

## SinkMixer™ Scald Protection Thermostatic Mixing Valve

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### 5212 Series

#### Function



**ASSE 1070**  
**NSF/ANSI/CAN 61**  
**NSF/ANSI/CAN 372**

The Caleffi SinkMixer™ thermostatic mixing valve ensures that end users are safeguarded against scalding water temperature conditions in applications such as sinks, bathtubs or lavatories. The SinkMixer is most critical in hospitals, schools, and nursing homes, where precise water temperature control is essential for the safety of vulnerable individuals. In accordance with American and Canadian product safety standards, the valve functions to control and limit the mixed outlet water temperature up to 120 °F. In the event of cold water supply failure the valve will rapidly reduce outlet flow to prevent against scalding conditions from fluctuating hot water supply conditions. The SinkMixer is equipped with integral check valves on both supply inlets to prevent against cross flow conditions .

The SinkMixer comes in two configurations: 3- and 4-port. The 3-port compact configuration is designed with single-pipe installations in mind where only a singular tempered water is supplied to the fixture. The 4-port configuration is meant for fixtures requiring both hot and cold sources without requiring a brass T or additional piping. The 3-port configuration includes a compression fitting kit for hard pipe applications, while the 4-port configuration comes with a mounting bracket and an optional cold port plug and compression fittings kit for hard pipe installations.

The Caleffi SinkMixer family complies with ASSE 1070/ASME A112.1070/ CSA B125.70 performance requirements for water temperature limiting devices. Certified and listed by ICC-ES, PMG File 1358. Complies with low lead and lead free material requirements of NSF/ANSI/CAN 61 and NSF/ANSI/CAN 372 for use in potable water systems. Certified and listed by ICC-ES, PMG File 1512 and PMG File 1360 respectively. Certified for installation and use in compliance with UPC, IPC, NRC, and NPC plumbing codes. Certified and listed by ICC-ES, PMG File 1358.

#### Product range

- 521201A 4-port SinkMixer scald protection thermostatic mixing valve..... 3/8" compression
- 521201AP 4-port SinkMixer scald protection thermostatic mixing valve,  
includes plug for cold water outlet and compression fittings kit.....3/8" compression
- 521204A 3-port SinkMixer scald protection thermostatic mixing valve,  
includes compression fittings kit..... 3/8" compression

## Technical specifications

### Materials

Valve body, regulating spindle, spring holder and cold inlet union nut:	low-lead* brass
Internal shutter:	polysulfone
Hot inlet strainer:	AISI 304 stainless steel
Spring:	AISI 302 stainless steel
Seals:	peroxide-cured EPDM
Cover:	ABS white
Mounting bracket and adjustment key:	polyamide nylon

\* 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

Temperature adjustment range:	95–120 °F (35–50 °C)
Temperature set:	must be commissioned on site to achieve desired temperature
Temperature stability:	±3 °F (±2 °C)
Cold inlet temperature:	Minimum 40 °F (5 °C); Maximum 85 °F (30 °C)
Hot inlet temperature:	Minimum 120 °F (50 °C); Maximum 195 °F (90 °C)
Factory setting:	113 °F (45 °C)
Maximum operating differential pressure:	Static: 150 psi (10 bar); Dynamic: 75 psi (5 bar)
Minimum operating differential pressure (dynamic):	1.5 psi (0.1 bar)
Maximum unbalanced dynamic supply (hot/cold or cold/hot):	2:1
Minimum temperature differential between hot water inlet and mixed water outlet to ensure thermal shutoff function:	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 optimum operation:	0.35 gpm (1.3 l/min)
Maximum flow rate for optimum operation:	2.3 gpm (8.5 l/min)

### 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 61, Drinking Water System Components for use in potable water systems. Certified by ICC-ES, PMG File 1512.
3. NSF/ANSI/CAN 372, US and Canadian Low-Lead and Lead-Free materials contents laws for drinking water system components. Certified by ICC-ES, PMG File 1360.



