

Declaration of Conformity as per Directive 97/23/EC and Manufacturer`s Declaration as per Directive 98/37/EC

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| The manufacturer | Pfeiffer Chemie-Armaturenbau GmbH, 47906 Kempen, Germany |
| declares that: | PTFE-lined shut-off butterfly valves Series 10a and Series 10e, with PTFE liner and shaft packing <ul style="list-style-type: none"> • with pneumatic/electric/hydraulic actuator • with free shaft end for subsequent mounting of an actuator |
| <ol style="list-style-type: none"> 1. The valves are pressure accessories within the meaning of the Pressure Equipment Directive 97/23/EC and conform with the requirements of this Directive, 2. The valves are not complete machinery within the meaning of the Machinery Directive 98/37/EC, but meet the relevant requirements of this Directive, 3. They may only be operated observing the operating instructions <BA10a-01_EN> delivered together with the valve. <p>The commissioning of these valves is only permitted after the valve has been installed from both sides in the pipeline and a risk of injury can be ruled out.</p> | |

Applied standards:

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| EN 593 AD2000 Regulations DIN-EN 292-2000 | Product standard for butterfly valves Regulations for pressurized valve body parts Safety of Machinery, Part 2: Technical requirements |
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Type designation and technical features:

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| Pfeiffer data sheets <TB10a_EN and TB10e_EN> <i>NOTE: This Manufacturer's Declaration applies to all valve types listed in this catalog.</i> |
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Applied conformity assessment procedure:

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| Conforming to Annex II of the Pressure Equipment Directive 97/23/EC, Module H |
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Name of notified body:

Identification number of the notified body:

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| TÜV Rheinland Service GmbH Am Grauen Stein 51101 Köln Germany | 0035 |
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These Declarations become invalid when modifications are made to the shut-off butterfly valves and/or assemblies that affect the technical data of the shut-off butterfly valve or the <Intended use> described in section 1 of the operating instructions, and considerably change the valve or an assembly delivered with it.

Kempen, 1. December 2006

Lorenz Stolzenberg, Managing Director

These Declaration of Conformity and operating instructions have been generated electronically and are legally binding without signature

Operating instructions

Shut-off butterfly valve with PFA/PTFE lining actuated


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0 Introduction

These instructions are designed to assist the user during installation, operation and maintenance of shut-off butterfly valves with PTFE lining from the Series 10a and Series 10e.


These instructions apply only to the shut-off butterfly valve itself. In addition, refer to the instructions of the mounted actuator.

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|  Note | <p>The WARNING and CAUTION notes must be strictly adhered to. Otherwise this may lead to personal injury and equipment damage and the manufacturer's warranty may become void.</p> <p>Please contact the manufacturer if you have any queries, see section 8 for contact address.</p> |
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1 Intended use

After installing the valve in the pipeline and connecting the actuator to the control equipment, these shut-off butterfly valves are designed exclusively for shutting off or controlling media (often corrosive) within the permissible pressure and temperature ranges.

The permissible pressure and temperature ranges for these shut-off butterfly valves are specified in the data sheets <TB10a_EN or TB10e_EN>.

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|  Danger | <p>Do not operate a shut-off butterfly valve when its permissible pressure/temperature rating is not sized for the operating conditions specified in the data sheets <TB10a_EN or TB10e_EN>.</p> <p>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</p> |
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Observation of conformity with the Directive 94/9/EC.

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|  Note | <p>Pfeiffer valves do not have their own potential ignition source according to the risk assessment in the rare incident of an operating fault in accordance with DIN EN 13463-1:2000 and therefore do not fall within the scope of the Directive 94/9 EC.</p> <p>Relating to this directive, CE marking is not permissible. The integration of valves into the equipotential bonding of a plant applies to all metallic parts in hazardous areas regardless of the directive.</p> <p>Valves with plastic lining (PFA, PTFE) in applications with chargeable media have to be lined with conductive plastic lining with a surface resistance less than 1 Gigaohm (10^9 Ohm) in accordance with paragraph 7.4 of DIN EN 13463-1:2001.</p> |
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Refer to the limitations in the above mentioned data sheets if the shut-off butterfly valve is intended for throttling services.

