

HORNE[®] 15 TMV H1502

Thermostatic Mixing Valve



Owner's Manual

Containing Installation, Commissioning and Maintenance guides



Note

The Horne 15 TMVH1502 is NSW Health approved. The product supply, system design, installation, commissioning, operation, maintenance/service and site management of warm water supply systems incorporating thermostatic mixing valves in NSW, is subject to compliance with the relevant requirements of the following:

- a) Nursing Homes Act 2000
Occupational Health and Safety Act 2000
Private Health Establishments Act 1988
Public Health Act 1991
Trade practices Act 1974
- b) NSW Health Department Circular No. 2000/10,
Issued 9 February, 2000 – “Requirements for the
Provision of Cold and Heated Water”.
- c) “New South Wales Code of Practice – Plumbing
and Drainage”, Edition 2 July 1999.
- d) Australian/New Zealand Standards AS 3500, AS 3666,
AS 4032 and any other relevant Standards.
- e) “HOSPLAN Code of Practice for Thermostatic Mixing
Valves for Use in Health Care Facilities in NSW”.
- f) Safety Guide No. 4517, Issued November 1999 –
“Health Care and Accommodation Industries:
Thermostatic Water Mixing Valve Failure” published by
the WorkCover Authority of NSW.

Copies

Additional copies of this Manual or the Commissioning/
Maintenance Report shown on pages 25 and 27 may be
obtained from Zip Heaters (Aust) Pty Ltd. Contact details are
shown on the back of the Manual.

HORNE[®] 15TMVH1502

Thermostatic Mixing Valve

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The HORNE Thermostatic Mixing Valves are manufactured for Zip by:
Horne Engineering Ltd
Rankine Street, Johnstone, PA5 8BD, United Kingdom

Warnings

1. The Horne 15 TMV H1502 Thermostatic Mixing Valve should be installed, commissioned and maintained by a duly qualified person licensed as a plumber in accordance with relevant state requirements.
2. The Horne 15 TMV H1502 Thermostatic Mixing Valve must be installed, adjusted and maintained in compliance with all relevant Australian Standards, all Health Acts, as applicable to respective State Legislation, relevant Plumbing and Drainage Codes, relevant Codes of Practise for Thermostatic Mixing Valves and regulations laid down by local authorities
3. It is the responsibility of the installer and/or owner of any Horne 15 TMV H1502 Thermostatic Mixing Valve to maintain records which may be called upon to validate the date of installation in the event of a claim under warranty.

Technical Description

The main functions of a Horne 15 TMV H1502 thermostatic mixing valve are to:

1. Mix hot and cold water to provide mixed water at a steady temperature, independent of reasonable fluctuations in the temperature and/or pressure of the incoming hot water or cold water supply, and to
2. Close the hot or cold water supply in the event of failure of the other supply.

Features of a Horne 15 TMV H1502 are as follows:

1. Mixed temperature at 40.5 to 43.5 °C (for adults) and 38.0 to 40.5°C (for children) would be maintained from minimum flow rate of 2.5 litres/minute through to a maximum flow rate of 48 litres/minute.
2. Mixed temperature would be maintained whether the supply pressures are equal or unequal. [Maximum pressure differential 20:1 ratio]. The lower of the two supplies should be maintained at not less than 12 kPa.
3. Mixed temperature would be maintained when cold inlet temperature increases [eg winter/summer 5°C to 30°C].
4. Mixed temperature should be maintained when hot inlet temperature increases [eg failure of controls at water heater 60°C to 85°C].
5. On re-start after a dormant period, mixed temperature should stabilise before scalding could occur.
6. If the cold water supply ever fails, the flow of mixed water will quickly stop (thermal shut-off) and any drips from the valve will be less than 46°C, provided that:
 - Hot water temperature is at least 5°C higher than the mixed water temperature.
 - Hot water pressure does not exceed 600 kPa.
 - The thermostatic mixing valve is maintained in accordance with these instructions.
7. If the hot water supply ever fails, the flow of mixed water is cut off. The valve will shutdown the flow of cold water preventing cold shock.

Operation

For illustration see figure 9 on page 24.

The flows of incoming hot and cold water are controlled by variable inlet ports which are governed by the temperature of the outgoing mixed water. The hot water enters through the port created between the lower end-face of the slide valve and the flat surface provided on the valve body (hot valve seat). The hot water passes upwards between the slide valve and the mixer tube.

At the top of the mixer tube water is diverted through 90 degrees and enters the mixing chamber where it mixes with the incoming cold water and passes through the sensing chamber to the outlet.

The cold water enters through the port created between the upper face of the slide valve and the flat surface provided on the valve cover (cold valve seat). The cold water then passes through holes in the upper section of the slide valve and enters the mixing chamber and then through the sensing chamber to the outlet.

The thermostat element sits in the slide valve and its actuator pin abuts the adjusting screw.

If too much hot water is entering the valve, the thermostat element senses the resultant temperature rise and the actuator pin protrudes further; this movement is transmitted to the slide valve which moves closer to the hot valve seat and further from the cold valve seat, thus, less hot water and more cold water is allowed to enter the valve and the outlet temperature is maintained.

If too much cold water is entering the valve, the actuator pin withdraws, and a reverse movement takes place.

The temperature at which the valve will control the mixed water is determined by the position of the adjusting screw.

In the event of a cold water supply failure the hot inlet port will close, thus stopping any flow through the valve.

The function of the overheat protection spring is to absorb any excess movement of the actuator pin, preventing overloading of the thermostat element, thereby helping prevent premature failure of the element.

Typical Installations

The Horne 15 TMV H1502 thermostatic mixing valve must be installed, commissioned and maintained in compliance with all relevant Australian Standards including AS/NZS 3500, AS/NZS 3666 and AS 4032, all Health Acts, as applicable to respective State Legislation, relevant Plumbing and Drainage Codes, relevant Codes of Practice for Thermostatic Mixing Valves and regulations laid down by local authorities.

