

Adjustable thermostatic mixing valve for solar systems



2521 series



cert. n 0003
ISO 9001

01127/05 GB



Function

The thermostatic mixing valve is used in systems for the production of domestic hot water.

It is designed to maintain the set temperature of the mixed water supplied to the user when there are variations in the temperature and pressure conditions of the incoming hot and cold water or in the flow rate.

This particular series of mixing valves can function continuously at the high temperatures of the incoming hot water from the solar storage tank.

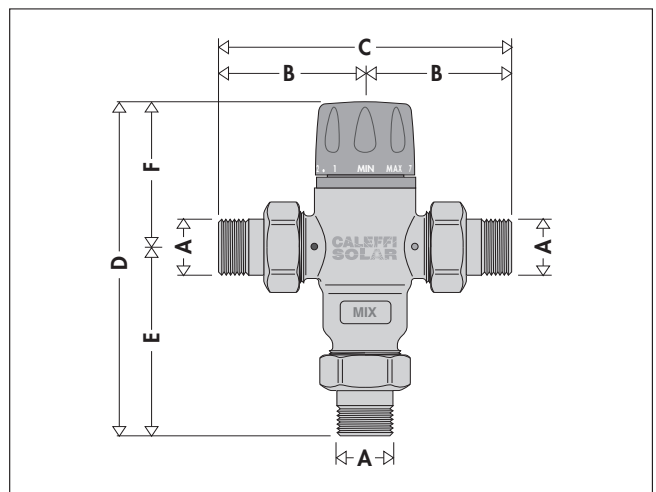
Product range

2521 series Adjustable thermostatic mixing valve for solar systems Sizes 1/2", 3/4"

Technical specifications

Materials:	- body:	dezincification-resistant alloy CR EN 12165 CW602N, chrome-plated
	- shutter:	PSU
	- springs:	stainless steel
	- seal components:	EPDM
Setting range:		30÷65°C
Accuracy:		±2°C
Max working pressure (static):		14 bar
Max working pressure (dynamic):		5 bar
Min working pressure (dynamic):		0,2 bar
Max inlet temperature:		100°C
Max inlet pressures ratio (H/C or C/H):		2:1
Min temperature difference between hot water at inlet and mixed water at outlet for optimum performance:		15°C
Min flow rate to ensure stable temperature:		5 l/min
Connections:		1/2" and 3/4" M with union

Dimensions



Code	A	B	C	D	E	F	Weight (kg)
252140	1/2"	67	134	152	86,5	65,5	1,11
252150	3/4"	67	134	152	86,5	65,5	1,12

Solar systems - high temperatures

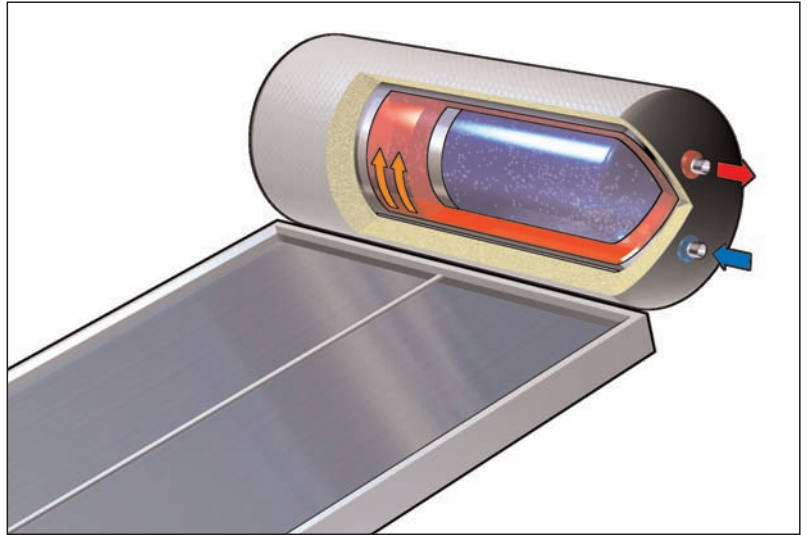
In solar systems with natural circulation in the primary circuit and storage tank with heating jacket, the temperature of the water in the storage tank can vary considerably depending on the degree of solar radiation and can reach very high temperatures over long periods.