Observance of section 2 <Safety instructions> is presumed for the Intended use.

2 Safety instructions

2.1 General safety instructions


For shut-off butterfly valves, the same safety regulations apply as for the pipelines in which they are installed, as well as for the control equipment connected to the actuator. These instructions only specify those safety instructions which need to be additionally observed concerning shut-off butterfly valves.

Additional safety instructions are specified in the instructions for the actuator assemblies.

2.2 Safety instructions for the operator

The manufacturer does not assume any responsibility. Therefore, on using the shut-off butterfly valve, make sure the following instructions are observed:

⇒ The valve is to be used only for its intended use as described in section 1.

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|  Warning | <p>Preventing misuse of the shut-off butterfly valve:</p> <p>It is especially important to make sure that the selected lining for wetted parts in the shut-off butterfly valve is suitable for the media used as well as the prevailing pressures and temperatures.</p> <p>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline. The manufacturer does not assume any final responsibility.</p> |
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⇒ Make sure that the pipeline and control equipment have been installed correctly and are checked at regular intervals. The valve body wall thickness must be designed to take into account the additional forces and moments usually found in the pipeline.

⇒ The valve needs to be connected correctly to the pipeline and to the control equipment.

⇒ Make sure the usual flow velocities are not exceeded in continuous service in this pipeline. Exceptional operating conditions such as oscillations, water hammering, cavitation and large proportions of solid matter in the process medium, especially abrasive, must be clarified beforehand with the manufacturer.

- ⇒ Shut-off butterfly valves that are operated at temperatures greater than +50°C or lower than -20°C must be protected, together with the pipeline connections, against being touched.
- ⇒ An actuator unit mounted subsequently onto the valve must fit the shut-off butterfly valve properly and its final positions, especially the open position, need to be correctly adjusted.
- ⇒ Make sure at all times, that the butterfly disc is only operated within the range 0° - 90°. Over winding the butterfly disc past 0° will lead to irreparable damage to the sealing ring i.e. sealing strip. This must therefore be avoided.
- ⇒ The valve should only be operated and serviced by personnel appropriately qualified for pressurized pipelines.

2.3 Particular hazards

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|  Danger | Prior to unscrewing the bonnet or removing the shut-off butterfly valve from the pipeline, relieve pressure entirely in the pipeline to ensure the process medium cannot escape uncontrollably from the pipeline. |
|  Warning | Should it be necessary to remove a shut-off butterfly valve from the pipeline, process medium may escape from the pipe or out of the shut-off butterfly valve. In the case of process media that can damage health or are dangerous, drain the pipeline completely before removing the shut-off butterfly valve from the pipeline. Take special care concerning any remaining media that may still be in the pipeline or have collected in the cavities of the valve. |
|  Warning | Only unscrew or loosen any screws or bolts connecting the body parts after the valve has been removed from the pipeline. Tighten the screws on reassembly with a torque wrench according to repair instructions <EB10a_EN or EB10e_EN>. |
|  Warning | <i>For shut-off butterfly valves intended for dead-end service:</i> During standard operation, in particular, with gases or hot and/or dangerous media, mount a blank flange at the free end connection or ensure that the shut-off butterfly valve is properly protected against unauthorized operation. |
|  Warning | If a shut-off butterfly valve used for dead-end service must be opened in a pressurized pipeline, special care must be taken to ensure that any process media escaping under pressure do not cause any damage. Take into consideration that in most cases the process medium is a dangerous substance! |

