



PROFACTOR®
DER DEUTSCHE QUALITÄTSSTANDARD

EN

TECHNICAL DATA SHEET AND USER MANUAL



**PRODUCT
CODE**

**PF BS 578
PF BS 579**

**SAFETY RELIEF VALVE
FOR WATER HEATER**

1. PURPOSE AND SCOPE

The safety relief valve performs the functions of both a safety valve and a check valve. It is designed to protect water heating systems from exceeding the maximum allowable working pressure and to prevent backflow of heated water into the supply pipeline in case of low pressure or absence of water supply. When the pressure in the system exceeds the permissible value, the valve partially releases the working medium into the atmosphere or into a discharge pipeline.

The working medium may include water, air, ethylene glycol (up to 50%), propylene glycol, natural gas, LPG, and other liquid or gaseous substances that are neutral to the valve materials.

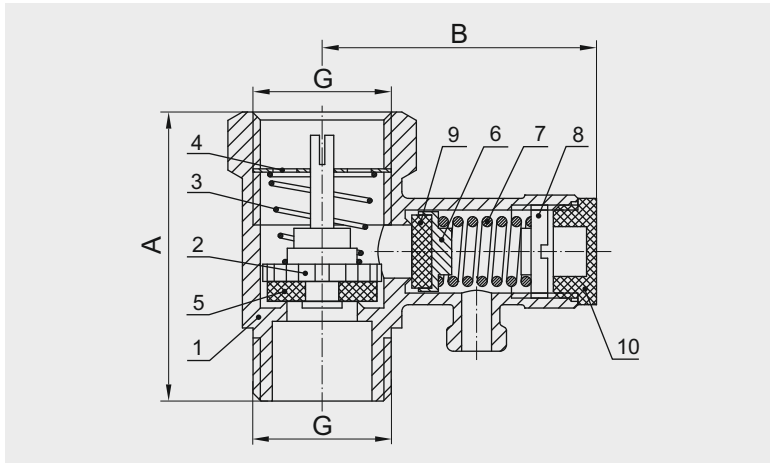
2. TECHNICAL SPECIFICATIONS

Product Code	PF BS	578	579
Nominal size	DN	15	
	G	1/2"	
Opening pressure of the safety relief valve	bar	from 6 to 18 (adjustable); factory setting: 7	$7 \pm 0,5$
Opening pressure of the check valve	bar	$0,9 \pm 0,3$	$0,7 \pm 0,3$
Maximum working medium temperature	°C	120	110
Maximum capacity of the safety system	kW	40	
A	mm	43,5	41
B	mm	41,5	45
Weight	g	105	91
Average service life	years	15	12

3. DESIGN

The safety relief valve for the water heater consists of two valves (a safety valve and a check valve) assembled in a common body. All cylindrical pipe threads are in accordance with ISO 228-1:2000, DIN 259, and all metric threads are in accordance with ISO 261:1998.

Safety relief valve for water heater PF BS 578:



- | | |
|------------------------|--------------------------------|
| 1 – Body | 6 – Safety relief valve disc |
| 2 – Check valve stem | 7 – Safety relief valve spring |
| 3 – Check valve spring | 8 – Adjusting washer |
| 4 – Perforated disc | 9 – Safety relief valve seal |
| 5 – Check valve seal | 10 – Protective cap |

The body (1) is made of brass grade CW617N (according to the European standard DIN EN 12165:2011), with nickel-plated surfaces. At the bottom, it has a 1/2" external cylindrical thread for connection to the supply pipeline; at the top, there is a 1/2" internal cylindrical thread for connection to the water heater; and on the side, there is a discharge outlet that houses the safety valve. The outlet includes a threaded hole for the adjusting washer with an internal metric thread, as well as an orifice for discharging the working fluid.

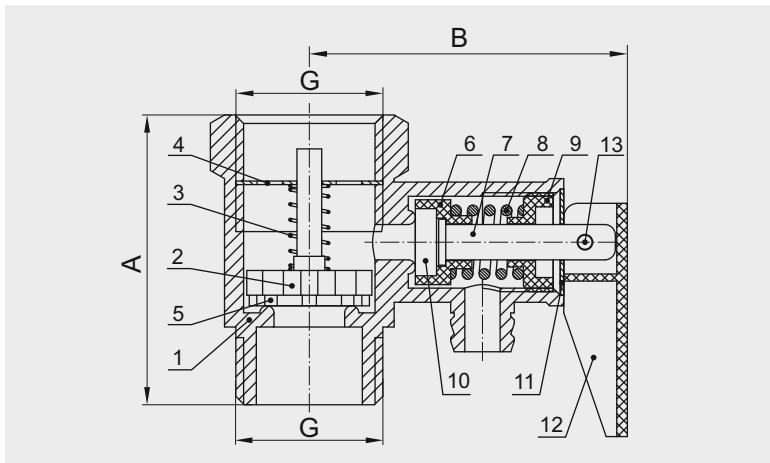
The check valve consists of a shut-off stem (2), a spring (3), a perforated disc (4), and a valve seal (5). The stem has a disc-shaped expansion at its lower end. The perforated disc has a central hole for the stem and slots for the passage of the working fluid.

