

MIXCAL III Fail Safe Thermostatic Mixing Valve INSTALLATION & SERVICING INSTRUCTIONS

7.4 If the cold inlet to the valve is supplied by a pipe which also serves a cold tap(s), then the cold tap(s) should also be open during the setting procedure. This ensures that under the worst operating conditions, adequate flow and pressure are available at the valve for correct mixing.

For best results, leave the hot tap running long enough to ensure temperature stabilisation before finalising the setting.

7.5 When the setting is finalised, the control knob can be locked in position to prevent tampering as follows. Remove the control knob fixing screw and pull off control knob without disturbing setting. Refit control knob locating 'min/max' as shown in Fig. 4.

8. MAINTENANCE/SERVICING

8.1 It is recommended, that the cold water supply to the valve is turned off periodically (every 3-4 months) to check the correct operation of the fail-safe mechanism.

8.2 In hard water areas with no system water softening, annual servicing and descaling of the valve and associated accessories – i.e. check valves, inlet filters etc. – will ensure ongoing optimum performance.

8.3 On 15mm and 22mm models, the hot and cold water inlet conical-type mesh filters can be removed for cleaning by unscrewing the inlet union nuts and carefully pulling apart the connecting pipework.

8.4 The built-in check valves on the hot and cold connections (15mm and 22mm models) can be accessed in a similar way to 8.3 to ensure freedom of operation and correct seating.

8.5 Dis-assembly of the main body of the valve should not be attempted.

9. SPARE PARTS

(Refer to exploded diagram)

Note:- It is important that only genuine Altecnic spare parts are used.

9.1 The following spare parts are available for 15mm and 22mm models:-

Ref. Item

- | | |
|---|---|
| A | 1/2" conical-type mesh filter (15mm models) |
| B | 3/4" conical-type mesh filter (22mm models) |
| C | 1/2" union compression adaptor, including check valve (15mm models) |
| D | 3/4" union compression adaptor, including check valve (22mm models) |
| E | 1/2" mesh filter (15mm models) |
| F | 3/4" mesh filter (22mm models) |

9.2 The internal components of the Mixcal III valve body are not available as separate spare parts. If necessary, the complete valve should be replaced to ensure correct and safe operation.

10. FAULT FINDING

If these Installation and Servicing Instructions are adhered to, particularly Section 6, Notes for Guidance, system faults should be minimal. However, the following is a list of typical faults which can be encountered if recommendations are ignored. Possible causes and solutions are also proposed.

10.1 Fault: Not enough hot water at tap(s).

Possible Causes:

- Effect of multiple demand (i.e. 2 taps or more in use).
- Hot water store too small.
- Inadequate supply pressure.

Refer to Sections: 6.1, 6.2, 6.6, 6.8, 6.10.

10.2 Fault: Hot Water at cold water tap(s)

Possible Causes:

- Incorrect siting of check valves.
- Cold check valve blocked.
- Unbalanced hot/cold pressures.

Refer to Sections: 6.5, 6.6, 6.7, 6.8, 6.9, 6.13.

10.3 Fault: Scalding water at hot tap when turned on.

Possible Causes:

- Insufficient hot/mixed differential temperature.
- Scaling of valve operating element.

