

Solar pump stations for solar heating systems

series 255 & 256

CALEFFI SOLAR



BSI EN ISO 9001:2000
Cert. n° FM 21654



UNI EN ISO 9001:2000
Cert. n° 0003



General

The solar pump station is a pre-installed and leak-tested unit with fittings for transferring heat from the collector to the storage tank. 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 and thermo circulation.
- Unit for flushing, filling and emptying the system.
- Air vent for manual bleeding of the solar thermal system.
- Flow meter for displaying and setting the flow rate.
- Thermometer in flow and return for displaying both temperatures.
- Pressure gauge for displaying the system pressure.
- Safety relief valve to prevent overpressure.
- Three-speed solar pump for wide range of flow rates.

Function

Solar pump stations are used on the primary circuit of solar heating systems to control the temperature of the hot water storage. The pump inside the units is activated by the signal from the differential temperature controller. The units contain the functional and safety devices for an optimal circuit control, and are available with flow and return connection and with return connection only.

Product range

Code 255050A Dual line pump station, flow and return connection, flow meter scale: 1/2–5 gpm _____ size 3/4"
Code 256050A Single line pump station, return connection, flow meter scale: 1/2–5 gpm _____ size 3/4"

Technical specifications

Body: brass
Temperature gauge: steel / aluminium
Seals: PTFE / EPDM
O-Rings: EPDM / Viton
Union gaskets: AFM 34, asbestos free
Insulating shell: EPP, thermal conductivity value = R4

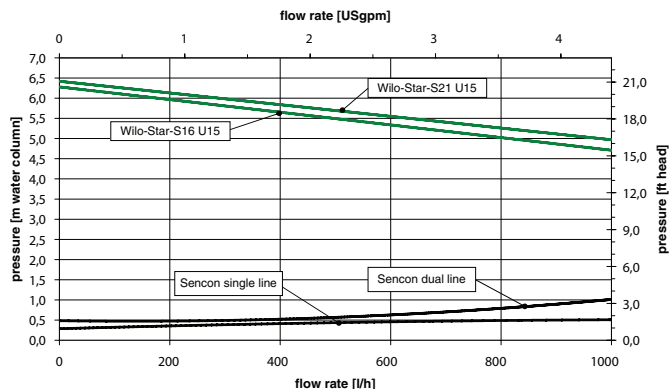
Wilco pump

Wilco solar model: Star S-16 U15
Body: cast iron
Power supply: 115 V - 60 Hz
Max. pressure: 150 psi (10 bar)
Max. temperature: 230°F (110°C)
Agency approval: cULus

