



PROFACTOR[®]
DER DEUTSCHE QUALITÄTSSTANDARD

EN

TECHNICAL DATA SHEET AND USER MANUAL



**PRODUCT
CODE**

**PF RVT 999
PF RVT 999C**

**UNIVERSAL
INJECTION UNIT**

1. PURPOSE AND SCOPE

The universal injection unit PROFACTOR® PF RVT 999 (PF RVT 999C) is used for the lower connection of radiators, the design of radiators and heated towel rails in single-piped and double-piped heating systems. The use of such a node increases the reliability of the system with hidden piping, as makes it possible to avoid hidden connections.

2. TECHNICAL SPECIFICATIONS

Connection to the pipeline: 3/4"M pipe cylindrical (G)

Connection to a radiator: 1/2"M pipe cylindrical (G) with ring consolidation

Thermostatic head connection: M30x1.5

Maximum working pressure: 10 bar

Medium temperature: +5°C to +80°C

Center distance between feed and return line: 40 mm

Weight: 560 g

3. DESIGN

The universal injection unit PROFACTOR® PF RVT 999 includes a thermostatic valve with presetting, a manual shut-off valve and an autonomous bypass mounted in one housing (1).

All PROFACTOR® thermostatic valves are in an accordance with DIN EN 215.

An outstanding feature of the design of the injection unit PF RVT 999 is the ability to swap thermostatic and shut-off valves. This makes it possible to connect the supply or return line to both the right branch of the housing and the left. In the design of this unit, a shut-off valve is installed at the feed.

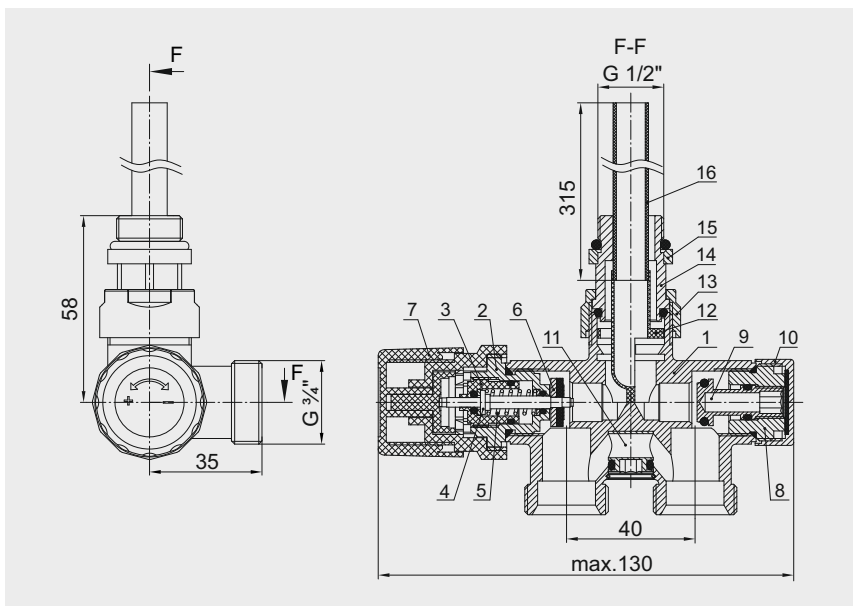
The connection of the PF RVT 999 unit to the heating device is carried out using a fitting (14) with an O-ring and does not require the use of additional sealing materials.

The universal injection unit PROFACTOR® is available both with nickel-plated external surfaces (PF RVT 999) and chrome plated (PF RVT 999C).

All pipe cylindrical threads are in an accordance with DIN 259 (ISO 228-1).

The thread for connecting the thermostatic head is in an accordance with DIN ISO 261.





