

# Adjustable thermostatic mixing valves for water storage heaters

## 520 - 522 series



### Function

The 520 and 522 series mixing valves are used in systems that produce hot water for sanitary purposes with a water storage heater. They are designed to maintain the preset temperature of the mixed water delivered to the user despite variations in the temperature of the water contained in the storage.



### Product range

520 series Adjustable thermostatic mixing valve \_\_\_\_\_ sizes 1/2", 3/4", 1"  
 522 series Adjustable thermostatic mixing valve for installations under a water storage heater \_\_\_\_\_ size 1/2"

### Technical specifications

#### Materials

Body: brass EN 12165 CW617N, chrome plated  
 Obturator: brass EN 12164 CW614N  
 Spring: stainless steel  
 Sealing elements: EPDM  
 522 series extension: chrome plated brass

#### Performance

Medium: water  
 Max. working pressure (static): 10 bar  
 Max. working pressure (dynamic): 5 bar

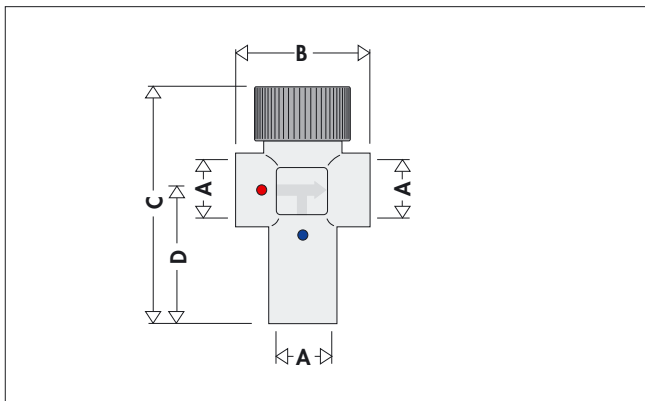
Max. inlet pressure ratio (H/C or C/H): 1,1:1  
 Max. hot water inlet temperature: 90°C  
 Setting range: 30–48°C (code **520430/530/630, 522430**)  
 40–60°C (code **520440/540/640, 522440**)

Minimum flow rate to ensure the highest performance: 5 l/min

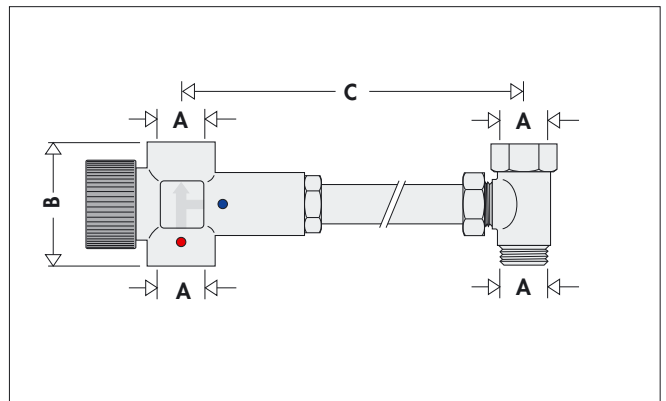
Connections: 1/2", 3/4", 1" F (520 series)  
 1/2" M x F (522 series)

Centre distance between the 522 series connections: adjustable from 105 to 160 mm

### Dimensions



Code	A	B	C	D	Weight (kg)
5204..	1/2"	56	96	54	0,38
5205..	3/4"	61	103	60	0,47
5206..	1"	64	103	55	0,59



Code	A	B	C adjustable	Weight (kg)
5224..	1/2"	56	105 – 160	0,65

## Legionella vs scalding risk

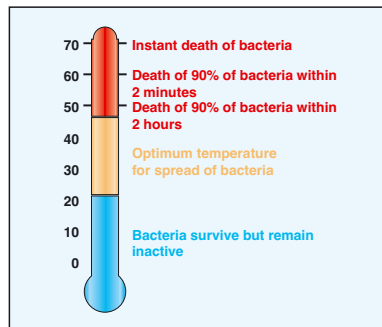
In systems producing hot water for sanitary purposes with storage, in order to avoid the dangerous infection known as Legionnaire's disease, the hot water must be stored at a temperature of at least 60°C. At this temperature it is certain that the proliferation of the bacteria that cause this infection will be totally inhibited. At this temperature, however, the water cannot be used directly. Water temperatures over 50°C can cause scalding injuries very quickly and even considerably faster to children and elderly people. Therefore, it is necessary to use a thermostatic mixing valve which can reduce the temperature at the point of use to a value much lower than that of the storage so it can be used by the domestic user.