## SAFETY INSTRUCTION

This safety alert symbol will be used in this manual to draw attention to safety related instructions. When used, the safety alert symbol means **ATTENTION! BECOME ALERT! YOUR SAFETY IS INVOLVED! FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN A SAFETY HAZARD.**



**WARNING:** This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**CAUTION:** All work must be performed by qualified personnel trained in the proper application, installation, and maintenance of systems in accordance with all applicable codes and ordinances.



**CAUTION:** If the thermostatic 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.



**CAUTION:** Make sure that all the connecting pipework is water tight.



**CAUTION:** When making the water connections, make sure that the pipework connecting the thermostatic mixing valve 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.



**CAUTION:** Water temperatures higher than 100 °F (38 °C) can be dangerous. During the installation, commissioning and maintenance of the thermostatic mixing valve, take the necessary precautions to ensure that such temperatures do not endanger people.



**CAUTION:** To prevent any damage which will cause the thermostatic mixing valve to not operate correctly, treat highly aggressive water before entering the thermostatic mixing valve.



**WARNING:** The outer surface of the device, especially in polymer type components, must not come into contact with any chemical substance, either on purpose or accidentally. The system fluid and any chemical additives used within the water piping system – whether for washing or as protection – must be compatible with the materials used to make the device and with the function it performs.

Caleffi shall not be liable for damages resulting from stress corrosion, misapplication or misuse of its products.

**Leave this manual for the user.**



## CONSIGNE DE SÉCURITÉ

Ce symbole d'avertissement servira dans ce manuel à attirer l'attention sur la sécurité concernant instructions. Lorsqu'il est utilisé, ce symbole signifie.

**ATTENTION! DEVEZ-VOUS ÊTRE ALERTES ! VOTRE SÉCURITÉ EST EN JEU ! NE PAS SUIVRE CES INSTRUCTIONS PEUT PROVOQUER UN RISQUE DE SÉCURITÉ.**



**AVERTISSEMENT:** Ce produit peut vous exposer à des produits chimiques comme le plomb, qui est connu dans l'État de Californie pour causer le cancer, dommages à la naissance ou autre. Pour plus d'informations rendez-vous [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).



**ATTENTION:** Tous les travaux doivent être effectués par du personnel qualifié formé à la bonne application, installation et maintenance des systèmes conformément aux codes et règlements locaux.



**ATTENTION:** Si le réducteur de pression, thermostatique réglable, n'est pas installé, mis en service et entretenu correctement, selon les instructions contenues dans ce manuel, il peut ne pas fonctionner correctement et peut mettre en danger l'utilisateur.



**ATTENTION:** S'assurer que tous les raccordements sont étanches.



**ATTENTION:** Lorsque vous effectuez les raccordements d'eau, assurez-vous que la tuyauterie reliant le thermostatique réglable n'est pas mécaniquement overstressed. Au fil du temps, ceci pourrait causer des ruptures, avec pour conséquence des pertes en eau qui, à leur tour, peuvent causer des dommages à la propriété et/ou les gens.



**ATTENTION:** Les températures de l'eau supérieures à 100 °F (38 °C) peuvent être dangereuses. Au cours de l'installation, mise en service et l'entretien de le réducteur de pression, le thermostatique réglable, prendre les précautions nécessaires afin de s'assurer que de telles températures ne compromettent pas les gens.



**ATTENTION:** Pour prévenir tout dommage qui provoque le thermostatique réglable à ne pas fonctionner correctement, le traitement de l'eau très agressive avant d'entrer dans la vanne de le thermostatique réglable.



**AVERTISSEMENT:** La surface extérieure de l'appareil, en particulier les composants de type polymère, ne doit pas entrer en contact avec des substances chimiques, que ce soit volontairement ou accidentellement. Le produit et les additifs chimiques utilisés dans les canalisations d'eau - que ce soit pour le lavage ou la protection - doivent être compatibles avec les matériaux utilisés pour la fabrication de l'appareil et avec la fonction qu'il remplit.

Caleffi ne pourra être tenue responsable des dommages résultant de la corrosion, d'une mauvaise utilisation ou une mauvaise utilisation des produits.

