

Maintenance

Butterfly Valve Series 10a



Fig. 1 – Control and shut-off butterfly valve Series 10a

The text and illustrations do not necessarily display the scope of supply or an eventual order of spare parts. Drawings and graphics are not to scale.

Customer-related special designs, which are not in accordance with our standard offer, are not shown.

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0. General

These instructions are intended to support the user in the assembly and repair of control butterfly valves of the Series 10a.

Technical details, as a result of the further development of the valves mentioned in these instructions, are subject to alteration.

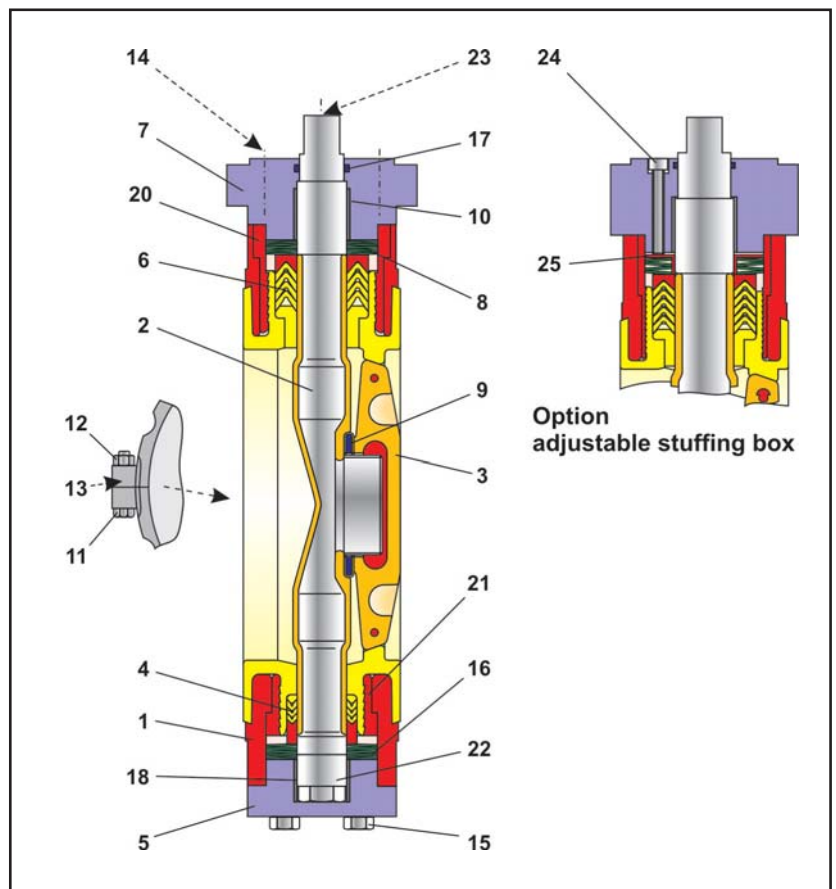


Fig. 2 – Cross-section through a butterfly valve Series 10a => for parts list see table on page 2

Butterfly Valve Series 10a



The equipment may only be dismantled and disassembled by skilled staff who are familiar with the assembly, the start-up and the operation of this product.

Skilled staff in the sense of these repair and assembly instructions are persons who, as a result of their training, their knowledge and their experience, as well as their knowledge of the relevant standards, are able to judge the tasks assigned to them and are able to recognize possible dangers.

2. Design, operation and dimensions

Design, operation and dimensions as well as all further details and technical data may be found in the **data sheet** < **TB 10a_EN** >.

3. Installation, start-up and maintenance

Guidelines for the installation, start-up and maintenance are to be found in the **operating instructions**

< **BA 10a-01_EN** > for pneumatic control butterfly valves, resp.
< **BA 10a-02_EN** > for hand-operated control butterfly valves.

4. Mounting instructions

4.1 Assembly of the control butterfly valve

4.1.1 Preparation for the assembly

In order to assemble the butterfly valve, all the parts must be prepared, i.e. the parts are carefully cleansed and placed on a soft surface (rubber mat or similar).

