

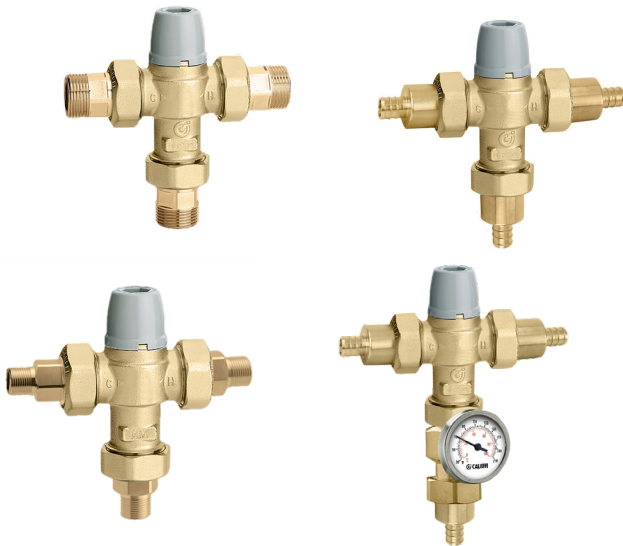
TubMixer™

High Flow Scald-Protection Thermostatic Mixing Valves



01092/24 NA

Replaces 01092/23.1 NA



**ASSE 1070/ASME A112.1070/CSA B125.70
NSF/ANSI/CAN 372**



Function

The Caleffi 5213 TubMixer™ is a temperature limiting thermostatic mixing valve designed to deliver safe, consistent, and controlled water temperatures. Engineered to comply with product standards, the valve is limited to outputting tempered water at 120°F. It features check valves on the inlets to prevent cross-connections. With an adjustable temperature setting and a durable temperature cartridge, it supports a wide flow range from 0.5 to 9 GPM for single to multi fixture applications. In the event of a hot or cold water supply failure, the valve automatically stops water flow from the mixed outlet. Its superior performance under varying water temperatures and pressures makes the TubMixer ideal for applications where precise temperature control and scald protection are critical, such as in hospitals, schools, and nursing homes.

The 5213 Series TubMixer complies with ASSE 1070/ASME A112.1070/CSA B125.70, CSA B125.3, UPC, IPC, IRC and NPC compliance for use in accordance with U.S. and Canadian plumbing codes. Additionally, it is compliant with NSF/ANSI/CAN 372, US and Canadian Low-Lead and Lead-Free materials contents laws for drinking water system components. The product is certified and listed by ICC-ES.

Product range

5213A series TubMixer high-flow scald protection three-way thermostatic mixing valve with optional dual-scale outlet temperature gauge..... threaded NPT male, sweat, press, PEX crimp and PEX expansion union connections, sizes ½", ¾", 1"; and compression union, size ¾".

Technical specifications

Materials

Body:	low-lead* cast brass
Regulating spindle:	low-lead* cast brass
Internal shutter:	PPO
Sealing elements:	peroxide-cured EPDM
Cover:	ABS

* Meets the "lead free" requirement of Section 1417 of the Safe Drinking Water Act (SDWA)
This product has a weighted average lead content of less than 0.25% for its wetted surfaces contacted with consumable water.

Performance

Suitable fluids:	water
Maximum working pressure (static):	150 psi (10 bar)
Maximum working pressure (dynamic):	70 psi (5 bar)
Minimum working pressure (dynamic):	1.5 psi (0.1 bar)
Temperature adjustment range:	85 to 120 °F (30 to 50 °C)
Temperature set:	must be commissioned on site to achieve desired temperature setting
Temperature control accuracy:	±3 °F (±2 °C)
Minimum cold inlet temperature:	40 °F (5 °C)
Maximum cold inlet temperature:	85 °F (30 °C)
Minimum hot inlet temperature:	120 °F (50 °C)
Maximum hot inlet temperature:	185 °F (85 °C)
Maximum unbalanced dynamic supply (hot/cold or cold/hot):	6:1
Minimum temperature differential between hot water inlet and mixed water outlet to ensure thermal shutoff operation:	18 °F (10 °C)
Minimum temperature differential between mixed water outlet and cold water inlet to ensure stable operation:	9 °F (5 °C)
Minimum flow rate for stable operation:	0.5 gpm (2 l/min)
Maximum flow rate for stable operation:	9 gpm (34 l/min)

