Profactor Armaturen GmbH

EN

PROFACTOR®
DER DEUTSCHE QUALITÄTSSTANDARD

TECHNICAL DATA SHEET AND USER MANUAL

ADJUSTABLE MANIFOLD BYPASS

PRODUCT CODE

PF MB 845

1. PURPOSE AND SCOPE

The adjustable manifold bypass is used in autonomous circulation systems for underfloor heating and radiator heating, consisting of pump-mixing units and manifold groups.

The bypass serves to redirect the flow of the heat transfer medium from the supply manifold to the return manifold when the flow rate through the circulation loops decreases below the value set on the bypass valve.

Using a bypass with a bypass valve allows maintaining the hydraulic characteristics of the autonomous circulation system regardless of the operation of valves that control individual circulation loops of the manifold group.

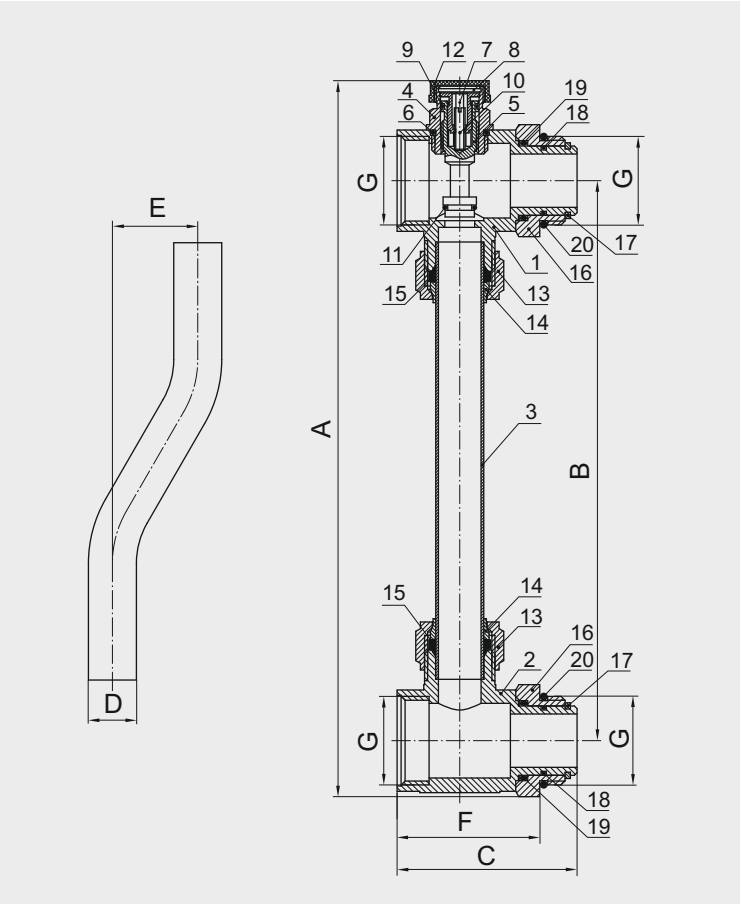
The bypass maintains the circulation of the heat transfer medium in the system even when all circulation loops of the manifold group are completely closed, and it also protects the pump–mixing unit from overloads. As a heat transfer medium, liquids that are non-aggressive to the materials of the product can be used: water or glycol-based solutions. The maximum glycol concentration is 40%.

2. TECHNICAL SPECIFICATIONS

Product Code	PF MB	845
Nominal Size	DN	25
	G	1"
Nominal Pressure, PN	bar	10
Maximum Temperature of the Heat Transfer Medium	°C	+110°C
Maximum Ambient Temperature	°C	+50°C
A	mm	268,5
B	mm	210
C	mm	67,5
E	mm	32
F	mm	53,5
Outer Diameter of the Bypass Tube, D	mm	18
Weight	g	910
Expected Service Life	years	15

PROFACTOR ARMATUREN GMBH
Ruffiniallee 9, c/o Kanzlei Antegra, 82166 Gräfelfing, Germany. Telefon: +49 89 21546092
E-mail: info@pf-armaturen.de, Internet: www.profactor.de

3. DESIGN



1 – Upper bypass tee
2 – Lower bypass tee
3 – Bypass tube
4 – Bypass valve body
5 – Shut-off stem
6, 9, 11, 18, 19, 20 – Sealing rings
7 – Hexagonal adjusting sleeve
8, 17 – Spring rings
10 – Limit screw
12 – Protective cap
13 – Union nut
14 – Compression ring
15 – Bypass tube gasket
16 – Nut with external thread

The upper (1) and lower (2) bypass tees have, on one side, an internal cylindrical thread for connection to a pipeline or a pump-mixing unit, and on the other side, a mounting seat for the nut with external thread (16) for connection to the manifold group, as well as a lateral outlet with an external cylindrical 3/4" thread for connection to the bypass tube (3).

