

Thermostatic mixers with interchangeable cartridge for centralised systems

series 5230



01080/03 GB

Replaces 01080/02 GB



Function

The thermostatic mixer is used in systems for the production of domestic hot water. Its function is to maintain the temperature of the mixed water supplied to the points of use constant at the set value when there are variations in the temperature and supply pressure of the incoming hot and cold water or in the draw-off flow rate.

This particular series of mixers has been designed especially for systems which demand high flow rates, such as, for example, centralised systems, or group mixing. These systems also require high accuracy and stability of temperature regulation, especially in relation to variations in the flow rate drawn off by the users.

Patent Application No. MI2001A001645.

Product range

Code 5230.0	Thermostatic mixer with interchangeable cartridge for centralised systems	_____ Sizes Ø 1/2" - 3/4" - 1" - 1 1/4" - 1 1/2" - 2"
Code 5230.3	Thermostatic mixer with interchangeable cartridge with inlet check valve	_____ Sizes Ø 3/4" - 1" - 1 1/4"
Code 5230.2	Thermostatic mixer with interchangeable cartridge with inlet check valve	_____ Size Ø 22 - Ø 28 mm for copper pipe
Code 523005	Replacement cartridge for 1/2" and 3/4" mixer	
Code 523006	Replacement cartridge for 1" and 1 1/4" mixers	
Code 523008	Replacement cartridge for 1 1/2" and 2" mixers	

Technical specifications

- Materials: - Body: Brass UNI EN 12165 CW617N, chrome plated
- Cartridge and Shutter: Brass UNI EN 12164 CW614N
- Springs: Stainless steel
- Seal components: EPDM

Medium: water

Max. working pressure (static): 14 bar

Max. working pressure (dynamic): 5 bar

Max. inlet temperature: 85°C

Max. inlet pressures ratio (H/C or C/H): 2:1

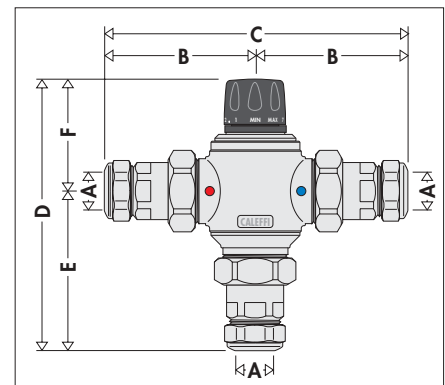
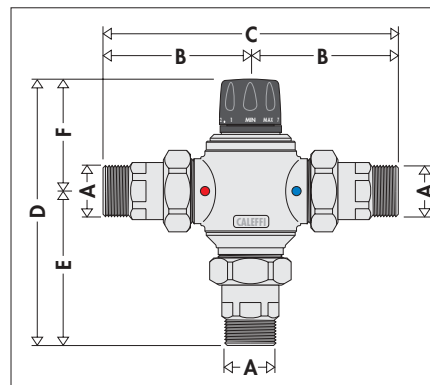
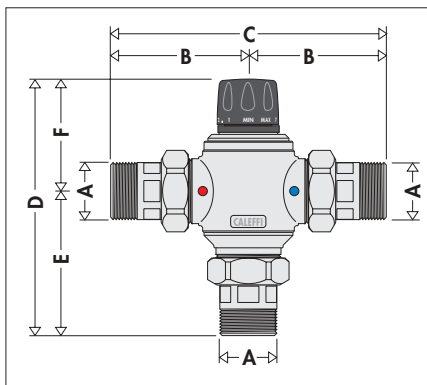
Setting range: - 1/2" ÷ 1 1/4"; 30÷65°C
- 1 1/2" ÷ 2"; 36÷60°C

Temperature stability related to the below indicated flow rates G: ±2°C

1/2"	G ≥ 400 l/h
3/4" - Ø 22	G ≥ 500 l/h
1" - Ø 28	G ≥ 800 l/h
1 1/4"	G ≥ 1.000 l/h
1 1/2"	G ≥ 2.800 l/h
2"	G ≥ 3.000 l/h

