

Product Installation Guidelines & Scope of Use

CliniMix® Emergency Shower Thermostatic Mixing Valve

Product Codes		
190.88.00.09	CliniMix® Emergency Shower Thermostatic Mixing Valve	
190.49.00.90 (190.88.00.09 + 190.93.00.10)	CliniMix® Safety Shower Thermostatic Mixing Valve and SS Cabinet	

1. Specifications

- The CliniMix® Emergency Shower Thermostatic Mixing Valve is designed to be paired with Safety Showers and, with limitations, Eye/Face wash units. In addition to these instructions, the valve must be installed subject to the requirements of the relevant regulatory authorities.
- Ensures high stability of mixed water temperature even under varying inlet conditions.
- Ensures rapid termination of mixed outlet flow if there is a failure in either the cold or hot water supply, and allows for continuous cold water flow through the bypass in the event of hot water failure, guaranteeing an uninterrupted supply for emergency situations.
- Suitable for installation into AS3500 compliant systems with hot water temperature as low as 55°C
- Fitted with a tamper resistant temperature adjustment mechanism

WARNINGS: Special attentions to be paid on notes, photos, images, or drawings of assembly steps marked with the warning symbol.



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3. Technical Data

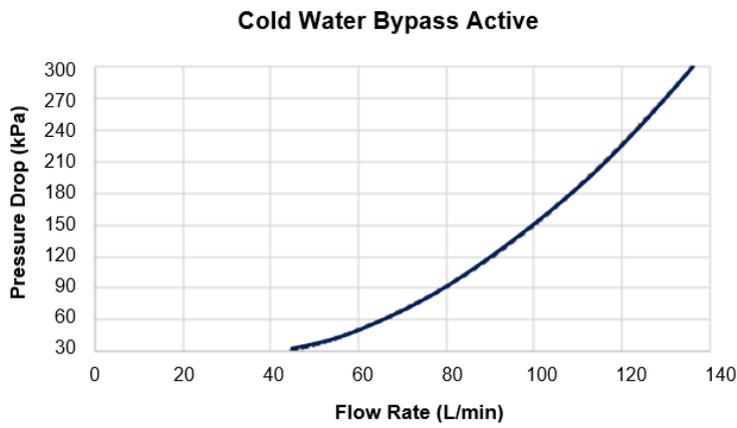
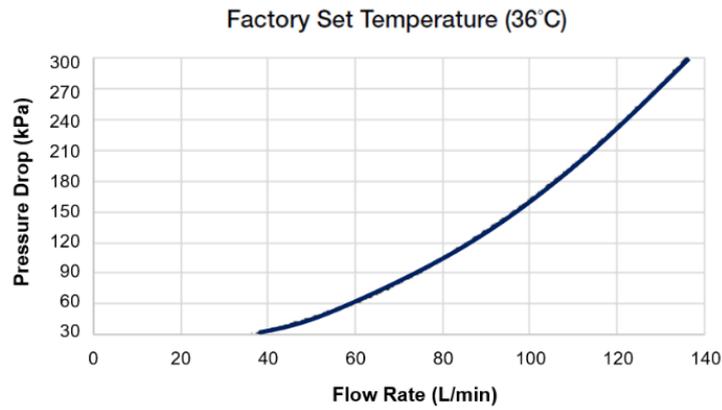
Mixed outlet Temperature		
Factory Preset Temperature (°C)		36 ± 2
Adjustable Temperature Range (°C)		Full cold – Max 37.8
Inlet Temperatures		
Cold Supply (°C)	Min	5
	Max	25
Hot Supply (°C)	Min	55
	Max	85
Hot to Mix Temp Differential (°C) (at outlet temperature greater than 33°C)	Min	15
Minimum Flow Rate to Ensure Stable Operation (L/min) 	Min	15
Factory set temperature flow rate maximum		112L/min @ 210kPa
Cold water bypass flow rate maximum		115L/min @ 210kPa
Dynamic Inlet Pressures		
Permitted supply pressure variation (exceeding this variation may result in the activation of the cold-water bypass) (kPa) 	Δ	80
Static Inlet Pressures		
Hot and Cold Inlet Pressures (kPa)	Max	1000
NOTE 1: Notwithstanding the above, compliance with AS/NZS3500 must be maintained.		
NOTE 2: Galvin Engineering continually strive to improve their products. Specifications may change without notice.		

4. Safety

The CliniMix® Emergency Shower Thermostatic Mixing Valve is a high-performance valve designed to give stable and dependable operation, provided it is installed, commissioned, operated and maintained as per the requirements outlined in this manual. It should be noted, however, that this valve should not be considered as an alternative to adequate supervision and duty of care during its use and operation.

 **Note: The mixing valve, inlet controls, pipe work and the surrounding area may become hot when installed which may cause burn injuries. Precautions should be taken to ensure that these surfaces cannot cause such injuries.**