Please pay attention! Plastic parts are nearly always soft and very sensitive, and particularly the sealing surfaces should not be damaged.



Caution: In order to prevent a cold welding of the screws in the bodies, a high-performance grease paste is employed during manufacturing (e.g. Gleitmo 805. from Fuchs).

For valves employed in oxygen environments, this agent may not be used. For grease-free valves, especially when employed in an oxygen environment, a suitable lubricant is to be chosen.



Note: The position and arrangement of the individual parts shown in the detail drawing (Fig. 3) are to be observed during assembly.

4.1.2 Assembly of the butterfly valve

The butterfly valve body (1) is laid with the sealing side onto a clean, soft surface, positioned at working height so permitting easy access to the shaft bearings.

The butterfly valve body forms together with the PTFE lining and the sleeves (20 and 21) a modular unit which is assembled with the dowel pin (13), as well as the screw (11) and the nut (12).



Note: The modular unit of the body may not be disassembled any more.

The butterfly valve shaft (2) and the bearing screw (22) were manufactured together and also form a modular unit.



Note: The modular unit of butterfly valve shaft and bearing screw belong together and may not be individually exchanged.

The bearing screw (22) is unscrewed from the butterfly valve shaft (2).

The butterfly valve shaft (2) is inserted at an angle into the butterfly valve body (1).



Caution: Care must be taken that the PTFE lining and the PTFE jacket of the shaft are not damaged.

The bearing screw (22) is screwed into the mounted butterfly valve shaft (2) and tightened.

The base ring of the packing (6) is pushed over the free end of the shaft to the appropriate position in the butterfly valve body (1) by means of an assembly sleeve.

The PTFE packing (6) is now pushed over the shaft into the body bore and pressed home with an assembly sleeve. The arrangement of the packing is shown in the detail drawing (Fig. 3).

The cup spring assembly (8) is pushed over the shaft and positioned at the appropriate place on the packing. The arrangement of the cup springs is also shown in the detail drawing (Fig.3).