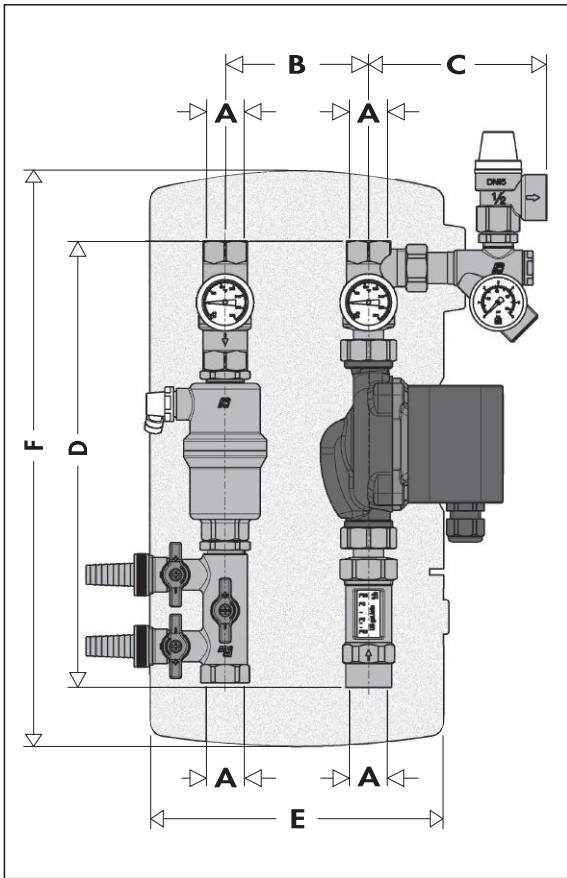
Performance

Medium: water, glycol solutions
Max. percentage of glycol: 50%
Max. working temperature: 360°F (180°C)
Max. working pressure: 150 psi (10 bar)
Safety relief valve temperature range: -20 to 360°F (-30 to 180°C)
Safety relief valve factory setting: 90 psi (6 bar)
Min. opening pressure for check valve: Δp : 1/4 psi (2 kPa)
Adjustment range of flow meter: 1/4 to 5 gpm (1 to 20 l/min)
Max return flow meter temperature: 265°F (130°C)
Pressure gauge scale: 0–90 psi (0–6 bar)
Temperature gauge scale: 32–320°F (0–160°C)
Connections: 3/4" male thread
Filling/drain hose connections: 3/4"

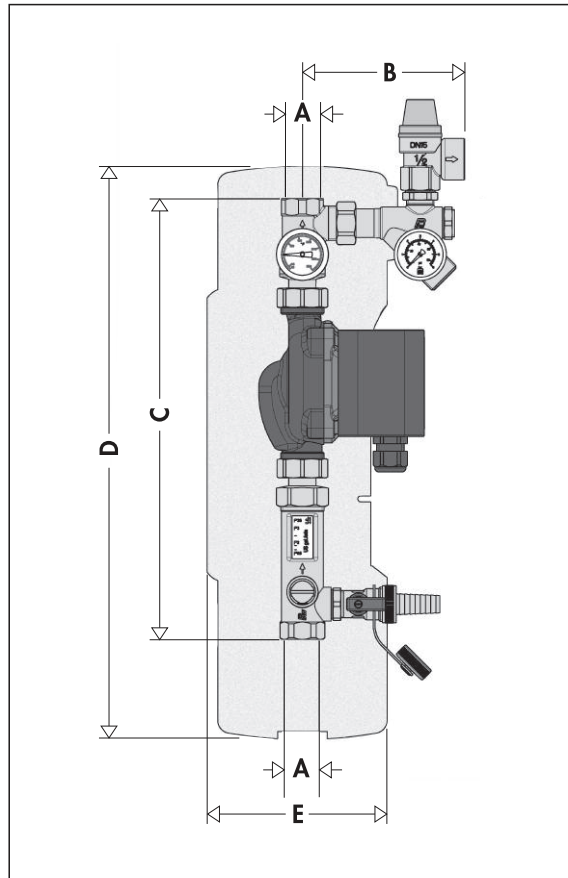
Wilco Star S-16 U15 hydraulic characteristics



Dimensions



Code	A	B	C	D	E	F	Weight (lb)
255056A	3/4"	4"	4 7/8"	15"	8"	16"	15
255059A	3/4"	4"	4 7/8"	15"	8"	16"	15
255060A	1"	4"	4 7/8"	13"	8"	16"	15



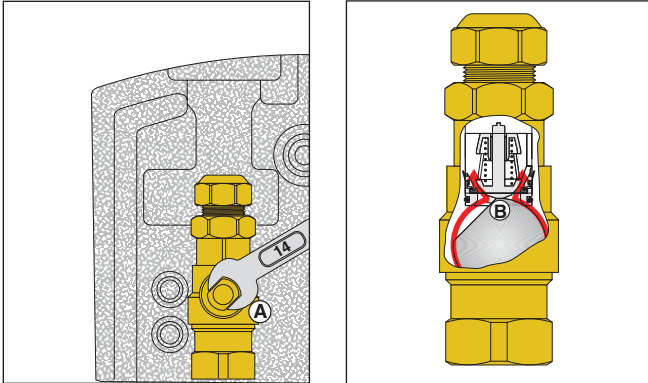
Code	A	B	C	D	E	Weight (lb)
256059A	3/4"	7"	16 1/4"	17"	5"	10