Outlet temperature gauge (optional) 2" diameter
Dual-scale 30 - 210 °F and 0 - 100 °C
Accuracy: 1% full-scale

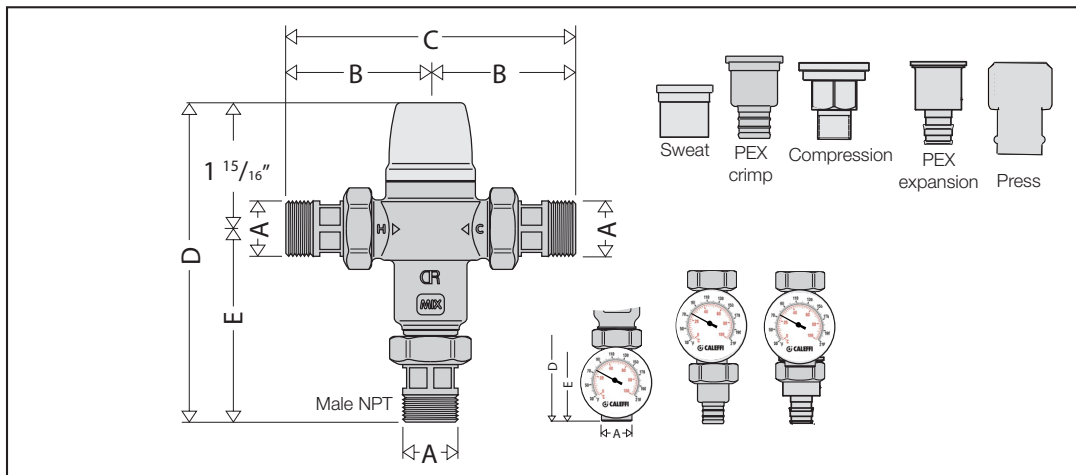
Connections

Main connections: ½", ¾", 1" union PEX crimp, PEX expansion, NPT male, sweat and press ¾" union compression

Certifications

1. ASSE 1070/ASME A112.1070/CSA B125.70, CSA B125.3, UPC, IPC, IRC and NPC compliance for use in accordance with U.S. and Canadian plumbing codes. Certified and listed by ICC-ES, PMG File 1358.
2. NSF/ANSI/CAN 372, Drinking Water Systems Components-Lead Content Reduction of Lead in Drinking Water, California Health and Safety Code 116875 S.3874, Reduction of Lead in Drinking Water Act, certified by ICC-ES, file PMG-1360.
3. PEX crimp fittings certified to ASTM F 1807.
4. PEX expansion fittings certified to ASTM F 1960.

