

iStop® antifreeze valve with air sensor

108 series



Function

The antifreeze valve has the task of keeping the water in the heating and cooling circuit moving and preventing ice from forming. When the temperature of the medium reaches a value of 3 °C the internal sensor opens and allows water to drain out of the system. Designed for systems served by monobloc heat pumps, it prevents damage to the machine and the circuit components if the electric supply is cut off and the air temperature is below zero.

The valve has a second sensor which reacts to the temperature of the outside air and prevents water drainage in warmer conditions. System operation in cooling mode can take place with temperatures in the region of 3 °C.

PATENT PENDING

Product range

108 series Antifreeze valve with air sensor, threaded connections sizes DN 25 (1"), DN 32 (1 1/4")

Technical specifications

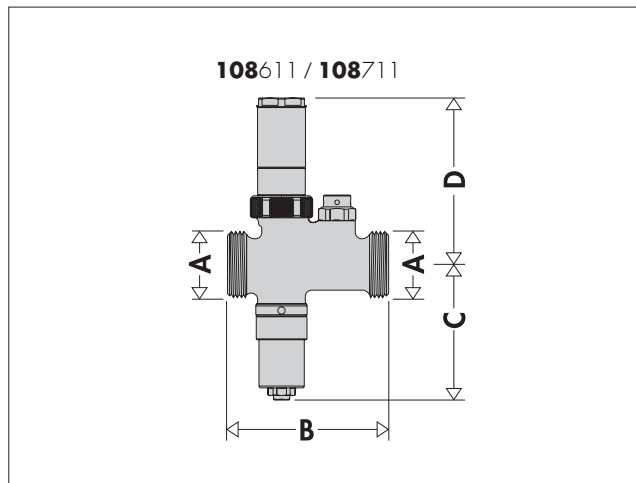
Materials

Body: brass EN 12165 CW617N
 Springs: stainless steel EN 10270-3 (AISI 302)
 Seals: EPDM
 Connections: (108611) G 1" (ISO 228-1)
 (108711) G 1 1/4" (ISO 228-1)

Performance

Medium: water
 Maximum working pressure: 5 bar
 Working temperature range: 0–65 °C
 Ambient temperature range: -30–60 °C
 Medium temperature (opening): 3 °C
 Medium temperature (closing): 4 °C
 Enabling of antifreeze function with outside air temperature: < 5°C
 Accuracy: ±1 °C
 Kv (straight path): (108611) 28 m³/h
 (108711) 28 m³/h

Dimensions






Code	A	B	C	D
108611	1"	81	74	91
108711	1 1/4"	91	74	91

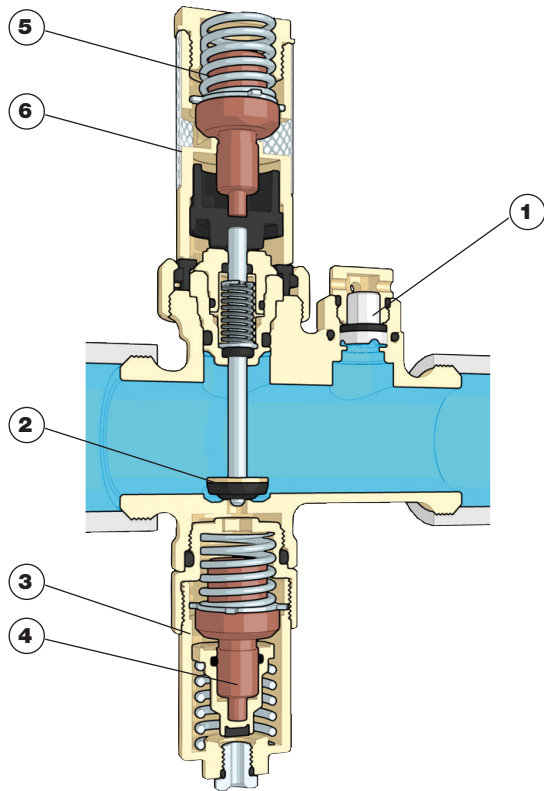
Sizing

Antifreeze valves are sized according to the diameter of the system pipes. In the table below, based on the nominal power of the heat pump, a typical flow rate is shown with a temperature difference of 5 °C. In relation to the flow rate, we can identify the diameter of a pipe that has a pressure drop $r=20\text{-}22\text{ mm w.g./m}$ (50 °C). The model to use is identified based on the pipe diameter.