In summer, and if there is little water usage, the hot water at the storage tank outlet can actually reach temperatures around 98°C before the pressure and temperature safety valves are actuated.

At these temperatures, the hot water cannot be used directly, because of the danger of scalding. Water temperatures over 50°C can cause burns very quickly. For example, at 55°C, partial burn occurs in about 30 seconds, whereas at 60°C partial burn occurs in about 5 seconds.

Consequently, the thermostatic mixing valve installed must be able to:

- reduce the temperature of the water supplied through the hot water system to a lower value than to the storage tank, i.e. a value usable by the user. For reasons of safety, we advise adjusting the temperature of the mixed water supplied to the user to a value not higher than 50°C.
- maintain a constant temperature in the mixed water when there are variations in the inlet temperatures and pressures.
- maintain function and efficiency over time, without being affected by the continuous high temperature of the hot water at the inlet.
- ensure that water is stored at high temperature for longer periods, and supplied to the water system at a lower temperature.



Operating principle

The controlling element of the thermostatic mixing valve is a temperature sensor fully immersed in the mixed water outlet passage which, as it expands or contracts, continuously establishes the correct proportion of hot and cold water entering the valve. The regulation of these flows is by means of a piston sliding in a cylinder between the hot and cold water passages. Even when there are pressure drops due to the drawing off of hot or cold water for other uses, or variations in the incoming temperature, the mixer automatically regulates the water flow to obtain the set temperature.

Construction details

High heat resistance

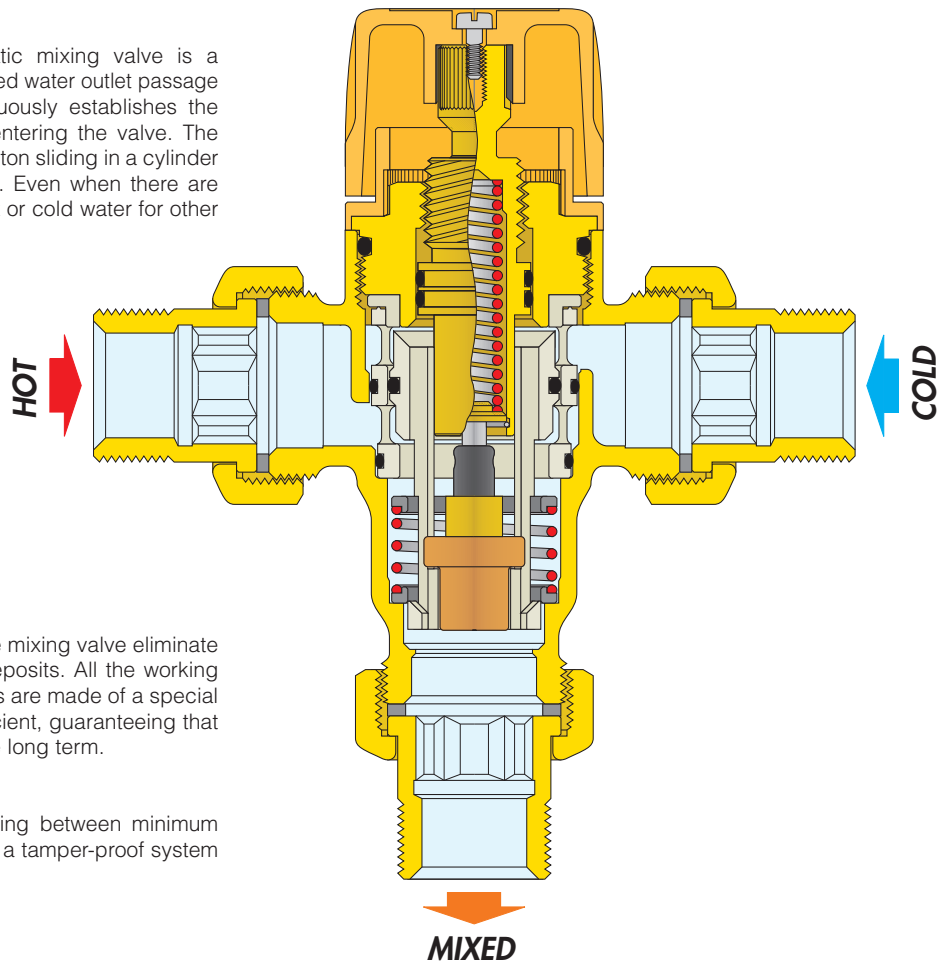
The internal flow regulation components are designed to maintain performance of the mixing valve with inlet hot water temperatures up to 100°C, in continuous operation.

