



Health

**PART A**

**APPROVAL SPECIFICATION**

**FOR**

**OPERATIONAL TESTING OF**

**THERMOSTATIC MIXING VALVES**

**FOR USE IN**

**NON DOMESTIC BUILDINGS**

**IN**

**NEW SOUTH WALES**

Issued: June 2014

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**(A) INTRODUCTION**

The Public Health Regulation, 2012, Part 2, – Legionella Control, Clause 6(4) “A warm-water system must not be installed in a hospital unless it is of a kind approved in writing by the Director-General.”

To allow new warm water systems to be approved, the Ministry of Health has adopted the following test criteria which must be met in order to be considered for approval

This Specification denotes the minimum requirements for the test methods and acceptance criteria for warm water supply systems incorporating thermostatic mixing valves.

**(B) GENERAL**

All warm water systems shall:

1. have relevant current product certification complying with current QAS authorisation to SAA MP52..; and
2. when installed and commissioned in accordance with the supplier’s instructions be shown by certified testing to be able to provide thermal shut-off over at least the extremes of the working range of inlet water temperatures and pressures (see Section 6 of this Specification ) and also the minimum flowrate of warm water for the product (stated by the supplier in product literature) whilst meeting the safe water temperature requirements specified in Part 2.6 of the relevant Ministry of Health Policy Directive
3. Have supplier’s literature complying with requirements of
  - 3.1 legislation applicable in NSW,
  - 3.2 current Ministry of Health publications including the “Requirements for the provision of cold and heated water”,
  - 3.3 The Plumbing Code of Australia
  - 3.4 in respect of thermostatic mixing valves – the “HOSPLAN Code of Practice for Thermostatic Mixing Valves for Use in Health Care Facilities in NSW” and
  - 3.5 AS/NZS 3500, AS/NZS 3666, AS 4032 (in respect of thermostatic mixing valves) and other relevant Australian & International Standards.

**(C) CERTIFICATION**

All tests required to be carried out pursuant to section 2 above of this specification shall be witnessed and the test results shall be certified by a person from an independent testing organisation which is registered or accepted by the National Association of Testing Authorities of Australia. Alternatively, the tests shall be undertaken and certified by an independent laboratory which is registered or accepted by the National Association of Testing Authorities of Australia or recognised and accepted by NATA.

**(D) INDEPENDENT CERTIFICATION**

The application for type approval of the warm water system shall be certified in writing as complying with the above requirements 1 to 3 inclusive, by an independent person to be nominated by Ministry of Health (Independent Certifier) from either of those listed in Form 2 at the end of this document. The costs for this certification shall be met by the manufacturer / applicant. The application for the type approval shall be accompanied by a certified copy of all documents evidencing compliance with the above requirements 1 to 3 inclusive.

**(E) MINISTRY OF HEALTH APPROVAL**

The application form attached (Form 1) and the Certificate (Form 2) shall be completed and be accompanied by the current prescribed fee of \$160.00 (See Clause 6(4) of the Public Health Regulation 2012.

The cheque shall be made payable to "*NSW Ministry of Health*" and be sent to the NSW Ministry of Health , PO Box 201, Wagga Wagga, NSW, 2650.

The applicant shall be advised in writing of any Ministry of Health approval and conditions of approval, if any.

The relevant contact person shall be:

Tony Burns  
Legionella Consultant  
Ph (02) 69339120 Fax (02) 69339129  
Mob 0428693374

## 1. INTRODUCTION

1.1 This specification denotes the minimum requirements for the test methods and acceptance criteria for thermostatic mixing valves produced by the Valve Manufacturer.

1.2 All Operational Tests shall be carried out.

1.3 Additional tests under other conditions of operation may also be undertaken at the option of the Valve Manufacturer.

1.4 The purpose of these tests is primarily to assess the thermal shut off function and temperature stability functions of the respective model, type and size of thermostatic mixing valve offered by the Valve Manufacturer / Applicant.

1.5 Ministry of Health is prepared to consider comprehensive test reports for any equivalent operational tests that the Valve Manufacturer / Applicant may have already had carried out over and including the extremes in the range of operating conditions stated in the Valve Manufacturers' published instructions, with such tests being carried out either by or under the direct supervision and control of an Independent Testing Body accredited with a Testing Authority endorsed or recognised by NATA.

