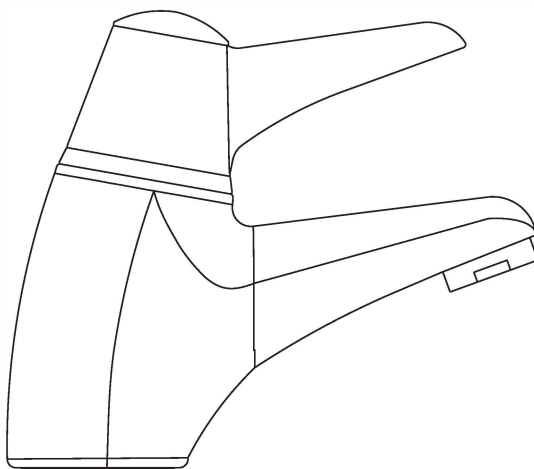




Thermostatic Mixing Valve
SOL003
Sequential Mono Basin Mixer
PRODUCT MANUAL



IMPORTANT

Installer: *This manual is property of the customer and must be retained with the product for maintenance and operational purposes*

INTRODUCTION

Thermostatic Mixing Valves (SOL003) are specified to meet the N.H.S. Estate Model engineering Specifications-D08 of safety, comfort and economy as demanded by today's users. All Methven products are designed, manufactured and supported in accordance with accredited BS EN ISO 9001:2000 Quality Systems.

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

The following abbreviated designation codes are used throughout this booklet. Detailed descriptions are given below:

HP High pressure
LP Low pressure
W Wash basin

SOL003 FOR USE IN THE FOLLOWING DESIGNATIONS

CODE	OPERATING PRESSURE	APPLICATION
HP-W	HIGH PRESSURE	WASH BASIN
LP-WE	LOW PRESSURE	WASH BASIN

DESCRIPTION

The SOL003 is a lever operated sequential mixing valve designed for single-hole basins. It uses proven thermostatic technology for temperature control. A single lever provides sequential operation from OFF through COLD and WARM to a maximum blend temperature preset at 41 °C, which can be adjusted if required.

The supply connections are via flexible inlet tails and check valve assemblies that incorporate check valves and filter.

SAFETY: WARNINGS

The SOL003 is precision-engineered and should give continued superior and safe performance, provided:

1. They are installed, commissioned, operated and maintained in accordance with the recommendations given in this manual.
2. Periodic attention is given as necessary to maintain the product in good functional order.

The function of a Thermostatic Mixing Valve is to deliver water consistently at a safe temperature. In keeping with every other mechanism it cannot be considered as being functionally infallible and as such cannot totally replace the vigilance of nursing/supervisory staff where that is necessary. Provided it is installed, commissioned, operated and maintained within these recommendations, the risk of failure, if not eliminated, is reduced to the minimum achievable.

SPECIFICATION

Important Points:

1. The installation, commissioning and maintenance of this product must be carried out in accordance with instructions given in this Manual, and must be conducted by designated, qualified and competent personnel.
2. Installation must comply with all local/National Water Supply Authority Regulations/Bye-laws, and Building and Plumbing Regulations.
3. Methven products are precision-engineered and should give continued superior and safe performance, provided:
 - they are installed, commissioned, operated and maintained in accordance with these recommendations; and
 - periodic attention is given as necessary to maintain the product in good functional order.
4. **Warning:** continued use of this product in conditions outside the limits listed in this section can a) severely affect the performance, b) reduce the effective service life and c) can present potential risk to users.

