

Assembly and operating instructions

**Ergo-Pro Twinline Solar Station.
Complete with DeltaSol C Plus Controller.**

677.16.90



Safety instructions

Before using your equipment, please read the following instructions for assembly and start-up. This will help you avoid any damage to your equipment that may arise from incorrect handling. Use of the equipment in a manner that is contrary to its intended purpose, together with changes during assembly or to the construction that are not permitted will invalidate any claims for liability. Alongside country-specific guidelines, the following technical regulations must be given particular consideration:

DIN 4751
Central heating boilers
DIN 4757
Solar heating and solar thermal systems
DIN 18380
central heating systems and hot water supply systems
DIN 18382
Electrical cable and wiring systems in buildings
EN 12975
Thermal solar systems and components

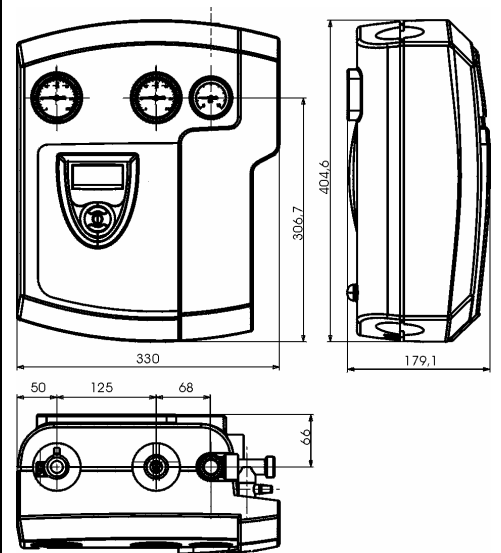
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Technical data

| | |
|---------------------------------------|--|
| Operating pressure: | max. 6 bar |
| Operating temperature of feed line: | max. 140 °C |
| Operating temperature of return line: | max. 120 °C |
| Medium | Water with max. 50 % propylene glycol |
| Nominal size: | DN 15 |
| Screw connections: | flatsealing union nut 1 inch |
| Collector connections | Internal thread 3/4 inch |
| Tank connections | Internal thread 3/4 inch |
| Materials: | |
| Seals | EPDM/AFM 34 |
| Housing | CW 617 (2.0402) |
| Connecting components | CW 614 (2.0401) |
| Insulation | EPP foam |
| Heat conductivity: | 0.038 W/mK |
| Weight: | approx. 7 kg. |
| Operating voltage | 230V/ 50Hz |
| Pump capacity ST 20/6 3 | min. 34 W (stage 1) max. 82 W (stage 3) |

