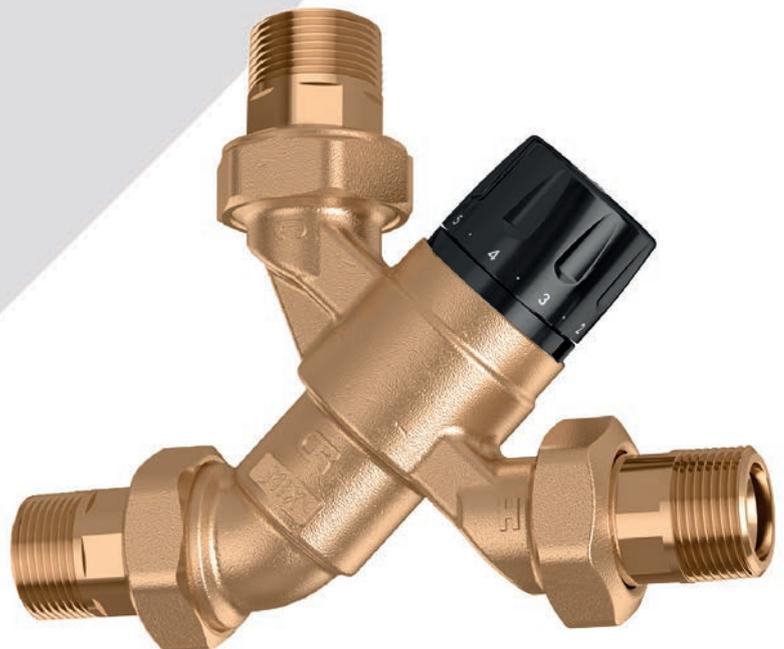


# 5200 'L' pattern

thermostatic mixing valves



**kiwa**

**altecnic**  
CALEFFI group

# 5200 'L' pattern thermostatic mixing valves



## Application

Thermostatic mixing valves are used to maintain the domestic hot water supplied to the user at a constant and safe temperature, when variations in the hot and cold water supply conditions and draw off flow rates occur.

The valves are also equipped with an anti-scald safety function which immediately shuts off the flow of hot water in the event of a failure in the cold water supply.

The 5200 mixing valves provides the mixed water outlet in line with the hot water inlet from the storage, facilitating trouble-free connection and reducing the space required for installation.

## TMV2

Altecnic 5200 thermostatic mixing valves meet the requirements of BS EN 1111: 1999 and BS EN 1287: 1999 and the TMV2 Type Scheme. The valves have been independently tested and approved as a type 2 valve under the Buildcert TMV2 scheme by the WRc - NSF Limited / Buildcert Limited.

Altecnic 5200 thermostatic mixing valves are suitable for use in domestic housing and commercial building for single user outlets including wash basins, showers, baths and bidets but are also suitable for multiple outlet use.

## Construction Details

| Component | Material        | Grade                    |
|-----------|-----------------|--------------------------|
| Body      | DZR             | BS EN 1982 CC768S        |
| Shutter   | PSU             |                          |
| Springs   | Stainless steel | BS EN 10270-3 (AISI 302) |
| Seals     | EPDM            |                          |
| Knob      | ABS             |                          |

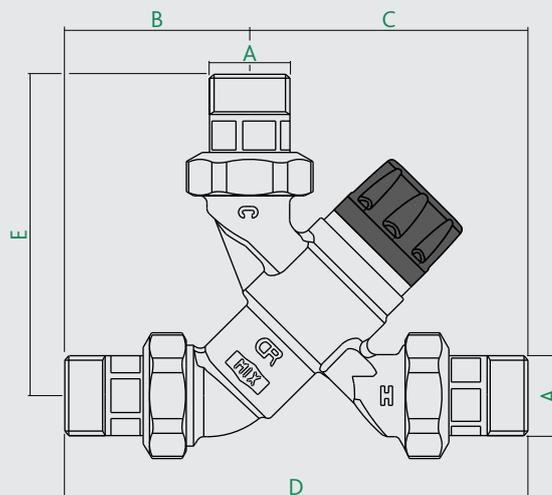
| Product Code | Size | Connection    |
|--------------|------|---------------|
| 520040       | 1/2" | male threaded |
| 520050       | 3/4" | male threaded |
| 520060       | 1"   | male threaded |

## Safety

The Altecnic 5200 thermostatic mixing valve ensures stable operation when installed, commissioned and maintained according to the instructions provided.