Connections: 1/2"÷2" M with union
Ø 22 - Ø 28 mm for copper pipe

Dimensions



Code	A	B	C	D	E	F	Weight (kg)
523040	1/2"	85	170	169	95	74	1,65
523050	3/4"	85	170	169	95	74	1,68
523060	1"	101	202	195	107	88	3,09
523070	1 1/4"	101	202	195	107	88	3,07
523080	1 1/2"	129	258	243	135	108	8,00
523090	2"	129	258	243	135	108	8,24

Code	A	B	C	D	E	F	Weight (kg)
523053	3/4"	91	182	175	101	74	1,72
523063	1"	111	222	202	114	88	3,22
523073	1 1/4"	111	222	202	114	88	3,20

Code	A	B	C	D	E	F	Weight (kg)
523052	Ø 22	92	184	176	102	74	1,80
523062	Ø 28	116	232	207	119	88	3,31

“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 60°C. At this temperature it is certain that the growth of the bacteria causing this infection will be totally eliminated. However, at this temperature the water cannot be used directly, as it may cause scalding. For example, at 55°C, partial burning takes place in 30 seconds and at 60°C total burning takes place in 5 seconds.

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

- reduce the temperature at the point of use to a value lower than that of storage;
- maintain this value when the incoming pressure and temperature conditions vary.

Thermal disinfection

The diagram below shows the behaviour of the bacteria “*Legionella Pneumophila*” when the temperature conditions of the water in which it is contained vary, in laboratory sample population.

In order to ensure proper thermal “disinfection”, the value must not be below 60°C.



Reference documents

With regard to the prevention and control of Legionella, see the National Regulations and applicable Code of Practice.

Operating principle

The controlling element of the thermostatic mixer is a thermostat fully immersed in the mixed water outlet port which, by expanding or contracting, continuously adjust the correct proportions of hot and cold water entering.

These flows are regulated by means of a piston sliding in an appropriate cylinder between the hot and cold water inlets.

Even when there are pressure drops due to the draw-off of hot or cold water by other users, or variations in the incoming temperature, the mixer automatically regulates the water flow rates to obtain the required temperature.

Constructional details

Double seat

The mixer has a special actuator which acts on a double water passage seat. This guarantees a high flow rate with a reduced resistance, at the same time maintaining accurate temperature regulation.

Interchangeable cartridge

The internal cartridge containing all the regulating components is pre-assembled in a single unit and can easily be inspected for cleaning or replacement if necessary, without the need to remove the valve body from the pipework.

Non-stick coating

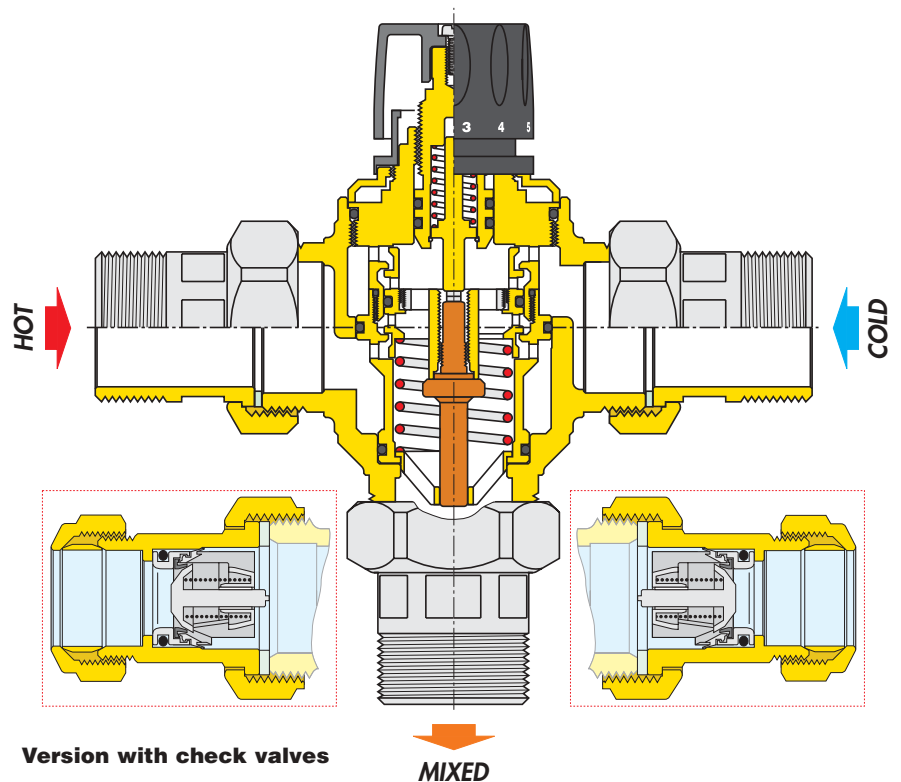
All the working parts such as shutter, seats and slide guide are hot-coated with PTFE. This coating reduces the possibility of scaling to a minimum and guarantees the maintenance of performance over time.