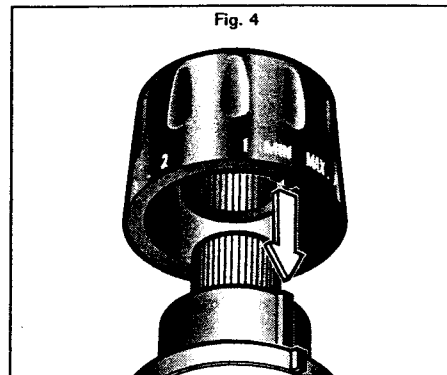
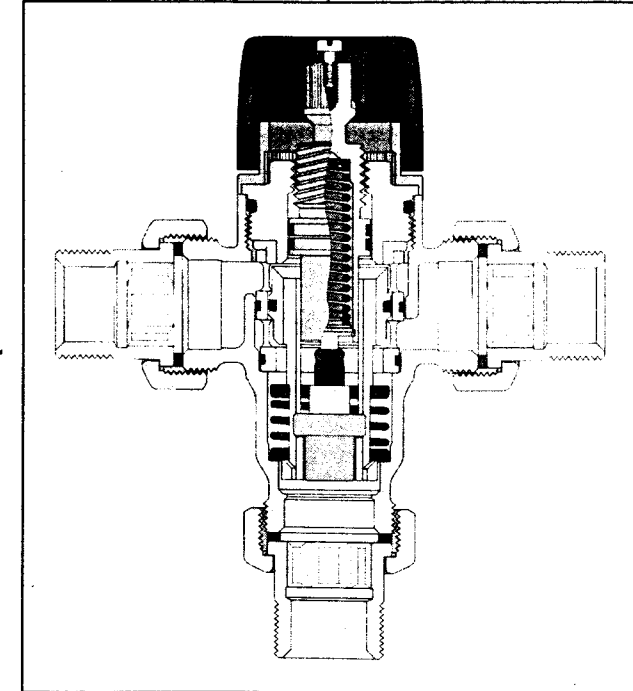
Refer to Sections: 6.1, 6.6, 6.11.

10.4 Fault: Hot water backing up into cold water supply tank.

Possible Causes:

- Unbalanced hot/cold pressures.
- Incorrect siting of check valves.
- Cold check valve blocked.

Refer to Sections: 6.5, 6.6, 6.7, 6.8, 6.9, 6.13.



1. GENERAL

These instructions cover all models of the Mixcal III range as follows:-

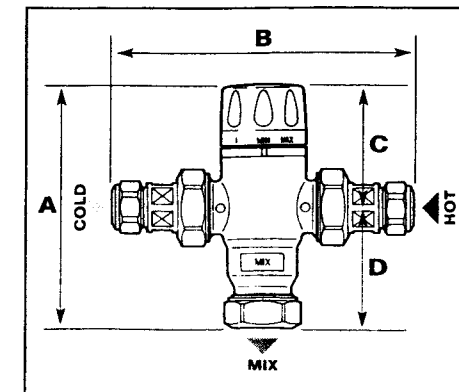
3/4" BSP (inlets/mixed outlet – male connections).

15mm, 22mm Compression (inlets/mixed outlet – copper compression connections). Models available with or without check valves and filters.

All models are designed to provide hot water at selected constant temperature and incorporate a fail safe feature to ensure shut down in the event of cold water supply failure. The control knob can also be locked at the selected temperature to prevent tampering.

The Mixcal III operates over a very wide range of mixed outlet temperature 30°C to 65°C and uses a wax expansion element to act proportionally on both hot and cold supplies in order to maintain the selected mixed temperature.

Dimensions



2. DIMENSIONS, WEIGHTS AND APPROVALS

Dimensions (mm) and weights (kg)

Model	A	B	C	D	Kg
½" BSP	152	134	65.5	86.5	0.98
15mm comp.	152	134	65.5	86.5	0.98
*15mm + C/V	165.5	161	65.5	100	0.99
22mm comp.	131	92	65.5	65.5	0.98
*22mm + C/V	131	159	65.5	65.5	0.99

* These model options are supplied complete with check valves and filters in both hot and cold inlets.

Approvals – The Mixcal III mixing valve range is UK WFBs Listed and Approved.

3. TECHNICAL INFORMATION

Temperature Range	30°C – 65°C
Temperature Control	±2°C
Maximum Operating Temperature	85°C
Maximum Working Pressure	14 bar
Minimum Working Pressure	0.2 bar
Maximum Differential Pressure (between hot/cold) (cold/hot)	2 bar max.
Max Unbalanced Dynamic Supply Pressures (hot/cold) (cold/hot)	10:1
Maximum Flow Rate	Refer to diagram below
Valve Body Material	Brass (DZR)
1st Inlet Mesh Filter	Stainless Steel (15mm & 22mm model options)
Supplied Loose	
2nd Inlet Conical Mesh Filter	Stainless Steel (15mm & 22mm model options)
Supplied Fitted	

4. PRESSURE DROP/FLOW RATE

The Mixcal III is a low resistance mixing valve with the following performance characteristics (Fig. 1).

