

Grant CombiSOL

Solar Hot Water Control

Installation Instructions



IMPORTANT NOTE FOR INSTALLERS

These instructions are intended to guide installers on the installation and commissioning of the Grant CombiSOL System. After installing the Grant CombiSOL System, leave these instructions with the user.

SERVICING

The Grant CombiSOL System should be serviced as part of the Solar Thermal System every 12 months. Refer to Solar Thermal System Installation and User instructions for further information (DOC 0073).

PRODUCT CODES COVERED

These instructions cover the installation of the Grant CombiSOL System (product code: COMSOL3) as part of a number of different kits. The various kits available provide on-roof, flat roof and in-roof solutions, with different orientations and quantities of collectors being considered.

Please contact Grant UK for information on the various Solar Thermal Collector kits available.

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SPECIAL TEXT FORMATS

The following special text formats are used in these instructions for the purposes listed below:

! WARNING !

Warning of possible human injury as a consequence of not following the instructions in the warning.

! CAUTION !

Caution concerning likely damage to equipment or tools as a consequence of not following the instructions in the caution.

! NOTE !

Used for emphasis or information not directly concerned with the surrounding text but of importance to the reader.



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1 General

1.1 PRODUCT DESCRIPTION

The Grant CombiSOL System uses the Intasol manifold as a hot water diverter control for use with combination boilers. This means that a solar thermal system can now be linked with a combi boiler as back-up.

Cross-flow contamination is eliminated by the clever deployment of non-return valves integrated within the manifold. Refer to Figure 1-1.



Figure 1-1: Intasol manifold

The Grant CombiSOL System allows unvented hot water heated by solar thermal panels, to be used safely with a combination boiler. The Grant system automatically harnesses the thermal energy contained in a solar water storage system to provide hot water at a controlled, optimum temperature.

The Grant CombiSOL System uses the Intasol manifold that is supplied complete with a TMV2 thermostatic mixing valve, thermostatic diverting valve, thermostatic blending valve and integral non-return valves.

The system ensures that the user always receives hot water at the set temperature, and diverts cooler water at 28°C to activate the boiler when the temperature of the water coming from the solar storage cylinder falls below 48°C.

Its compact design means that all the valves are housed in the Intasol manifold, and it's supplied complete with connections suitable for 15mm copper pipe.

1.2 HIGH TEMPERATURE SOLAR SYSTEM

The temperature of the domestic water in solar thermal system can reach very high temperatures over long periods.

In Summer, especially if there is little water usage, the hot water can reach a temperature of around 98°C before the temperature and pressure safety relief valves are actuated.

At these temperatures, the hot water cannot be used directly because of the risk of scalding to the user.

Water temperatures over 50°C can cause burns very quickly. At 55°C, partial burns occur after 30 seconds immersion. At 60°C they can occur in as little as 5 seconds.

The Intasol manifold incorporates a TMV2 thermostatic mixing valve which blends the hot and cold water to deliver blended water at safe temperature for users.

1.3 KIT CONTENTS

Table 1-1: Kit contents

Kit contents
1 x Intasol manifold
3 x 15 mm connectors (c/w non return valves and filter)
2 x 15mm connectors
5 x sealing washers
1 x Installation Instructions

2 Technical Data

2.1 COMBISOL TECHNICAL DATA

Table 2-1: Technical data

Technical specification	
Connections	15mm compression for copper tube
Body material	DZR copper alloy BS EN 12164 CW602N
Shutter	UDEL GF-120NT
Spring	Stainless steel AISI 302
Thermostatic mixing valve	
Maximum working pressure	10 bar (static), 5 bar (dynamic)
Adjustment range	35 to 55°C
Accuracy	±2°C
Maximum inlet temperature	100°C
Maximum inlet pressure ratio (H/C or C/H)	2:1
Minimum temperature difference between the inlet hot water and the outlet mixed water to ensure anti-scald performance	10°C
Minimum flow rate for stable operation	6 litres/minute
Thermostatic diverting valve	
Maximum working pressure	10 bar (static), 5 bar (dynamic)
Factory set	48°C
Maximum inlet temperature	100°C
Thermostatic blending valve	
Maximum working pressure	10 bar (static), 5 bar (dynamic)
Factory set	28°C
Maximum inlet temperature	90°C

