Safety relief valve for solar thermal systems

253 series

01089/24 EN
replaces 01089/06 EN

General

The safety relief valves are made by Caleffi in compliance with the essential safety requirements set out by Directive 2014/68/EU of the European Parliament and the Council of the European Union on the harmonisation of the laws of the member states relating to pressure equipment.

Function

The safety valves are used for pressure control in the primary circuits of solar thermal systems.
On reaching the setting pressure, the valve opens and, by discharging into the atmosphere, prevents the pressure in the system from reaching dangerous levels for solar manifold operation and for the equipment installed.

This particular series of products is specially designed and certified to work at high temperature with a glycol solution.

Product range

253 series Safety relief valve for solar thermal systems ..... size 1/2" F x 3/4" F; 3/4" F x 1" F

Technical specifications

Materials

Body	brass , EN 12165 CW617N, chrome-plated
Control stem:	brass EN 12164 CW617N
Obturator seal:	high-resistance elastomer
Spring:	steel UNI 3823
Control knob:	PA6G30

Performance

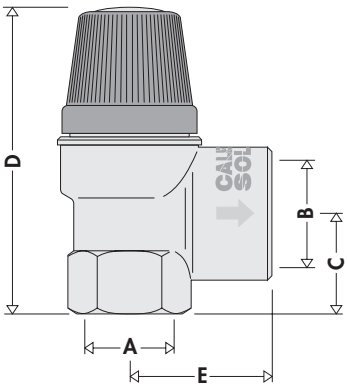
Medium: water, glycol solutions

Max. percentage of glycol:	50 %
Nominal pressure:	PN 10
Opening overpressure:	10 %
Closing differential:	20 %
Discharge rating:	1/2" - 50 kW 3/4" - 100 kW

Code	253042	253043	253044	253046	253048	253040
	253052	253053	253054	253056	253058	253050
Setting	2.5 bar	3 bar	4 bar	6 bar	8 bar	10 bar

Working temperature range:	-30–160 °C
PED category:	IV
Certification:	TÜV in accordance with SV 100 7.7 TÜV no. SV 07 2009 · SOL · H· p
Connections:	1/2" F x 3/4" F 3/4" F x 1" F

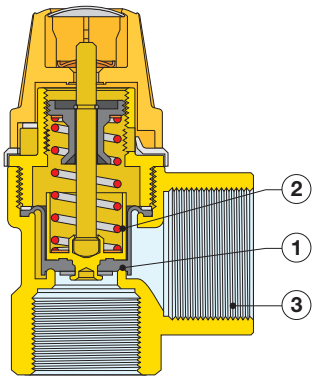
Dimensions



Code	A	B	C	D	E	Mass (kg)
25304.	1/2"	3/4"	24	70	33,5	0,22
25305.	3/4"	1"	30	80	36,5	0,32

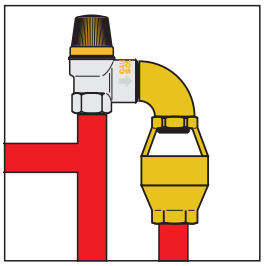
Operating principle

The obturator (1), opposed by a set spring (2), rises on reaching the setting pressure and fully opens the outlet. The setting pressure is chosen according to the maximum permissible pressure in the system.
The diameter of the outlet connection (3) is greater in order to help discharge the required potential.
As the pressure decreases there is the opposite action, with the valve subsequently reclosing within the set tolerances.



Discharge pipe

The safety relief valve discharge pipe must not obstruct normal valve operation and must not endanger people or things.
In accordance with applicable regulations, the safety relief valve drain must be visible and conveyed to a collection tray using suitable pipes. The glycol solution must therefore be emptied into a suitable collection container.
As shown in the diagram, it is advisable to fit a tundish directly onto the drain pipe.



Construction details

Temperature and glycol

In solar thermal systems, the thermal medium in the primary circuit has glycol added to it and works at a high temperature; to take account of these particular operating conditions, the safety relief valve obturator seal is made using high-resistance elastomer.
The knob is made using plastic material that is particularly resistant to temperature increases and UV rays, in case of outdoor installation.