Dimensions



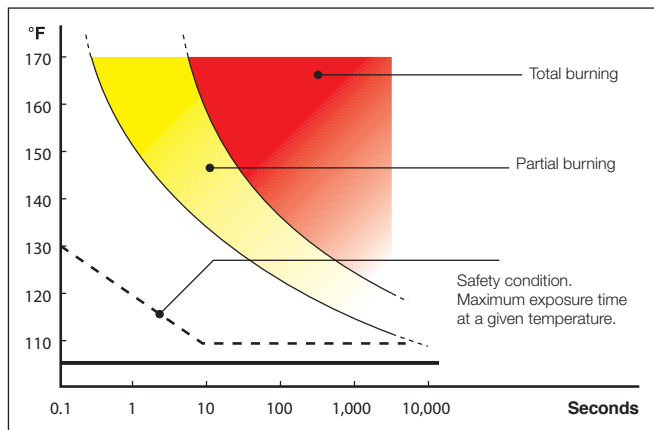
Code (1)	A	B	C	D	E	LL(3)	Wt (lb)
521342A	½" MNPT	2 ¾"	5 9/16"	5 1/16"	3 1/8"		2.0
521342A 002				7 3/16"	5 5/16"		
521352A	¾" MNPT	2 ¾"	5 ½"	4 13/16"	2 15/16"		
521352A 002				7"	5 1/16"		
521362A	1" MNPT	2 7/8"	5 ¾"	5 3/16"	3 ¼"		
521362A 002				7 5/16"	5 3/8"		
521347A	½" PEX crimp	2 15/16"	5 7/8"	5 7/16"	3 ½"		
521347A 002				7 9/16"	5 11/16"		
521357A	¾" PEX crimp	2 15/16"	5 7/8"	5 7/16"	3 ½"		
521357A 002				7 9/16"	5 11/16"		
521367A	1" PEX crimp	3"	6"	5 ½"	3 5/8"		
521367A 002				7 11/16"	5 ¾"		
521348A	½" PEX exp	2 15/16"	5 7/8"	5 7/16"	3 9/16"		
521348A 002				7 5/8"	5 11/16"		
521358A	¾" PEX exp	3 3/16"	6 3/8"	5 11/16"	3 ¾"		
521358A 002				7 13/16"	5 15/16"		
521368A	1" PEX exp	3 ½"	6 15/16"	6"	4 1/16"		
521368A 002				8 1/8"	6 ¼"		
521349A	½" sweat	2 5/8"	5 5/16"	4 ½"	2 9/16"	4 5/16"	
521349A 002				6"	4 1/8"		
521359A	¾" sweat	2 13/16"	5 9/16"	4 ¾"	2 13/16"	4 5/16"	
521359A 002				6 1/8"	4 3/16"		
521369A	1" sweat	3 1/16"	6 1/16"	5 5/16"	3 3/8"	4 ¼"	
521369A 002				6 7/16"	4 ½"		
521346A	½" press	3 3/16"	6 5/16"	4 13/16"	2 15/16"	4 5/8"	
521346A 002				7"	5 1/16"		
521356A	¾" press	3 ¼"	6 ½"	5 3/16"	3 ¼"	4 9/16"	
521356A 002				7 5/16"	5 7/16"		
521366A	1" press	4 1/8"	8 ¼"	5 ¾"	3 13/16"	6 7/16"	
521366A 002				7 15/16"	6"		
521333A (2)	3/8" comp	2 ½"	5 5/16"	5 1/16"	3 1/8"		
521333A 002 (2)				7 3/16"	5 ¼"		

(1) Suffix 002 means the assembly includes a temperature gauge and adapter.

(2) Includes mounting bracket.

(3) Lay length: Hot to Cold Inlets.

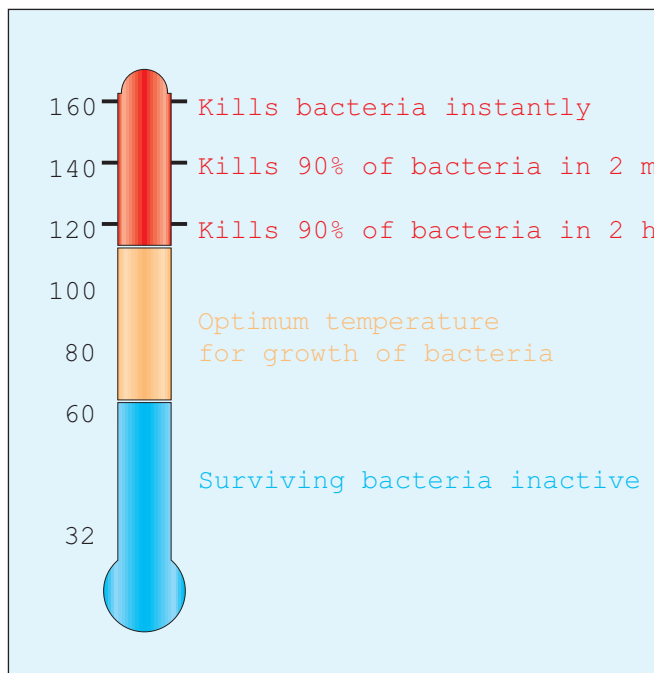
Temperature — exposure time



Thermal disinfection

The diagram shows the behavior of the bacteria Legionella Pneumophila when the temperature conditions of the water in which it is contained vary.

In order to ensure proper thermal “disinfection”, the values must not be below 140 °F.



Exposure time for partial burns

Temperature	Adult	Children 0-5 years
160 °F	1 sec	---
150 °F	2 sec	0.5 sec
140 °F	5 sec	1 sec
130 °F	30 sec	10 sec
120 °F	5 min	2.5 min

Legionella-scalding risk

In systems producing domestic hot water with storage, in order to avoid the dangerous infection known as Legionella, the hot water must be stored at a temperature of at least 140 °F. At this temperature it is certain that the growth of the bacteria causing this infection will be totally eliminated. At this temperature, however, the water cannot be used directly.