2.2 DIMENSIONS

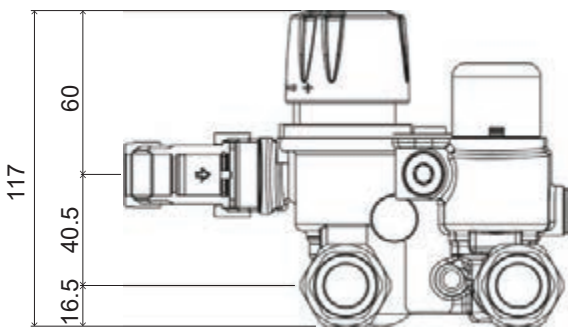


Figure 2-1: Front view dimensions Intasol manifold

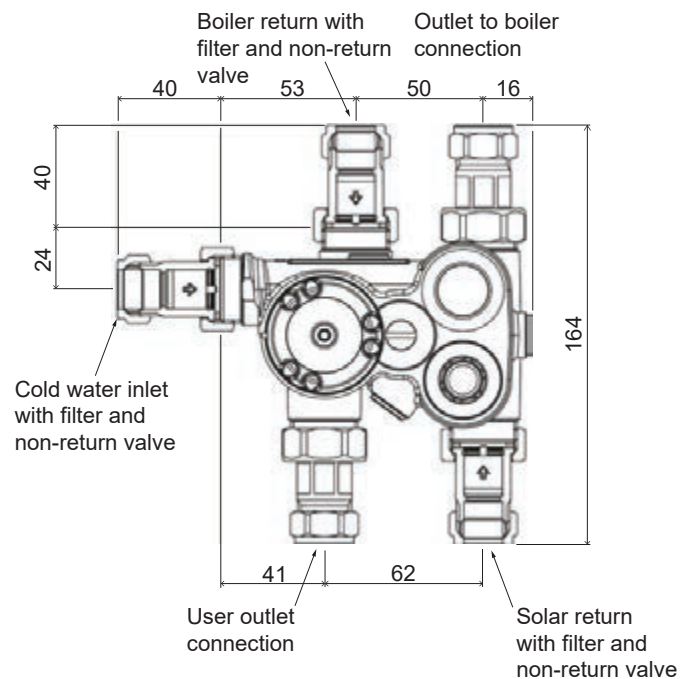


Figure 2-2: Plan view dimensions Intasol manifold

Figure 2-1: Dimensions

3 Operation

3.1 OPERATION EXAMPLE 1

DHW heated by Solar collectors is delivered direct to hot taps after mixing with cold to give a safe temperature. Refer to Figure 3-1.