5. Flow Sizing Graph



6. Dimensions

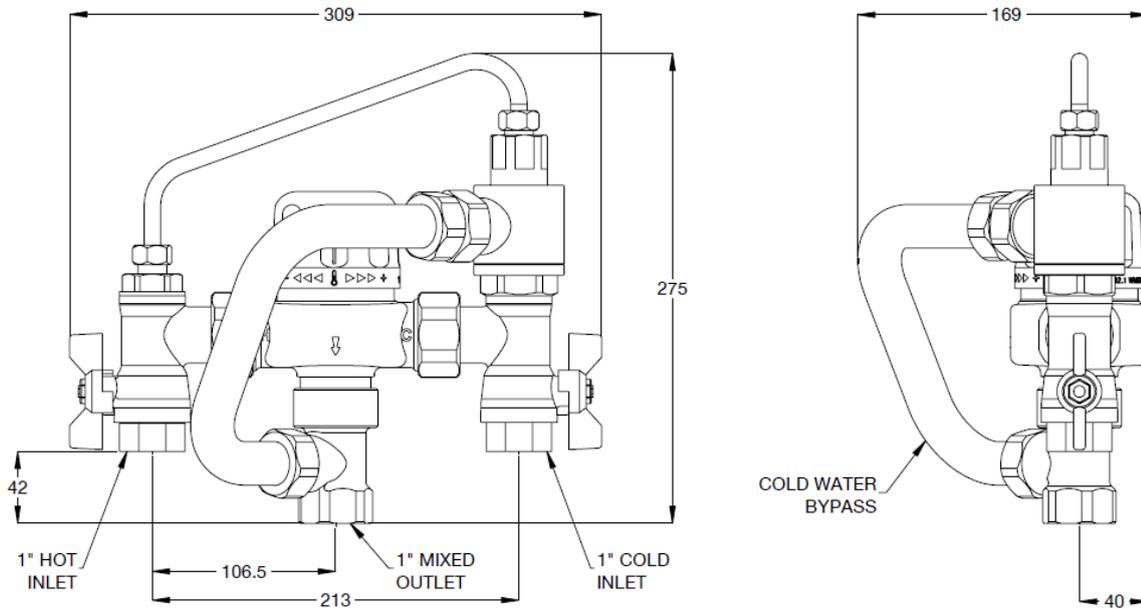


Figure 1 - 190.88.00.09

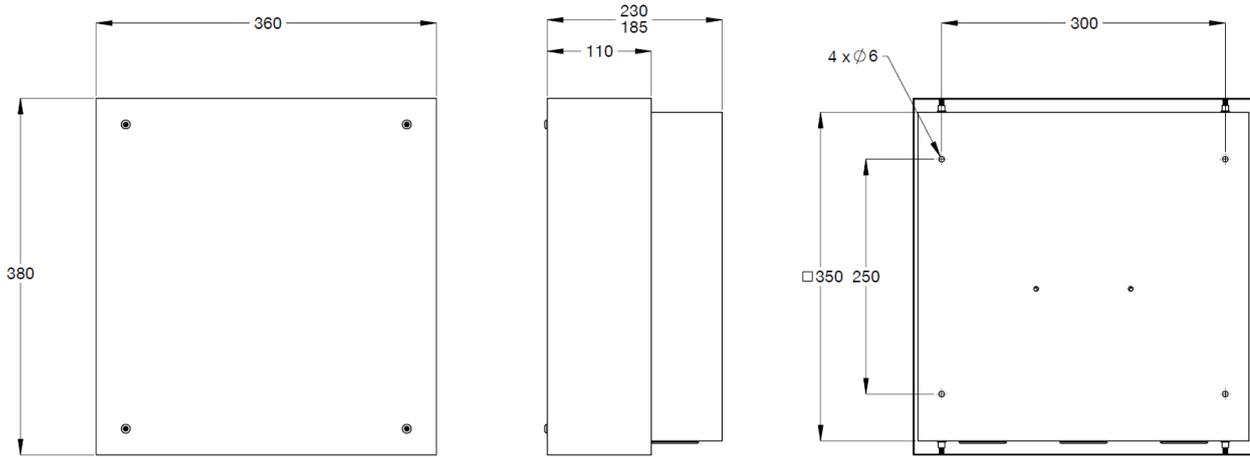


Figure 2: Comes in the kit 190.49.00.90 (individual item code is 190.93.00.10)

7. Tools Required

- Adjustable spanner (43mm min)
- Hex key (2.5mm)
- Fasteners (to suit Cabinet installation)
- A calibrated digital thermometer with rapid response time and maximum temperature hold

8. Installation Requirements

- When designing a safety shower station in combination with this valve, attention must be given to installation and performance requirements covered by AS 4775.
- The valve to be installed as close as possible to the safety shower inlet point.
- If the valve is installed in combination with Eyewash and Facewash units, and the valve flow will be below minimal flow rate, cold bypass will be triggered. ▲
- The valve is not intended to be paired solely with Eyewash units, due to minimal flow requirements (refer to *Technical Data*). ▲
- If there is a risk that the hot water supply temperature exceeds specified maximal inlet temperature (refer to *Technical Data*), a suitable temperature limiting valve must be fitted upstream of the inlet fitting.
- Tapware must be installed in accordance with the provisions of AS/NZS 3500. Installations not complying with AS/NZS 3500 may void the product and performance warranty provisions

9. Installation (Valve)

INSTALLATION COMPLIANCE: Galvin Engineering products must be installed in accordance with these installation instructions and in accordance with AS/NZS 3500, the PCA and your local regulatory requirements. Water and/or electrical supply conditions must also comply to the applicable national and/or state standards. Failing to comply with these provisions shall void the product warranty and may affect the performance of the product.

1. Check the site conditions (temperature, pressure, etc.) against the valve specifications shown in Chapter 3. Any discrepancies must be rectified prior to valve installation.
 - a. If there is a risk that the hot water supply temperature exceeds 85°C, a suitable temperature limiting valve must be fitted upstream of the inlet fitting.
 - b. If there is a risk that the dynamic inlet pressures exceed 1000kPa, a suitable pressure reducing valve must be fitted upstream of the inlet fitting.
 - c. It is required that the hot and cold inlet pressures are balanced to within 80kPa. A variation in excess of 80kPa will result in the cold-water bypass activating.
2. Flush the system thoroughly before fitting the valve. It is critical that all debris is flushed from the pipework prior to valve installation. Debris and particulate contamination are the most common causes of valve failures.
3. Determine the location of the valve to be installed. Ensure the installation allows sufficient room for service and maintenance procedures. The valve should be installed as close to the shower as is practical. Long distances from the valve to the outlet will result in the mixed water not reaching the user in time in case of emergency.

