# Anti-scald thermostatic mixing valve for wash-hand basins

## 601-602 series

BSI EN ISO 9001:2000 Cert. n° FM 21654
UNI EN ISO 9001:2000 Cert. n° 0003
01162/08 GB

### Function

In certain sanitary hot water distribution systems, for example hospitals, nursing homes, schools, sport centres etc., it is necessary to protect vulnerable people from a risk of scalding with hot water.

This particular series of thermostatic mixing valves has been specifically designed for this type of application, for installation just upstream of the basin tap. The mixing valves automatically maintain the mixed water temperature constant, despite any variation in inlet pressure or temperature or the actual flow rate drawn at the tap.

A special by-pass mechanism is used on the 602 series unit to thermally disinfect the circuit all the way to the tap, in compliance with anti-Legionella regulations.

### Product range

| | | |
|---|---|---|
| 601 series | Anti-scald thermostatic mixing valve for wash-hand basins | sizes 3/8" and 1/2" |
| 602 series | Anti-scald thermostatic mixing valve with by-pass, for wash-hand basins | sizes 3/8" and 1/2" |

### Technical specifications

**Materials**

| | |
|---|---|
| Body: | brass EN 12165 CW617N, chrome plated |
| Obturator: | brass EN 12164 CW614N |
| Spring: | stainless steel |
| Sealing elements: | EPDM |
| Cover: | ABS |

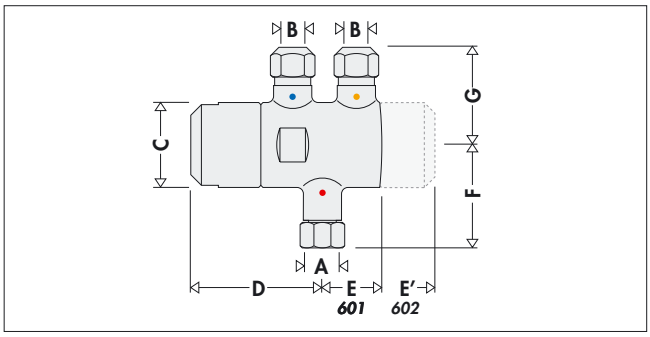
**Performance**

| | |
|---|---|
| Medium: | water |
| Adjustment range: | 25–50°C |
| Factory set: | 41°C |
| Accuracy: | ±2°C |
| Max. working pressure (static): | 10 bar |
| Max. working pressure (dynamic): | 5 bar |
| Max. inlet temperature: | 90°C |
| Max. inlet pressure ratio (H/C or C/H): | 5:1 |
| Min. temperature difference between hot water inlet and mixed outlet to guarantee the anti-scald function: | 10°C |
| Min. flow rate for a stable operation: | 4,5 l/min |

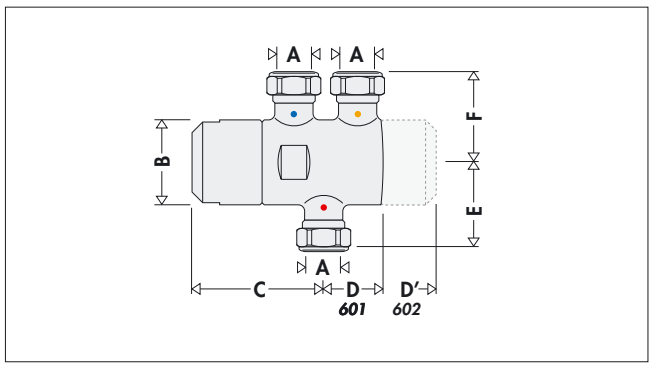
Connections:

| Hot | Cold and mixed |
|---|---|
| 3/8" F (captive nut) | 3/8" - Ø 10 olive |
| 3/8" F (captive nut) | 3/8" - Ø 12 olive |
| 3/8" F (captive nut) | 3/8" M (flat seat) |
| 1/2" - Ø 15 olive | 1/2" - Ø 15 olive |
| 1/2" M (flat seat) | 1/2" M (flat seat) |

