SOLAR Series

Expansion vessel and accessories for solar thermal systems

Technical Data Sheet

WattsIndustries.com

Description

SOLAR Series expansion vessels are closed receptacles pre-charged to a given pressure. A fixed diaphragm inside them separates the pressurised air from the system water.

SOLAR

Expansion vessel for solar thermal systems with special diaphragm for solar fluid, to collect the excess volume generated during heating. Max. operating pressure: 10 bar. Pre-charge pressure: 2.5 bar. Operating temperature range: -10÷100°C. The 12-24-litre models have a 3/4" M threaded connection at the bottom of the vessel. Designed to resist fluid blends containing up to 50% glycol. The 35-50-litre models are equipped with support feet and a 3/4" M threaded side outlet connection.

Compliant with PED Directive 2014/68/EU.

Type	Part No.	Capacity in litres	Weight (kg)
SOLAR 12	06400012WS	12	2.4
SOLAR 18	06400018WS	18	3.2
SOLAR 24	06400024S	24	3.6
SOLAR 35	06400035S	35	6.8
SOLAR 50	06400050S	50	7.4

KAV

Control valve compliant with DIN EN 12828 (DIN 4751). Enables you to test and disassemble diaphragm expansion vessels without draining the system. Complete with drain valve and lead seal. PN10. Maximum operating temperature: 130°C.

Type	Part No.	Description	Weight (kg)
KAV 20	0608120	3/4" x 3/4"	0.43
KAV 25	0608125	1" x 1"	0.76
KAV 32	0608132	1/4" x 1/4"	0.76
SP/KAV	0699033	10 lead seals	-

SK-SOL

Quick coupling for solar thermal systems enables you to test and replace expansion vessels without draining the system. Max. operating temperature: 160°C.

Type	Part No.	Weight (kg)
SK-SOL	0608102	0.24

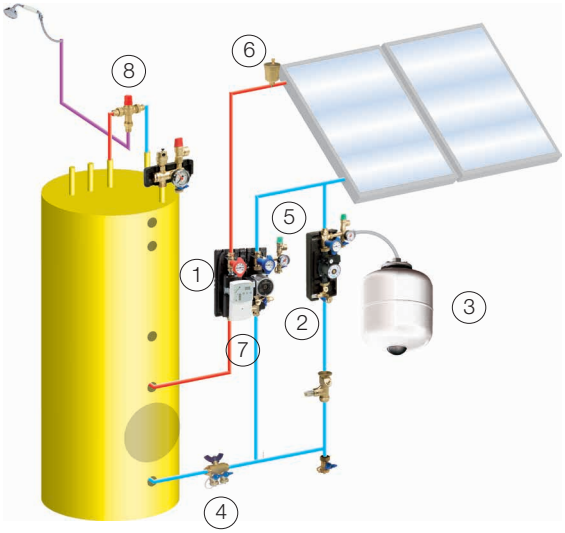
WH-MAG

Wall bracket with quick coupling for expansion vessel for installing the expansion vessel connected to the FlowBox Solar module.

Type	Part No.	Description	Weight (kg)
WH-MAG	WID 4188117	Vessels with capacity of up to 18 litres	0.68
WH-MAG	WID 4188118	Vessels with capacity of up to 24 litres	0.83

SOLAR technical features	
Body	steel
Diaphragm	special rubber to DIN 4807
Maximum operating pressure	10 bar
Pre-charge pressure	2.5 bar
Operating temperature	-10÷100°C
Threaded connection	3/4"M
PED class	I (12-18-litre models) II (24-50-litre models)

KAV technical features	
Body, fittings and drain valve	brass (CuZn39Pb3, DIN 17 660)
Protective cap	impact-resistant plastic
Connection fittings	female threaded
Lead sealing kit	lead and spiral wire
Nominal pressure	PN10
Maximum operating temperature	130°C