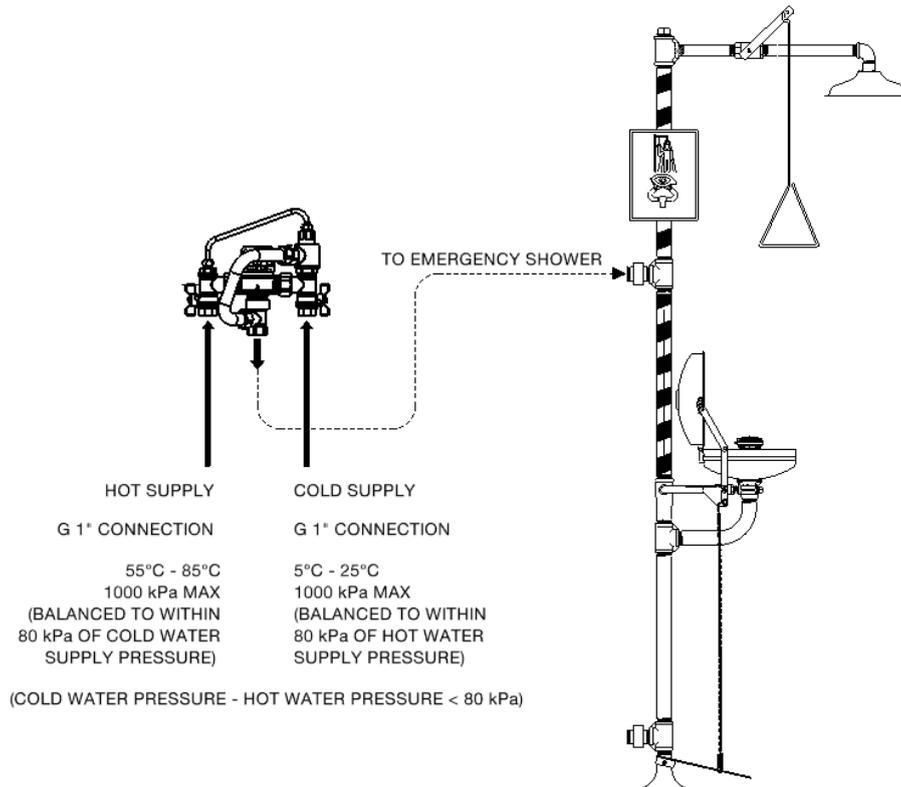
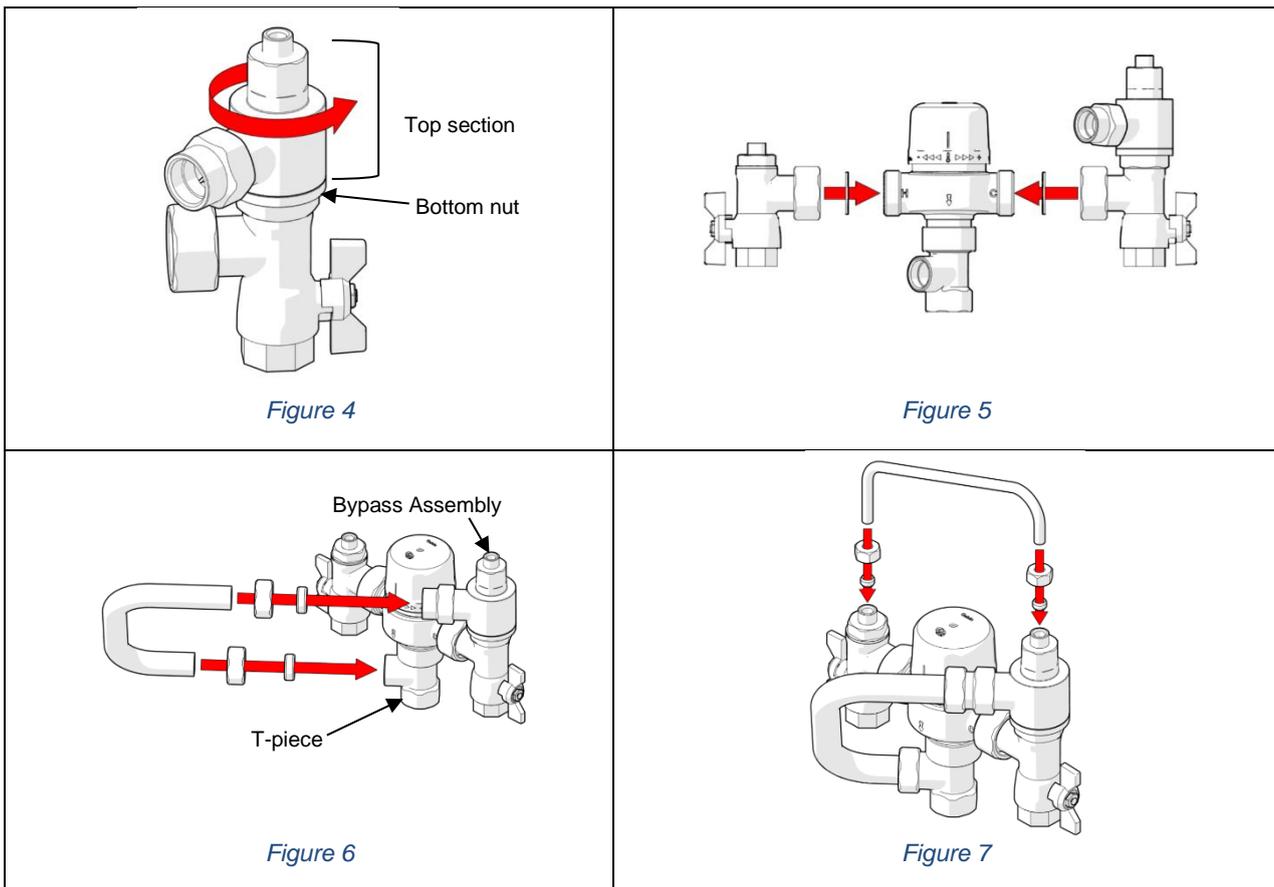


Figure 3

4. Fix a support bracket (not supplied with the product) (or a cabinet with integral bracket) to a wall or rigid support structure.
 - a) For isolating valves, a provision shall be made to prevent unauthorized isolation, and it shall be prominently marked when isolated. A cabinet can be used to prevent unauthorized access. In this case the cabinet can be installed on the wall surface or partially recessed inside wall cavity.
 - b) The pipework to and from the valve must not be used to support the weight of the valve. Saddle clips or pipe support brackets must be used to mount the inlet control valves and the valve firmly

to a wall or rigid support structure. If the inlet control valves are not used, then a suitable support bracket or saddle is required to support the weight of the valve. This is to ensure that the pipework is not under load from the valve.

5. Assemble the valve
 - a) The cold inlet fitting contains an already fitted bypass assembly. Confirm that top section of bypass assembly is loose enough to be adjustable and that the bottom nut is fixed tight to the inlet fitting (see Figure 4).
 - b) Turn top section for one full turn only ▲. The cold bypass should be located as shown in Figure 4.
 - c) Assemble hot and cold inlet fittings in correct position (hot on left, cold on right) using supplied washers. Check that the nut of the bypass assembly must be fixed to the inlet fitting (see Figure 5).
 - d) Rotate and adjust mixed outlet T-piece and top section of bypass assembly at an angle parallel to each other and fit bypass tubing using supplied compression nuts and olives as shown in Figure 6. Make sure the bypass fits correctly to prevent leaks or the valve failing to operate correctly ▲.
 - e) Fit pilot tubing to hot and cold inlet fittings using supplied compression nuts and olives as shown in Figure 7. Make sure the tubing fits correctly to prevent leaks or the valve failing to operate correctly ▲.



6. Fix the assembled valve on a bracket and connect inlet and outlet pipes to the valve. If installed in a cabinet, firstly install the cabinet and then fix the valve on the provided bracket. During installation or servicing, heat must not be applied near the mixing valve and inlet fittings as this will result in damage to the valve and inlet fitting internals, and void warranty.
 - Ensure inlet and outlet pipe connections are not permanently fixed to the mixing valve for easier maintenance and servicing ▲.
7. Once the valve is installed, proceed to commissioning.

10. Installation (Cabinet)

When a cabinet is used, follow steps described in Chapter 9. After the system has been flushed, the valve is assembled & prior to connecting inlets/outlet, follow the steps below to install the cabinet.

- Cabinet is designed to be front wall mounted.
- Mount the cabinet as close as possible to the inlet of the safety shower.
- During installation or servicing, heat must not be applied near the mixing valve and inlet fittings as this will result in damage to the valve and inlet fitting internals, and void warranty.
- The cabinet does not come with inlet and outlet tails ▲.
- Cabinet secured using back mount.
- Measure & mark the cabinet mounting hole locations as per the dimensions shown in Figure 2.
- Suitable fasteners will need to be sourced by the installer ▲.

