

# Thermostatic mixer lower mixed way

## 148-149-165-166

### / Function

The burn-proof thermostatic mixers, series 148-149-165-166, are utilized in domestic hot water heating systems and function in continuous operation.

Their purpose is to maintain a constant temperature in the mixed water conveyed to users regardless of any variations in the pressure or temperature values of the hot and cold water at the mixer inlet, or in the flow meter.

They are also equipped with a burn-proof safety system: this allows the flow of hot water to be shut off automatically as soon as cold water is missing at the mixer inlet.

Article 165 is also equipped with two non-return valves placed at the hot and cold water inlets; their function is to prevent any undesired fluid returns to the system.



### / Products

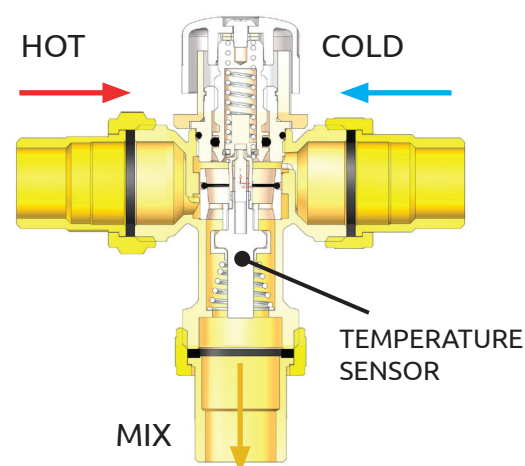
Art.	Code	Size	Connection
148	90148AD05	G ½" M	With pipe union
148	90148AE05	G ¾" M	With pipe union
148	90148AF05	G 1" M	With pipe union
149	90149AD05	G ½" M	Female
149	90149AE05	G ¾" M	Female
149	90149AF05	G 1" M	Female
165	90165AE05	G ¾" M	Pipe union + Non-return valve
166	90166AD05	G ¾" M	Male
166	90166AE05	G 1" M	Male
166	90166AF05	G 1 ¼" M	Male

### / Operating principle

Mixer operation is based on the temperature sensor contained inside the mixer, in the mixed water outflow area.

Variations in the expansion of the thermostatic component cause the plunger contained inside the mixer body to slide. This generates correct mixing of the cold and hot water at the water distribution system inlet.

In this way, the mixer automatically maintains the temperature value set, even when there are variations in pressure caused by the drawing of hot and cold water by the various users, or when there are variations in the temperature of either the cold or hot water at the inlet.



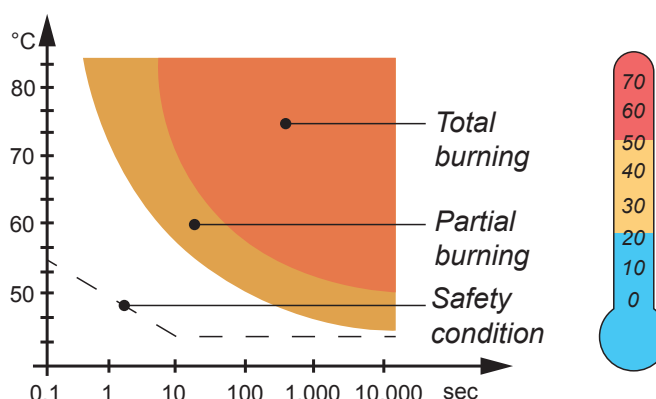
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## 148-149-165-166

### / Burn-proof device

In domestic hot water heating systems with accumulator, water must be kept at a minimum temperature of 60°C in order to totally prevent the growth of the bacteria that causes a very dangerous infection called Legionnaire's disease.

Water cannot be used directly at this temperature because it can cause burns. The installation of a thermostatic mixer is recommended to ensure that water is safe to use. The mixer keeps the preset value constant when there are variations in temperature and pressure at the inlet.



The graph at the side of text indicates the degree of burning that can be caused depending on water temperature and heat exposure time. The mixer solves this problem by interrupting the flow of hot water when the flow of cold water is missing at the inlet.