Table for sizing components for heat pump systems

Nominal power HP [kW]		3	4	5	6	7	8	9	10	11	12	14	16	18	22	25
Max. set flow rate [l/h] (ΔT = 5 °C)  		516	688	860	1,032	1,204	1,376	1,548	1,720	1,892	2,064	2,408	2,752	3,096	3,784	4,300
Nominal pipe diameter		3/4"	3/4"	1"	1"	1"	1"	1"	1"	1 1/4"	1 1/4"	1 1/4"	1 1/4"	1 1/2"	1 1/2"	1 1/2"
iStop® 	108611 (1")									108711 (1 1/4")						

Characteristic components

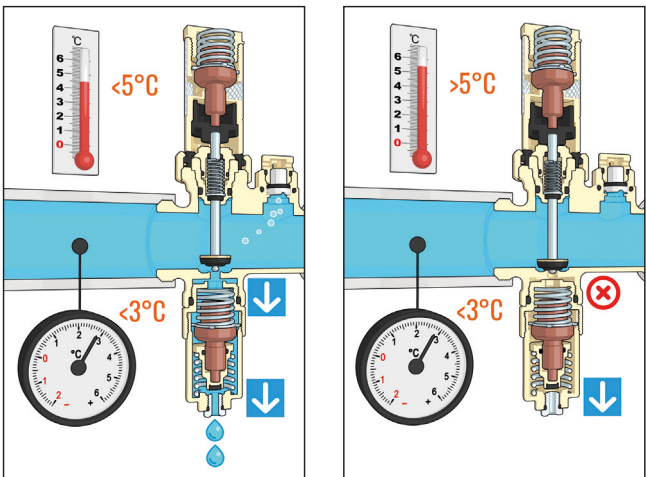
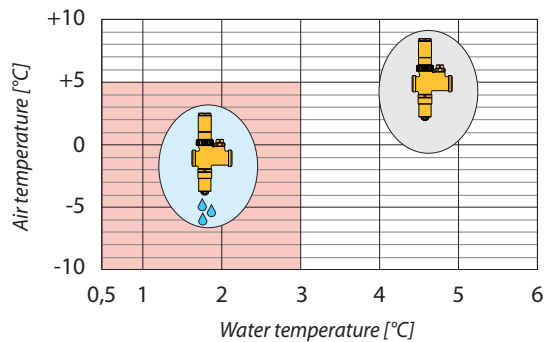


Antifreeze valve with air sensor

- 1. Vacuum breaker
- 2. Air temperature sensor obturator
- 3. Water temperature sensor cartridge
- 4. Water temperature sensor
- 5. Air temperature sensor
- 6. Air temperature sensor cartridge