The upper tee also has a top opening where the bypass valve body (4) is installed. The connection is sealed with an O-ring (6) and adhesive. The bypass valve body has an internal worm thread along which the shut-off stem (5) moves.

The stem has a blind hexagonal socket at the top and a disc-shaped extension at the lower end with an O-ring (11), which ensures tight sealing of the flow when the bypass valve is closed. The sealing of the stem is provided by an O-ring (9).

At the top of the bypass valve body, there is a mounting seat for the hexagonal adjusting sleeve (7), which is permanently engaged with the stem (5). The sleeve is fixed by a spring ring (8) and cannot move vertically. The sleeve has a central hole for a steel limit screw (10). The protective cap (12) protects the bypass valve from external contamination.

The bypass tube (3) is connected to the upper and lower tees using union nuts (13) and compression rings (14). These connections are sealed with gaskets (15). The connection nuts with external threads (16) are secured to the ends of the upper and lower bypass tees with spring rings (17).

The O-rings (18 and 19) ensure tight sealing of the nuts (16) on the upper and lower bypass tees, while the O-ring (20) seals the connection of the bypass to the supply and return manifolds.

The upper (1) and lower (2) bypass tees, bypass valve body (4), union nuts (13), and connection nuts with external threads (16) are made of brass grade CW617N (according to European standard DIN EN 12165-2011) with chrome-plated surfaces. The shut-off stem (5), adjusting sleeve (7), and compression rings (14) are made of brass CW614N (DIN EN 12165-2011).

PROFACTOR ARMATUREN GMBH
Ruffiniallee 9, c/o Kanzlei Antegra, 82166 Gräfelfing, Germany. Telefon: +49 89 21546092
E-mail: info@pf-armaturen.de, Internet: www.profactor.de

The bypass tube (3) is made of chrome-plated copper. The spring rings (8, 17) are made of stainless steel grade AISI 304 according to DIN EN 10088-2005. The protective cap (12) is made of impact-resistant technical thermoplastic resin (acrylonitrile butadiene styrene, ABS). All sealing components (6, 9, 11, 15, 18, 19, 20) are made of ethylene propylene diene monomer rubber (EPDM).

All cylindrical pipe threads comply with ISO 228-1:2000, DIN 259, and all metric threads comply with ISO 261:1998.

4. OPERATING PRINCIPLE

The flow rate through the bypass valve is adjusted by rotating the adjusting sleeve (7) using a 5 mm hex key.

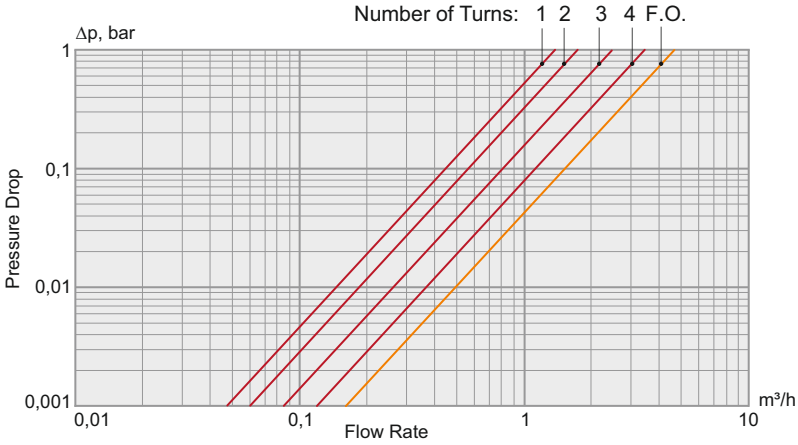
When the sleeve is rotated clockwise, the shut-off stem (5) moves downward onto the seat, closing the valve. Conversely, when the sleeve is rotated counterclockwise, the stem rises, opening the valve.

