Anti-freeze valve series
ZL-7201 ZL-7203 ZL-7204 ZL-7205
ZL-7207 ZL-7208

DESCRIPTION

The antifreeze valve allows the circuit medium to be drained when its temperature reaches an average value of 3 °C. This prevents ice forming in the circuit of a system, generally with a heat pump, avoiding potential damage to the machine and to the pipes.
The version with the air sensor allows the system to work in cooling mode, even when the water temperature is approaching 3 °C. In these conditions the air sensor cuts in to prevent water drainage.

Product range

Antifreeze valve with threaded connections	sizes DN 25 (1"), DN 32 (1 1/4") and DN 40 (1 1/2")
Antifreeze valve with connections for copper pipe sizes	DN 25 (Ø 28)
Antifreeze valve with air sensor, threaded connections sizes	DN 25 (1") and DN 32 (1 1/4")

Technical specifications

Materials

Body:	brass EN 12165 CW617N
Springs:	stainless steel
Seals:	EPDM
Connections:	G 3/4 (ISO 228-1)
	G 1″ (ISO 228-1)
	G 1 1/4″ (ISO 228-1)
	G 1 1/2″ (ISO 228-1)
	Ø 28 mm for copper pipe

Performance

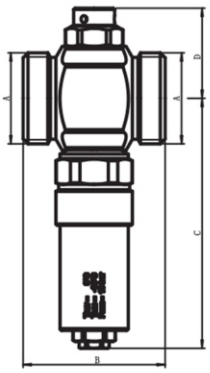
Medium:	water
Maximum working pressure:	
	10 bar
Working temperature range:	5 bar
Ambient temperature range:	0–65 °C
	-30–60 °C
Medium temperature (opening):	3 °C
Medium temperature (closing):	4 °C
Enabling of antifreeze function with outside air temperature:	< 5 °C
Accuracy:	±1 °C
Kv (straight path):	55 m3/h
	70 m3/h
	72 m3/h
	64 m3/h
Tightening torque:	80 N·m

Discharge flow rate

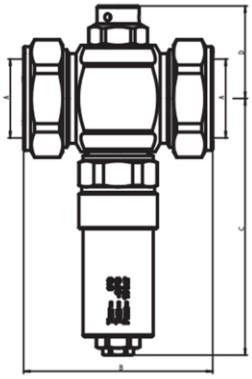
P(bar)	T outside(°C)	Flow rate(l/h)
3	-5	0.5
	-20	1

Test conditions:
- straight pipe (Ø 12 mm, length 1 m) exposed to the outside;
- water temperature inside building 18 °C.

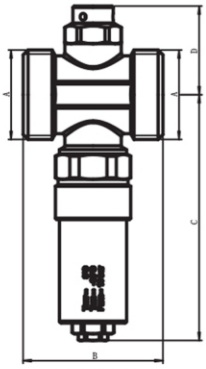
ZL-7201



ZL-7201



ZL-7203



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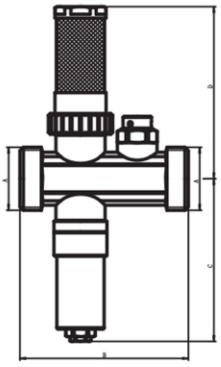

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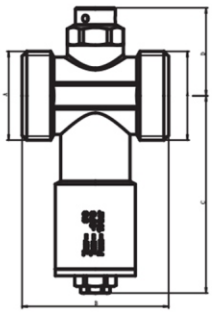
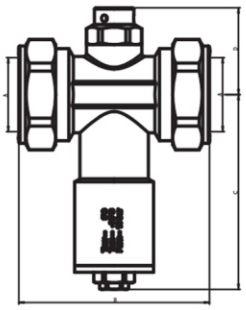
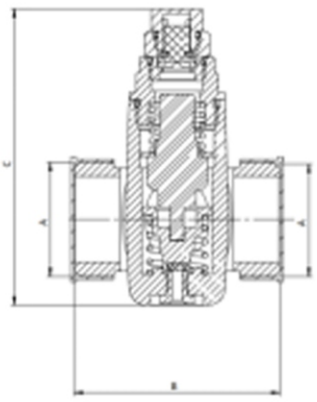