For reasons of safety, it is recommended to set the temperature of the mixed water sent to the user to values no higher than 50°C.

## Thermal disinfection

The drawing alongside shows the behaviour of *Legionella Pneumophila* bacteria as the conditions vary in the temperature of the water containing the bacteria.

To ensure correct thermal disinfection, it is necessary to go up to values of no less than 60°C.

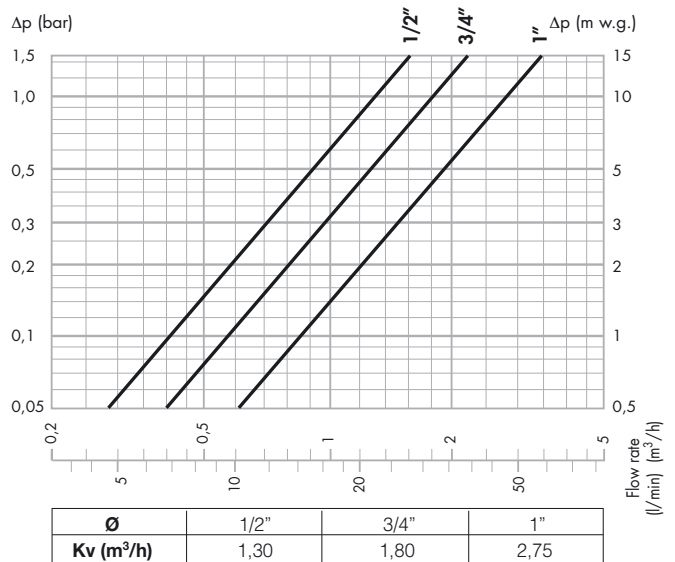


## Energy Savings

Energy savings rules advise to use mixing valves on water delivery systems for sanitary use with storage, to limit the temperature of the water at the inlet of the delivery network to 48°C with a tolerance of +5°C.

The purpose of limiting the temperature is to reduce passive thermal losses through the delivery network as much as possible, besides preventing delivering water at a higher temperature than necessary.

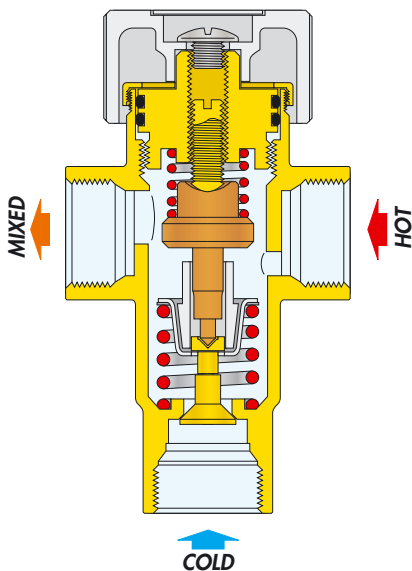
## Hydraulic characteristics



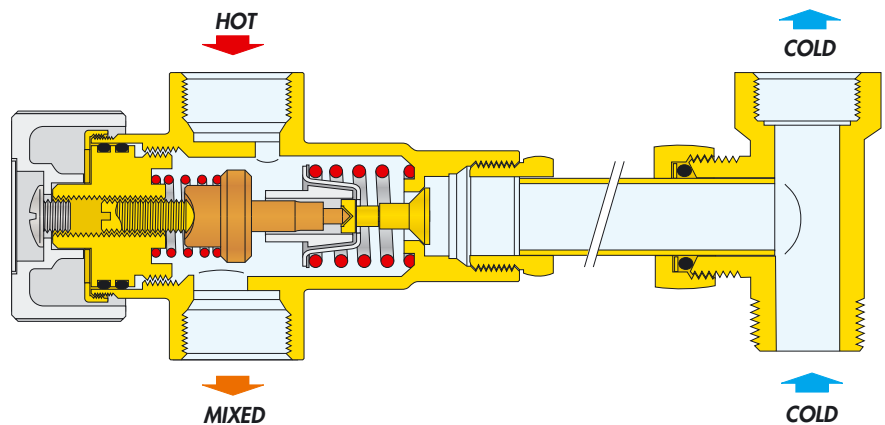
## Operating principle

The regulating element within the thermostatic mixing valve consists of a temperature sensor in contact with the mixed water outlet pipe. By expanding and contracting, it continuously ensures correct proportioning of the hot and cold water at the inlet, modulating with the obturator on the cold water. **Correct mixing therefore requires the hot and cold water pressures to be balanced.**