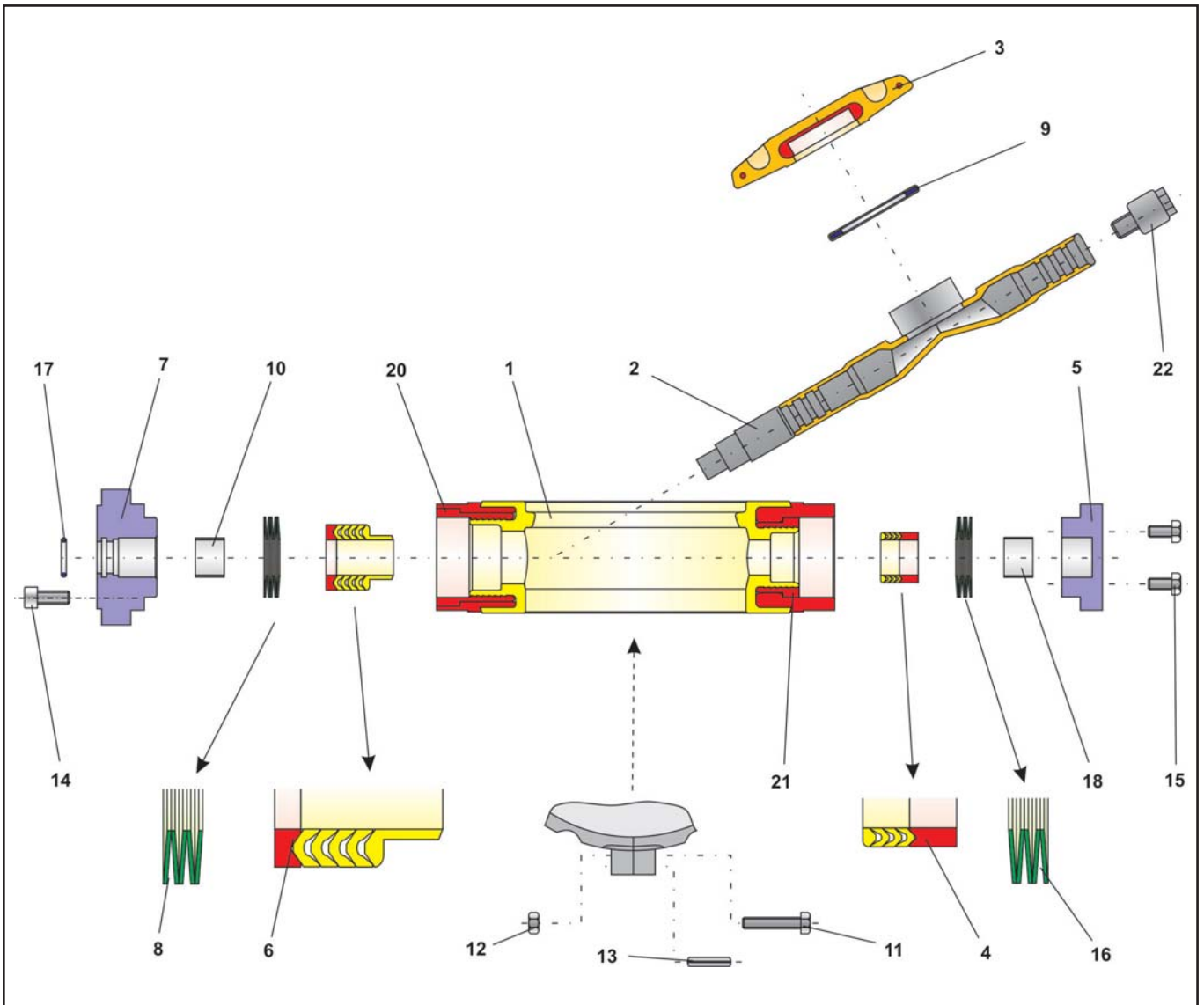


Fig. 3 – Detail drawing of the control butterfly valve Series 10a

Item	Description	Material
1	Valve body	St / PTFE
2	Valve shaft	1.4313 / PTFE
3	Butterfly disc	1.4313 / PTFE
4	V-ring packing	1.4305 / PTFE
5	Lower gland flange	1.0503
6	V-ring packing	1.4305 / PTFE
7	Guide bushing	1.0503
8	Belleville spring washer	1.8159 / Delta Tone
9	Sealing element	PTFE / EPDM
10	Bearing bushing	PTFE with carbon
11	Screw	A2-70

Item	Description	Material
12	Nut	A2-70
13	Grooved pin	1.4301
14	Screw	A2-70
15	Scw	A2-70
16	Belleville spring washer	1.8159 / Delta Tone
17	O-ring	Viton
18	Bearing bushing	PTFE with carbon
20	Bushing	1.0037
21	Bushing	1.0037
22	Bearing screw	1.0503
23	Threaded pin	1.4301

Table 1 – Parts list

Butterfly Valve Series 10a

The bearing bush (10) is pressed into the guide bush (7).

The O-ring (17) is also placed in the appropriate position of the guide bush.

The pre-assembled guide bush is carefully placed onto the body and adjusted with the cheese head screws (14). The screws are then equally and alternately tightened.

The PTFE packing (4) is now pushed over the shaft into the body bore and pressed home with an assembly sleeve. The arrangement of the packing is shown in the detail drawing (Fig.3).

The cup spring assembly (16) is pushed over the shaft and positioned in the appropriate place on the packing. The arrangement of the cup springs is also shown in the detail drawing (Fig.3).

The bearing bush (18) is pressed into the lower gland (5).

The pre-assembled lower gland is carefully placed onto the body and adjusted with the cheese head screws (15). The screws are then equally and alternately tightened.

The squeeze seal (9) is laid onto the thread for the butterfly valve disc.

The butterfly valve disc (3) is now screwed onto the butterfly valve shaft.



Caution:

The tightening of the disc is carried out with a special tool.

The butterfly valve disc can now be closed.



Caution:

Pay particular attention to the direction of rotation!

4.1.3 Note for the mounting of actuators



Caution:

The double eccentric valves must always be closed clockwise!