This disc is screwed into the thread of the upper opening of the body and also serves as the upper stop for the spring (3). The stem (2) and disc (4) are made of brass CW617N (according to DIN EN 12165:2011), while the spring (3) is made of stainless steel AISI 304 (according to DIN EN 10088:2005).

At the lower end of the stem, a valve seal made of ethylene-propylene rubber (EPDM) is firmly attached. The safety valve is located in the side outlet of the body and consists of a valve disc (6), spring (7), adjusting washer (8), and valve seal (9). The valve disc (6) and adjusting washer (8) are made of brass CW617N (according to DIN EN 12165:2011). The adjusting washer, screwed into the body, holds the spring (7) in a partially compressed state, which in turn presses the valve disc (6) tightly against the safety valve seat inside the body.

Sealing of the flow is ensured by the valve seal (9), made of ethylene-propylene rubber (EPDM). The spring (7) is made of stainless steel AISI 304 (according to DIN EN 10088:2005). The protective cap (10), made of heat-resistant nylon, prevents the adjusting washer from accidental rotation.

Safety relief valve for water heater with manual release handle PF BS 579:



- 1 – Body
- 2 – Check valve stem
- 3 – Check valve spring
- 4 – Perforated disc
- 5 – Check valve seal
- 6 – Safety relief valve disc
- 7 – Safety relief valve stem

- 8 – Safety relief valve spring
- 9 – Safety relief valve spring support
- 10 – Safety relief valve seal
- 11 – Thrust disc
- 12 – Release handle
- 13 – Rivet

The body (1) is made of brass grade CW617N (according to the European standard DIN EN 12165:2011), with nickel-plated surfaces. At the bottom, it has a 1/2" external cylindrical thread for connection to the supply pipeline; at the top, a 1/2" internal cylindrical thread for connection to the water heater; and on the side, a branch outlet that houses the safety valve, featuring a threaded hole with internal metric thread and an orifice for discharging the working fluid.

The check valve consists of a shut-off stem (2), spring (3), perforated disc (4), and valve seal (5). The stem has a disc-shaped extension at its lower end. The perforated disc has a central hole for the stem and slots for the passage of the working fluid. This disc is screwed into the thread of the upper opening of the body and also serves as the upper stop for the spring (3). The stem (2) is made of heat-resistant glass-fiber reinforced nylon, while the disc (4) is made of stainless steel AISI 201 (according to DIN EN 10088:2005). The spring (3) is made of stainless steel AISI 304 (according to DIN EN 10088:2005).

Below the stem, a valve seal made of ethylene-propylene rubber (EPDM) is freely positioned. The safety valve is located in the side outlet of the body and consists of the valve disc (6), stem (7), spring (8), spring support (9), valve seal (10), thrust disc (11), and release handle (12). The valve disc (6), stem (7), spring support (9), and release handle (12) are made of heat-resistant glass-fiber reinforced nylon, while the spring (8) is made of stainless steel AISI 304 (according to DIN EN 10088:2005).

The spring support (9) has an external metric thread and a central hole for the stem. It is screwed into the body and holds the spring (8) in a partially compressed state, which in turn presses the valve disc (6) tightly against the safety valve seat inside the body.

Sealing of the flow is ensured by the valve seal (10) made of ethylene-propylene rubber (EPDM). The stem (7) is inserted into the valve disc (6) from the inside and has a limiting collar, allowing it to be pressed against the seat together with the disc by the spring (8).

At the protruding end of the stem, a thrust disc (11) is mounted, which is pressed into the body by the release handle (12), fixed on the stem with a rivet (13). The thrust disc is made of stainless steel AISI 201 (according to DIN EN 10088:2005).

When the release handle (12) is lifted, it presses against the thrust disc (11), pulling the stem (7) and the safety valve disc (6), thereby opening the valve.

4. PRINCIPLE OF OPERATION

When cold water flows into the system, it exerts pressure on the disc of the check valve stem, overcoming the resistance of the spring and thereby opening the check valve, allowing water to enter the heater.

If the supply of cold water stops, the spring of the check valve pushes the disc of the stem back into the seat, closing the valve and preventing the heated water from flowing back into the supply pipeline.

When the system pressure exceeds the permissible value, the pressure of the working medium inside the heater becomes greater than the elastic force of the safety relief valve spring. As a result, the spring compresses, opening the valve and discharging heated water through the outlet orifice. After the pressure decreases, the spring's elastic force pushes the safety relief valve disc back into the seat, closing it tightly.