Figure 1
Single Point – Shower, Bath or Basin

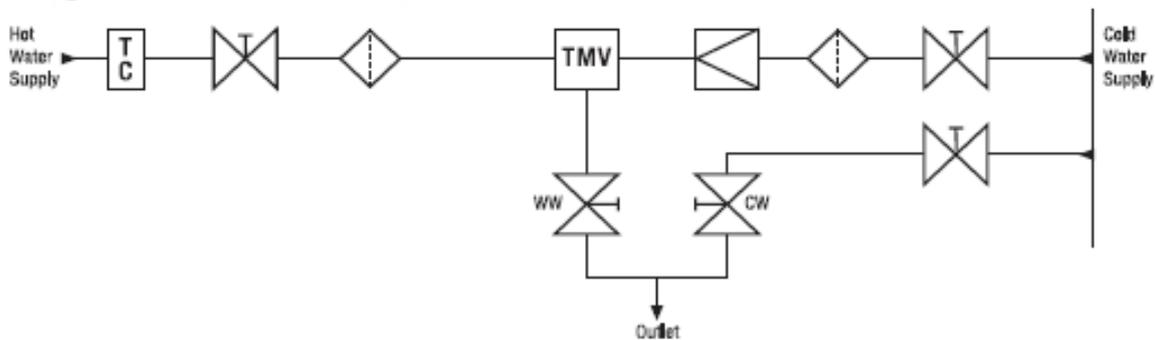
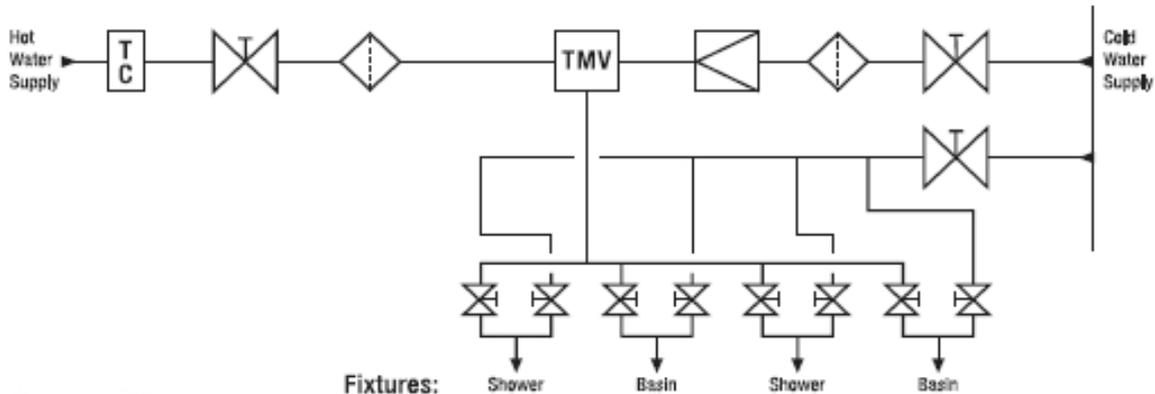


Figure 2
Multi-Point Installation



Legend

-  Max. Temp control (if necessary)
-  Isolating Valve
-  Line Strainer (if necessary)
-  Pressure Reducing Valve (If required)
-  Thermostatic Mixing Valve
- cw** Cold Water
- ww** Warm Water

Fixtures: Shower Basin Shower Basin

Notes:

TMV should be positioned to prevent tampering of temp-control.

Pipe connections to TMV shall be in accordance with AS 3688.

Baths & Basins should have common outlet for warm & cold water.

Minimum pipe length from TMV to outlet shall be one (1) metre.
Max. Length ten (10) metres.

Avoid long dead legs.

Insulate hot & warm water lines.

Non-Return valves are integral in the hot and cold inlets of the TMV.

The valve shall not be mounted so that its mass is supported by the connecting pipe work. A suitable mounting bracket or mounting clip arrangement must be used to take the mass of the valve, surrounding pipe work must not support the valve.

The valve can be installed in cavities, under basins or in any position that complies with local regulations and manufacturers recommendations, but in all instances must be easily accessible for maintenance and commissioning.

Recommended Supply Pressures & Temperatures

Inlet Temperatures

Cold Supply	Minimum 5°C Maximum 30°C	Hot Supply	Minimum 60°C Maximum 85°C
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The Horne valve is intended for use mainly in applications where the set temperature is below 45°C. When installed at higher set temperatures the Horne valve's performance may be less than specifications as set out in AS 4032.1. In such situations consideration should be given to the question of whether an alternative device, i.e. a tempering valve approved to AS 4032.2 would provide a greater margin of safety in preventing scalding accidents.

Note: The maximum temperature of the cold water supply must be at least 5°C lower than the preset warm water temperature.

Flow Rates – when producing warm water at nominal 42°C

Minimum mixed water flow	2.5 litres/minute
Maximum	48 litres/minute

It is assumed that the minimum flow rate of warm water is achieved with equal inlet pressures and a maximum limit on the inlet pressures.

Dynamic Inlet Pressures (Hot and Cold Water)

Minimum 12 kPa
Maximum 600 kPa

Static Pressures

Maximum 1000 kPa

Inlet Pressure Ratios (Cold supply to Hot Supply)

Hot and cold water pressures do not need to be equal.

The lower of the two pressures, however, should be maintained at not less than 12 kPa.

Note: In accordance with the NSW Code of Practice for Thermostatic Mixing Valves (in Health Care Facilities) it is required that hot and cold water supply pressures be nominally equal within 10% imbalance.

Maximum Water Velocity

We recommend 3m/sec in the pipework local to the valve.

Set Up Temperatures of the mixed water

Minimum 38°C	Maximum 45°C
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Technical Information

Horne 15TMV H1502

1/2" BSP connections.

Dry weight of Horne 15 TMV H1502 valve is 1.48kg.

All Horne 15 TMV H1502 thermostatic mixing valves include isolating valves, non return valves and strainers as standard.

Temperature Control can be maintained without balanced inlet pressures.

The Non-return valves can seal against low back pressures and up to a maximum back pressure of 1600 kPa.

Hard Water. The Horne 15 TMV H1502 thermostatic mixing valves is designed to give trouble free operation in hard water areas.

Figure 3 - Horne 15 TMV H1502 thermostatic mixing valve.