2.4 Designation of the shut-off butterfly valve

The designation of the shut-off butterfly valve includes the following details:

| Details | Designation | Comments | | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------|------------------------------|--|------|-------------------------------------|------|------|--|--|--|--|--|-----------------------|--|--|--|--|---------------|--|--|--|--|-------|--|--|--|--|-------------------------------------|
| Manufacturer | Pfeiffer | Address, see section 8 <Further information> | | | | | | | | | | | | | | | | | | | | | | | | | |
| Valve type | BR (and number) | e.g. BR 10a = Series 10a, see Pfeiffer catalog | | | | | | | | | | | | | | | | | | | | | | | | | |
| Body material | e.g.: EN-JS 1049 | Material number acc. to DIN EN 1563 (formerly GGG 40.3) | | | | | | | | | | | | | | | | | | | | | | | | | |
| Size | DN (and number) | Value in mm, e.g. DN 50 | | | | | | | | | | | | | | | | | | | | | | | | | |
| Maximum pressure | PN (and number) | Value in bar at room temperature | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perm. temperature | TS (and number) | PS and TS are associated values at maximum permissible operating temperature and maximum permissible operating pressure. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Perm. pressure | PS (and number) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Serial no. | e.g.: 2030153/001/001 | <table style="border: none;"> <tr> <td style="border: none;">203</td> <td style="border: none;">0153</td> <td style="border: none;">/001</td> <td style="border: none;">/001</td> <td style="border: none;"></td> </tr> <tr> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;">Valve no. within item</td> </tr> <tr> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;">Item in order</td> </tr> <tr> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;">Order</td> </tr> <tr> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;"> </td> <td style="border: none;">Year of manufacture (e.g. 203=2003)</td> </tr> </table> | 203 | 0153 | /001 | /001 | | | | | | Valve no. within item | | | | | Item in order | | | | | Order | | | | | Year of manufacture (e.g. 203=2003) |
| 203 | 0153 | /001 | /001 | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Valve no. within item | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Item in order | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Order | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | Year of manufacture (e.g. 203=2003) | | | | | | | | | | | | | | | | | | | | | | | |
| Year of manufacture | e.g.: 2003 | On customer request, the year of manufacture is stamped on the valve. | | | | | | | | | | | | | | | | | | | | | | | | | |
| Conformity | CE | Conformity is certified separately by the manufacturer | | | | | | | | | | | | | | | | | | | | | | | | | |
| Identification no. | 0035 | Notified body as per EU Directive = TÜV Anlagentechnik GmbH | | | | | | | | | | | | | | | | | | | | | | | | | |
| Direction of flow | ➔ | Note: see note in section 4.2 <Installation instructions> | | | | | | | | | | | | | | | | | | | | | | | | | |

Table 1 – Designation of the control valve



Keep the labeling on the valve body and on the nameplate to ensure that the valve can be identified at all times.

3 Transport and storage

Shut-off butterfly valves **with linings must be carefully handled, transported and stored:**

- ⇒ Store the valve with its protective packing and/or with its protective caps in place in the end connections. Store and transport the shut-off butterfly valves that weigh over approx. 10 kg on pallets (or a similar type of support) right up to the point of installation. The packing is designed to protect the valve's plastic lining, that is prone to scratching, against being damaged.







- ⇒ Store the valve in a closed room before it is installed. Protect it against damaging influences such as dirt or moisture.
- ⇒ Make sure, in particular, that the plastic-lined facings of the flanges intended to connect the valve to the pipeline are not damaged through mechanical or other influences. Do not stack shut-off butterfly valves!
- ⇒ As a rule, shut-off butterfly valves of the BR10a series are delivered in the closed position and shut-off butterfly valves of the Series 10e in the slightly open position. Store the valves in the condition they were delivered in. Do not operate the actuator.