Low inertia thermostat

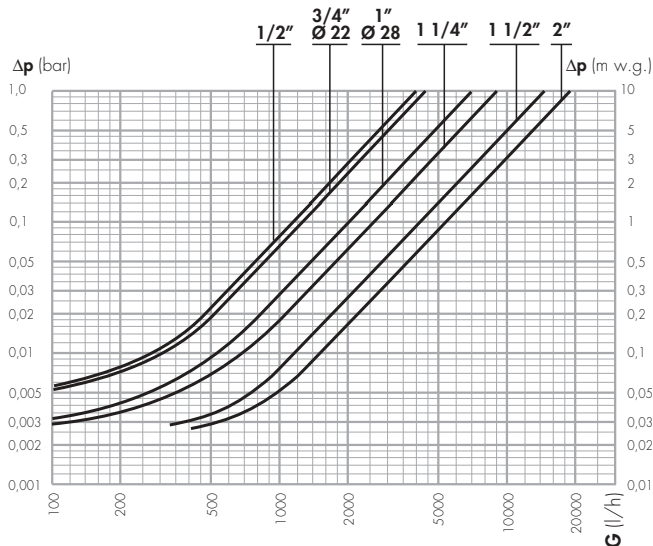
The temperature-sensitive element, the “motor” of the thermostatic mixer, is characterised by a low heat inertia; this means that it reacts rapidly to variations in the incoming temperature and pressure conditions, reducing the valve response times.

Temperature setting and locking

The control knob permits temperature setting, between min. and max., in one turn (360°). It also has a tamper-proof system to lock the temperature at the set value.



Hydraulic characteristics



Size	1/2"	3/4"	1"	1 1/4"	1 1/2"	2"
Kv (m ³ /h)	4,0	4,5	6,9	9,1	14,5	19,0

Use

Depending on flow characteristics, Caleffi series 5230 thermostatic mixers can be installed in centralised systems with multiple points of use or to control groups of outlets, such as shower groups, washbasin groups, etc..

Installation

Before installing Caleffi series 5230 mixers, the system must be flushed out and cleaned to remove any dirt which may have accumulated during installation.

It is always advisable to install filters of suitable capacity at water mains connection.

Caleffi series 5230 thermostatic mixers must be installed in accordance with the installation diagrams given in the instruction sheet or in this leaflet, and in line with current regulations and Code of Practice.

Caleffi series 5230 thermostatic mixers can be installed in any position, either vertical or horizontal.

The body of the mixer has the following markings:

- hot water inlet, colour red;
- cold water inlet, colour blue.

Check valves

In systems with thermostatic mixers, check valves should be installed to prevent undesirable fluid backflow.

The thermostatic mixers are also available in versions with built-in check valves in the hot and cold inlets.

Commissioning

In view of the special purpose of the thermostatic mixer, it must be commissioned in accordance with current standards by qualified personnel using suitable temperature measuring equipment. Use of a digital thermometer is recommended for measurement of the mixed water temperature.

Temperature setting

The temperature is set to the required value by means of the knob with the graduated scale, located on the top of the valve.