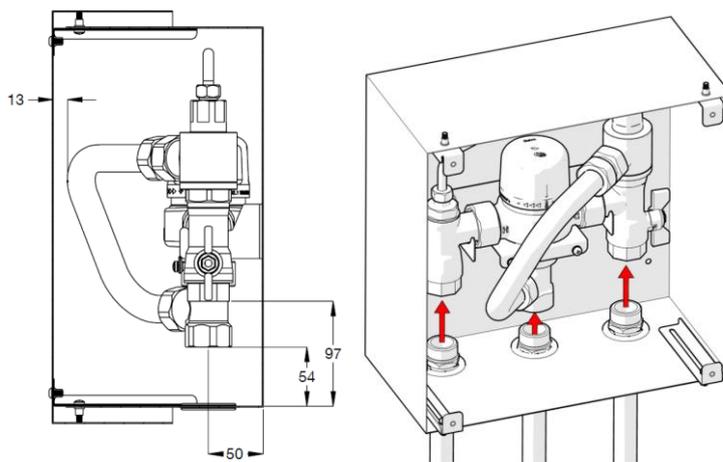
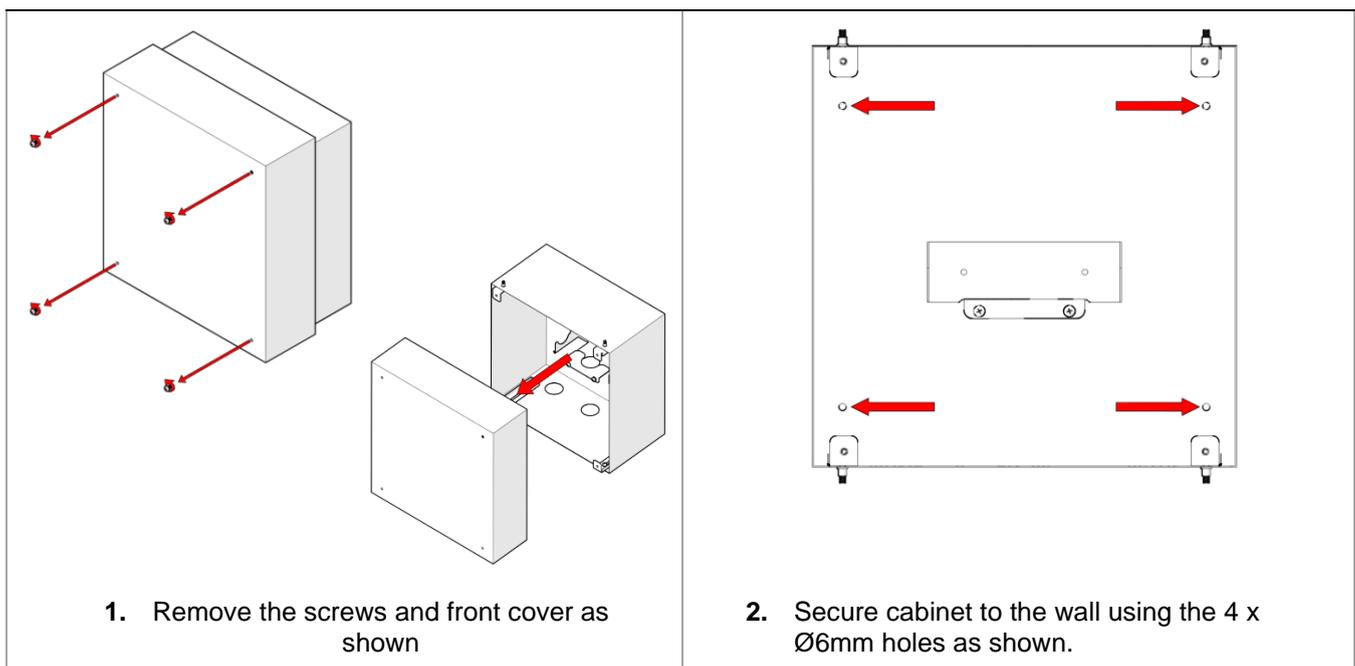


Figure 8

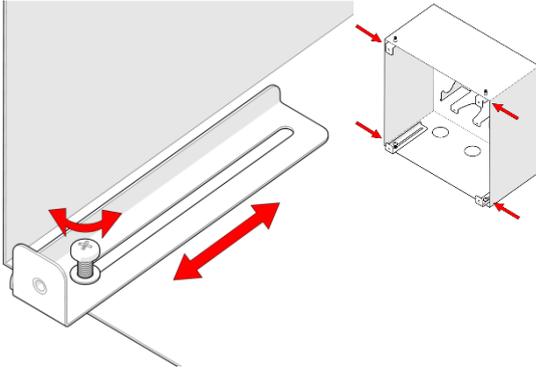


Prior to fitting the valve to the cabinet, determine whether pipework (not supplied) is required to be fitted thru cabinet grommets (see Figure 8) prior to installing the valve. The cabinet grommet openings are approximately 30mm and after fitting the valve there is approximately 54mm available between the bottom of the cabinet and the valve.

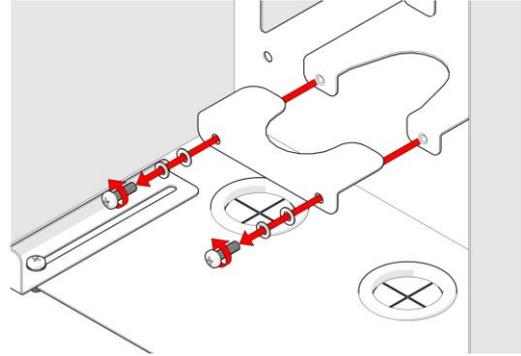


1. Remove the screws and front cover as shown

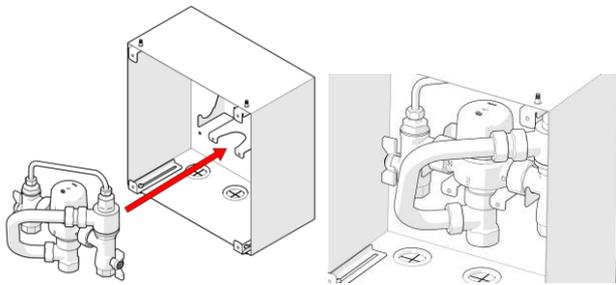
2. Secure cabinet to the wall using the 4 x Ø6mm holes as shown.



