PUMP STATIONS FOR SOLAR THERMAL SYSTEMS

07S
01S

28S-27S
09S-12S

05S

Description

Pre-assembled pump station for the fluid circulation in the primary circuit of solar thermal systems. It allows the circulation of the thermal fluid between the solar panel and the water storage. The group is composed of a circulator, flow/return shut-off valves, flow/return temperature gauges, flow/return check valves, deaerator, flow meter, thermal insulation and safety group complete with pressure gauge, safety relief valve and connection for expansion vessel.

The 07S-01S series are supplied without solar controller. The 28S-27S-09S-12S series are complete with solar controller. The 07S-28S-27S series have no copper pipe on the flow side. The 05S series is the version composed of the return line only.
Available with male and female connections, high efficiency and constant speed pumps.

Range of products

Pump station for solar thermal systems	XXX			XXX	X	X	X	X
	Without controller	With controller						
		Sorel	Seitron					
Pump station without copper pipe, without controller	07S	-	-	020				
Pump station with copper pipe, without controller	01S	-	-	020				
Pump station without copper pipe, with controller		28S	27S	020				
Pump station with copper pipe, with controller		09S	12S	020				
Return only pump station, without controller	05S	-	-	020				
Without accessories					0			
Flow meter 0,5–15 l/min						A		
Flow meter 3–35 l/min						B		
Without pump							X	
Pump Grundfos UPM3 Solar 15-75 130							U	
Pump GPA 20-7,5 III 130							S	
Pump Grundfos UPS Solar 15-65 130 (Extra EU)							G	
Pump Grundfos UPS Solar 15-70 130 (Extra EU)							B	
Female connections G 3/4 F - G 3/4 F								-
Male connections G 3/4 M - G 3/4 M								M

Features

Maximum working temperature:
- group and pump: **110 °C**
- flow meter with flow rate regulator, monobloc with shut-off valve and check valve, deaerator: **140 °C**
- safety relief valve: **160 °C**

Maximum working pressure: **10 bar**
Safety relief valve setting: **6 bar (on request 3 bar)**
Threaded connections ISO 228-1:
- main: **G 3/4 F o G 3/4 M**
- expansion vessel: **G 3/4 M**
- fill/drain cocks: **G 3/4 M with hose connection**

Main connection centre distance: **125 mm**
Pump: **Grundfos UPM3 Solar 15-75 130**
   GPA 20-7,5 III 130
   Grundfos UPS Solar 15-65 130 (Extra EU)
   Grundfos UPS Solar 15-70 130 (Extra EU)
Suitable fluids: **acqua, soluzioni glicolate (max 50%)**
Temperature gauge scale: **0–160 °C (32–320 °F)**
Pressure gauge scale: **0–10 bar**
Flow meter scale: **0,5–15 l/min and 3–35 l/min**

Materials

Components body: **brass EN 12165 CW617N**
Elongation (flow side, only for series 01S-09S-12S): **copper**
Insulation:
- Material: **EPP**
- λ (10 °C): **0,038 W/(m K)**

Gaskets: **Viton/Klinger**
Pump
- Body: **cast iron**
- Supply: **230 V-50/60 Hz**
- Protection class:
   UPM3 Solar: **IPX4**
   GPA III: **IP 42**
   UPS Solar (Extra EU): **IPX2**
- Centre distance: **130 mm**
- Connections: **G 1 M (ISO 228-1)**
- Gaskets: **EPDM**

1

Safety relief valve: features and materials

Setting pressure: **3 bar, 6 bar**
Opening overpressure: **10%**
Reseating pressure: **-20%**
Outflow coefficient: **K=0,05**
Max working pressure: **10 bar**
Max working temperature: **160 °C**
Suitable fluids: **water, glycol solutions (max 50%)**
Category 2014/68/EU PED: **IV**

Body: **brass CW617N**
Headwork: **nylon 66**
Spring: **stainless steel EN 10270-1**
Membrane: **EPDM**
Knob: **nylon 66**

Solar controller: features

Sorel MTDC (in stations 28S-09S)
Electric supply: **100–240 V - 50–60 Hz**
Protection class: **IP 40**
Preset programs: **27**
Supplied probes: **3 Pt 1000**
Optional probe: **1 Pt 1000**
Working temperature range of probes: **-40–300 °C**
Signals: **4 Inputs Pt1000, 2 Outputs on/off, 1 Output PWM or 0–10 V**

Seitron TDST24M (in stations 27S-12S)
Electric supply: **230 V - 50 Hz**
Protection class: **IP 40**
Preset programs: **6**
Supplied probes: **3 NTC 10K @ 25 °C ± 1%**
Working temperature range of probes: **-50–200 °C (blue), -50–110 °C (yellow)**
Signals: **3 Inputs NTC, 2 Outputs on/off, 1 Output alarm, 1 Output PWM, 1 Output 0–10 V**
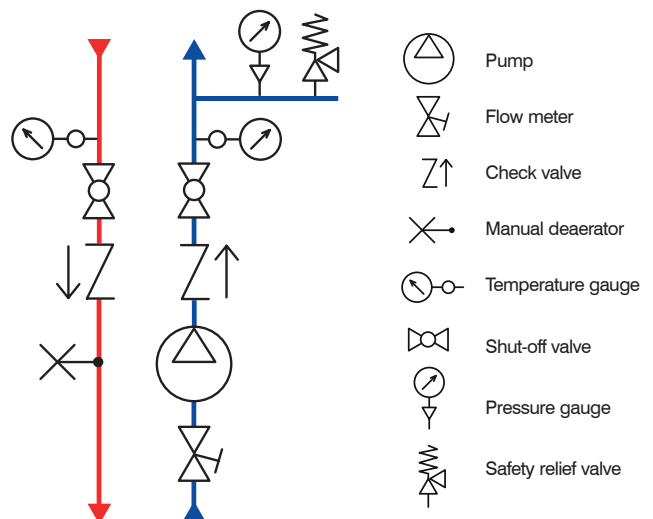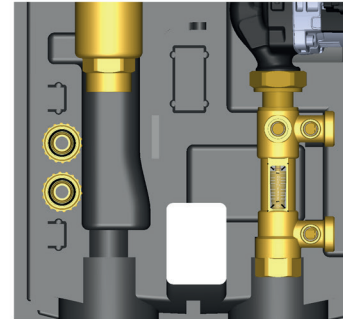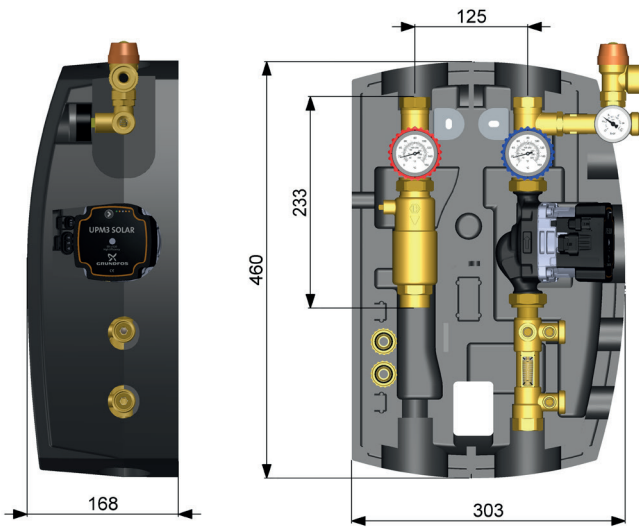
Components
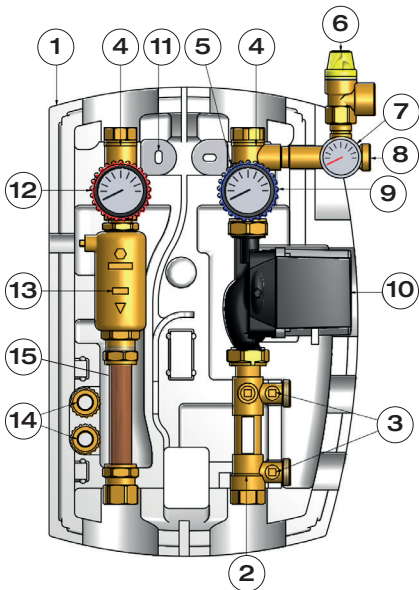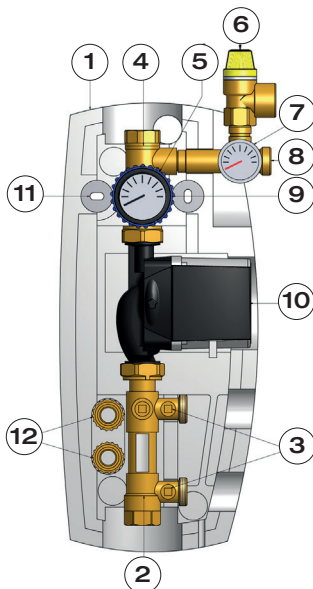
07S
01S
28S-27S
09S-12S

