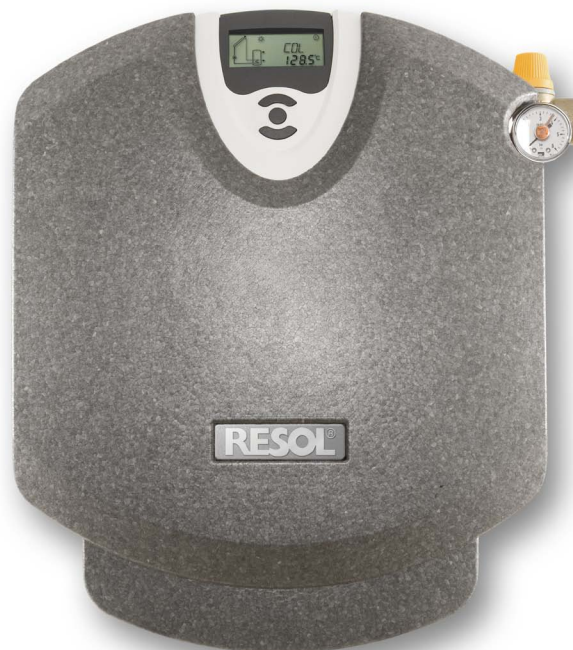


FlowSol® C

RESOL®

Manual for the
specialised craftsman

Installation
Operation
Commissioning



48002501

Thank you for buying this RESOL product.
Please read this manual carefully to get the best performance from this unit.
Please keep this manual carefully.

en

Manual

www.resol.com

Safety advice

Please pay attention to the following safety advice in order to avoid danger and damage to people and property.

Instructions

Attention must be paid to the valid local standards, regulations and directives!

Information about the product

Proper usage

The pump station may only be used in the solar circuit of solar thermal systems in compliance with the technical data specified in these instructions. Due to its design the station must be mounted and operated as described in these instructions!

CE-Declaration of conformity

The product complies with the relevant directives and is therefore labelled with the CE mark. The Declaration of Conformity is available upon request, please contact RESOL.



Target group

These instructions are exclusively addressed to authorised skilled personnel.
Only qualified electricians should carry out electrical works.

Subject to technical change. Errors excepted.

Initial installation must be effected by qualified personnel named by the manufacturer.

Description of symbols

WARNING! Warnings are indicated with a warning triangle!
→ **They contain information on how to avoid the danger described.**



Signal words describe the danger that may occur, when it is not avoided.

- **WARNING** means that injury, possibly life-threatening injury, can occur.
- **ATTENTION** means that damage to the appliance can occur.



Note

Notes are indicated with an information symbol.

- Arrows indicate instruction steps that should be carried out.

Disposal

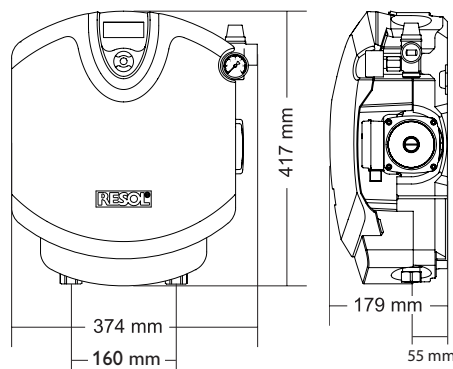
- Dispose of the packaging in an environmentally sound manner.
- Dispose of old appliances in an environmentally sound manner. Upon request we will take back your old appliances bought from us and guarantee an environmentally sound disposal of the devices.