1.6 The Valve Manufacturer should become familiar with all the requirements of this specification before preparing the test specification. Particular attention is drawn to the documentation procedures outlined in this specification.

1.7 The requirements of this document shall apply unless amended and advised beforehand in writing by Ministry of Health.

1.8 Ministry of Health would welcome and appreciate receiving any comments which would help enhance the application and use of this specification to help ensure the safety of the end user of a thermostatic mixing valve.

## 2. DEFINITION OF TERMS

For the purposes of this specification, the following definitions shall apply unless otherwise stated in the text:-

- 2.1 Thermostatic Mixing Valve – a standard commercial product that is suitable for its intended purpose and can automatically mix hot water and cold water together to form warm water and to also control the temperature of the warm water
- 2.2 Valve Manufacturer – means the firm manufacturing the thermostatic mixing valve or the authorised agent of such manufacturer.
- 2.3 Manufacturers' Test Specification – means the specification developed by the Valve Manufacturer after consultation with the Independent Testing Body.
- 2.4 Independent Testing Body – means the independent testing laboratory or organisation who will either supervise or conduct the tests (as applicable) and record the results all in accordance with the test specification. Such independent testing body shall be accredited with a national testing authority. The testing body shall be accredited to an existing internationally recognised thermostatic mixing valve standard such as AS 4032, ASSE1016, NHS D08 and NF D18-203.
- 2.5 Testing Authority – means a national association or government body responsible for administering an accreditation system and determining the conditions to be complied with by testing laboratories, particularly the standards in regard to staff, equipment and laboratory practice all as indicated in standards.
- 2.6 Endorsed – means stamped and signed by the applicant.
- 2.7 Test Engineer – means the authorised representative of the Valve Manufacturer.
- 2.8 Observer – means the authorised representative of the Independent Testing Body.
- 2.9 Independent Certifier – the person certifying the documentation to accompany the application for approval.
- 2.10 Thermal Shut Off – a term used to describe the function of a thermostatic mixing valve in promptly and automatically either shutting off or significantly reducing the flow of water, should either the cold or the hot water supply to the mixing valve be inadequate or be interrupted. The objective of this test is to avoid the risk of scalding occurring to the end user.
- 2.11 Applicant - means the person / organisation applying for the approval of the thermostatic mixing valve.
- 2.12 Warm Water - for the purpose of these tests means potable water within the temperature of 40.5 to 43.5 °C as measured at an outlet fixture.
- 2.12 Shall - is to be understood to be mandatory or compulsory.

### 3. PROCEDURAL MATTERS

3.1 Besides any other procedural matters that may be required by the Independent Testing Body, the following requirements shall also apply.

3.2 Independent Testing Body shall be selected by the Valve Manufacturer / Applicant after consultation with the Testing Authority. The manufacturers' test specification shall be prepared by the Valve Manufacturer / Applicant in consultation with the Independent Testing Body.

3.3 Tests covered by this specification, will at the expense and option of the Valve Manufacturer / Applicant, be either carried out at the works of the Valve Manufacturer / Applicant or at a location agreed with the independent testing body and in each case under the direct control and supervision of the Observer. Each test shall be carried out by the Test Engineer and be observed and witnessed by the Observer. The particulars of the mixing valve being tested and the results of all tests shall be entered in the respective log sheet by the Observer. Each log sheet shall be signed by the Test Engineer and also by the Observer. The original of the completed log sheets shall be kept by the Observer and a reasonable number of certified copies shall be made available to the Valve Manufacturer / Applicant.

3.4 The Test Engineer and the Observer will need to become familiar with all the procedures and requirements associated with these tests before the tests commence.

3.5 Pressure measurements shall be made to an accuracy of  $\pm 1\%$  of reading. Temperature measurements shall be made to an accuracy of  $\pm 0.1^\circ\text{C}$ . Flow measurements shall be made to an accuracy of  $\pm 5\%$  of reading. Any known errors greater than the required accuracy of reading, shall be taken into account in the measurements.

3.6 All testing equipment and gauges shall be calibrated in accordance with accepted national standards prior to the tests being carried out and the certificates of compliance shall be made available for inspection and endorsement by the Test Engineer and the Observer. Each certificate of compliance and calibration report shall be endorsed by the Test Engineer and the Observer.