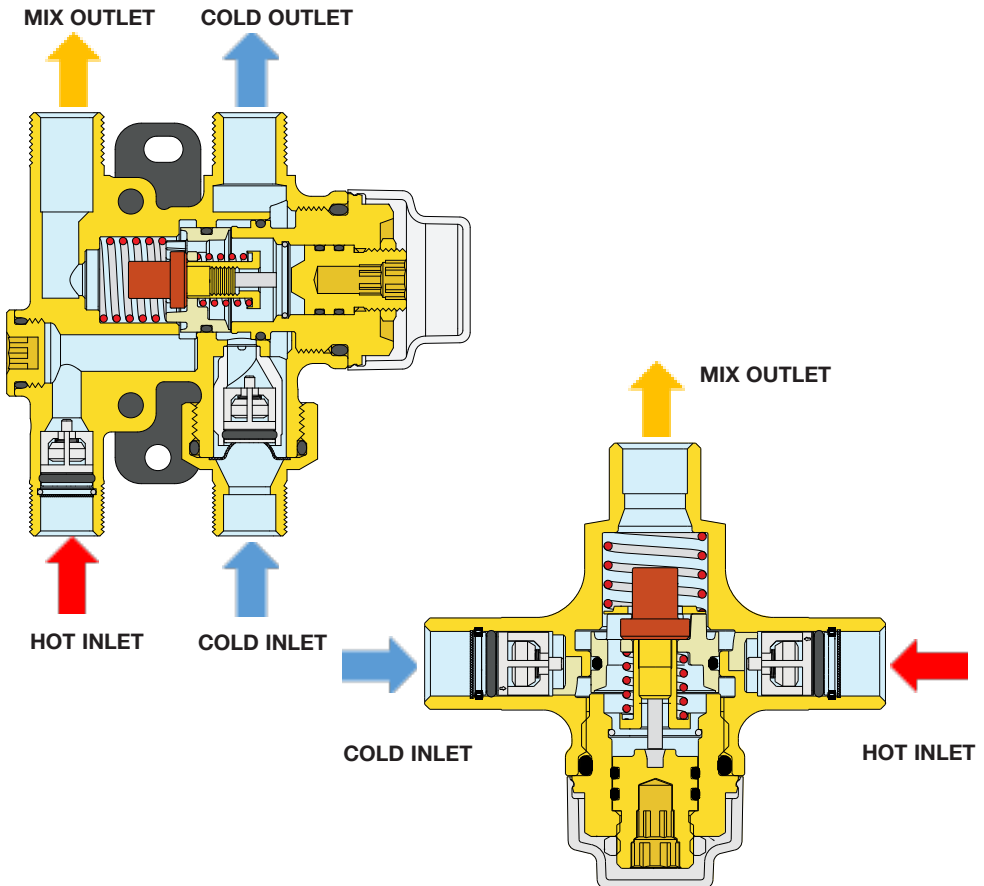
**Laissez ce manuel avec l'utilisateur**