### / Technical characteristics

#### MATERIALS

Body:	Brass CW 617 N - UNI EN 12165
Large screw:	Brass CW 617 N - UNI EN 12165
Springs:	Stainlass Steel
Lock nut:	PA6
Hand wheel:	PA6
O-Ring:	EPDM PEROX - (high resistance)

#### NON-RETURN VALVE MATERIALS

Body:	Brass CW617N - UNI EN12165
O-Ring:	EPDM PEROX - (high resistance)
Spring:	Stainlass Steel

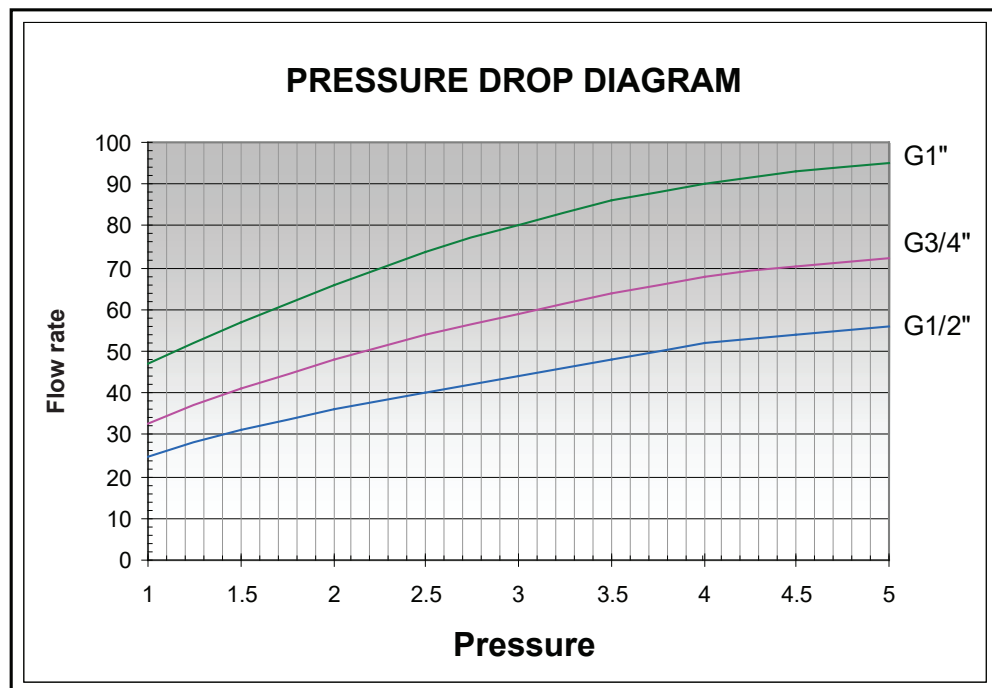
#### PERFORMANCE

Fluid used:	water
Max percentage of glycol:	50%
Temperature range:	30-60°C
Factory calibration:	38 ±2°C
Max operating pressure (static):	10 bar
Max operating pressure (velocity):	5 bar
Max temperature at inlet:	85°C
Max ratio between C/F or F/C pressures:	2:1

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## 148-149-165-166

### Hydraulic characteristics



#### Art. 148-149

Kv [m³/h]

G 1/2"	1.5
G 3/4"	2
G 1"	3

#### Art. 165

Kv [m³/h]