3.7 The actual number of samples of each model, type and size of thermostatic mixing valve to be tested shall be proposed in writing by the Valve Manufacturer / Applicant. The thermostatic mixing valve(s) for testing shall be sampled at random by the Observer from bulk stock held by the Valve Manufacturer / Applicant or another source as agreed by the Observer. The method of sampling used shall be stated in the Report prepared by the Observer. Each sample selected shall be permanently marked by the Observer with a unique reference number which shall be entered on each log sheet detailing the test results for that particular thermostatic mixing valve.

3.8 Any special or qualifying comments on the conduct of the tests, the test results or observations made, shall be included in the Report prepared by the Observer. A copy of that Report shall be supplied to the Valve Manufacturer for transmittal to the Independent Certifier for later transfer to Ministry of Health.

3.9 All test specifications, log sheets, test reports, drawings and all other accompanying documents intended to be supplied to the Independent Certifier for later transfer to Ministry of Health, shall at least be in English and S.I. Units of measurement.

3.10 It is most important that isolation valves shut off tight and that all valves be sized to enable Test Specification and Manufacturer's requirements to be met.

3.11 After all the tests have been completed, a copy of each of the following documents shall be submitted by the Valve Manufacturer / Applicant to Ministry of Health:

- (i) Test Report prepared by the Observer, and
- (ii) Completed Log Sheets for all tests carried out, and
- (iii) Detail workshop drawings for the Operational Test Rig and
- (iv) Test Certificates (for all test equipment and gauges) endorsed by the Test Engineer and Observer or alternatively a list of such endorsed certificates shall be included in the Test Report; and
- (v) Overall submissions certifying all tests per this document; and
- (vi) Print out from the data logger with suitable notation for all tests.



#### 4. TESTING PARAMETERS

##### 4.1 General

4.1.1 Unless otherwise stated in this document, all test conditions shall be constant throughout each test.

4.1.2 The Valve Manufacturer's detailed test specification shall fully describe all test procedures and techniques to be used throughout the various tests.

##### 4.2 Inlet Supply Temperatures

The tests shall be carried out using hot (heated) water and cold water, whose temperatures shall be sensed at the supply lines to the thermostatic mixing valve as shown in the respective drawings. The maximum temperature shall be not more than 2°C below the maximum temperature as allowed and the minimum temperature shall be not more than 2°C above the minimum temperature as indicated in Section 6 of this Specification.

##### 4.3 Inlet Supply Pressures (Dynamic)

The tests shall be carried out using the inlet water supply pressures (dynamic, flow, maintained or operating) as indicated in Section 6 of this Specification. These pressures shall be sensed at the supply lines to the mixing valve as shown in the test rig. The pressures of the cold water and the hot water shall be equal and be maintained within  $\pm 10\%$  of the pressures as indicated in Section 6 of this Specification.

## 5. OPERATIONAL TESTING

### 5.1 General

This series of tests is mainly intended to simulate an actual patient showering situation in a non domestic building involving an unforeseen breakdown or malfunction of the cold water supply system and the delay in attendant staff recognising the problem and obtaining technical assistance from maintenance / service staff.

### 5.2 Testing Apparatus

5.2.1 All thermostatic mixing valves required to be tested shall be tested on a purpose built test rig (ie as specified in AS 4032 / 1998) having the capability to at least meet and measure all the requirements of this document.

5.2.2 Test instruments, plant and equipment complying with other national standards may be used as an alternative.

5.2.3 The nominal size of the pipe shall at least correspond with the nominal size of the warm water outlet connection on the thermostatic mixing valve. For all tests, the maximum velocity of the warm water in the pipe shall not exceed 1.2 metres per second except where this would entail the use of a pipe of nominal size greater than 50 mm, the maximum velocity may be increased to 3 metres per second.

5.2.4 For testing under conditions of low inlet pressure (hot and cold water), a draw off tap of same nominal size as the outlet connection of the thermostatic mixing valve shall be fitted at the warm water outlet.

5.2.5 For testing under conditions of high inlet pressure (hot and cold water), a lever (quick) acting type ball valve shall be fitted at the warm water outlet in parallel with the draw off tap. The outlet of this valve may be restricted by means of a stop valve or other suitable flow controlling valve.