Construction details

Shut-off and check valve

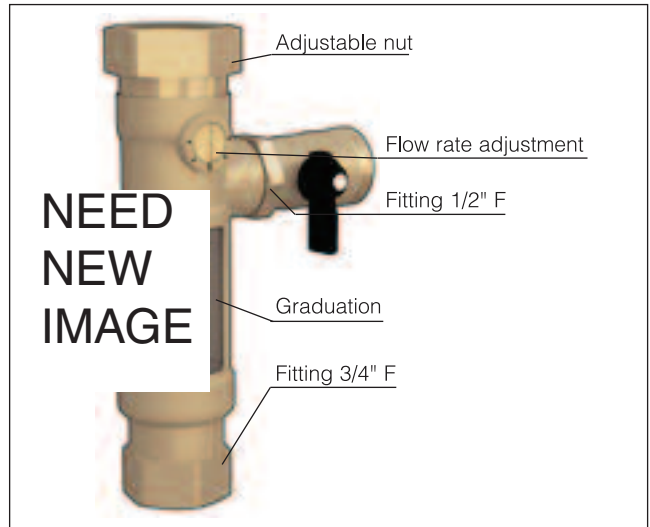
The shut-off and check valves are built into the ball valves of the temperature gauge connectors.

To allow the fluid to flow in both directions, it is necessary to open the respective ball valve (A) to 45° with a .551 inch (14mm) wrench. The check valve is opened by the ball (B). In normal system operation, the ball valves must be fully open.



Flow meter

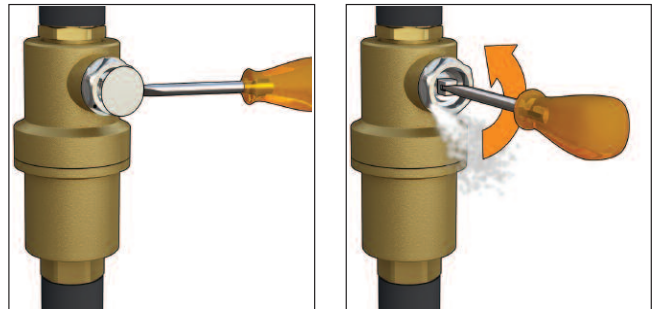
The flow meter has a built-in adjustable flow limiter. The meter is available with three different ranges of ~~1-13 l/min, 8-30 l/min and 5-40 l/min~~ depending on the version.