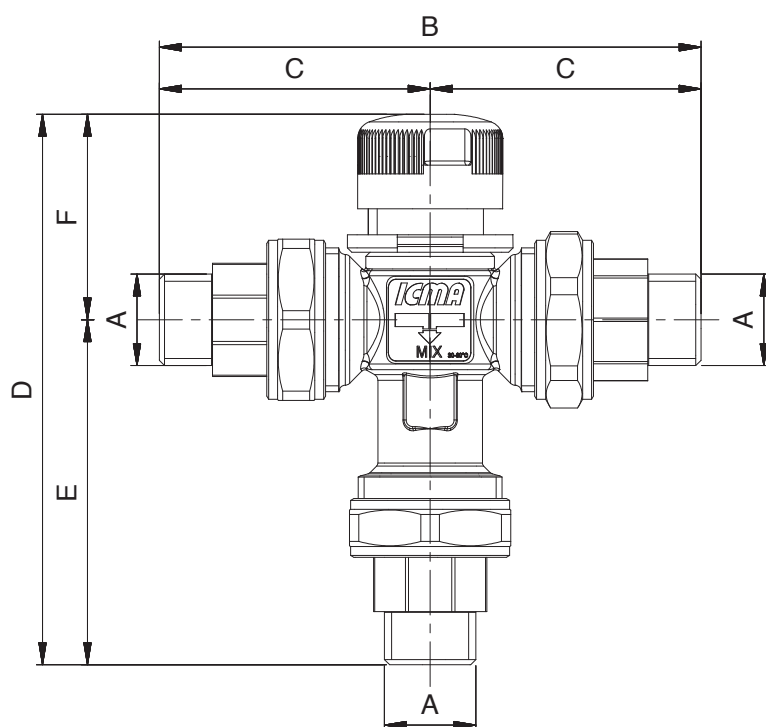
G 3/4"	2
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#### Art. 166

Kv [m³/h]

G 1"	2
G 1 1/4"	3

### Dimensions (Art. 148-165)



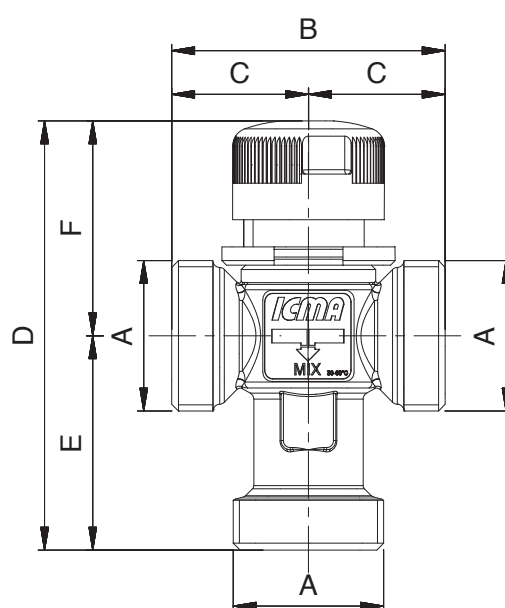
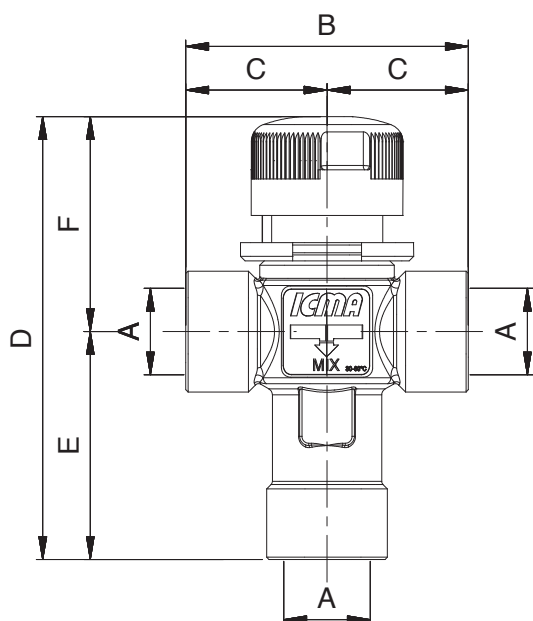
Code	90148AD05	90148AE05	90148AF05
A	1/2" M	3/4" M	1" M
B	124	124	144
C	62	62	72
D	125	125	147
E	80	80	89
F	45	45	58

Code	90165AE05
A	3/4" M
B	127
C	63,5
D	125
E	80
F	45

# Thermostatic mixer lower mixed way

## 148-149-165-166

### / Dimensions (Art. 149-166)



Code	90149AD05	90149AE05	90149AF05
A	1/2" F	3/4" F	1" F
B	62	66	84
C	31	33	42
D	97	100	118
E	50	53	60
F	47	47	58

Code	90166AD05	90166AE05	90166AF05
A	3/4" M	1" M	1"1/4 M
B	66	60	75
C	33	30	37,5
D	98	94	112
E	50	47	54
F	48	47	58

### / Installation

Make sure that pipes are free of impurities before activating the mixer to avoid equipment malfunction.  
Filters should be installed at the inlet of the water distribution system.