Key

1. FlowBox FBS 8010-C-LED circulation unit
2. FBS 8010-S circulation unit
3. SOLAR expansion vessel
4. QUICKFILL filling valve
5. SVE-SOL safety valve
6. MV-SOL air vent valve
7. BASIC electronic control unit
8. MMV-S mixing valve

Operation

SOLAR Series expansion vessels are generally used in solar panel systems, in conjunction with Flowbox Series circulation units where appropriate. The vessel must be sized in accordance with the specifications set down in the "R" regulations (Chap. R.3.B). In any circuit in which the carrier fluid changes temperature, there will always be corresponding changes in fluid volume. **SOLAR Series** closed fixed-diaphragm expansion vessels have the capacity to absorb these increases in volume by means of a cushion of air inside them, which is separated from the water by a rubber diaphragm. In the heating phase, the increased volume of fluid in the system is absorbed by the closed expansion vessel, thus compressing the air cushion, before allowing it to decompress again when the fluid cools. The two diagrams show the position of the membrane with the system cold **(Fig.1)** and with the system running in steady state **(Fig.2)**. As you can see, when the fluid temperature increases, the system pressure increases accordingly. When the system is cold, the rubber diaphragm adheres to the walls of the vessel, but when it is running in steady state, the fluid in the system expands, thus pushing the diaphragm half way down the vessel. The **SK-SOL Series** quick coupling for solar thermal systems consists of two parts, which are fixed to the expansion vessel and the system respectively. Both parts are equipped with check valves, which close automatically when you remove the connection. This enables you to remove the expansion vessel without draining the solar thermal system. When the connection is fitted, however, the check valves open, bringing the expansion vessel into communication with the system.

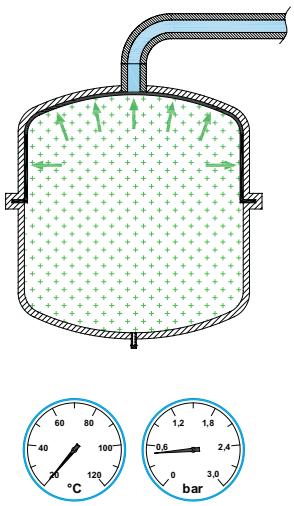


Fig.1 - Diaphragm position with system OFF

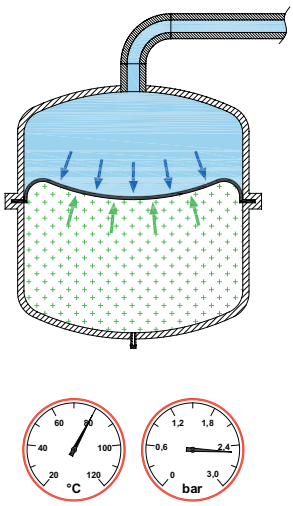


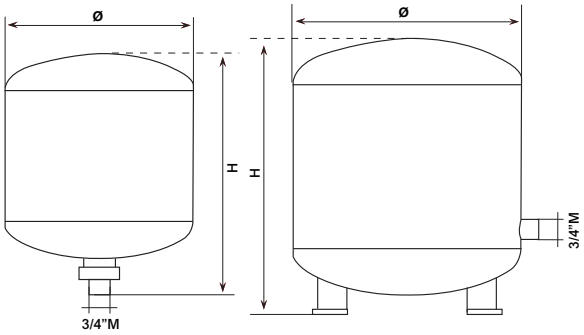
Fig.2 - Diaphragm position with system ON in steady state

Installation

SOLAR Series expansion vessels must be connected to the solar thermal circuit with a pipe that cannot be shut off, or that conforms in any event with the technical specifications set down in the "R" regulations (Chap. R.3.B). Regular servicing (annual) is recommended in order to keep the expansion vessel in efficient working order at all times. Should it be necessary to restore the pre-charge pressure, restore it to the pressure shown on the label affixed to the device.
KAV Series valves must be fitted on the expansion pipe in accordance with DIN 4751/2. The drain valve must be locked in position with the drain outlet facing down. Once installed, KAV valves must be lead-sealed (with the appropriate lead seal and wire) in the open position to prevent accidental shut-off of the expansion vessel.