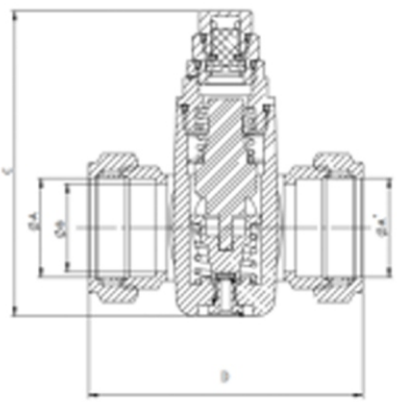
ZL-7205



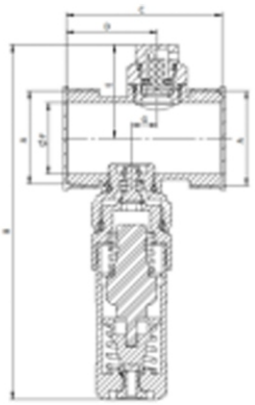
CODE	A	B	C	D
ZL-7201	1"	52	91.5	33
	1 1/4"	59	96	37.5
	1 1/2"	62	99	40.5
ZL-7201-28	28mm	67.5	91.5	33
ZL-7203	1"	52	91.5	33
	1 1/4"	59	95	36.5
	1 1/2"	62	98.5	40
ZL-7204	1"	89	86	91
	1 1/4"	97	86	91
ZL-7205	1"	55	74	33
	1 1/4"	61	77.5	36.5
	1 1/2"	63	81	40
ZL-7205-28	28mm	72.5	74	33
ZL-7208	3/4	120	55	/
	1”	60	86.5	/
	11/4”	134	62	/
	11/2”	140	64	/
ZL-7208-28	28MM	25	86.5	78
ZL-7207	3/4	120	55	32
	1”	125	55	32
	11/4”	134	62	65.5
	11/2”	140	64	36.5
ZL-7207-28	28MM	125	72	33