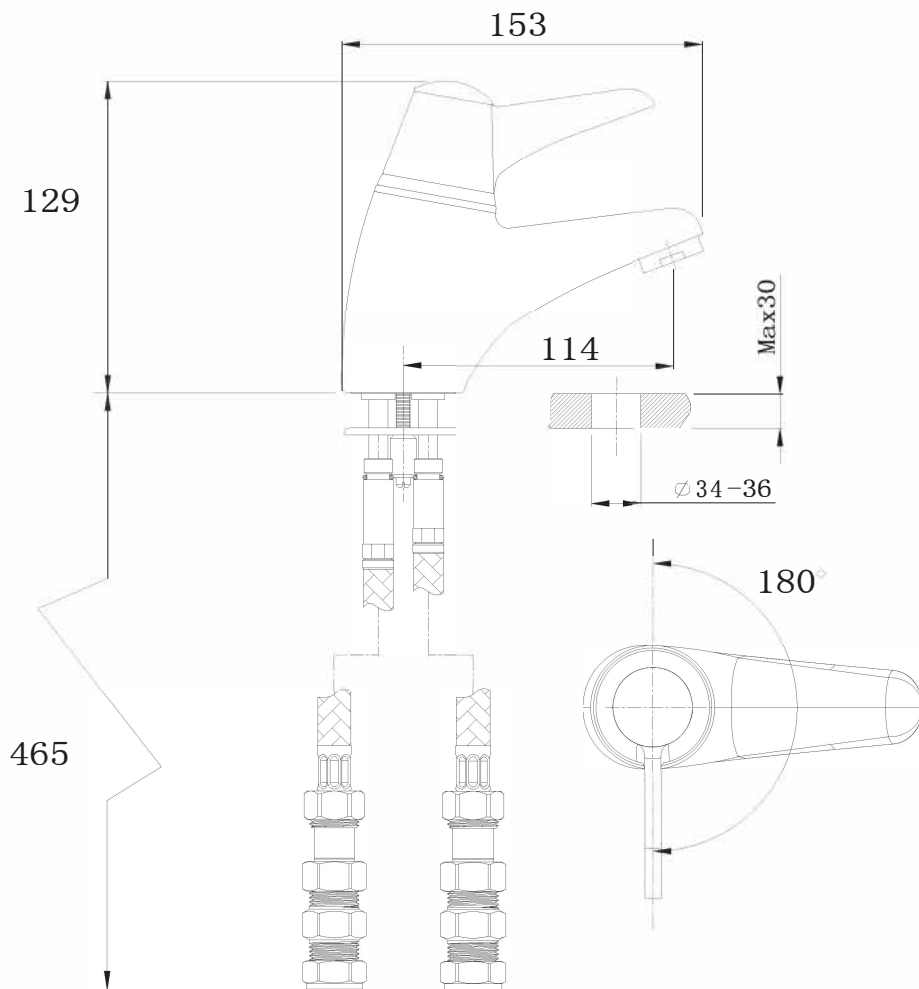
Table 1: Conditions for normal use

Operating pressure range	High pressure	Low pressure
Maximum static pressure-bar	10	10
Flow pressure, hot and cold-bar	0.5 to 5.0	0.1 to 1.0
Hot supply temperature-°C	55-65	55-65
Cold supply temperature-°C	5 to 20	5 to 20

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

CONNECTIONS

Inlet supply connections are via the 1/2" BSP internal threads in the check valve assemblies, connected to the ends of flexible inlet tails. The reversible insert washers allow for connection to either flat-faced 1/2" BSP external or 15 mm compression unions. The hot supply connection is through the flexible inlet tail nearest the outlet of the Thermostatic Mixing Valve and identified with a red mark.



15mm compression unions or ½" BSP male available

INSTALLATION

General

Installation must be carried out in accordance with these instructions and must be conducted by designated, qualified and competent personnel.

1. Before commencing ensure that the installation conditions comply with the information given in the Specification section.