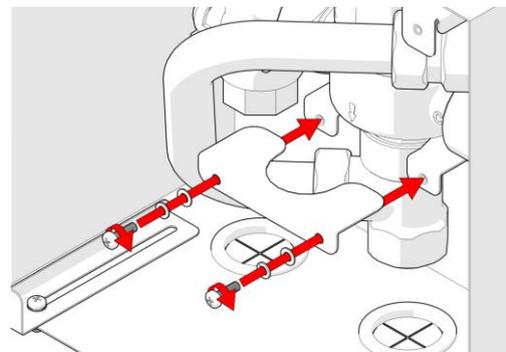
3. Adjust the front cover brackets on all 4 corners to the distance required. A minimum of approximately 60mm out is required for the valve to fit correctly.



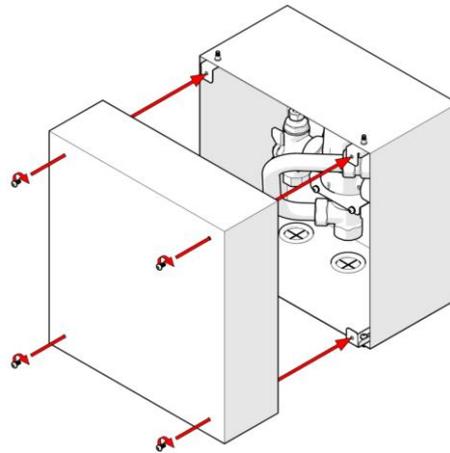
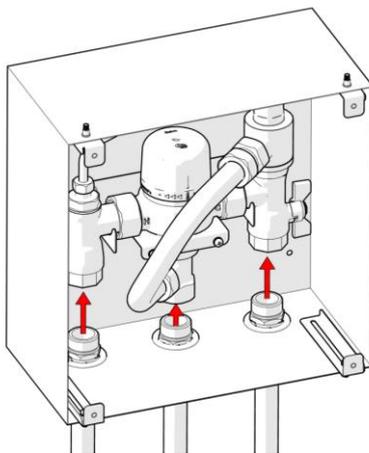
4. Remove screws, washers and valve bracket from cabinet.



5. Fit the valve as shown ensuring the valve is fully supported by the bracket.



6. Fit screws, washers and valve bracket and ensure the valve is secure and correctly supported.



7. Connect inlets and outlet. Fit the front cover and screws then proceed to Chapter 11.

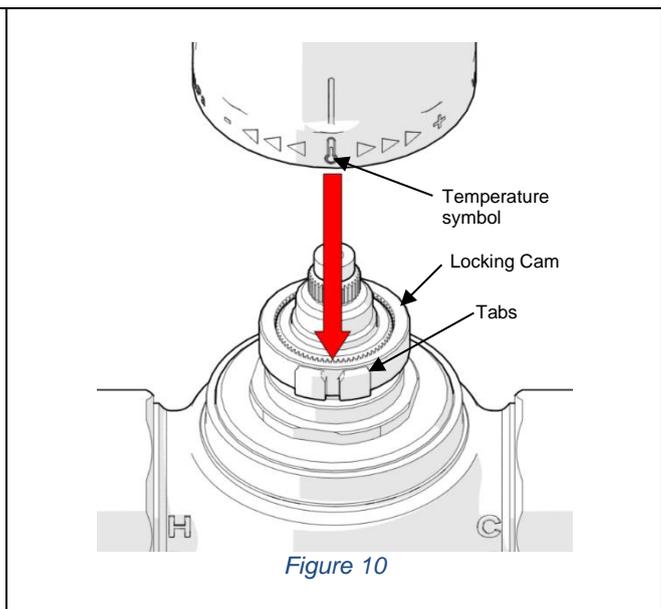
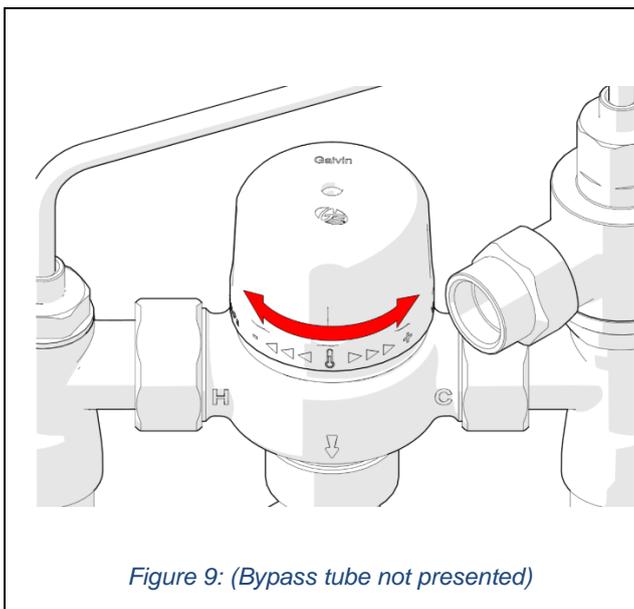
11. Commissioning of the Valve

- Once the installation is finished, the valve needs to undergo testing and commissioning following the provided procedure or as directed by the local authority. It is essential to carefully review the entire procedure before commissioning the valve. To check and adjust the valve's outlet mixed temperature, you will require a calibrated digital thermometer with rapid response time and maximum temperature hold.

2. Ensure the outlet that will be serviced by the valve has adequate warning signs posted to ensure that it is not used during commissioning.
3. Open the cold supply line to the valve, then open the hot supply line, ensuring there are no leaks.
4. Open the outlet
5. Ensure the hot and cold-water supplies are stable and within the temperature specifications.
6. Allow the mixed outlet to flow for at least 60 seconds to allow the temperature to stabilize before taking a temperature reading at the outlet with a digital thermometer. The flow rate should be at least 15 L/min. The flow rate can be checked with the aid of a known size container and a stopwatch. We recommend using the GalvinSafe Shower & Eye Wash Testing Kit 190.95.90.90 (available from Galvin Engineering) in checking the flow rate. Important: the testing must be performed on all outlets individually (example: on a shower and Face/Eye wash) ▲.
7. If the outlet temperature requires adjustment, follow steps in Chapters 12 and 13.

12. Temperature adjustment

1. To increase the mixed outlet temperature, rotate the cap anticlockwise (Figure 9).
2. To decrease the mixed outlet temperature, rotate the cap clockwise.
3. Allow the mixed outlet temperature to stabilise for 60 seconds and once again take a temperature reading. Repeat the procedure until the desired temperature has been reached.
4. Check that the outlet temperature is stable over the full range of flow rates and that the flow rate is adequate for the application.



13. Locking the Temperature Settings

1. Loosen the cap screw with 2.5mm Allen key and remove the cover cap.
2. Check the position of the tabs on the locking cam, and re-position locking cam so that the tabs are facing the front.
3. Align the cover cap so that the position marked with a temperature symbol is in line with the tabs on the locking cam (Figure 10).
4. Install the cover cap back on the valve at this position. If the cover cap is not aligned to the locking tabs, the cover cap can be left to rotate freely to adjust the temperature higher or lower.
5. The locking cam can also be used to limit the maximum temperature setting while allowing the cover cap to rotate freely, by positioning the cover cap so that the temperature symbol is located just on the left-hand

side of the locking tabs when the valve is set at the desired maximum temperature.