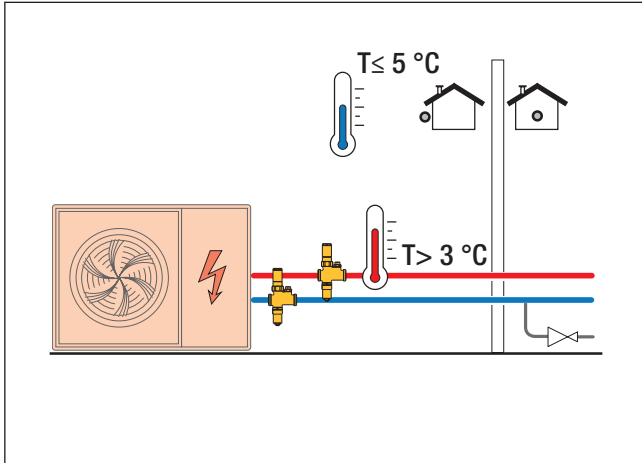
Operating principle

The 108 series antifreeze valve allows drainage of the medium in the circuit when the circuit temperature reaches a value of 3 °C. In outside temperature conditions over 5 °C, antifreeze valve cut-in is inhibited by the air temperature sensor. This prevents the valve from cutting in during operation in cooling mode during the summer.

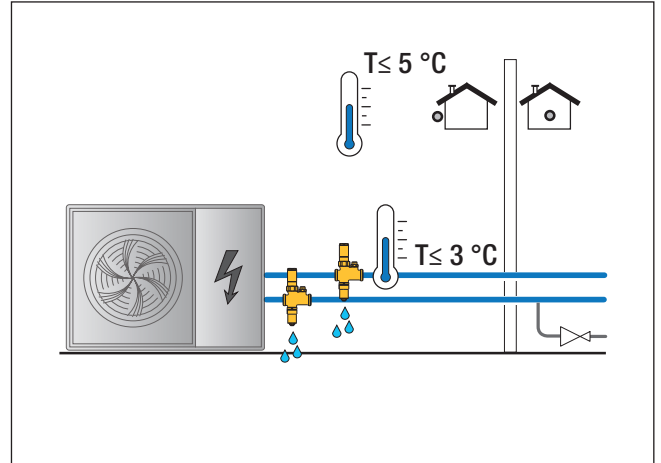


Operating phases

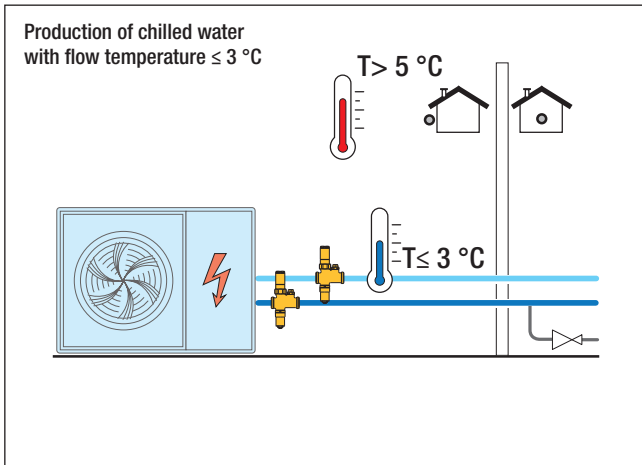
Winter operation in heating mode



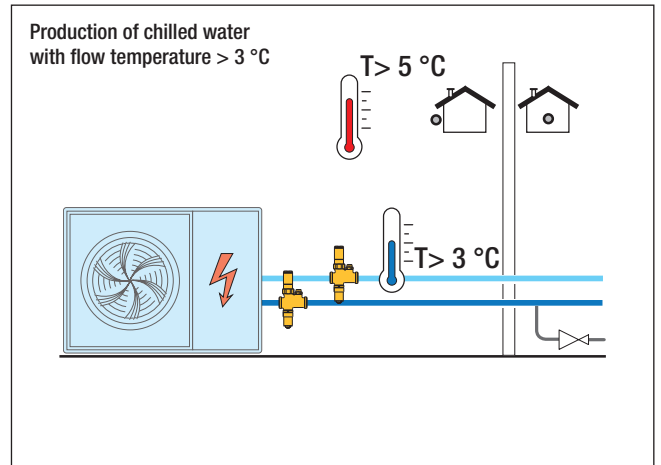
Winter operation in the event of electric supply failure