Dimensions



Structure / scope of supply

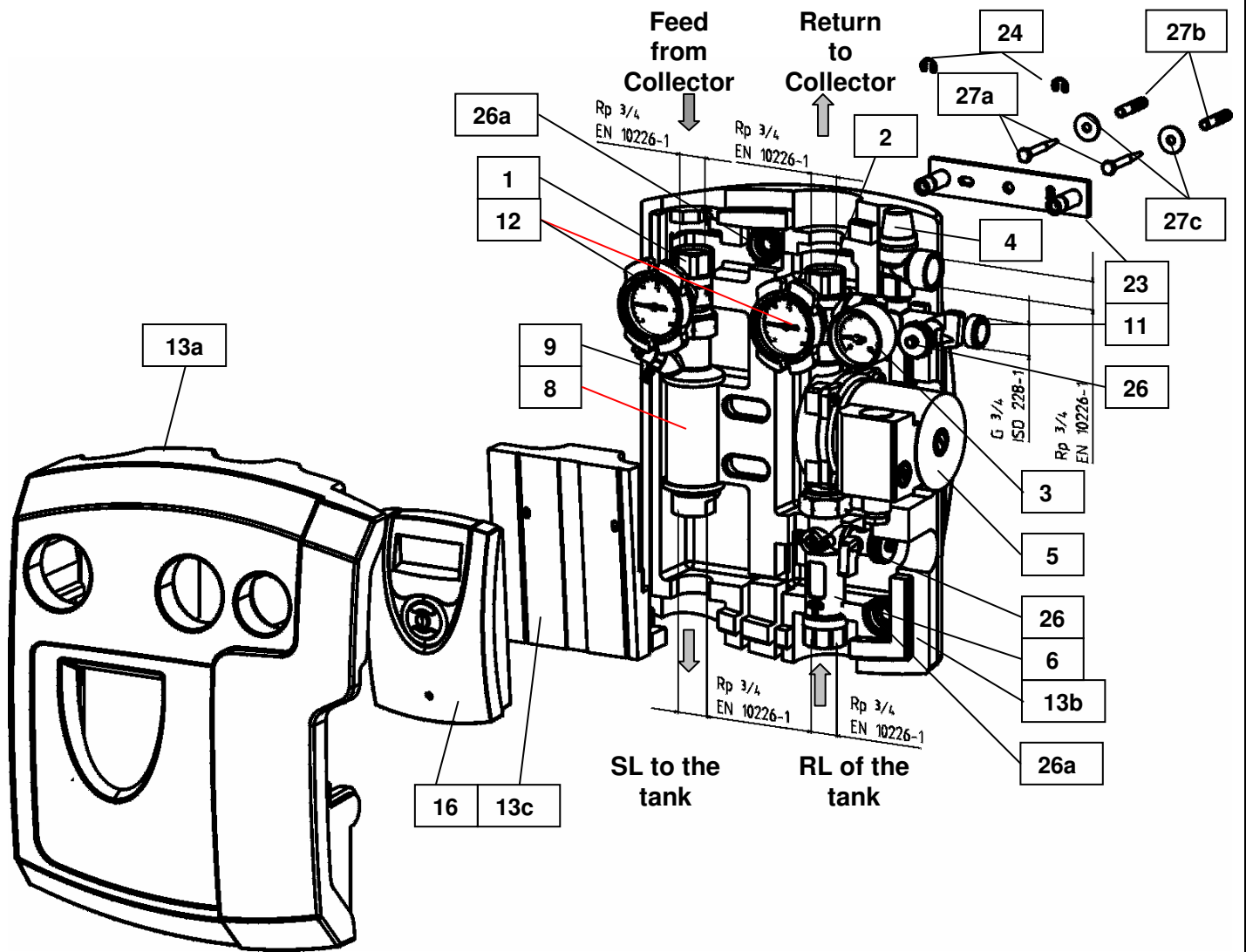


Fig. 1: General layout drawing

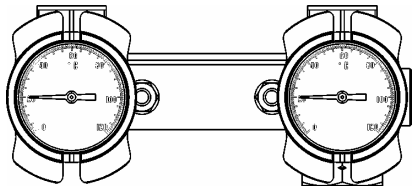
| Item | Designation | PGS DN15 |
|------|---|----------|
| 1 | Feed line ball valve with integrated gravity brake (20 mbar) | 1 |
| 2 | Return line ball valve with integrated gravity brake (20 mbar) | 1 |
| 3 | Manometer | 1 |
| 4 | Solar relief valve, 6 bar, TÜV tested | 1 |
| 5 | Circulation pump ST 20/6 3 | 1 |
| 6 | Flow meter 1 - 10 l/min. with rinsing / shut-off function, union nut G1 x IG Rp ³ / ₄ | 1 |
| 8 | Air jet, union nut G1 x IG Rp ³ / ₄ with | 1 |
| 9 | Manual bleeding nipple | 1 |
| 11 | Connection to membrane expansion vessel | 1 |
| 12 | Dial thermometer | 2 |
| 13 | Insulation (insulating half jacket front (13a), back (13b), control console (13c)) | 1 |
| 23 | Mounting plate | 1 |
| 16 | Controller | 1 |
| 24 | Spring | 2 |
| 26 | BFE cocks | 2 |
| 26a | Grommets for BFE cocks | 2 |
| 27 | Wall assembly set (wood screws (27a), dowel (27b), washers (27c), 2 of each) | 1 |

Gravity brake function

Gravity brake opening pressure

in each case 20 mbar

The gravity brakes are built into the feed and return ball valve. They are operated by turning the ball valve handle.