5. HYDRAULIC CHARACTERISTICS

Flow capacity of the bypass valve:

Number of Turns	1	2	3	4	(Full Opening)
Kv, m^3/h	1,3	1,75	2,40	3,35	4,50

Pressure Loss Curve for the Bypass Valve:



6. INSTALLATION INSTRUCTIONS

The 1" internal cylindrical thread in the tees is intended for connection to a pipeline or a pump–mixing unit. These connections must be made using additional sealing rings or a thread-sealing material such as PTFE-tape (polytetrafluoroethylene, fluoroplastic sealing material), polyamide thread with silicone, or flax fiber.

The nuts with external threads (16) on the opposite side of the bypass tees are designed for connection to the manifold group. These connections are sealed with O-rings (20) and do not require additional sealing materials.Before installing the autonomous circulation system, the pipeline must be thoroughly cleaned of rust, dirt, scale, sand, and other foreign particles that could affect the performance of the device.

After installation, heating and heat supply systems must be flushed with water until it runs clear and free of suspended solids. The autonomous circulation system must be installed vertically, at a height of at least 300 mm from the floor, using brackets mounted on the body of the manifold group, either inside a manifold cabinet or on a wall, connected to the pipeline via cylindrical pipe threads.

It is not recommended to mount the system directly onto load-bearing structures or building elements to prevent sound and vibration transmission. Avoid any mechanical damage to the autonomous circulation system and protect it from contact with construction materials such as plaster or cement mixtures.

The dimensions of the manifold cabinet vary depending on the number of manifold outlets and the size of the pump-mixing unit. The autonomous circulation system must not be subjected to loads from the pipeline such as bending, compression, tension, twisting, misalignment, vibration, or uneven tightening of fasteners.

If necessary, supports or compensators should be provided to reduce the load on the unit 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 entire system must be securely connected to the pipeline, using a sealing material such as PTFE tape, polyamide thread with silicone, or flax fiber. Ensure that excess sealing material does not enter the shut-off and regulating mechanisms of valves, taps, or cocks, as this may cause malfunction.

Finally, check the correctness of the installation before operation.

After installation, the system must undergo a pressure (manometric) leak test. This test ensures the system's tightness and prevents potential leaks and related damage. Before performing the test, make sure that all union nuts are securely tightened.

When using the autonomous circulation module in a system that contains a high concentration of mechanical impurities, a mechanical filter must be installed before the pump–mixing unit.

7. OPERATION AND MAINTENANCE

The adjustable through-type bypass must be operated without exceeding the pressure and temperature limits specified in the technical specifications table.

Installation and removal of the device, as well as any repair or adjustment operations, must be carried out only when the system is depressurized. Allow the equipment to cool down to ambient temperature before performing any work.

The adjustment of the bypass valve is performed by turning the adjusting sleeve (7) with a 5 mm hex key.

— Turning the sleeve clockwise decreases the flow of the heat transfer medium.

— Turning it counterclockwise increases the flow.

To set up the valve:

1. Completely close the bypass valve. Remove the protective cap, then use a 5 mm hex key to turn the adjusting sleeve clockwise until it stops.

2. Turn the sleeve counterclockwise by the required number of turns for your specific system (according to the flow and pressure loss diagram).

3. Fix the adjustment by tightening the limit screw (10) until it stops.

The fully tightened limit screw prevents accidental over-opening of the bypass valve, ensuring stable operation. After adjustment, reinstall the protective cover.

8. 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 user observes all storage, transportation, installation, operation, and maintenance rules. The warranty covers all defects that arise due to the manufacturer's fault.

The warranty does not cover defects that occur as a result of:

— Violation of storage, transportation, installation, operation, or maintenance conditions;
— Exposure to substances aggressive to the product's materials;
— Signs of mechanical damage;
— Damage caused by fire, natural disasters, or other force majeure circumstances;
— Damage resulting from improper handling or misuse by the user;
— Evidence of unauthorized modification or interference with the product's design.

The product described in this technical data sheet is a technically complex device that must be installed by a qualified specialist with appropriate experience in handling 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 device.

PROFACTOR ARMATUREN GMBH
Ruffiniallee 9, c/o Kanzlei Antegra, 82166 Gräfelfing, Germany. Telefon: +49 89 21546092
E-mail: info@pf-armaturen.de, Internet: www.profactor.de

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** _____

Profactor Armaturen GmbH

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