

## Declaration of Conformity as per Directive 97/23/EC and Manufacturer's Declaration as per Directive 98/37 EG

The manufacturer	<b>Pfeiffer Chemie-Armaturenbau GmbH, 47906 Kempen, Germany</b>
declares that:	<b>Butterfly valves Series 14a, Series 14b, Series 14c, Series 14e, Series 14t and Series 74b, with packing</b> <ul style="list-style-type: none"> <li>• with pneumatic/electric/hydraulic actuator</li> <li>• with free shaft end for subsequent mounting of an actuator</li> </ul>
<ol style="list-style-type: none"> <li>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,</li> <li>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,</li> <li>3. They may only be operated observing the operating instructions &lt;BA14b-01_EN&gt; delivered together with the valve.</li> </ol> <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. (For butterfly valves which are intended for dead-end service, see section 2.3).</p>	

*Applied standards:*

<b>EN 593 AD 2000 Regulations DIN-EN 292-2000</b>	<b>Product standard for butterfly valves Regulations for pressurized valve body parts Safety of Machinery, Part 2: Technical requirements</b>
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*Type designation and technical features:*

<b>Pfeiffer data sheets</b> <TB14a_EN, TB14b_EN, TB14e_EN, TB14t_EN and TB74b_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:*

<b>Conforming to Annex II of the Pressure Equipment Directive 97/23/EC, Module H</b>
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<i>Name of notified body:</i>	<i>Identification number of the notified body:</i>
<b>TÜV Rheinland Service GmbH</b> Am Grauen Stein 51101 Köln Germany	<b>0035</b>

These Declarations become invalid when modifications are made to the butterfly valves and/or assemblies that affect the technical data of the 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

## Butterfly valves actuated


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## 0 Introduction

These instructions are designed to assist the user during installation, operation and maintenance of butterfly valves from the **Series 14a, Series 14b, Series 14c, Series 14e, Series 14t** and **Series 74b**.


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

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


## 1 Intended use

After installing the valve in the pipeline and connecting the actuator to the control equipment, these 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 butterfly valves are specified in the data sheets <**TB14a\_EN, TB14b\_EN, TB14e\_EN, TB14t\_EN** and **TB74b\_EN**>.

	Do not operate a butterfly valve when its permissible pressure/temperature rating is not sized for the operating conditions specified in the data sheets < <b>TB14a_EN, TB14b_EN, TB14e_EN, TB14t_EN</b> and <b>TB74b_EN</b> >.
<b>Danger</b>	<b>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</b>

### Interpretation of declaration to the Directive 94/9/EC

	Pfeiffer valves have no own potential ignition source after testing the hazardous ignition in accordance to DIN EN 13463-1:2002. Therefore Pfeiffer valves do not come under the directive 94/9/EC. <b>Relating to this directive a CE-marking is not permissible.</b>
<b>Note</b>	The valve could be incorporated into potential compensation of plants independent of the directive, valid for metallic parts in hazardous areas.

Refer to the limitations in the above mentioned data sheets if the 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 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 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, when using the 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.

	<b>Preventing misuse of the butterfly valve:</b> It is especially important to make sure that the wetted parts in the butterfly valve are suitable for the media used as well as the prevailing pressures and temperatures.
<b>Warning</b>	<b>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.</b>






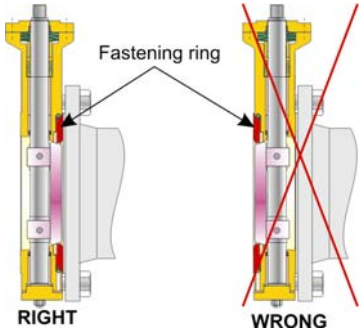

⇒ An actuator unit mounted subsequently onto the valve must fit the butterfly valve properly and its final positions, especially the closed position, need to be correctly adjusted.

- ⇒ 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 an additional load  $F_z$  in the usual order ( $F_z = \pi/4 \cdot DN^2 \cdot PS$ ) for a correctly sized 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.
- ⇒ That operating parameter near the cavitation limit and/or sound emission clearly above 85 dB, have been approved with the manufacturer Pfeiffer.
- ⇒ 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.

	<p><i>For double eccentric valves:</i></p> <p>Make sure, that the butterfly disc is always operated within a range of between 0° - 90°. Turning the butterfly valve over 0° leads to irreparable damage to the sealing ring e.g. sealing strip, this must therefore be avoided.</p>
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- ⇒ The valve should only be operated and serviced by personnel appropriately qualified for pressurized pipelines.

### 2.3 Particular hazards

	<p><b>Danger</b></p> <p>Prior to unscrewing the bonnet or removing the butterfly valve from the pipeline, <b>relieve pressure entirely in the pipeline</b> to ensure the process medium cannot escape uncontrollably from the pipeline.</p>
	<p><b>Warning</b></p> <p>Should it be necessary to remove a butterfly valve from the pipeline, process medium may escape from the pipe or out of the butterfly valve. In the case of process media that can damage health or are dangerous, drain the pipeline completely before removing the butterfly valve from the pipeline.</p> <p>Take special care concerning <b>any remaining media that may still be in the pipeline or have collected in the cavities of the valve.</b></p>
	<p><i>For butterfly valves intended for dead-end service:</i></p> <p>During standard operation, in particular, with gases or hot and/or dangerous media, <b>mount a blank flange at the free end connection</b> or ensure that the butterfly valve is <b>properly protected against unauthorized operation.</b></p>
	<p><b>Warning</b></p> <p>If a butterfly valve used for dead-end service must be opened in a pressurized pipeline, special care must be taken to ensure that <b>any process media escaping under pressure</b> do not cause any damage.</p>
	<p><i>Application as end valve:</i></p> <p>The valve must be mounted, so that the fastening ring mounted on the valve body with cheese screws i.e. tension spring, is pressed against the piping flange.</p> <p><b>Sealing can not be guaranteed, if mounted in reverse.</b></p>
	