01S-05S-07S-09S-12S-27S-28S	
1	Insulation
2	Flow meter
3	Fill/drain cocks
4	Monobloc with shut-off and check valve
5	Temperature gauge
6	Solar safety relief valve
7	Pressure gauge
8	Expansion vessel connection
9	Device for check valve override
10	Pump — Grundfos UPM3 Solar, GPA III, Grundfos UPS Solar (Extra EU)
11	Fixing bracket
12	Temperature gauge
13	Deaerator
14	Hose connections
15	Copper elongation pipe (only for 01S, 09S, 12S)

05S

Pump
Flow meter
Check valve
Manual deaerator
Temperature gauge
Shut-off valve
Pressure gauge
Safety relief valve

Dimensions

125

233

460

168

303

07S
28S-27S
In the detailed figure: version without copper elongation pipe

125

460

370

168

303
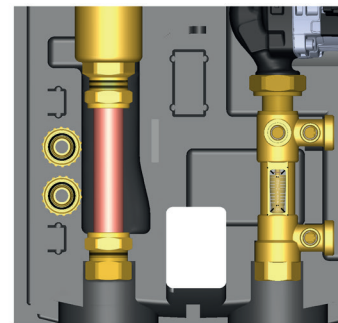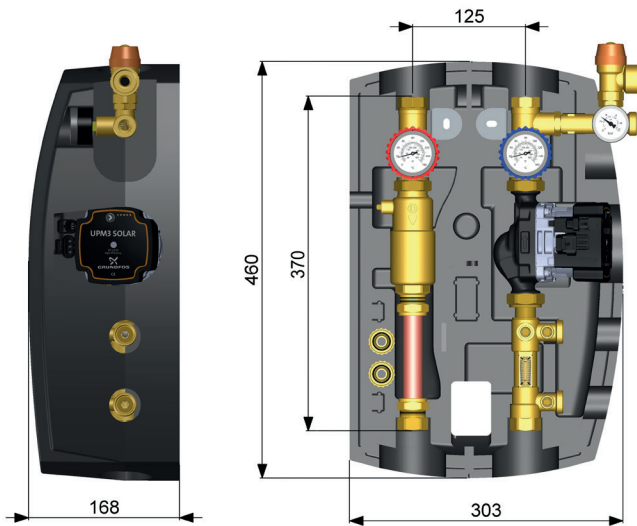
01S
09S-12S
In the detailed figure: version with copper elongation pipe