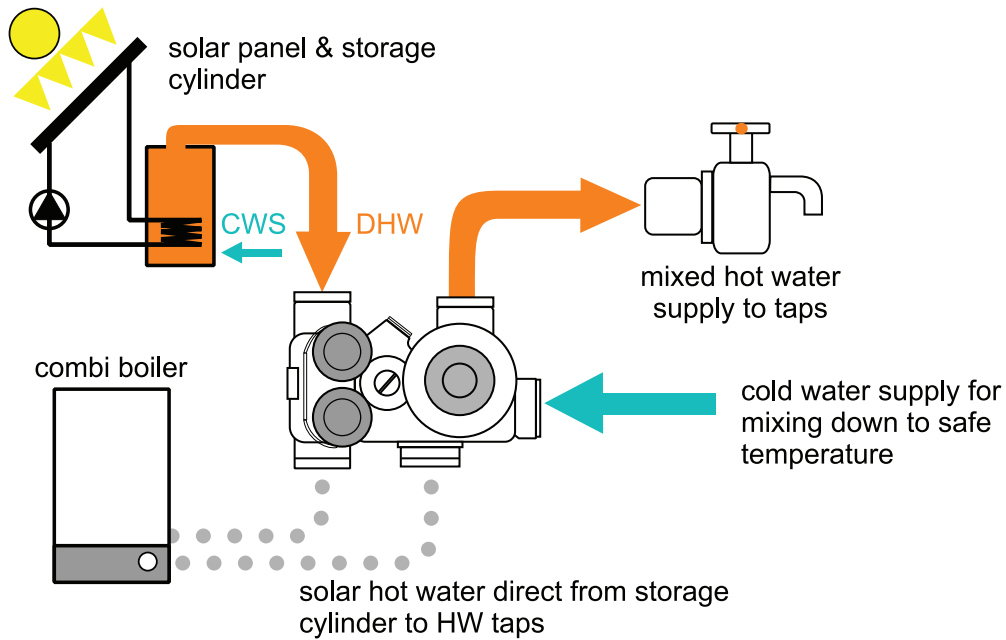


Figure 3-1: Operation example 1

3.2 OPERATION EXAMPLE 2

When DHW from cylinder is only warm (or cold), the CombiSOL System diverts the water to the combi boiler, heating the DHW. DHW is mixed with cold in the Intasol manifold to maintain safe temperatures. Refer to Figure 3-2.