Anti-scale materials

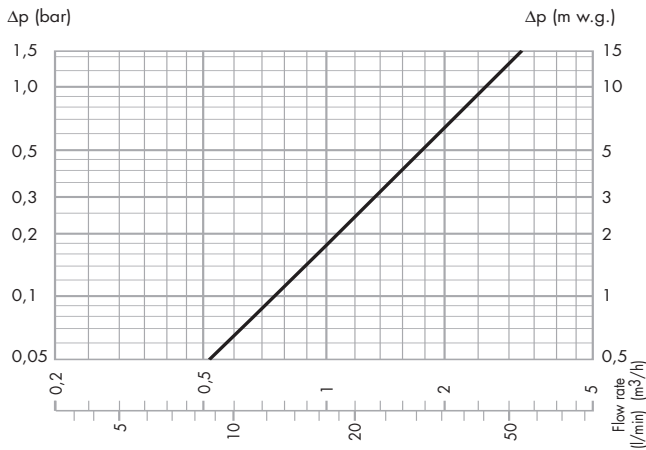
The materials used in the construction of the mixing valve eliminate the problem of jamming caused by lime deposits. All the working parts such as shutter, seats and slide guides are made of a special anti-scale material, with a low friction coefficient, guaranteeing that the performance will be maintained over the long term.

Temperature setting and locking

The control knob permits temperature setting between minimum and maximum in one turn (360°). It also has a tamper-proof system to lock the temperature at the set value.



Hydraulic characteristics



$K_v = 2,6 \text{ (m}^3/\text{h)}$

Use

2521 series thermostatic mixing valves are typically installed at the outlet of hot water storage tanks in solar systems, to ensure constant temperature of the mixed water supplied to the user.

In view of their flow characteristics, 2521 series thermostatic mixing valves can be installed to control the temperature either for point of use (e.g. washbasin, bidet, shower) or for multiple outlets. To ensure that the mixed water is supplied at a stable temperature, the mixing valves must have a minimum flow rate of 5 l/min.

Installation

Before installing the mixing valve, pipes should be flushed to remove any impurities that could impair performance. We recommend always installing filters of sufficient capacity at the inlet of the water system.