420

155

185
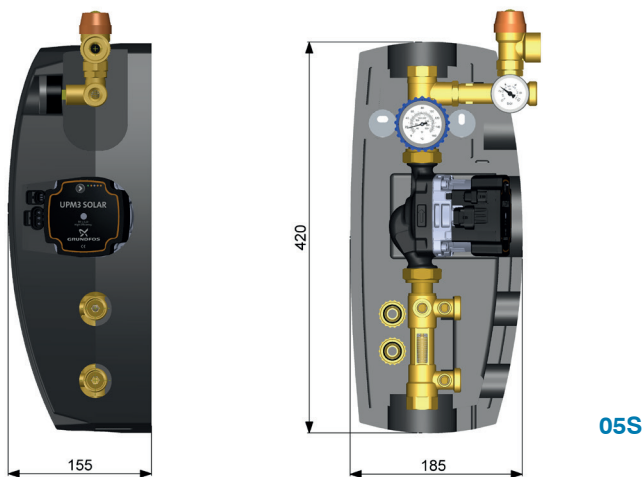
05S

Code		Size	Pump	Flow meter [l/min]	Controller	Weight [kg]		N. P/B	N. P/C
Without copper pipe	With copper pipe					Without copper pipe	With copper pipe		
07S 020 0AU	01S 020 0AU	G 3/4 F - G 3/4 F	UPM3 Solar 15-75 130	0,5–15	-	5,46	5,68	-	1
07S 020 0AS	01S 020 0AS	G 3/4 F - G 3/4 F	GPA 20-7,5 III 130	0,5–15	-	5,44	5,66	-	1
07S 020 0AG	01S 020 0AG	G 3/4 F - G 3/4 F	(Extra EU) Solar 15-65 130	0,5–15	-	5,96	6,18	-	1
07S 020 0AX	01S 020 0AX	G 3/4 F - G 3/4 F	WITHOUT PUMP	0,5–15	-	3,7	3,92	-	1
07S 020 0BU	01S 020 0BU	G 3/4 F - G 3/4 F	UPM3 Solar 15-75 130	3–35	-	5,46	5,68	-	1
07S 020 0BS	01S 020 0BS	G 3/4 F - G 3/4 F	GPA 20-7,5 III 130	3–35	-	5,44	5,66	-	1
07S 020 0BA	01S 020 0BA	G 3/4 F - G 3/4 F	(Extra EU) Solar 15-70 130	3–35	-	6	6,22	-	1
07S 020 0BX	01S 020 0BX	G 3/4 F - G 3/4 F	WITHOUT PUMP	3–35	-	3,7	3,92	-	1
07S 020 0AU M	01S 020 0AU M	G 3/4 M - G 3/4 M	UPM3 Solar 15-75 130	0,5–15	-	5,46	5,68	-	1
07S 020 0AS M	01S 020 0AS M	G 3/4 M - G 3/4 M	GPA 20-7,5 III 130	0,5–15	-	5,44	5,66	-	1
07S 020 0AG M	01S 020 0AG M	G 3/4 M - G 3/4 M	(Extra EU) Solar 15-65 130	0,5–15	-	5,96	6,18	-	1
07S 020 0AX M	01S 020 0AX M	G 3/4 M - G 3/4 M	WITHOUT PUMP	0,5–15	-	3,7	3,92	-	1
07S 020 0BU M	01S 020 0BU M	G 3/4 M - G 3/4 M	UPM3 Solar 15-75 130	3–35	-	5,46	5,68	-	1
07S 020 0BS M	01S 020 0BS M	G 3/4 M - G 3/4 M	GPA 20-7,5 III 130	3–35	-	5,44	5,66	-	1
07S 020 0BA M	01S 020 0BA M	G 3/4 M - G 3/4 M	(Extra EU) Solar 15-70 130	3–35	-	6	6,22	-	1
07S 020 0BX M	01S 020 0BX M	G 3/4 M - G 3/4 M	WITHOUT PUMP	3–35	-	3,7	3,92	-	1
28S 020 0AU	09S 020 0AU	G 3/4 F - G 3/4 F	UPM3 Solar 15-75 130	0,5–15	Sorel	6,06	5,99	-	1
28S 020 0AS	09S 020 0AS	G 3/4 F - G 3/4 F	GPA 20-7,5 III 130	0,5–15	Sorel	6,04	5,97	-	1
28S 020 0AG	09S 020 0AG	G 3/4 F - G 3/4 F	(Extra EU) Solar 15-65 130	0,5–15	Sorel	6,56	6,49	-	1
28S 020 0AX	09S 020 0AX	G 3/4 F - G 3/4 F	WITHOUT PUMP	0,5–15	Sorel	4,3	4,23	-	1
28S 020 0AU M	09S 020 0AU M	G 3/4 M - G 3/4 M	UPM3 Solar 15-75 130	0,5–15	Sorel	6,06	5,99	-	1
28S 020 0AS M	09S 020 0AS M	G 3/4 M - G 3/4 M	GPA 20-7,5 III 130	0,5–15	Sorel	6,04	5,97	-	1
28S 020 0AG M	09S 020 0AG M	G 3/4 M - G 3/4 M	(Extra EU) Solar 15-65 130	0,5–15	Sorel	6,56	6,49	-	1
28S 020 0AX M	09S 020 0AX M	G 3/4 M - G 3/4 M	WITHOUT PUMP	0,5–15	Sorel	4,3	4,23	-	1
27S 020 0AU	12S 020 0AU	G 3/4 F - G 3/4 F	UPM3 Solar 15-75 130	0,5–15	Seitron	6,04	6,26	-	1
27S 020 0AS	12S 020 0AS	G 3/4 F - G 3/4 F	GPA 20-7,5 III 130	0,5–15	Seitron	6,02	6,24	-	1
27S 020 0AG	12S 020 0AG	G 3/4 F - G 3/4 F	(Extra EU) Solar 15-65 130	0,5–15	Seitron	6,54	6,76	-	1
27S 020 0AX	12S 020 0AX	G 3/4 F - G 3/4 F	WITHOUT PUMP	0,5–15	Seitron	4,28	4,5	-	1
27S 020 0AU M	12S 020 0AU M	G 3/4 M - G 3/4 M	UPM3 Solar 15-75 130	0,5–15	Seitron	6,04	6,26	-	1
27S 020 0AS M	12S 020 0AS M	G 3/4 M - G 3/4 M	GPA 20-7,5 III 130	0,5–15	Seitron	6,02	6,24	-	1
27S 020 0AG M	12S 020 0AG M	G 3/4 M - G 3/4 M	(Extra EU) Solar 15-65 130	0,5–15	Seitron	6,54	6,76	-	1
27S 020 0AX M	12S 020 0AX M	G 3/4 M - G 3/4 M	WITHOUT PUMP	0,5–15	Seitron	4,28	4,5	-	1

Code	Size	Pump	Flow meter [l/min]	Controller	Weight [kg]	N. P/B	N. P/C
05S 020 0AU	G 3/4 F - G 3/4 F	UPM3 Solar 15-75 130	0,5–15	-	3,98	-	1
05S 020 0AS	G 3/4 F - G 3/4 F	GPA 20-7,5 III 130	0,5–15	-	3,96	-	1
05S 020 0AG	G 3/4 F - G 3/4 F	(Extra EU) Solar 15-65 130	0,5–15	-	4,48	-	1
05S 020 0AX	G 3/4 F - G 3/4 F	WITHOUT PUMP	0,5–15	-	2,22	-	1
05S 020 0BU	G 3/4 F - G 3/4 F	UPM3 Solar 15-75 130	3–35	-	3,98	-	1
05S 020 0BS	G 3/4 F - G 3/4 F	GPA 20-7,5 III 130	3–35	-	3,96	-	1
05S 020 0BA	G 3/4 F - G 3/4 F	(Extra EU) Solar 15-70 130	3–35	-	4,52	-	1
05S 020 0BX	G 3/4 F - G 3/4 F	WITHOUT PUMP	3–35	-	2,22	-	1
05S 020 0AU M	G 3/4 M - G 3/4 M	UPM3 Solar 15-75 130	0,5–15	-	3,98	-	1
05S 020 0AS M	G 3/4 M - G 3/4 M	GPA 20-7,5 III 130	0,5–15	-	3,96	-	1
05S 020 0AG M	G 3/4 M - G 3/4 M	(Extra EU) Solar 15-65 130	0,5–15	-	4,48	-	1
05S 020 0AX M	G 3/4 M - G 3/4 M	WITHOUT PUMP	0,5–15	-	2,22	-	1
05S 020 0BU M	G 3/4 M - G 3/4 M	UPM3 Solar 15-75 130	3–35	-	3,98	-	1
05S 020 0BS M	G 3/4 M - G 3/4 M	GPA 20-7,5 III 130	3–35	-	3,96	-	1
05S 020 0BA M	G 3/4 M - G 3/4 M	(Extra EU) Solar 15-70 130	3–35	-	4,52	-	1
05S 020 0BX M	G 3/4 M - G 3/4 M	WITHOUT PUMP	3–35	-	2,22	-	1

N. P/B: number of pieces in box - N. P/C: number of pieces in carton
Other pump types should be evaluated

Diagrams

Pump station sizing (operation for specialized/authorized technical personnel).
Step 1: calculation of the flow rate and head losses of the solar panels.
Given: - the quantity of solar panels (project data)
- the positioning in series and/or parallel of the panels (project data): the system designer decides the arrays in parallel, each of them composed of some panels placed in series (refer to the panel manufacturer to choose the maximum quantity of panels in series)
- the characteristic flow rate of each single panel (manufacturer data)
- the head loss of each single panel (manufacturer data)
- the temperature difference of the solar fluid between the inlet and the outlet of the panel array (Δt, project data)
We calculate: - the total design flow rate (G)
- the head losses of the solar panel circuit (ΔPp). In case of panels placed in series, let's consider the head losses of the most disadvantaged circuit in parallel.

