

Rev. 10/2023

SERIES 4093

RBM

zerofrost

Antifreeze valve for Single-block heat pumps.

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Antifreeze valve for Single-block heat pumps.



- +** Bulb inserted directly into the flow
- High-performance bulb
- Very low discharge rate
- Does not require insulation

PRODUCTION RANGE

	Code	Size
	4093.06.00	G 1" (UNI EN ISO 228)
	4093.07.00	G 1 1/4 (UNI EN ISO 228)
	4093.08.00	G 1 1/2 (UNI EN ISO 228)

SPARE PARTS

Code	Description
10289.005	Vacuum Breaker
10290.005	Thermostatic Cartridge

DESCRIPTION OF OPERATING PRINCIPLE

The antifreeze valve is designed to discharge when the system water temperature drops to 3 °C, preventing ice from forming in the single-block heat pump circuit, which could cause breakdowns or costly damage to the system.

The **RBM ZEROFROST*** valve has been designed to avoid the negative influences of low ambient temperatures by positioning the element directly on the system's water flow and allowing precise system discharge only when it is really necessary.

A protective ring was included in the construction to prevent system debris from clogging the valve operation. Double O-rings and a surface friction reduction treatment on the control element also ensure proper functioning and reliability over time.

FEATURES

The sensor inside the valve has a low thermal inertia. In this way, **RBM ZEROFROST*** can react quickly to any change in input conditions, with very short response times.

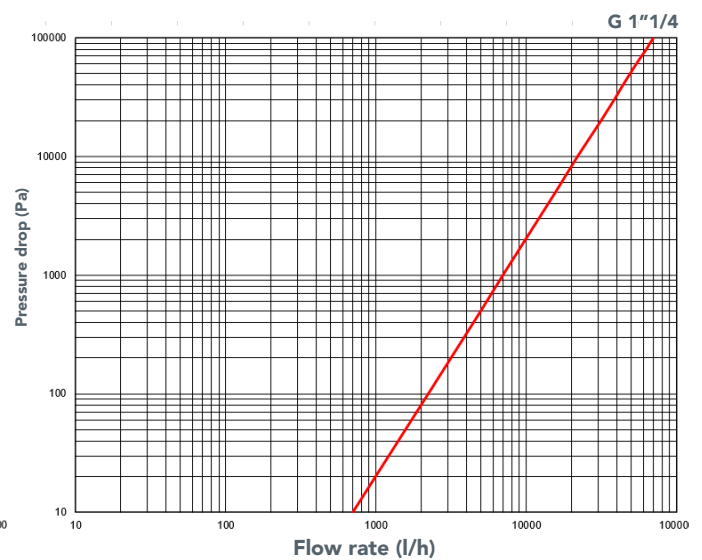
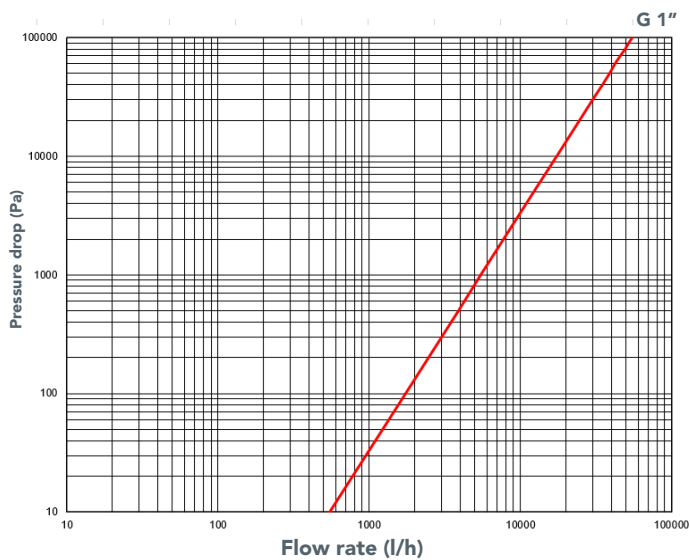
TECHNICAL FEATURES - MATERIALS

Valve body:	Brass - UNI EN 12165 CW617N
Internal components:	Brass - UNI EN 12164 CW617N
Spring:	Stainless steel
Sealing gasket:	EPDM PEROX

TECHNICAL FEATURES - PERFORMANCE

Compatible fluid:	Water
Max. operating pressure:	10 Bar
Temperature Range:	0÷85 °C
Ambient temperature range	-30÷60 °C
Fluid temperature (Open):	3°
Fluid temperature (Closed):	4°
Sensitivity:	± 1 °C
Maximum discharge flow rate at 3 Bar	1,5 l/h