Contents

1	Overview	3
2	Mounting the station.....	4
3	Commissioning.....	4
3.1	Flushing and filling the solar thermal system	4
3.2	Flushing the store for initial commissioning.....	5
3.3	Flushing and filling the solar thermal system	5
3.4	Emptying the solar thermal system.....	6
4	Flowmeter.....	6
5	Air separator	6
6	Connection.....	6
7	Accessories for the station.....	6

1 Overview

- Integrated controller *DeltaSol® C*
- Outstanding design
- Safety assembly with safety valve and pressure gauge
- High-quality casing for reduced heat losses
- Flowmeter



Scope of delivery:

- 1 x pump station FlowSol® C
- 1 x flushing and filling unit (optional)
- 1 x wall mounting bracket

About this product

The pump station *FlowSol® C* is a preinstalled and leak-tested group of fittings for transferring heat from the collector to the store. It contains important fittings and safety devices for the operation of the solar thermal system:

- Ball valves in flow and return in combination with check valves to prevent gravity circulation
- Air separator for manual bleeding of the solar thermal system
- Flowmeter for displaying the flow rate
- Manometer for displaying the system pressure
- Safety valve to prevent inadmissible overpressure
- Flushing and filling unit (optional) for flushing, filling and emptying the solar thermal system

Technical data

Dimensions (H x W x D):

approx. 417 x 374 x 179 mm (incl. insulation)

Distance centre: 1600 mm

Distance axis / wall: 55 mm

Pipe connections: ¾" IT

Connection to diaphragm-type expansion vessel: ¾" ET, flat sealing

Outlet safety valve: ¾" IT

Safety valve: 6 bar

Pressure gauge: 0 ... 6 bar

Non-return valve: Opening pressure 20 mbar, openable

Max. permitted pressure: 6 bar

Admissible max. temperature: +120 °C

Material:

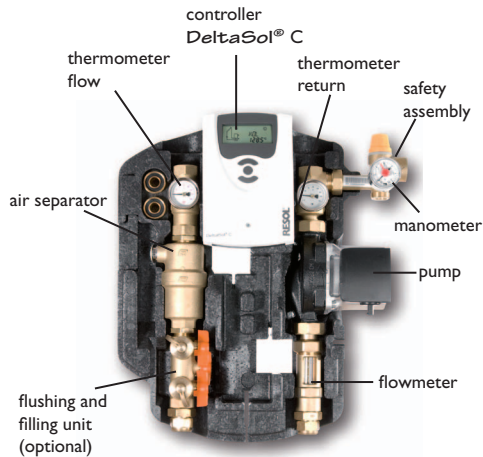
Fittings: brass

Seals: EPDM

Insulation: EPP, $\lambda = 0,041 \text{ W}/(\text{m}^2\text{K})$

Flowmeter: 1 ... 20 l/min

2 Mounting the station

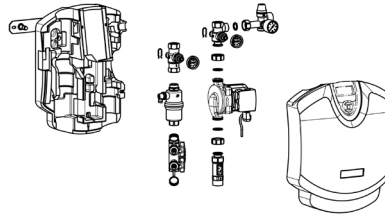


- ➔ Determine the mounting site of the station.
- ➔ Take the station out of the packing. Remove the front half of the insulation.
- ➔ Hold the enclosed wall mounting bracket against the wall and mark the fastening holes, drill holes and insert dowels.
- ➔ Fasten the wall mounting bracket to the wall with the screws.
- ➔ Push the station against the wall mounting bracket. The station catches and is then attached to the wall.
- ➔ Connect the station to the solar thermal system.
- ➔ Check the inlet pressure of the expansion vessel and, if necessary, adjust it to the local conditions ($P_{\text{inlet}}[\text{bar}] = 1 \text{ bar} + \Delta Th [\text{m}]^*1/10$ (ΔTh = height difference between collector and station).

- ➔ Connect the electrical components of the solar station: Attach the store and collector sensor and connect these to the controller. Plug the controller into a socket.
- ➔ Tighten all union nuts and screw connections.
- ➔ Attach the front half of the insulation to the station.

3 Commissioning

3.1 Flushing and filling the solar thermal system



Attention! Risk of scalding!



To prevent the solar fluid boiling in the collectors, the system should not be flushed or filled during periods of strong sunshine!

Attention! Risk of frost!



Solar thermal systems cannot be completely emptied after flushing. There is a danger of frost damage if water is used for flushing. Only use solar fluid to flush and fill the solar thermal system.