5.2.6 The Valve Manufacturer / Applicant shall provide a detailed drawing of the complete test installation incorporating the test rig and specifying all relevant particulars (including reference to applicable national standards) for all plant, equipment and test instruments associated with the test. The drawing shall be in sufficient full detail including a complete description of all items to enable the test rig to be reproduced at another site if it is considered necessary to have any results verified at a later date. The drawing shall outline the method of producing and supplying the heated water and also the chilled water. A copy of such drawing (previously endorsed by the Valve Manufacturer / Applicant) shall after subsequent verification and endorsement by the Observer, accompany the test results to be supplied by the Valve Manufacturer.

5.2.7 Installation, commissioning and operation of the thermostatic mixing valve under test shall comply with the Valve Manufacturer's published installation, commissioning and operating instructions. A copy of such instructions shall be supplied by the Valve Manufacturer to the Observer prior to the tests commencing.

5.2.8 The flowrate of the discharge or warm water shall be measured by the use of a calibrated container (alternatively a container and suitable weighing scale) and a stop watch. Alternatively, flow meters may be used on both hot and cold supplies such that they can be summed in order to provide the mix flow rate.

5.2.9 All temperatures and variations in temperature of the warm water at the outlet fitting shall be measured by means of a precision style digital (electronic type of quick responding, temperature measuring instruments capable of indicating in tenths of 1°C and also using relevant temperature sensing probes as recommended by the supplier of the instruments. The instrument shall be of the type capable of displaying the maximum temperature. Details of the make, model and serial number of all the instruments used during the tests shall be included in the Report prepared by the Observer. The probes shall be fixed in position (not hand held) in contact with the water outlet and shall sense the temperature of the water stream (not the spray) and any drips. The instrument shall be checked by the Observer for correct temperature display both immediately before and after each series of tests.

5.2.10 As an additional aid and for cross reference, a suitable digital type automatic temperature recorder shall be coupled to the same probe as the digital thermometer as it will then receive the same signal.

### 5.3 Pre-selected Temperature for Warm Water Supply

5.3.1 All thermostatic mixing valves shall be made operational within the pre-selected temperature range for warm water as detailed in Section 6 of this Specification.

5.3.2 The temperature of the warm water produced shall be sensed at the outlet fixture.

### 5.4 Warm Water Flow

5.4.1 With adequate quantities of both hot and cold water available for supply to the thermostatic mixing valve within the test conditions set out in Section 6 of this Specification, the thermostatic mixing valve shall be put into operation to produce warm water at the outlet fixture

5.4.2 Whenever the thermostatic mixing valve is made operational, the initial flow of water produced at the outlet shall be:

- warm water or of cold water followed quickly by warm water; or alternatively
- only warm water shall flow.

Hot water **shall not** be supplied at the outlet fitting.

5.4.3 By means of the outlet control, the flowrate of the warm water shall be adjusted to provide the minimum recommended flowrate of warm water that can be produced by the mixing valve for acceptable temperature control as stated in the Valve Manufacturer's published literature. Any necessary fine adjustments shall be made to the mixing valve until a temperature of between 40.5 to 43.5°C is provided at the outlet. This temperature condition is necessary because thermostatic mixing valves generally operate with warm water in the upper half of the required temperature range. The temperature locking device or lock shield cover (provided by the Valve Manufacturer) shall be adjusted to ensure that the above pre-set warm water temperature cannot be altered during the tests.

5.4.4 Warm water shall be permitted to flow for a period of at least five minutes and the following conditions shall then be measured and recorded:

- (i) Pressure of hot water;
- (ii) Flowrate of hot water (when flow rate meter is fitted);
- (iii) Pressure of cold water ;
- (iv) Flowrate of cold water (when flow rate meter is fitted);
- (v) Pressure of warm water;
- (vi) Temperature of warm water ;
- (vii) Check flow rate of warm water;
- (viii) Also temperatures of hot and cold water where the flow rates of hot and cold water are to be calculated rather than measured..

## 5.5 Thermal Shut Off (Cold Water Shut-Off)

5.5.1 The isolating valves in the cold water pressure measuring line and the warm water pressure measuring line shall be closed.