Step 2: head losses of the pump station without pump. Enter on the x-axis of the first diagram with the design flow rate value (G). Cross the curve of the pump station and read the corresponding head losses of the pump station (without pump) on the y-axis (ΔPg).
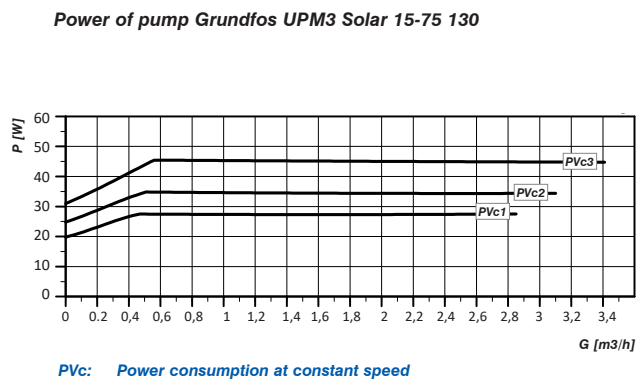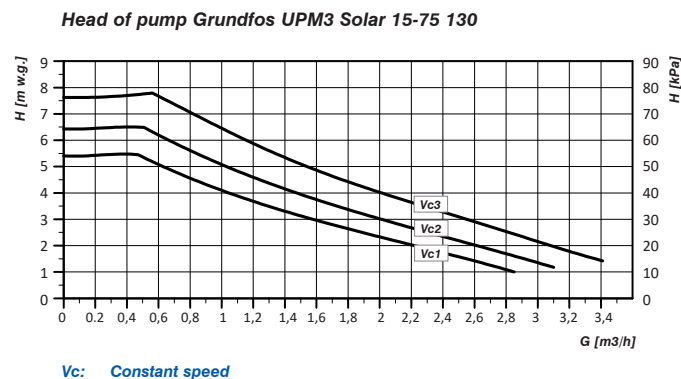
Step 3: available head of the pump. With the same design flow rate value (G), enter on the x-axis of the selected pump diagram ("Head of pump"). Cross the curve of the selected working mode (Constant speed, Proportional pressure, Constant pressure) and read the corresponding available head of the pump on the y-axis (H).

Step 4: pump validation. Sum the head losses of the panel circuit (ΔPp) and the pump station without pump (ΔPg). Calculate the difference between the available head of the pump (H) and the sum of the head losses just calculated ($H-(\Delta Pp+\Delta Pg)$). The remaining pump head should be higher than the head losses of the rest of the circuit: if higher, the selected pump is suitable to supply water to the rest of the circuit, otherwise a different pump working mode or pump size or a different panel positioning (limiting their placement in series) could be necessary in order to reduce the head losses.
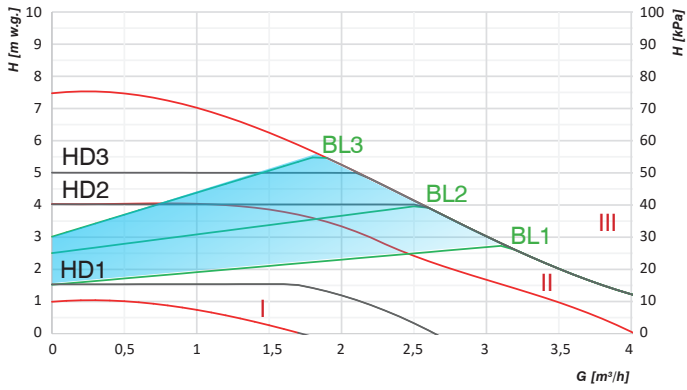
Hydraulic characteristics: head losses of the solar pump station without pump

Solar pump station without pump, version 0,5-15 l/min

Solar pump station without pump, version 3-35 l/min
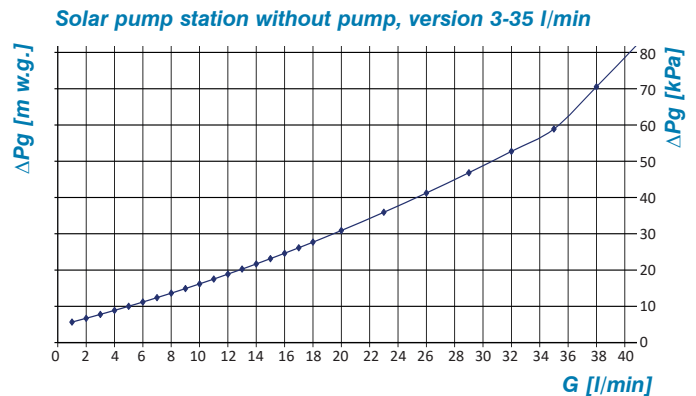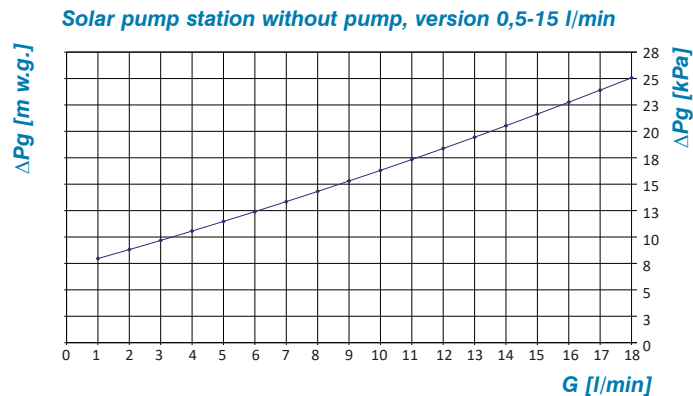
Head and power consumption of the pumps

Head of pump Grundfos UPM3 Solar 15-75 130

Power of pump Grundfos UPM3 Solar 15-75 130

Vc: Constant speed

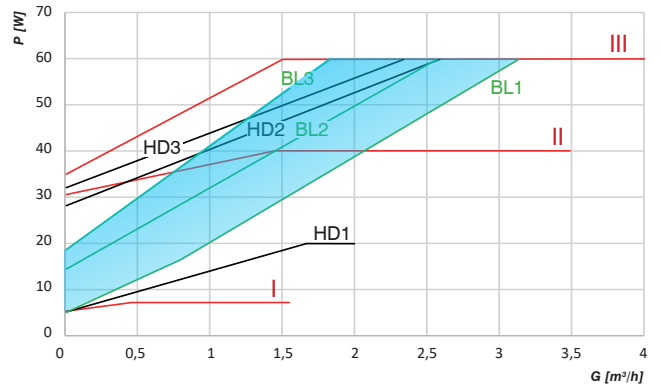**PVc: Power consumption at constant speed**

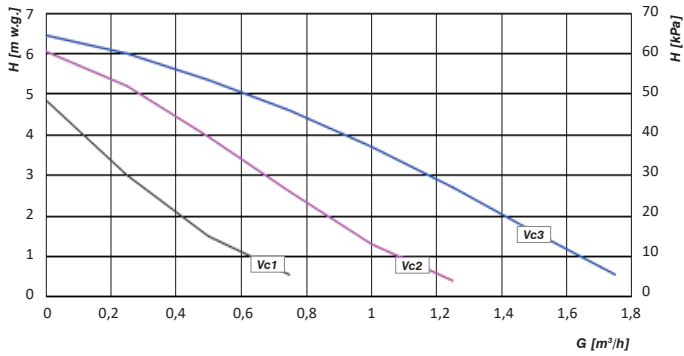**Head of pump GPA 20-7,5 III 130**

I, II, III: Constant speed
BL1-2-3: Proportional pressure
HD1-2-3: Constant pressure
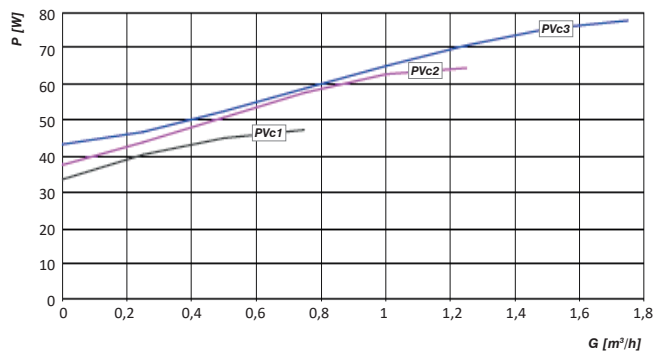: Autoadapt