2. Care must be taken during installation to prevent any risk of damage.
3. The hole in the basin must be a minimum of 34 mm up to a maximum of 36 mm diameter, with a basin thickness of 30 mm maximum.
4. The Thermostatic Mixing Valve should be positioned for easy access during use and maintenance. All routine maintenance procedures can be conducted with the Thermostatic Mixing Valve Body in place.
5. Conveniently situated isolating valves must be provided for maintenance.
6. Pipework dead-legs should be kept to a minimum.
7. Supply pipework layout should be arranged to minimize the effect of hydraulic restriction or other outlet usage upon the dynamic pressures at the Thermostatic Mixing Valve Inlets. Recommended minimum supply line pipe diameter is 1/2" or 15 mm.
8. Inlet threaded joint connections should be made with PTFE tape or liquid sealant. Do not use oil-based, non-setting jointing compounds.
9. To eliminate pipe debris it is essential that supply pipes are thoroughly flushed through before connection to the Thermostatic Mixing Valve.

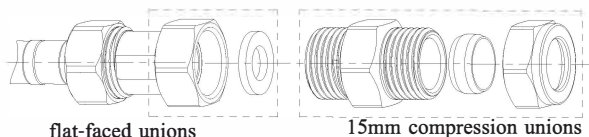
Procedure (Refer to Figure 1)

1. Screw the fixing studs fully into the Thermostatic Mixing Valve body.
2. Place the 'O' seal in the groove in the basin of the Thermostatic Mixing Valve body and place the Thermostatic Mixing Valve into the hole in the basin.
3. Place the flexible inlet tails through the larger holes in the backplate.
4. Screw the flexible inlet tails into the Thermostatic Mixing Valve from under the basin and hand tighten.
5. Pull the backplate over the fixing studs.
6. Make sure that the Thermostatic Mixing Valve is in the correct position and screw the fixing nuts onto the fixing studs. Tighten the fixing nuts.
7. Select the correct orientation of the insert washers. This is dependant on the type of unions used to terminate the supply pipework.

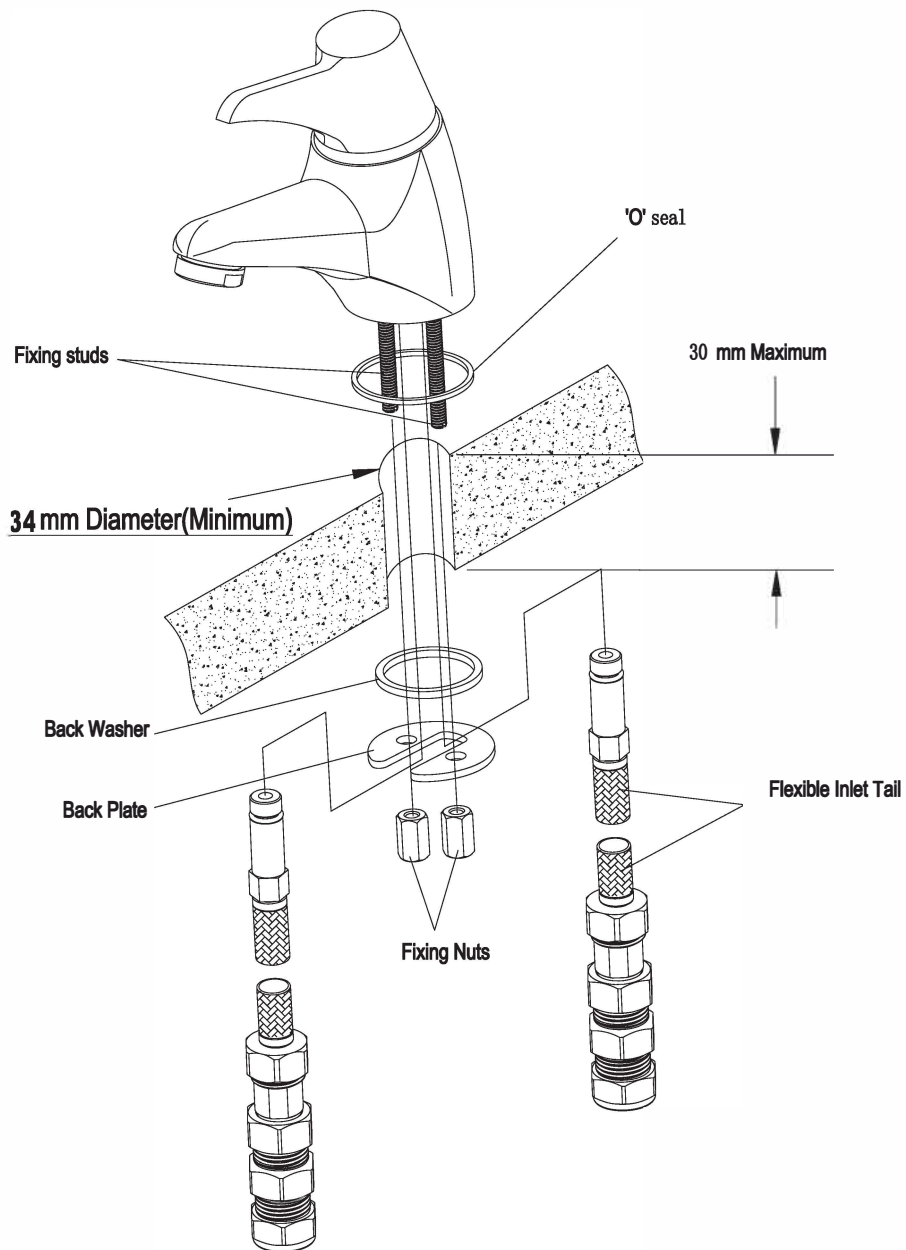
-For flat-faced unions remove the 'O' seals and place the insert washers into the checkvalve assemblies small end first.