- | | |
|--|---|
| 1 – Case | 9 – Spool off manual shutoff valve |
| 2 – Thermostatic valve body | 10 – Protective cap |
| 3 – Thermostat valve presetting sleeve | 11 – Stand-alone bypass |
| 4 – Stock | 12 – Separator of the feed and the return flows |
| 5 – Spring | 13 – Flare nut |
| 6 – Shutter of the thermostatic valve | 14 – The union with an o-ring |
| 7 – Manual adjustment flywheel | 15 – Thrust ring |
| 8 – Body off manual shut-off valve | 16 – Probe |

4. MATERIALS

Parts (1, 10, 13, 14, 15) — Brass CW617N (DIN EN 12165) nickel-plated surfaces (PF RVT 999) or with chrome plating (PF RVT 999C)

Parts (2, 6, 8, 9) — Brass CW617N (DIN EN 12165)

Bushing (3) and Separator (12) — POM

Stock (4) and Spring (5) — AISI 304 Stainless steel (DIN EN 10088)

Manual adjustment flywheel (7) — ABS

Autonomous Bypass (11) — Brass CW614N (DIN EN 12165) with nickel plating surfaces

Probe (16) — PA6

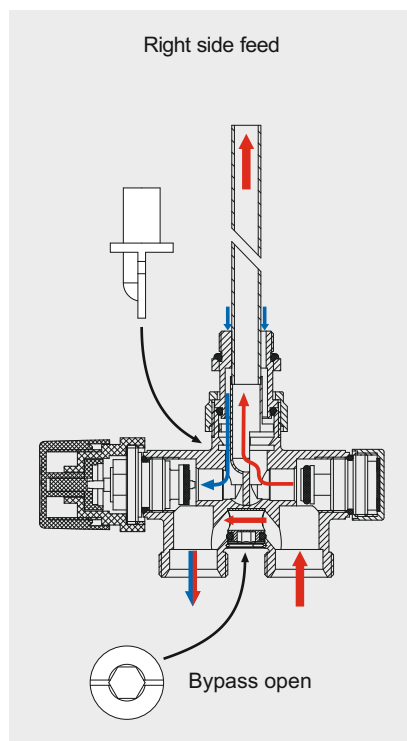
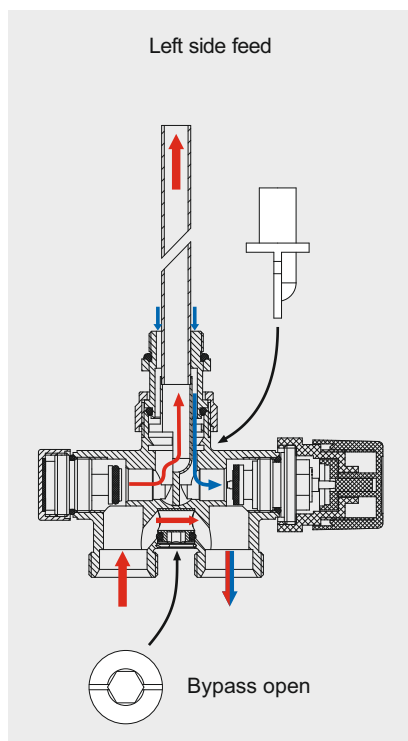
5. PRINCIPLE OF WORK AND WAYS OF CONNECTION

The coolant enters the injection unit PF RVT 999 and, passing through the manual shut-off valve, is sent directly to the probe (16) using a separator (12). Using a probe, the coolant rises to the top of the heater.