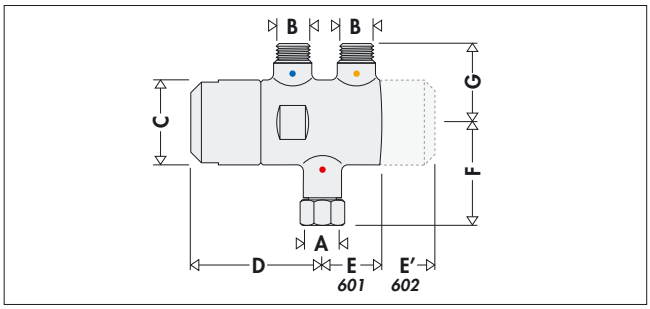
## Dimensions



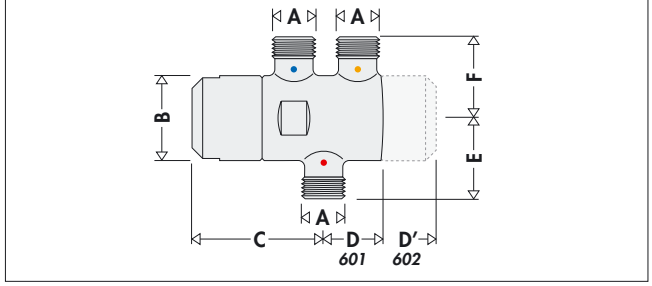

| Code | A | B | C | D | E | E' | F | G | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|
| **601**310/**602**310 | 3/8" | Ø10 | 40 | 62 | 28 | 55 | 51 | 46 | 0,60/0,69 |
| **601**312/**602**312 | 3/8" | Ø12 | 40 | 62 | 28 | 55 | 51 | 46 | 0,60/0,69 |




| Code | A | B | C | D | D' | E | F | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| **601**415/**602**415 | Ø15 | 40 | 62 | 28 | 55 | 47 | 47 | 0,60/0,69 |




| Code | A | B | C | D | E | E' | F | G | Weight (kg) |
|---|---|---|---|---|---|---|---|---|---|
| **601**333/**602**333 | 3/8" | 3/8" | 40 | 62 | 28 | 55 | 51 | 38 | 0,60/0,69 |



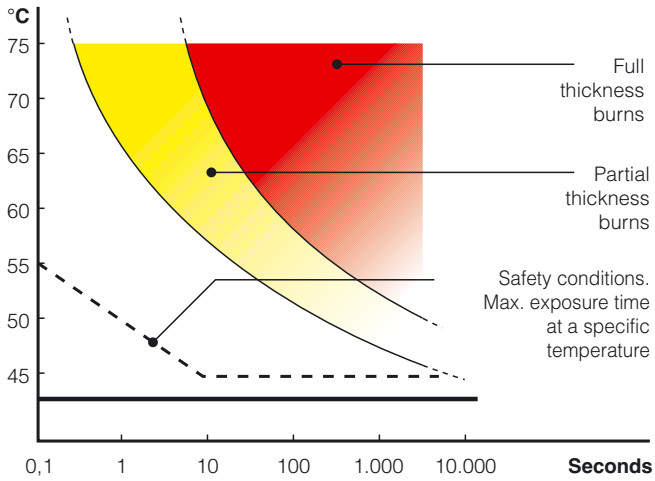

| Code | A | B | C | D | D' | E | F | Weight (kg) |
|---|---|---|---|---|---|---|---|---|
| **601**444/**602**444 | 1/2" | 40 | 62 | 28 | 55 | 51 | 38 | 0,60/0,69 |

## Legionella - scalding risk

In systems that produce hot water for sanitary purposes with storage, in order to prevent the growth of dangerous Legionella bacteria, 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 inhibited. At this temperature, however, the water cannot be used directly. As shown in the diagram opposite, temperatures of more than 50°C can cause burns very quickly.
For example, at 55°C, partial burn will occur in approximately 30 seconds, while at 60°C partial burn will occur in approximately 5 seconds.
This time may be reduced by 50% for children and elderly people.
In view of the above, it is necessary to use a thermostatic mixing valve which can:

