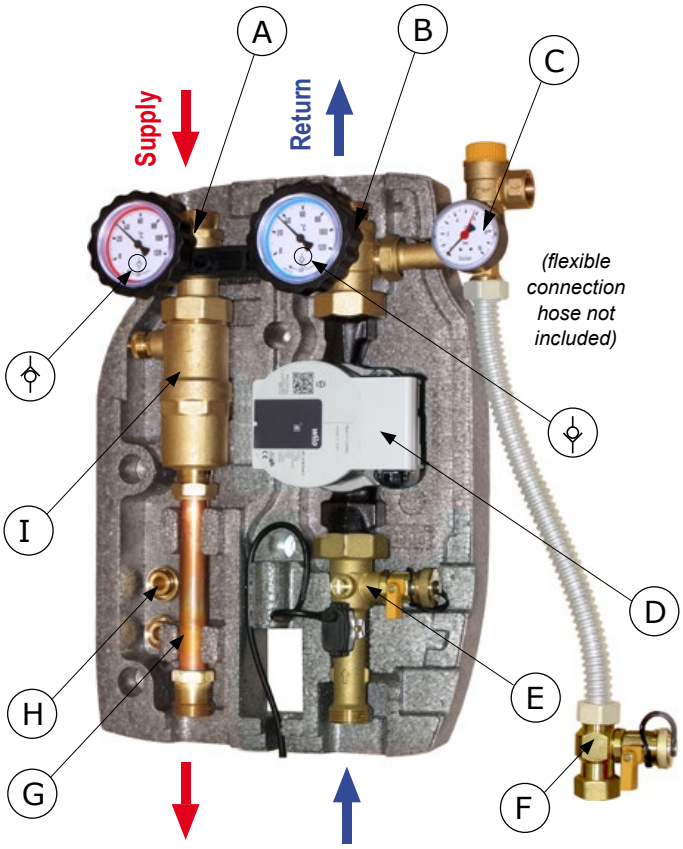
SOLAR PUMPING STATION S2 SOLAR 30 L VFS

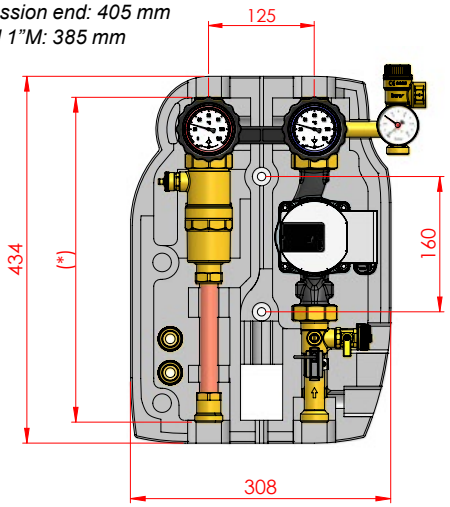
Installation instructions

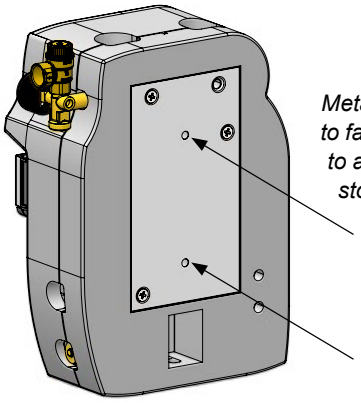


DIMENSIONS

EPP Insulation box: it includes a control unit holder insert suitable for the passage of power cables and sensors.
Dimensions: 308x434x169 mm.
A special metal back plate fasten the unit to the insulation and allows easy installation both on the wall and on the water tank.

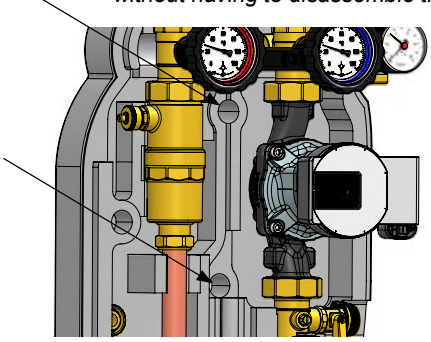
(*) Distance of threaded connections:
22 mm compression end: 405 mm
3/4"M and 1"M: 385 mm





Metal back plate to fasten the unit to a wall or to a storage tank.

ø10 fastening holes on the back plate.
Special passages on the insulation allow fastening without having to disassemble the unit.