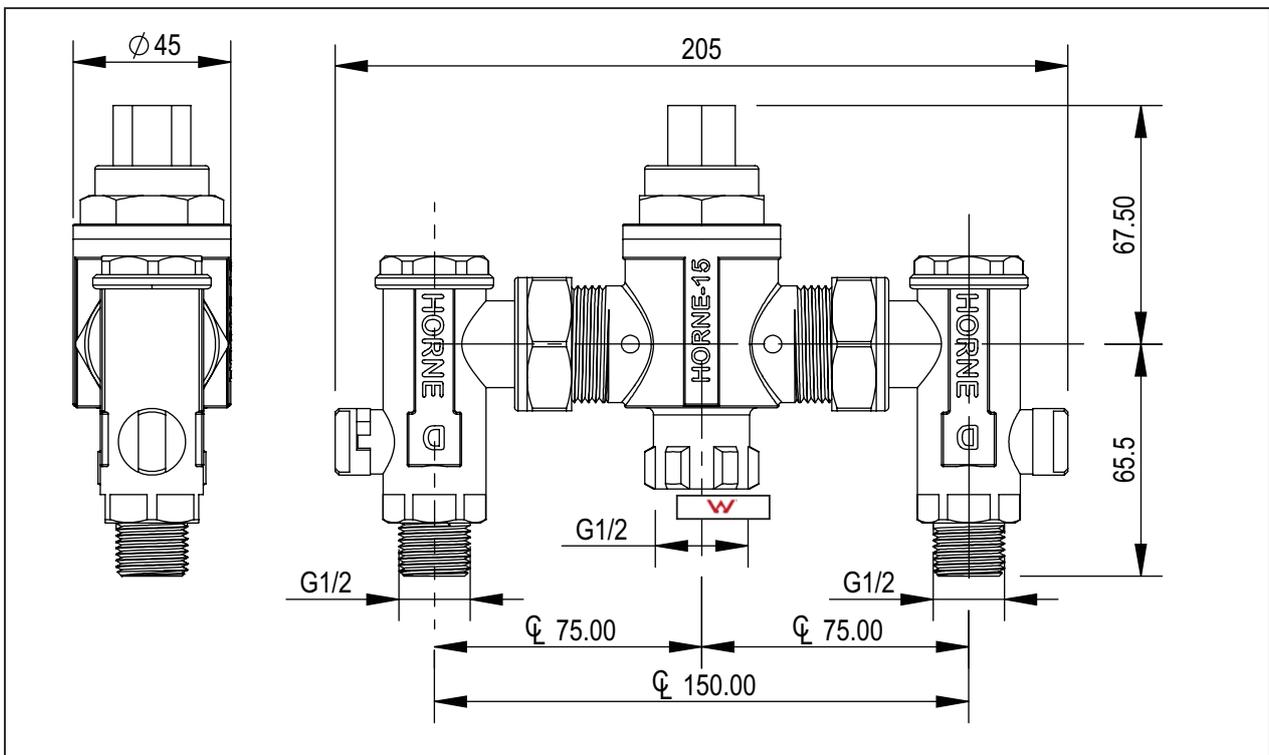
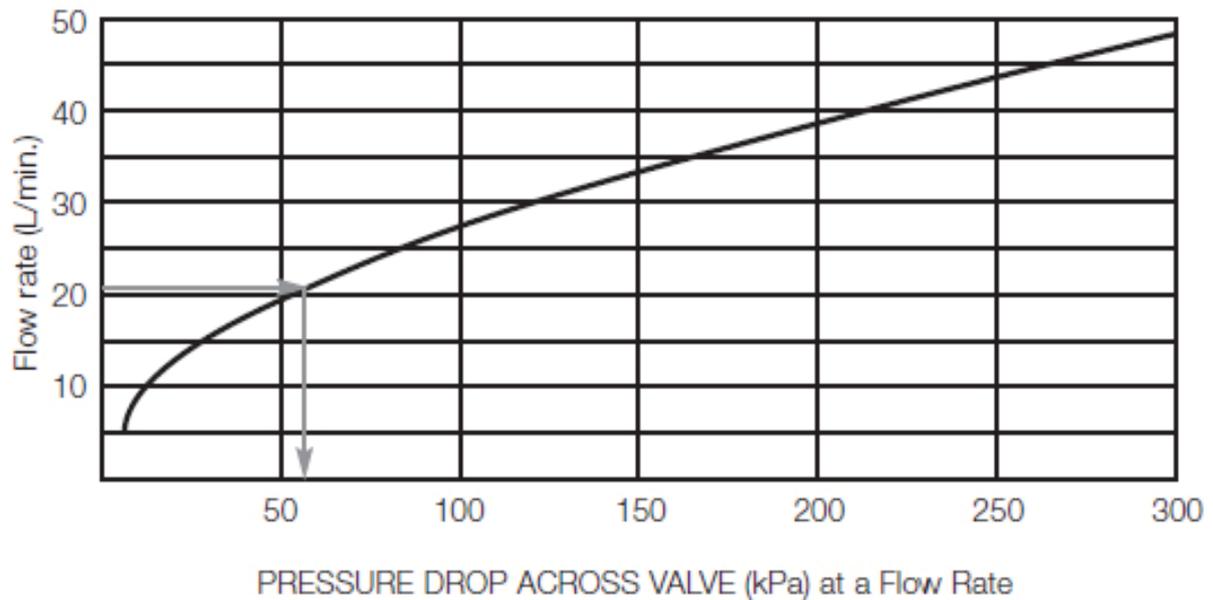


Table 1 – Horne 15 TMV H1502 Sizing Chart



Worked Example:

If a flow rate of 0.34 l/sec. (ie. $0.34 \times 60 = 20.4$ l/min) is required (eg 2-wash basins or 2-showers) a pressure drop of 60 kPa will occur across the mixing valve.

Note 1:

If the Horne 15 TMV H1502 is being used with water supply of unequal pressure, it is the lower pressure which will determine the flow rate from the valve.

Note 2:

The graph shows the pressure drop through the TMV with an open ended outlet.

The total pressure drop comprises the sum of the pressure drop through:

- supply and delivery pipework
- TMV
- Terminal Fittings

Installation, Commissioning and Maintenance Instructions

The components referred to below are shown in Figure 5.

1. Installing The Horne 15 TMV H1502

The Horne 15 TMV H1502 thermostatic mixing valves must be installed, commissioned and maintained in compliance with all relevant Australian Standards including AS/NZS 3500, AS/NZS 3666 and AS 4032, all Health Acts, as applicable to respective State Legislation, relevant Plumbing and Drainage Codes, relevant Codes of Practice for Thermostatic Mixing Valves and regulations laid down by local authorities.

The Horne 15 TMV H1502 Thermostatic Mixing Valve must be installed, commissioned and maintained by a fully qualified person licensed as a plumber in accordance with relevant state requirements.

The Hot water inlet to the mixing valve is marked with a red dot and the Cold water inlet is marked with a blue dot.

Non-conformance to the manufacturers/suppliers published installation instructions for the mixing valve could also void the warranty or guarantee for the mixing valve.

Keep all valves, fittings and pipework, clear of adjacent electrical equipment (AS/NZS 3000).

2. Inlet Pressures

For multiple outlets to be properly served it is most important that the Hot and Cold water inlet pressures (dynamic) to the mixing valves be nominally equal (within 10% imbalance). The use of an adjustable pressure reducing valve, should be considered.

Warning: The incorrect installation, commissioning, operation and maintenance/service of a mixing valve or the associated fittings could put a person's life in jeopardy.

Note The water supply authorities do not allow mixing valves to be supported off exposed pipework.

3. Inlet Supply Temperatures

Maximum Hot Water	85°C
Minimum Hot Water	60°C
Maximum Cold Water	30°C
Minimum Cold Water	5°C

The use of a hot water supply with temperatures in excess of the manufacturers recommended tolerance could result in permanent damage to the thermostat due to thermal stress failure. It is therefore essential that the maximum likely temperatures of the hot water supply be carefully checked and, if necessary, appropriately adjusted or corrected.

4. Line Strainers

The Horne 15 TMV H1502 is designed with integral strainers in the valve assembly however if an excess of suspended contamination exists in the water supply consideration should be given to the fitting of additional strainers. Refer to Figures 1 and 2.