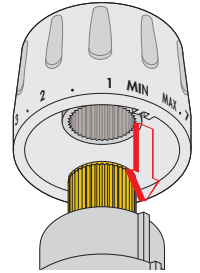
Temperature setting table

Position	Min.	1	2	3	4	5	6	7	Max.
1/2"÷3/4" - Ø 22; T (°C)	25	29	33	39	43	48	52	58	65
1"÷1 1/4" - Ø 28; T (°C)	27	32	38	44	49	53	58	63	67
1 1/2"÷2"; T (°C)	36	39	42	45	48	51	54	57	60

Reference conditions: $T_{hot} = 68^{\circ}\text{C}$; $T_{cold} = 13^{\circ}\text{C}$; Hot and cold inlet pressures = 3 bar

Locking the setting

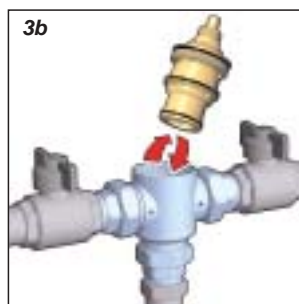
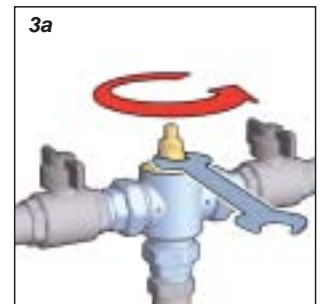
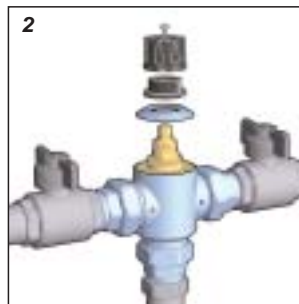
Position the knob at the required value, unscrew the top screw, slide off the knob and put it back in such a way that the handle fits into the internal slot of the knob. Tighten the head screw.



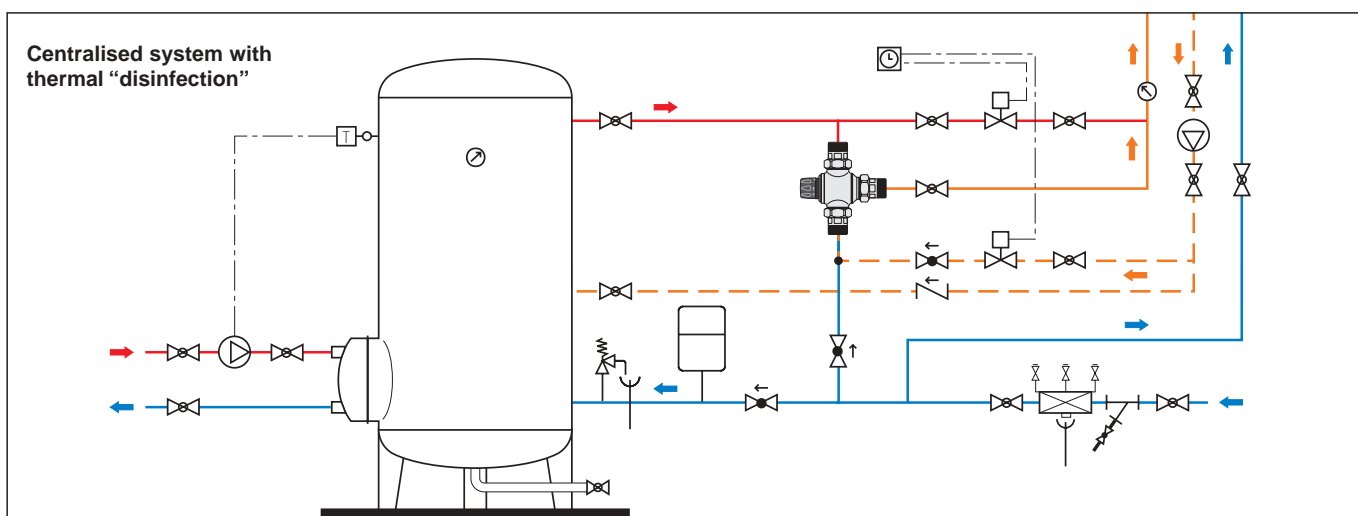
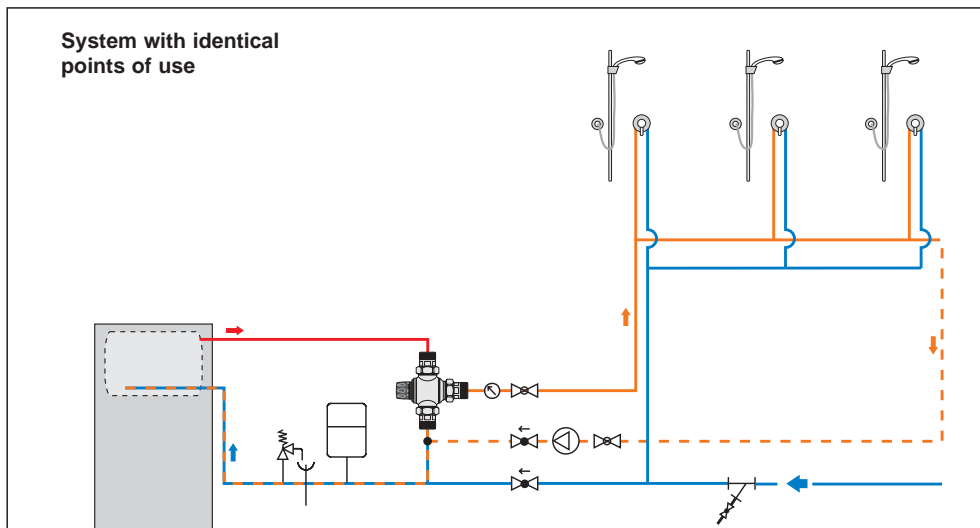
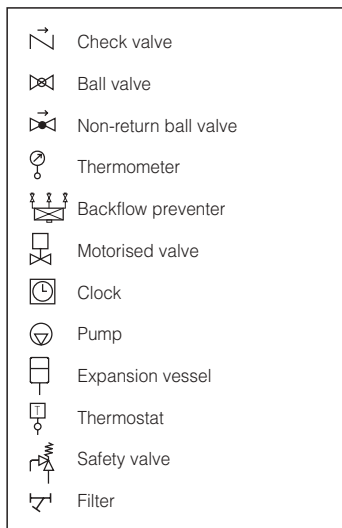
Replacing the cartridge