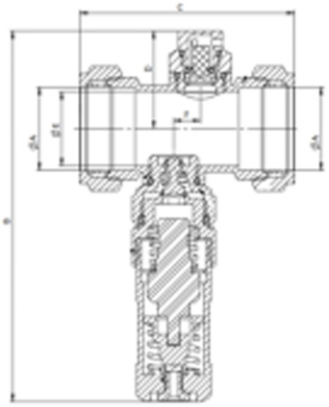
ZL-7208



ZL-7208-28

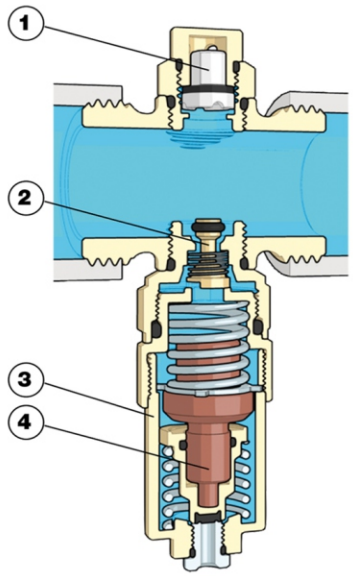


ZL-7207



ZL-7207-28

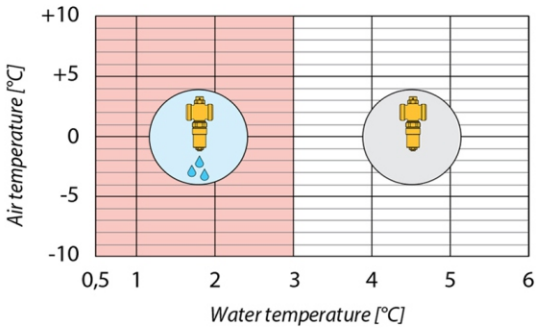
Characteristic components

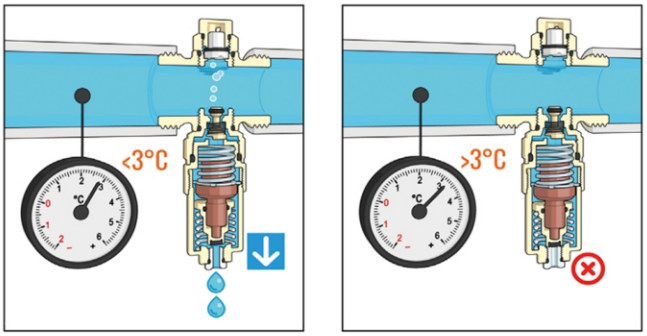


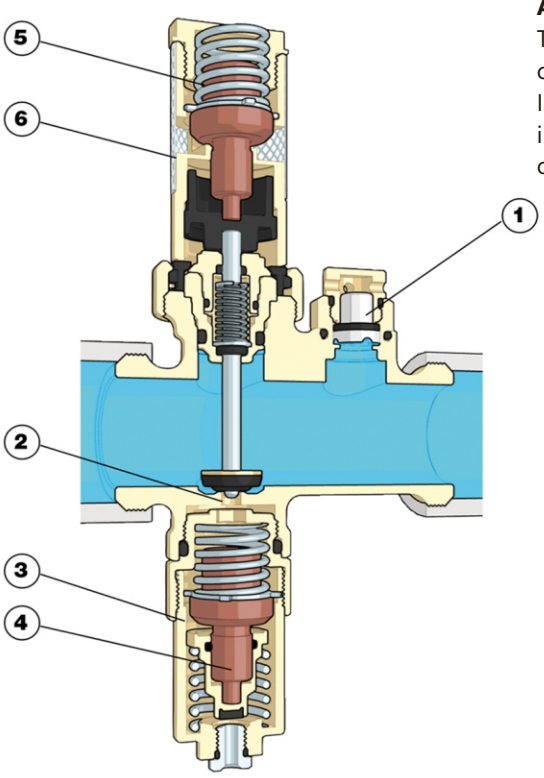
Antifreeze valve
1.Vacuum breaker
2.Automatic shut-off cock
3.Water temperature sensor cartridge
4.Water temperature sensor

Operating principle

Antifreeze valve
The antifreeze valve allows drainageof the mediumin thecircuit when the circuit temperature reaches a value of 3°C.

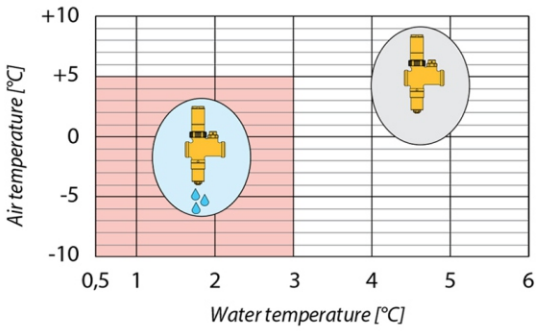


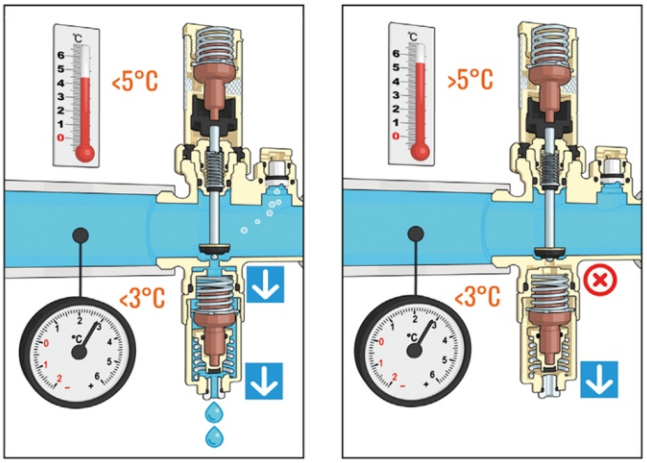




Antifreeze valve with air sensor
1. Vacuum breaker
2. Air temperature sensor obturator
3. Water temperature sensor cartridge
4. Water temperature sensor
5. Air temperature sensor
6. Air temperature sensor cartridge

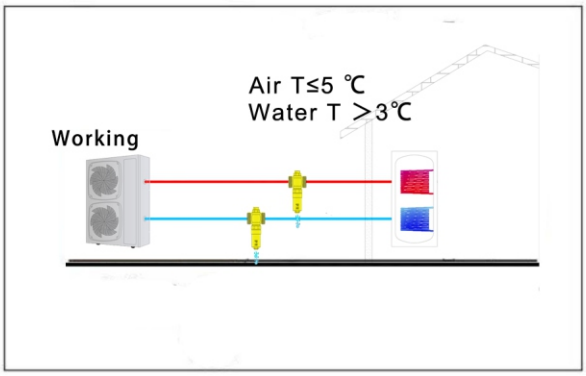
Antifreeze valve with air sensor
The antifreeze valve allows drainage of the medium in the circuit when the circuit temperature reaches a value of 3 °C.
In outside temperature conditions over 5 °C, antifreeze valve cut-in is inhibited by the air temperature sensor. This prevents the valve from cutting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



