMix® Mini Lead Safe™ TMV, follow the steps below:

- Select a suitable location:** Choose a location on the wall where the TMV will be installed. Ensure it is easily accessible and meets any local plumbing regulations or guidelines.
- Mark the position:** Use a pencil or marker to mark the desired position for the plastic support bracket on the wall. Take into account the appropriate height and alignment with the incoming hot and cold water supplies.
- Fix the plastic support bracket:** Securely attach the plastic support bracket to the marked position on the wall using suitable screws or fixings. Make sure the bracket is level and firmly fixed, providing a stable support structure for the TMV.
- Connect the TMV to the bracket:** Once the support bracket is in place, align the TMV with the bracket and attach it securely. Ensure the TMV is securely mounted on the bracket and does not wobble or move. The plastic support bracket should provide sufficient support to keep the TMV in a stable position.
- Connect hot and cold water supplies:** Connect the hot and cold water supplies to the appropriate inlets on the TMV via isolation stop taps / valves.
- Flush the water lines:** It is essential to flush the lines with clean water. This helps removed any debris, sediment, or contaminants that may be present in the pipes. Flushing the lines ensures that the water supplied to the TMV is clean and free from obstructions.
- Commission the CliniMix® Mini Lead Safe™ TMV as per the commissioning instructions provided in this manual.

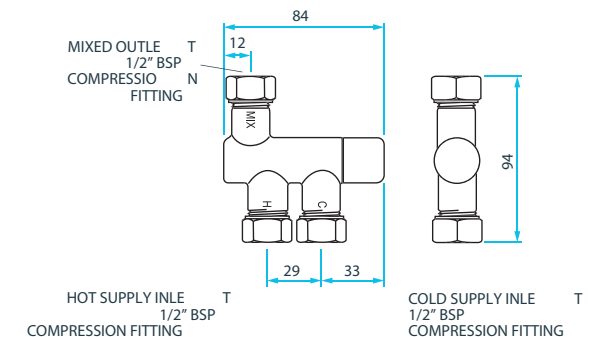
Figure 1 - Thermostatic Mixing Valve Specifications

Dynamic Inlet Pressure¹:	20 - 500kPa
Static Supply Pressure:	Max 1600kPa
Hot Supply Temperature:	50°C - 90°C
Cold Supply Temperature:	5°C - 30°C ²
Hot to Mix Temp Differential:	7°C
Outlet Temperature Range:	35°C - 45°C (+/- 2°C)
Minimum Flow Rate:	2L/min
Maximum Flow Rate:	12L/min @ 300kPa pressure loss as per Flow Sizing Graph

Notes:

- AS3500.4 clause 1.9.4.2 - The dynamic pressure differential between hot and cold supplies when mixed at a thermostatic mixing valve shall not exceed 10%.
- Where cold inlet temperature may exceed recommended range due to seasonal variation, a 5°C temperature differential between the inlet cold supply and outlet mixed temperature setting must be maintained.

Figure 2 - Physical Dimensions

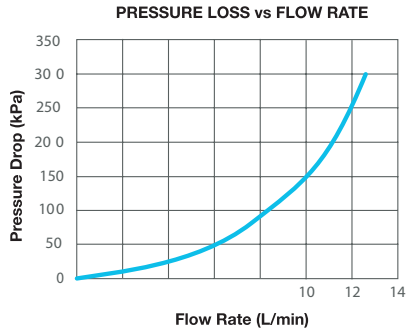


Flow Rate

It is vital to properly size the CliniMix® Mini Lead Safe™ TMV for its intended application. The head loss characteristic graph (Figure 3), which shows the relationship between the mixed outlet flow rate and balanced inlet pressure, is a valuable tool for sizing and selecting the appropriate TMV for a specific installation.

Properly sizing the TMV ensures that it can effectively control and maintain the desired temperature and flow rate in the application. It is recommended to consult with the manufacturer or a professional plumber experienced with TMV installations to ensure accurate sizing for your specific application.

Figure 3 - Flow Rate Graph



NOTE: To ensure optimum performance of the CliniMix® Mini Lead Safe™ TMV, it is recommended to maintain a minimum outlet flow rate of 2 litres per minute during operation. This minimum flow requirement helps ensure the proper functioning of the valve and the accurate blending of hot and cold water.