Therefore, attention must be paid to the direction of rotation when mounting an actuator!

A plate on the butterfly valve shows the direction of rotation.

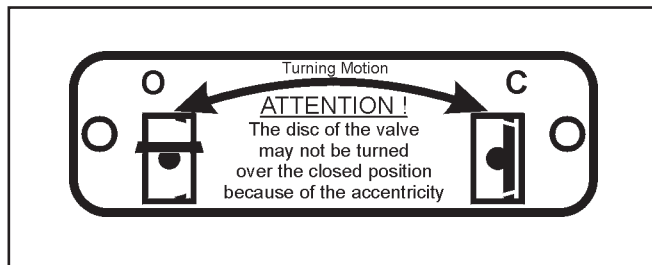


Fig. 4 – Plate showing direction of rotation

The assembly of the valve is now complete.

4.2 Assembly of the control butterfly valve with adjustable stuffing box

4.2.1 Preparation for the assembly

In order to assemble the butterfly valve, all the parts must be prepared, i.e. the parts are carefully cleaned and placed on a soft surface (rubber mat or similar).

Please pay attention! Plastic parts are nearly always soft and very sensitive, and particularly the sealing surfaces must not be damaged.



Caution: In order to prevent a cold welding of the screws in the bodies, a high-performance grease paste is used during manufacturing (e.g. Gleitmo 805. from Fuchs). For valves used in oxygen environments, this agent may not be used. For grease-free valves, especially when employed in an oxygen environment, a suitable lubricant should be chosen.



Note: The position and arrangement of the individual parts shown in the detail drawing (Fig. 5) are to be observed during assembly.

4.2.2 Assembly of the butterfly valve with adjustable stuffing box

The butterfly valve body (1) is laid with the sealing side onto a clean, soft surface, positioned at working height so permitting easy access to the shaft bearings.

The butterfly valve body forms together with the PTFE lining and the sleeves (20 and 21) a modular unit which is assembled with the dowel pin (13), as well as the screw (11) and the nut (12).



Note: The modular unit of the body may not be disassembled any more.

The butterfly valve shaft (2) and the bearing screw (22) were manufactured together and also form a modular unit.



Note: The modular unit of valve shaft and bearing screw belong together and may not be individually exchanged.

The bearing screw (22) is unscrewed from the valve shaft (2).

The valve shaft (2) is inserted at an angle into the valve body (1).



Caution:

Care must be taken that the PTFE lining and the PTFE jacket of the shaft are not damaged.

The bearing screw (22) is screwed into the mounted butterfly valve shaft (2) and tightened.

The base ring of the packing (6) is pushed over the free end of the shaft to the appropriate position in the valve body (1) by means of an assembly sleeve.

The PTFE packing (6) is now pushed over the shaft into the body bore and pressed home with an assembly sleeve. The arrangement of the packing is shown in the detail drawing (Fig. 5).

The cup spring assembly (8) is pushed over the shaft and positioned at the appropriate place on the packing. The arrangement of the cup springs is also shown in the detail drawing (Fig. 5).

The pressure sleeve (25) is placed on the spring washer.

The bearing bush (10) is pressed into the guide bush (7).

The O-ring (17) is also placed in the appropriate position of the guide bush.

The screws (24) are screwed in, so that the screw shafts are aligned (flush) with the underside of the guide bushing (7), i.e. the pre-loaded tension of the packing (6) is effective only through the spring washer set (8).

The pre-assembled guide bush is carefully placed onto the body and adjusted with the cheese head screws (14). The screws are then equally and alternately tightened.

The PTFE packing (4) is now pushed over the shaft into the body bore and pressed home with an assembly sleeve. The arrangement of the packing is shown in the detail drawing (Fig.5).

The cup spring assembly (16) is pushed over the shaft and positioned at the appropriate place on the packing. The arrangement of the cup springs is also shown in the detail drawing (Fig.5).

The bearing bush (18) is pressed into the lower gland (5).

The pre-assembled lower gland is carefully placed onto the body and adjusted with the cheese head screws (15). The screws are then equally and alternately tightened.

