

iStop® antifreeze valve



01376/24

replaces 01376/22

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 version of the iStop® valve ending in the digit 1 is suitable for use with standard heat pumps in which the maximum temperature of the flow water is 65 °C.

The version ending in the digit 2 is designed for heat pumps which use the new refrigerant gases with flow temperatures up to 90 °C.

PATENT PENDING

Product range

For applications with water up to 65 °C

108..1 series Antifreeze valve with threaded connections _____ sizes DN 25 (1"), DN 32 (1 1/4") and DN 40 (1 1/2")
 108..1 series Antifreeze valve with fittings for copper pipe _____ sizes DN 25 (Ø 28)

For applications with water up to 90 °C

108..2 series Antifreeze valve with threaded connections _____ sizes DN 25 (1") and DN 32 (1 1/4") and DN 40 (1 1/2")
 108..2 series Antifreeze valve with fittings for copper pipe _____ sizes DN 20 (Ø 22) and DN 25 (Ø 28)

Technical specifications

Materials

Body: brass EN 12165 CW724R (108601-108701-108301)
 brass EN 12164 CW617N (108801)
 brass EN 12165 CW617N (108602-108702-108802-108202-108302)
 Springs: stainless steel
 Seals: EPDM
 Connections: (108601-108602) G 1" (ISO 228-1)
 (108701-108702) G 1 1/4" (ISO 228-1)
 (108801-108802) G 1 1/2" (ISO 228-1)
 (108202) Ø 22 for copper pipe
 (108301-108302) Ø 28 for copper pipe

Working temperature range:

(108601-108701-108801-108301) 0–65 °C
 (108602-108702-108802-108202-108302) 0–90 °C

Ambient temperature range:

-30–60 °C

Medium temperature (opening):

3 °C

Medium temperature (closing):

4 °C

Accuracy:

±1 °C

Kv (straight path): (108601-108602) 33 m³/h

(108701-108702) 60 m³/h

(108801-108802) 60 m³/h

(108202) 23 m³/h

(108301-108302) 38 m³/h

Tightening torque: (108202) 60 N·m

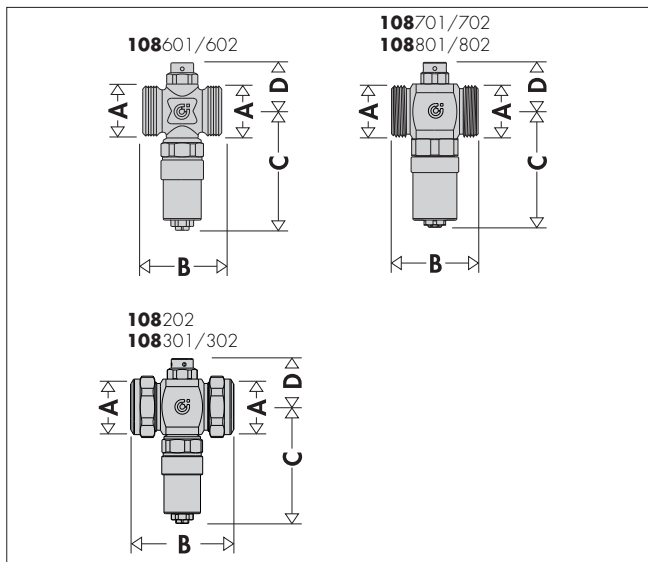
(108301-108302) 80 N·m

Performance

Medium: water

Maximum working pressure: 10 bar

Dimensions

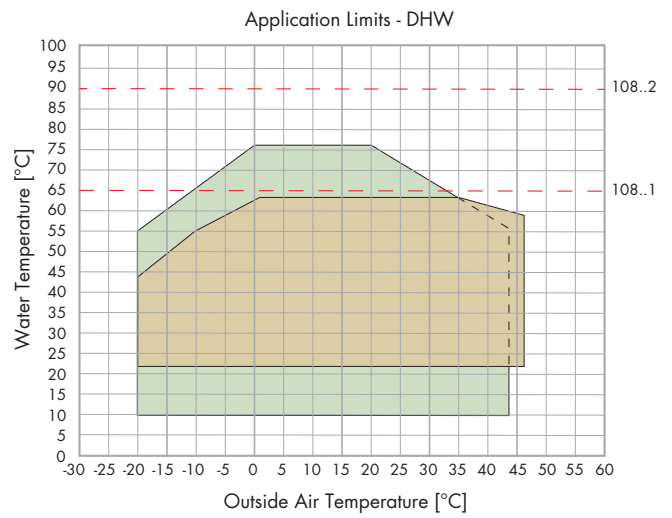
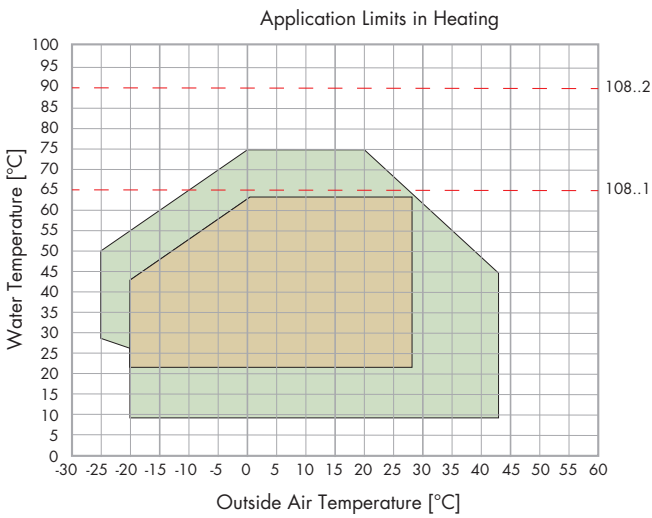


Code	A	B	C	D
108601	1"	52	79	32
108701	1 1/4"	59	83	36
108801	1 1/2"	62	83	36
108301	Ø 28	71	80	33
108602	1"	52	73	31
108702	1 1/4"	59	77	35
108802	1 1/2"	62	77	35
108202	Ø 22	71	74	31
108302	Ø 28	71	77	35

Technical selection

Technical selection takes place according to the type of heat pump installed in the system. The temperature of the water produced may vary, depending on the refrigerant used. Manufacturers generally provide two charts showing the change in "technical" water temperature during heating and during domestic hot water production. It is essential to calculate the maximum temperatures that can be reached and to correctly select the type of valve to be used.

■ R290 ■ R410A



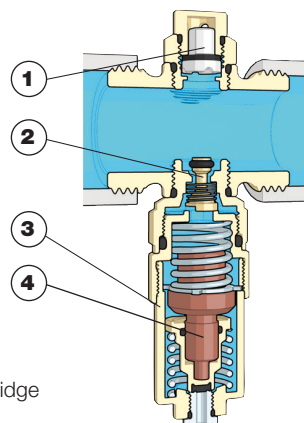
Sizing

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 $r=20\text{-}22$ 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

HP nominal power [kW]	3	4	5	6	7	8	9	10	11	12	14	16	18	22	25
Max. set flow rate [l/h] ($\Delta T = 5\text{ °C}$)	516	688	860	1032	1204	1376	1,548	1720	1892	2064	2408	2752	3096	3784	4300
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"
<i>iStop</i>		108601 (1")							108701 (1 1/4")			108801 (1 1/2")			
		108301 (Ø 28)												-	
		108602 (1")							108702 (1 1/4")			108802 (1 1/2")			
		108202 (Ø 22)							108302 (Ø 28)			-			

Characteristic components

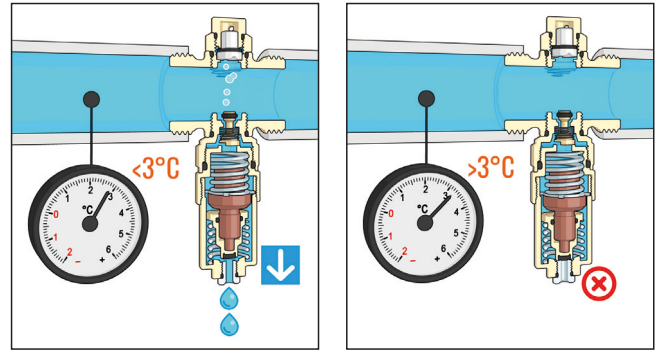
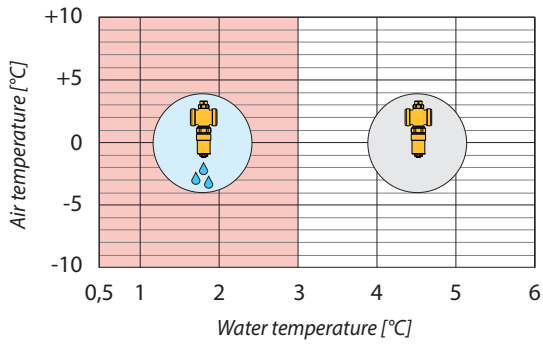