## Operating principle

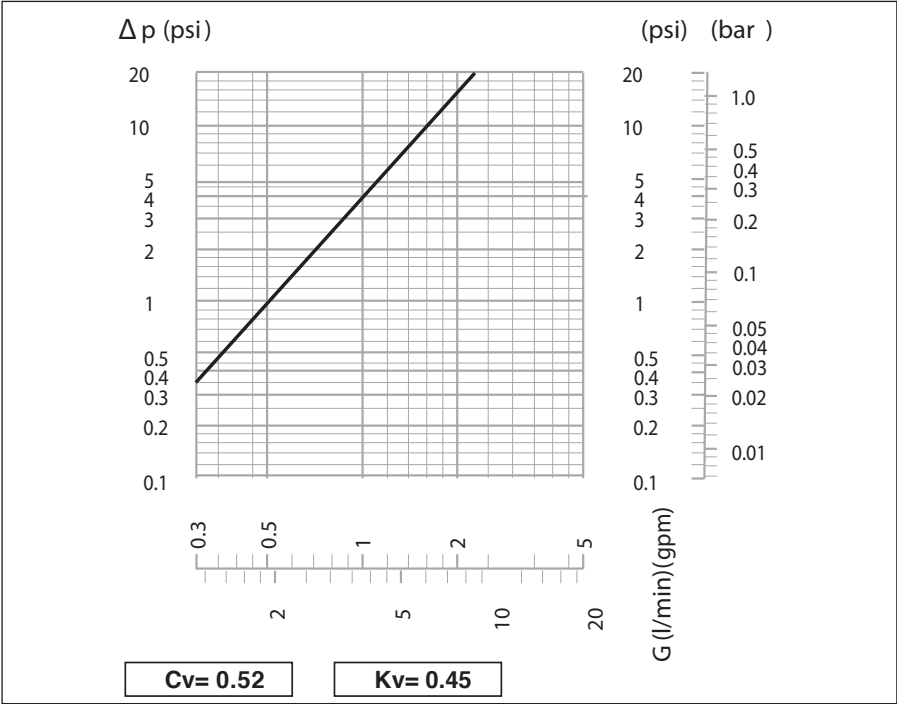
The thermostatic mixing valve maintains a constant outlet temperature by adjusting the ratios of hot and cold water automatically. Its immersed thermostatic element contracts or expands, moving the piston to regulate flow rates from the hot or cold inlets to achieve the desired outlet temperature. It responds to fluctuations in temperature or pressure at the inlets by automatically adjusting to maintain the set temperature. If the cold supply fails, the piston fully expands, halting water discharge from the mixed outlet.

## Thermal shutoff

In either event of a complete cold or hot water supply failure, the SinkMixer piston will close and prevent flow through the mixed outlet port. The 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 feature.



**Flow curve**



Flow should never exceed standards for pipe size and materials.

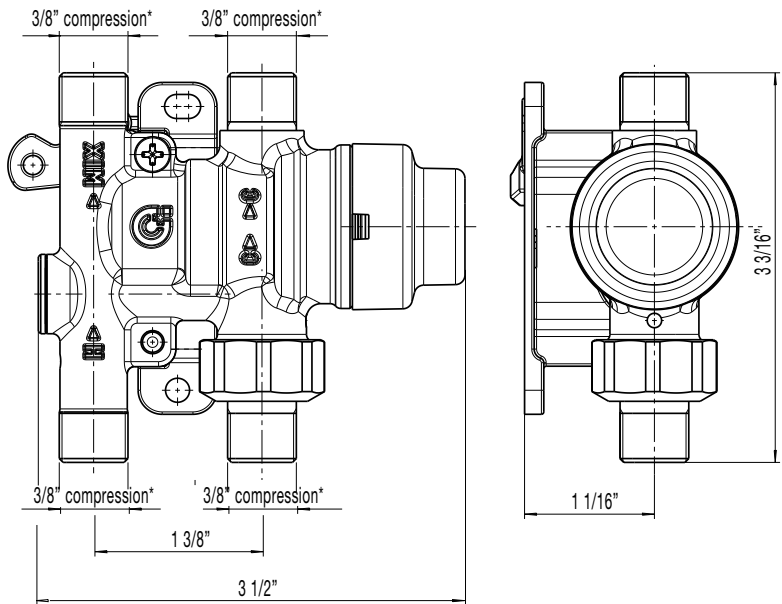
**Use**

The Caleffi SinkMixer thermostatic mixing valve is designed for under sink and under counter applications in accordance with plumbing codes requirements for installation and performance requirements of ASSE 1070/ASME A112.1070/CSA B125.70.

Valve and system sizing according to current legislation considering the nominal flow rate at each outlet is required.

The SinkMixer serves to prevent accidental scalding by ensuring the outlet water temperature is correctly tempered and limited. Verification of desired outlet temperature using a thermometer at the faucet is recommended.