14. Shut Down Test

Now that the mixing valve has been set and locked it is necessary to perform a shutdown check. Turn on each outlet separately. Allow the mixed water temperature to stabilise and note the outlet temperature.

1. Cold Shut Down Test
 - a. Quickly isolate the cold-water supply to the valve. The outlet flow should quickly cease to flow. As a rule of thumb, the flow should be less than 0.3L following the isolation. Note: flow might be higher if water is also drained from the pipework located after the valve.
 - b. Restore the cold-water supply and after the mixed water temperature has stabilised, measure and record the outlet temperature and ensure it has remained within specification.
2. Hot Shut Down Test - with Cold Bypass Activation
 - a. Repeat the above test, but this time quickly isolate the hot water supply to the valve. The outlet flow may slow momentarily as the pilot valve redirects flow from the cold inlet to the valve's outlet through the bypass. (An audible click may be heard as the valve switches over to cold bypass.) The changeover will ensure that the full flow of cold water continues to the connected safety apparatus. Measure and record the outlet water temperature, water flow, and confirm that the valve has switched over to full cold-water flow.
 - b. Restore the hot water supply to the valve. The pilot valve deactivates and restores mixed water to the outlet. Measure and record the outlet temperature after the mixed water temperature has stabilised, ensure it has remained within specification.
3. Ensure that all details of the Commissioning Service and Maintenance Report are completed.
4. The valve is now commissioned and can be used within the technical limits of operation.

15. Maintenance and Service Requirements

The valve should undergo annual commissioning and servicing, unless the specific installation conditions require more frequent maintenance. The following testing and maintenance procedures must be carried out on the valve at intervals not exceeding 12 months:

1. Clean Strainers
 - a. Isolate the hot and cold supplies to the mixing valve by closing the inlet ball valves.
 - b. Turn off water supply. Disconnect inlet and outlet connections and remove the mixing valve from the bracket.
 - c. Remove bypass tubing, pilot tubing and white top cap as shown in Figure 11.
 - d. Remove the pilot valve assembly from the cold inlet fitting and the pressure set adaptor from the hot inlet fitting with a suitable spanner, and then remove the strainers as shown in Figure 11.
 - e. The strainers should be cleaned with a dilute water solution of suitable descaling solvent (such as CLR), checked for physical damage and then thoroughly rinsed with clean water.
 - f. Re-install the strainers into the valve. Ensure bypass assembly and compression nuts are tightened well to prevent leaking (see Chapter 9 for installation details).

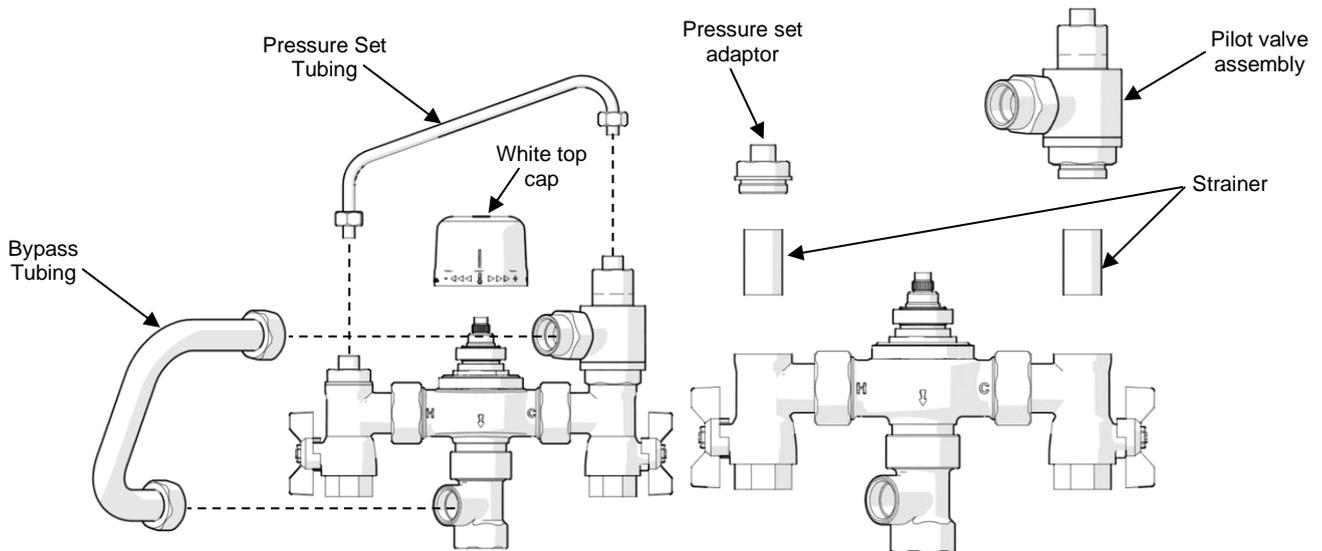


Figure 11

2. Check & Clean Non-Return Valves

- a. Loosen the two unions of the inlet fittings and remove them from the valve body. The non-return valves are in the inlet fittings as shown in Figure 12.
- b. Inspect the non-return valves for any damage and replace if necessary. Do not remove non-return valves from inlet fittings. ⚠
- c. Check the non-return valve operation by pushing the spring-loaded piston lightly, and check for any debris.
- d. Clean the non-return valves by flushing the inlet service fittings with clean water. To do this, cover the top portion of the inlet fittings, then flush some water through the inlet fittings and into a bucket or similar, ensuring that the surrounding areas are protected from water damage.
- e. Disassemble pilot valve assembly as shown in Figure 13. Inspect and check non-return valve located in pilot valve assembly.
- f. Check operation and flush under running water as per previous steps.