As shown on the diagram, temperatures of more than 120°F can cause burning very quickly. For example, at 130 °F partial burning will occur in approximately 30 seconds, while at 140 °F partial burning will occur in approximately 5 seconds. The time may be reduced by 50 percent or more for children and elderly people.

In view of the above, it is necessary to install a thermostatic mixing valve which can:

- reduce the temperature at the point of use to a value lower than that of storage and suitable for users. For safety reasons, it is advisable to limit the mixed water temperature to 120 °F;
- maintain a constant temperature when the incoming pressure and temperature conditions vary.

Operating principle

The controlling element of the three-way thermostatic mixing valve is a thermostatic sensor fully immersed in the mixed water outlet tube 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 thermostatic mixing valve automatically regulates the water flow to obtain the required temperature.

Construction details

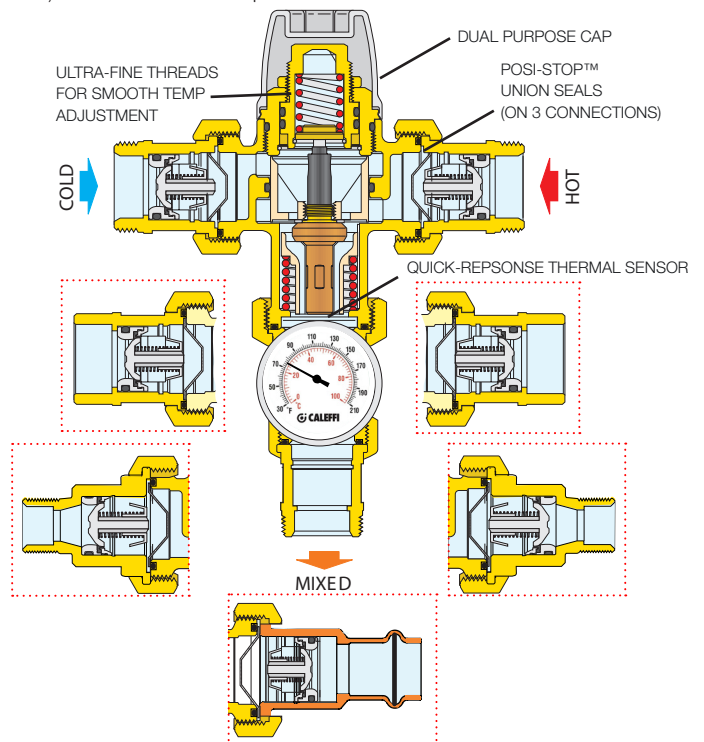
Anti-scale materials

The material used in the construction of the Caleffi TubMixer 5213 series thermostatic mixing valve reduces jamming caused by lime deposits. All the working parts are made of a special anti-scale material, with a low friction coefficient, assuring stable temperature control and long operating life.

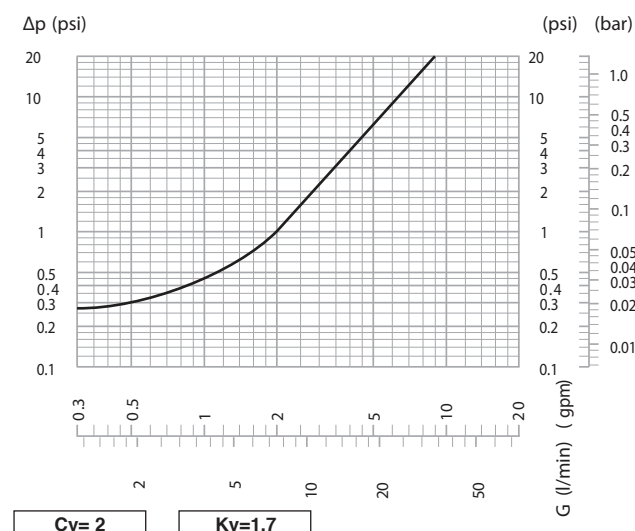
Thermal shutoff

In the event of a failure of either the hot or cold supply, the piston will close the opposite inlet, stopping water discharging from the mixed water outlet.