Power of pump GPA 20-7,5 III 130

I, II, III: Power consumption at constant speed
BL1-2-3: Power consumption at proportional pressure
HD1-2-3: Power consumption at constant pressure
: Autoadapt
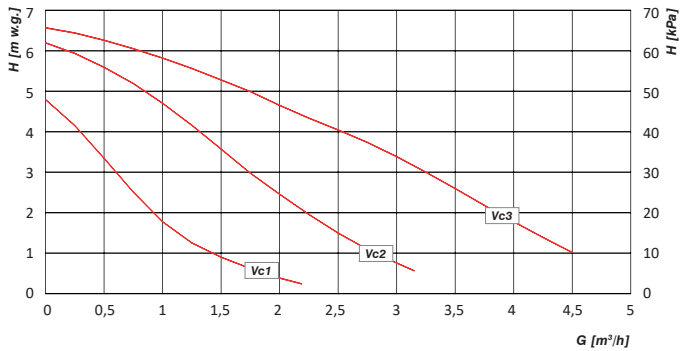
Head of pump Grundfos UPS Solar 15-65 130 (Extra EU)

Vc: Constant speed

Power of pump Grundfos UPS Solar 15-65 130 (Extra EU)
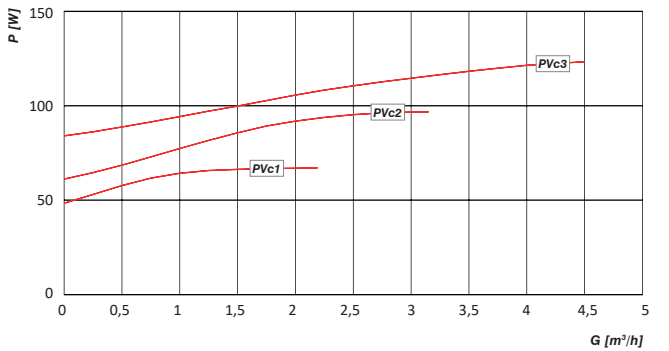

PVc: Power consumption at constant speed

Head of pump Grundfos UPS Solar 15-70 130 (Extra EU)

Vc: Constant speed

Power of pump Grundfos UPS Solar 15-70 130 (Extra EU)
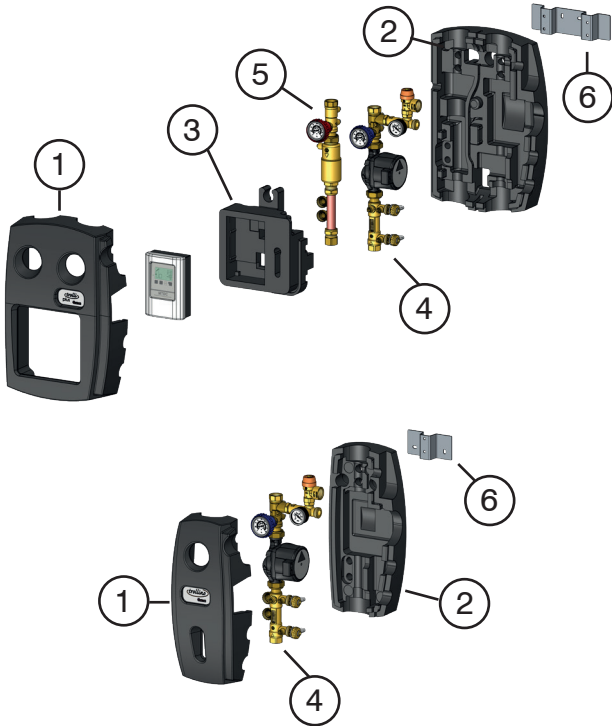

PVc: Power consumption at constant speed

Features

The solar pump station consists of:
- front insulation shell (1),
- rear insulation shell (2) with fixing bracket (6),
- controller holder insert (3, only in groups 28S-27S,09S-12S),
- return line (4) including flow meter, pump, ball shut-off valve, temperature gauge and check valve, safety group with pressure gauge, safety relief valve and expansion vessel connection,
- flow line (5) including ball shut-off valve, temperature gauge and check valve, deaerator and copper elongation (only in groups 01S, 09S, 12S).

Return check valve with override: to allow the fluid passage in both directions through the return valve (blue knob), operate on the little stem with screwdriver slot on the valve body by setting it in open position. The small stem allows to open the check valve. During normal operation of the system, the ball shut-off valves have to be fully opened (knobs completely turned anticlockwise) and the check valve has to be in the working position.

OVERRIDE ON
(check valve open)

OVERRIDE OFF
(check valve working)
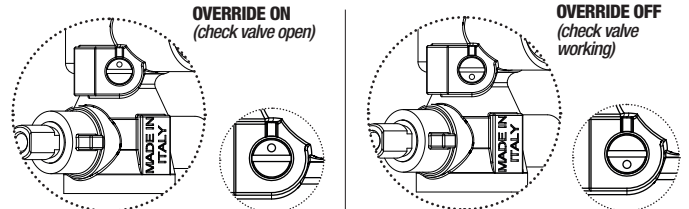
Pump range: the pump stations are available with different pump models. For the use of other models and/or manufacturers, it is advisable to contact Barberi for verification.

Preinstalled: the solar pump stations are supplied pre-installed, ready to be connected to pipes.

Cable glands: the insulation of the pump stations is equipped with cable glands pointing upward and downward to allow the cables to be laid safely and tidy.

Copper pipe elongation: available versions with and without copper pipe elongation, placed under the deaerator on the flow line.

07S
28S-27S
In the detailed figure: version without copper pipe elongation

01S
09S-12S
In the detailed figure: version with copper pipe elongation

Advantages

Energy saving: the front and rear shells help the thermal insulation of the group and allow energy saving.
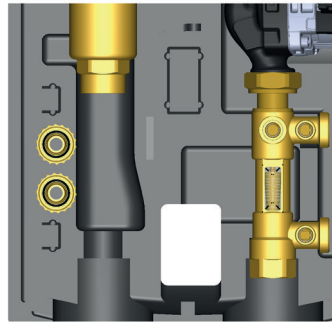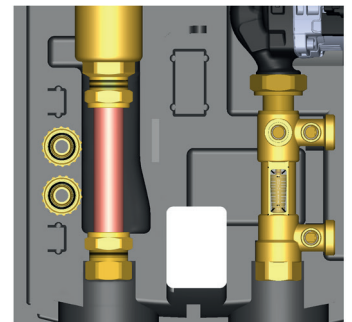
Controller holder insert: the controller is housed in the specific insert on the front insulation (28S-27S, 09S-12S). In groups without controller, this can be added by connecting it externally or by replacing the blind insert with the one fitted for the specific controller model.