5.5.2 The valve in the cold water supply line to the mixing valve shall be quickly closed (shut) so as to completely stop or isolate the flow of cold water. During or as a result of this action it shall cause the mixing valve to rapidly respond and provide a quick, thermal shut off operation. From the time of complete shut-off of the cold water valve to the cessation or termination of significant reduction in flow (not any ultimate termination in flow) of water discharged from the warm water outlet, the elapsed time shall be measured. The thermal shut off time should not exceed four seconds. Any water subsequently produced by the mixing valve shall have a temperature measured at the outlet, NOT exceeding the maximum permissible upper limit (46°C). The following particulars shall be measured and recorded in the log sheet:

- (i) Thermal Shut Off (reaction) time, and
- (ii) The maximum temperature of the discharge water during this period.

5.5.3 With the ball valve in the cold water supply line to the mixing valve, kept closed (shut) during this phase of the test, the temperature of the discharge water shall be kept under constant visual observation for a period of at least thirty (30) minutes to ensure that the temperature of any water still being emitted from the outlet shall have a temperature NOT exceeding 46°C. At intervals of approximately five minutes, the actual temperature of any water still being emitted from the outlet during this period shall be recorded. The maximum accumulated flow of any leakage water including drips during this particular test shall not exceed 20 litres. These observations shall be recorded in the log sheets.

#### 5.6 Thermal Adjustment After Thermal Shut Off Test

5.6.1 At the conclusion of the test detailed in section 5.5, the ball valve in the cold water supply line to the mixing valve shall be opened quickly and fully and the following conditions measured and recorded in the log sheets:

- (i) the elapsed time taken for the mixing valve to be reactivated and to produce stable warm water at the outlet. The elapsed time should preferably not exceed ten seconds. During this time, the temperature of the blended or discharge water shall NOT exceed 46°C.
- (ii) The warm water subsequently produced at the outlet shall be within 40.5°C to 43.5°C.

#### 5.7 Cold Shock Test (Hot Water Shut-Off)

5.7.1 The isolating valve in the cold water pressure measuring line shall be opened and the isolating valve in the hot water pressure measuring shall be closed. The ball valve in the hot water supply line to the mixing valve shall be quickly closed so as to completely stop the flow of hot water. During or as a result of this action, it should cause the mixing valve to rapidly respond and provide either a complete cessation of output or a significant reduction of output within a reaction time of four seconds. The reaction time shall be measured from the time of complete shut-off of the hot water valve to the complete cessation or significant reduction of output (not any ultimate termination in flow) of water discharged from the warm water outlet.

5.7.2 The following particulars shall be measured and recorded in the log sheet: -

- (i) The reaction time; and
- (ii) The accumulated flow of water emitted from the mixing valve during the reaction time or thirty seconds whichever is the lesser time.

5.7.3 At the end of this test, the ball valve in the hot water supply line shall be fully opened.

## 5.8 Stability of Operation of Mixing Valve

5.8.1 The warm water outlet shall be opened fully and the warm water temperature shall be observed until it has stabilised.

5.8.2 The magnitude and duration of any excursions of the warm water outside the permitted temperature range of 40.5<sup>o</sup>C to 43.5<sup>o</sup>C, shall be noted and also the time after the opening of the outlet at which these excursions occur. When the warm water temperature has stabilised, the following measurements shall be recorded: -

- (i) The inlet pressure of the hot water;
- (ii) The flowrate of hot water;
- (iii) The inlet pressure of the cold water;
- (iv) The flowrate of cold water;
- (v) The pressure of the warm water;
- (vi) The temperature of the warm water;
- (vii) The flowrate of warm water;
- (viii) Also temperatures of hot and cold water where the flowrates of hot and cold water are to be calculated rather than measured; and
- (ix) The time for the warm water outlet to reach the prescribed operating temperature in <sup>o</sup>C.

6. Operational Test Data

**Schedule of Basic Conditions for Operational Test on Mixing Valve**

Manufacturer's Rating as per Published Operating Instructions to Produce Warm Water at Outlet fitting (See Notes below)

	Temp. of Hot Water at Inlet to Mixing Valve (°C)		Temp. of Cold Water at Inlet to Mixing Valve (°C)		Dynamic Press of Cold Water and also Hot Water at Inlet to Mixing Valve (kPa)			Warm Water
	Min.	Max.	Min.	Max.	Min.	Max.		
1		x		X		X	Temp	40.5 to 43.5°C measured at outlet fixture To be rated minimum as stated in Valve Manufacturers' published literature for the relevant mixing valve To be measured as shown in the test rig.
2		X		X	X		Flowrate	
3		X	X			X	Dynamic Pressure	
4		X	X		X			
5	X				X		X	
6	X				X	X		
7	X		X				X	
8	X		X		X			