- ➔ **Use a water-propylene glycol mixture as a solar fluid (maximum 50% propylene glycol).**



Instructions for initial commissioning

The optionally enclosed flushing and filling unit can either be integrated into the station (below the Air separator, mounted by 30° outwards, see fig.2) or installed horizontally at the lowest point of the solar circuit (see fig.1).

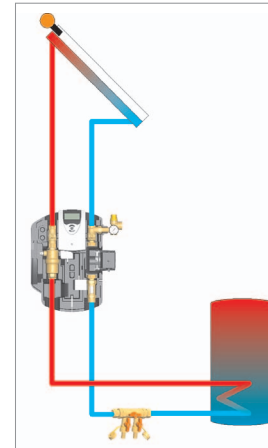


fig.1



fig.2

In both cases a filter must be installed between the store and the solar pump in order to prevent the flushed-out scale from re-entering the solar circuit.

If the flushing and filling unit is integrated in the solar station, we recommend an additional fill and drain ball valve at the lowest point of the solar circuit, to flush possible scale out.

This flushing process is described in “3.2 Flushing the store for initial commissioning”. Then continue as described in “3.3 Flushing and filling the solar thermal system”.

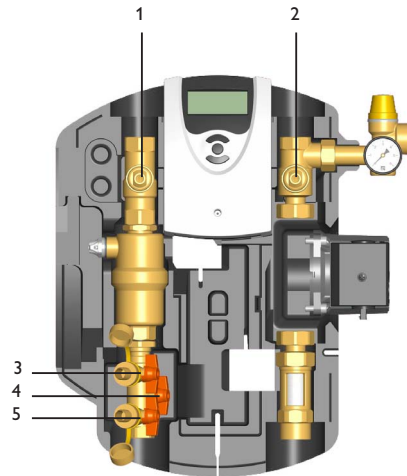
3.2 Flushing the store for initial commissioning

- Connect the pressure hose of a flushing and filling station to the fill ball valve.
- Connect the flushing hose of a flushing and filling station to the fill and drain valve at the lowest point of the solar thermal system.
- Close the ball valve.
- Open the fill ball valve (5) and the fill and drain valve at the lowest point of the solar thermal system.
- Flush the solar thermal system by means of the flushing and filling station until the discharged solar fluid is free of dirt particles.
- Switch off the filling pump.
- Close the fill and drain valve at the lowest point of the solar thermal system.
- Remove the flushing hose from the fill and drain valve.
- Close the fill ball valve.
- Connect the flushing hose to the drain ball valve.

3.3 Flushing and filling the solar thermal system

- Disconnect the expansion vessel from the solar thermal system.
- Connect the pressure hose of a flushing and filling station to the fill ball valve (5) of the flushing and filling unit.
- Connect the flushing hose of a flushing and filling station to the drain ball valve (3) of the flushing and filling unit.
- Close the ball valve (4) in the centre of the flushing and filling unit.
- Turn the ball valves in flow (1) and in return (2) with an open-ended spanner (wrench width 14) to a 45° position. The non-return valves in the ball valves are now open.

- Open the fill and drain ball valves (3 and 5).
- Flush the solar thermal system using the flushing and filling station for at least 15 minutes to remove all air from the system.
- During flushing, bleed the solar thermal system several times at the Air separator until the discharged solar fluid is free of air bubbles.
- Close the drain ball valve (3) of the flushing and filling unit with the filling pump running and increase the system pressure to approx. 5 bar. The system pressure can be read from the manometer.
- Close the fill ball valve (5) and switch off the pump of the flushing and filling station.
- Check the manometer to see whether the system pressure reduces and eliminate leaks where necessary.
- Reconnect the expansion vessel to the other components of the solar thermal system.