# Dimensions



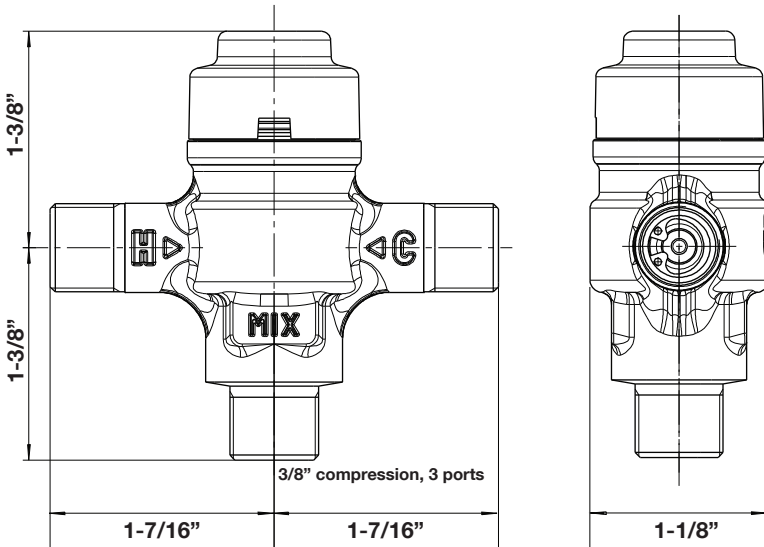
**Code 521201A, AP\*\***

0.5 lb /0.3 kg

\* Actual thread is 9/16" - 24 UNEF.  
\*\*AP includes a plug for cold water outlet and a bag with 4 nuts and 4 ferrules for hard pipe installations.

**Code 521204A**

0.5 lb /0.3 kg



\* Actual thread is 9/16" - 24 UNEF.

\*\*521204A package includes a bag with 3 nuts and 3 ferrules.

## Replacement parts

Replacement check valve and strainers for 5212 series under sink thermostatic mixing valves.



F0001270.....check valve and two strainers, one set for the cold inlet port and one set for the hot inlet port.

5-pack of plugs/nuts to plug the valve cold outlet port when using 521201A with a single-pipe fixture, or field replacement for 521204A.



NA10741.....plug/nut 3/8" compression (5-pack)



## Installation

The following instructions must be read prior to the installation of a Caleffi SinkMixer thermostatic mixing valve. The installer should also be aware of his responsibility and duty of care to ensure that all aspects of the installation comply with current regulations and legislation. The Caleffi SinkMixer should be installed using the appropriate standard, code of practice and legislation applicable to each state and following the details in this manual. The Caleffi SinkMixer series must be installed by a licensed plumber.

Prior to the installation of the valve, the system must be checked to ensure that the **system operating conditions fall within the recommended operating range of the valve, i.e. verify supply temperatures, supply pressures, risk assessments, etc.**

The supply system into which the Caleffi SinkMixer is to be installed must be thoroughly flushed and cleaned to remove any debris which may accumulate during the installation. Failure to remove any debris will affect the performance and the manufacturer's warranty on the product. In areas that are subject to high levels of aggressive water, provision must be made to treat the water prior to it entering the valve.

The 4-port valve is recommended to be installed in a position oriented with the cover to the right with cold inlet/outlet on the right side (allowing direct connection to the sink's cold water inlet fitting) resulting in the hot inlet/mix outlet on the left aligning direct to the hot water inlet sink fitting. The 3-port valve is recommended to be installed with the MIX port up. It is essential that the access to the valve is not obstructed for future maintenance that may be required to the valve or associated fittings.

It is essential that when the installation is designed and/or installed, all current legislation is noted, e.g. the maximum distance from the outlet of the valve to any terminal fitting.

The connecting hot and cold water supplies must be connected to the valve strictly in accordance with the indications on the body of the valve. The inlets of the valves are clearly marked with the letter H (Hot) and C (Cold). The outlet is marked with the word MIX. The valve has male 3/8" compression threads for connection to standard 3/8" compression faucet connectors and stops.

Where one or both the incoming supply pressures are excessive, a Caleffi pressure reducing valve should be installed to reduce the pressure(s) within the limits.

The Caleffi SinkMixer valve is supplied complete with the check valves at the hot and cold inlets.

Mount the 4-port SinkMixer valve to the wall underneath the sink with black plastic mounting bracket supplied with valve but not attached. Use mounting screw to attach the mounting bracket to the valve to meet the orientation described above. Break off the adjustment key for adjusting the temperature, see commissioning section.

