MAPAG
Butterfly valve - Type W
For all temperature applications
Installation, Maintenance and
Operating Instructions
Read these instructions first!
These instructions provide information about safe handling and operation of the valve.
If you require additional assistance, please contact the manufacturer or manufacturer’s representative.
Addresses and phone numbers are printed on the back cover

Save these instructions!

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1 Method of operation

The purpose of MAPAG Type W butterfly valves is to shut off pipes and to regulate the flow of products in both directions.

Type W butterfly valves are provided with a metal O-ring. The butterfly valve can be used for liquids or gases between -60 °C and +600 °C, depending on the medium and the configuration of your system. Information about the exact application area can be found in the documentation compiled for your order.

The butterfly valve has been designed to have double-offset bearings in order to guarantee that the sealing element has a long useful life. There is practically no friction when it closes.

MAPAG Type W butterfly valves are operated by an actuator (manual, electric, pneumatic or hydraulic). There is a mark on the actuator shaft as well as one on the O-ring side of the body. The valve is closed when the two marks are in line with each other (Fig. 1).

2 Cleaning and maintenance

Type W butterfly valves require practically no maintenance.

Check the butterfly valve regularly to make sure it is not leaking. You should replace the sealing element (321) after two years at the latest (Fig. 2). When you are doing this, make sure you also check the condition of the other seals, i.e. the O-rings (304, 470), the packing (451) and the preliminary bearing seal (475), if there is one. Do not forget to check the sealing rings (301, 303) and the retaining ring (310) too. In some versions of the Type W butterfly valve the sealing ring (301) is screwed directly to the body. The ring (303) and the retaining ring (310) are not included in this case.

In order to avoid long shut downs during maintenance operations, you should order the sealing element (321) in good time. A better solution is to keep the sealing element (321) in stock.

The medium carries contaminants that may have an adverse effect on the tightness of the butterfly valve, you will need to clean the sealing surface of the shut-off disc on a regular basis. Contamination can damage the sealing surface of the shut-off disc or the sealing element. Do not use any agents to remove residues that might attack the sealing surface or the sealing element. Use water, soap suds or other liquid solvents and a soft, lint-free cloth instead.

CAUTION: Do not under any circumstances use files or sandpaper. And do not use any cleaning agents that might cause undesirable chemical reactions with the residues of the medium or might attack the sealing elements

If you outsource the butterfly valve cleaning operation, it is essential that you draw attention to the dangers of the medium being used as well as to any residues that may be present.

2.1 Replacement of the sealing element

Please proceed as follows when you want to replace the sealing element (321, Fig. 3) on the butterfly valve:

1. Remove the butterfly valve when it is in the closed position. Instructions on how to remove the valve can be found in section 1 of the instruction manual 2 B 70.
2. Secure the butterfly valve in position, so that it cannot move or tip over.
3. Open the shut-off disc by moving it to the left, so that it is in the 180° position and the sealing ring is exposed (Fig. 4).

If you turn the shut-off disc by moving it to the right or by turning it beyond the 180° position, the sealing element will be damaged. The shut-off disc must not hit against the body.

Now secure the shut-off disc – for example with wooden wedges – in order to eliminate the danger of crushing. Make sure that you do not damage the sealing area of the shut-off disc while you are doing this.

4. The remaining operations you need to carry out in order to remove the sealing element depend on the configuration and – if relevant – the version of your butterfly valve. You will find the instructions for all the flange configurations in section 2.1.1 (Fig. 5). There are two different versions in the case of the monof-lange and sandwich configuration. The instructions for replacing the sealing element (Fig. 6) in the version where the sealing ring (301) is screwed directly to the body can be found in section 2.1.2, while the instructions for the version with the retaining ring are explained in section 2.1.3.

2.1.1 Replacement of the sealing element in the flange configuration

Remove the bolt (Fig 6: 306). You can now pull the following parts off one after the other and replace them if necessary:
1. the retaining ring (310),
2. the ring (303),
3. the sealing ring (301),
4. the O-ring (304) and
5. the sealing element (321).

Installation is carried out by completing the same operations in the opposite order.

Check that the butterfly valve is tight before fitting it again. Information about the installation operations can be found in section 1 of the instruction manual 2 B 70.
2.1.2 Replacement of the sealing element in the monoflange (Fig. 7) sandwich configuration, where the sealing ring is attached directly to the body

Remove the bolt (306, Fig. 8). You can now pull the following parts off one after the other and replace them if necessary:
1. the sealing ring (301),
2. the O-ring (304) and
3. the sealing element (321).

Installation is carried out by completing the same operations in the opposite order.

Check that the butterfly valve is tight before fitting it again. Information about the installation operations can be found in section 1 of the instruction manual 2 B 70.