Check valves: the groups are equipped as standard with a check valve on both the flow and return lines, located in the monoblocs with red and blue knob:
1) in the red flow monobloc, the check valve prevents the heat from rising by convection from the storage to the solar panel during the night pump stop, thus preventing its dispersion through the panel;
2) in the blue return monobloc, in the event of overtemperature (stagnant fluid that turns into steam), the check valve prevents the excessively hot fluid from reaching the pump, which is usually the component with the lowest maximum working temperature compared to all the others.
In this way the check valves completely isolate the solar panel.

Group position

The pump station can only be installed in vertical position to allow the correct functioning of the float flow meter. The pump stations complete with flow and return lines are not reversible, therefore it is not possible to move the pump from right to left.
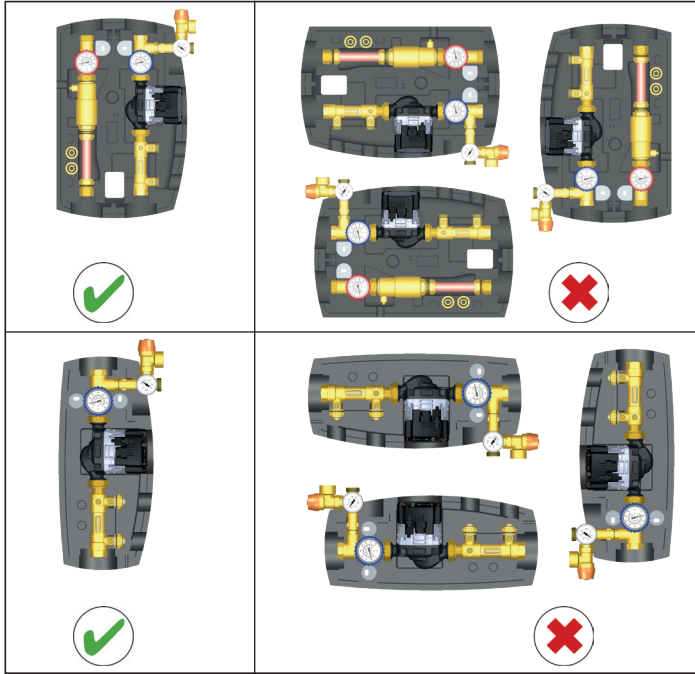

Installation

1. Remove the front cover of the insulation.

2. Look for a proper installation place suitable also for maintenance, keeping a free space of 20 cm at least around each side. Consider also the overall dimensions of the expansion vessel.

NB: do not fix the solar station and the expansion vessel on walls unsuitable for weight heavier than 120 kg.

3. Fix the holes' positions with the provided template. We suggest to use also a level.

4. Drill the wall with a 10 mm bit and insert the provided wall anchorages.

5. Lay the station on the wall and fix it with the provided screws.

6. Connect the expansion vessel to the specific connection.

7. Connect as illustrated, then check there's no leakage in the system, testing it under pressure.

8. Connect the controller to the pump.
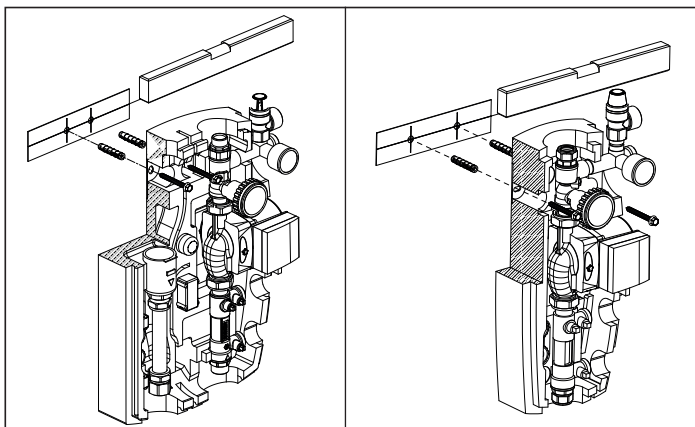
System filling

1. Before activating the system, check all the connections.

2. Be sure the two shut-off valves (blue and red knobs) are fully open, turning them completely anticlockwise.

3. Connect the pump for filling the system to the fill/drain cocks (fig. 1).

4. Set the flow rate balancing valve with the slot in horizontal position (fig. 2, BALANCING VALVE OFF).

5. Open the fill/drain cocks (fig. 2, A and B OPEN with horizontal slot).

6. Fill the system through the cock A until the fluid comes out from the cock B.

7. Close the cock B (CLOSED with vertical slot).

8. Fill the system up to the design pressure, then close the cock A (CLOSED with vertical slot).

9. Set the flow rate balancing valve with the slot in vertical position (fig. 2, BALANCING VALVE ON).

10. Switch the pump on and let it work for some minutes, checking the system watertightness.

11. Vent the system by opening the air vents on the roof and the deaerator on the pump station (fig. 3).

12. Restore the working pressure.

13. Regulate the system flow rate, as required by the design, through the flow rate balancing valve (see "Flow meter") and/or regulate the pump velocity.

14. After some working hours, test again point 11 and point 12 if necessary.
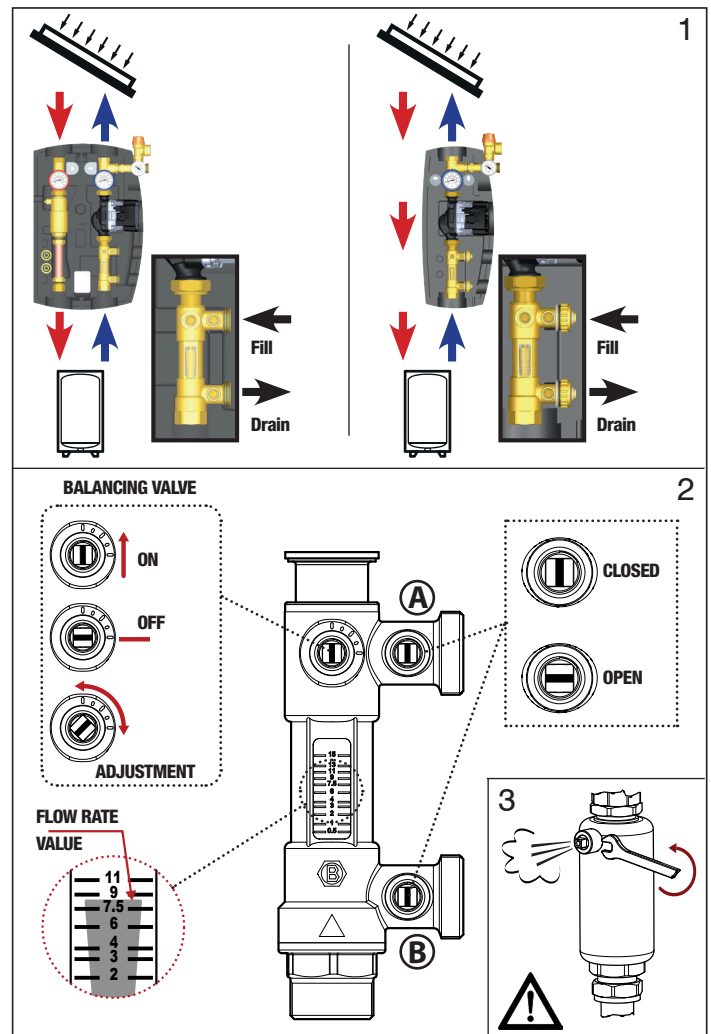
Flow meter