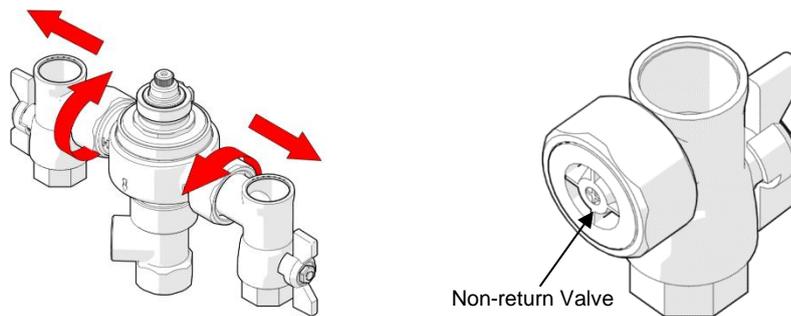


Figure 12

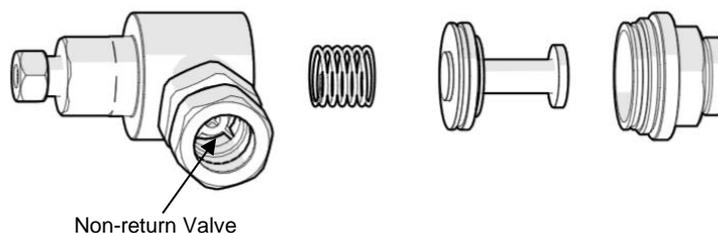


Figure 13

3. Replace O-rings

- a. Remove the top cap assembly by using a suitable spanner on the wrenching flats (Figure 14). Twist the temperature adjuster spindle clockwise to wind it out of the top cap assembly.
- b. Take the element and other internal components out of the mixing valve body and clean all components.
- c. Replace O-rings as shown in Figure 14 – 4x O-rings (2x in Valve body, 1x in temperature adjuster spindle and 1x in top cap body).
- d. Apply lubricant on the O-rings. For re-greasing of O-rings, use silicone-based lubricants suitable for use with potable water.
- e. Re-assemble all components back together.

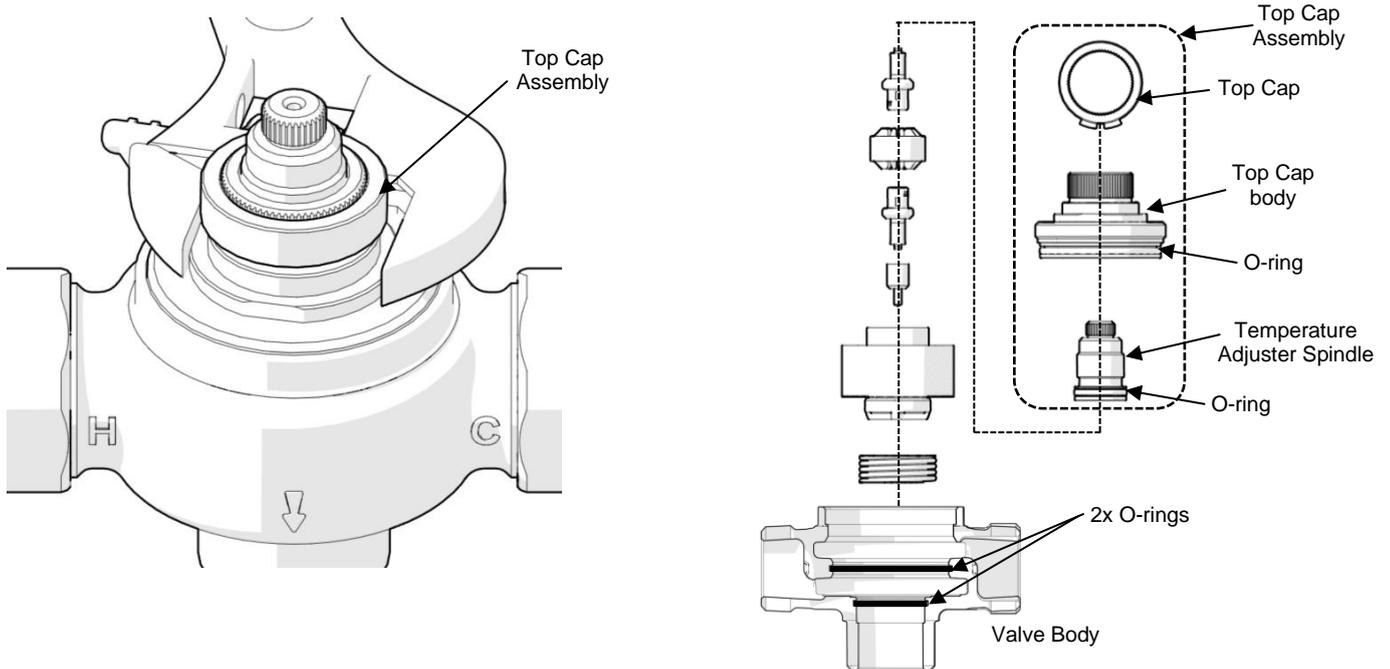


Figure 14

4. Re-commissioning the Valve

The valve must now be recommissioned as per Commissioning procedure outlined on Chapter 11, *Commissioning of the Valve*, including Temperature Adjustment and Shut Down Test. If the valve fails to shut down or fails to maintain its set temperature, refer to Troubleshooting table.

5. Mandatory 5-year Service

In addition to the Annual Maintenance and Servicing, the Thermostatic Element of the mixing valve must be replaced at intervals not exceeding 5 years. The Thermostatic Element (part code 201.90.41.90) will be required.

Ensure a silicone-based lubricant suitable for use with potable water is used when re-greasing O-rings.

16. Spare Parts

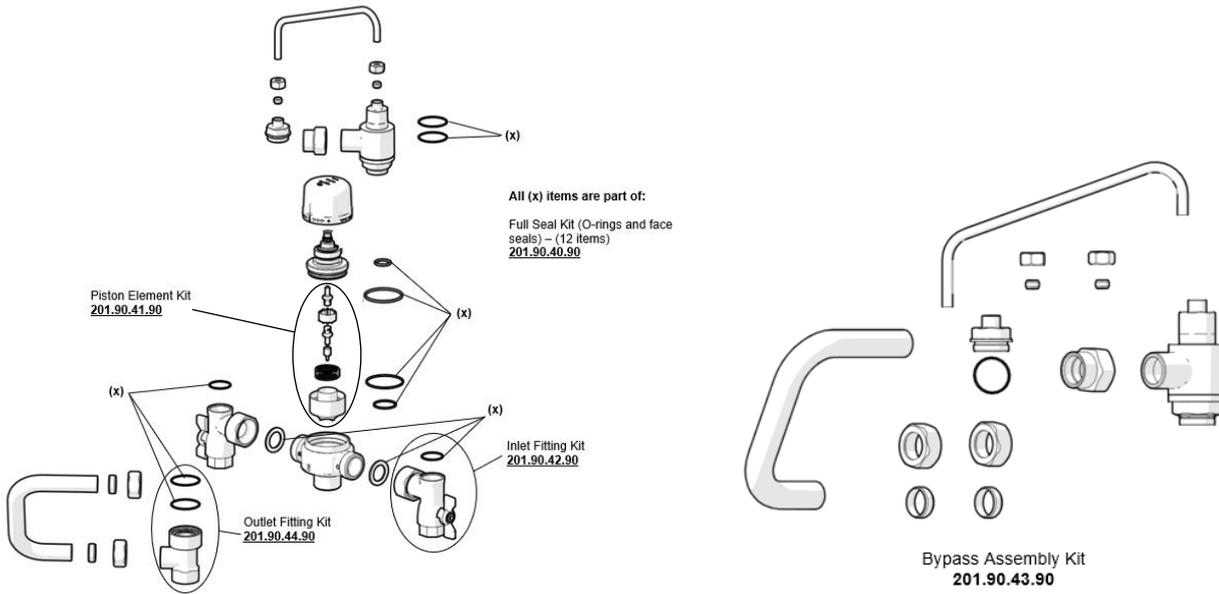


Figure 15: Spare parts

Name	Item Code
CliniMix® Emergency Shower Thermostatic Mixing Valve Seal Kit	201.90.40.90
CliniMix® Emergency Shower Thermostatic Mixing Valve Piston Element Kit	201.90.41.90
CliniMix® Emergency Shower Thermostatic Mixing Valve Inlet Fitting Kit	201.90.42.90
CliniMix® Emergency Shower Thermostatic Mixing Valve Bypass Assembly Kit	201.90.43.90
CliniMix® Emergency Shower Thermostatic Mixing Valve Outlet Fitting Kit	201.90.44.90