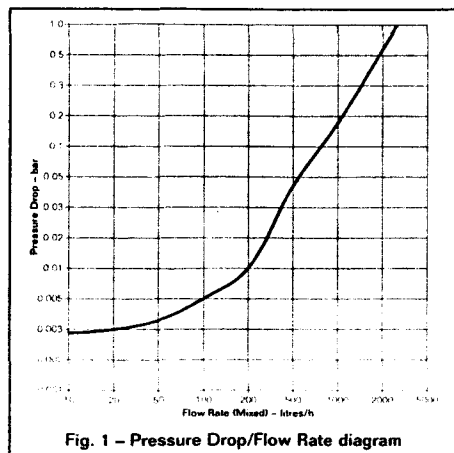
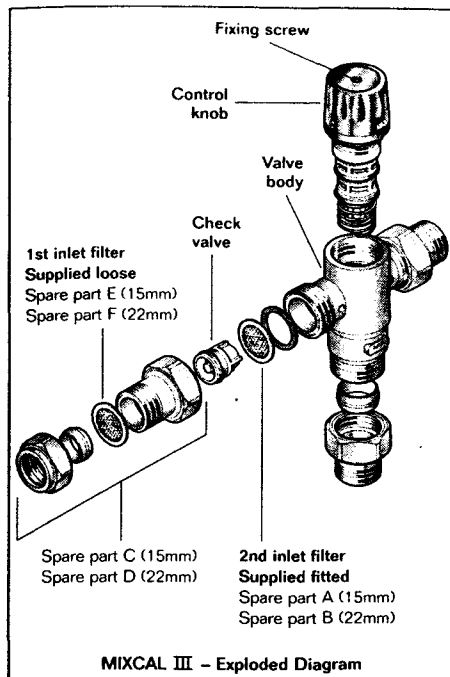


Fig. 1 – Pressure Drop/Flow Rate diagram



5. APPLICATIONS

The Mixcal III provides safe, temperature controlled hot water wherever required – homes, hospitals, schools, leisure centres, old person's homes etc.

Typical applications include:-

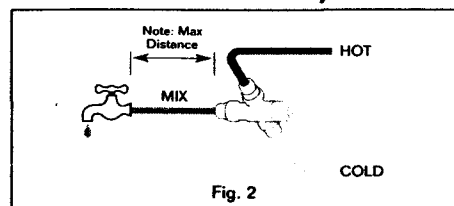


Fig. 2

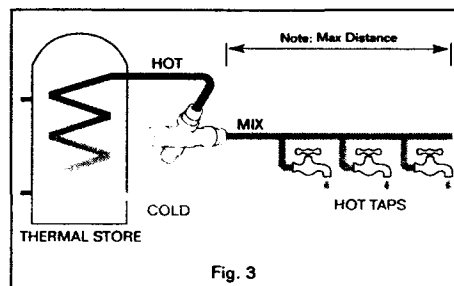


Fig. 3

– Bath or wash basin taps in systems where hot water is stored and supplied at high temperature (Fig. 2).

– Thermal store systems which operate at high temperature and require a mixing valve to reduce draw-off water temperatures at taps. The efficiency of the thermal store system is also improved by the use of a mixing valve (Fig. 3).

The Mixcal III can be connected to a single outlet (as Fig. 2) or can be fitted to serve several hot water outlets (baths, wash basins, showers etc. – e.g. Fig. 3) providing that both the water supply pressures and mixed flow rate are adequate – Refer to Pressure Drop/Flow Rate diagram (Fig. 1).

Note:- Please refer to current legislation regarding the maximum distance from source of mixed hot water to an outlet.