Antifreeze valve

1. Vacuum breaker
2. Automatic shut-off cock
3. Water temperature sensor cartridge
4. Water temperature sensor

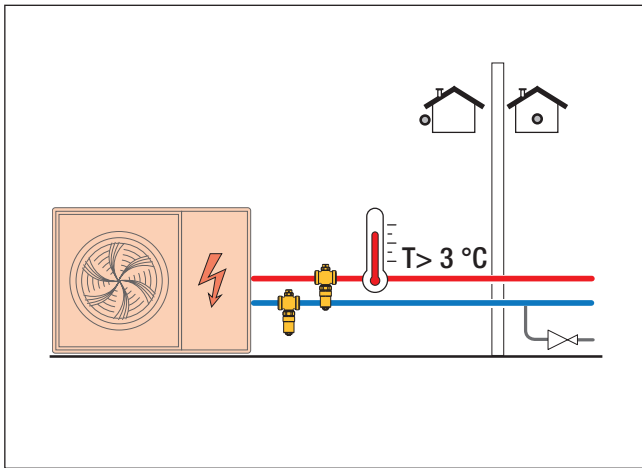
Operating principle

The 108 series antifreeze valve allows drainage of the medium in the circuit when the circuit temperature reaches a value of 3 °C.

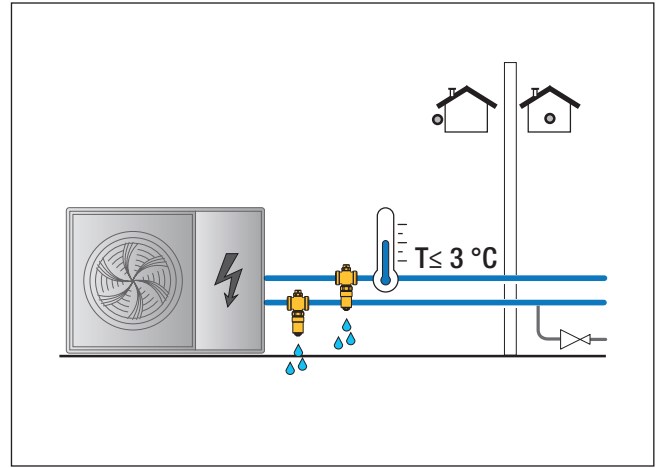


Operating phases

Winter operation in heating mode



Winter operation in the event of electric supply failure



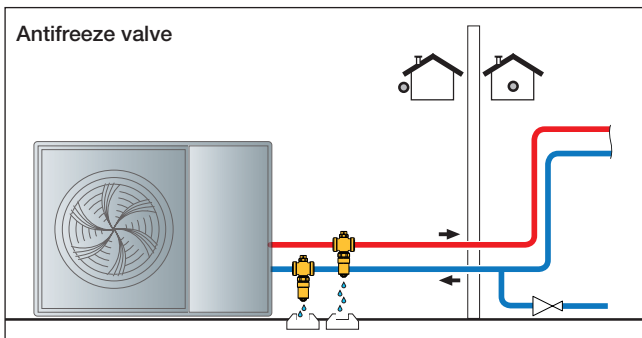
Installation

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.

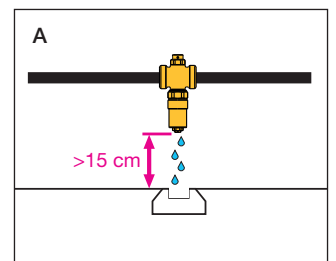
The antifreeze valves must be installed outdoors, where the lowest temperatures can be reached if the heat pump is locked. The antifreeze valves must be positioned well away from sources of heat in order to keep them working properly.

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.

