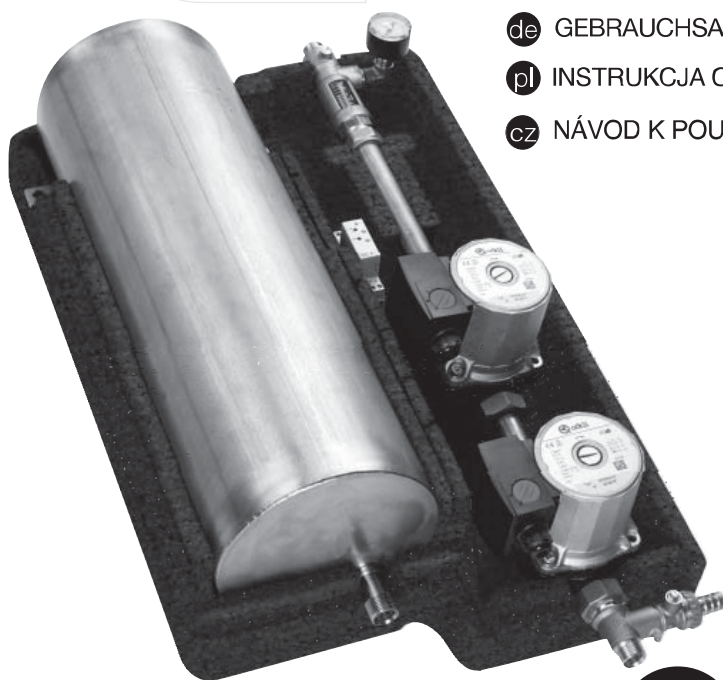


DRAIN-UNIT

GRUPO HIDRÁULICO CON SISTEMA DRAIN-BACK
PUMP STATION WITH DRAIN-BACK SYSTEM
GROUPE HYDRAULIQUE AVEC SYSTÈME DRAIN-BACK
HYDRAULIKAGGREGAT MIT DRAIN-BACK-SYSTEM
AGREGAT WODNY Z SYSTEMEM DRAIN-BACK
HYDRAULICKÁ JEDNOTKA SE SYSTÉMEM DRAIN-BACK



- es MANUAL DE INSTRUCCIONES
- en INSTRUCTIONS FOR USE
- fr MANUEL D'UTILISATION
- de GEBRAUCHSANWEISUNG
- pl INSTRUKCJA OBSŁUGI
- cz NÁVOD K POUŽITÍ



1. FUNCTION

The SolarOrkli Drain-Unit is a solar pump station with a built-in drain-back system. It can be installed with virtually any brand of collector on the market as well as with any storage tank.

By draining the solar collectors problems with over-temperature and freezing on the panel will be avoided. Like the hydraulic units without a self-draining system the main function of the Drain-Unit is to pump solar fluid from the collectors to the storage tank to transfer the energy collected.

Advantages

Safety:

To avoid overheating or freezing problems.

Flexibility:

- Pumping unit for draining the collector field, adaptable to practically any type of solar collector on the market.
- Can be used for installations of up to:
 - 4-5 collectors (in 8 litre separation systems).
 - 5-10 collectors (in 16 litre separation systems).
- High-efficiency options with two pumps.
- Can be installed with any storage tank and control unit on the market.

Savings in materials:

Air vent and expansion vessels not needed.

2. SELECTION OF MODEL TO BE USED

The Drain-Unit selection is determined by the height of the installation. Bear in mind the difference in height between the top of the collector array and the bottom part of the Drain-Unit positioning.

N.b.: less pump power required if the Drain-Unit is installed just above the collector field.

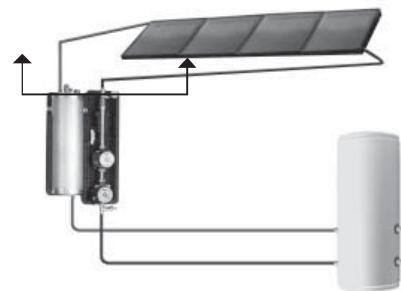


3. CALCULATION OF SEPARATION VOLUME

The total separation volume of the Drain-Unit separator is 8 or 16 litres. The volume of the primary circuit which remains above the Drain-Unit should not exceed this volume capacity.