The valve shall not be considered as an alternative to proper care during its operation.

## Dimensions

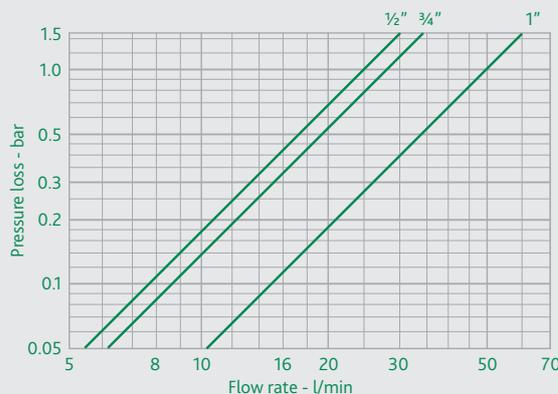


| Prod Code | A    | B    | C     | D   | E     | kg   |
|-----------|------|------|-------|-----|-------|------|
| 520040    | 1/2" | 58.5 | 87.5  | 146 | 102.5 | 0.8  |
| 520050    | 3/4" | 59.5 | 88.5  | 148 | 103.5 | 0.9  |
| 520060    | 1"   | 76.5 | 115.5 | 192 | 133.5 | 1.71 |

## Technical Data

|  |                 |
|--|-----------------|
| Temperature adjustment range:  | 35 to 65°C      |
| Accuracy:  | ±2°C            |
| Max. working pressure:   | 10 bar - Static |
| Max. working pressure:   | 5 bar - Dynamic |
| Max. inlet temperature:  | 90°C            |
| Max. inlet pressure ratio (H/C or C/H):  | 2:1             |
| Min. temperature difference between inlet hot water and outlet mixed water to ensure thermal shut-off: | 15°C            |
| Min. flow for stable operation (1/2" & 3/4"):  | 4 l/m           |
| (1"):  | 6 l/m           |

## Flow Characteristics and Kv Values



Recommended flow rate values to ensure stable operation with an accuracy of ±2%

\* Δp = 1.5 bar

| Code   | Size | Kv m <sup>3</sup> /hr | Size | Maximum m <sup>3</sup> /hr | Minimum* m <sup>3</sup> /hr |
|--------|------|-----------------------|------|----------------------------|-----------------------------|
| 520040 | 1/2" | 1.5                   | 1/2" | 0.24                       | 1.8                         |
| 520050 | 3/4" | 1.7                   | 3/4" | 0.24                       | 2.0                         |
| 520060 | 1"   | 3.0                   | 1"   | 0.36                       | 3.6                         |

# 5200 'L' pattern thermostatic mixing valves

## Legionella - Point of Distribution

According to the most recent legislation and standards, in order to prevent the growth of the dangerous Legionella bacterium in centralised systems producing domestic hot water with storage, the hot water must be stored at a temperature of at least 60°C.

At this temperature it is certain that the growth of the bacteria will be totally eliminated.

The adjacent diagram shows the behaviour of **Legionella Pneumophila** bacteria as the temperature conditions of the water containing the bacteria vary.

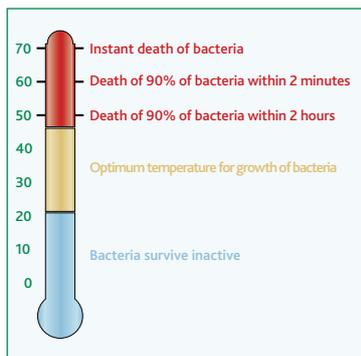
To ensure correct thermal disinfection, it is necessary to go up to values of at least 60°C.

In this type of system, it often happens that the temperature at the storage outlet is unstable and highly variable.