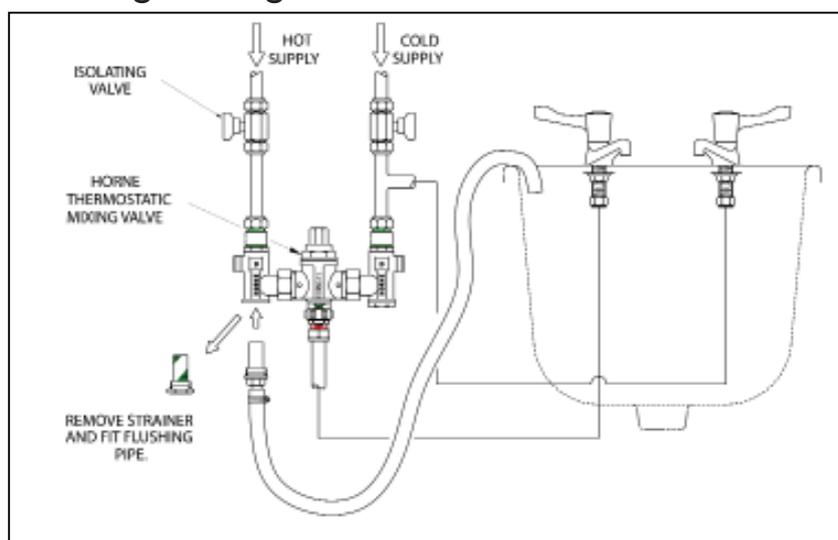
5. Flushing the pipework

The most common cause for complaint regarding the performance of any Thermostatic Mixing Valve is traced to dirt or debris in the TMV or non-return valves.

Before a Horne 15 TMV H1502 is commissioned, the hot and cold water pipework should be thoroughly flushed. As an option, a Flushing Kit is available (part no. 91182) (old part no 91075 for black handle models) as shown in Figure 4. Flushing kits are not enclosed with each Horne 15 TMV H1502 and only one or two flushing kits are required on each site. The Flushing Kit comprises a screwed adaptor to fit the strainer body and a plastic pipe to enable water to be flushed into a basin or bath. The Flushing Kit allows for hot and cold supply pipework to be flushed in accordance with AS/NZS 3500.4.2.

Do not flush the pipework by removing the strainer baskets and opening the taps. This will flush any debris into the Horne 15 TMV H1502 and affect performance.

Figure 4 - Flushing arrangements for the Horne 15 TMV H1502



CAUTION

Do not open the hot water tap before flushing the hot and cold pipework.

The flushing procedure is as follows. Refer to Figure 5.

1. Close the hot and cold water isolating valves. Keep both the hot and cold water taps closed.
2. Unscrew the end cap (21) and remove the strainer basket (19) from the strainer body (18).
3. Screw the flushing kit into the strainer body (18)
4. Place the outlet of the flushing pipe in the basin or bath as per Figure 4. Make sure that the basin drain or plug is not in place and that water passing through the flushing pipe is free to drain.
5. Open isolating valve and allow any air in the pipework to escape until water begins to flow to drain. Allow water to drain until it is perfectly clean and free from dirt or debris.
6. Close isolating valve again.
7. Remove the flushing kit and replace the strainer basket and end cap.
8. Repeat 5.2 to 5.7 for the other strainer body.
9. Re-open both isolating valves.

6. Commissioning a new Horne 15 TMV H1502

1. Open the tap on the hot water supply and allow some water to run through the Horne 15TMV H1502.
2. Check the temperature of the hot water entering the Horne 15TMV H1502. This temperature should be at its design temperature and at least 60°C and must not exceed 85°C.
3. Check the temperature of the hot water tap. This is the temperature of the mixed water.
4. If necessary make minor adjustments to the temperature setting as described in Section 8, Temperature Adjustment.
5. Carry out a cold water failure test as below.
 - a. Close the cold water isolating valve and simultaneously measure the mixed water temperature. The flow of mixed water should immediately stop and then a drip or trickle may be seen. The temperature of any water coming from the tap should not be more than 2°C above the mixed water set temperature measured in 6.3 above.
 - b. 6.5.2 If the water coming from the tap is at a temperature of more than 2°C above the mixed water temperature setting, then the Horne 15 TMV H1502 is not cutting off the hot water supply properly. The most likely cause for this to happen is dirt inside the TMV. It should be dismantled and thoroughly cleaned and the pipework flushed again. See Section 9 Maintenance Procedures.
 - c. If the Horne 15 TMV H1502 performs satisfactorily, close the hot water tap and open the cold water isolating valve.
6. The Horne 15 TMV H1502 is supplied with integral single non-return valves located in each of the swivel inlet assemblies. To check that the non-return valves are working properly, proceed as follows.
 - a. Start with both hot and cold taps closed and both hot and cold isolating valves open.

- b. Close the cold supply isolating valve.
 - c. Remove the strainer cap (21) at the cold inlet to the Horne 15 TMV H1502. After some initial draining of water, there should be no flow whatever. This indicates that the non-return valve at the cold inlet is giving a tight shut off.
 - d. Replace the strainer cap (21) at the cold inlet and open the cold supply isolating valve.
 - e. Close the hot supply isolating valve.
 - f. Remove the strainer cap (21) at the hot inlet. After initial draining of water, there should be no flow of water whatever. This indicates that the non-return valve at the hot inlet is giving a tight shut off.
- 6.6.7 Replace the strainer cap.
 7. Allocate unique identification to the valve as per facility's valves register.
 8. Record the commissioning details in the Maintenance Report shown on page 26.
 9. The Horne 15 TMV H1502 has now been commissioned.

7. Flow Rates

Check the flow rate of the mixed water at the outlet fitting. Recommended minimum water outlet flow rates are:

Hand held (shampoo) shower:	0.1 L/sec 6.0 L/min
Shower rose (100mm dia.)- cylindrical spray pattern:	0.17 L/sec 10.2 L/min
Shower head (conical spray pattern, mains press):	0.1 L/sec 6.0 L/min
Small hand basin (in toilet cubicles):	0.13 L/sec 7.8 L/min
Washbasins in bathrooms:	0.17 L/sec 10.2 L/min
Doctors' washbasins (in wards, treatment areas and corridors):	0.17 L/sec 10.2 L/min
Bath:	0.42 L/sec 25.2 L/min

The Horne 15 TMV H1502 can be fitted in any orientation with the mixed water outlet connection pointing upwards, downwards or horizontally.

All parts of the valve should remain accessible for adjustment and ongoing maintenance.

