

**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.



Art.148  
Art.165 (with non-return valves)



Art.149  
Art.166

**PRODUCTS**

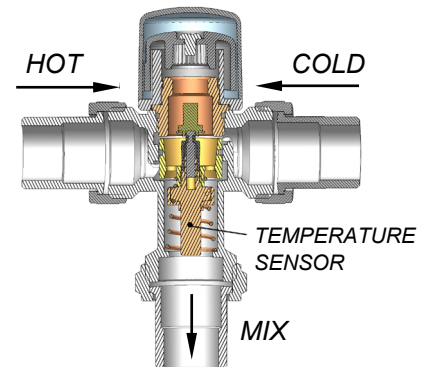
Article	Size	Connections	Article	Size	Connections
90148AD05	G 1/2" M	With pipe union	90165AE05	G 3/4" M	Pipe union + Non-return valve
90148AE05	G 3/4" M	With pipe union			
90148AF05	G 1" M	With pipe union			
90149AD05	G 1/2" F	Female	90166AD05	G 3/4" M	Male
90149AE05	G 3/4" F	Female	90166AE05	G 1" M	Male
90149AF05	G 1" F	Female	90166AF05	G 1 1/4" 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.

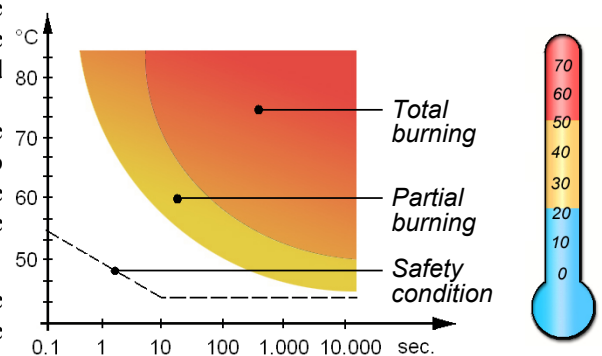


**BURN-PROOF DEVICE**

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**

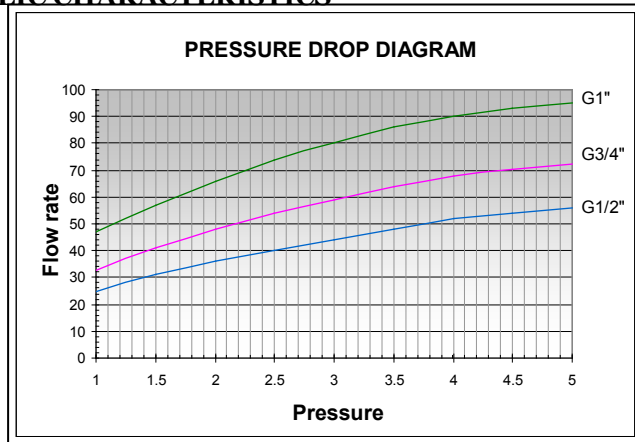
Body: CW617 N Brass - UNI EN 12165  
Large screw: CW614 N Brass - UNI EN 12164  
Springs: STAINLESS Steel  
Lock nut: POM  
Hand wheel: POM  
Cap: Transparent ABS  
O-Ring: PEROXY EPDM (high resistance)

Fluid used: Water  
Max percentage of glycol: 50%  
Temperature range: 30 to 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

**NON-RETURN VALVE**

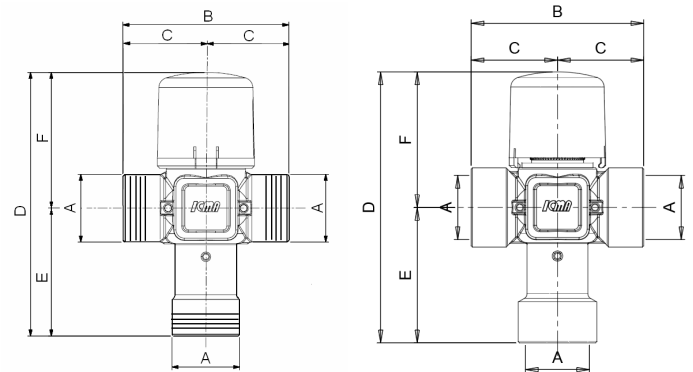
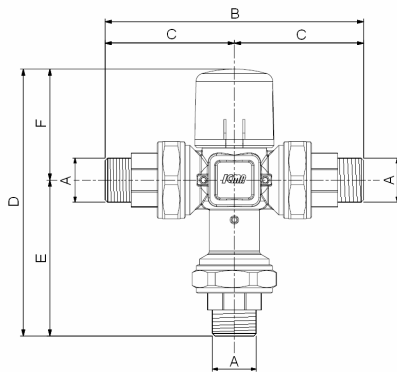
Body CW614N Brass - UNI EN12164  
O-Ring PEROXY EPDM (high resistance)  
Spring STAINLESS Steel