The Caleffi Tubmixer 5213 series thermostatic mixing valve requires a minimum temperature differential from hot inlet to mixed water outlet of 18 °F (10 °C) to ensure the correct operation of the thermal shutoff function.



Flow curve



Flow rate and use

The Caleffi TubMixer 5213 series is a thermostatic mixing valve suitable for **point of use application**. For this reason, the flow rate through the valve is the same as that of the final outlet, e.g. mixer or tap for washbasin, shower or bath. In order to ensure the set temperature, the thermostatic mixing valve must have a minimum flow rate of 0.5 gpm (2 l/min).

The system must be sized taking into account the current legislation with regard to the nominal flow rate of each outlet.

Public buildings, hospitals, schools

In these applications, for the type of users of hot water such as children, elderly or disabled people, the risk of being scalded is very high. In these installations, the two supply lines of the hot water from storage and of the cold water can have different origin and work at different pressures.

In the event of failure of the cold or hot water supply, the thermostatic mixing valve shuts off the water flow from the outlet, thus avoiding possible scalding or thermal shocks.

Installation

Before installing the Caleffi 5213 series TubMixer thermostatic mixing valve, carefully review the following instructions. The installer is responsible for ensuring that all aspects of the installation comply with current regulations and legislation.

The TubMixer should be installed in accordance with the relevant standards, codes of practice, and legislation for each state, as well as the details provided in this manual. Installation must be carried out by a licensed plumber.

Before installation, verify that the system operating conditions are within the recommended range for the valve. This includes checking supply temperatures, supply pressures, and conducting risk assessments as necessary.

Before installing the TubMixer, thoroughly flush and clean the supply system to remove any debris that may have accumulated during installation. Failure to do so can impact the valve's performance and void the manufacturer's warranty. In areas with aggressive water conditions, the water should be treated before entering the valve.

The valve can be installed in any position, either vertical or horizontal. Ensure that access to the valve remains unobstructed for any future maintenance of the valve or its associated fittings.

The valve can be installed in any position, either vertical or horizontal. Ensure that access to the valve remains unobstructed for any future maintenance of the valve or its associated fittings.

The hot and cold water supplies must be connected to the valve as indicated on the valve body. The inlets are marked with "H" for hot and "C" for cold, and the outlet is labeled "MIX." If the incoming supply pressures are excessive, a Caleffi pressure reducing valve should be installed to bring the pressure within acceptable limits.

Any thermostatic mixing valve installation must include isolating valves, line strainers, and check valves at both inlets. Isolating valves allow the water supply to be shut off for servicing, strainers prevent debris from entering the valve, and check valves prevent cross-connection between the hot and cold supplies.

The Caleffi 5213 series TubMixer comes with check valves pre-installed at the hot and cold inlets. For the sweat version, the check valve must be removed from the tailpiece before soldering and then reassembled afterward.

To maintain the TubMixer's performance, particularly in the event of a cold water failure, the hot water supply temperature at the valve's entry point should be at least 18°F higher than the set mixed water discharge temperature.

The piping to and from the valve should not be used to support the valve's weight.

Commissioning

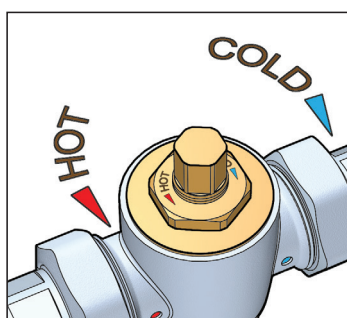
After installation, the valve must be commissioned in accordance with current standards by qualified personnel using suitable temperature measuring equipment. Use a suitably calibrated and accurate digital thermometer to measure temperatures during commissioning. The valve is commissioned by measuring the mixed water temperature at the outlet. Consult instruction sheet 38531 for a complete commissioning procedure.