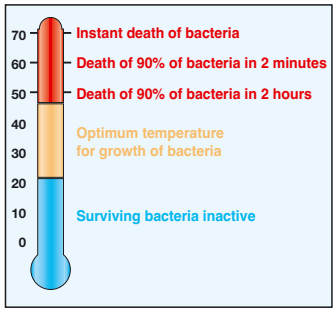
- reduce the temperature at the point of use to a value lower than that of the storage and make it suitable for sanitary use.
- maintain the temperature constant while the incoming pressure and temperature conditions vary.
- prevent the water temperature at the outlet from reaching values above 50°C.
- have an anti-scald safety function in case of failure of the cold water supply.

## Temperature - Exposure time




## 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.

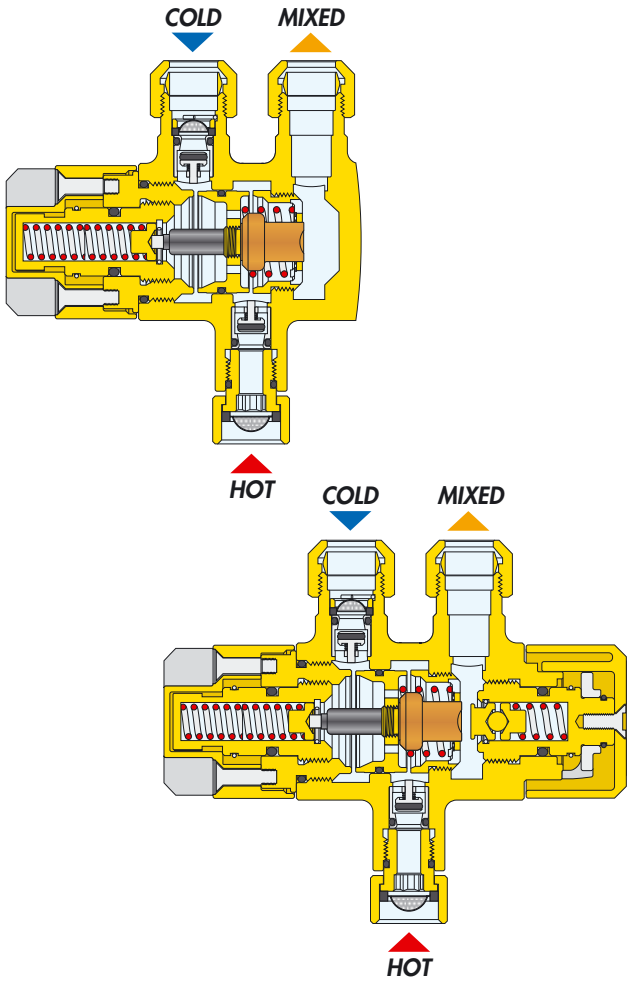



## Exposure time required to cause partial burns

| Temperature | Adults | Children 0-5 years |
|---|---|---|
| 70°C | 1 s | — |
| 65°C | 2 s | 0,5 s |
| 60°C | 5 s | 1 s |
| 55°C | 30 s | 10 s |
| 50°C | 5 min | 2,5 min |

