# Automatic air vent and shut-off valve for solar thermal systems

## 250 series

CALEFFI SOLAR

ISO 9001 FM 21654

CALEFFI

01133/15 GB

replaces dp 01133/07 GB

### Function

Automatic air vents are used in the closed circuits of solar thermal systems to allow air contained in the fluid to be released automatically by means of a valve operated by a float in contact with fluid in the system.
The shut-off valves are on the contrary typically used in combination with the automatic air vents to be able to cut them off after filling the circuit of solar thermal systems.
These particular series of products have been specially made to work at high temperature with a glycol medium.

WRAS APPROVED PRODUCT
CERTIFICATION MARK

### Product range

| | | |
|---|---|---|
| Code 250831 | Automatic air vent for solar systems | size 3/8" M |
| Code 250931 | Automatic air vent and shut-off cock for solar systems | size 3/8" M |
| Code 250031 | Automatic air vent for solar systems | size 3/8" M |
| Code 250131 | Automatic air vent and shut-off cock for solar systems | size 3/8" M |
| Code 250041 | Automatic air vent for solar systems | size 1/2" M |
| Code 250300 | Shut-off cock, butterfly handle for solar systems | size 3/8" M |
| Code 250400 | Shut-off cock, lever handle for solar systems | size 1/2" M |

### Technical specifications of valve

**Materials:**

| | |
|---|---|
| Body: | brass EN 12165 CW617N, chrome plated |
| Cover: | brass EN 12165 CW617N, chrome plated |
| Control spindle: | dezincification resistant alloy CR EN 12164 CW602N |
| Float and conveyor: | high resistance polymer |
| Seals: | high resistance elastomer |

**Performance:**

| | | |
|---|---|---|
| Medium: | | water, glycol solutions |
| Max. percentage of glycol: | | 50% |
| Working temperature range: | | -30–180°C |
| Max. working pressure: | | 10 bar |
| Max. discharge pressure: | - 250831/931: | 2,5 bar |
| | - 250031/131/041: | 5 bar |
| Connections | - 250031/131/831/931: | 3/8" M (ISO 228-1) |
| | - 250041: | 1/2" M (ISO 228-1) |

### Technical specifications of shut-off cock

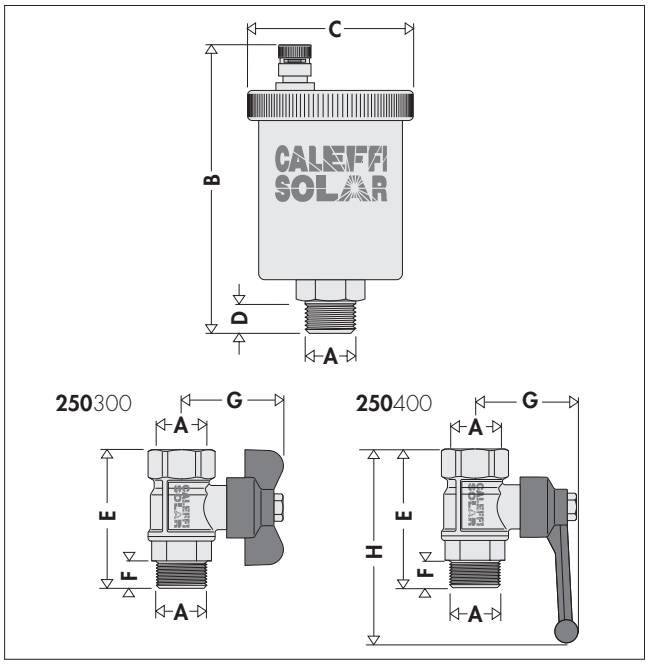
**Materials:**

| | |
|---|---|
| Body: | brass EN 12165 CW 617N, chrome plated |
| Ball: | brass EN 12164 CW 614N, chrome plated |
| Seals: | high resistance elastomer |

**Performance:**

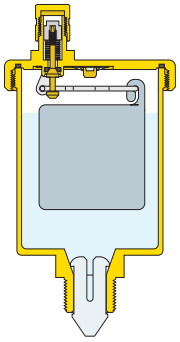
| | | |
|---|---|---|
| Medium: | | water, glycol solutions |
| Max. percentage of glycol: | | 50% |
| Working temperature range: | | -30–200°C |
| Max. working pressure: | | 10 bar |
| Connections: | - 250300: | 3/8" M x 3/8" F (ISO 228-1) |
| | - 250400: | 1/2" M x 1/2" F (ISO 228-1) |

### Dimensions




| Code | A | B | C | D | E | F | G | H | Mass (kg) |
|---|---|---|---|---|---|---|---|---|---|
| **250**831 | 3/8" | 79 | Ø 48 | 11 | – | – | – | – | 0,20 |
| **250**931 | 3/8" | 79 | Ø 48 | 11 | 46 | 8,5 | 36 | – | 0,31 |
| **250**031 | 3/8" | 97 | Ø 55 | 11 | – | – | – | – | 0,31 |
| **250**131 | 3/8" | 97 | Ø 55 | 11 | 46 | 8,5 | 36 | – | 0,42 |
| **250**041 | 1/2" | 97 | Ø 55 | 11 | – | – | – | – | 0,32 |
| **250**300 | 3/8" | – | – | – | 46 | 8,5 | 36 | – | 0,11 |
| **250**400 | 1/2" | – | – | – | 61 | 10 | 51 | 136 | 0,31 |

### Operating principe



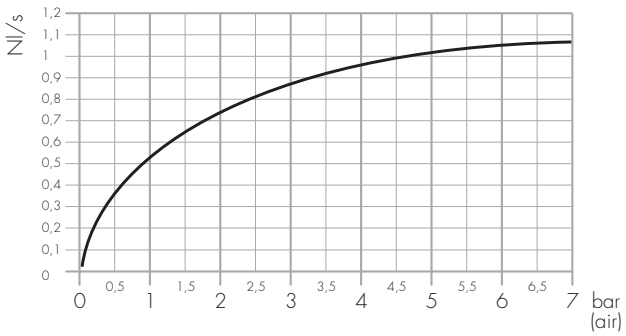
The accumulation of air bubbles in the valve body causes the float to drop so that the air vent opens.
This phenomenon occurs, and consequently the valve functions correctly, as long as the water pressure remains below the maximum discharge pressure.