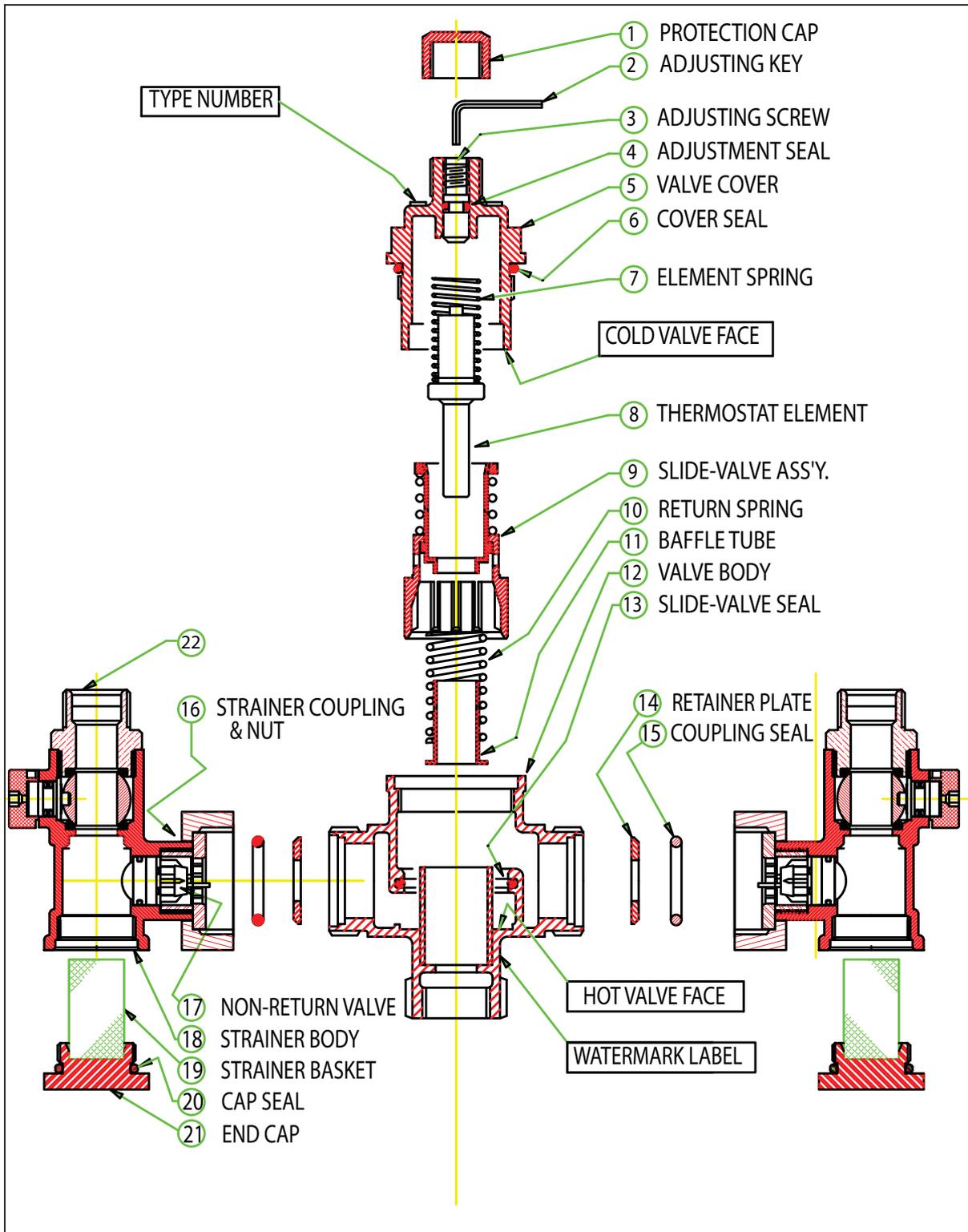
8. Temperature Adjustment

The Horne 15 TMV H1502 is set at the factory to control the mixed water at a nominal temperature of 41°C approx.

The range of final temperature adjustment must be controlled between 38 to 45°C. However, the range of temperature adjustment, at the valve, is 35 to 50°C.

Mixed water temperatures should be set following consultation with management of the site to ascertain the required temperature range. The following warm water temperature requirements for patient use are drawn from the NSW Department of Health Requirements for the Provision of Cold and Heated Water.

Figure 5 - Horne 15 TMV H1502 exploded diagram.



User classification	Maximum permissible allowable temperature range of water	Maximum peak temperature during thermal shut-off test (hot water safety shut off)
For adults	40.5 to 43.5°C	46°C
For children and neonates (babies)	38.0 to 40.5°C	43.5°C

To ascertain the required temperature setting, carry out the following procedure.

1. Check the calibration of the thermometer before checking temperature of the water.
2. Check that hot and cold water supplies are at or near to their designed temperature and pressure.
3. Open the mixed water outlet and allow water to flow until the mixed water temperature has stabilised. Make sure that the dead leg from the HWS to the Horne 15 TMV H1502 and from the Horne 15 TMV H1502 to the outlet has fully cleared.
4. Remove protective cap (1)
5. Using the adjusting key (2) (supplied with every valve) turn the adjusting screw (3) clockwise to reduce the mixed water temperature or anti-clockwise to increase the temperature. Adjustments of not more than 1 turn at a time should be made and a few seconds allowed for the water at the temperature to stabilise. Before making temperature adjustments ensure that the hot water supply temperature is not less than 60°C. The adjusting key is a 4mm Allen key.
6. After making an adjustment, close the hot water supply isolating valve for ten seconds, then re-open it and measure the mixed water temperature again. If a further adjustment is required, repeat procedure.
7. Record results in the Commissioning Report shown on page 25.

9. Maintenance Procedures

It is an essential part of routine maintenance to ensure that the internal parts of the Horne 15 TMV H1502 including the integral non-return valve (check valves) are kept clean. The frequency of cleaning depends upon the condition of the water and local knowledge will dictate the intervals between maintenance, and in any case the time interval is not to exceed twelve months.

The procedure for cleaning is as follows. Refer to Figure 5.

- a. Shut off the two isolating valves incorporated into the TMV.
- b. Using a bucket to collect any leakage water and taking care (as hot water may be present) remove and clean the strainer baskets (19).
- c. Unscrew the valve cover (5).
- d. Carefully remove internal parts 7, 8, 9, 10 and 11. The slide valve assembly is a precision part and should be handled with care. Do not score or mark any of the faces or surfaces and do not clean with coarse or abrasive materials.
- e. Wash and clean all internal parts.

- f. If the valve body shows signs of heavy scaling, it is necessary to remove the Horne 15 TMV H1502 from the pipework so that it can be cleaned using descaling fluid. To remove it from the pipework, uncouple the strainer couplings (16) and compression fitting at the mixed water outlet. Do not grip the valve body in a vice. The slide valve seal (13) should be removed using a special tool, which is available upon request (part no 91091). If the slide valve seal has been removed it must be replaced with a new seal (part no 91020). Never re-use a Slide Valve Seal. See Figure 7 for the removal of slide valve seal. Note: Special tools supplied with Seal Removal Tool Kit (part no 91091).
- g. If there is any signs of dirt in the water, the pipework should be flushed as described above in Section 5 Flushing the pipework.
- h. The non-return valves (17) are designed for long life with no maintenance.
- i. The Maintenance Schedule on page 22 is to be applied.

