

# Fuel shut-off valve - I.S.P.E.S.L. approved

series 540



01074/03 GB



## General

Series 540 (97°C) fuel shut-off valves are made by Caleffi S.p.A. in compliance with the essential safety requirements laid down by directive 97/23/CE of the European Parliament and the Council of the European Union for harmonisation of member states with regard to pressurised equipment.

## Function

The Caleffi series 540 fuel shut-off valve is a fail-safe safety device with pre-set calibration. The valve, installed in the burner fuel supply pipework, shuts off the flow of fuel when the temperature of the heat-carrying fluid reaches the calibrated value of the sensor.

As this is a fail-safe device, in the case of damage to the sensor assembly, the fuel supply pipe is closed automatically.

This valve can be used with different types of gaseous fuels and is available in versions for superheated water.



I.S.P.E.S.L.

## Product range

Series 540 Fuel shut-off valve with flanged connections \_\_\_\_\_ Sizes DN 65, DN 80, DN 100

## Technical specification

Materials: - body: aluminium alloy  
- spring: stainless steel  
- seals: NBR

Flanged connections PN16: DN 65 - 80 - 100

Sensor pocket connection: 1/2" M

Calibration temperature: 97°C (+3 -3°C) I.S.P.E.S.L. approved

120°C (+0 -5°C) I.S.P.E.S.L. approved

140°C (+0 -5°C) supplied with declaration of conformity

160°C (+0 -5°C) supplied with declaration of conformity

180°C (+0 -5°C) supplied with declaration of conformity

Max temperature: - (sensor side): calibration temperature + 20%

- (valve side): 50°C

Average working temperature (using gas): 15°C

Max working pressure: - (sensor side): 12 bar

- (valve side) using gas: 50 kPa

Suitable for following fuels: methane, LPG

PED category: IV

## Code completion (-)

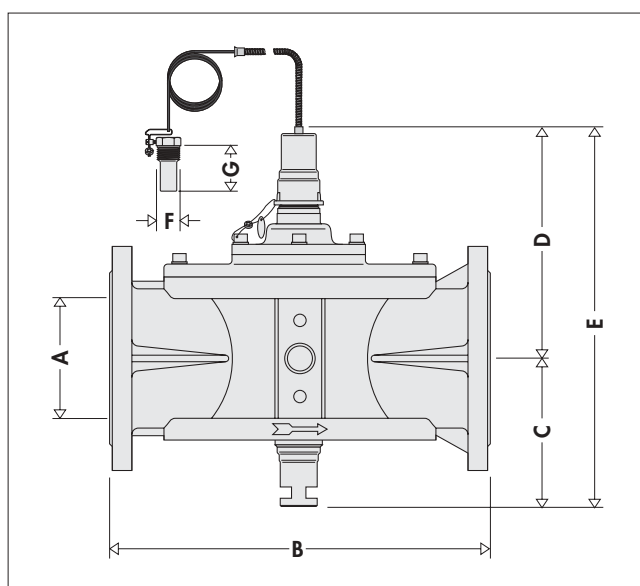
With 5 m capillary

|          |           |           |           |           |
|----------|-----------|-----------|-----------|-----------|
| 0 → 97°C | 2 → 120°C | 4 → 140°C | 6 → 160°C | 8 → 180°C |
|----------|-----------|-----------|-----------|-----------|

With 10 m capillary

|          |           |           |           |           |
|----------|-----------|-----------|-----------|-----------|
| 1 → 97°C | 3 → 120°C | 5 → 140°C | 7 → 160°C | 9 → 180°C |
|----------|-----------|-----------|-----------|-----------|