-For 15 mm compression unions place the insert washers, complete with 'O' Seals, into the checkvalve assemblies large end first.

Figure 1:



8. Connect the check valve assemblies complete with insert washers to the supply pipework. Use a suitable 22 mm A/F spanner/adjustable to tighten the check valve assemblies.
9. Locate the fibre washers inside the nuts on the flexible inlet tails and screw the flexible inlet tails on to the check valve assemblies. The flexible inlet tail nearest the outlet of the Thermostatic Mixing Valve must be connected to the hot supply. Use a suitable 24 mm A/F spanner/adjustable to tighten the flexible inlet tails.
10. Restore the water supplies and check all connections are watertight. Refer to commissioning.



COMMISSIONING

Commissioning must be carried out in accordance with these instructions, and must be conducted by designated, qualified and competent personnel.

Maximum Temperature

The maximum blend temperature obtainable by the user should be limited to prevent accidental selection of a temperature that is too hot.

The SOL003 is fully performance tested, and the maximum temperature is preset to 41°C under ideal installation conditions at the factory. Site conditions and personal preference may dictate that the maximum temperature has to be reset following installation.

Adjust the mixed water temperature in accordance with table 2, the method of adjustment is covered in this COMMISSIONING section.

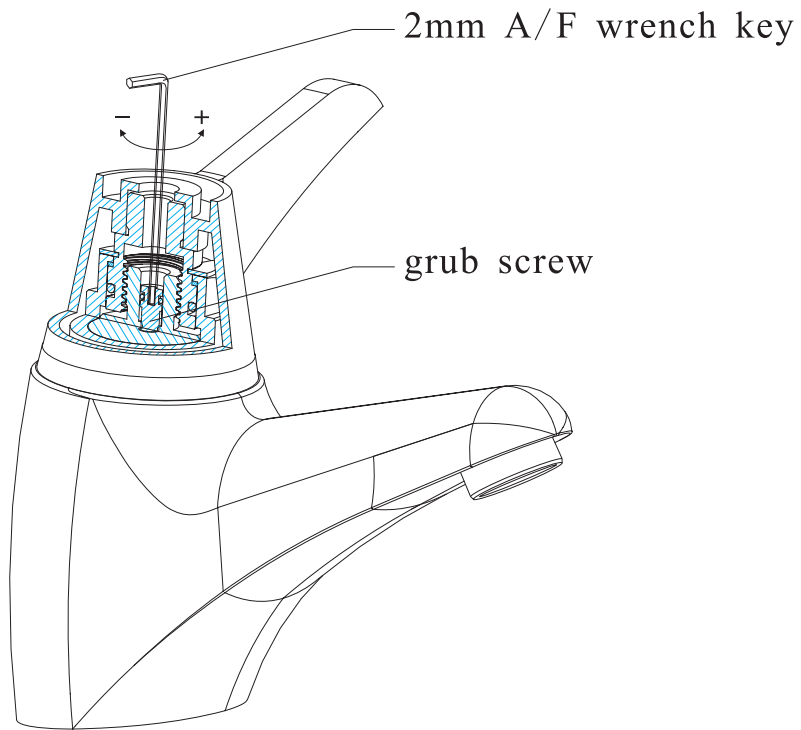
Table 2: Mixed Water Temperature

Application	Abbreviated Designation	Mixed water temperature °C
Washbasin	-HP-W, -LP-WE	41 max

Maximum Temperature Setting

Make sure that an adequate supply of hot water is available at the hot inlet of the Thermostatic Mixing Valve.

The minimum temperature of the hot water must be at least 10°C above the desired blend. However, during resetting this should be close to the typical storage maximum to offset the possibility of any blend shift due to fluctuating supply temperatures. Make sure that both inlet isolating valve are fully open. Temperatures should always be measured using a thermometer with proven accuracy.



1. Use the screwdriver to loosen the screw in the lever.