**HYDRAULIC CHARACTERISTICS**



Kv / m³h	
G 1/2"	3.8
G 3/4"	4.6
G 1"	6.8

**DIMENSIONS**



Code	A	B	C	D	E	F
90148AD05	1/2" M	124	62	133	80	53
90148AE05	3/4" M	124	62	133	80	53
90148AF05	1" M	140	70	152	87	65

Code	A	B	C	D	E	F
90149AD05	1/2" F	65	32.5	103	50	53
90149AE05	3/4" F	68	34	106	53	53
90149AF05	1" F	84	42	123	61	62

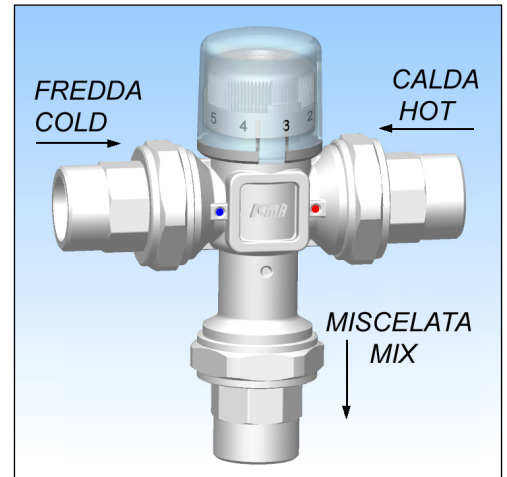
90165AE05	3/4" M	124	62	133	80	53
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90166AD05	3/4" M	65	32.5	103	50	53
90166AE05	1" M	60	30	100	47	53
90166AF05	1 1/4" M	76	38	119	55	64

**INSTALLATION**

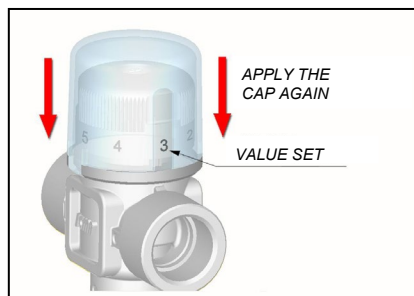
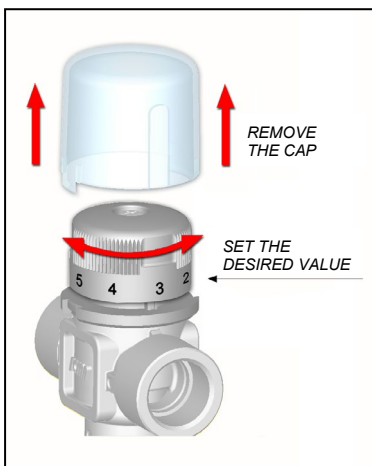
Make sure that pipes are free of impurities before activating the mixer to avoid equipment malfunction.  
Filters should be installed at the inlet of the water distribution system.

- The following indications are provided on the mixer body:
- hot water inlet indicated in red
  - cold water inlet indicated in blue
  - mixed water outflow



**TEMPERATURE ADJUSTMENT**

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



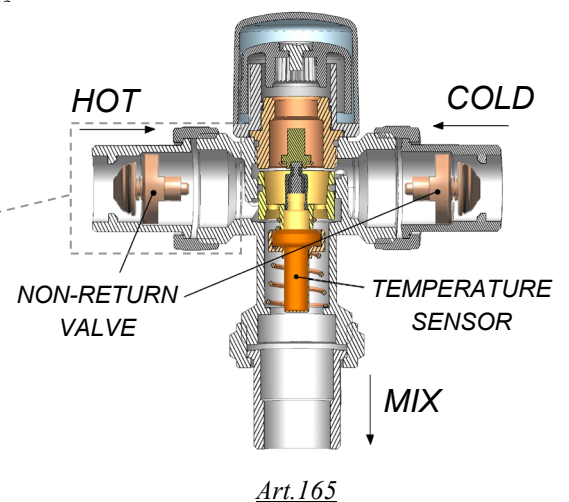
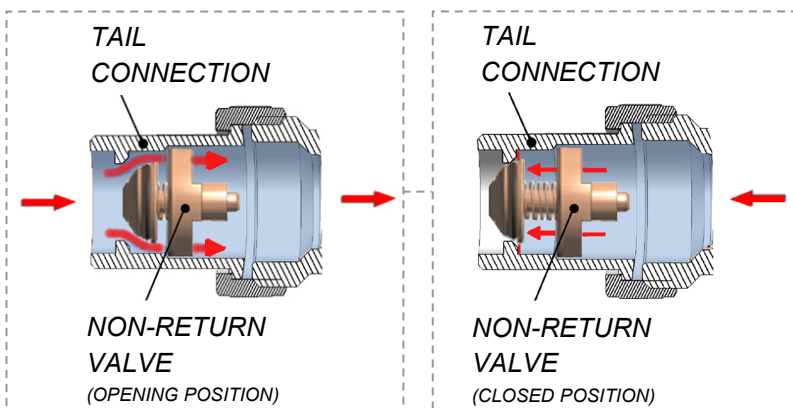
*Reference conditions:*  
Hot T: 68°C  
Cold T: 13°C  
Inlet pressure: 3+3 balanced Bar