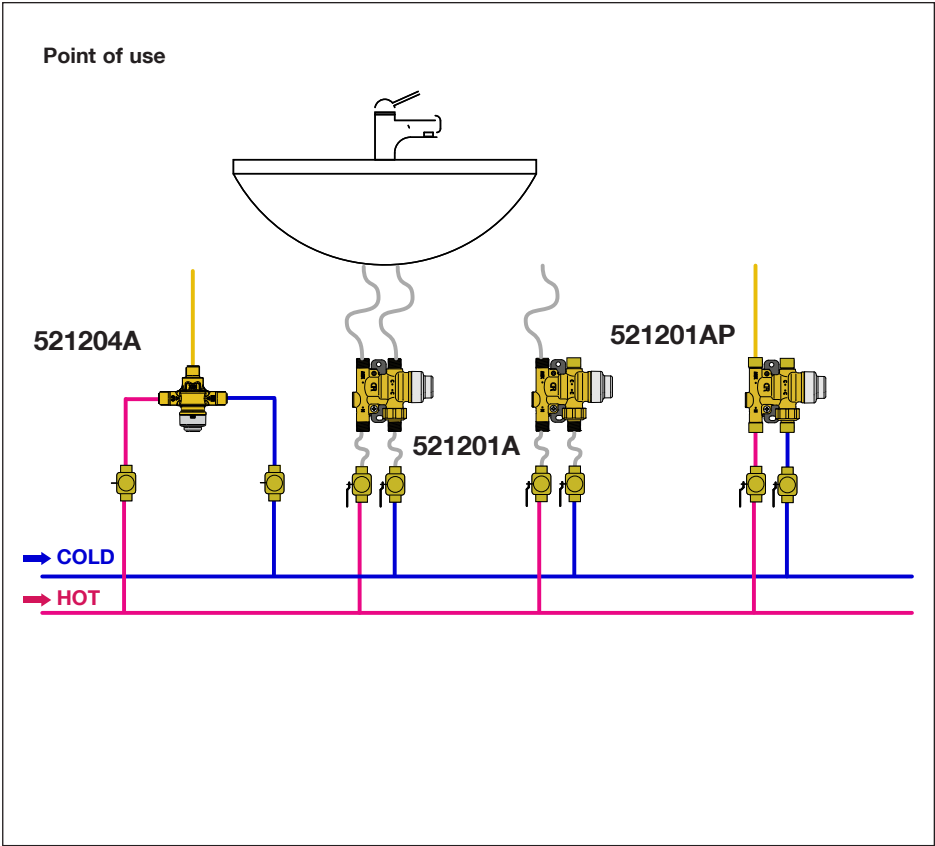
To ensure that the performance of the Caleffi SinkMixer valve is maintained (in the event of cold water failure), the temperature of the hot water supply at the point of entry to the valve must be a minimum of 18 °F higher than the set mixed water discharge temperature.

If the valve is not installed correctly, it will not function correctly and may put the user in danger.

For single-pipe fixtures (tempered water only), code 521201AP comes complete with a plug/nut for the valve cold outlet port. Also, code 521204A comes with 3 nuts and 3 ferrules. Code NA10741 is a 5-pack of nuts and ferrules, including a plug for the cold outlet port when installing code 521201A (unit coming without this plug/nut) in single pipe fixture undersink applications. Code 521201AP also includes a copper compression fittings kit for hard pipe installations.



Installation diagram



## Commissioning

Upon completion of the installation, the valve should be tested and commissioned as per the procedure outlined below or as specified by the local authority.

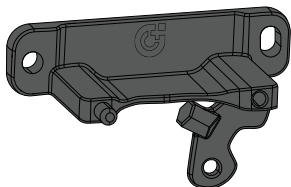
The following instructions should be read and understood prior to commissioning the Caleffi SinkMixer thermostatic mixing valve. If, under any circumstances, there are aspects of the installation/system which do not comply with our requirements or the specifications as listed, the valve must not be put into service until the installation/system does comply.

