Profactor Armaturen GmbH

EN

PROFACTOR®
DER DEUTSCHE QUALITÄTSSTANDARD

TECHNICAL DATA SHEET AND USER MANUAL

PRODUCT CODE

PF RVM 395.15
PF RVM 395.20
PF RVM 395.25

THERMOSTATIC MIXING VALVE

1. PURPOSE AND SCOPE

Thermostatic mixing valve PROFACTOR® PF RVM 395 is used in household hot water systems. The valve allows to instantly mix incoming liquids (hot and cold water) and provides a stable temperature of the mixed outlet water, independent of the pressure changes, flow and temperature of the liquids at the mixer inlet. The temperature of the outlet water is set and controlled manually by the user. The valve can also be used for dividing the flow. The PF RVM 395 valve is not a shut-off valve and does not provide a complete shut-off of hot or cold water.

Thermostatic mixing valve can be installed on the piping transporting fluids that are non-aggressive to valve materials: water, glycol-based solutions with maximum glycol content of up to 50%.

2. TECHNICAL SPECIFICATIONS

Product Code	PF RVM	395.15	395.20	395.25
Nominal size	DN	15	20	25
	G	1/2"	3/4"	1"
Maximum operating pressure	bar	14		
Maximum pressure difference at inlet between cold and hot water	bar	3		
Flow factor Kvs with Δp=1 bar	m^3/h	1,47	1,9	2,05
Mixed water temperature control range	°C	25°C to 55°C	38°C to 60°C	
Maximum temperature of hot water at inlet	°C	85°C		
Temperature control accuracy	°C	±2°C		
Average service life	years	15		
A	mm	100	131	134
B	mm	117	153	160
Weight	g	480	1210	1375

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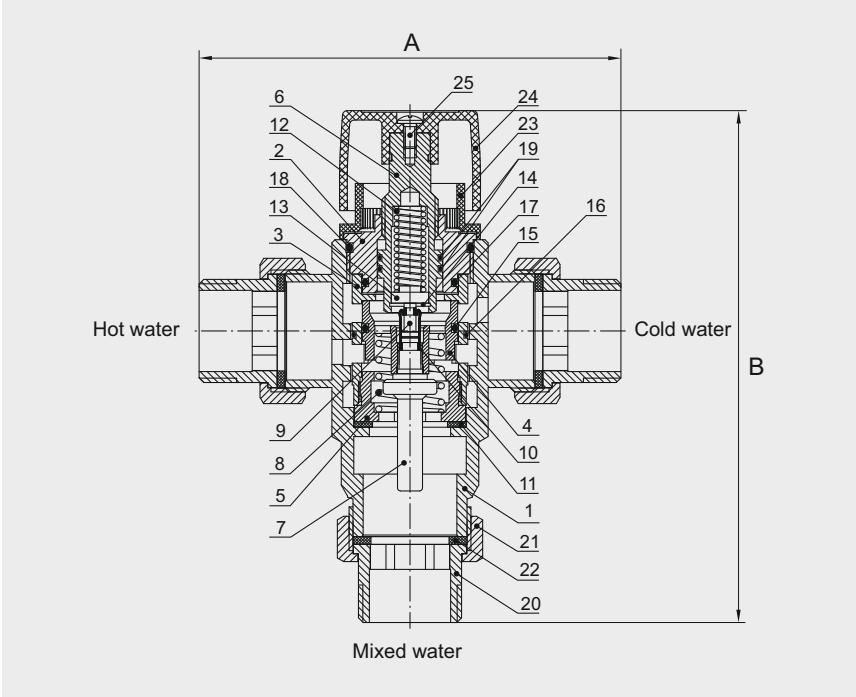
3. DESIGN

The product is in an accordance with the requirements of DIN EN 1287. All cylindrical pipe threads are in an accordance with ISO 228-1 and all metric threads are in an accordance with ISO 261.

The inside chamber of the thermostatic sensor is filled with liquid, the sensor works based on the principle of thermal expansion. Thermostatic mixing valves PF RVM 395 use Vernet™ temperature sensors.



1 – Body
2 – Bushing
3 – Thermostat capsule
4 – Plunger
5 – Base
6 – Adjusting spindle
7 – Thermostatic sensor
8 – Thermostat capsule spring
9 – Stem
10 – Connector
11 – Thermostat capsule gasket
12 – Damper spring
13 – Bearing plate
14 – Spring seat
15, 16, 17, 18, 19 – O-rings
20 – Union
21 – Union nut
22 – Union gasket
23 – Handle base
24 – Handle
25 – Screw