Temperature adjustment

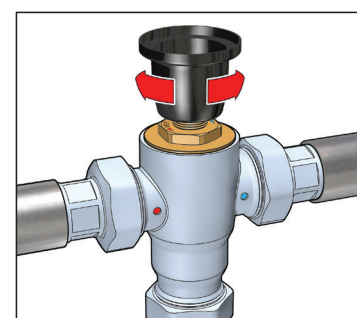
Temperature setting can be adjusted by removing the cap from the valve body and reversing the cap onto the temperature adjustment spindle. In accordance with the anti-scald requirements, mixed water at the outlet of the sanitary fixtures must not exceed the following values:

- 120 °F (49 °C) for domestic or normal buildings
- 110 °F (43.3 °C) for hospitals or special buildings
- 100 °F (38 °C) for children

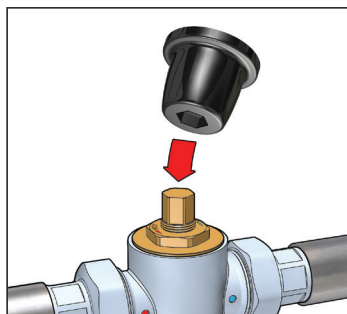
Temperature setting can then be locked at the desired value using the locking nut.



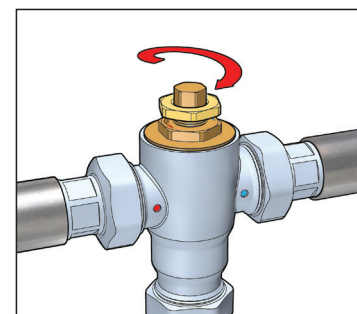
View of temperature adjustment



Attaching temperature adjustment cap



Temperature adjustment cap in place



Locking adjustment spindle with locking nut

Replacement fittings

Refer to the current Caleffi Plumbing and Hydraulics Catalog for replacement union nuts and tailpieces by size and connection style.

Replacement parts



Replacement check valves for 5213 series TubMixer thermostatic mixing valves.

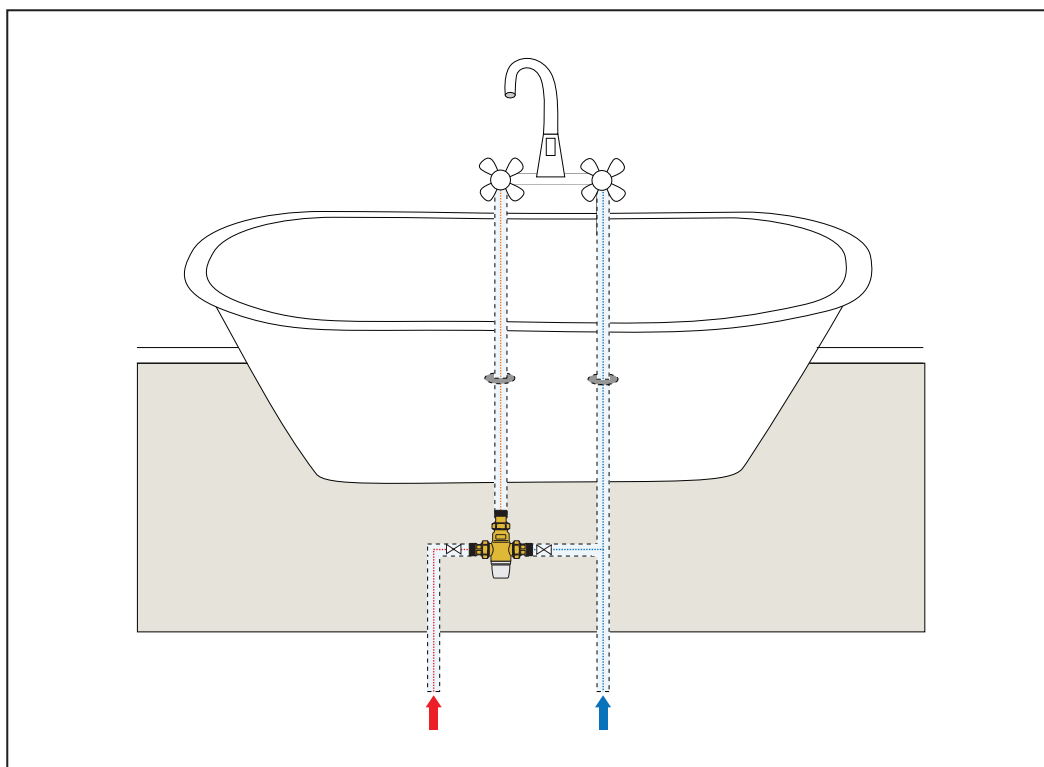


Replacement conical inlet filter for 5213 series TubMixer thermostatic mixing valves.