## Dimensions

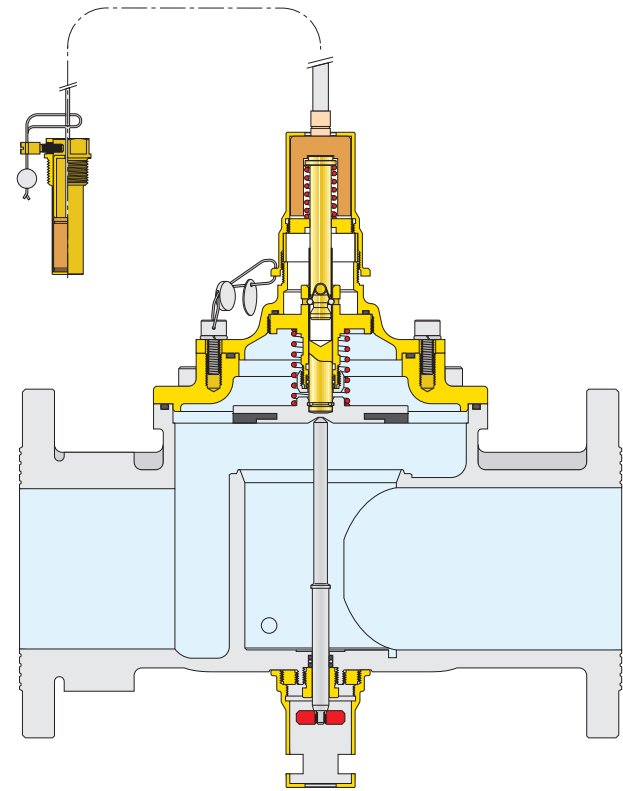


Length of connecting capillary tube 5 or 10 m

| Code   | A      | B   | C     | D   | E     | F    | G  | Weight (kg) |
|--------|--------|-----|-------|-----|-------|------|----|-------------|
| 54060. | DN 65  | 310 | 112,5 | 225 | 337,5 | 1/2" | 60 | 9,5         |
| 54080. | DN 80  | 310 | 112,5 | 225 | 337,5 | 1/2" | 60 | 9,9         |
| 54010. | DN 100 | 350 | 157   | 214 | 371   | 1/2" | 60 | 15,5        |

Operating principle

If the calibrated temperature is reached, the vapour pressure sensitive element, with the change of state, causes the triggering of the actuator via the capillary tube and the flexible bellows. The intervention functions are restored by pressing the pushbutton positioned in the lower part of the valve and protected by a metal cover.



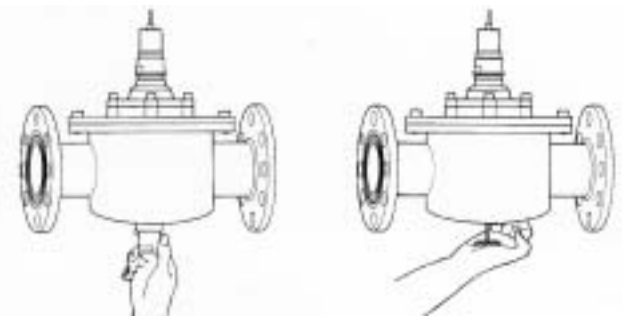
Constructional details

Reset

Should the shut-off device be activated, it has to be reset to its original status as follows:

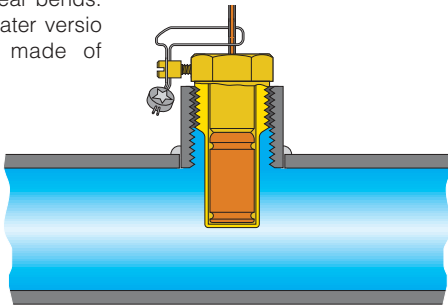
- a) Wait until the water temperature falls to 10°C below the shut-off temperature (otherwise it will not be possible to reset the device).
- b) Unscrew the protective cap.
- c) Press the reset button.

Series 540 valves are positive action (fail-safe) devices: if the sensor element is damaged or the capillary is broken, the positive action consists of an upward movement of the control unit, thus triggering the actuator, which in turn closes the valve. If this situation occurs, the valve must be replaced.



Sensor pocket

The compact dimensions of the pocket make it suitable even for small diameter pipework. In addition, its limited height means that it can be positioned vertically, avoiding difficult installation in the case of slopes or near bends. The superheated water version of the pocket is made of stainless steel.



Fluid-dynamic characteristics

Methane at 15°C



LPG at 15°C



Guideline ratings of boilers (kW)

| Series | Size   | Methane       | LPG           |
|--------|--------|---------------|---------------|
| 540    | DN 65  | 900 - 1.900   | 1.700 - 2.300 |
| 540    | DN 80  | 1.100 - 2.600 | 1.900 - 2.900 |
| 540    | DN 100 | 1.900 - 4.500 | 3.400 - 4.600 |