The sealing element (9) is laid onto the thread for the valve disc.

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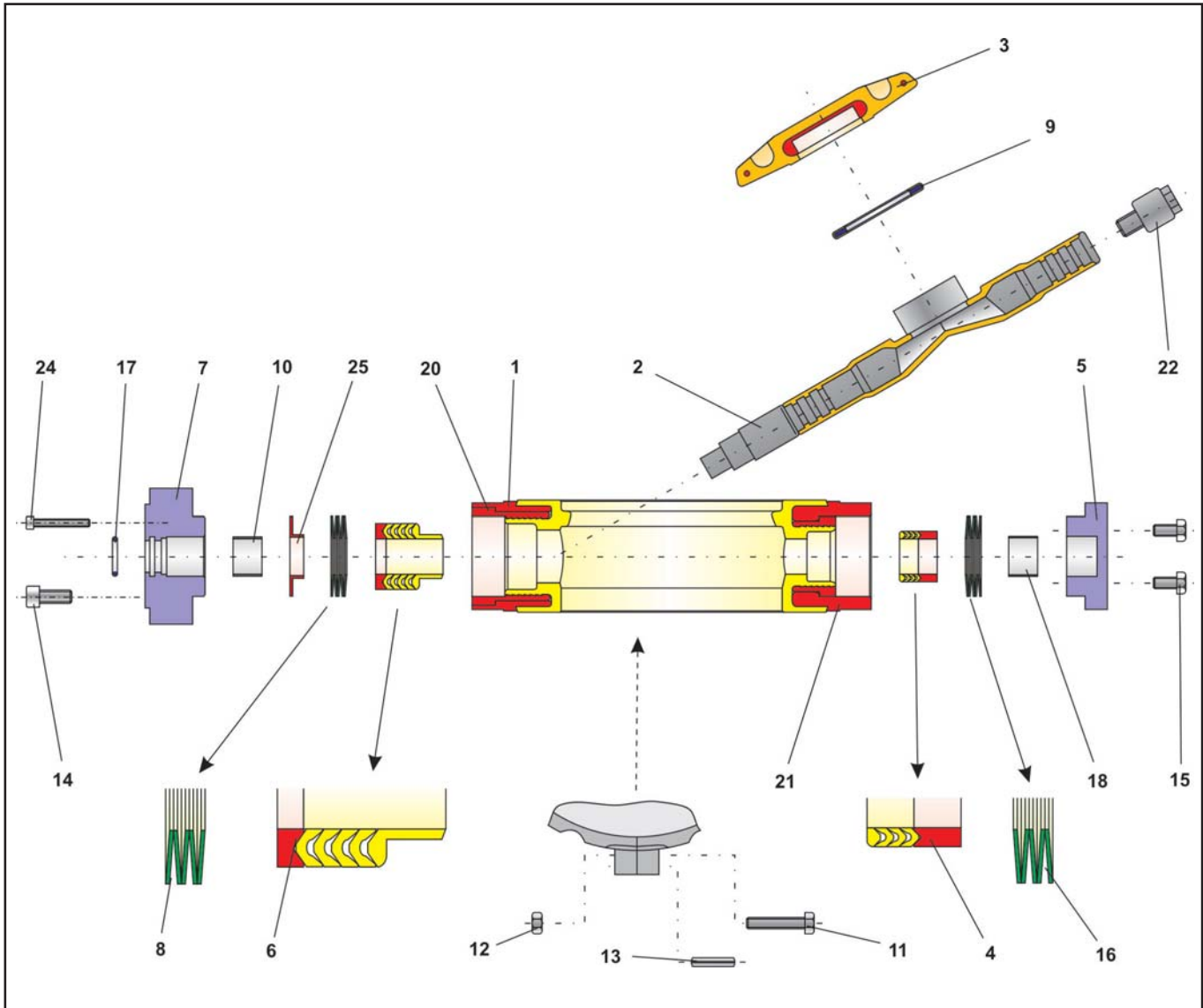