MAIN COMPONENTS

A. Supply ball valve provided with 10 mbar check valve which can be excluded, supplied with in-handle red ring thermometer, range 0-120°C.
B. Return ball valve provided with 10 mbar check valve which can be excluded, supplied with in-handle blue ring thermometer, range 0-120°C.
C. 6 bar safety unit with 0-10 bar pressure gauge with connection to the flexible hose of expansion vessel (not included).
D. Synchronous high efficiency circulating pump externally controlled by PWM signal.
E. VFS digital flowmeter with drain valve.
F. System filling connection.
G. Fixing area of the temperature sensor in contact with the pipe.
H. Pair of hose unions for filling and draining.
I. Deaerator provided with manual bleeder.

MAINTENANCE

To operate an incidental service or replacement of the circulating pump, close the ball valves by rotating the handle **(B)** and the regulation rod **(E)** clockwise. Once maintenance is over, open again the two ball valves and restore the pressure of the system.

TECHNICAL FEATURES

PN 10. Constant temperature 120°C;
(short time temperature: 160°C for 20 s).

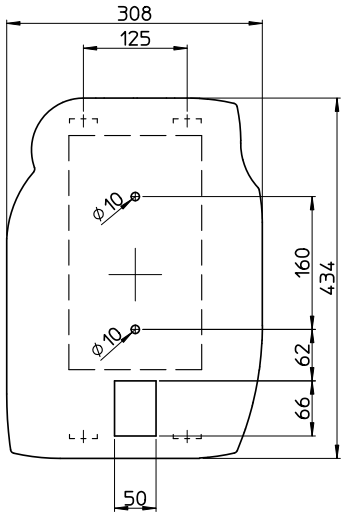
External connections:
22 mm compression, 3/4" Male or 1" Male.

FIELD OF USE

For power up to 50 kW.

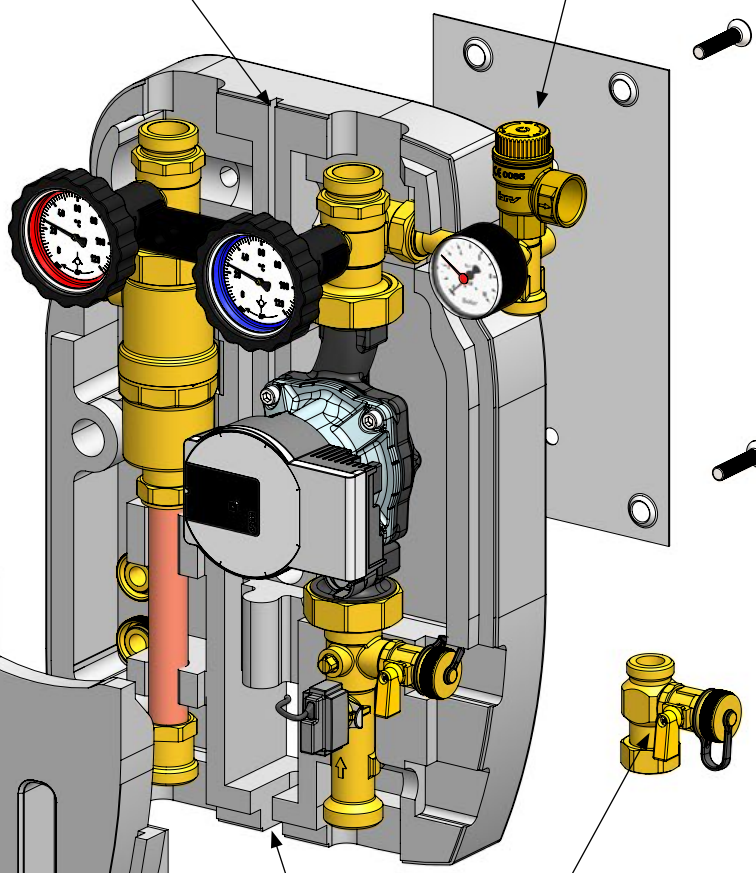
***SAFETY:* Temperatures reached by the fluid can be high enough to cause scalds and burns. The unit must be installed by a qualified installer. After the installation, check the tightness of the connections to avoid leaks during working operations.**

Solar Pumping Station S2 Solar 30 L VFS

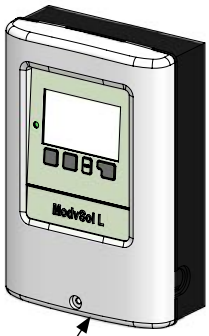


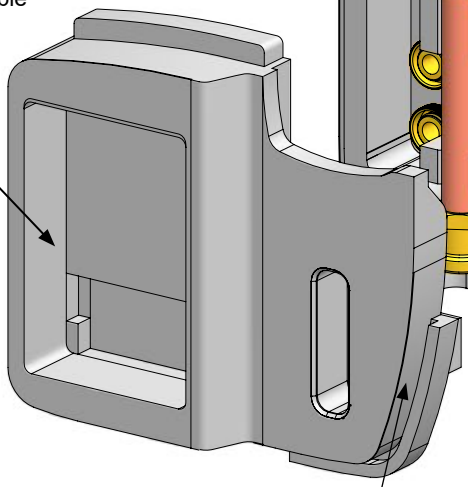
Cable passage for the sensor positioned on the solar collector.