10. Re-assembling of the Horne 15 TMV H1502 TMV

- a. Insert the components into the valve as shown in Figure 5.
- b. The flanged end of baffle tube (11) must be inserted first into the valve body.
- c. The chamfered side of the retainer plate (14) must face towards the coupling seal (15).
- d. When the internal components have been located loosely in the valve body place the valve cover (5) over the element spring (7) then push gently and turn until the thread on the cover engages with the body. The valve cover will automatically align all the internals inside the valve body.
- e. Record the maintenance details in the Maintenance Report shown on page 26.

Note: All mating faces are sealed by O-rings in preference to gaskets so that minimal torque is required when screwing components together. When fitting new O-rings, it is advisable to smear sparingly with silicone grease ~ e.g. Molykote 111.

The strainers at the hot and cold water inlets have a very large surface area so that frequent cleaning of them should not be required.

Never use excessive force when dis-assembling or re-assembling the Horne 15TMV H1502.

Fault Finding

Fault	Possible Cause	Action
Mixed water temp too high	Adjustment has been tampered with. Hot water has migrated to cold supply.	Reset valve to give desired mixed water temperature. Replace swivel assembly on cold side of TMV (part no 91160). Note: If this condition occurs, the effects of one leaking check valve may be noticed at various locations. Replace the element (part no 91043).
	Element has failed and this can be checked by performing a cold water failure test.	
Mixed water temp too low.	Adjustment has been tampered with. Cold water has migrated to hot supply	Reset valve to give desired mixed water temperature. Replace swivel assembly on hot side of TMV (part no 91160). Note: If this condition occurs, the effects of one leaking check valve may be noticed at various locations.
	Hot water temperature too low.	Check operation of water heater.
	Cold valve seat requires cleaning.	Remove cover (5) from the valve and lap the bottom surface with 800 grade wet abrasive paper on a flat surface. Rinse the valve cover in clean water and re-assemble the valve.
Mixed water temp fluctuates.	Valve requires descaling.	Remove the element and all rubber 'O' rings from the valve. Immerse the valve in descaling fluid (e.g. Fernox DS3 3% solution). Remove all scale from the valve in accordance with manufacturer's instructions. Replace 'O' rings (seal kit part no 91042) with new ones (the element may not be required to be renewed). Re-assemble and test the valve. (See Figure 6.)

Fault	Possible Cause	Action
Mixed water temp. does not change when the adjusting screw is altered.	Valve requires descaling Hot and cold inlets have been reversed.	See action for (c) above. Check that cold water is entering the valve at the side with the blue dot and hot is entering the side with the red dot.
	Thermostat element has failed.	Clean the valve (descale if scale is present) then perform a cold water failure test. If valve does not pass the test then renew the element (part no 91043).
Mixed water flow rate is inadequate, fluctuates or cuts off.	Strainers are blocked. Hot and/or cold supply pressures.	Clean strainers. Investigate and rectify any pressure deterioration.
Valve fails cold water test, i.e. if cold supply is shut off, valve continues to pass hot water.	Hot valve seat requires cleaning.	Using a mandrel, lap the hot valve seat using a water soluble scouring paste. See Figure 8.
	Slide valve seal (13) is damaged. Element has failed.	Replace slide valve seal (13) (part no 91020). Replace element (part no 91043)
Valve is noisy.	Flow rate is higher than recommended maximum.	Reduce the inlet pressures to the valve.
Valve will not mix, i.e. outlet runs either full hot or full cold.	Hot and cold inlets are reversed.	Check that cold water is entering the valve at the side with the blue dot and hot is entering the side with the red dot.

Maintenance Schedule & Spare Parts

The replacement time is indicative only and the valve must be maintained by a duly qualified person licensed, such as a plumber and in compliance with all relevant Australian Standards including AS/NZS 3500, AS/NZS 3666 and AS 4032, all Health Acts as applicable to respective State Legislation, relevant Plumbing and Drainage Codes, relevant Codes of Practice for thermostatic mixing valves and regulations laid down by local authorities.

All replaceable parts for the Horne 15 TMV H1502 are available as spares, and the following table shows the parts which should periodically be replaced as per manufacturer's instructions.

Zip Part No.	Spare Part (Periodic Replacement)	Replacement Time	Refer Fig 5
91020	Slide Valve Seal (see Figure 6)	every 5 years	13
91043	Thermostat Element /Element Spring (complete)	every 5 years	8/ 7
91076	Slide Valve Assembly	every 5 years	9
91042	Seal Kit (incorporates all items marked with * and shown in Figure 6)		-
91042	*Adjustment Seal (see Figure 6)	replace as required	4
91042	*Cover Seal (see Figure 6)	replace as required	6
91042	*Coupling Seal (see Figure 6)	replace as required	15
91042	*Cap Seal (see Figure 6)	replace as required	20
91160	Inlet Assembly (this part is complete providing strainer body with coupling and nut, strainer, non-return valve and isolating valve).	replace as required	-
91073	Strainer Basket	replace as required	19
91182	Flushing Kit (see p.14)		-
91091	Seal Removal Tool Kit		-
91183	Lapping Mandrel		-

The following table identifies other components not requiring routine replacement. These are available from Zip Industries if ever needed.

Component		Replacement Time	Refer Fig 5
Protection Cap		replace as required	
Adjusting Key		replace as required	
Adjusting Screw		replace as required	
Valve Cover		replace as required	
Return Spring		replace as required	
Baffle Tube		replace as required	
Retainer Plate		replace as required	

Note:

The Code of Practice as published by various State Health Departments may require additional maintenance to that shown above. You should check with your local Department of Health to ascertain their requirements.

Figure 6 - Seal Kit and Thermostat for Horne TMV H1502 (Part No. 91042)