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|  Warning | <i>Valves delivered without an actuator:</i> The butterfly disc is not safeguarded against alteration of its position. Do not allow the disc to be opened from the closed position by external influences (e.g. shock, vibrations). |
|  Caution | <i>Only for valves with pneumatic actuators with extending actuator stem:</i> The butterfly disc projects out at both sides of the valve body in its delivered state. The packaging at the protruding edge is designed to protect the butterfly disc against being damaged. It is important to make sure that the fine-machined facing at the disc's edges are not damaged. |



4 Installation in the pipeline

4.1 General


The same instructions apply for installing the shut-off butterfly valves in the pipeline as for connecting pipes and similar pipeline equipment. The following instructions additionally apply for shut-off butterfly valves. Also observe section 3 for transporting the shut-off butterfly valve to the point of installation.

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|  Caution | <i>The valve is lined with PTFE:</i> Handle with special care and follow the instructions for flange connection. |
|  Note | <i>The facings of the valve body are lined with plastic.</i> If additional flange gaskets are used, we recommend using gaskets made of PTFE. The mating flanges must have smooth facings. Contact the manufacturer if you intend to use other flange forms. |
|  Warning | <i>There is a risk of being crushed with shut-off butterfly valves with a mounted actuator not yet installed in the pipeline:</i> Do not connect the actuator or operate it until the shut-off butterfly valve is installed into the pipeline. For valves intended for dead-end service in a pipeline section, mount a cover at the valve outlet or ensure that the actuator is properly protected against unauthorized operation to rule out the risk of crushing. |
|  Note | <i>The actuating device is set for the operating data specified in the order.</i> Do not alter the settings for the final positions OPEN and CLOSED without the manufacturer's prior consent. |
|  Warning | <i>Only for shut-off butterfly valves with electric actuator:</i> Make sure that the actuator is switched off in the final positions by the limit switch's signal . If the actuator is switched off in an intermediate position by the torque switch's signal , this signal should be used additionally for fault indication. <i>See the instructions for the electric actuator for further details</i> |
|  Danger | In exceptional cases, when a valve is installed into a pipeline without an actuator mounted, make sure that pressure is not applied to these valves. If an actuator unit has been mounted subsequently, torque, direction of rotation, operating angle as well as the final positions OPEN and CLOSED must be adapted to the shut-off butterfly valve. Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline. |


The following warnings are to be observed for actuators:

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|  Warning | <i>Actuators are not designed to be used as step-ladders:</i> Do not apply any weight/load to the actuators. This can damage or destroy the shut-off butterfly valve. |
|  Warning | <i>Actuators that weigh more than the shut-off butterfly valve:</i> Support any actuator which due to its size and/or mounting situation would otherwise cause the valve to bend under the load. |


4.2 Installation instructions


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|  Note | <p><i>Lined surfaces of the valve must be specially protected before/during installation:</i> Transport the valve in its original packaging right up to the point of installation. Remove packaging first at the point of installation.</p> |
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- ⇒ Check valve and actuator for signs of damage that may have occurred during transportation. Do not install a damaged shut-off butterfly valve or actuator.
- ⇒ Make sure that only shut-off butterfly valves are installed when their pressure rating, end connections and face to face dimensions match the conditions of application. See the designation of the shut-off butterfly valve.

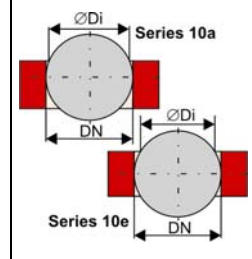
| | |
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|  Danger | <p>Do not install a shut-off butterfly valve if its permissible pressure/temperature ranges do not apply to the operating conditions. The limits of application are marked on the valve, see section 2.4 <Designation>. The permissible range is determined in section 1 <Intended use>. Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</p> |
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- ⇒ The connecting specifications for the actuator unit must match those of the control equipment. See nameplate(s) on the actuator unit.
- ⇒ Make sure the end connections of the pipeline are aligned with the shut-off butterfly valve's end connections and their ends have parallel planes. Connecting flanges that are not parallel can damage the PTFE lining during installation!