Summer operation in cooling mode



Summer operation in cooling mode



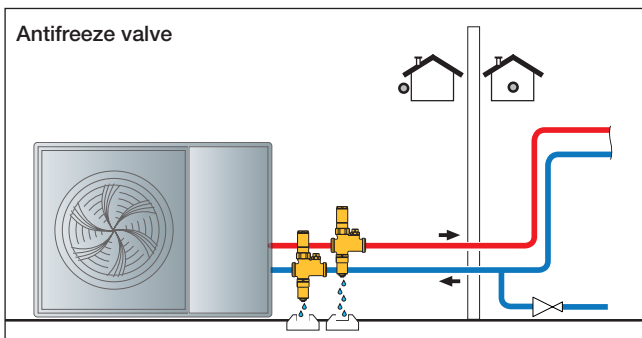
Installation

The device must only be installed in a vertical position, with the outlet facing downwards, to allow the drained water to flow out properly and free from obstructions.

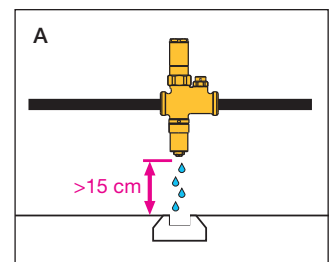
The antifreeze valves must be installed outdoors, where the lowest temperatures can be reached if the heat pump is locked. The antifreeze valves must be positioned well away from sources of heat in order to keep them working properly.

It is recommended to install the antifreeze valves on both pipes (flow and return). Otherwise, water may be left in one pipe which could then freeze.

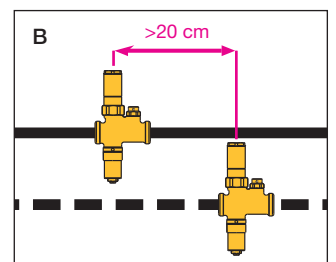
We recommend always keeping the system pressurised, even while draining, to ensure the antifreeze device works properly.



Leave at least 15 cm clearance from the ground (fig. A) to prevent the block of ice which may form below from stopping water from draining from the valve. Route the drain to a suitable collection point.



Keep a distance of at least 20 cm between the antifreeze valves with air sensor (fig. B).

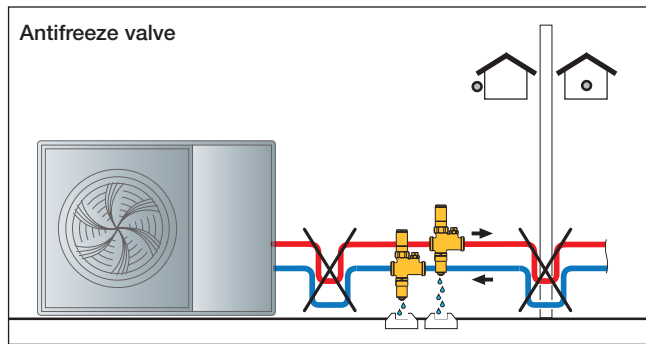


The antifreeze valve must be free of insulation for the system to work properly.

When installed outdoors, the antifreeze valve must be protected from rain, snow and direct sunlight.

Presence of traps

Do not make any trap connections. If the shape of the connection pipe has the potential to create a trap effect (as shown in the following figure), drainage is inhibited and frost protection will no longer be guaranteed.



Antifreeze valve maintenance

Antifreeze valve with air sensor maintenance

1. Vacuum breaker

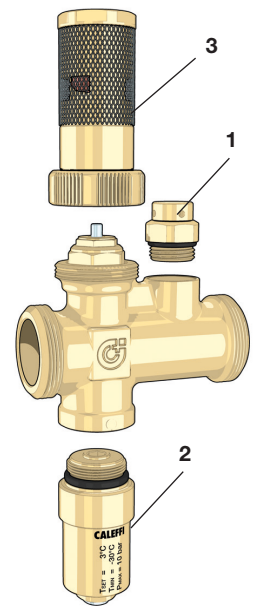
THE vacuum breaker can be replaced with spare part code R0000994.