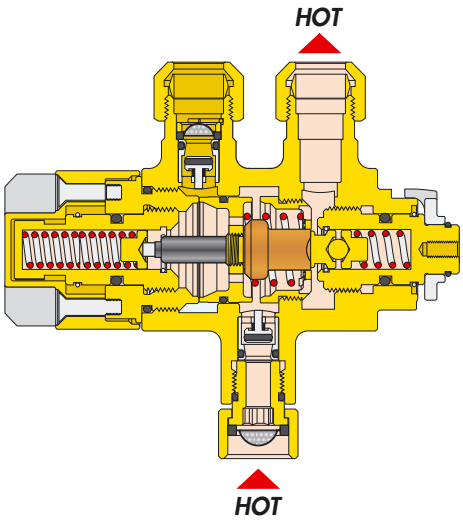
## Operating principle

The thermostatic mixing valve mixes the hot and cold water at the inlet so as to maintain constant the adjusted mixed water temperature at the outlet. A thermostatic element is fully immersed in the mixed water port. It contracts or expands, moving an obturator which controls the passage of the hot or cold water at the inlet. If there are changes in inlet temperature or pressure, the internal element reacts automatically to restore the adjusted temperature at the outlet.




## Thermal disinfection - By-pass function

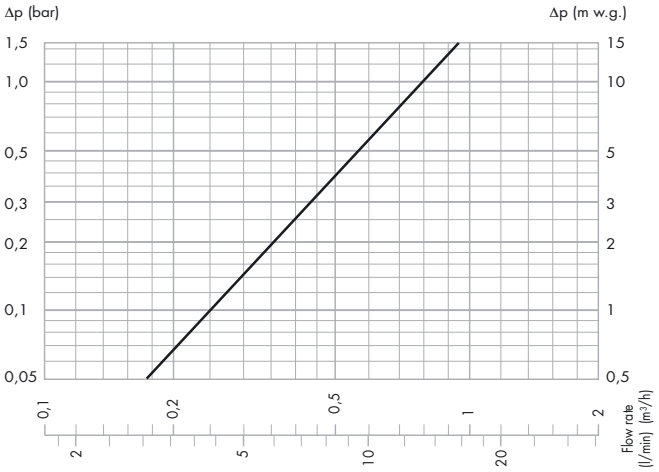
602 series mixing valves are equipped with a by-pass device which allows to reach the delivery tap with the thermal disinfection, as required by established legislation.
The by-pass provides total disinfection of the system and the mixing valve itself, without the need for disassembly.




## Anti-scald safety function

In case of hot or cold water supply failure at the inlet, the obturator closes the water port, thus shutting off the mixed water outlet. This function is only guaranteed if there is a minimum temperature difference of 10°C between the hot water at the inlet and the mixed water at the outlet.

## Hydraulic characteristics



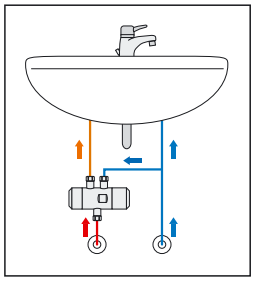

**Kv (m³/h) = 0,8**

## Use

601-602 series thermostatic mixing valves are designed for installation underneath the wash-hand basin. For correct operation, the minimum flow rate must be 4,5 l/min. The system must always be sized to take into account current legislation about the nominal flow rate to each user.

## Installation

Before installing the mixing valve, the connecting pipes should be flushed to remove any impurities that could impair the performance. We recommend to install always strainers of adequate performance at the water inlet from the hydraulic network.
601-602 series mixing valves are equipped with strainers at the hot and cold water inlets.
601-602 series thermostatic mixing valves can be installed in any position, horizontally or vertically.
The hot and cold water supplies must be connected as shown on the valve body (red dot for hot water - blue dot for cold water - the mixed water output is not marked).

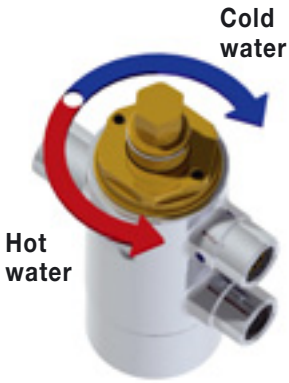


## Check valves

In systems with thermostatic mixing valves, check valves should be installed to prevent undesired back flows. 601-602 series thermostatic mixing valves are equipped with check valves at the hot and cold water inlets.