Fig. 7 Monoflange / sandwich configuration

Fig. 8 Changing the sealing element

2.1.3 Replacement of the sealing element in the monoflange / sandwich (Fig. 9) configuration with a retaining ring

Remove the retaining ring (310, Fig. 10). To do this on larger butterfly valves (with a nominal width of 500 mm and upwards), you first of all have to undo a bolt (313) in order then to be able to take out the clamping element (311) and the spring lock washer (312). You can now pull the following parts off one after the other and replace them if necessary:
1. the sealing ring (301),
2. the O-ring (304) and
3. the sealing element (321).

Installation is carried out by completing the same operations in the opposite order.

Check that the butterfly valve is tight before fitting it again. Information about the installation operations can be found in section 1 of the instruction manual 2 B 70.

Fig. 9 Monoflange / sandwich configuration with a retaining ring

Fig. 10 Changing the sealing element
2.2 Replacement of mechanical parts on the actuator side

Proceed as follows to replace mechanical parts on the actuator side:

1. Start off by removing the adapter (Fig. 14; 501).
2. Open the shut-off disc by moving it to the left (Fig. 11), so that it is in the 180° position and the sealing ring is exposed.

   If you turn the shut-off disc by moving it to the right or by turning it beyond the 180° position, the sealing element will be damaged. The shut-off disc must not hit against the body. Now secure the shut-off disc - for example with wooden wedges - in order to eliminate the danger of crushing. Make sure that you do not damage the sealing area of the shut-off disc while you are doing this.

3. Undo the two bolts (448, Fig. 12). Now remove the lock washers (444) and the locking plates (447). In the case of smaller butterfly valves (up to a nominal width of 150), undo the two nuts (445) at this point instead of the bolts and the lock washer.

4. Undo the nut (455), the washer (456) and the disc spring (457) on the locking bolt (458).
5. Pull out the gland (450), the actuator shaft (401), the packing (451), the bottom ring (452) and the spacing ring (428) if there is one in your configuration. You can now take out the bearing seats (424), the spacing ring (429) between them and the preliminary bearing seal (475) if there is one in your configuration. The mechanical parts are now accessible and can be replaced if necessary.
6. The rest of the installation process is carried out by completing the same operations as before, except in the opposite order. Please do not tighten the nut (455) to the locking bolt (458) until it reaches the stop (Fig. 13), because the disc spring (457) will be damaged if you do. The tighter you screw on the nut (455), the higher the resistance on the actuator shaft (401, Fig. 14). Check that the butterfly valve is tight before fitting it again. Information about the installation operations can be found in section 1 of the instruction manual 2 B 70.

2.3 Replacement of mechanical parts on the cover side

Proceed as follows to replace mechanical parts on the cover side:

1. Open the shut-off disc by moving it to the left, so that it is in the 180° position and the sealing ring is exposed.
If you turn the shut-off disc by moving it to the right or turn it further than the 180° position, the sealing element will be damaged. The shut-off disc must not hit against the body. Now secure the shut-off disc - for example with wooden wedges - in order to eliminate the danger of crushing. Make sure that you do not damage the sealing area of the shut-off disc while you are doing this.

2. Remove the two bolts (448). Now take off the lock washers (444) and the locking plates (447). In the case of smaller butterfly valves (up to a nominal width of 150), undo the two nuts (445) at this point instead of the bolts and the lock washer.

3. Remove the bolts (432, Fig. 15) and the cover (430) from the opposite side of the butterfly valve from the actuator.

4. You can now pull out the thrust bearings (404), the O-ring (470), the shaft (402), the bearing seats (424), the spacing ring (429) and — if they are included in your configuration — the preliminary bearing seal (475) and the shaft (402) and replace them if necessary.

5. Installation is carried out by completing the same operations in the opposite order. Check that the butterfly valve is tight before fitting it again. Information about the installation operations can be found in section 1 of the instruction manual 2 B 70.

Example 1:

Mechanical parts on the cover side

3 Heat-Jacket Explanation

Butterfly valves with "Heat-Jacket" each have one or more Steamjunctions for input and output (Fig. 16 and Fig. 17).

NOTE!
The inlet (IN) of a chamber is always above the outlet (OUT).

Fig. 15 Butterfly Valve NPS32W431 CL150
Flange NPS36 CL150
The outlet (OUT) is the deepest point. The start (IN) of the steam junctions has to be over the outlet.

- **So the condensate can flow!**

Butterfly valves with "Heat-Jacket" each have one or more Steam junctions for input and output.

**NOTE!**

The inlet (IN) of a chamber is always above the outlet (OUT).

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**Example 2:**

![Diagram of Butterfly Valve NPS12W431 CL150 Flange NPS14 CL150](image)

The Outlet (OUT) is the deepest point. The start (IN) of the steam junctions has to be over the outlet.

- **So the condensate can flow!**
- **In order to guarantee a reliable function during the operation, a continuous steam supply has to be warranted.**