### 520 series



### 522 series



## Use

Under standard conditions, Caleffi 520 and 522 series thermostatic mixing valves can manage reduced flow rates (from 5 l/min).

## Instantaneous hot water production

Caleffi 520 and 522 series thermostatic mixing valves **must not be used in combination with boilers with instantaneous hot water production for sanitary purposes.**

Adding them would impair the operation of the boiler.

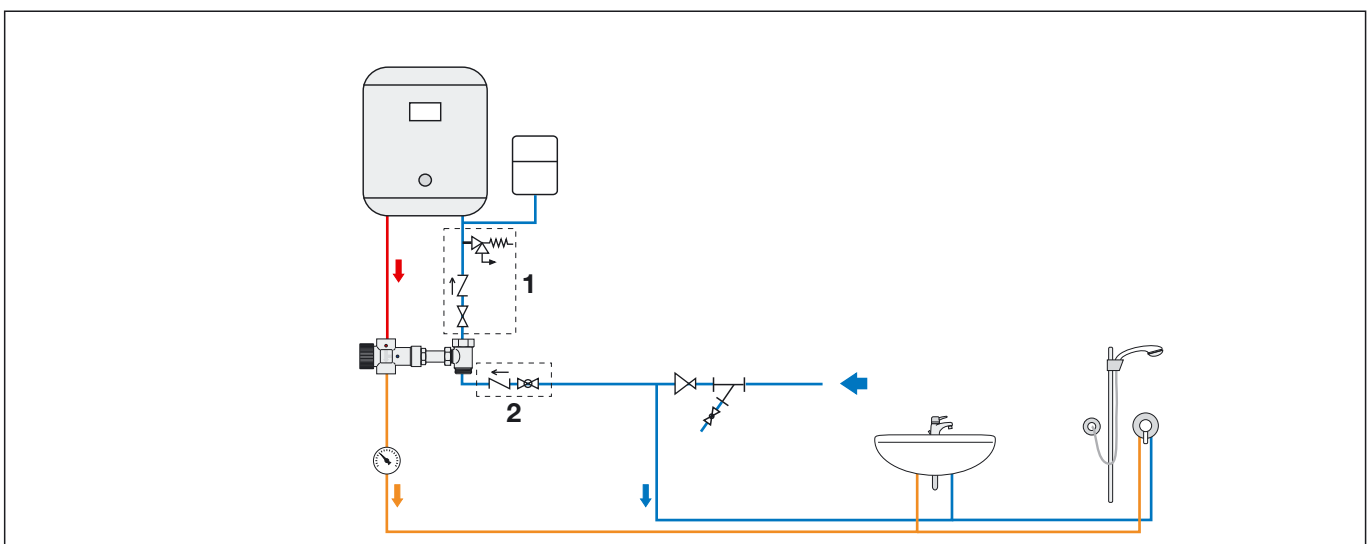
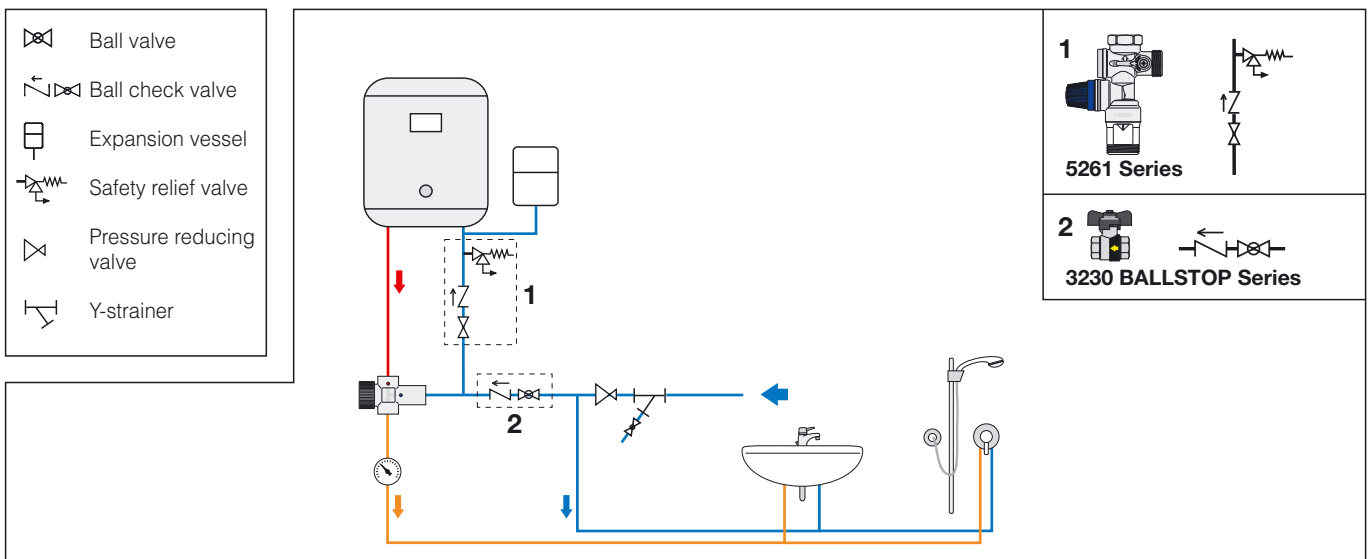
## Installation