**CE mark**

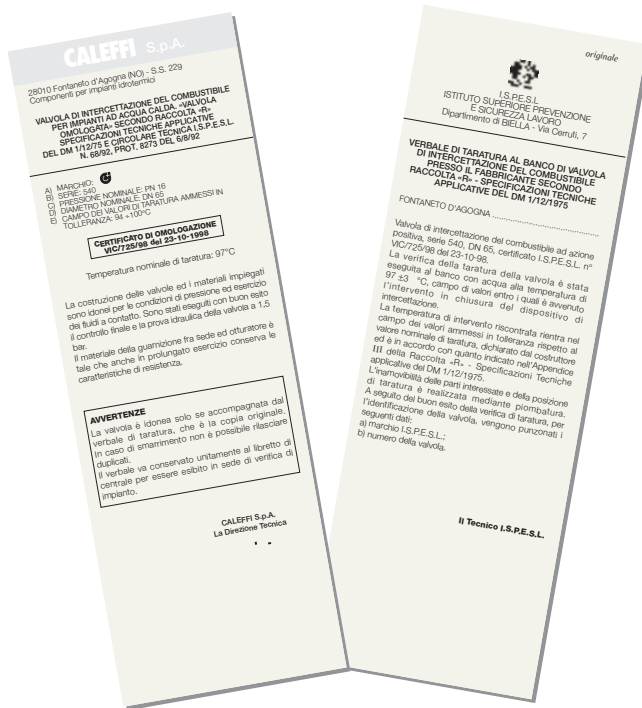
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**I.S.P.E.S.L. mark**

**The approval certificate** is the document issued by the I.S.P.E.S.L. which attests to the positive result of the tests carried out on the prototype sample and consequently certifies that the series in question has been approved.

**The bench calibration report** is the document confirming the testing of each individual device included in the approved series. The test is carried out in the presence of an I.S.P.E.S.L. inspector who draws up the report after the test has been passed. The document gives the serial number of the valve, which is also to be found on the plate fixed to the valve body.

**There is only one copy of the report and it is therefore vital for it to be kept with the valve.**



**The declaration of conformity**, is the document issued by the manufacturer which confirms that the article in question was made in accordance with the reference standards for I.S.P.E.S.L. approval, but without having had a prototype sample approved. In practice, this is equivalent to a declaration of compliance (i.e. L. 46).

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**CALEFFI**  
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E IL RIFRESCIMENTO

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## DECHIARAZIONE DI RESPONSABILITÀ

Firenze, 10 maggio 1980 (1980/05/10)

La sottoscritta CALEFFI S.p.A., produttrice di componenti per impianti idraulici, con sede in Firenze (Via S. Felice 10), dichiara che:

### OGGETTO

- l'articolo 1 della Legge 5 marzo 1980, n. 30 "Norme per la sicurezza degli impianti";
- l'articolo 5 del D.P.R. 5 gennaio 1981, n. 441 "Regolamento di attuazione della Legge 5 marzo 1980, n. 30, in materia di sicurezza degli impianti".

### OGGI SI DICE

con la stessa di dichiarazione del costruttore CALEFFI sono stati testati i bruciatori 150°C - 180°C a combustione a gas (in base alle specifiche) secondo le sue disposizioni, i cui risultati si sono riscontrati in conformità con le disposizioni del Decreto Ministeriale 17 dicembre 1975 - 17040/1 - e, quindi, i bruciatori in esame si dichiarano per essere conformi alle norme stabilite.

(Firma)

Mario Tadini  
Incaricato  
*(Firma)*

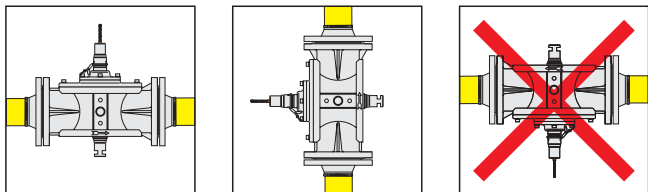
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## Installation

Before installing a fuel shut-off valve, correct sizing must be carried out by specialist technical personnel in accordance with the current legislation governing the specific applications. It shall not be used other than for its stated purpose. The fuel shut-off valve must be installed by competent technical personnel qualified in accordance with current legislation. The valve sensor must be installed at the top of the boiler or in the flow pipework within 0,5 m of the boiler, upstream of any other shut-off control.