### Temperature adjustment

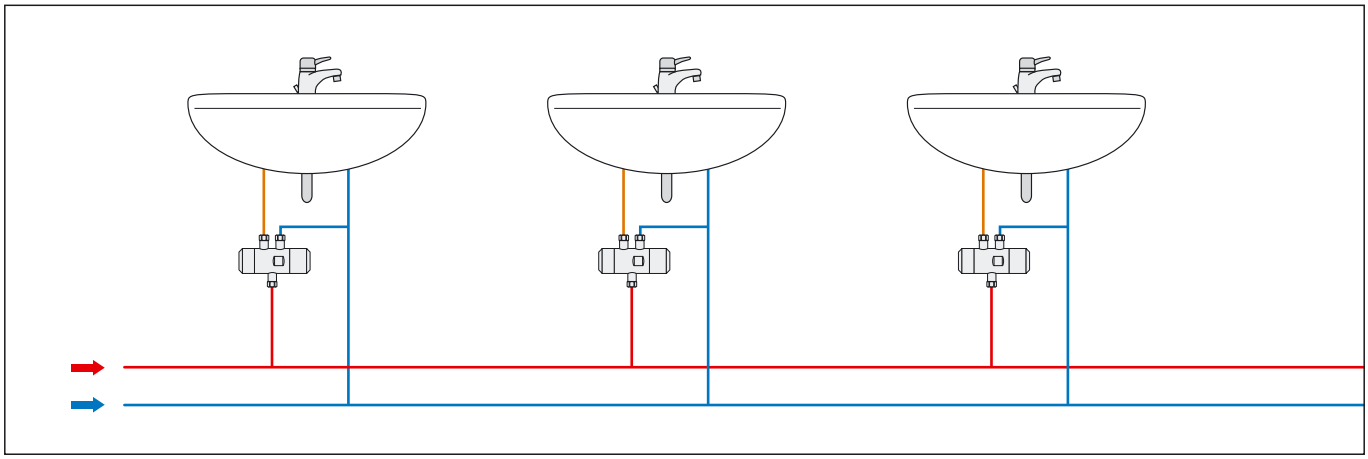
The temperature of the mixed water can be set to the desired value by turning the adjustment screw.
Applying the cover, equipped with screws, prevents unauthorised persons tampering with the setting.




### By-pass function

The 602 series thermostatic mixing valve is equipped with a special by-pass mechanism to provide thermal disinfection of each individual tap.
After removing the protective cover, turn the screw fully anti-clockwise.
In this way, only the incoming hot water will circulate, independently of the thermostat action.


### Application diagram



## SPECIFICATION SUMMARIES

### 601 series

Anti-scald thermostatic mixing valve for wash-hand basins. Threaded connections 3/8" (and 1/2"). Chrome plated brass body. Brass obturator. Stainless steel spring. EPDM seal elements. ABS cover. Medium water. Adjustment range 25–50°C. Factory set 41°C. Accuracy ±2°C. Maximum working pressure (static) 10 bar; maximum working pressure (dynamic) 5 bar. Maximum inlet temperature 90°C. Maximum inlet pressure ratio (H/C or C/H) 5:1. Minimum temperature difference between the inlet hot water and the outlet mixed water to ensure anti-scald performance 10°C. Minimum flow rate for a stable operation 4,5 l/min.

### 602 series

Thermostatic mixing valve with by-pass, for wash-hand basins. Threaded connections 3/8" (and 1/2"). Chrome plated brass body. Brass obturator. Stainless steel spring. EPDM seal elements. ABS cover. Medium: water. Adjustment range 25–50°C. Factory set 41°C. Accuracy ±2°C. Maximum working pressure (static) 10 bar; maximum working pressure (dynamic) 5 bar. Maximum inlet temperature 90°C. Maximum inlet pressure ratio (H/C or C/H) 5:1. Minimum temperature difference between the inlet hot water and the outlet mixed water to ensure anti-scald performance 10°C. Minimum flow rate for a stable operation 4,5 l/min.

*We reserve the right to make changes and improvements to the products and related data in this publication, at any time and without prior notice.*

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