2. Water sensor cartridge

The thermostatic cartridge can be replaced with spare part code F89046. Only replace the cartridge when the outside air temperature > 5 °C. Otherwise, isolate the system using shut-off valves.

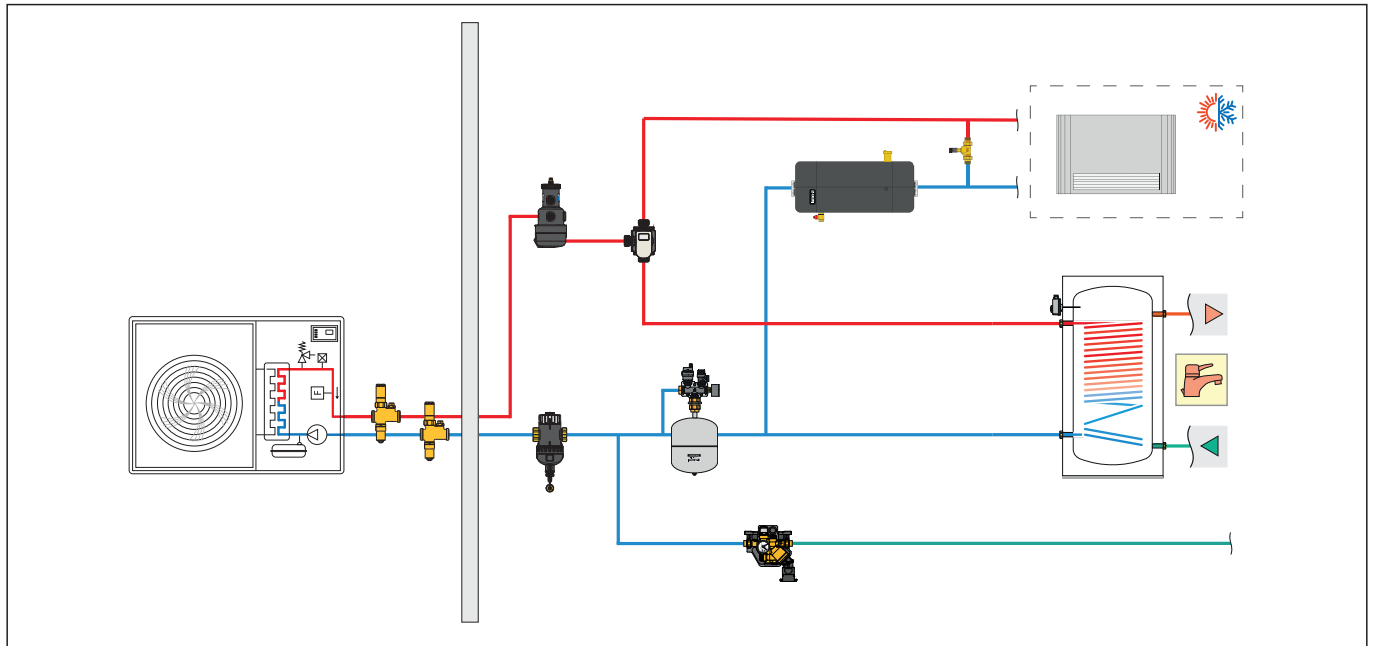
3. Air sensor cartridge

The air sensor cartridge can be replaced with spare part code F0001896.



Antifreeze valve with air sensor 108.11

Application diagram



SPECIFICATION SUMMARY

108.11 series

Antifreeze valve with air sensor. Threaded connections DN 25 (1") and DN 32 (1 1/4") (ISO 228-1). Brass body. Maximum working pressure 5 bar. Working temperature range 0–65 °C. Ambient temperature range: -30–60 °C. Water temperature for opening drain: 3 °C. Water temperature for closing drain: 4 °C. Enabling of antifreeze function with outside air temperature ≤ 5 °C.

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