- 1) Ensure that the system is thoroughly clean and free from debris prior to commissioning the thermostatic mixing valve.
- 2) Use a suitably calibrated, accurate digital thermometer to commission temperatures by measuring the mixed water temperature at the outlet.
- 3) In accordance with the anti-scald requirements, water installation shall deliver hot water at the outlet of the sanitary fixtures used primarily for personal hygiene purposes at a temperature not exceeding 120 °F (50 °C) or as specified by authority having jurisdiction.
- 4) The temperature at the outlet of each valve must be set taking into consideration any fluctuations which may occur within the system due to simultaneous demand.
- 5) Once the supply temperatures are stabilized and the normal operating conditions are established, the valve can be commissioned. The temperature setting can be adjusted by with the black plastic adjustment 1/4" hex key, included separately in the box.  
Break off from the mounting bracket. Use the following sequence when commissioning the valve.
  - a) Using a thermometer, measure the temperature of the sink faucet discharge with the hot tap open, cold tap closed. The temperature should not exceed the temperature allowed by the applicable standard or code of practice for each state.
  - b) Adjust mixing valve to desired faucet discharge temperature, with provided 1/4" hex key.
  - c) Perform the thermal shut-off test. Isolate the cold water supply to the Caleffi valve and monitor the mixed water temperature. The outlet flow should quickly cease flowing.
  - d) Restore the cold water supply to the valve and measure and record the outlet temperature after the mixed water temperature has stabilized. The final temperature found during this test should not exceed the permitted values  $\pm 3$  °F.
- 6) Once the desired temperature has been reached, remove the adjustment key and store in a safe place that can be located if required in the future.

We recommend that the above information is recorded in the Commissioning Report and updated on the Service Report when any work is performed on the valve.

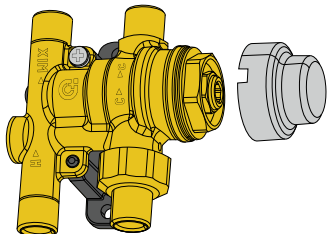
**Temperature adjustment**

**1**



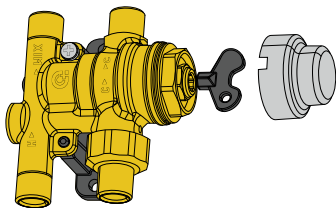
◀ Remove 1/4" hex key from mounting bracket.

**2**



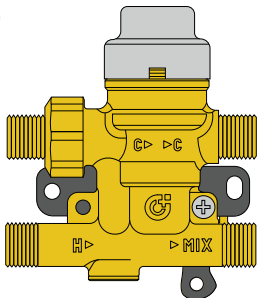
◀ Remove white cap.

**3**



◀ Adjust temperature setting with 1/4" hex key. After adjustment, lock the temperature with locking nut.

**4**



◀ Replace cap and store key in safe place.

Steps 2-4 apply to code 521204A 3-port model.

## Maintenance

In service tests should be conducted regularly to monitor and record the performance of the valve. Deterioration in performance can indicate the need for servicing of the valve and/or water supply. If, during these tests, the mixed water temperature has changed significantly from the previous test results, record the change before re-adjusting the mixed water temperature. If the final mixed water temperature is greater than the permitted values, Verify details quoted in the Installation and Commissioning sections of this manual and that service work is required.

The following actions are recommended at least every 12 months, or more frequently if the need arises, and that the following steps are checked to maintain optimum valve performance.

Use the following recommended procedure:

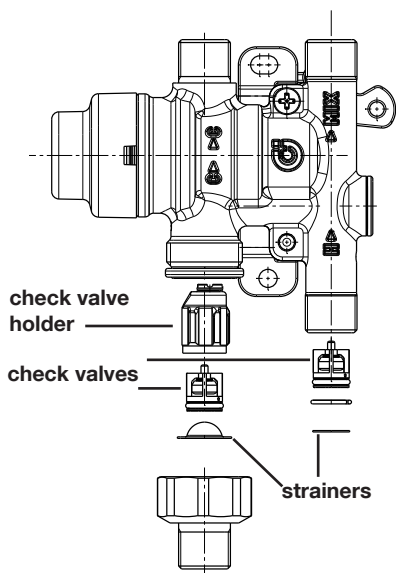
- 1) On the Caleffi SinkMixer valves, the inlet strainers on both the hot and cold water inlet ports can be removed for cleaning by unscrewing the inlet union nut on the cold port and, with a screw driver, pop strainer out of the hot port.
- 2) If service is required, cleaning and de-scale as needed, or replace these check valves, see page 8 for code numbers.