6. INSTALLATION – NOTES FOR GUIDANCE

Important – Attention to these Notes for Guidance will help to ensure a trouble-free and effective installation. The requirements of the Water Byelaws and any other relevant regulations should always be complied with.

6.1 Before installing a Mixcal valve, check water flow rates, temperatures and dynamic pressures at all fittings to be served (hot and cold taps). A calibrated jug or vessel of known volume and watch with second hand can be used for water flow rate assessment.

Due account should be taken of possible multiple demand – i.e. the simultaneous use of 2 or more taps – to ensure adequate hot water supply.

6.2 The maximum flow ratings of Mixcal III valves depend on available differential pressures (inlets to outlet) – refer to Fig. 1 – Pressure Drop/ Flow Rate diagram.

Typical flow rates at taps are approximately 15-20 litres/min (baths) and 8-12 litres/min (wash basins).

6.3 The Mixcal III can be installed in vertical or horizontal pipework (any orientation).

6.4 To ensure the most stable mixed outlet temperature, the valve should be fitted as close to the draw-off point as possible.

6.5 The valve should be installed in the hot water supply pipe with water flow connections as indicated on the valve body (hot, cold and mixed).

6.6 The difference between the hot and cold inlet pressures should be kept to a minimum (max. ratio 10:1), but in any case this pressure differential should not exceed 2 bar. Inlet pressures should not be less than 0.2 bar. If the supply pressure differential (hot to cold) is excessive, a Pressure Reducing Valve (Altecnic Ref. 5332) should be installed in the appropriate higher pressure supply (refer to Altecnic Pressure Reduction Valve leaflet).

6.7 Thermostatic mixing valves should always be fitted with check valves on the hot and cold inlet connections, to prevent cross-circulation. The Mixcal III – 15mm and 22mm models can be supplied with union compression

adaptors with check valves built in to the hot and cold connections (the mixed outlet does not have a check valve).

6.8 It is recommended that isolation/service ball valves are installed close to the Mixcal III in the hot and cold supply pipes. The "Ballstop" valve available from Altecnic (Ref. 323) also incorporates a non-return valve.

6.9 It is recommended that "Y" pattern strainers are installed to protect the check valves and the mixing valve itself.

Conical-type mesh filters can be supplied for use in the hot and cold inlet of the Mixcal III – 15mm and 22mm models – see exploded diagram. This does not replace the possible need for an in-line main strainer.

6.10 The Mixcal III should be set up with the hot water inlet temperature at maximum (Department of Health guidelines give a minimum of 60°C to prevent Legionella). If, during periods of hot water draw-off the inlet temperature to the valve reduces, inadequate hot water supply is indicated.

6.11 To ensure fail-safe operation (in the event of cold water supply failure), the hot water inlet temperature must be at least 15°C above the mixed water temperature.

6.12 The Mixcal III valve must not be subjected to extreme temperatures either during installation or in use – in particular, avoid brazing or soldering near the valve.

6.13 Before final installation and commissioning of the Mixcal III, the system must be thoroughly flushed out to ensure removal of all debris. On larger and/or older systems, it may be necessary to consider chemical cleaning (descaling) of the system.

6.14 In known hard water areas, the use of a water softener in the system should be considered to promote ongoing trouble-free operation of controls and fittings, as well as giving the benefits of softer water.

7. COMMISSIONING

7.1 Ensure that the Mixcal III installation is in accordance with the recommendations given in Section 6, including the final flushing out of the system.

7.2 The valve is factory set to the following approximate mixed outlet temperatures:-

Control Knob Position	Min	1	2	3	4	5	6	7	Max
Outlet Temp. (°C)	27	32	38	44	49	53	58	63	67

These temperature settings are based on cold water supply at 13°C and hot water supply at 68°C, with both cold and hot water supply pressures at 3 bar.

Rotate the control knob anticlockwise to increase mixed water temperature and clockwise to decrease temperature.

7.3 Actual site conditions should be checked to ensure accurate valve operation. The temperature of the hot water from the outlet tap(s) should be measured using an accurate thermometer, and the control knob adjusted to give the desired set temperature.