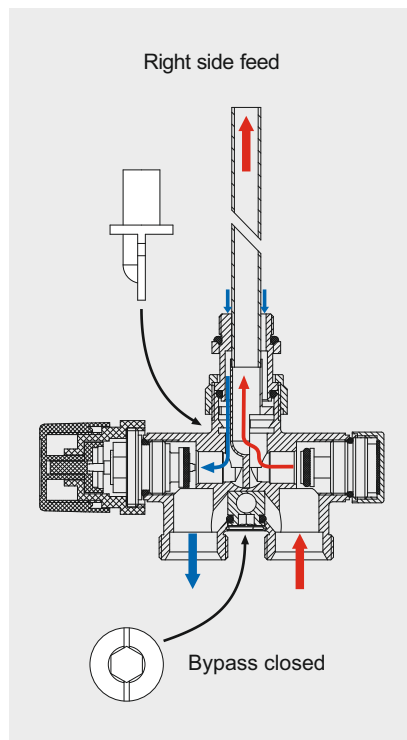
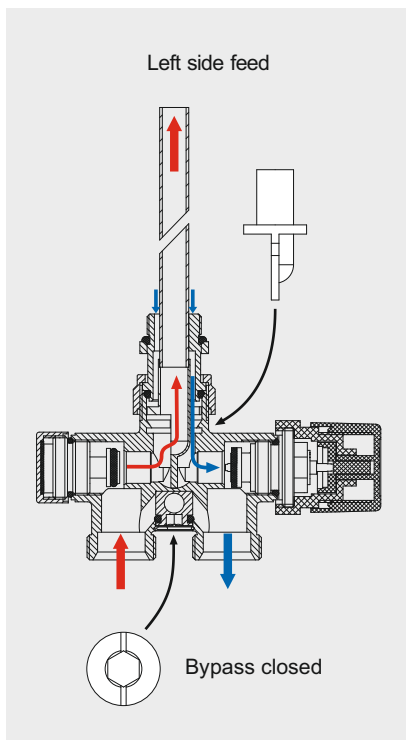
The return flow of the coolant flows around the probe (16) from the outside and through special channels in the fitting (14) and the separator (12) is output to the thermostatic valve, and then to the return pipe.

In a single-pipe heating system, the universal injection unit PF RVT 999 / PF RVT 999C is used with an open bypass, and in a double-pipe heating system with a closed bypass.

Connection method for single pipe heating system:



Connection method with double-pipe heating system:



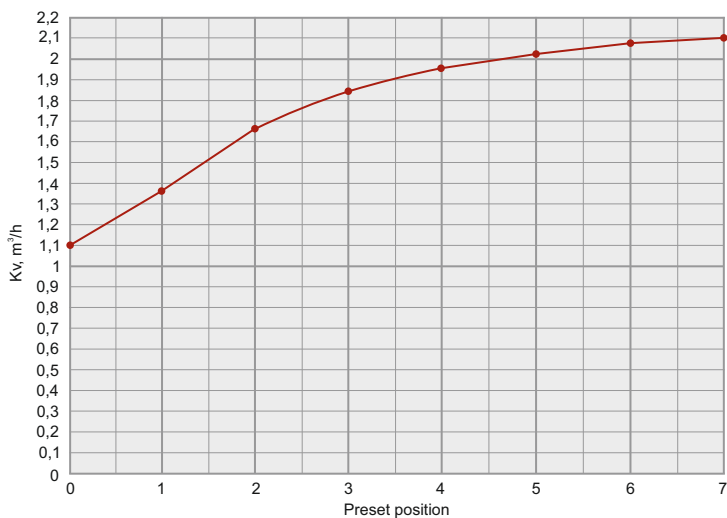
6. HYDRAULIC CHARACTERISTICS

Pre-setting the coolant flow rate on a thermostatic valve:

Single pipe system (bypass open):

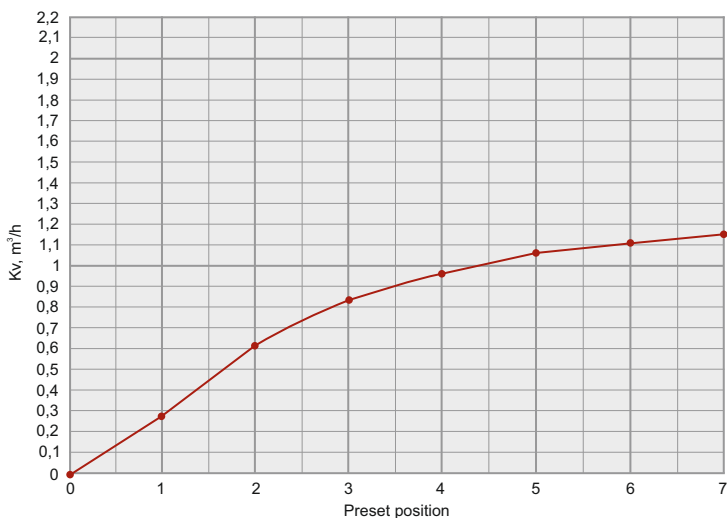
Bypass throughput, Kv: 1.1 m³/h

Preset Position	0	1	2	3	4	5	6	7
Kv, m ³ /h	1,1	1,36	1,66	1,84	1,95	2,02	2,07	2,1



Double-pipe system (Bypass closed):