Metal back plate to fasten the unit to a wall or to a storage tank.



Controller housing seat
On the side of the controller there is a special passage that allows the cables to reach the central cable exit compartment.





Connection to fill the system
By this special “solar” connection it is possible to fill the system easily. It is included in the box, it must be connected between the flexible hose (not included) and the expansion vessel.

Controller wiring exit (sensors, power supply, circulating pump).

Circulating pump cable
The controller insert offers a dedicated passage for the circulating pump’s power cable. This seat extends along the external profile of the insert, normally covered by the insulation cover, and allows the cable to be guided along a well-defined path and isolated from heat sources.

Wiring exit compartment
In this area, which is thermally insulated from the rest of the group, all the wiring and temperature probes are collected and sorted. Thanks to the double opening obtained in the insulation, the cables can come out both towards the bottom and towards the rear, depending on the installation needs.

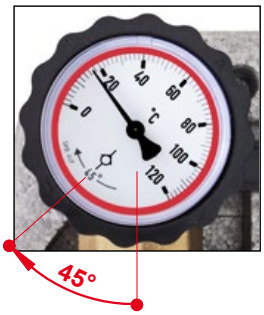
Mounting position

To facilitate installation operations, the control unit holder insert can be temporarily housed in a lateral position. This device allows easy access to the filling valve, avoiding having to manually support the control unit: it is sufficient to use the 22 mm groove located in the lower area of the insert to hook the insert itself to the supply pipe. Once the installation operations have been completed, it is possible to reposition the control unit holder insert in its final housing.

TAKE CARE

***Electric wiring:* The station is fully wired. Provide a Schuko type socket for connection to the electrical network. Voltage: 230 VAC +/- 10%. Frequency 50-60 Hz.**

COMPONENTS AND OPERATION



10 mbar check valve

"Solar" check valve built-in in the ball valve, both in the supply and in the return way. It guarantees tightness and low pressure drops. To exclude the check valve, for example in case of draining the system, turn the handle 45° clockwise.

Deaerator

The deaerator is a device that continuously separates the air that is possibly in circulation together with the fluid. The air is collected in the upper area of the deaerator pipe, and can be eliminated through the special bleeder, during the operation of the system. **Unscrew the knurled ring no more than half a turn.** This operation must be performed occasionally to keep the circuit efficient.

***Deaerator:* to avoid direct leakage of the liquid, given the high operating temperature, it is advisable to connect a tube to the end of the bleeder.**

Safety unit

The safety unit, CE and TÜV approved, protects the installation from overpressures. It is calibrated at 6 bar and over this pressure the unit intervenes. It is also provided with a ø50 mm 0-10 bar pressure gauge and with a connection to the expansion vessel by means of a 3/4" flexible kit (optional).

***Safety unit:* the blow-off outlet is marked by an arrow on the body of the valve. Install a blow-off pipe such that neither injury to a person nor damage to property can be caused by the blow out liquid.**

Digital VFS flowmeter

Thanks to this special device, adjustments and settings of the solar pumping station are no longer required. In fact the electronic controller adjusts the speed of the circulating pump to get the better performance of your solar system. The flow is viewed on the LCD display. Range of measurement: 2-40 L/min.

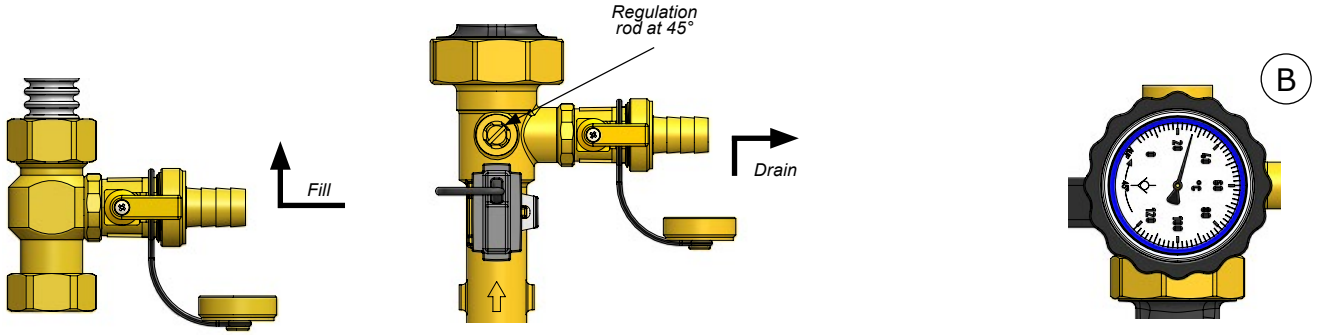
***SAFETY:* The VFS sensor cable must not be placed in contact and/or winded on the pipes.**

This cable, made in PVC, is not suitable for temperatures higher than 80°C. The right route of the cable is the one shown in the picture: in that way it is never in contact with high temperature components. The cable is also held in the right position thanks to the special way shown in the picture on the left.