Fig. 5 – Detail drawing of the control butterfly valve Series 10a

Item	Description	Material
1	Valve body	St / PTFE
2	Valve shaft	1.4313 / PTFE
3	Butterfly disc	1.4313 / PTFE
4	V-ring packing	1.4305 / PTFE
5	Lower gland flange	1.0503
6	V-ring packing	1.4305 / PTFE
7	Guide bushing	1.0503
8	Belleville spring washer	1.8159 / Delta Tone
9	Sealing element	PTFE / EPDM
10	Bearing bushing	PTFE with carbon
11	Screw	A2-70
12	Nut	A2-70

Item	Description	Material
13	Grooved pin	1.4301
14	Screw	A2-70
15	Scew	A2-70
16	Belleville spring washer	1.8159 / Delta Tone
17	O-ring	Viton
18	Bearing bushing	PTFE with carbon
20	Bushing	1.0037
21	Bushing	1.0037
22	Bearing screw	1.0503
23	Threaded pin	1.4301
24	Screw	A2-70
25	Bushing	1.4301

Table 2 – Parts list

The valve disc (3) is now screwed onto the valve shaft.



Caution:
The tightening of the disc is carried out with a special tool.

The butterfly valve disc can now be closed.



Caution:
Pay particular attention to the direction of rotation!

4.2.3 Note for the mounting of actuators



Caution:
The double eccentric butterfly valves must always be closed clockwise!

Therefore, attention must be paid to the direction of rotation when mounting an actuator!
A plate on the butterfly valve shows the direction of rotation.

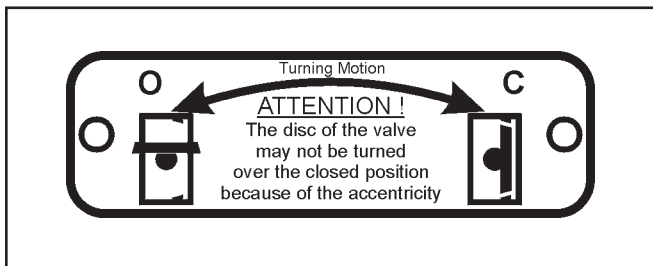


Fig. 6 – Plate showing direction of rotation

The assembly of the valve is now completed.

5. Troubleshooting

Assistance in the case of malfunctions is provided in the **operating instructions**

< **BA 10a-01_EN** > for automatic control butterfly valves, resp.
< **BA 10a-02_EN** > for manually-operated control butterfly valves under section 7.

6. Repairing the shaft of the valve

6.1 Replacing the stuffing box packing

If a leak is detected at the shaft bore of the control valve, the packing (4 and 6) may be defect.

It is then recommended to check the condition of the packing rings.

To remove the packing, the valve is disassembled in the reverse order as described in chapter 4.

The PTFE packing rings, together with all plastic parts, are checked for damage and, in case of doubt, exchanged.

6.2 Replacing the adjustable stuffing box packing (Option)

If leakage is detected at the shaft lead-through, re tighten the screws (24) thereby increasing the pre-load tension of the spring washers and the V-ring packing.

In doing this, if the leakage is not eliminated, the V-ring packings (4 and 6) may be defect, and must be replaced.

It is recommended to check the condition of the packing rings.

To remove the packing, the valve is disassembled in the reverse order as described in chapter 4.

The PTFE packing rings are, together with all plastic parts, checked for damage, and in case of doubt, replaced.

6.3 Exchange of the butterfly valve disc

If a leak is detected at the bore of the control valve, the lining or the butterfly valve disc (3) may be defect.

It is then recommendable to check the condition of the lining and the disc.



Note:

A disassembly is however not recommended and a repair should be carried out by Pfeiffer.

6.4 Further repair work

In case of further more serious damage, we recommend the repair work to be carried out by our skilled staff at Pfeiffer.

7. Customer inquiries

(In case of queries please provide following information)

1. Order number (embossed on the type plate)
2. Type, product number, nominal diameter and design of control butterfly valve.
3. Pressure and temperature of the flow medium.
4. Flow rate in m³/h
5. Drawing of installation, if available.

For your special requirements, please contact our technical sales department.

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Specifications subject to change without notice.