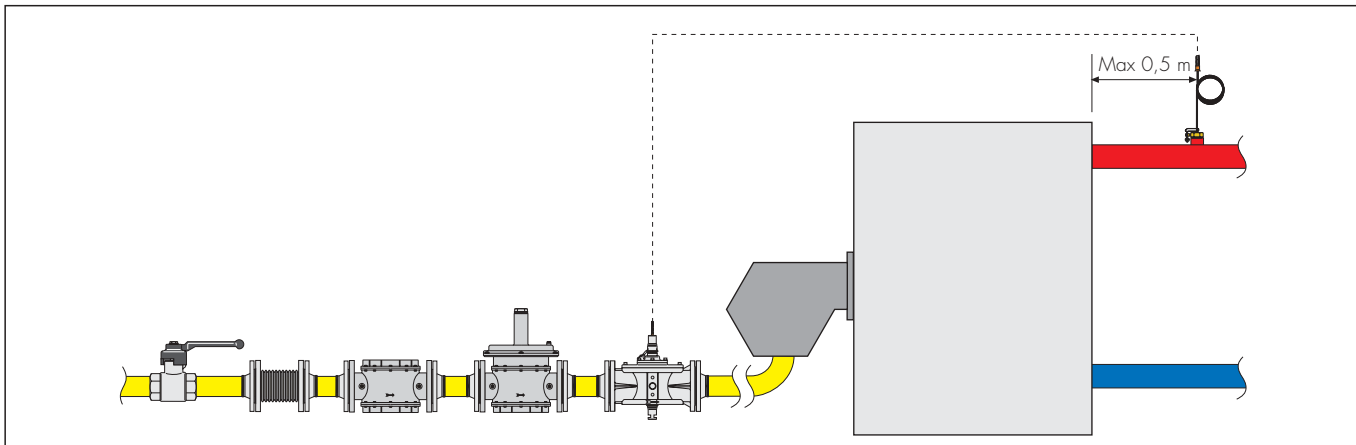
The valve is installed in the fuel supply pipework, in line with the flow direction indicated by the arrow, even if this is in the vertical position.



When installing the device, appropriate precautions must be taken to ensure that the capillary connecting the sensor to the valve does not become squashed or excessively bent.

In order to prevent tampering or accidental leaks of the sensor, the latter must be sealed in the pocket (the seal and the securing wire are included in the package).

## Application diagram



## References to I.S.P.E.S.L. standards

### Series 540, calibration 97°C

**Use: hot water systems (temperature < 100°C) - section "R" ed. 82 (R.2.A. 4)**

The fuel shut-off valve is used in the following types of open vented system:

- Hot water heating system where the safety pipe runs downwards (R3A 1.14).
- Hot water heating system in existence on the date of the coming into force of D.M. 1-12-75, where the safety pipe, although having a minimum diameter greater than 18 mm, does not permit discharge into the atmosphere of the maximum quantity of steam which could be produced in relation to the capacity of the boiler (R3A 3.1).

It is not used in sealed systems:

- In secondary circuits in heat exchangers supplied with fluids at a temperature above 100°C with controls on the secondary or where automatic on/off control is not excluded.

In these cases a heat discharge (temperature relief) valve must be installed.

### Series 540, calibration 120-140-160-180°C

**Use: superheated water systems (temperature > 100°C) - section "H" ed. 82 (H.4. 4)**

The fuel shut-off device must be used in all types of open and sealed systems except for those fired by solid fuel or with heat sources other than fire.

## SPECIFICATION SUMMARIES

### Series 540, calibrations 97 and 120°C

Manual reset fuel shut-off valve. I.S.P.E.S.L. approved. Bearing CE mark as per directive 97/23/CE (calibration 97°C). Positive action (fail-safe). Flanged connections DN 65 (from DN 65 to DN 100), PN 16. Body in aluminium. Sensor pocket connection 1/2" M. Stainless steel spring. Seals NBR. Capillary length 5 m (or 10 m). Maximum working temperature (valve side) 50°C. Maximum working temperature (sensor side) + 20% of calibrated temperature. Maximum working pressure (valve side) 50 kPa. Maximum working pressure (sensor side) 12 bar. Calibration 97°C (97 and 120°C).

### Series 540, calibrations 140 - 160 and 180°C

Manual reset fuel shut-off valve. Supplied with declaration of conformity from the manufacturer. Positive action (fail-safe). Flanged connections DN 65 (from DN 65 to DN 100), PN 16. Body in aluminium. Sensor pocket connection 1/2" M. Stainless steel springs. Seals NBR. Capillary length 5 m (or 10 m). Maximum working temperature (valve side) 50°C. Maximum working temperature (sensor side) + 20% of calibrated temperature. Maximum working pressure (valve side) 50 kPa. Maximum working pressure (sensor side) 12 bar. Calibration 140°C (140 - 160 and 180°C).

*We reserve the right to change our products and their relevant technical data, contained in this publication, at any time and without prior notice.*