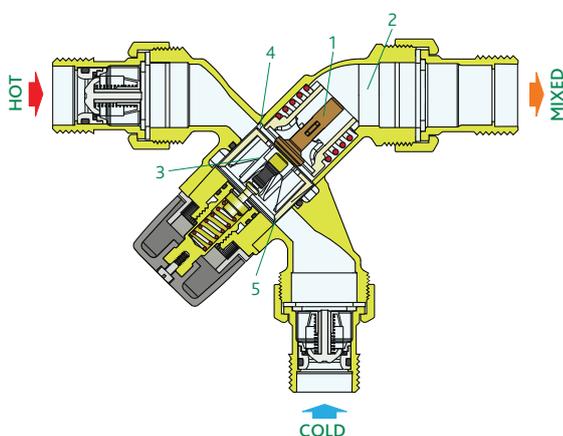
This occurs because of multiple operating conditions, in terms of pressure and heat exchange with the primary energy source and the drawn off flow rate.

For all these reasons, therefore, a thermostatic mixing valve must be installed on the hot water storage outlet line, at the inlet point of the distribution system, which is able to:

- reduce the temperature at the point of distribution to a value lower than that of the storage, in a controlled way to make it suitable for domestic use.
- have a temperature adjustment range that makes it possible to perform a thermal disinfection of the system, should this be necessary.
- allow the temperature to be adjusted to the desired value, with a tamper-proof locking system.
- keep the distribution temperature constant despite variations in temperature, inlet pressure and drawn off flow rate.
- have a thermal shut-off function that operates in the event of a cold water supply failure at the inlet.



## Operating Principle



## Operating Principle

The thermostatic mixing valve mixes the hot and cold water at the inlet so as to maintain the mixed water at a constant set temperature at the outlet.

The thermostatic element (1) is fully immersed in the mixed water flow (2). It contracts or expands, moving an obturator (3) which controls the passage of hot (4) or cold (5) water at the inlet.

If the inlet temperature or pressure changes, the internal element automatically reacts to restore the set temperature at the outlet.

## Construction Details

### Body shape

The "L" pattern configuration facilitates installation of the mixing valve.

It also makes it possible to optimise fluid dynamics and thus obtain high Kv values while minimising head losses.

### Dezincification resistant material with very low lead contents (Low Lead)

The material used to make the mixing valve body complies with the new provision concerning contact with potable water.

This is an innovative alloy with very low lead contents and dezincification resistant properties.

### Anti-scale materials

The materials used in constructing the mixing valve were selected to eliminate seizing due to limescale deposits. All functional parts have been made using a special anti-scale material with low friction coefficient, which ensures over time performance.

### Thermal shut-off

In the event of accidental cold water supply failure, the obturator shuts off the hot water passage, thus preventing the delivery of mixed water.

This is only guaranteed when there is a minimum temperature difference between the inlet hot water and the mixed water delivery of 15°C.

### Certification

5200 series thermostatic mixing valves are certified by the Buildcert and Kiwa bodies as compliant with the requirements of EN 1111 and EN 1287.

### Application

The 5200 thermostatic mixing valves are used for applications at the point of distribution, to control the temperature of the domestic hot water distributed in the network.

To guarantee stable operation, the mixing valve must be supplied with a minimum flow rate of 4 l/min ( $\frac{1}{2}$ " &  $\frac{3}{4}$ " ) and 6 l/min (1").

### Selecting the mixing valve size

Given the design flow rate, taking into account simultaneous use of the domestic appliances, the mixing valve size should be selected by checking the head loss on the flow chart - see page 1.

In this case, it is necessary to check the available pressure, the head loss in the system downstream of the mixing valve and the residual pressure to be guaranteed for user appliances.



Sizing software available at [www.caleffi.com](http://www.caleffi.com)  
Apple Store and Google play.

# 5200 'L' pattern thermostatic mixing valves

## Installation

Before installing the mixing valve, the connecting pipework should be flushed to remove any debris that could impair performance.

Altecnic always recommends installing strainers of sufficient capacity at the inlet from the water main.

The 5200 thermostatic mixing valves can be installed in any orientation in horizontal or vertical pipework.