2. Move the lever to full hot, note its position and remove the lever.
3. Let the water run until the temperature stabilizes.
4. Insert the 2mm A/F hexagonal wrench key (supplied) into the grub screw in the centre of the head assembly (refer to illustration).
5. Rotate the grub screw as necessary until the required maximum blend temperature is achieved. Rotate the grub screw anticlockwise to increase the temperature or clockwise to decrease the temperature (refer to illustration).
6. Refit the lever in its original position. If required the lever can be fitted in any position that allows unobstructed movement of the lever over its operating range.
7. Move the lever to the off position.
8. Use the screwdriver to tighten the screw in the lever.

Method for Commissioning Thermostatic Mixing Valves

Purpose

Since the installed supply conditions are likely to be different from those applied in the laboratory tests it is appropriate, at commissioning, to carry out some simple checks and tests on each mixing valve to provide a performance reference point for future in-service tests.

Procedure

Check that:

1. The designation of the thermostatic mixing valve matches the intended application
2. The supply pressures are within the range of operating pressures for the designation of the valve
3. The supply temperatures are within the range permitted for the valve and by guidance information on the prevention of Legionella etc.

Adjust the temperature of the mixed water in accordance with the manufacturer's instructions and the requirement of the application. Then carry out the following sequence:

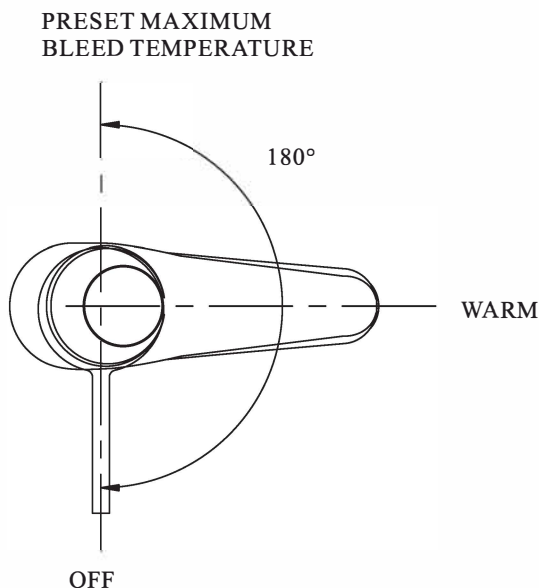
1. Record the temperature of the hot and cold water supplies.
2. Record the temperature of the mixed water at the largest draw-off flow rate.
3. Record the temperature of the mixed water at a smaller draw-off flow rate, which shall be measured.
4. Isolate the cold water supply to the mixing valve and monitor the mixed water temperature.
5. Record the maximum temperature achieved as a result of (4) and the final stabilised temperature. **NOTE: The final stabilised mixed water temperature should not exceed the values in Table 17**
6. Record the equipment, thermometer etc. used for the measurements.