The 520 and 522 series thermostatic mixing valves must be installed as shown in the diagrams in this leaflet. They can be installed in any position, horizontally or vertically. The following marks are indicated on the mixing valve body: hot water inlet, indicated by a red colour, cold water inlet, indicated by a blue colour, and mixed water outlet, indicated by the word "MIX".

The 522 series is equipped with a telescopic extension on the cold water inlet line with an adjustable connection centre distance from 105 to 160 mm. This permits fitting directly under the water storage heater, easily adapting to different models and sizes. On the extension there is a label showing the reference marks so as to be able to cut the pipe to size easily.

Centre distance boiler mm.	T05	T10	T15	T20	T25	T30	T35	T40	T45	T50	T55	T60

## Application diagrams



## Check valves

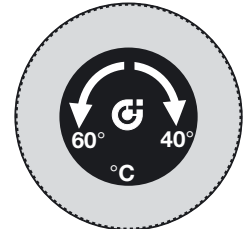
In systems with thermostatic mixing valves, check valves should be fitted to prevent undesired backflows, as shown in the diagrams in this leaflet.

## Commissioning

The thermostatic mixing valve must be commissioned in accordance with current regulations and by qualified personnel using suitable temperature measuring instruments. We recommend using a digital thermometer for measuring the temperature of the mixed water.

## Temperature setting

The control knob is used to adjust temperature between 30°C and 48°C or from 40°C to 60°C depending on the version.



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## SPECIFICATION SUMMARIES

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### 520 series

Adjustable thermostatic mixing valve. Threaded connections 1/2" F (3/4", 1"). Chrome plated brass body. Brass obturator. Stainless steel spring. EPDM seals. Maximum working pressure (static) 10 bar. Maximum working pressure (dynamic) 5 bar. Maximum working temperature 90°C. Maximum inlet pressures ratio 1,1:1. Setting range 30–48°C (40–60°C). Minimum flow rate to ensure the highest performance 5 l/min.

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### 522 series

Adjustable thermostatic mixing valve for installations under a water storage heater. Threaded connections 1/2" M x F. Chrome plated brass body. Brass obturator. Stainless steel spring. EPDM seals. Maximum working pressure (static) 10 bar. Maximum working pressure (dynamic) 5 bar. Maximum working temperature 90°C. Maximum inlet pressures ratio 1,1:1. Setting range 30–48°C (40–60°C). Minimum flow rate to ensure the highest performance 5 l/min. Centre distance between the connections adjustable from 105 to 160 mm.

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*We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.*



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