The flow meter is composed of a flow rate floating indicator and a flow rate regulating valve (balancing valve). To correctly work, the flow meter has to be in vertical position. In the same valve, two cocks are integrated to fill/drain the system (A and B). The flow rate regulation is performed through the stem with screwdriver slot (BALANCING VALVE ADJUSTMENT), by reading the flow rate value on the top of the floating device (FLOW RATE VALUE).
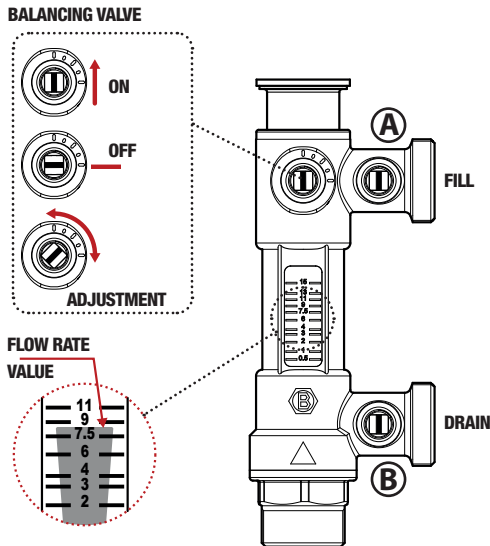
Deaerator

The deaerator releases the air by means of a separator device on the flow line. Air, after being collected on the top part of the deaerator, can be manually released by partially opening the air vent. We suggest to use a wrench to avoid burns.
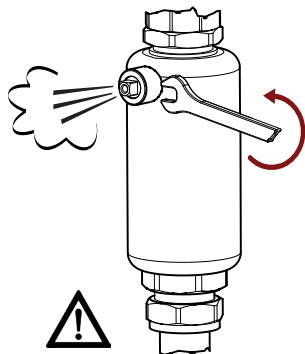
Maintenance/Drain

Flushing. Repeat the point from 1 to 6 of paragraph "System filling". Let the fluid circulate in the system for some minutes.
Drain. This operation is required only if the system has been filled only with water and there's hence the risk of freezing.
1. Connect a recycle tank to a tap on the lower part of the system.
2. Override the check valve on the monobloc with blue knob by using a screwdriver.
3. Open the air vents on the upper part of the system.

Accessories

33D

Solar thermal system controller with 3 temperature probes - 3 Input NTC, 2 Output on/off, 1 Output alarm, 1 Output PWM, 1 Output 0–10 V

Supply: *230 V - 50 Hz*
Protection class: *IP 40*
Preset programs: *6*
Supplied probes: *3 NTC 10K @ 25 °C ± 1%*
Working temperature range of probes:
-50–200 °C (blue), -50–110 °C (yellow)

Code	Size	Controller	📦	📦
33D 000 000	L-H-D 155-110-30	Seitron TDST24M	1	-

34D

Solar thermal system controller with 3 temperature probes - 4 Input Pt1000, 2 Output on/off, 1 Output PWM or 0–10 V

Supply: *100–240 V - 50–60 Hz*
Protection class: *IP 40*
Preset programs: *27*
Supplied probes: *3 Pt 1000*
Optional probe: *1 Pt 1000*
Working temperature range of probes:
-40–300 °C

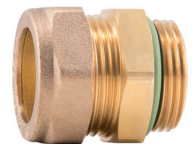| Code	Size	Controller	📦	📦
34D 000 001	L-H-D 106-157-31	Sorel MTDC	1	-

12D

Fitting G 3/4 M with compression end, with assembled nut, olive and O-Ring (codes "XXX XXX XXX M" without compression fitting)

Max working temperature: *140 °C*
Max working pressure: *16 bar*

Code	Size	📦	📦
12D 022 000	22 mm - G 3/4 M	2	-
12D 025 000 M	G 1 M - G 3/4 M	2	-

30D

Expansion vessel for primary and secondary circuit of solar thermal systems. Versions with maximum pressure 10 bar have interchangeable membrane. Balloon (bladder) membrane

Max working temperature: **99 °C**
Max working peak temperature: **130 °C (max 4 h/day)**
Suitable fluids: **water, glycol solutions (max 50%)**
Suitable for potable water

Code	Size	Litres	P [bar]	📦
30D 020 006 12	G 3/4 M	12	8	1
30D 020 006 18	G 3/4 M	18	8	1
30D 020 006 25	G 3/4 M	25	8	1
30D 020 006 40	G 3/4 M	40	8	1
30D 020 008 12	G 3/4 M	12	10	1
30D 020 008 19	G 3/4 M	19	10	1
30D 020 008 25	G 3/4 M	25	10	1
30D 020 008 40	G 3/4 M	40	10	1

14D.3

Cable for PWM signal with rapid connector (Superseal type) for UPM3 solar pump

Code	Nr. poles	Cable [m]
14D 100 003	3	1

005KV

Universal check valve - FF - brass obturator - viton gasket

Max working temperature: **150 °C**

| Code	Size	P [bar]	📦	📦
005 008 000 KV	G 1/4 F	35	30	240
005 010 000 KV	G 3/8 F	35	30	240
005 015 000 KV	G 1/2 F	35	30	240
005 020 000 KV	G 3/4 F	35	18	144
005 025 000 KV	G 1 F	35	14	84
005 032 000 KV	G 1 1/4 F	25	12	72
005 040 000 KV	G 1 1/2 F	25	10	40
005 050 000 KV	G 2 F	25	6	36
005 065 000 KV	G 2 1/2 F	12	-	15
005 080 000 KV	G 3 F	12	-	12
005 100 000 KV	G 4 F	12	-	5