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

- water inlet, indicated by letter H (Hot) and a red mark
- cold water inlet, indicated by letter C (Cold) and a blue mark
- mixed water outlet, indicated by the word "MIX".

## Check valves

In systems with thermostatic mixing valves, check valves must be installed to prevent undesired backflow.

5200 mixing valves are supplied complete with check valves on the hot and cold water inlets.

## Commissioning

In view of the special applications of the thermostatic mixing valve, it must be commissioned in accordance with current regulations by qualified technicians, using appropriate temperature measurement equipment.

We recommend using a digital temperature gauge for measuring the mixed water temperature.

## Temperature adjustment

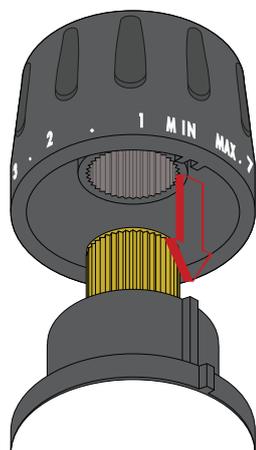
The temperature is set at the specified value using the control knob with the graduated scale on the valve.

| Position       | Min | 1  | 2  | 3  | 4  | 5  | 6  | 7  | Max |
|----------------|-----|----|----|----|----|----|----|----|-----|
| ½" & ¾" T (°C) | 35  | 40 | 45 | 48 | 52 | 56 | 60 | 63 | 65  |
| 1" T (°C)      | 35  | 38 | 41 | 45 | 50 | 53 | 56 | 60 | 65  |

conditions:  $T_{Hot} = 70^{\circ}C$   $T_{Cold} = 15^{\circ}C$   
 $P_{Hot} = 3 \text{ bar}$   $P_{Cold} = 3 \text{ bar}$

## Locking the setting

Turn the knob to the required number, unscrew the upper screw, remove the knob and put it back on so that the internal reference couples with the protrusion on the knob holder nut.



## Commissioning

After installation, the mixing valve must be tested and commissioned by an authorised technician in accordance with the procedure given below and as specified by current applicable legislation.

The following instructions must be read and understood before commissioning the 5200 thermostatic mixing valves.

If there are any aspects of the installation or the system which do not correspond to the specified requirements, the valve must not be commissioned until the installation/system is made to conform to the said requirements.

- 1 Make sure that the system is clean and free from dirt before commissioning the thermostatic mixing valve.
- 2 Set the mixed water temperature, with a calibrated digital thermometer. Measure the temperature of the mixed water with the probe immersed in water flowing from a water outlet.
- 3 Depending on the intended use and associated risk, the temperature at the outlet must be regulated so it does not present a danger to the user and so that it remains within the limits stipulated by established legislation.
- 4 The temperature at the valve outlet must be set while taking into account potential temperature fluctuations caused by the simultaneous drawing of water from more than one user fitting.

These conditions must be stabilized before the valve is commissioned.

- 5 The temperature may be adjusted using the control knob.
  - a Adjust the temperature of the mixed water to the desired value.
  - b Measure and record the temperature at the cold and hot water inlets.
  - c Measure and record the temperature of the water delivered from the tap at the lowest and highest flow rates.
  - d Run a test of the thermal shut-off function.

Close the cold water inlet shut-off valve and check the mixed water delivery. The delivery flow rate should quickly drop to zero.
  - e Measure and record the maximum mixed water temperature. The temperature may not exceed the values permitted in any applicable legislation or code of practice.
  - f Restore the cold water inlet supply and measure the water delivery temperature after it has stabilised. The final temperature measured in this test may not exceed the permitted values by  $\pm 2^{\circ}C$ .

In case of change to temperature setting, repeat tests in accordance with points d, e, f.

All the above information should be recorded in the commissioning report and updated in the maintenance report whenever the valve is worked on.

# 5200 'L' pattern thermostatic mixing valves

## Problem Solving

In normal operating conditions, Altecnic 5200 thermostatic mixing valves offer outstanding performance.