When installing and operating the CliniMix® Mini Lead Safe™ TMV under unequal inlet pressures, it is important to consider the dynamic pressure differentials between the hot and cold water supplies. According to AS3500.4, clause 1.9.4.2, the dynamic pressure differential between the hot and cold supplies, when mixed at a thermostatic mixing valve, should not exceed 10%.

Commissioning of the Valve

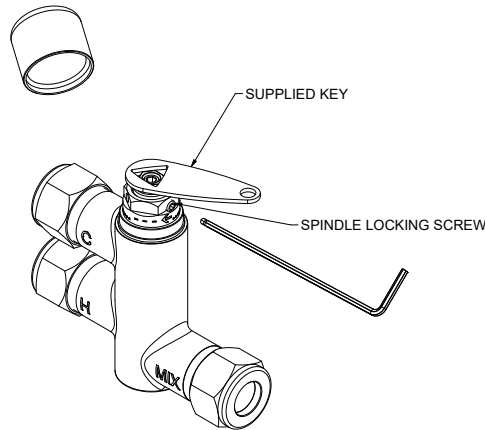
Upon completion of the installation, the valve should be tested and commissioned as per the procedure outlined below or as specified by the local authority. The entire procedure should be read through thoroughly prior to the commissioning of the valve. A calibrated digital thermometer having rapid response time with maximum temperature hold and the adjusting key (supplied with the CliniMix® Mini Lead Safe™ TMV) will be required to check and set the outlet mixed temperature of the valve.

- Ensure all outlets that will be serviced by the valve have adequate warning signs posted to ensure that no outlet is used during commissioning.
- Open the cold supply line to the valve, and then open the hot supply line, ensuring there are no leaks.
- Open the outlet that is serviced by the shortest length of pipe work between the mixing valve and outlet fixture.
- Ensure the hot and cold water supplies are stable and within the temperature specifications.
- **Allow the mixed outlet to flow for at least 60 seconds** to allow the temperature to stabilise before taking a temperature reading at the outlet with a digital thermometer. The flow rate should be at least 2L/min. The flow rate can be checked with the aid of a known sized container and a stopwatch. The temperature should be taken at the closest outlet served by the thermostatic mixing valve.
- If the outlet temperature requires adjustment please refer to the Temperature Adjustment section.

Temperature Adjustment

1. Remove the protective cover off the valve by unscrewing it away from the valve body. Slacken off the spindle locking screw using a 2mm Allen Key.
2. Fit the supplied key over the adjusting spindle (figure 4)
 - **To increase the mixed outlet temperature, rotate the spindle anti-clockwise.**
 - **To decrease the mixed outlet temperature, rotate the spindle clockwise.**
3. Allow the mixed outlet temperature to stabilize for 60 seconds and once again take a temperature reading. Repeat the procedure until the desired temperature has been reached.
4. Tighten the spindle locking screw. Screw the protective cover firmly back on to the top of the valve.
5. Check that the outlet temperature is stable over the full range of flow rates and that the flow rate is adequate for the application.
6. Close the outlet.
7. The mixing valve is now set and locked.

Figure 4 - Increasing and Decreasing the Mixed Water Temperature



Shut Down Test

- Now that the mixing valve has been set and locked it is necessary to perform a shutdown check. Allow the mixed water temperature to stabilise and note the outlet temperature. While holding a calibrated digital thermometer in the outlet flow, quickly isolate the cold water supply to the valve. The outlet should quickly cease to flow. As a rule of thumb the volume should be less than 0.2L following the isolation. Restore the cold water supply and after the mixed water temperature has stabilised, record the outlet temperature and ensure it has remained within specification.
- Repeat the above test, except this time quickly isolate the hot water supply to the valve. The outlet flow should quickly slow to a trickle. As a rule of thumb the volume should typically be less than 0.4L following the isolation. Restore the hot water supply and after the mixed water temperature has stabilised, record the outlet temperature and ensure it has remained within specification.
- Ensure that all details of the Commissioning Service and Maintenance Report are completed.
- The valve is now commissioned and can be used within the technical limits of operation.

Thermal Flush Option

The CliniMix® Mini Lead Safe™ has a Thermal Flush feature, which is an added optional procedure that allows hot water to pass through the valve and perform a controlled thermal flush to the TMV, outlet pipework & fixtures during critical decontamination / maintenance procedures - a major step forward in Legionella control.

NOTE: The thermal flush procedure is optional and does not form part of commissioning and service requirements set out in AS4032.3

Before commencing the thermal flush, a site-specific procedure must be implemented to control the risk of scalding. Hot water will run directly to the outlets fed by the Thermostatic Mixing Valve, and precautions must be taken to prevent the change of injury.