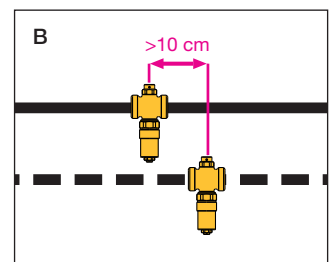
We recommend always keeping the system pressurised, even while draining, to ensure the antifreeze device works properly.



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 10 cm between the antifreeze valves (fig. B).

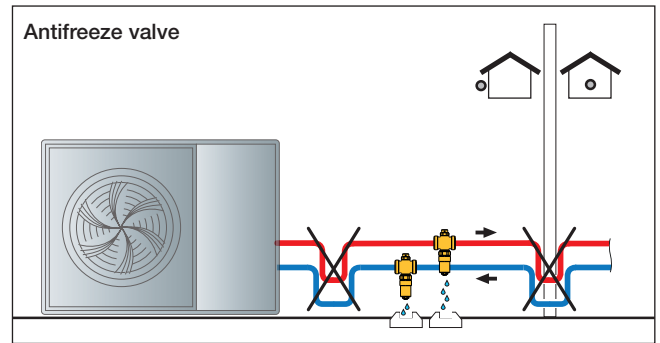


The antifreeze valve must be free of insulation for the system to work properly.

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

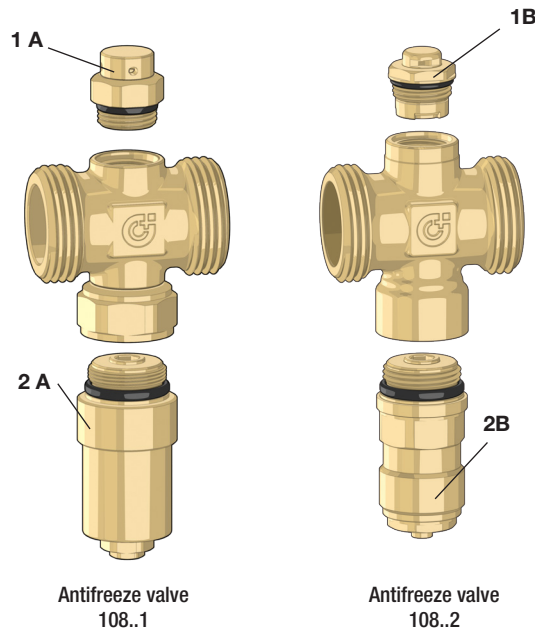
1 A. Vacuum breaker

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

2 A. Water sensor cartridge

The thermostatic cartridge can be replaced with spare part code F89046.

An automatic shut-off cock prevents the water from draining while the cartridge is being replaced, thereby keeping the system pressurised.



Antifreeze valve
108..1

Antifreeze valve
108..2

Antifreeze valve maintenance

1B. Vacuum breaker

THE vacuum breaker can be replaced with spare part code F0002131.

2B. Water sensor cartridge

The thermostatic cartridge can be replaced with spare part code F0002130.

An automatic shut-off cock prevents the water from draining while the cartridge is being replaced, thereby keeping the system pressurised.

SPECIFICATION SUMMARY

Series 108...1

Antifreeze valve. Threaded connections DN 25 (1"), DN 32 (1 1/4") e DN 40 (1 1/2") (ISO 228-1). Brass body. Maximum working pressure 10 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.

Series 108...1

Antifreeze valve. With fittings for copper pipe DN 25 (Ø 28). Brass body. Maximum working pressure 10 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.

Series 108...2

Antifreeze valve. Threaded connections DN 25 (1"), DN 32 (1 1/4") e DN 40 (1 1/2") (ISO 228-1). Brass body. Maximum working pressure 10 bar. Working temperature range 0–90 °C. Ambient temperature range: -30–60 °C. Water temperature for opening drain: 3 °C. Water temperature for closing drain: 4 °C.

Series 108...2

Antifreeze valve. With fittings for copper pipe sizes DN 20 (Ø 22) and DN 25 (Ø 28). Brass body. Maximum working pressure 10 bar. Working temperature range 0–90 °C. Ambient temperature range: -30–60 °C. Water temperature for opening drain: 3 °C. Water temperature for closing drain: 4 °C.

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