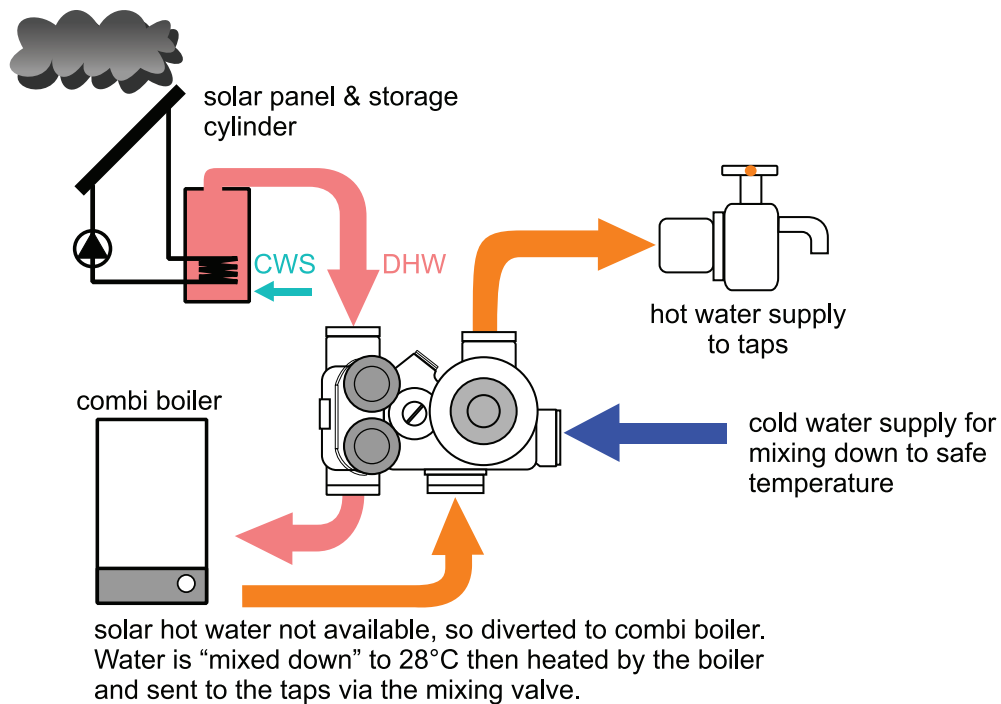


Figure 3-2: Operation example 2

4 Schematics

4.1 OPTIMAL SOLAR HEATING CONDITIONS

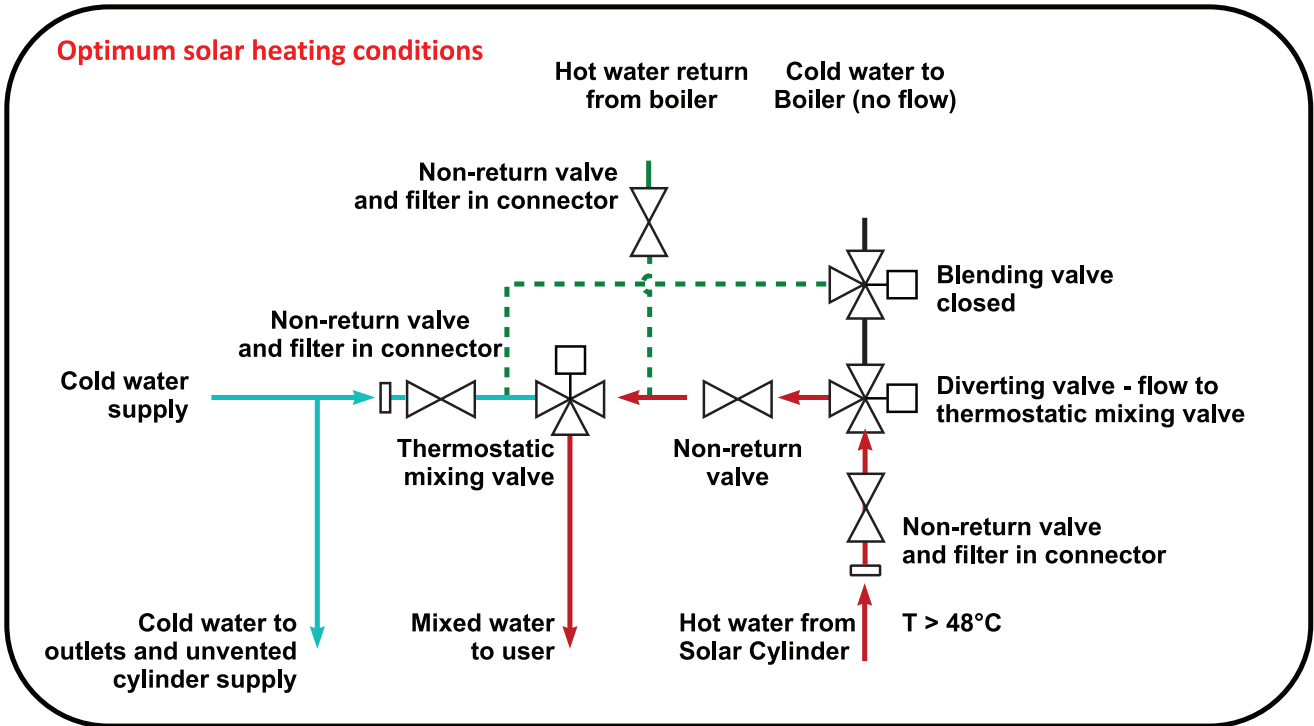


Figure 4-1: Optimum solar heating conditions

4.2 SOLAR HEAT UNAVAILABLE

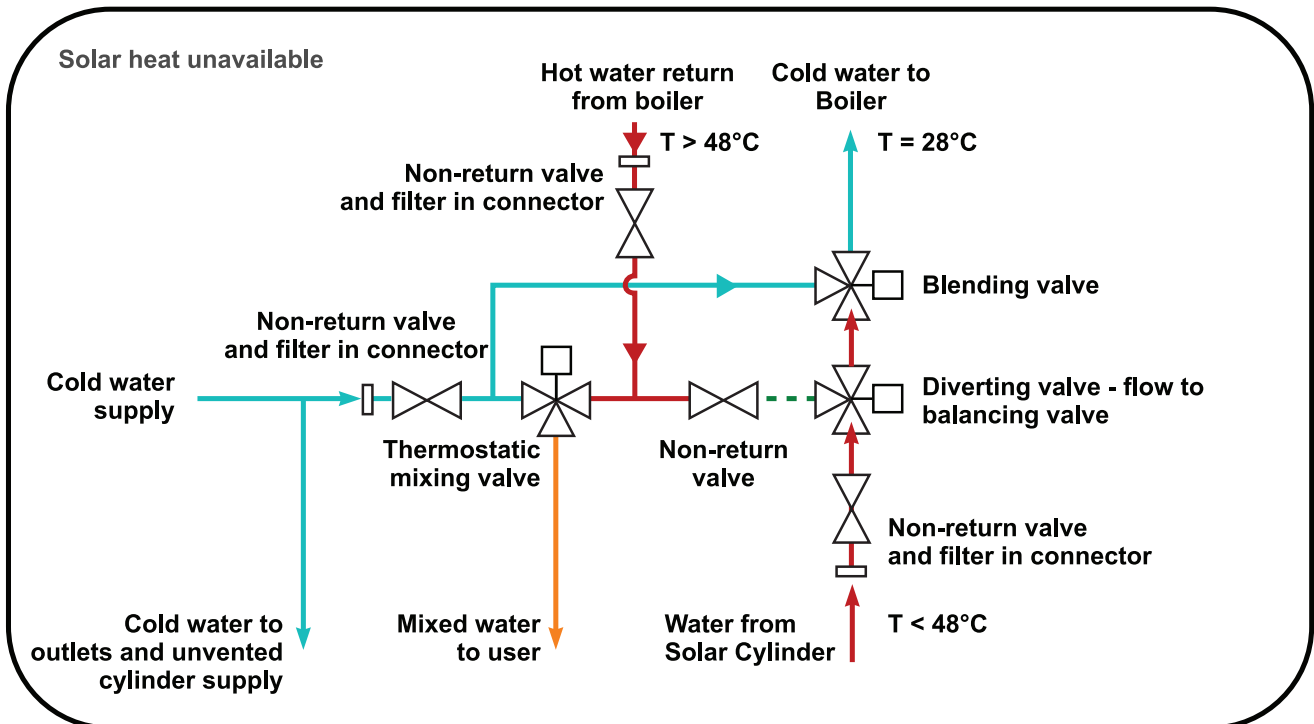


Figure 4-2: Solar heat unavailable

4.3 TYPICAL CIRCUIT USING COMBISOL

The Intasol manifold should preferably be installed close to the boiler, on the outlet from the solar hot water storage, to ensure a constant temperature of mixed water is supplied to users.

The CombiSOL System should be fitted in a circuit similar to the one illustrated below. Refer to Figure 4-3.

To ensure that maintenance, commissioning and testing can be undertaken easily, the manifold must be installed in an accessible position.

Given the flow characteristics of the integral thermostatic mixing valve, the CombiSOL System can be used for a single outlet, e.g. washbasin, shower or for multiple outlets.

To ensure that the mixed water is supplied at the set temperature, a minimum flow rate of 6 litres per minute is required.

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

Installation in domestic properties must comply with the requirements of Approved Document G3.

In particular, the supply of hot water to any fixed bath in an a build property, or where there is a material change of use in an existing property to create the location for a bath, must be designed to ensure that the temperature of the water delivered to that bath does not exceed 48°C. As any device limiting this maximum water temperature cannot be easily altered by the users, a suitable separate TMV would be required on the supply to any such bath.

For installation in non-domestic applications, e.g. Healthcare premises, Care homes, schools, etc. please refer to the TMVA Recommended Code of Practice for Safe Water Temperatures for further guidance.