Table 17: Guide to maximum stabilised temperatures recorded during site tests

Application	Mixed water temperature °C
Bidet	38
Shower	41
Washbasin	41
Bath (44°C fill)	44
Bath (46°C fill)	46

OPERATION

The SOL003 has a single lever that provides sequential operation from OFF through COLD and WARM to a preset maximum blend temperature. The maximum temperature is preset to 41°C under ideal installation conditions at the factory. To change this setting refer to the information given the commissioning section.



Principle of Operation

IN-SERVICE TESTING

The purpose of in-service testing is to regularly monitor the thermal performance of the Thermostatic Mixing Valve. Deterioration in performance can indicate the need for service work to be carried out on the system.

If the authority concerned does not have a planned test and maintenance schedule then the suggestions below should form the basis of a new system.

At intervals of 6-8 weeks and 12-15 weeks after commissioning:-

1. Check supply parameters are still within the expected values. If not check system for faults.

2. Carry out Commissioning procedures using the same test equipment. If the mixed water temperature has changed a significant amount (by more than 1°C) check to ensure in line filters are clean, that the check valves are working and all isolation valves are fully open. If no fault can be found check and record the mixed water temperatures and readjust mixed water temperature to the values in table 2. Complete the commissioning procedure. If the mixed water temperature exceeds the values of the maximum recorded temperature by more than 2°C the need for service work is indicated.

Depending on the results of these two tests the following should be adopted:

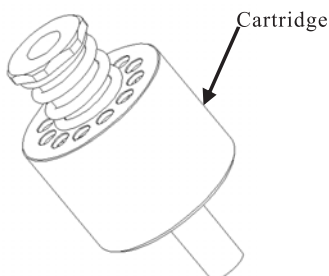
1. If a small change (e.g. 1°C to 2°C) occurs in one of these tests or there is no significant change (e.g. 1°C maximum) then the next in service test should be 24 to 28 weeks after commissioning.
2. If small changes occur in both test or a larger change occurs in one test (exceeding 2°C) then the next in service test should be carried out 18 to 21 weeks after commissioning.

These results can then be used to set a service interval which tests have shown can be used with no more than a small change in mixed water temperature. This method of determining service intervals is used to take into account various in service conditions (i.e. water condition) that the valve may experience.

CLEANING

Depending on the quality of water the valve needs regular cleaning and Servicing.

1. For a valve with little grime on the surface of the cartridge, scrub the cartridge by using discloth with detergent on. Please wash the cartridge once more with pure water after that.
2. For the valve with serious grime on the cartridge, lightly polish the surface of the cartridge with 400# above high-grade soft abrasive Paper. Attention-to avoid damaging the diameter of cartridge do not to polish the cartridge too deeply. Please wash the cartridge Once more with pure water after that.
3. Please re-lubricate the cartridge after cleaning and before re-installation into the tap body. Manufacturer recommended lubricant: Molykote 111 COMPOUND. Brand : DOW CORNING.



PROBLEM SOLVING

Fluctuating mixed water temperature:

1. Erratic supply temperatures at inlets
2. Poor water supply at inlets
3. Incorrect commissioning of valve-check procedure

Erratic flow:

1. Insufficient water supply
2. Fluctuations of water supply/pressures
3. Pressure drops caused by other outlets

No flow or reduced flow:

1. Filters are blocked
2. Poor water pressure
3. Debris obstructing water supply
4. Valve requires servicing

Valve does not failsafe when tested:

1. Installation not in accordance with recommendations
2. Minimum temperature differential not achieved
3. Internals effected by debris from system

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