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|  Note | <p>The valve must be inserted in the gap between the pipe flanges with the butterfly disc in the closed position. Otherwise, the butterfly disc could be damaged and the valve will not shut tightly.</p> |
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|  Danger | <p><i>Only for valves with pneumatic actuators with extending actuator stem:</i> Make sure the following instructions are followed on installing the valve:</p> <ul style="list-style-type: none"> - Remove the actuator in the open position, - Close the butterfly disc by hand, - Install the valve into the pipeline, - Open the butterfly disc by hand - Remount the actuator on the valve. <p>Failure to follow these instructions may result in personal injury and can damage equipment installed in the pipeline.</p> |
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|  Note | <p>The inside diameter of the mating flanges must leave sufficient room for the opened butterfly disc to ensure that it cannot be damaged on swinging out. See Table 2.</p> |
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| DN | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 500 | 600 | 800 |
|-----------|-------------------|----|----|------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Di | Series 10a | - | - | 76,5 | - | 126 | 175 | 222 | 274 | 326 | 366 | 465 | 573 | 763 |
| | Series 10e | 45 | 45 | 62 | 86 | 116 | 140 | 187 | 238 | 282 | - | 390 | - | - |

Table 2 : Minimum required inside diameter of the mating flanges

- ⇒ Prior to installation, carefully clean the valve and the connecting section of the pipeline from dirt, especially hard foreign material.
- ⇒ Make sure, in particular, that flange facings and any flange gaskets used are free from any dirt prior to installation.
- ⇒ The process medium can flow through the valve in either direction. The preferable mounting position for shut-off butterfly valves is with a shaft in a horizontal position. However, if possible, the actuator should not be located directly underneath the shut-off butterfly valve.
- ⇒ Make sure the arrow on the valve body corresponds with the direction of flow in the pipeline.

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|  Note | <p>In special cases, it may be necessary for the valve to be tightly shut against the direction of flow. The installation in such special cases must be determined by the operator of the pipeline (e.g. to protect a pump).</p> |
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- ⇒ On inserting the valve (and flange gaskets) into a ready mounted pipeline, keep a certain clearance between the pipeline ends to ensure that all facings (and gaskets) remain undamaged.

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|  Caution | <p>Tighten the flange bolts evenly and in a criss-cross pattern in at least three steps. Tighten all flange bolts using the torques specified in Tables 2 or 3. Use a torque wrench to ensure that the torque specified is reached, yet not exceeded.</p> |
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| | | | | | | | | | | | | | | |
|----------------|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| DN [mm] | 50 | 65 | 80 | 100 | 125 | 150 | 200 | 250 | 300 | 350 | 400 | 500 | 600 | 800 |
| MA [Nm] | 45 | 45 | 65 | 75 | 55 | 140 | 170 | 140 | 170 | 170 | 240 | 240 | 310 | 480 |

Table 3 – Flange torques for DIN-Flanges

| | | | | | | | | | | | |
|------------------|----|----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| DN [Zoll] | 3" | 4" | 6" | 8" | 10" | 12" | 14" | 16" | 20" | 24" | 32" |
| MA [Nm] | 65 | 50 | 100 | 150 | 140 | 160 | 160 | 230 | 240 | 300 | 470 |

Table 4 – Flange torques for ANSI-Flanges

- ⇒ The associated instructions apply for connecting the actuator unit to the control equipment.
- ⇒ After completing installation, carry out a function check using the signals issued by the control equipment. The valve must open and close properly corresponding with the control signals. Any function errors that are recognized must be remedied before commissioning. See also section 7 <Troubleshooting>.

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|  Warning | Control commands that are not carried out correctly may result in personal injury and can damage equipment installed in the pipeline. |
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5 Pressure check in pipeline section

The pressure check of valves has already been carried out by the manufacturer. To check the pressure of a section of pipeline with installed valves, the following points must be observed:

- ⇒ Carefully flush newly installed pipes to remove any foreign material.
- ⇒ **Valve OPEN:** The test pressure should not exceed the value **1.5 x PN** (see nameplate).
- ⇒ **Valve CLOSED:** The test pressure should not exceed the value **1.1 x PN** (see nameplate).