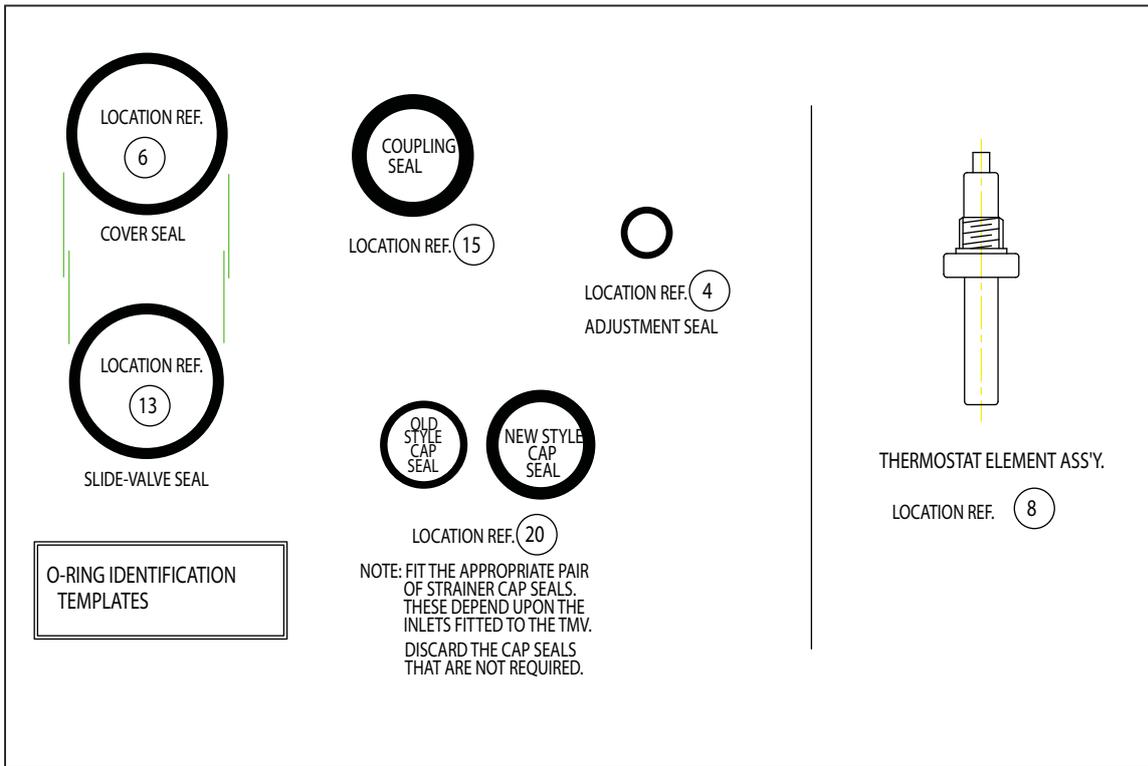


Figure 7 - Removal of Slide Valve Seal

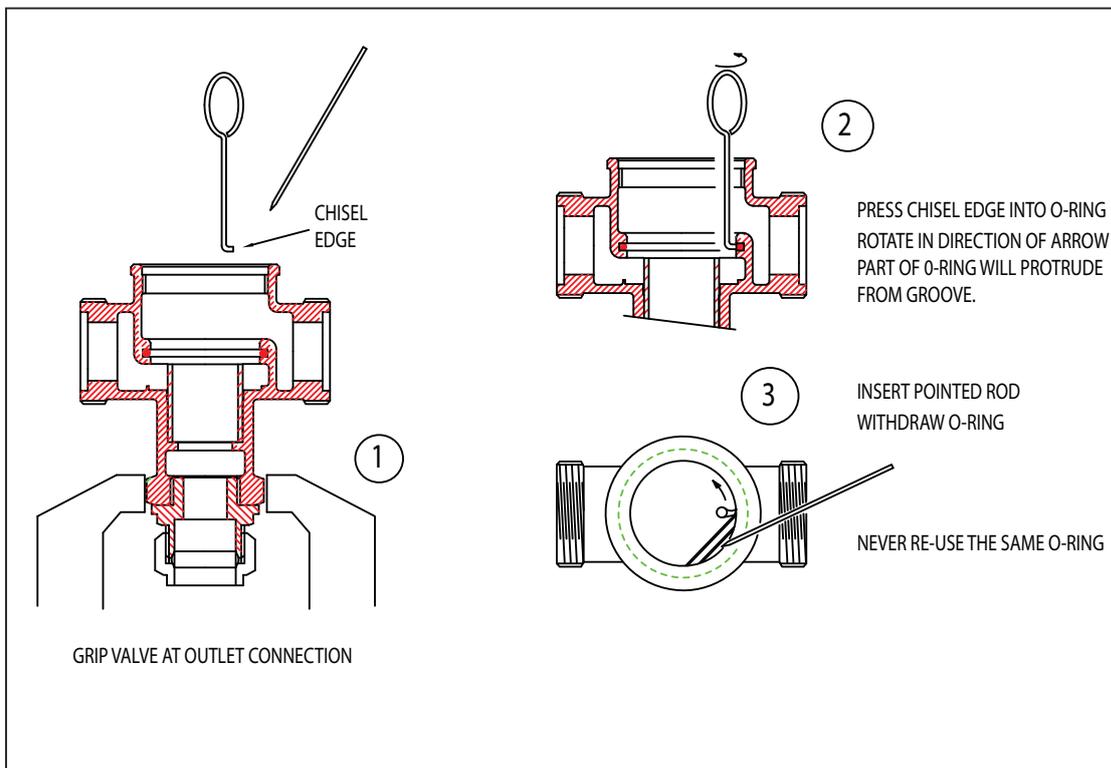


Figure 8 - Valve seat lapping instructions

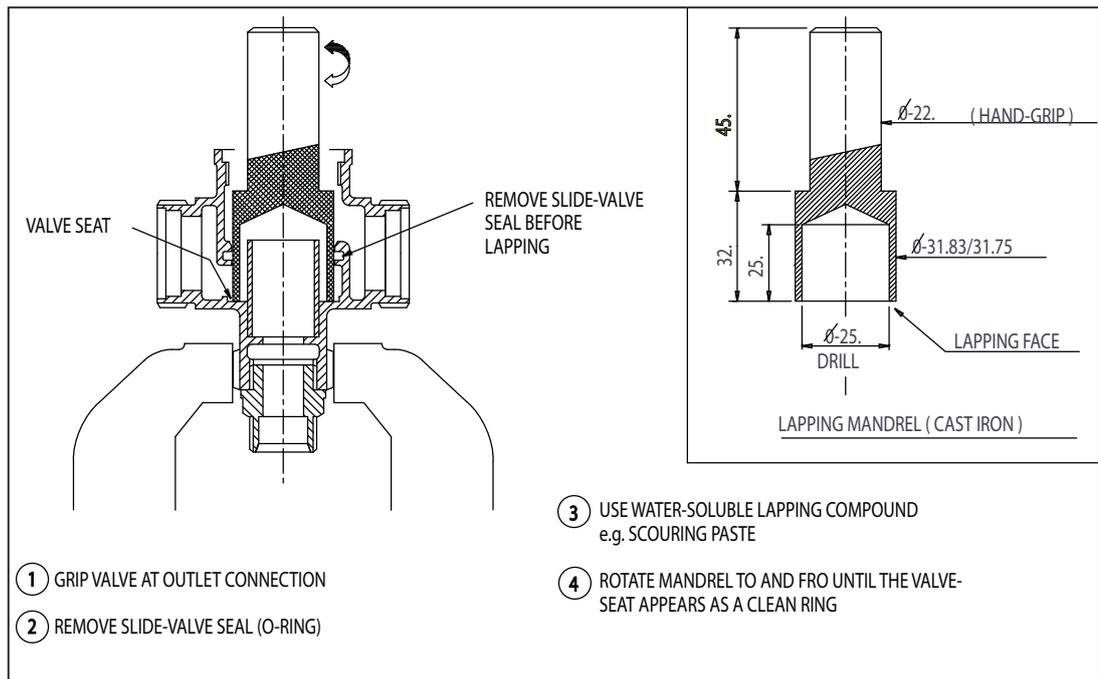
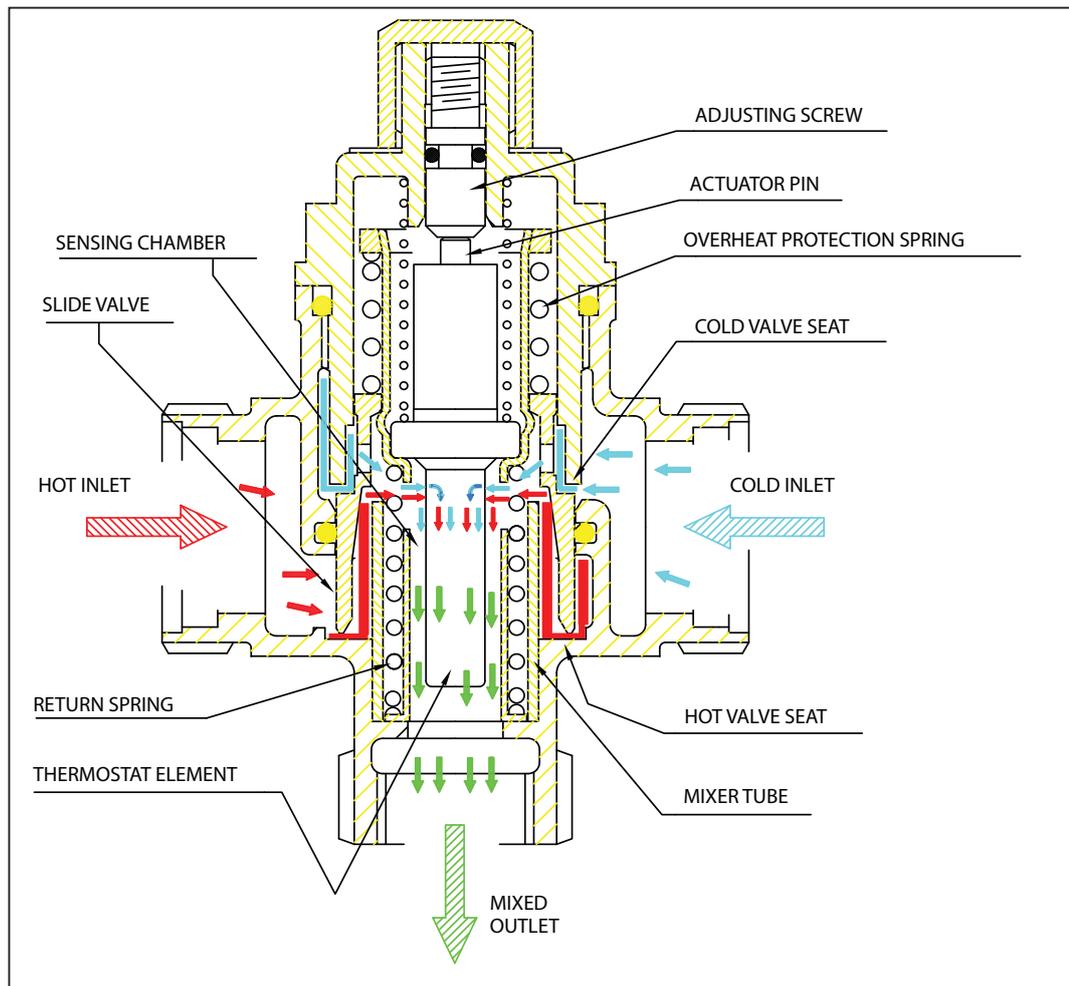


Figure 9 - Method of operation



Commissioning/Maintenance:

The method for testing and maintaining thermostatic mixing valves is detailed in AS4032.3 appendix B. and includes both Hot and Cold operational tests.

The following report templates are designed to assist the installer in meeting the mandatory requirements of AS4032 parts 1; 2 and 3

Commissioning/Maintenance Report

Name of Establishment:

Address :

Contact:

Make of TMV: Horne 15 Model No: H1502

Valve location in building:

Number of outlets served by this valve: Baths

Phone No:

Unique ID:

Basins

Showers

Other:

Number of valves on this site/building:

Mixing valves installed in compliance with requirements of:

A) Drawings and specifications Yes No

B) Manufacturer/supplier published installation instructions Yes No

C) Relevant code of practice for thermostatic mixing valves Yes No

D) Local Water Supply Authority and Standards as per page 8 Yes No

If NO, give reasons and action taken:

Advised Building Engineer/Facilities Manager

Yes No

Work carried out during this site visit. The Horne 15 TMV H1502 was:

Dismantled

Components inspected & cleaned

Slide valve seal replaced and lubricated

Reassembled

Thermostat Element replaced

Commissioned

Slide Valve Assembly replaced

Non-return valves checked

Serviced

Temperature set

Hot/cold water failure tested Passed Failed O-ring seals replaced

Temperature of water supply

Hot: °C Cold: °C

Temperature of water at outlet

°C

Dynamic pressure of water supply Hot: kPa Cold: kPa

Date of installation:

Valve Installed by:

Date of commissioning:

Valve commissioned by:

Date of service:

Valve serviced by:

Next service date:

Signature of licensed plumber:

License No:

Signature of site manager/occupier:

Date:

A full and accurate record of the exact location of all TMV's installed and all maintenance work carried out is an essential component of any effective maintenance programme. The testing must be performed in accordance with AS4032.3 App.B. and include both Hot and Cold failure tests.

Note: Should service or installation problems arise, please contact the Australian Distributor: Zip Heaters (Aust) Pty Ltd. Telephone: 02 9796 3100. Fax: 02 9796 3858.

Commissioning/Maintenance Report

Name of Establishment:

Address :

Contact:

Make of TMV: Horne 15 Model No: H1502

Valve location in building:

Number of outlets served by this valve: Baths

Phone No:

Unique ID:

Basins

Showers

Other:

Number of valves on this site/building:

Mixing valves installed in compliance with requirements of:

A) Drawings and specifications Yes No

B) Manufacturer/supplier published installation instructions Yes No

C) Relevant code of practice for thermostatic mixing valves Yes No

D) Local Water Supply Authority and Standards as per page 8 Yes No

If NO, give reasons and action taken:

Advised Building Engineer/Facilities Manager

Yes No

Work carried out during this site visit. The Horne 15 TMV H1502 was:

Dismantled

Components inspected & cleaned

Slide valve seal replaced and lubricated

Reassembled

Thermostat Element replaced

Commissioned

Slide Valve Assembly replaced

Non-return valves checked

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Temperature of water supply

Hot: °C Cold: °C

Temperature of water at outlet

°C

Dynamic pressure of water supply Hot: kPa Cold: kPa

Date of installation:

Valve Installed by:

Date of commissioning:

Valve commissioned by:

Date of service:

Valve serviced by:

Next service date:

Signature of licensed plumber:

License No:

Signature of site manager/occupier:

Date:

A full and accurate record of the exact location of all TMV's installed and all maintenance work carried out is an essential component of any effective maintenance programme. The testing must be performed in accordance with AS4032.3 App.B. and include both Hot and Cold failure tests.

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