Once the above servicing is performed follow the commissioning details in the previous section ensuring that a suitably accurate thermometer is used.

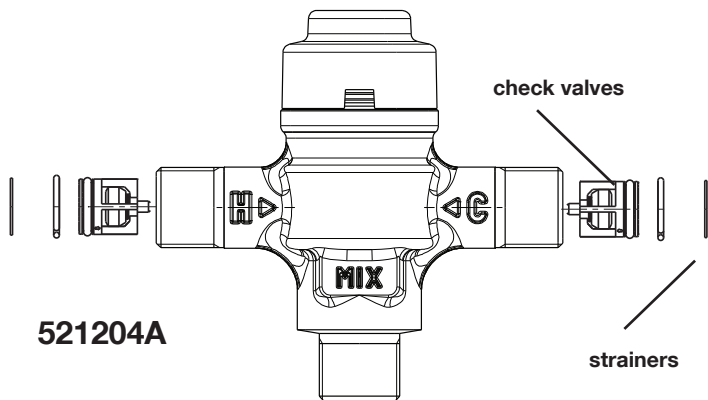
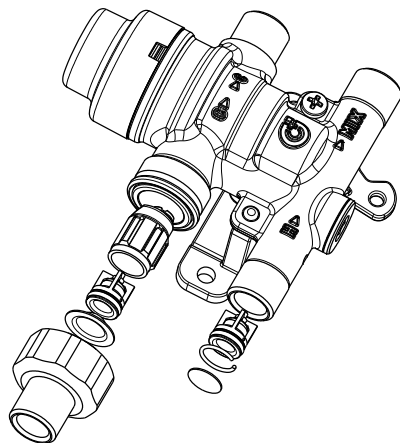
Should the valve still not function correctly, it may be necessary to replace the valve entirely. Contact Caleffi Technical Support for details and advice.

## Spare parts

Spare parts are available for the Caleffi SinkMixer valves, see page 8.



**521201A, AP**



## Troubleshooting

Under normal operating conditions the Caleffi SinkMixer 5212 series thermostatic mixing valve will provide a very high level of performance. However, in some circumstances, where the following maintenance schedule is not followed problems may arise.

### Common troubleshooting symptoms:

Symptoms	Cause	Corrective action
Hot water at the cold taps	a) Operation of check valve is hindered; Check valve is not sealing correctly. b) Check valves not installed.	- Replace faulty check valve.
Fluctuating mixed water temperature	a) Erratic supply temperatures at the inlets of the mixing valve. b) Flow through the valve is less than it's minimum flow rate. c) Incorrect commissioning of the valve.	- Restore inlet conditions within the limits of the recirculation circuit.
Erratic flow of water from the valve	a) Flow through the valve is less than it's minimum flow rate. b) Fluctuations in the supply pressures/temperatures. c) Adverse effect created by other draw off points on the system.	- Stabilize inlet supply conditions.
No flow of water from the valve	a) In-line filters or strainers blocked. b) Insufficient supply pressures. c) Debris obstructing valve operation.	- Clean filters or strainers. - Restore inlet supplies. - Clean debris or scale from the valve.
Valve thermal shut-off function not performed when testing	a) Mixing valve not properly installed per instructions. b) Minimum temperature difference not reached. c) Valve mechanism blocked by dirt.	- Re-install per instructions. - Increase hot water temperature. - Remove dirt/limescale from the valve.

LEAVE THIS MANUAL WITH THE USER.

Laissez ce manuel à la disposition de l'utilisateur.

04-2024

 **CALEFFI**  
Hydronic Solutions  
Caleffi North America, Inc.  
3883 West Milwaukee Road  
Milwaukee, WI 53208  
T: 414.238.2360 F: 414.238.2366

**For Technical Support call 1-414-338-6338, or  
email [techsupport.us@caleffi.com](mailto:techsupport.us@caleffi.com)**