020KV

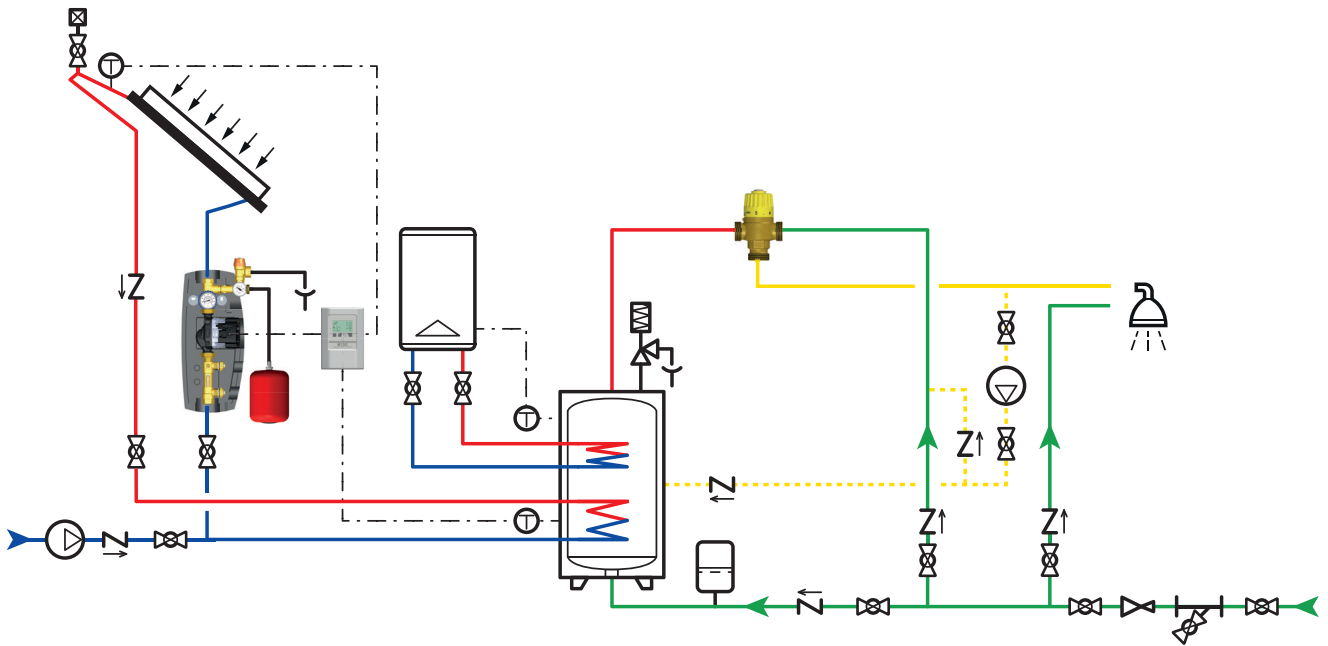*Universal check valve - FF - brass obturator - viton gasket - suitable for high pressure application*

Max working temperature: **150 °C**

Code	Size	P [bar]	📦	📦
020 010 000 KV	G 3/8 F	50	24	192
020 015 000 KV	G 1/2 F	50	20	160
020 020 000 KV	G 3/4 F	50	12	96
020 025 000 KV	G 1 F	50	8	64
020 032 000 KV	G 1 1/4 F	35	8	48
020 040 000 KV	G 1 1/2 F	35	6	36
020 050 000 KV	G 2 F	35	5	20

System diagrams
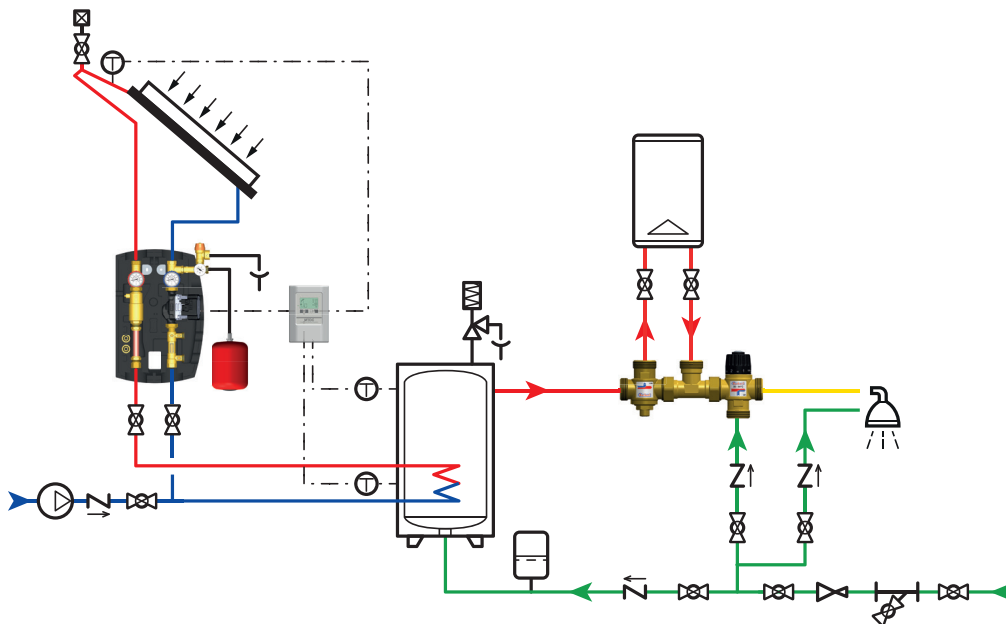
Specifications

Series 07S, 01S, 28S-27S, 09S-12S

Pump station for solar thermal systems with flow and return line. Main connections G 3/4 F (and G 3/4 M), connection for expansion vessel G 3/4 M, fill/drain cocks G 3/4 M with hose connection. Centre distance between flow and return connections 125 mm. The station is composed of: flow meter with floating device with brass body, scale 0,5–15 l/min (and 3–35 l/min, only for 07S and 01S); flow and return ball shut-off valves in brass with built-in brass check valve; flow and return temperature gauges with scale 0–160 °C (32–320 °F); pressure gauge with scale 0–10 bar; brass safety relief valve; brass manual deaerator; copper elongation pipe (01S, 09S-12S). High efficiency pump Grundfos UPM3 Solar 15-75 130 (and GPA 20-7,5 III 130) and 3 speed pump Grundfos UPS Solar 15-65 130 for versions with 0,5–15 l/min flow meter (Grundfos UPS Solar 15-70 130 for versions with 3–35 l/min flow meter), electric supply 230 V (50 Hz). EPP insulation. Maximum working temperature for pump and station 110 °C. Maximum working temperature for flow meter with flow rate regulator, monobloc with shut-off and check valve, deaerator 140 °C, for safety relief valve 160 °C. Maximum working pressure 10 bar. Safety relief valve setting 6 bar (on request 3 bar). Gaskets in Viton/Klinger and EPDM. Suitable fluids: water, glycol solutions (max 50%). Complete with solar controller (28S-27S, 09S-12S).

Series 05S

Pump station for solar thermal systems with return line only. Main connections G 3/4 F (and G 3/4 M), connection for expansion vessel G 3/4 M, fill/drain cocks G 3/4 M with hose connection. The station is composed of: flow meter with floating device with brass body, scale 0,5–15 l/min (and 3–35 l/min); ball shut-off valve in brass with built-in brass check valve; temperature gauge with scale 0–160 °C (32–320 °F); pressure gauge with scale 0–10 bar; brass safety relief valve. High efficiency pump Grundfos UPM3 Solar 15-75 130 (and GPA 20-7,5 III 130) and 3 speed pump Grundfos UPS Solar 15-65 130 for versions with 0,5–15 l/min flow meter (Grundfos UPS Solar 15-70 130 for versions with 3–35 l/min flow meter), electric supply 230 V (50 Hz). EPP insulation. Maximum working temperature for pump and station 110 °C. Maximum working temperature for flow meter with flow rate regulator, monobloc with shut-off and check valve 140 °C, for safety relief valve 160 °C. Maximum working pressure 10 bar. Safety relief valve setting 6 bar (on request 3 bar). Gaskets in Viton/Klinger and EPDM. Suitable fluids: water, glycol solutions (max 50%).