**ADJUSTMENT RANGE**

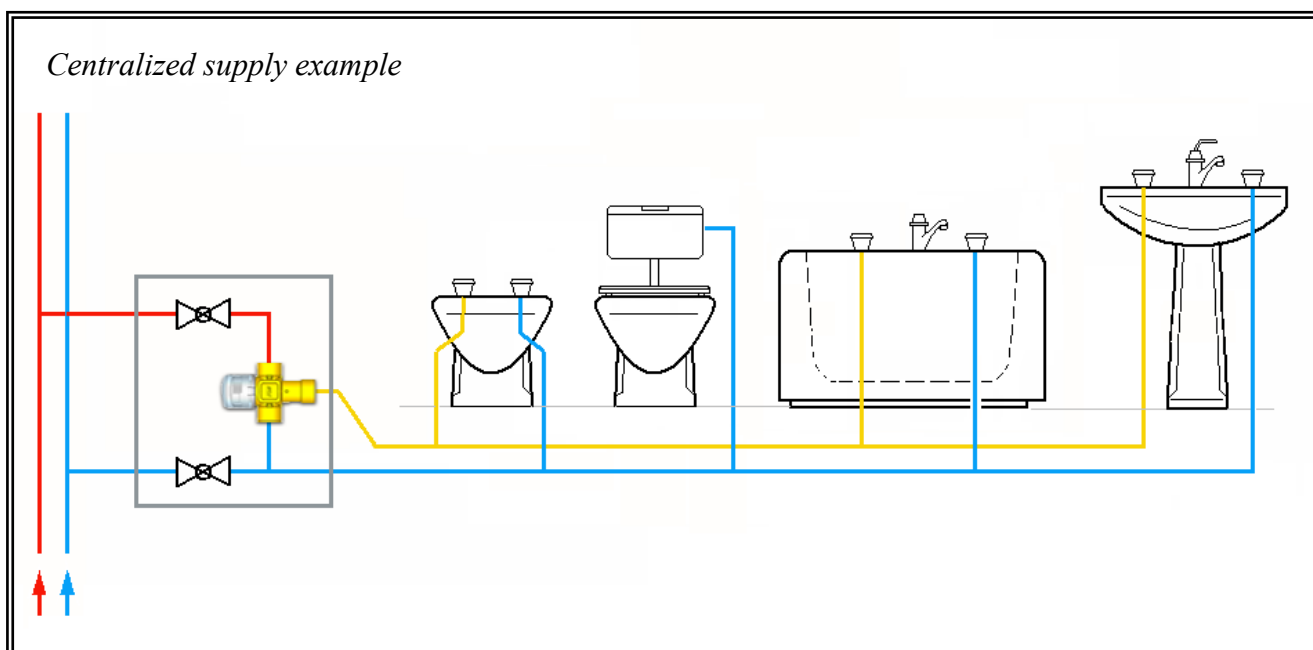
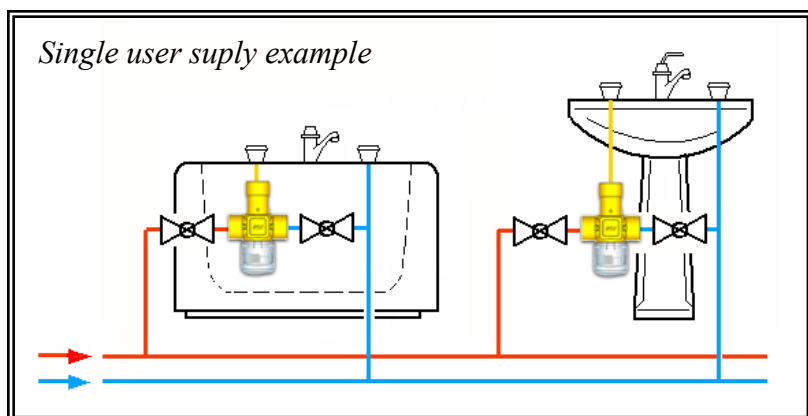
Setting	1	2	3	4	5	6
°C	30	35	40	45	50	60

**NON-RETURN VALVES**

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**



**! 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.