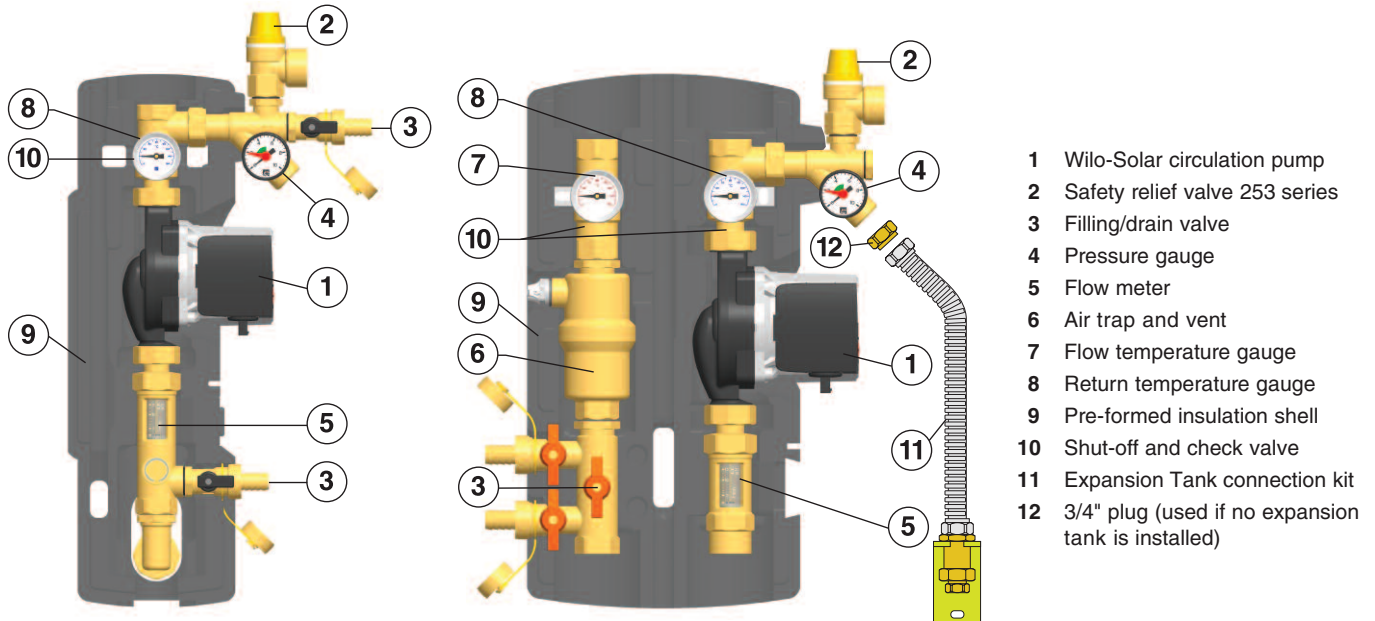
Air separator

The solar pump unit version with flow and return connection is equipped with an air trap on the flow line. The gases, separated from the fluid, are collected at the top of the trap.

The collected gases must be released from time to time — every day after the initial installation; however, it can eventually be done weekly or monthly, depending on the quantity of the air. The collected gases are released using the manual air vent with a screwdriver. To maintain optimal efficiency of the solar heating system, it is necessary to vent the system every six months by using the manual air vent.



Characteristic components



Accessories

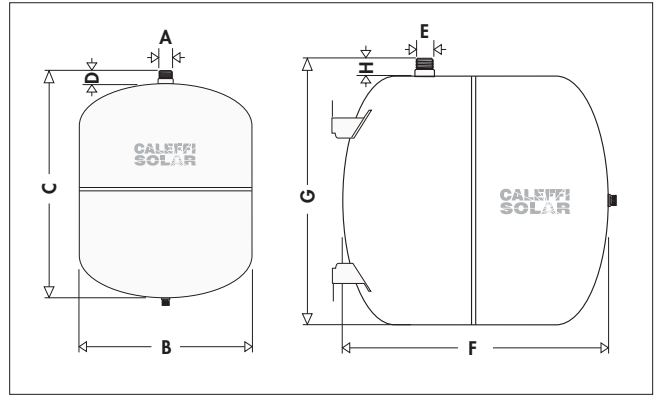
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Welded expansion vessel for solar heating systems.
 Diaphragm certified DIN4807-3 standard.
 Compatible with glycol solutions.
 Max. working pressure:
 150 psi (10 bar).
 Max. diaphragm temperature:
 212°F (100°C).
 System temperature range:
 14–248°F (-10–120°C).



Code	Gallons	(Litres)	Connections	Psi	Precharge (bar)
259012	3.171	(12)	3/4"	36.251	(2.5)
259018	4.757	(18)	3/4"	36.251	(2.5)
259025	6.606	(25)	3/4"	36.251	(2.5)
259035	9.249	(35)	3/4"	36.251	(2.5)
259050	13.212	(50)	3/4"	36.251	(2.5)

Dimensions



Code	A	B	C	D	Size (gal)
259012	3/4"	10 5/8"	10 5/8"	3/4"	3
259018	3/4"	10 5/8"	13 3/4"	3/4"	5
259025	3/4"	11 7/8"	15 1/2"	3/4"	7

Code	E	F	G	H	Size (gal)
259035	3/4"	15 3/4"	16"	1"	9
259050	3/4"	21 1/8"	16"	1"	13

Mounting feet for wall installation.

255

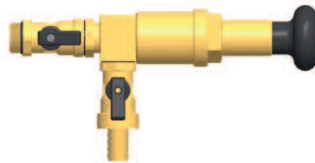
Expansion vessel connection kit.
 Consisting of: stainless steel hose, automatic shut-off cock, wall bracket.
 Max. working pressure: 150 psi (10 bar).
 Max. cock working temperature: 230°F (110°C).
 Hose length: 19.685 inches (500 mm).
 Used on a bracket for expansion vessels with a maximum capacity of 6.342 gal (24 l).



Code	Connections
255001	3/4"

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System filling pump for circulation units 255 and 256series.



Code	Connections
255010	3/4"