Volume calculation on the upper part:

$$\text{Volume} = \text{Number of collectors} \times \text{Volume of collector fluid} + \text{Pipe volume}$$

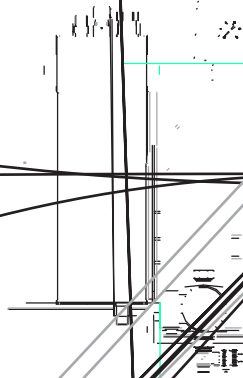


4. COMPONENTS AND FUNCTIONS

1. Solar pump.
2. Circuit draining and filling valve.
3. Filling taps.
4. Air draining chamber.

This element stores the fluid of the primary circuit when the system is stationary and the air from the collector field when the pump is running.

5. Pressure gauge.
6. Safety valve set to 3bar.
7. Flow meter and level indication.
The flow may be adjusted on this element which also indicates the fluid level we have on the primary circuit.
8. Expanded Polypropylene insulating housing (EPP).
9. Solar controller (in systems with control included).



5. TECHNICAL SPECIFICATIONS

- Valve Material: Brass according to standard EN12165.
- Material separation tank AISI 304.
- Sealing material: EPDM.
- Connections: ½ " M or 15mm copper piping.
- Maximum operating temperature 110 ° C.
- Maximum working pressure: 3 bar.
- Safety valve set to 3 bar.
- Flow indicator range: 2-12 l/min.
- Pressure gauge 0-10 bar.
- Connection to drain tap: ¾ "M or Rexil 16
- Extended Polypropylene Density 40 g/l.
- Air Separation Capacity: 5 or 16 litres depending on the model.

6. INSTALLATION

- Positioning and fixing to the wall.

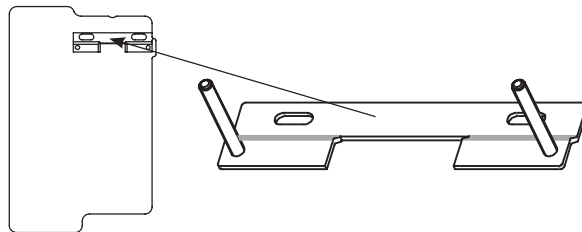
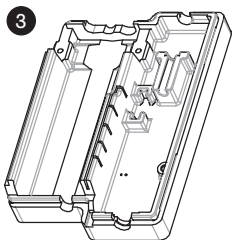
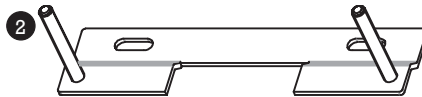
The Drain-Unit can be installed at any height on the solar collectors within the ranges established for the different models. At lower heights between the collectors and the Drain-Unit less power will be required for the pumps and therefore system performance will be improved.

Installation must always be above the primary circuit heat exchanger.

The selected location must be on the inside of the building and in a dry place.

Fixing to the wall:

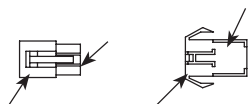
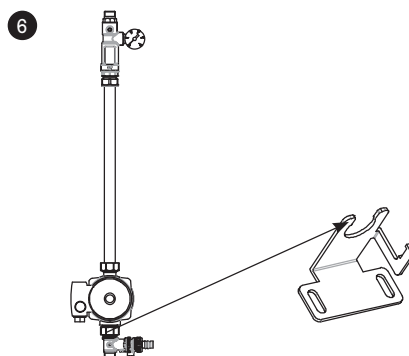
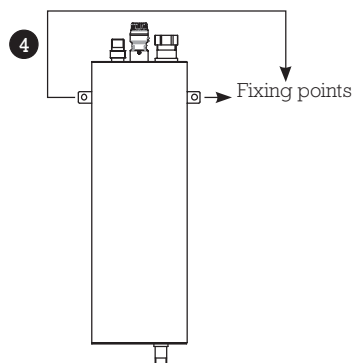
1. Insert the fixing bolts to attach the metal tank bracket.
2. Fix the mounting plates on the wall.
3. Position the insulating base of the housing by inserting the two threaded rods through the holes in the base*.



4. Enter the separation tank into the left cavity by inserting the threaded rods through the fins of the tank. Once inserted, use the nuts to completely fix this section.

In 16 litres separation systems join the two separators with the join pipes provided, at the top and bottom part.

5. Position the return line (with pump), and position it on the right side of the base housing.
6. Fix the bracket of the return line aligned with the slot of the plate with the dent for the branch below the drain valve.



***N.B.:** On systems with integrated control disconnect the fast-connection from the regulator to the tap of the pumps and connect it again when positioning the insulating cover.