Preset Position	0	1	2	3	4	5	6	7
Kv, m³/h	0	0,28	0,61	0,83	0,97	1,06	1,11	1,15



7. INSTALLATION INSTRUCTIONS

Before installing the universal injection unit PF RVT 999, the pipeline must be cleaned of rust, dirt, scale, sand and other foreign particles that affect the performance of the product. Heating, internal cold and hot water supply systems, boiler room pipelines at the end of their installation must be flushed with water until it comes out without mechanical suspensions.

The product should not experience stress from the pipeline (bending, compression, tension, torsion, distortions, vibration, misalignment of the nozzles, uneven tightening of the fasteners). If necessary, supports or compensators should be provided to reduce the load on the product from the pipeline. The misalignment of the connected pipelines should not exceed 3 mm with a length of up to 1 m plus 1 mm for each subsequent meter.

The universal injection unit PF RVT 999 is installed horizontally under the heater, with the probe (16) pointing vertically upwards. When installing the product, the fitting (14) with the probe (16) fixed in it is first connected to the heating device. The probe must be inserted inside the radiator / heated towel rail from below, then screw in the fitting (14). This connection does not require additional sealing materials.

The supply pipe can be connected to either the left or right branch of the PF RVT 999 assembly. It is recommended to install the manual adjustment valve on the supply line, thermostatic — on the return. If according to the project it is necessary to change the supply and return lines in places, then the tuning and thermostatic valves should be interchanged, as well as the separator of the supply and return flows (12), turning it 180° (see diagrams in paragraph 5)!

It is necessary to check the integrity of the rubber o-rings of the fitting. After tightening by hand, tighten the union nut (13) with a wrench no more than ½ turn. The universal injector assembly PF RVT 999 is connected to the pipeline using 3/4" Euroconus fittings (PROFACTOR® PF MIP 271 and PF MIP 272) and also does not require additional sealing materials.

The product must be securely fixed to the pipeline, the flow of the working fluid through the threaded part is not allowed.

Check for proper installation. After installation, a manometric tightness test of the system should be carried out. This test allows you to protect the system from leaks and damage associated with them.

When using the product in moving systems with a high content of mechanical impurities, a mechanical cleaning filter should be installed in front of the PF RVT 999 assembly, as mechanical particles can limit the shut-off and control ability of the valves and impair their tightness.



8. ADJUSTMENT, OPERATION AND MAINTENANCE INSTRUCTIONS

The universal injection units PROFACTOR® PF RVT 999 / PF RVT 999C must be operated without exceeding the pressure and temperature specified in paragraph 2.

Installation and dismantling of the product, as well as any repair operations should be carried out in the absence of pressure in the system. Allow equipment to cool down to the ambient temperature.

To preset the maximum flow rate of the coolant on the thermostatic valve, you need to: remove the manual adjustment flywheel (7), then rotate the tuning sleeve (3) to combine one of the seven numbers indicated on it with the mark on the thermostatic valve body (2).

9. WARRANTY OBLIGATIONS

The warranty period is 12 months from the date of sale to the end user. During the warranty period, the manufacturer guarantees the proper operation of the product and its compliance with safety requirements, provided that the consumer observes the prescribed rules for storage, transportation, installation, operation, and maintenance. The warranty covers all defects resulting 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 product materials;
- Evidence of mechanical damage;
- Damage caused by fire, natural disasters, or other force majeure circumstances;
- Damage resulting from improper actions by the user;
- Evidence of unauthorized interference with the product design.

The product described in this technical passport is a technically sophisticated device that must be installed by a qualified specialist experienced with this type of 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 characteristics or functional features of the product.



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



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