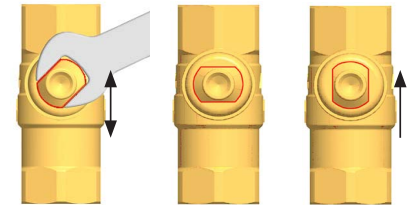
If it is necessary to set the pressure, observe the following step:

- Set the operating pressure of the solar thermal system by means of the flushing and filling station (0.3-0.5 bar higher than the inlet pressure of the expansion vessel).
- If you have put the flushing and filling station into operation to set the operating pressure, switch off the filling pump.
- Close the fill and drain ball valves and open the ball valve.
- Remove the hoses of the flushing and filling station and screw the caps onto the fill and drain ball valves.
- Put the non-return valves in flow and return in operating position by opening the ball valves with an open-ended spanner (wrench width 14).

ball valve: 45°
non-return valve
not operating
flow-through in
both directions

ball valve: 90°
ball valve closed,
no flow-through

ball valve: 0°
non-return valve
in operation,
flow-through
only in flow
direction



- Manually put the solar thermal pump in operation at the highest RPM level (see controller manual) and let it circulate for at least 15 minutes
- During flushing, bleed the solar thermal system several times at the Air separator, until the discharged solar fluid is free of air bubbles and increase, if required, the system pressure to the operating pressure.

3.4 Emptying the solar thermal system

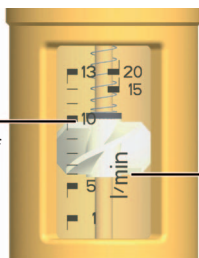
WARNING! Risk of injury. The discharged fluid can have very high temperatures. Place the collection container so that people standing near by are not endangered when the solar thermal system is being emptied.



- Open the non-return valves in the ball valves in flow and return by turning the ball valves to a 45° position with an open-ended spanner.
- Place a temperature-resistant collection container under the drain ball valve at the lowest point of the solar thermal system.
- Open the drain ball valve at the lowest point of the solar thermal system.
- Open the bleeding devices at the highest point of the solar thermal system, where available.
- Dispose of the solar fluid in observance of local regulations.

4 Flowmeter

The Flowmeter is for measurement and display of the flow rate of 1-20 l/min. In order to guarantee the flawless function of the measuring device the system must be flushed and free from foreign substances.



Left scale:
Upper edge of
the propeller

Right scale:
Lower edge of
the propeller

5 Air separator

The air separator (manual bleed valve) is for bleeding the solar fluid in the solar thermal system. The air precipitated from the solar fluid gathers in the upper area of the manual bleed valve (see diagram) and can, if required, be discharged at the bleeding valve. To guarantee faultless bleeding of the collector circuit the flow rate in the flow must be at least 0.3 m/s.

Check the system pressure after bleeding and if necessary increase it to the specified operating pressure.

WARNING! Risk of injury caused by very high temperatures. During bleeding the escaping air and solar fluid can reach temperatures of over 100 °C.



Bleeding the solar thermal system directly after commissioning.

At first you should bleed the solar thermal system daily and then weekly or monthly, depending on the volume of discharged air, in order to achieve optimal efficiency.



Note

Bleed the solar thermal system half-yearly with the manual bleed valve to achieve optimal efficiency.

6 Connection

WARNING! Always disconnect the controller from power supply before opening the housing!



The controller is already integrated in the station and ready to plug in. In the case of maintenance or service work, the controller is to be taken out from the station. Please pay attention to the following steps:

- switch off the system, disconnect plug from the mains
- remove the front half of the insulation
- unscrew the cross-recessed screw off the front cover and remove it by pulling it upwards
- unscrew the lower cross-recessed screw, push the controller upwards and remove it

Mounting of the controller has to be carried out in reverse order.

7 Accessories for the station

For installation screw connections are required, which are not included in the scope of delivery. Self-sealing double nipples, solder nipples or clamp-ring connections can be used. For further information, please see product catalogue.

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Important note

The texts and drawings in this manual are correct to the best of our knowledge. As faults can never be excluded, please note:

Your own calculations and plans, under consideration of the current standards and directions should only be basis for your projects. We do not offer a guarantee for the completeness of the drawings and texts of this manual - they only represent some examples. They can only be used at your own risk. No liability is assumed for incorrect, incomplete or false information and / or the resulting damages.

Note

The design and the specifications can be changed without notice.

The illustrations may differ from the original product.

Imprint

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