### Construction details

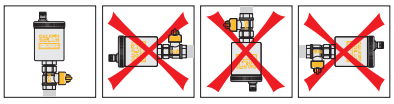
**Resistance to high temperature**
The high performance level of this series of automatic air vents, required moreover in solar thermal systems, is ensured by using materials that are resistant to high temperature. They allow maintaining the functional features of the valve with glycol water temperatures up to 180°C.

### Hydraulic characteristics

**Discharge capacity** when the system is being filled

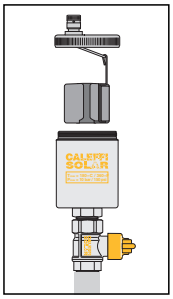



### Installation



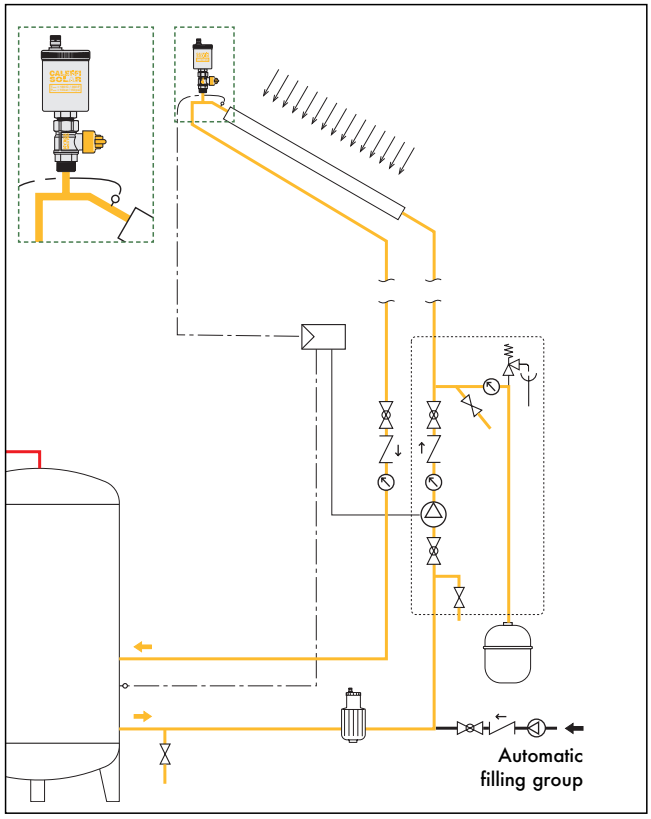
250 series automatic air vents must be installed in vertical position, typically on the top of the solar thermal system panels and at points in the circuit where air bubbles gather that need to be discharged.
They **must always be installed in combination with a shut-off cock**. This is necessary since the air vents valves must be shut off after use to remove the air in the filling phase and system start up.

### Maintenance



250 series automatic air vent is made to allow checking of the internal mechanism.
Access to the moving parts that govern the air vent is obtained by simply taking off the top cover.
A shut-off cock must be installed before the 250 series device in order to simplify any maintenance work and for shutting off after the filling phase.

### Application diagram




## SPECIFICATION SUMMARY

**Code 250031-041-831**
Automatic air vent for solar thermal systems. Threaded connections 3/8" M (and 1/2") (ISO 228-1). Brass body and cover, chrome plated. Float in high resistance polymer. Seals in high resistance elastomer. Medium water and glycol solutions. Maximum percentage of glycol 50%. Working temperature range -30–180°C. Maximum working pressure 10 bar. Maximum discharge pressure 5 bar (code 250831 2,5 bar).

**Code 250131-931**
Pair consisting of: - Automatic air vent for solar thermal systems. Threaded connections 3/8" M (ISO 228-1). Brass body and cover, chrome plated. Float in high resistance polymer. Seals in high resistance elastomer. Medium water and glycol solutions. Maximum percentage of glycol 50%. Working temperature range -30–180°C. Maximum working pressure 10 bar. Maximum discharge pressure 5 bar (cod. 250931 2,5 bar). Shut-off cock for solar thermal systems. Threaded connections 3/8" M x 3/8" F. Brass body and ball, chrome plated. Seals in high resistance polymer. Medium water and glycol solutions. Maximum percentage of glycol 50%. Working temperature range -30–200°C. Maximum working pressure 10 bar.

**Code 250.00**
Shut-off cock for solar thermal systems. Threaded connections 3/8" M x 3/8" F (and 1/2" M x 1/2" F) (ISO 228-1). Brass body and ball, chrome plated. Seals in high resistance elastomer. Butterfly handle (cod. 250300) and lever handle (code 250400). Medium water and glycol solutions. Maximum percentage of glycol 50%. Working temperature range -30–200°C. Maximum working pressure 10 bar.



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