However, in certain circumstances or if the maintenance schedule is not observed, the following problems may arise:

| Problem   | Cause   | Solution  |
|---|---|---|
| Hot water delivery at cold tap                              | a) Inlet check valve not operating correctly or seals worn/damaged<br>b) Check valves not fitted  | • Replace damaged check valves  |
| Fluctuations in temperature of mixed water                  | a) Incorrect inlet water temperature<br>b) Insufficient inlet water flow<br>c) Commissioned incorrectly   | • Restore inlet conditions to within valve specification range  |
| Incorrect valve outlet flow rate                            | a) Insufficient water supply<br>b) Fluctuations in temperature/ pressure at inlet<br>c) Unfavourable conditions created by the operation of other water outlets | • Stabilise water supply to the valve   |
| No outlet flow rate   | a) In-line filters blocked<br>b) Insufficient supply pressure<br>c) Debris blocking water flow through valve  | • Clean filters<br>• Restore supply conditions<br>• Remove debris/limescale from the valve                          |
| Valve anti-scald safety function not performing when tested | a) Installation not compliant with instructions<br>b) Minimum temperature difference not achieved<br>c) Valve mechanism blocked by debris                       | • Follow installation instructions<br>• Increase hot water temperature<br>• Remove debris/ limescale from the valve |

## Maintenance

In service tests should be carried out regularly to monitor the mixer performance, as deterioration of performance could indicate that the valve and/or the system require maintenance.

If, during these tests, the temperature of the mixed water has changed significantly in comparison with the previous test, the details given in the installation and commissioning sections should be checked and maintenance carried out.

The following aspects should be checked regularly to ensure that the optimum performance levels of the valve are maintained. Every 12 months at least, or more often if necessary.

With reference to the exploded view:

- 1 The hot and cold water inlet strainers can be removed for cleaning by unscrewing the locking nut of the union, please refer to the cross sectional illustration shown in Operating Principles.
- 2 The check valves can be inspected as explained in point 1 to ensure that they are perfectly operational and watertight.
- 3 The best way to remove limescale from the components inside the valve is to immerse the complete valve in a limescale de-scaler.  
Check the O-rings and lubricate them with a suitable lubricant.
- 4 After checking any components requiring maintenance, repeat the mixing valve commissioning procedure.

## Safety



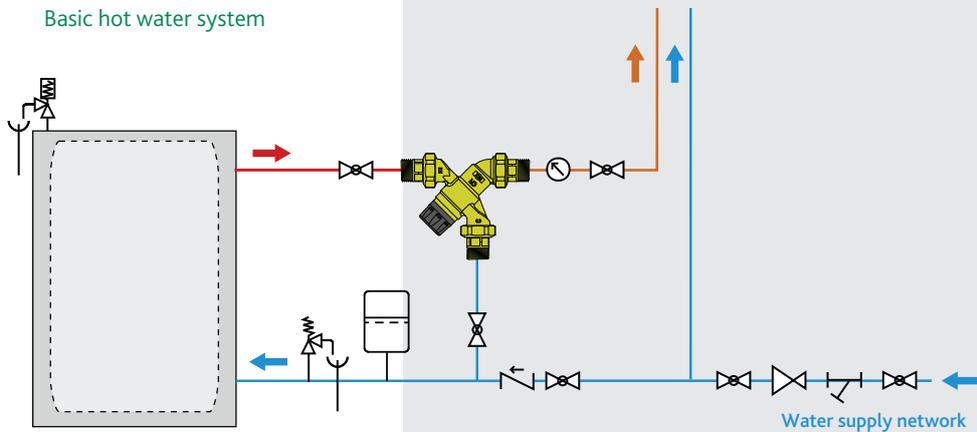
- The thermostatic mixing valve must be installed by an approved installer in accordance with national regulations and/or relevant local requirements.
- If the mixing valve is not installed, commissioned and maintained properly, according to the instructions contained in this manual, it may not operate correctly and may endanger the user.
- Make sure that all the connecting pipework is water tight.
- When making the water connections, make sure that the mixer connecting pipework is not mechanically over-stressed. Over time this could cause breakages, with consequent water losses which, in turn, could cause harm to property and/or people.
- Water temperatures higher than 50°C can cause serious scalds.
- During the installation, commissioning and maintenance of the mixing valve, take the necessary precautions to ensure that such temperatures do not endanger people.
- In the case of highly aggressive water, arrangements must be made to treat the water before it enters the mixing valve, in accordance with current legislation. Otherwise the mixer may be damaged and will not operate correctly.

