Solar Freeze Protection

Design Features:

* Brass body and thermal element
* Narrow temperature band
* Compact, low mass - Fast response
* Ram-type plug for reliable tight shutoff
* Sensitive to temperature only
* Unaffected by pressure variations
* Easy installation with pipe wrench
* Discharges the minimum amount of water required to prevent freeze damage

Operation

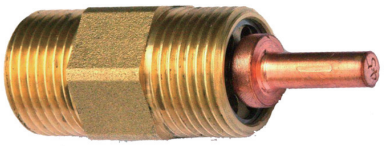
The Freeze Protection Valves utilize a reliable self-contained thermo element which is sensitive to temperature and operates without any electrical power or air pressure. When the fluid temperature approaches freezing, and freeze damage is imminent, the thermal actuator modulates the valve open. When the makeup water temperature returns to the safe range, the valve then modulates closed, minimizing water loss. Due to the actuator's placement in the fluid stream, this valve is unaffected by ambient air temperature, and opens only when the water is in danger of freezing, being open at 1°C, and closed at 4°C. This cycle will repeat as often as necessary to help prevent freezing.

* Model: FP65-35/LF47-35 opening/closing temp 1~4°C ideal for water tube freeze protection

* Model: FP65-45/LF47-45 opening/closing temp 3~6°C ideal for flat pannel collector freeze protection

Solar Application

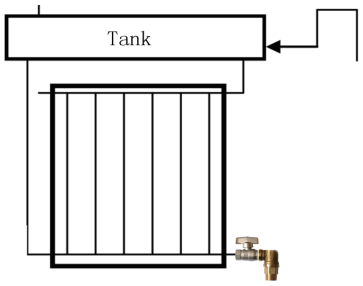
We designs and manufactures self-operating temperature actuated freeze protection valve. Winning Thermo Control also offers self-operating thermostatic "reverse acting" and mixing/diverting valves that are ideal for balancing the flow of heated water from solar collectors. Installed at the outlet of the collector, this valve will automatically regulate the outlet flow within the setpoint range of the valve. If the outlet water is not fully heated to your desired level, the valve will restrict the water flow to allow more solar heating; as the outlet water heats up to the specified temperature, the valve modulates open to allow more flow.
In multi-collector systems, this thermal balancing valve also serves to balance the flow through various collectors which may be producing different outlet water temperatures due to variations in solar exposure, wind, or other factors. This valve will automatically adjust the outlet flow to maintain the desired outlet water temperature.



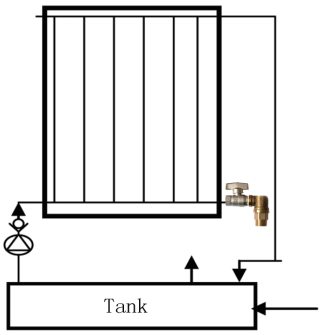
FP65-35/FP65-45

LF47-35/LF47-45

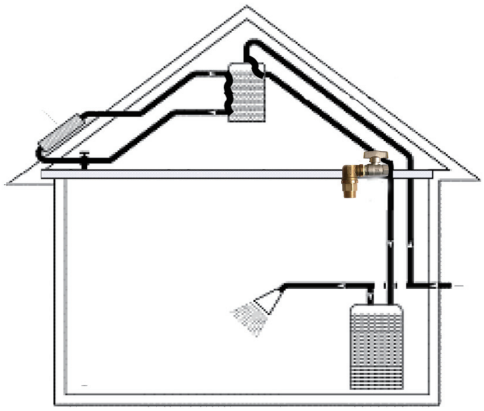
Solar Freeze Protection



Thermo-siphoning System



Pumped Circulation System



Freeze Protection Valve Application Considerations

1. The "Freeze Protection Vavle(s)" functions properly provided the valve is installed in a location, where during operation, the warmer supply water first passes through the collectors and/or pipe to be protected and then through the valve. The valve should be located in a position to allow good water distribution through the solar panel so that when the valve opens, water flows as evenly as possibe through all the collector tubes. Location of the valve may vary depending on the system design and piping.
2. Select a mounting position where the valve will sense the coldest anticipated ambient temperature. Do not insulated the valve. Do not install valve near an external heat source.
3. The "Freeze Protection Valve (s)" should be installed in a vertical position with discharge port down.
4. If the discharge tube is used, make sure it will drain freely and is installed in accordance to local codes. Avoid water traps in the discharge tube that could freeze and prevent drainage.

Specifications

Model	Port Size	Body Material	Maximum Temp (° C)	Operating Pressure (MPa)	Flow Rate (Cv)	Dimensions (mm)	Net Weight (g)
LF47	DN15/DN20 Male	Brass	+150	1.0	1.0	Φ25*78	185
FP65	NPT Male 3/4"	Brass	+150	1.0	0.6	Φ30*69	130

Notes:

*1. Seal material: EPDM, Viton available

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