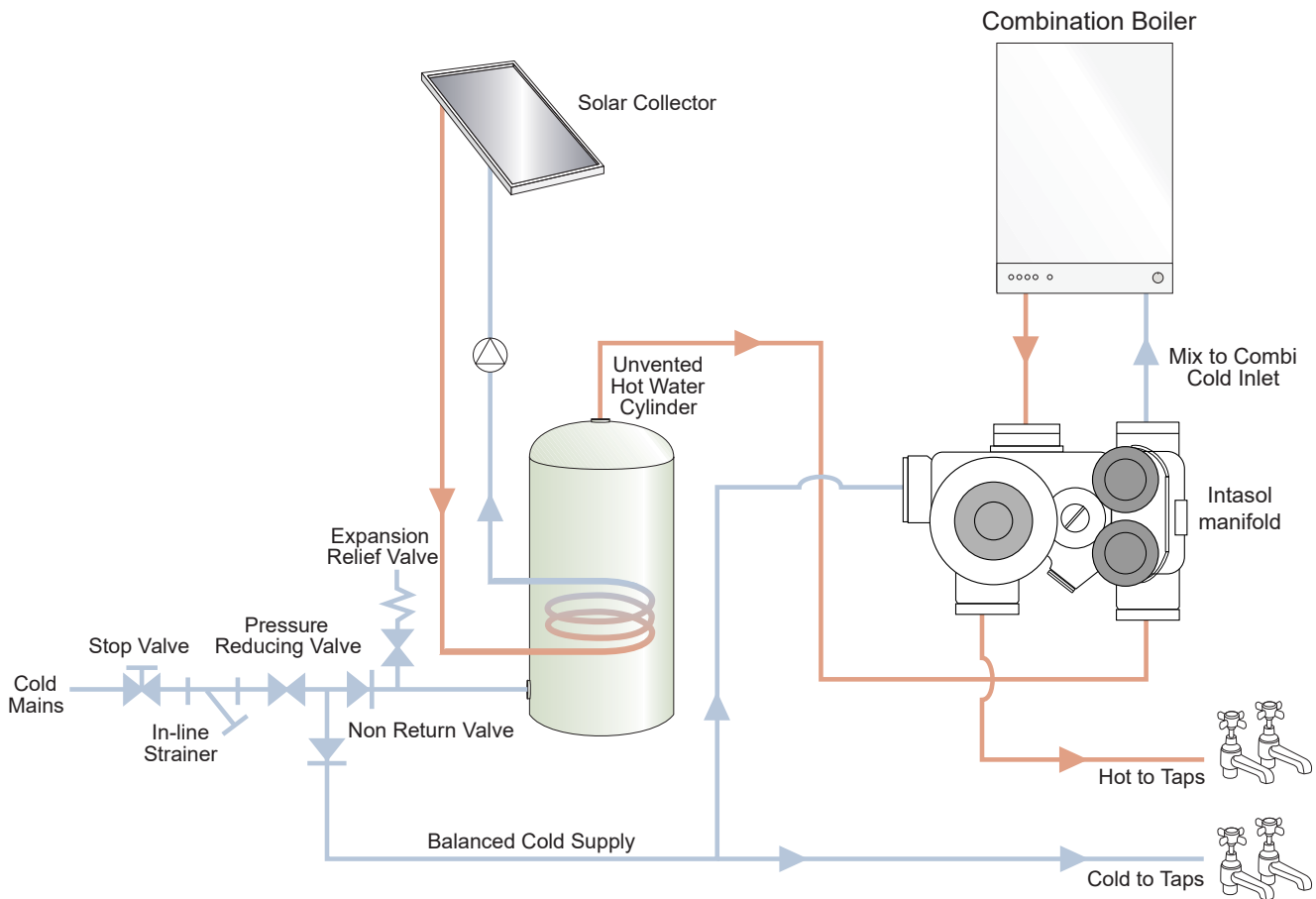


Figure 4-3: Typical circuit using Grant CombiSOL

! WARNING !

The Grant CombiSOL System is not intended to act as a means of preventing bacteria (including legionella) in hot water systems. It is the responsibility of the installer to ensure that suitable protection is provided to control the growth of any bacteria in the hot water system.

! NOTE !

Refer to unvented cylinder or Thermal Store manufacturer's Installation Instructions when connecting the cold mains supply