If a valve leaks, see section 7 <Troubleshooting>.

6 Standard operation and maintenance

Due to the fact of flowing plastic flange facings we strongly recommend to check flange bolt torques acc. to specified figures in section 4.2 after commissioning and normal operation temperature has been reached.

Operate the valve/actuator unit over the control equipment signals. Shut-off butterfly valves delivered with the actuator already mounted are precisely set and should not be readjusted.

The shaft is sealed with a V-ring packing preloaded with a set of spring washers and does not require any maintenance.


Normal manual force is sufficient to operate the manual override on the actuator (if required). It is not permissible to use extensions to increase the operating torque.



Regular maintenance work on the shut-off butterfly valves is not necessary. The shut-off butterfly valve from the BR10e Series with an additional packing can be fitted with a leak-off connection (e.g. 1/4") at the valve neck, on request. This allows you to check whether the packing is leaking.

If a valve leaks, proceed as described in section 7 <Troubleshooting>.

7 Troubleshooting

Observe the safety instructions listed in section 2 on troubleshooting.

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|  Warning | <i>To remove a valve from a pipeline containing dangerous media and to take it out of the plant: Decontaminate the valves properly first.</i> |
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| Type of fault | Action to be taken | Comment |
|---|--|---|
| Leak at the connection to the pipeline | <p>Tighten flange bolts.</p>  <p>Caution The permissible tightening torque of the flange bolts is restricted. See table 3 or 4 in section 4.2 <Installation instructions>.</p> <p><i>If the medium leaks out at the flanges of the lined valve:</i> Retighten the flange bolts using the torque specified in Table 2 or 3 in section 4.2 <Installation instructions>. If necessary, the torque may be increased by max. 20 %.</p> <p><i>If the medium leaks out at the flanges even after tightening the flange bolts:</i> Unscrew the flange bolts and remove the valve (on doing so, observe the instructions in section 2.3 <Particular hazards>). Check the parallel planes of the flanges and, if necessary, correct them. Also check the facing of all the flanges. If the plastic lining is damaged, replace it together with the associated flange gasket.</p> | <p>Note 1: <i>When ordering spare parts, include all the specifications listed in the valve designation. Only use original parts from Pfeiffer.</i></p> <p>Note 2: <i>If, after removing the valve from the pipeline, it is found that the PTFE/PFA lining is not sufficiently resistant to the process medium, select parts made of a suitable material.</i></p> |
| Leak at the seat seal | <p>Check whether the actuator closes completely the valve.</p> <p><i>If the shut-off butterfly valve has been closed under the full torque:</i> Open and close the valve under a pressure drop several times.</p> <p><i>If the valve still leaks:</i> If it must be repaired, replace the plastic lining of the valve body and/or butterfly disc, observing the instructions in section 2.3 <Particular hazards>). Contact Pfeiffer for spare parts and necessary instructions.</p> | |
| Leak at the shaft | <p>If it must be repaired, replace the shaft, observing section 2.3 <Particular hazards>). Contact Pfeiffer for spare parts and necessary instructions.</p> | |
| Malfunction | <p>Check actuator unit and control signals</p> <p><i>If actuator and control equipment are in order:</i> Remove the valve (observing the instructions in section 2.3 <Particular hazards>) and check it.</p> <p><i>If the valve is damaged:</i> If it must be repaired, remove the valve, observing section 2.3 <Particular hazards>). Contact Pfeiffer for spare parts and necessary instructions.</p> | |
| If a pneumatic actuator with springs must be removed from the valve |  <p>Caution: Risk of injury Before removing the actuator from the valve, disconnect the signal pressure.</p> | |

For malfunctioning actuator units, refer to the actuator instructions.

8 Further information

Contact the address below for the listed <Data sheets> and <Repair instructions> as well as further information.

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