Gravity brakes closed,
Ball valves opened

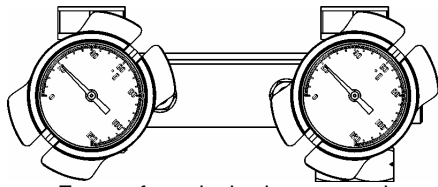
Fig.4a

Operating position

The valve discs should not be opened, to prevent circulation under the force of gravity

The slots in the handles are vertical (fig. 4a)

The force of gravity brakes are in the operating position (closed). The ball valves are opened



Force of gravity brakes opened

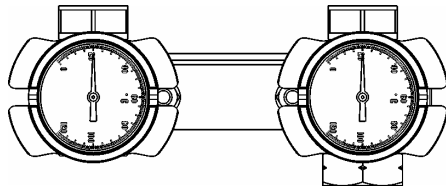
Fig.4b

Emptying / filling

To fill and completely empty the solar plant, open the gravity brakes by turning the handles to the right.

The slots in the handles are located at an angle of 45 ° to the vertical (fig. 4b).

The gravity brakes are opened.



Ball valves closed

Fig.4c

Position "Closed"

Turn the handles 90° to the right .

The ball valves are closed. The slots in the handles are now horizontal (fig. 4c).

Flow meter / rinsing and filling armature

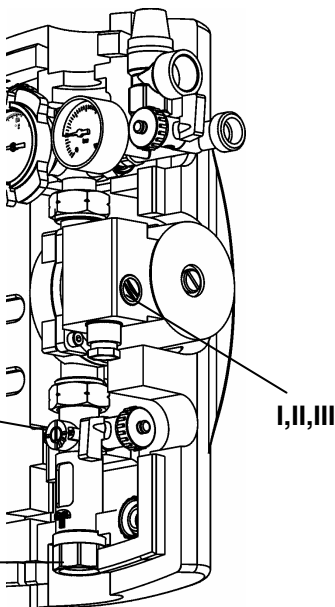
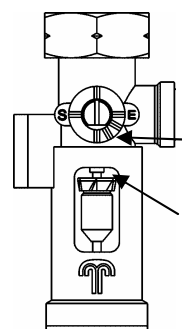


Fig. 5

Adjusting the flow rate of the heat transfer fluid is achieved by selecting the r.p.m. setting (I, II, III) on the circulating pump and with the throttle (C) on the flow meter (7).

The flow meter displays the flow rate. The normal range is between 1 and 10 l/min.



Flow rate adjustment range

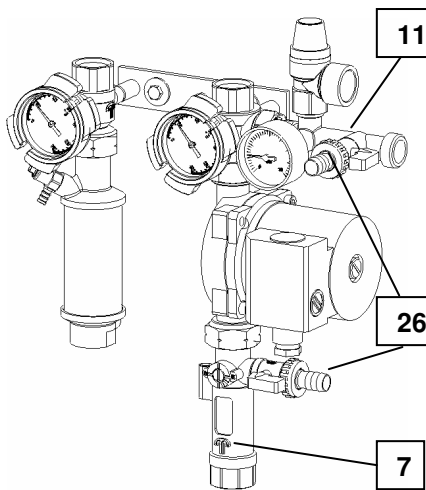
Read off the flow rate from the upper edge of the float

Fig. 6

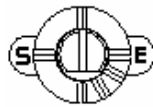
Fill / rinse / empty (fig.7)

For filling, rinsing and emptying the solar plant, use the BFE cocks (26) on the membrane expansion vessel connection (11) and on the flow meter (7) (see Fig. 7). Unscrew the caps from the closed boiler filling and boiler emptying cocks (BFE cocks) and attach the input pipes from the rinsing and filling mechanism

Filling and emptying:



To fill and empty the solar plant, the supply and return ball valve must be opened in the "Gravity brake" position (45 °).