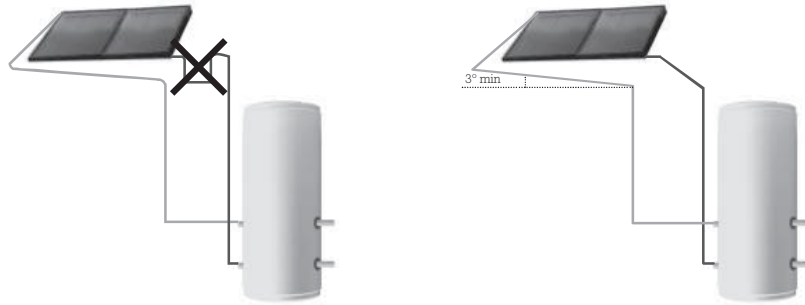
7. Place the upper insulating cover that covers the entire Drain-Unit.

N.b.: In systems with built-in regulation reconnect the cable which connects the controller to the pumps.

• *Installation requirements.*

The Drain-Unit station together with the collector field and an storage tank make up the drain-back solar system. As this is a self-draining collector system the pipe-line must meet certain requirements.

- *Avoid siphons in the pipes and both in the outflow and return.*
- *Install the pipes with a minimum slope of 3 ° for the fluid to descend through the pipes when the pump is deactivated.*



• *Collector field connection*

As with the rest of the circuit, the presence of siphons in the circuit should also be avoided in the collector field.

Collectors must be installed with the angle corresponding to the climate in the area and the application and at a level to avoid siphons and facilitate draining.

In systems where 1-3 grill or harp type collectors are used, the bottom part of the collectors must be connected together with fittings that do not reduce the inner outlet diameter of the solar collectors. Thus avoiding that the fitting generates a siphon on the lower part of the collector being connected.



• *Pipes to use*

The connection pipe to be used will change based on the number of solar collectors in the system.

Number of harp-type collectors	Pipe Cu	Flexible pipe Inox
1	15mm	DN16
2	18mm	DN20
3	18mm	DN20

On systems with more than 3 collectors, these should have an internal coil configuration. In this case they should be installed in series of 2 by 2, and the unit in parallel.

System with 8 collectors:



System with 6 collectors:



System with 4 collectors:



System with 2 collectors:



Collectors must not be installed in series.

- Items that do not need to be installed:
 - Automatic bleed valves.
 - Expansion vessel.



N.b.: Installation not correct, the central collector means a siphon in the circuit and therefore will not drain in the standby position.

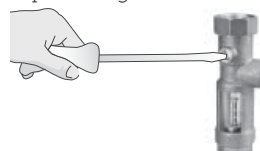
7. START-UP

• Filling the system.

Before filling the installation with the working fluid the circuit should be cleaned as well as pressure tested (not to be done over 3bar when the Drain-Unit is connected).

Ensure that the Drain-Unit is not connected to stop the pumps running on empty.

1. Once the pre-fill operations has been carried out the circuit will be filled again from the filling tap (2). The ball valve of the flowmeter must be closed again to ensure that the fluid reaches the accumulation air separator tank and the exchanger is filled.



2. Fill the circuit with a filling pump or similar system. Open the cup (3) to verify that the fluid reaches the delivery line. Fill the circuit until separation tank/s is/are full. Once the level is close to overflowing also check that the fluid has reached the flowmeter (7).
3. Once the operation has finished cover the filling plug (3) with the flat seal and the cup supplied and close the filling / draining tap (2).

- *Adjust controller parameters*

In references without controller it is necessary to adjust parameters of the used controllers.

- Activation temperature difference between collector and storages tank: 15°C.
- Maximum permissible temperature in the collector field: 130°C.

- *Start up and adjustment of pump speed*

Pumps must be connected manually to regulate the speeds of the pumps:

1. Systems with a pump
Once the pump has been turned on ensure that the pump has enough power to fill the installation. Using the flow meter (7) to ensure that the flow does not drop to 0 litres / min.
2. Systems with two pumps
Connect the pumps from the supply tap for both.
The timing of the two pumps is automatic and it is not necessary to add any additional component.
Ensure that the pumps have enough power to fill the installation. Using the flow meter (7) to ensure that the flow does not drop to 0 litres / min.
After a filling period one of the pumps will be deactivated and only the main pump will continue to operate. At this point we should check that the flow provided by the pump will be sufficient for installation.

8. MAINTENANCE

1. Open the cap of the air separator during maintenance operations when the system is not running and re-plug it.
2. Ensure that there is flow when filling the collectors.
3. Check the liquid level in the system and ensure that there are no leaks that would cause the fluid level to go down and not have enough volume to fill the collector field.

9. GUARANTEE

The Drain-Unit is guaranteed against material defects for 3 years from the date of manufacture marked on it. This warranty does not apply if the unit has been manipulated, altered or damaged by use or installation, and not installed according to the instructions provided by the manufacturer.