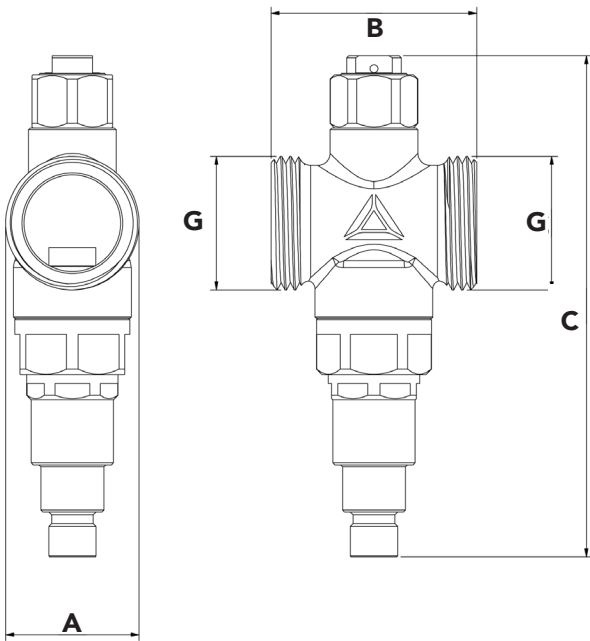
FLUID DYNAMICS FEATURES



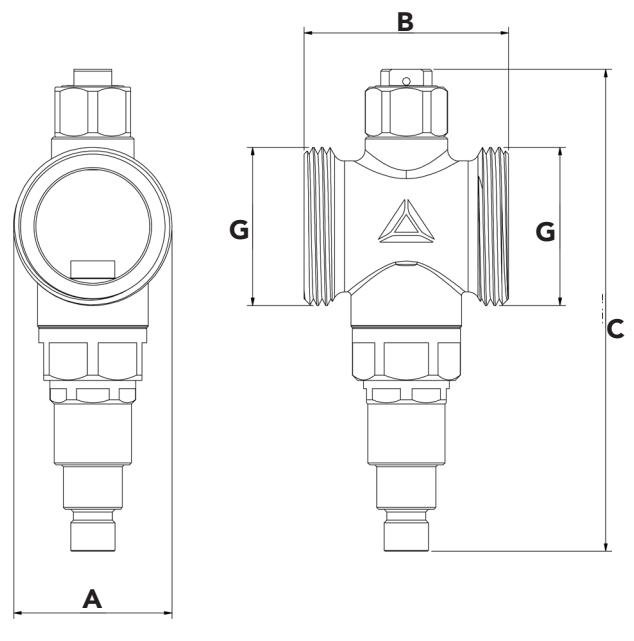
Size	Kv [m³/h]
G 1"	55
G 1" 1/4	70

DIMENSIONAL FEATURES

code 4093.06.00



code 4093.07.00



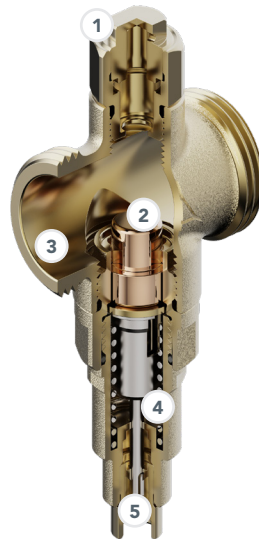
Code	Size G	A [mm]	B [mm]	C [mm]
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4093.06.00	1"	33.1	51	124.2
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Code	Size G	A [mm]	B [mm]	C [mm]
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4093.07.00	1"1/4"	41.8	54	127.2
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COMPONENTS DESCRIPTION



- ① Equipped with vacuum breaker
- ② The thermostatic sensor is inserted into the water flow
- ③ Equipped with a protective ring to prevent dirt in the hydraulic system from depositing in the cartridge
- ④ ZEROFROST* is designed with double safety O-rings
- ⑤ Surface treatment to reduce friction

INSTALLATION

GENERAL NOTES

Before installing the device, the pipes must be **treated according to national regulations** to prevent impurities in circulation from affecting their performance.

POSITION

The antifreeze valve must be installed outdoors, where the lowest temperature can be reached if the heat pump is blocked.

Furthermore, the valve should not be placed near heat sources that could interfere with their operation.

The antifreeze valve may only be installed in a vertical position, with the outlet pointing downwards, to allow the discharged water to flow out correctly and unobstructed.

MAINTENANCE

Installation must be carried out in such a way as to allow free access to the device for operation and maintenance.

It must be possible to replace both vacuum breaker and cartridge.

TIPS

It is advisable to install antifreeze valves on both the flow and return pipes, otherwise one pipe could remain full of water with the consequent risk of ice formation. (Figure 1).

Avoid siphon connections, they prevent a part of the pipeline from draining and frost protection is no longer guaranteed (Figure 2).

Provide a suitable discharge ducting system to prevent the formation of ice on the ground.

Do not overlap them and place them at a suitable distance from the ground (min 15 cm).

Set heat pump set-point in cooling mode to 5°C (2°C higher than the antifreeze valve tripping temperature).