On the thermostatic mixer body there is a label indicating:

- hot water inlet
- cold water inlet
- mixed water outlet



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### / Temperature adjustment

The temperature is set by turning the knob with graduated scale located on the mixer.



Reference conditions:

Hot T: 68°C

Cold T: 13°C

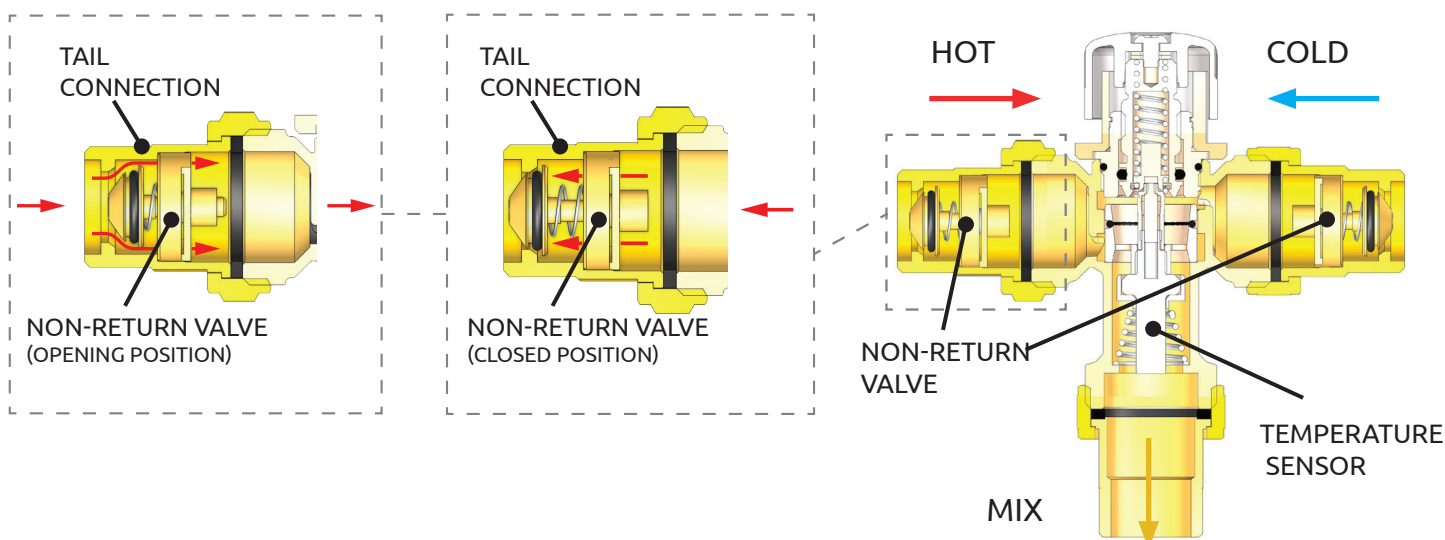
Inlet pressure: 3+3 balanced Bar

#### ADJUSTMENT RANGE

Setting	1	2	3	4	5	6
°C	30	35	40	45	50	60

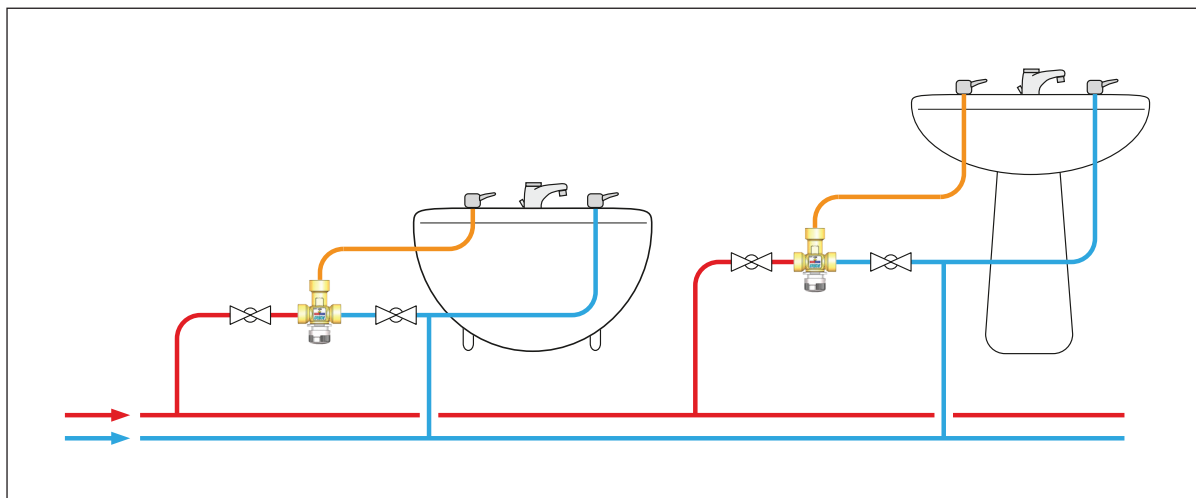
### / Non-return valve

Non-return valves should be installed on systems equipped with mixers in order to avoid undesired fluid returns. Item 165 is fitted on a non-return valve, one at the hot water inlet and another at the cold water inlet.

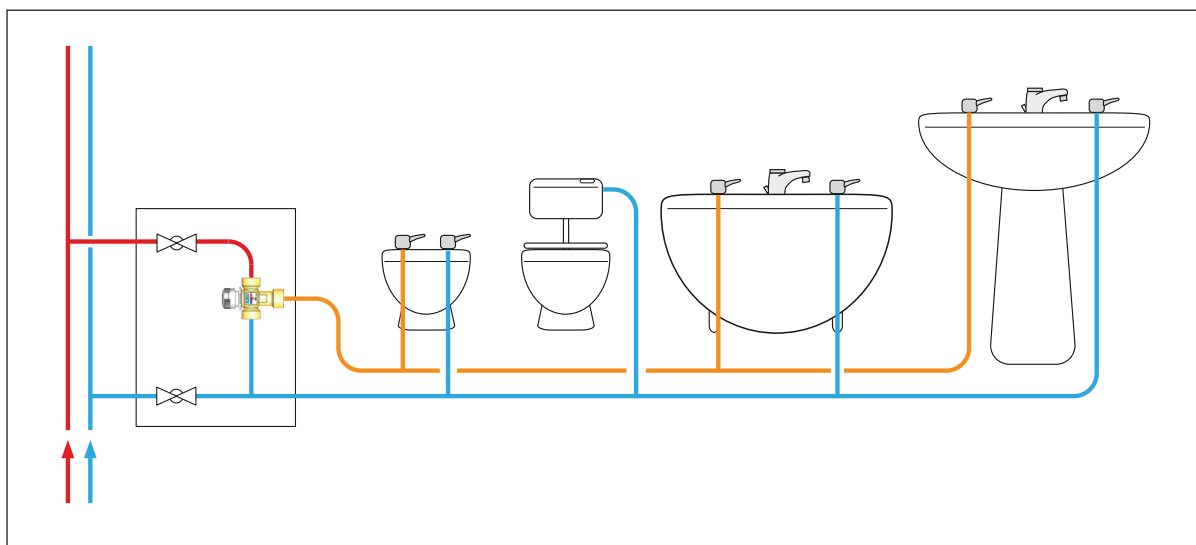


### / Application diagrams

#### Single user supply example



#### Centralized supply example



### / Safety



To keep internal components in good condition, avoid using detergents that contain solvents when cleaning the equipment.

Carefully read and observe the assembly and commissioning instructions before actuating the equipment in order to avoid accidents and breakdowns in the system caused by improper use of the product. You are reminded that warranty rights will be lost should any unauthorized changes be made in the equipment or should tampering occur during its assembly and construction. Make sure that all safety precautions are followed. Be sure to call on qualified personnel for assistance when there is doubt with regard to use of the equipment and to making changes in parameters, or functions.