The internal cartridge, containing all the regulating components, can be inspected and, if necessary, replaced, without the need to dismantle the valve body from the pipework.

- 1) Close the shut-off valves on the hot and cold inlets. Set the knob to the maximum value.
- 2) Remove the temperature regulating knob after unscrewing the lock screw at the top.
Dismantle the plastic knob frame. Unscrew the chrome plated protective cover by means of the hexagon (1" - 1 1/4").
- 3) Remove the internal cartridge for inspection or replacement, using a suitably sized spanner.
- 4) Refit the protective chrome plated cover. Refit the plastic frame in such a way that the position indicator is visible.
- 5) The spare cartridge is supplied pre-set to the maximum value. Position the regulating knob in such a way that the letters MAX align with the position indicator. By rotating the knob clockwise, it should be possible to adjust the value from maximum to minimum. Fix the knob with the top lock screw.
- 6) Reopen the shut-off valves and adjust the mixer to the required temperature value.



Application diagrams



SPECIFICATION SUMMARIES

Series 5230.0

Adjustable thermostatic mixer with interchangeable cartridge. Connections 1/2" (from 1/2" to 2") M with unions. Brass body. Chrome plated. Brass cartridge and obturator. Stainless steel springs. Seals in EPDM. Max. operating temperature 85°C. Setting range 30°C to 65°C (from 36° to 60° for 1 1/2" and 2"). Max. working pressure (static) 14 bar. Max. working pressure (dynamic) 5 bar. Tolerance ±2°C. Provided with tamper-proof temperature locking.

Code 52305.3

Adjustable thermostatic mixer with interchangeable cartridge. Connections 3/4" (from 3/4" to 1 1/4") M with unions. Brass body. Chrome plated. Brass cartridge and obturator. Stainless steel springs. Complete with check valves at inlets. Seals in EPDM. Max. operating temperature 85°C. Setting range 30°C to 65°C. Max. working pressure (static) 14 bar. Max. working pressure (dynamic) 5 bar. Tolerance ±2°C. Provided with tamper-proof temperature locking.

Code 52305.2

Adjustable thermostatic mixer with interchangeable cartridge. Connections Ø 22 - Ø 28 mm for copper pipe. Brass body. Chrome plated. Brass cartridge and obturator. Stainless steel springs. Complete with check valves at inlets. Seals in EPDM. Max. operating temperature 85°C. Setting range 30°C to 65°C. Max. working pressure (static) 14 bar. Max. working pressure (dynamic) 5 bar. Tolerance ±2°C. Provided with tamper-proof temperature locking.

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