- NOTES:
- (i) Unless otherwise stated in this document, all test conditions shall be constant throughout each test.
  - (ii) As an alternative, inlet water temperatures just outside the extreme range recommended by the Valve Manufacturer in published Literature, may be used at the option of the Valve Manufacturer.
  - (iii) Literature, may be used at the option of the Valve Manufacturer.
  - (iv) Other test conditions may also be used at the option of the valve manufacturer.
  - (v) The test conditions scheduled above are subject to any overriding qualifications stated in the valve manufacturers' published Installation, commissioning and operating instructions.





TEST RESULTS FOR (BRAND NAME)  
THERMOSTATIC MIXING VALVE IN  
ACCORDANCE WITH THE ATTACHED MANUFACTURERS TEST SPECIFICATION

- (a) Business Name of Valve Manufacturer or his Agent: .....  
.....  
Registered Office Address of Valve Manufacturer: .....  
.....  
Name of Test Engineer: .....  
.....
- (b) Business Name of Independent Testing Body: .....  
.....  
Name of Observer: .....  
.....
- (c) Business Name and Registered Office Address of the National Testing Authority with which the Testing Body is currently accredited:  
.....
- (d) Address of Location Where the Tests Were Carried Out:  
.....
- (e) Reference Designation and Date of Publication for Manufacturers' Test Specification Employed for the Purposes of these Tests:  
.....
- (f) Brand Name of Mixing Valve: .....  
.....
- (g) Valve Model/Type No. for Valve Tested: .....  
.....
- (h) Valve Sample No.: .....
- (i) List of Accompanying Log Sheets and All Other Relevant Documents:  
.....

**(Name of Valve Manufacturer)  
LOG SHEET FOR OPERATIONAL TESTS  
ON (BRAND NAME) OF MIXING VALVE**

**Valve Designation: (Model NO./Type/Size)**      **Valve Sample No: .....**      **Date of Tests: .....**

Location of Tests: (Business Name) and (Address)      Valve Manufacturer's Test Spec. No.: (Reference NO.) and (Date)  
Test Rig Reference: (Drawing No. or Other Designation)

For method of testing, refer to Valve Manufacturers' test spec.

Operational Test Series No.	Basic Operational Test Conditions		Pre-set Warm Water Conditions		Conditions at end of five minutes							
	Temp. of Hot Water	Temp. of Cold Water	Press. of Cold and also Hot Water	Min. Flowrate	Temp. of Warm Water	Press. Of Hot Water	Flowrate of Hot Water	Press. Of Cold Water	Flowrate of Cold Water	Press. Of Warm Water	Temp. of Warm Water	
	(°C)	(°C)	(kPa)	(kPa)	(L/min)	(°C)	(kPa)	(L/min)	(kPa)	(L/min)	(kPa)	(°C)
1												
2												
3												
4												
5												
6												
7												
8												
Acceptance Criteria	-	-	-	-	(as rated)	40.5 to 43.5°C	-	-	-	-	-	40.5 to 43.5°C

All test results shall be observed and recorded by the Observer.

The completed log sheet shall be kept by the Observer

**Test Engineer:** (Signature and name) for and on behalf of  
(Name of Valve Manufacturer)

**Test Observer:** (Signature and name) for and on behalf of  
(Name of independent test body)

**(Name of Valve Manufacturer)  
LOG SHEET FOR OPERATIONAL TESTS  
ON (BRAND NAME) OF MIXING VALVE**

**Valve Designation: (Model NO./Type/Size)      Valve Sample No: .....      Date of Tests: .....**

Location of Tests: (Business Name) and (Address)      Valve Manufacturer's Test Spec. No.: (Reference NO.) and (Date)  
Test Rig Reference: (Drawing No.)