***NOTE:* For instructions regarding the installation and operation of the controller, refer to the specific manual included.**

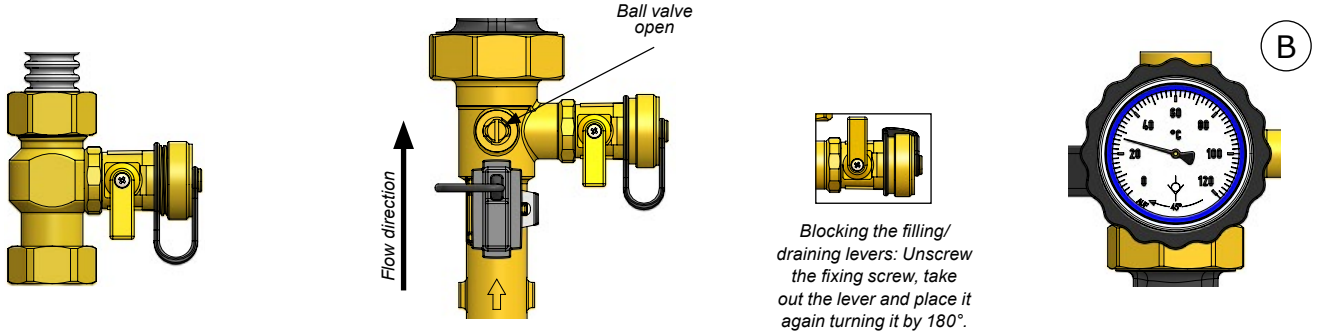
FILLING THE INSTALLATION

1. - Check the connections to the circuit and to the expansion vessel;
2. - Make sure that the supply ball valve (A) (red ring thermometer) is open;



3. - Remove the plug from filling and draining side valves and connect the hose unions, by connecting them to the filling device of the system;
4. - Position the regulation rod of VFS at about 45°;
5. - Close the return ball valve (B) (blue ring) rotating by 90° clockwise;
6. - Open the filling and draining valves;
7. - Fill the system up to a pressure level set by the project.

COMMISSIONING OF THE SYSTEM



Blocking the filling/ draining levers: Unscrew the fixing screw, take out the lever and place it again turning it by 180°.

1. - Close the side valves of filling and draining valves;
2. - Remove the no more in use hose unions and re-screw the plugs.
3. - To avoid any accidental opening of the side taps it is advisable to block the levers in the closed position as illustrated alongside;
4. - Reopen the ball valve (B) (blue ring thermometer);
5. - Reopen the ball valve of VFS (regulation rod);

DISPLAY OF THE THERMAL PERFORMANCE OF THE SYSTEM

ModvSol L controller is able to calculate the thermal energy supplied. In fact in menu "**2. Statistics**" is possible to display the total "Solar output", annual, monthly, weekly and daily (Fig. 2). These data, indicated in kWh, are displayed even disguised as a graphic.

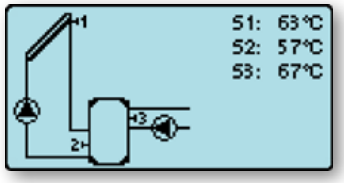


Fig. 1

Fig. 2

VFS MALFUNCTIONS

In the case of malfunctions or faults of the VFS flowmeter please observe following rules:

- ✓ *Verify that the sensor VFS installed into the pumping station corresponds to the one selected into the menu **6.9.2. VFS Type**. If it does not correpond please change the selection.*
- ✓ *Earth your installation, from the electric point of view, to avoid that roaming currents or other electric devices may disturb the VFS and therefore compromise the precise reading of the device.*
- ✓ *Verify that the maximum speed of the circulating pump (menu **6.3.5. Min. speed** 30% by default) gives at least a minimum flow of 3.5 L/min. (at 60°C with a water and glycol mixture). If, at the minimum speed, the VFS does not read any value, please increase this parameter (f.e. 60%).*
- ✓ *Verify that the maximum speed of the circulating pump (Menu **6.3.4. Max. speed** 100% by default) does not give a flow more than 40 L/min. In this case please decrease this value (f.e. 90%).*
- ✓ *Accuracy of the VFS with 40% water and glycol mixture: ±5%.*