5 Components

5.1 COMPONENTS

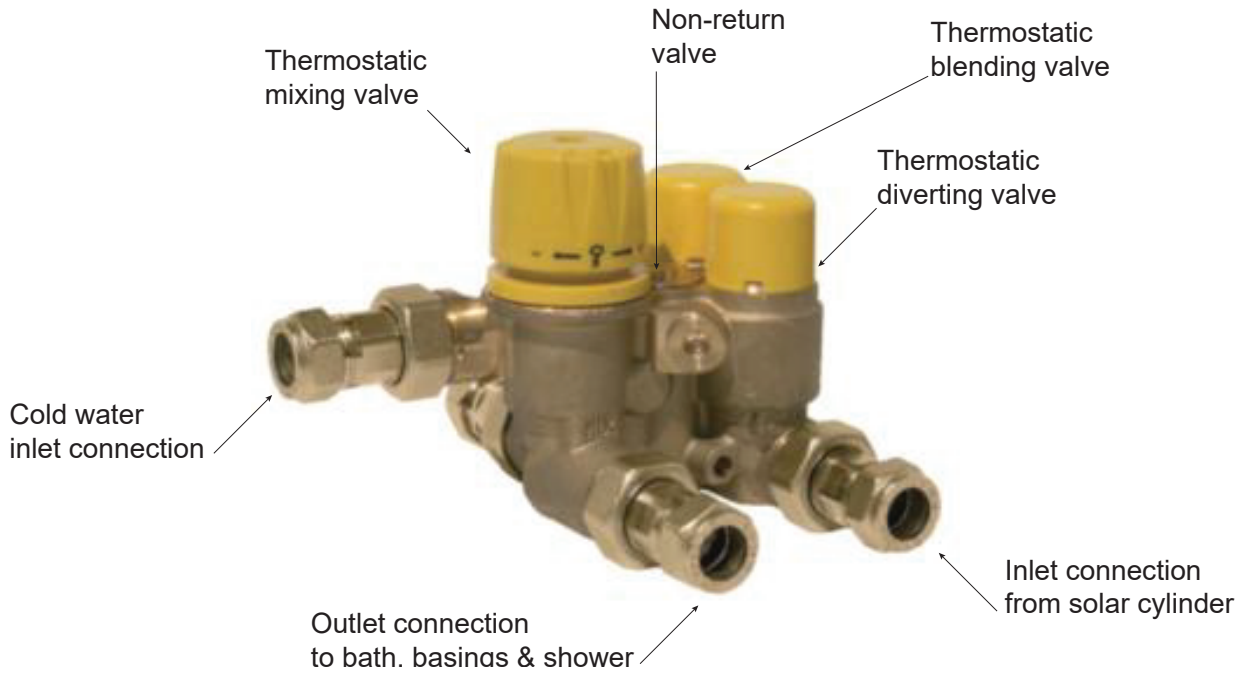


Figure 5-1: Components

5.1.1 Reverse view

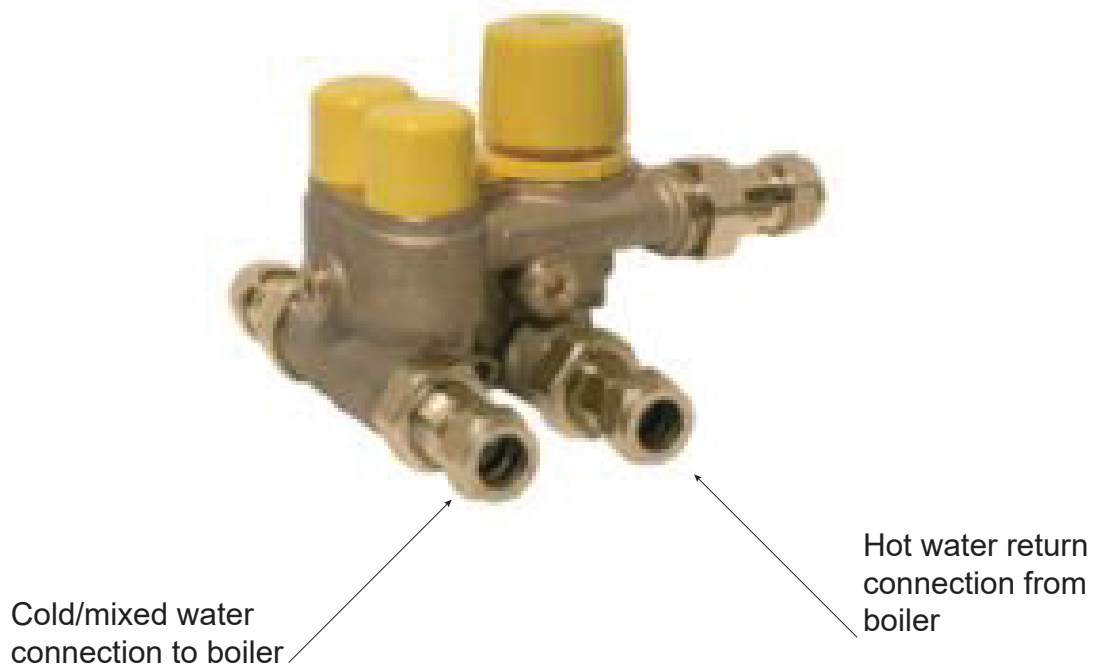


Figure 5-2: Components of the reverse view

6 Fault finding

Problem solving:

1. Hot water at the cold tap.
 - Operation of the check valve is hindered. Confirm that the valve is seated correctly.
 - Check valves not fitted.
 - Unbalanced hot/cold supply pressure.
2. Fluctuating mixed water temperature.
 - Erratic supply temperatures at the valve inlet.
 - Starvation of the water supplied at the valve inlets.
 - Incorrect commissioning of the valve.
3. Erratic flow.
 - Insufficient water supplies.
 - Fluctuations of the water supply pressures/temperatures.
 - Adverse effect created by other draw-off points of the system.
4. No flow/reduced flow from valve.
 - In line filters are blocked.
 - Insufficient supply pressure.
 - Debris obstructing valve operation.
 - Valve requires servicing (servicing kits available on request).
5. Valve does not "fail safe" when tested.
 - Installation not in accordance with our recommendations.
 - The minimum temperature differential has not been achieved.
 - Internal mechanism hindered by debris.

The following details are provided to answer on-site queries. If you require any further assistance, please contact our Technical team on +44 (0)1380 736920

Notes



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