# 5200 'L' pattern thermostatic mixing valves

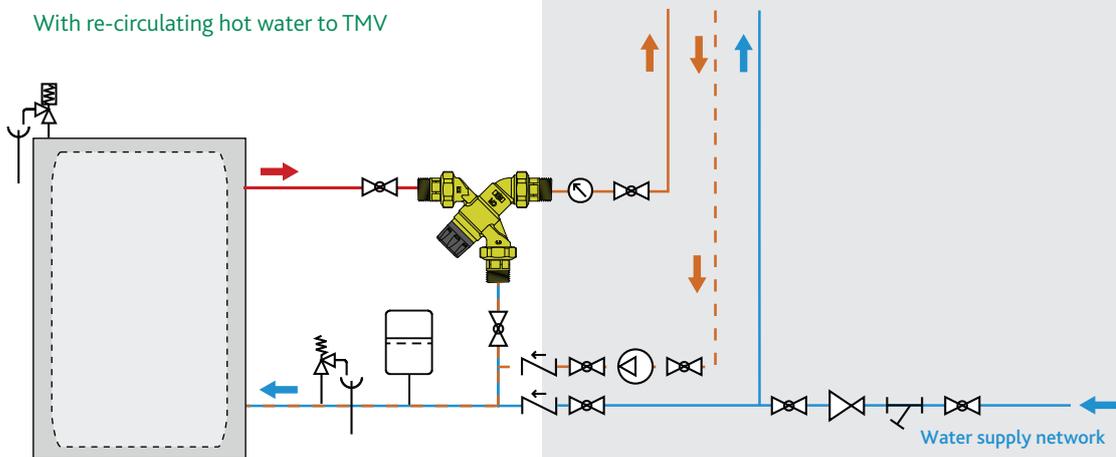
## Typical Applications

-  Ball valve
-  Ball valve with check valve
-  Temperature gauge
-  Pump
-  Expansion vessel
-  Thermostat
-  Temperature/pressure safety relief valve
-  Safety relief valve
-  Pressure reducing valve
-  Y-strainer

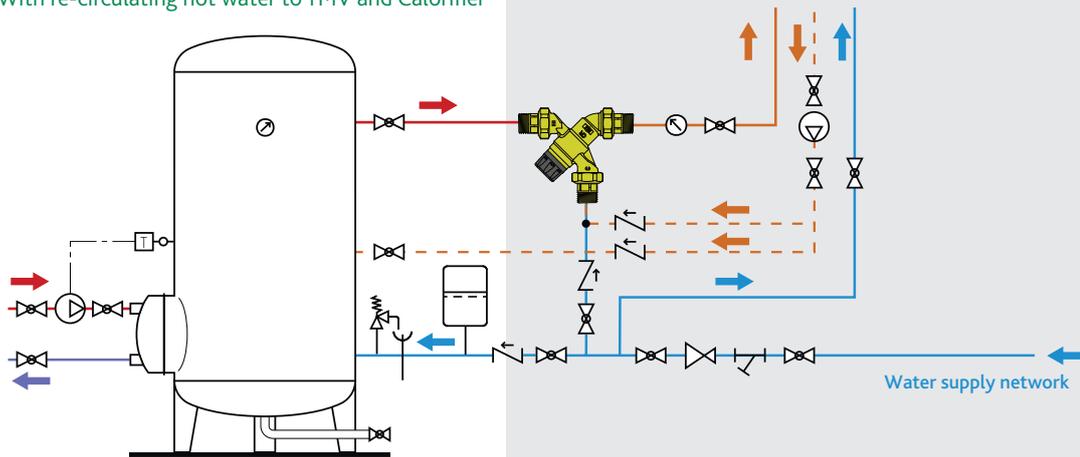
Basic hot water system



With re-circulating hot water to TMV



With re-circulating hot water to TMV and Calorifier



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