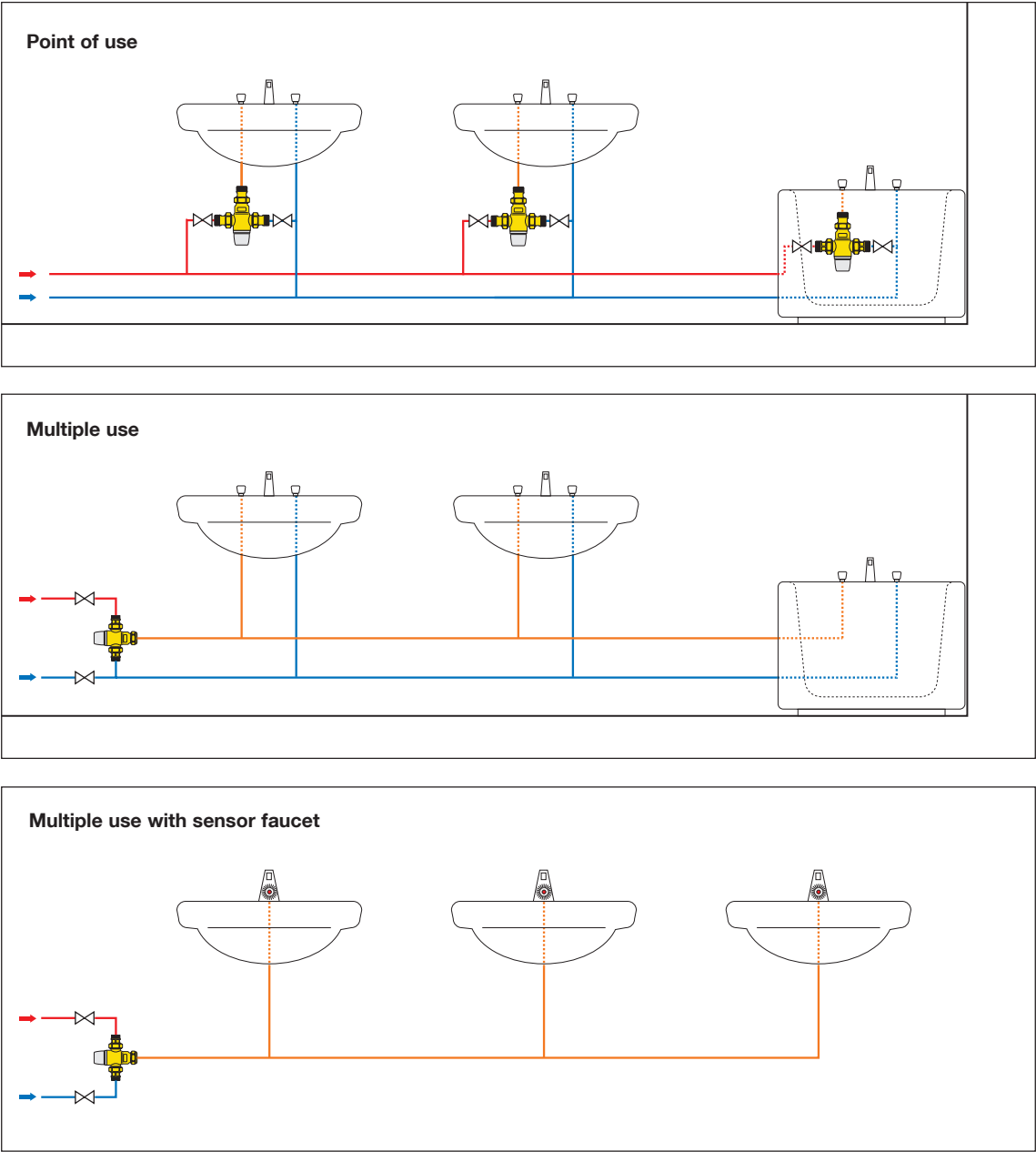
NA10405..... check valve for PEX fittings
R39204..... check valve for sweat, NPT fittings
NA10479.....check valve for 521333A