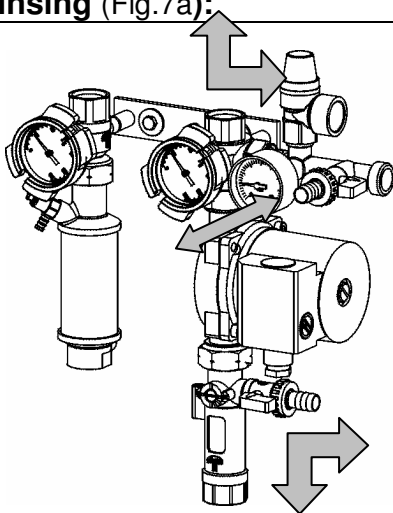


Turn the spindle of the flow meter to the flow position (the slot in the spindle is vertical the flat area points downwards).

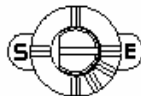
Open the BFE cocks. The solar plant can now be emptied or filled.

Fig. 7

Rinsing (Fig.7a):



To rinse the solar plant, turn the supply and return ball valve to the "gravity brake open" position (45°).

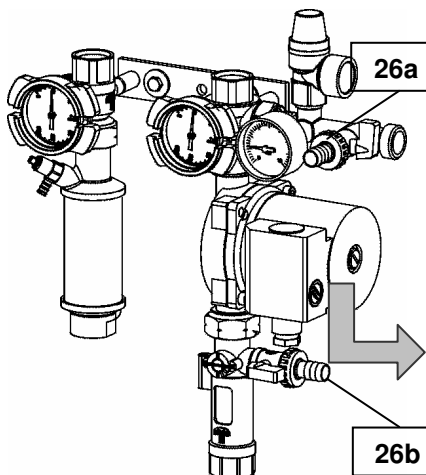


Turn the spindle on the flow meter to the "S" position. The slot in the spindle is horizontal, the flat points to the left.

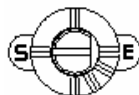
Open the BFE cocks and begin the rinsing procedure

Fig.7a

Service (Fig.7b):



When maintenance is being carried out (e.g. a pump change), the feed and return ball valve must be closed.



Turn the flow meter spindle to the "E" position. The slot on the spindle is horizontal, the flat points to the right.

With the BFE cock (26a) on the membrane expansion vessel closed, open the BFE cock (26b) on the flow meter

The heat transfer fluid in the pump can now be discharged.

Fig.7b

Extract from the WILO pump installation and operation manual

CE Declaration of Conformity

We hereby declare that this unit meets the following regulations entspricht:

EEC machine guidelines
89/392/EWG in this version,
91/368/EWG, 93/44/EWG,
93/68/EWG

Electromagnetic compatibility
89/336/EWG ith D F.
92/31/EWG, 93/68/EWG

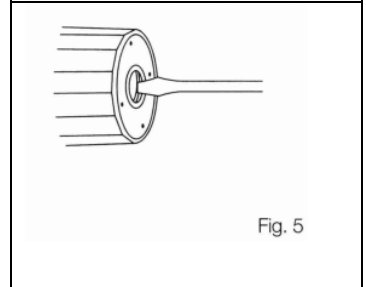
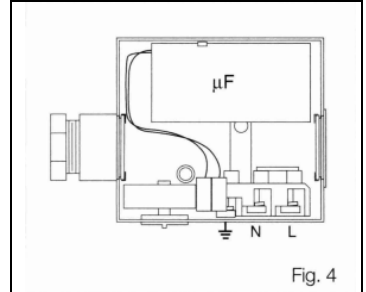
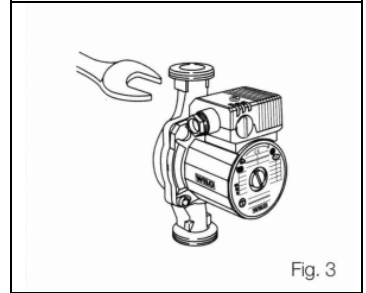
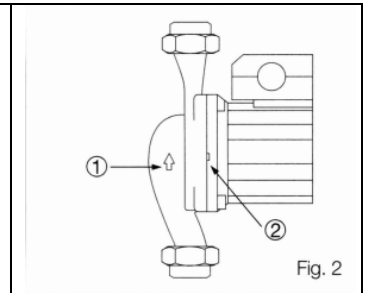
Harmonized standards used, in particular
EN 809, EN 50 081-1, EN 50 082-1,
EN 50 081-2, EN 50 082-2.