Chrome plating

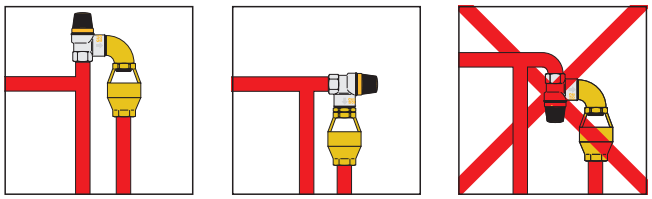
The valve body is chrome plated to protect it from aggressive atmospheric agents, in the case of outdoor installation of solar thermal systems.

Certification

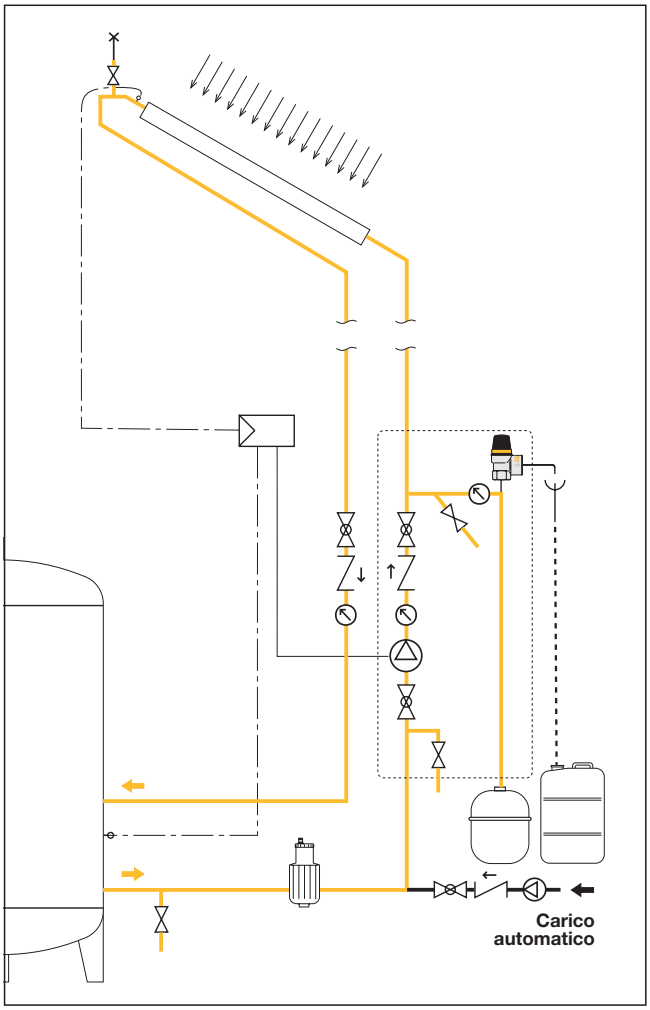
The 253 series safety relief valves are certified by the TÜV certifying authority specifically for use in solar thermal systems, in accordance with standard SV 100 Ed. 10.01 par. 7.7.

Installation

The safety relief valves for solar thermal systems should be installed near the point of the circuit at which system filling takes place, before the expansion vessel.
Make sure that there are no shut-off devices between the valve and the rest of the system.
Safety relief valves can be fitted vertically or horizontally, but not upside down.
This prevents deposits of impurities from affecting correct functioning.
The safety relief valve must be installed in line with the flow direction indicated by the arrow on the valve body.



Application diagram



SPECIFICATION SUMMARY

253 series

Membrane safety relief valve for solar panel thermal systems. CE marked as per Directive 2014/68/EU. TÜV certified for solar thermal systems. Threaded connections 1/2" F x 3/4" F (3/4" F x 1" F). Chrome plated brass body. High-resistance elastomer membrane and seal. Steel spring, UNI 3823. PA6G30 control knob. Working temperature range -30–160 °C. Nominal pressure PN 10. Setting value 2,5 bar (3, 4, 6, 8, 10 bar). Medium water and glycol solutions. Max. percentage of glycol 50 %.

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