4. MATERIALS

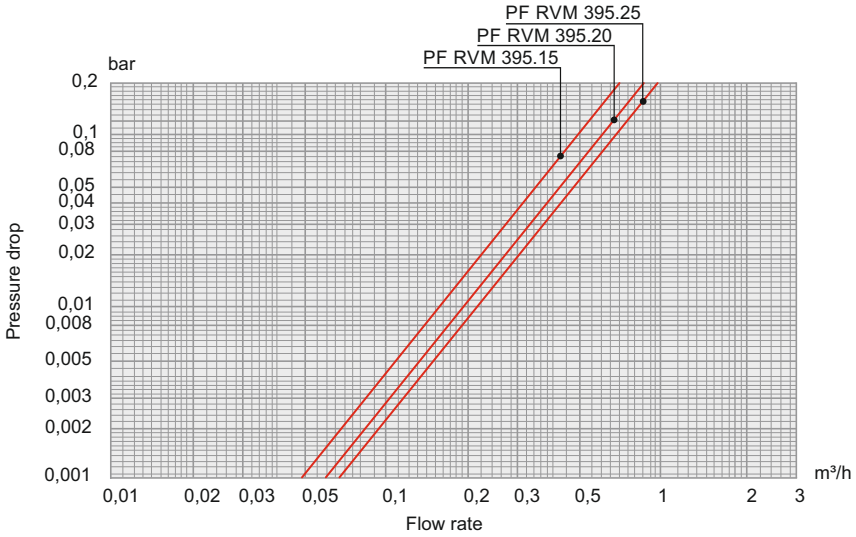
Parts 1, 20, 21 — CW617N (DIN EN 12165-2011) with chrome-plated surfaces.
Parts 2, 3, 4, 5, 6, 13 — CW614N (DIN EN 12165-2011) with nickel-plated surfaces.
Parts 8, 9, 12, 14 — AISI 304 (DIN EN 10088-2005).
Parts 10, 11, 15, 16, 17, 18, 19, 22 — EPDM.
Parts 23, 24 — ABS.

5. PRINCIPLE OF OPERATION

The required temperature of the mixed water is set manually by rotating the handle. Internal temperature control of the mixed water in the valve is carried out automatically due to the presence of a temperature detector, which reacts with proportional expansion or contraction upon coming into contact with the mixed water, depending on the set required value of the mixed water temperature.

6. HYDRAULIC SPECIFICATIONS

Diagram of the pressure drop dependency on flow rate:



7. INSTALLATION INSTRUCTIONS

Before the valve installation the pipe must be clean of rust, dirt, scale, sand, and other foreign matter that affect the product performance. Heating, heat supply, hot and cold-water supply systems must be washed with water after the installation until water comes out with no mechanical impurities.

Thermostatic mixing valve PF RVM 395 can be installed in any position (horizontally or vertically) connecting with a parallel pipe thread, however the hot, cold and mixed-water flow direction has to match the markings on the valve body (blue mark indicates the cold water inlet, red mark — the hot water inlet, bottom opening — mixed water outlet).

Proper functioning of PF RVM 395 thermostatic mixing valve is only possible when the temperature of inlet cold and hot water is respectively lower and higher of the requested temperature.

When PF RVM 395 valve is used for dividing the flow, the water is supplied to the bottom outlet, the supply pipe must be connected to the inlet with a blue mark and the return pipe — to the red mark inlet.

PF RVM 395 valve should not experience the stress from the pipe (bending, compression, elongation, torsion, skewness, vibration, misalignment of connectors, uneven tightening of the fasteners). If necessary, supports or compensators should be provided to reduce the load on the valve from the pipe. Misalignment of connected pipes should not exceed 3 mm with the length of up to 1 m, plus 1 mm for each subsequent meter.

Thermostatic mixing valve PF RVM 395 should be securely attached to the pipe, the leakage of the working fluid through the threaded parts is not allowed. Threaded connections must be completed using sealing material for winding up the threads — PTFE-tape (PTFE — polytetrafluoroethylene, Teflon sealing material), polyamide thread with silicone or flax. It is necessary to ensure that excess sealing material does not reach the regulating parts of the valve.

To prevent damage to regulating parts it is advised to install mechanical filtration systems and check valves at the thermostatic mixing valve PF RVM 395 water inlets.

In an accordance with the German standard DVGW-W551, volume of water between the thermostatic mixing valve PF RVM 395 and the nearest water tap must not exceed 3 liters to avoid spread of the Legionella bacteria. Therefore, the maximum pipe length between the thermostatic mixing valve PF RVM 395 and the nearest water tap is 17 m for a pipe with a diameter of 1/2", 10 m for a pipe with a diameter of 3/4" and 6 m for a pipe with a diameter of 1". Inspect the accuracy of installation.

8. OPERATING AND MAINTENANCE

Thermostatic mixing valve PF RVM 395 should be operated without exceeding the pressure and temperature found in the technical specifications table. It is advised to avoid difference of more than 3 bar in pressure of incoming hot and cold-water.

Thermostatic mixing valves PF RVM 395 provide the desired mixed outlet water temperature in a preset temperature range, with temperature of 18°C for inlet cold water and 60°C for inlet hot water.

If the temperature of the thermostatic mixing valve inlet hot and/or cold water is different from these values, it is recommended to recalibrate the valve. To do this, use the handle to adjust the outlet water temperature so as to be equal to the minimum: 25°C for the PF RVM 395.15 model, 38°C for the PF RVM 395.20 and PF RVM 395.25 models (measured by a thermometer in an outlet water stream). Unscrew and take off the handle, then reinstall it setting the «min» position opposite of the protruding control mark at the base of the handle. Fix the handle using a locking screw.

Installation and dismounting of equipment, as well as any repair operation must be carried out with no pressure in the system. Allow equipment to cool down to ambient temperature.

It is advised to perform regular maintenance of PF RVM 395 valves to remove scale without the use of solvents. To do this, unscrew the locking screw and take off the handle. Using the wrench, unscrew the bushing with the adjusting spindle. Take out the thermostatic capsule, wash with water and return to the initial position. Reassemble the valve. If water softener is used at the hot water inlet, regular valve maintenance is not necessary.

Recalibration of the thermostatic mixing valve might be necessary after reassembly.

9. WARRANTY OBLIGATIONS

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

The product described in this technical manual is a technically complex device that must be installed by a qualified specialist with appropriate experience working 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 changes to the product design that do not affect its technical characteristics or functional features.

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 detailes:
- 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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