FIGURE 1:

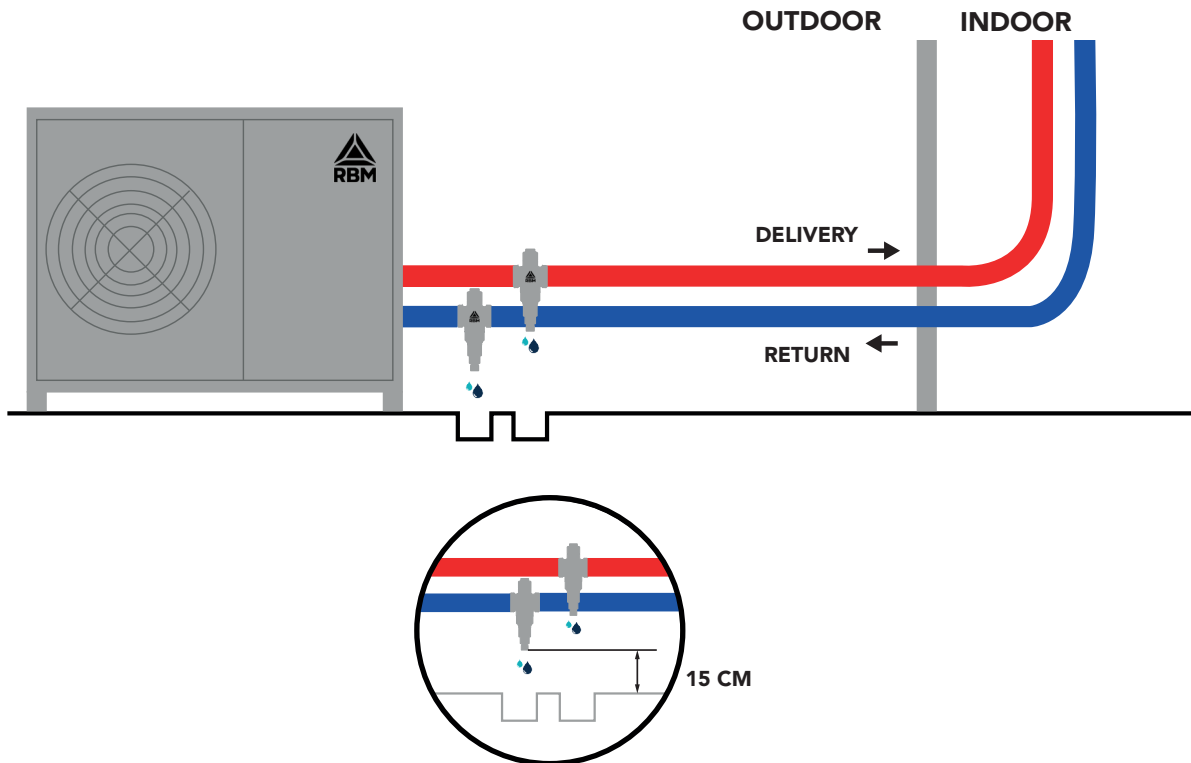
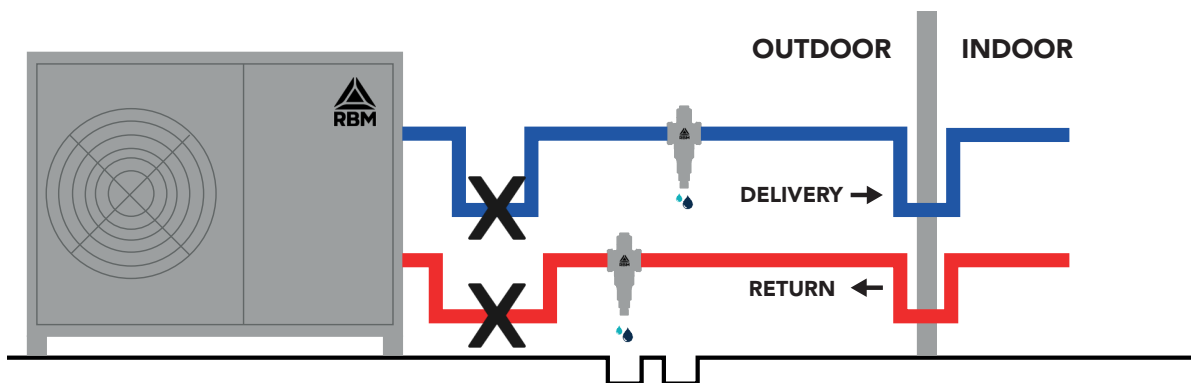


FIGURE 2:



WARNINGS:

- NO INSULATION
- NO EXPOSURE to direct sunlight.
- SYSTEM ALWAYS PRESSURISED even when the valve is discharged

SPECIFICATIONS

SERIES 4093

Antifreeze valve for single-block heat pumps. Brass body (UNI EN 12165 CW617N). Connections G 1" 1/2; G 1" 1/4 and G 1"(UNI EN ISO 228). Maximum operating pressure 10 Bar. Operating temperature range 0 - 85°. Ambient temperature range: -30-60°. Water temperature for discharge opening: 3°C. Water temperature for discharge closure: 4°C. Maximum discharge flow rate at 3 Bar: 1.5 l/h.

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