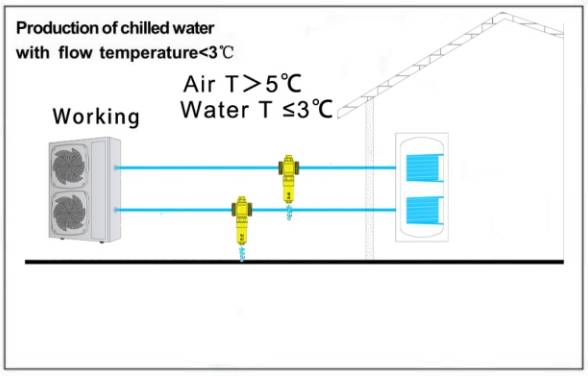


Operating phases

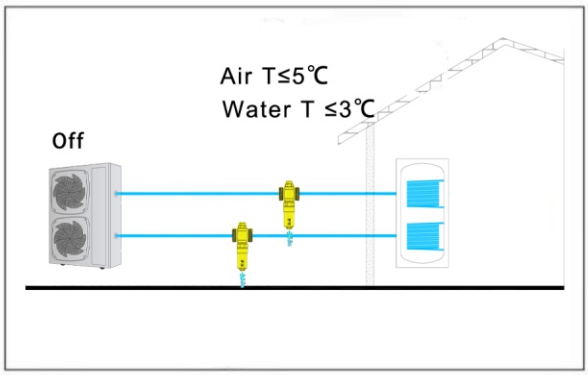
Winter operation in heating mode

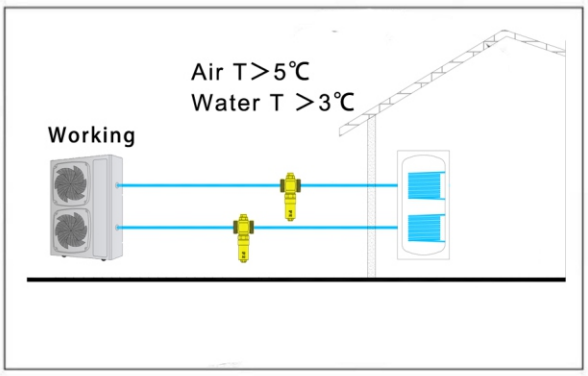


Summer operation in cooling mode



Winter operation in the event of electric supply failure





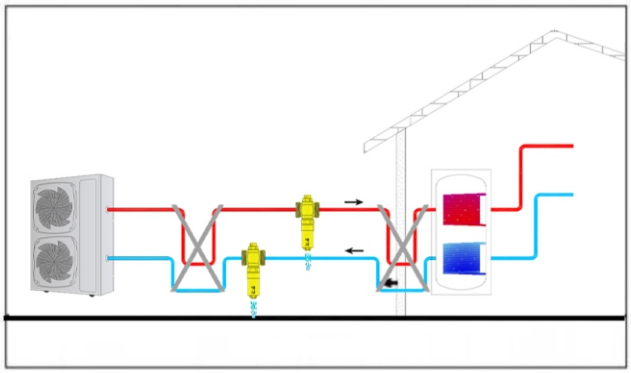
Installation Requirements

The anti-freeze valve must be installed vertically, with the discharge outlet facing downward to ensure proper drainage.

Avoid creating any trap connections. If the connection pipe is shaped in a way that could cause a trap effect (as illustrated in the
following figure), it will impede drainage and compromise frost protection.

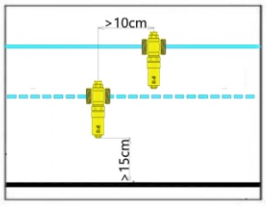
Maintenance

Vacuum Breaker and Temperature Sensor Core are replaceable, ensuring the system remains pressurized.



Maintain a minimum distance of 10 cm between valves, and avoid covering the valve with insulation material.

It should be installed outdoors, away from heat sources, and with the system pressurized.