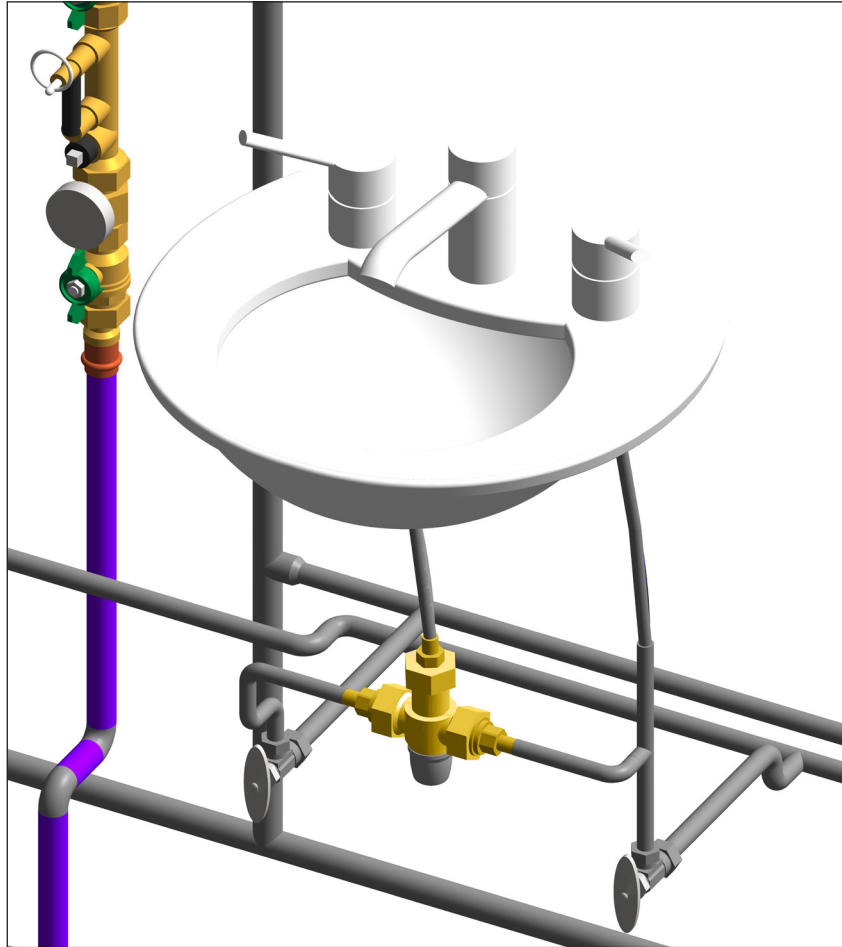
F52429.....conical filter

Application Diagrams



Application Diagrams





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<https://get.caleffi.info/specpoint>



find BIM Revit files and system templates at
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SPECIFICATION SUMMARY

TubMixer 5213 series

High flow scald-protection point-of-use thermostatic mixing valve certified by ICC-ES to ASSE 1070, ASME A112.1070, CSA B125.70, CSA B125.3 (temperature cannot exceed 120 degrees F) and NSF/ANSI/CAN 372. Meets codes IPC, IRC, UPC and NPC for use in accordance with the US and Canadian plumbing codes. Sizes ½ inch, ¾ inch and 1 inch with NPT male threaded, sweat, press, PEX crimp and PEX expansion union and 3/8 inch compression union connections. Low lead* cast brass body and regulating spindle. Shutter in PPO anti-scale plastic. Seals peroxide-cured EPDM. Maximum working temperature 185 degrees F (85 degrees C). Setting range 85 degrees F to 120 degrees F (30 degrees C to 50 degrees C). Tolerance ±3 degrees F (±2 degrees C). Maximum working pressure 150 psi (10 bar). Minimum flow rate for stable operation 0.5 gpm (2 l/min). Maximum flow rate for stable operation 9 gpm (34 l/min). Provided with tamper-proof setting lock and check valves at the inlets. Provide with optional mixed outlet dual-scale temperature gauge, 30 to 210 degrees F scale and 0 to 100 degree C scale, 2 inch diameter, accuracy, 1% full-scale.

* Meets the "lead free" requirement of Section 1417 of the Safe Drinking Water Act (SDWA) This product has a weighted average lead content of less than 0.25% for its wetted surfaces contacted with consumable water.

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. The technical brochure on www.caleffi.com always has the most up-to-date version of the document, which should be used for technical verification.



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