Thermal Flush Option Procedure

1. Isolate both hot and cold ball valves to the TMV.
2. Remove the TMV's protective cover.
3. Check that the temperature adjustment spindle locking grub screw on the side of the top cap is tight (see image below)
4. Using the 3mm Allen key provided with each valve, insert into the thermal disinfection sub-spindle on top of the valve and turn counter-clockwise until it stops. As the thermal flush feature is unwound, the red indicator will become visible, indicating that when the hot water isolating valve is opened, the thermal flush is activated and hence full store temperature hot water will flow to the outlet pipework and fixtures.
5. Open the hot water isolating valve on the inlet to the TMV.
6. Open the tap fixtures on the outlet pipework system.
SAFETY NOTE: Full temperature hot water will be flowing at this point and extreme care must be exercised to prevent scalding.
7. Once the required flushing time has elapsed (refer to the facility's in-house protocol) turn the hot water isolating valve on the TMV inlet to the OFF position.
8. Leave the tap fixtures on the outlet pipework system open, turn the cold water isolating valve on the TMV inlet valve to the ON position.
9. Using the 3mm Allen key, wind the Thermal Flush activation screw clockwise until the top of the red sub-spindle section is level with the top surface of the temperature adjusting spindle. It is normal to have some cold water ejected through the outlet fixtures as this procedure is conducted.
10. Turn the hot water isolating valve on the TMV inlet to the ON position.
11. Check the mixed water flow temperature at the closest outlet fixture to the TMV using a calibrated digital thermometer making sure it is within the required temperature range, and adjust the TMV setting as necessary.
12. Isolate the outlet fixtures.
13. Screw the cap back onto the TMV.

NOTE: If the protective cover does not sit flush on the valve, this indicates the thermal flush has not been disengaged. Repeat Steps 8-13.

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Fault Finding

Fault / Symptom

Cause

Rectification

- The desired mixed water temperature cannot be obtained or the valve is difficult to set

- Hot and cold supplies are fitted to the wrong connections
- Valve contains debris
- Strainers contain debris
- Non-return devices are damaged

- Refit the valve with Hot/Cold supplies fitted to the correct connections
- Clean valve ensuring debris is removed and components are not damaged
- Clean strainers ensuring debris is removed
- Check non-return devices are not jammed. Clean if necessary

- The valve will not shut down

- The hot to mix temperature differential is not high enough

- Raise hot water temperature

- Mix temperature is unstable

- Debris is fouling valve
- Flow rate below 2L/min
- Strainers are fouled
- Systems may be fluctuating outside valve parameters

- Clean the strainers ensuring that all debris is removed and components are not damaged
- Rectify any pressure deterioration
- Clean strainers
- Check system pressure, install pressure control valves to ensure inlet conditions are within specification

- Mix temperature changing over time

- Inlet conditions (pressures or temperatures) are fluctuating
- Strainers contain debris

- Install suitable pressure control valves to ensure inlet conditions are within specification
- Clean strainers ensuring debris is removed

- Either full hot or cold flowing from outlet fixture

- Valve is incorrectly set
- Hot/Cold water has migrated to other inlet

- Adjust mix temperature between 35 - 48°C as required
- If non-return valves are compromised, the valve needs to be replaced

- No flow from the valve outlet

- Hot or cold water failure
- Strainers are fouled

- Valve functioning correctly. Restore inlet supplies and check mix temperature
- Clean strainers

- Flow rate reduced or fluctuating

- Valve or isolation valves are fouled by debris
- Dynamic inlet pressures are not within the recommended limits

- Check valve and isolation valves for blockages
- Ensure the dynamic inlet pressures are nominally balanced to within +/- 10%

- Mixed water temperature too hot or cold

- Valve has been tampered with
- Valve incorrectly set
- Inlet temperatures are not within specified limits

- Readjust valve to required set temperature
- Ensure inlet temperatures are within required limits

- Hot water flows into the cold water system or vice versa

- Non-return valves faulty

- Valve needs to be replaced

- Valve is noisy

- Water velocity above velocity requirements of AS3500

- Reduce water velocity

- Temperature adjuster difficult to move

- Adjustment at maximum mix temperature stops
- Valve piston over set

- Mixed water is at maximum temperature no higher mix.
- Wind adjuster out until set temperature required is achieved.