17. Commissioning, Service and Maintenance Report

This report is based on AS 4032.3, Appendix B requirements, and can be a) provided to the owner/occupier or responsible person, b) retained by the tester and, c) where required, forwarded to the relevant authority.

Installation Details

Owner/Occupier		Address	
Specific Installation Requirements			

Valve Details

Size	Model
Location of Valve	

Commission and Service Details

	Commissioning		Service 1		Service 2		Service 3		Service 4		Service 5	
Authorised Tester												
Licenser Number												
Date												
Next Service Due	(<=1 yr)		(<=1 yr)		(<=1 yr)		(<=1 yr)		(<=1 yr)		(<=1 yr)	
Test												
Hot Water Temp (°C)												
Cold Water Temp (°C)												
Mixed Water Temp - Low Flow (°C)												
Tepid Water Temp Low Flow in range 15.6 - 37.8 (°C)	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>
Mixed Water Temp - High Flow (°C)												
Tepid Water Temp Low Flow in range 15.6 - 37.8 (°C)	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>
Mixed Water Low Flow (L/min)												
Mixed Water High Flow (L/min)												
Hot Water Isolation (with cold bypass activation)	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>
Cold Water Isolation	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>	Pass <input type="checkbox"/>	Fail <input type="checkbox"/>
Service												
Strainers Clean			Checked <input type="checkbox"/> Replaced <input type="checkbox"/>									
Non-Return Valve			Checked <input type="checkbox"/> Replaced <input type="checkbox"/>									
O-Ring Replacement											Replaced <input type="checkbox"/>	
Thermostatic Element/Piston Assembly Replacement											Replaced <input type="checkbox"/>	
Authorised Tester's Signature:												

Troubleshooting		
PROBLEM	CAUSE	RECTIFICATION
The desired mixed water temperature cannot be obtained or valve is difficult to set.	Hot and cold supplies are fitted to the wrong connections	Refit the valve with Hot/Cold supplies fitted to the correct connections.
	Valve contains debris.	Clean the valve ensuring debris is removed and components are not damaged.
	Strainers contain debris.	Clean strainers ensuring debris is removed.
	Non-return devices are damaged	Check that non-return devices are not jammed. Clean if necessary.
The valve will not shut down on cold shut down test, hot water flowing through	The supply hot water temperature is too low.	Raise hot water supply temperature, ensure it is within the limits specified in Technical Data
	Element/piston or other valve components are damaged, missing or installed incorrectly	Check valve internal components for damage, replace if required and re-assemble components in correct order
	Sealing seat is damaged or fouled by debris.	Clean seat using mild descaling solution
	Thermostatic element has failed.	Check and replace thermostatic element.
Mix temperature unstable	Debris is fouling valve.	Clean the valve ensuring that all debris is removed and components are not damaged.
	Flow rate below 15 L/min.	Rectify any pressure deterioration.
	Strainers are fouled.	Clean strainers.
	Inlet conditions (pressures or temperatures) are fluctuating.	Check system pressure, install suitable pressure control valves to ensure inlet conditions are within specification
Mix temperature changing over time	Inlet conditions (pressures or temperatures are fluctuating)	Install suitable pressure control valves to ensure inlet conditions are within specification
	Strainers contain debris	Clean strainers ensuring debris is removed
Full cold water flowing from outlet fixture	Hot water failure. Valve has shut down, cold bypass activated	Valve functioning correctly. Restore hot water supply and check mix temperature.
	Hot supply is less than cold supply pressure by greater than 80 kPa, bypass activated.	Increase hot water supply pressure, ensure the cold and hot supply pressures are balanced to within 80 kPa of each other.
	Cold supply pressure is too high in relation to hot supply pressure	Reduce cold water supply pressure, ensure it is no more than 80 kPa above hot supply
	Temperature setting is too low	Increase mixed water temperature setting
Full hot water flowing from outlet fixture	Valve is incorrectly set.	Adjust mix temperature between 15.6°C - 37.8°C +/- 2°C as required.
	Hot water has migrated to other inlet.	Check non-return valves, clean or replace if necessary
	Hot and cold supplies are fitted to the wrong connections.	Refit the valve with Hot/Cold supplies fitted to the correct connections.
No flow from the valve outlet	Hot or cold water failure. Valve has shut down.	Valve functioning correctly. Restore inlet supplies and check mix temperature.
	Strainers are fouled	Clean strainers.
	Water supply is turned off	Turn water on

Flow rate reduced or fluctuating	Valve or inlet fittings fouled by debris.	Check valve and inlet fittings for blockages.
	Dynamic inlet pressures are not within specified limits.	Ensure operating conditions are within specified limits and the dynamic inlet pressures are balanced to within 80 kPa.
Mixed water temperature too hot or cold	Valve has been tampered with	Readjust valve to required set temperature
	Valve incorrectly set	
Mixed water temperature does not adjust	Inlet temperatures are not within specified limits	Ensure inlet temperatures are within required limits
	Return spring is missing	Install return spring.
Hot water flows into the cold water system or vice versa.	Thermostatic element has failed	Replace thermostatic element
	Non-return valves faulty	Replace non-return valves.
Valve is noisy	Water velocity above velocity requirements of AS3500	Reduce water velocity
Temperature adjuster difficult to move	Adjustment at maximum mix temperature stops.	Mixed water is at maximum temperature
	Valve piston over set.	Wind adjuster out until set temperature required is achieved.

Warranty

Galvin Engineering products are covered under our Manufacturer's Warranty. Galvin Engineering products must be installed in accordance with the installation instructions and in accordance with AS 3500 and NCC Volume Three, relevant Australian Standards and local authorities applicable to product being installed. Water and electrical supply conditions must also comply to the applicable national and/or state standards, failing to comply with these provisions may void the product warranty and affect performance of the product.

Please visit www.galvinengineering.com.au to view the full warranty, our Installation Compliance and Maintenance & Cleaning information as well as any other additional information.