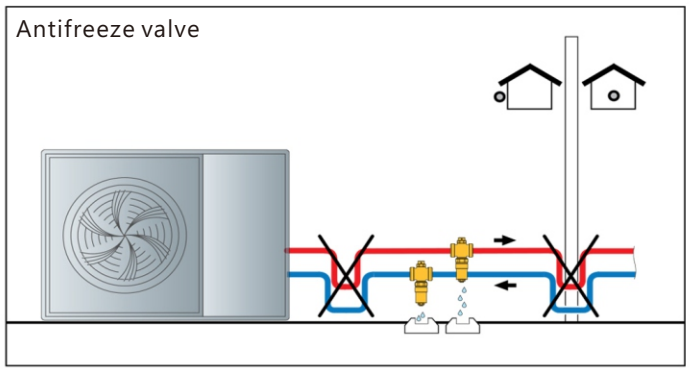
Ensure at least 15 cm of clearance from the ground to prevent ice blockage in the discharge outlet.

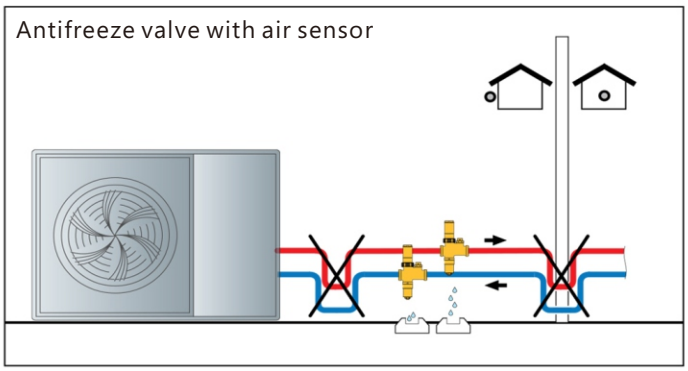
The antifreeze valve must be free of insulation for the system to work properly.

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.



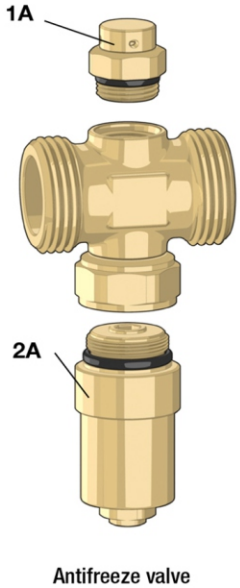


Antifreeze valve maintenance

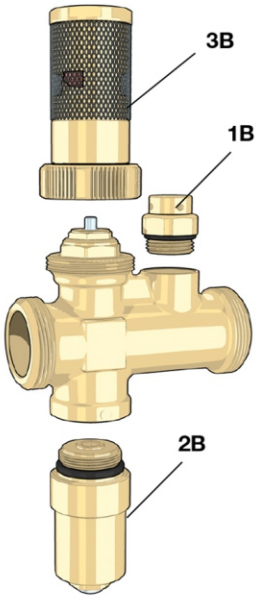
1A. Vacuum breaker

2A. Water sensor cartridge

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



Antifreeze valve



Antifreeze valve with air sensor

Antifreeze valve with air sensor maintenance

1B. Vacuum breaker

2B. Water sensor cartridge

Only replace the cartridge when the outside air temperature > 5 °C. Otherwise, isolate the system using shut-off valves.

3B. Air sensor cartridge

SPECIFICATION SUMMARY

Antifreeze valve (ZL-7201/7203/7204/7205/7207/7208)	
Threaded G 1″ M connections	(ISO 228-1) (from G 1″ to G 1 1/2″).
Brass body. Maximum working pressure10 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.

Antifreeze valve(ZL-7201-28)	Ø 28 copper pipe. Brass body.
With fittings for	10 bar.
Maximum working pressure	0–65 °C.
Working temperature range	-30–60 °C.
Ambient temperature range:	3 °C.
Water temperature for opening drain:	4 °C.
Water temperature for closingdrain:	

Antifreeze valve with air sensor(ZL-7204-1M, ZL-7204-11/4M)	
Threaded G 1″ M connections	(ISO 228-1) (from G 1″ to G 1 1/4″).
Brass body. Maximum workingpressure	5 bar.
Working temperature range	0–65 °C.
Ambient temperature range:	-30–60 °C.
Water temperature for openingdrain:	3 °C.
Water temperature for closing drain:	4 °C.
Enabling of antifreeze function with outside air temperature	⩽ 5 °C.