5. INSTALLATION INSTRUCTIONS

Before installing the valve, the pipeline must be cleaned of rust, dirt, scale, sand, and other foreign particles that could affect the operation of the device.

Upon completion of installation, internal hot and cold water supply systems must be flushed with clean water until the outflow is free of mechanical impurities. The valve must be installed on the cold-water supply line to the water heater in a vertical position, ensuring that the flow direction of the working medium corresponds to the arrow marked on the valve body.

The discharge outlet must be directed downward. A drain hose can be connected to it to remove water discharged during valve operation. The drain hose must be free from kinks, bends, or deformations that could restrict water flow. It is recommended to install the safety relief valve as close as possible to the water heater.

The length of the inlet pipe must not exceed 1 meter, and bends in this section are not permitted. The nominal diameter of the pipe must correspond to that of the valve outlet. No extraction of the working medium is permitted from the inlet pipeline. There must be no shut-off valves, filters, or other fittings between the valve and the water heater that would reduce the cross-sectional area of the passage.

The valve must not be subjected to mechanical stresses from the pipeline (bending, compression, tension, torsion, misalignment, vibration, or uneven tightening of fasteners). If necessary, supports or compensators must be provided to reduce the mechanical load on the valve from the pipeline.



The misalignment of connected pipelines must not exceed 3 mm per 1 meter of length, plus 1 mm for each additional meter. The valve must be securely fastened to the pipeline, and leakage of the working fluid through the threaded connection is not permitted.

Threaded joints must be sealed using PTFE tape (polytetrafluoroethylene, fluoroplastic sealing material), polyamide thread with silicone, or flax. Care must be taken to ensure that excess sealing material does not enter the seats of the check or safety valves, as well as the discharge orifice, since this may lead to malfunction of the device.

After installation, verify correct assembly and sealing.

6. ADJUSTMENT, OPERATION, AND MAINTENANCE INSTRUCTIONS

The safety relief valve for the water heater must be operated without exceeding the temperature and pressure values specified in the Technical Specifications table.

Installation, removal, and any repair operations must be carried out only when the system is not under pressure. Allow the equipment to cool down to ambient temperature before performing any work.

The opening pressure of the safety relief valve PF BS 579 is fixed at 7 bar and cannot be changed. The factory-set opening pressure of the safety relief valve PF BS 578 is also 7 bar, but it can be manually adjusted within the range of 6 to 18 bar. To adjust the pressure, the adjusting washer must be turned using a screwdriver. Turning the adjusting washer counterclockwise decreases the opening pressure, while turning it clockwise increases it.

The safety relief valve model PF BS 579 can be manually opened using the release handle. To do this, simply lift the handle 90° upward. Disassembly of the valves by the user is prohibited.

7. WARRANTY OBLIGATIONS

The warranty period is 24 months from the date of sale to the end user. Throughout the warranty period, the manufacturer guarantees the proper operation of the product and its compliance with safety requirements, provided that the consumer observes the rules for storage, transportation, installation, operation, and maintenance of the product. The warranty covers all defects arising from the manufacturer's fault.

The warranty does not cover defects resulting from:

- Violation of storage, transportation, installation, operation, or maintenance conditions;
- Exposure to substances aggressive to the materials of the product;
- Mechanical damage;
- Damage caused by fire, natural disasters, or other force majeure circumstances;
- Damage caused by improper handling by the user;
- Evidence of unauthorized interference with the product design.

The product described in this technical passport is a technically complex device that must be installed by a specialist with appropriate qualifications and experience in handling such equipment.

Installation and commissioning must be carried out by an authorized and certified company.

Profactor Armaturen GmbH reserves the right to make design modifications that do not affect the technical specifications or functional characteristics of the device.



INTERNATIONAL WARRANTY CARD

NAME OF THE PRODUCT

PRODUCT CODE, SIZE

QUANTITY

SELLER NAME AND ADDRESS

DATE OF PURCHASE

SELLER STAMP

SELLER SIGNATURE

For the warranty term refer to the Warranty obligation clause in the technical manual

FOLD LINE

FOLD LINE

In case of any claims to the product quality the following documents should be submitted:

1. Application with customer and product details:

- Name of the customer, actual address and phone number
- Article of the product
- Reason for the claim and photo
- Plumbing system where installed (name, address, phone number)

2. Invoice copy and receipt

3. Warranty card

RETURN/EXCHANGE COMMENTS

DATE

SIGNATURE



Profactor Armaturen GmbH

Ruffinallee 9, c/o Kanzlei Antegra, 82166 Gräfelfing, Germany;
Tel.: +49 89 21546092; info@pf-armaturen.de; www.profactor.de