

Anti-freeze safety device

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603 series

Function

The anti-freeze safety device prevents ice build-up in domestic water circuits, thereby avoiding possible damage to water storages and pipes in solar systems.

Product range

603040 AUS DN 15 / 1/2" F with nut

Technical specifications

Material

Body:	DZR alloy OR EN 12165 CW602N
Obturator stem:	brass EN 12164 CW614N
Seat:	stainless steel
Springs:	stainless steel
Seal elements:	EPDM
Strainers:	stainless steel

Performance

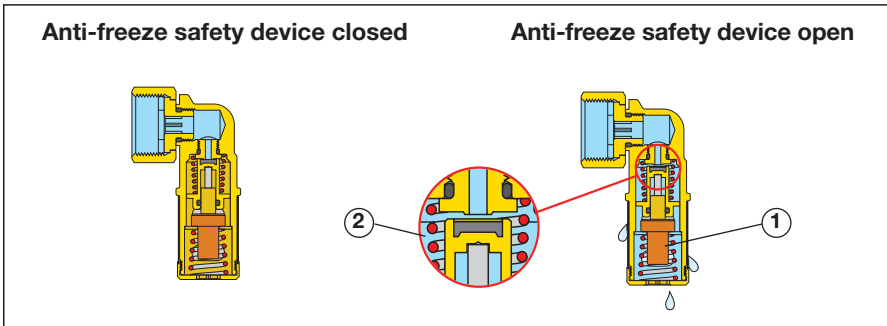
Medium:	water
Max. working pressure:	1000 kPa
Ambient temperature range:	-30-90°C
Opening temperature:	3°C
Closing temperature:	4°C
Accuracy:	±1°C
Connections:	1/2" F with nut

Operating principle

A thermostatic element (1) in contact with the ambient air controls a shut-off obturator fitted to a passage seat in contact with the water contained in the pipe (2).

When the ambient temperature drops to the minimum intervention value, the thermostat contracts. This causes the obturator to move and open a tiny passage so that water can drain out, allowing a small amount of water to flow in continuously; this prevents water from freezing inside the pipe. Water from the supply network, which is usually warmer than the air temperature up to the intervention value, laps the thermostat and causes the opposite action: the channel closes again and normal circuit operating conditions are restored.

For optimal system operation without the risk of freezing, it is recommended that the part of the circuit in which the safety device is installed is connected to the water supply network and a suitable pressure level maintained.



Volume of water drained

While the anti-freeze device is in operation, the drain outlet will drip as a result of the cyclical opening and closing phases taking place correctly. The amount of water drained out varies in accordance with the outdoor temperature, the temperature of the water in the pipe and the surface area of pipes and collectors exposed to the air. As a general guide, the amount of water drained out is less than 0.5 l/h, so long as the water supply temperature is greater than 5°C.

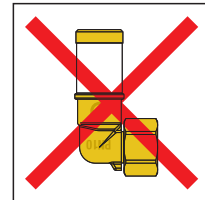
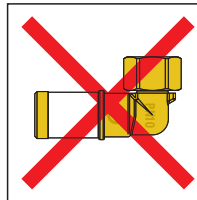
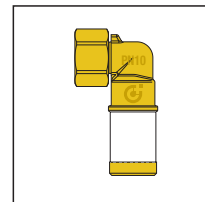
Note: if the water supply temperature is under 3°C, the anti-freeze function will always be active, thereby discharging water continuously to preventive the pipe from bursting. In this case, the flow will not be controlled and will be greater than 0.5 l/h.

Installation

Before installing the device, make sure that the system has been flushed and cleaned to remove any traces of dirt that may have accumulated during installation. The device must only be installed in vertical position, as shown in the diagram, so as to permit a free and unrestricted downward flow of the water as it drains out.

The device must be installed at the points of the circuit which are at risk of freezing, so that water may flow freely and in order to prevent pipes, storages or components located upstream of the device from freezing.

The antifrost valve must be installed in accordance with the installation instructions of the manufacturer of the solar heating system, as configuration of collectors depends on the specific design and performance.

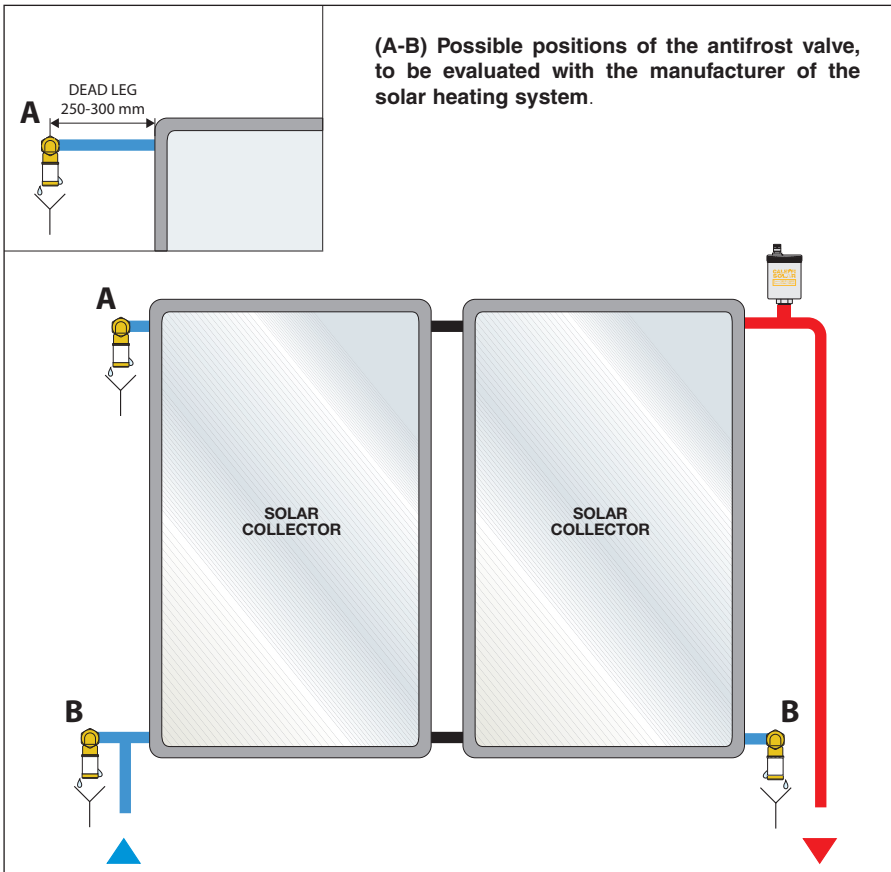


Installation on a dead leg is advisable for avoiding any risk of damage of the device caused by overheating from the solar collector, in case of stagnation conditions.

Installation at the bottom of the panel is on the coldest part of collector. Circulation of fluid in the collector has to be verified with the manufacturer of the solar system, in case of intervention of the antifrost valve.

Make sure that the anti-freeze device drains into a suitable manhole to prevent danger of ice forming and to assure the safety of people or things.

Application diagram on solar system





The device must be installed by a licensed plumber in accordance with national regulations and/or relevant local requirements.

If the device 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.

Make sure that all the connecting pipework is water tight.

When making the water connections, make sure that the device connecting pipework 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.

In the case of highly aggressive water, arrangements must be made to treat the water before it enters the device, in accordance with current legislation. Otherwise the device may be damaged and will not operate correctly.

Leave this manual as a reference guide for the user

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