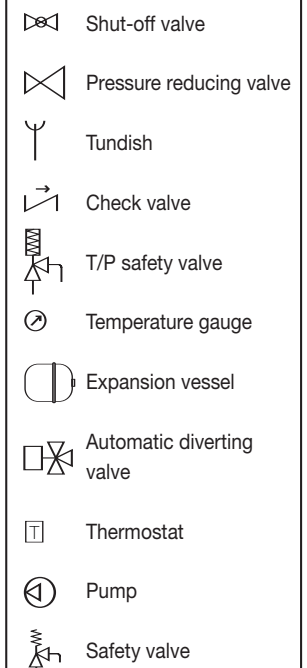
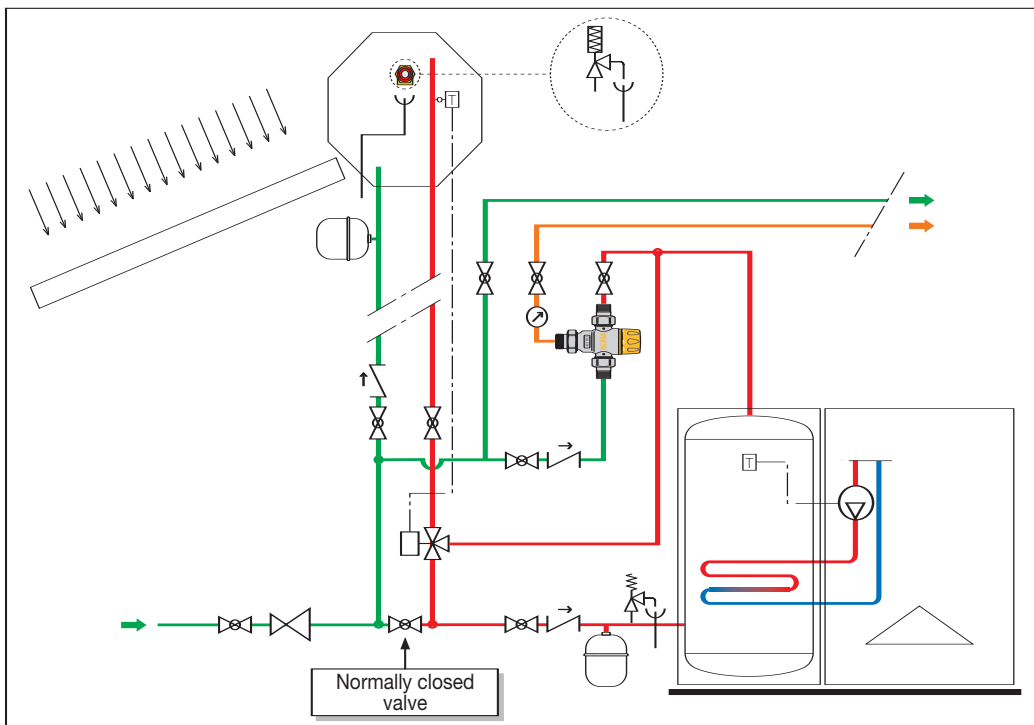
2521 series thermostatic mixing valves must be installed as shown in the installation diagrams on the instruction manual or in this brochure.

2521 series thermostatic mixing valves can be installed in any position, horizontally or vertically.

The following are indicated on the body of the mixing valve:

- hot water inlet, indicated by a red colour and the word "HOT"
- cold water inlet, indicated by a blue colour and the word "COLD"
- mixed water outlet, indicated by the word "MIX".

Application diagrams - System with thermal integration



Check valves

In systems with thermostatic mixing valves, check valves should be installed to prevent undesired circulation and back flows.

Commissioning

In view of the special purpose of the thermostatic mixing valve, it must be commissioned in accordance with current standards by qualified personnel using suitable temperature measuring equipment. Use of a digital thermometer is recommended for measurement of the mixed water temperature.

Temperature adjustment

The temperature is set at the desired value by means of the knob with the graduated scale, on the top of the valve.

Temperature adjustment table

Position	Min	1	2	3	4	5	6	7	Max
T (°C)	27	32	38	44	49	53	58	63	67

Reference values: $T_{hot} = 68^\circ\text{C}$; $T_{cold} = 13^\circ\text{C}$; Hot and cold water inlet pressures = 3 bar

Locking the setting

After adjusting the temperature, the setting can be locked at the desired value using the control knob.

To do this, undo the locking screw on the top of the control knob, remove the knob and re-position it so that the internal reference engages with the protrusion on the knob carrier ring nut.