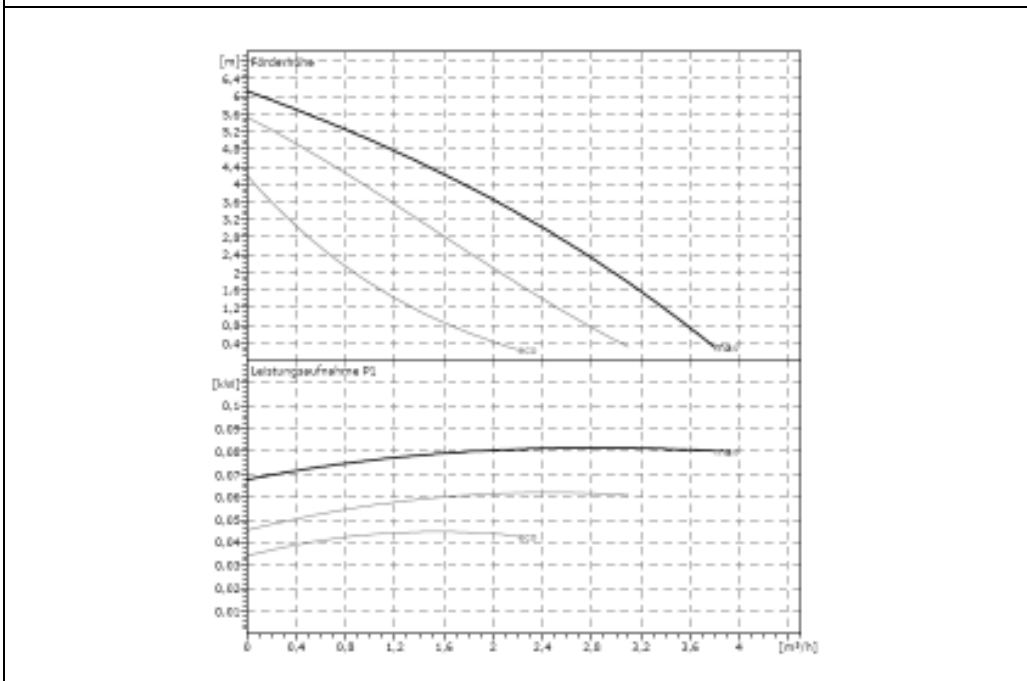

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Quality Management



WILO STAR ST 20/6



4. Set up / installation

Assembly

- The directional marker on the pump housing shows the direction of flow (Fig. 2, pos. 1).
- When bolting the pump onto the piping, the pump can be secured to prevent rotation by using a combination wrench on the flats provided (Fig. 3).

Electrical connections

- The connecting cable is to be laid in such a way that the piping, the pump housing and motor housings are not affected.
- The type of current and voltage of the mains supply must correspond to the data given on the identification plate.
- Carry out the connection to the mains according to fig. 4.
- Earth the pump / plant correctly.

5. Start-up

Bleeding

Bleeding the pump rotor area takes place automatically after a short period of operation. Unlubricated operation for brief periods does not harm the pump. If however it should be necessary to bleed the rotor area directly, proceed as follows:

- Switch off pump,
- Close the line on the pressure side,
- Carefully open the vent screw with a suitable screwdriver (Fig. 5).



Depending upon the temperature of the delivery medium and the system pressure, when opening the vent screw, hot delivery medium - in liquid or vapour form - can leak or shoot out under high pressure.

There is a risk of scalding!

- Carefully push back the pump shaft with a screwdriver several times,
- protect electrical parts before allowing water to flow out
- Switch on pump,
- after 15 - 30 s close the bleed screw again,
- Open the shutoff valve again.

WARNING!

Where the screw plug is opened, and depending on the operating pressure, the pump may block



Depending on the operating condition of the pump or the plant (temperature of the delivery medium) the entire pump can become very hot.

There is a risk of burning if the pump is touched!