For method of testing, refer to Valve Manufacturers' test specification

Operational Test Series No. Repeated	Thermal Shut off (Cold Water Shut Off)	Cold water shut off (Continued on next sheet)									
		5 mins later		10 mins later		15 mins later		20 mins later		25 mins later	
		Thermal Shut off Time (secs)	Maximum Warm Water Temp. (°C)	Outlet Temp. (°C)	Accum. Outlet Flow (litres)	Outlet Temp. (°C)	Accum. Outlet Flow (litres)	Outlet Temp. (°C)	Accum. Outlet Flow (litres)	Outlet Temp. (°C)	Accum. Outlet Flow (litres)
1											
2											
3											
4											
5											
6											
7											
8											
Acceptance Criteria	46°C max.	46°C max.	-	46°C max.	-	46°C max.	-	46°C max.	-	46°C max.	-

**All test results shall be observed and recorded by the Observer.**

The completed log sheet shall be kept by the Observer

**Test Engineer:** (Signature and name) for and on behalf of  
(Name of Valve Manufacturer)

**Test Observer:** (Signature and name) for and on behalf of  
(Name of independent test body)

(Name of Valve Manufacturer)  
LOG SHEET FOR OPERATIONAL TESTS  
ON (BRAND NAME) OF MIXING VALVE

Valve Designation: (Model NO./Type/Size)      Valve Sample No: .....      Date of Tests: .....

Location of Tests: (Business Name) and (Address)      Valve Manufacturer's Test Spec. No.: (Reference NO.) and (Date)  
Test Rig Reference: (Drawing No.)

For method of testing, refer to Valve Manufacturers' test specification

Operational Test Series No. Repeated	Cold Water Shut Off (Continued)		Thermal Adjustment After Thermal shut off Test		Cold Shock Test (Hot Water Shut Off)	
	30 mins. later		Recovery Time (secs)	Max. Temp. (°C)	Reaction Time (secs)	Accum. Flow (litres)
Outlet Temp. (°C)	Accum. Outlet Flow (°C)	Outlet Temp. (°C)				
1						
2						
3						
4						
5						
6						
7						
8						
Acceptance Criteria	46°C max.	20 litres max.		46°C max.		

All test results shall be observed and recorded by the Observer.

The completed log sheet shall be kept by the Observer

Test Engineer: (Signature and name) for and on behalf of  
(Name of Valve Manufacturer)

Test Observer: (Signature and name) for and on behalf of  
(Name of independent test body.)

**FORM 1**

**MINISTRY OF HEALTH**

**APPLICATION FOR APPROVAL OF A  
THERMOSTATIC MIXING VALVE FOR ABLUTION PURPOSES  
(Public Health Regulation, 2012 – Cl 6 (4))**

\*\*\*\*\*

Company Name: .....

Company's Representative (Name) .....

Company's Representative (Position):.....

Company Address:.....

.....Post Code:.....

Telephone No: ..... Facsimile No:.....

Application for Approval of .....

.....TMV

Model No. ....

*The product being offered meets the NSW Ministry of Health's requirements for the approval of warm water supply systems including thermostatic mixing valves.*

Signature of the Company Representative:.....

Date: .....

**Completed application to be sent to :**  
**The Ministry of Health**  
**PO Box 201**  
**WAGGA WAGGA, NSW, 2650**

=====  
**For Official use only**

Date Received:.....

Fee Received:..... Receipt No.....

**FORM 2**

**MINISTRY OF HEALTH**

**Certificate of Compliance**

**APPLICATION FOR APPROVAL OF A  
THERMOSTATIC MIXING VALVE FOR ABLUTION PURPOSES  
(Public Health Regulation, 2012 – CI 6 (4))**

\*\*\*\*\*

I .....<sup>1</sup> Hereby certify that I have examined the  
application for approval of the .....  
.....<sup>2</sup>

which is submitted to the Ministry of Health for approval as a Warm Water System in terms  
of the Public Health Regulation.

The application has been submitted by .....<sup>3</sup>  
of .....

The application has been examined and I certify that the application meets **all** of the requirements  
as detailed 1 – 3 inclusive in the GENERAL section as listed on page ii of this Ministry of Health  
Specification for the Operational Testing of Thermostatic Mixing Valves

Name: .....

For and on behalf of either:

Australian Certification Services

or

Quality Assurance Services (QAS)

<sup>1</sup> Name of Independent Certifier  
<sup>2</sup> Name/ Brand / Model of Thermostatic Mixing Valve  
<sup>3</sup> Name of manufacturer / applicant of Thermostatic Mixing Valve