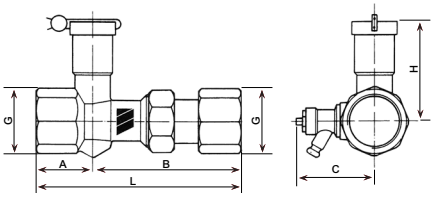
Overall dimensions

SOLAR 12-24 litres SOLAR 35-50 litres



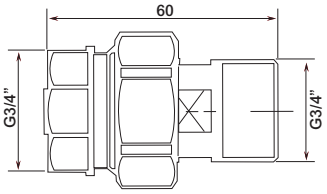
CAPACITY	Δ	H
12	260	315
18	260	380
24	260	490
35	380	535
50	380	565

KAV

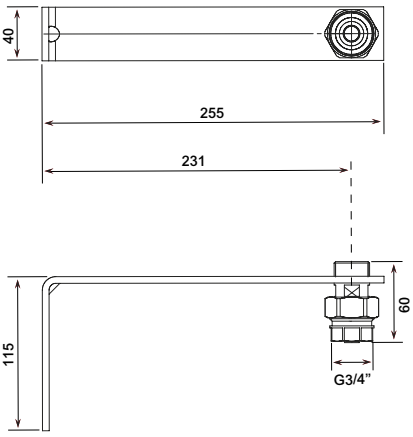


TYPE	G	L	H	A	B	C
KAV 20	G 3/4"	103	49	28	75	55
KAV 25	G 1"	117	58.5	35	82	64
KAV 32	G 1.1/4"	116	58.5	35	81	64

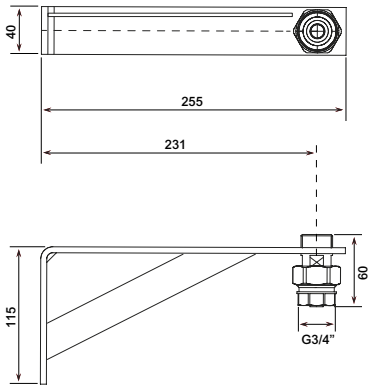
SK-SOL



WH-MAG - WID 4188117



WH-MAG - WID 4188118



Specification text

SOLAR Series – Expansion vessel for solar thermal systems **SOLAR Series** – WATTS brand – with special diaphragm for solar fluid, to collect the excess volume generated during heating. Max. operating pressure: 10 bar. Pre-charge pressure: 2.5 bar. Operating temperature range: -10÷100°C. Designed to resist fluid blends containing up to 50% glycol. Capacity 12÷50 litres. The 12-24-litre models have a 3/4" M threaded connection at the bottom of the vessel. The 35-50-litre models are equipped with support feet and 3/4" M threaded side outlet connection. Compliant with PED 2014/68/EU.
KAV Series – Control valve KAV Series – WATTS brand – to DIN EN 12828 (DIN 4751). 3/4" to 1.1/4" connections. Enables you to test and disassemble diaphragm expansion vessels without draining the system. Complete with drain valve and lead seal. PN10. Maximum operating temperature: 130°C.
SK-SOL Series – Quick coupling for solar thermal systems **SK-SOL Series** – WATTS brand – with 3/4" connections. Enables you to test and replace expansion vessels in solar thermal systems without draining the system. Maximum operating temperature: 160°C.
WH-MAG Series – Wall bracket with quick coupling for expansion vessel **WH-MAG Series** – WATTS brand – for installing the expansion vessel connected to the FlowBox Solar module.

Watts Industries Italia S.r.l.
Via Brenno, 21 • 20853 Biassono (MB) • Italy
Tel. +39 039 4986.1 • Fax +39 039 4986.222
infowattsitalia@wattswater.com • www.wattsindustries.com