	<p><b>Danger</b></p> <p><i>For Butterfly valves with adjustable Stuffing box:</i></p> <p>The shaft is sealed with a stuffing box packing. Prior to unscrewing the stuffing box gland, <b>relieve pressure entirely in the pipeline</b> to ensure the process medium cannot escape uncontrollably from the stuffing box packing.</p>

## 2.4 Designation of the butterfly valve

The designation of the butterfly valve includes the following details:

Details	Designation	Comments																									
Manufacturer	<b>Pfeiffer</b>	Address, see section 8 <Information>																									
Valve type	<b>BR (and number)</b>	e.g. BR 14a = Series 14a, see Pfeiffer catalog																									
Body material	e.g.: <b>1.4408</b>	Material number acc. to DIN 10213-4																									
Size	<b>DN (and number)</b>	Value in mm, e.g. DN200																									
Maximum pressure	<b>PN (and number)</b>	Value in bar at room temperature																									
Perm. temperature	<b>TS (and number)</b>	PS and TS are associated values at maximum permissible operating temperature and maximum permissible operating pressure.																									
Perm. pressure	<b>PS (and number)</b>																										
Serial no.	e.g.: <b>2070153/001/001</b>	<table border="0"> <tr> <td style="text-align: center;">207</td> <td style="text-align: center;">0153</td> <td style="text-align: center;">/001</td> <td style="text-align: center;">/001</td> <td></td> </tr> <tr> <td colspan="3"></td> <td colspan="2">Valve No. into the Item</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>Item in Commission</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>Commission</td> </tr> <tr> <td colspan="2"></td> <td colspan="2"></td> <td>year of manufacture (e.g. 207=2007)</td> </tr> </table>	207	0153	/001	/001					Valve No. into the Item						Item in Commission					Commission					year of manufacture (e.g. 207=2007)
207	0153	/001	/001																								
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				year of manufacture (e.g. 207=2007)																							
year of manufacture	e.g.: <b>2007</b>	On request of customer the year of manufacture is stamped on the valve.																									
Conformity	<b>CE</b>	Conformity is certified separately by the manufacturer																									
Identification no.	<b>0035</b>	Notified body as per EU Directive = TÜV Anlagentechnik GmbH																									
Direction of flow	<b>➔</b>	<b>Note:</b> see note in section 4.2 <Installation instructions>																									

Table 1 – Designation of the butterfly 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




Butterfly valves **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 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 internal parts 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 facings of the flanges are not damaged through mechanical or other influences. Do not stack butterfly valves!
- ⇒ As a rule, butterfly valves are delivered in the closed position. Store the valves in the condition they were delivered in. Do not operate the actuator.

## 4 Installation in the pipeline



### 4.1 General

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

 <b>Note</b>	The mating flanges must have smooth facings Contact the manufacturer if you intend to use other flange forms.
 <b>Caution</b>	<i>The following warnings are to be observed for high-performance butterfly valves including a seat with metal sealing:</i> To avoid that the seat seal is damaged, make sure the pipeline upstream and downstream of the place of installation is carefully cleaned from all hard and abrasive foreign material prior to installation of the butterfly valve.
 <b>Danger</b>	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 butterfly valve. <b>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</b>


 <b>Note</b>	<i>The actuating device is set for the operating data specified in the order.</i> <b>Do not alter the settings for the final positions OPEN and CLOSED</b> without the manufacturer's prior consent.
 <b>Warning</b>	<i>Only for butterfly valves with electric actuator:</i> Make sure that the actuator is switched off in the <b>CLOSED</b> position by the <b>torque switch's signal</b> . In the <b>OPEN</b> position, the actuator must be switched off by the <b>limit switch's signal</b> <i>See the instructions for the electric actuator for further details.</i>

The following warnings are to be observed for actuators:


 <b>Warning</b>	<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 butterfly valve.
 <b>Warning</b>	<i>Actuators that weigh more than the 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

- ⇒ Store and transport the valve with its protective packing right up to the point of installation.
- ⇒ Check valve and actuator for signs of damage that may have occurred during transportation. Do not install a damaged butterfly valve or actuator.
- ⇒ Make sure that only butterfly valves are installed when their pressure rating, end connections, (flow rate) and face to face dimensions match the conditions of application. See the designation of the butterfly valve.

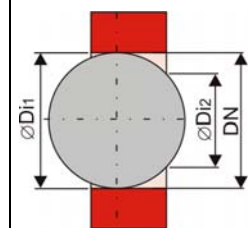
 <b>Danger</b>	Do not install a butterfly valve if its permissible pressure/temperature ranges do not apply to the operating conditions. The limits of application are marked on the valve, see section 2.4 <Designation>. The permissible range is determined in section 1 <Intended use>. <b>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</b>
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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 butterfly valve's end connections and their ends have parallel planes.

 <b>Caution</b>	The valve must be inserted between the pipeline flanges with the butterfly disc in closed position. Otherwise, the disc might be damaged and the valve could become leaky.
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 <b>Note</b>	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.
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DN		80	100	150	200	250	300	350	400	500	600
<b>Series 14a</b>	$\varnothing Di$ <b>Series 16</b>	-	56	113	162	205	257	295	343	443	540
	$\varnothing Di1$	54	78	128	180	227	276	308	365	406	-
<b>Series 14b</b>	<b>Series 20</b>	22	50	82	122	151	217	252	308	446	-
<b>Series 14c</b>	<b>Series 25</b>	35	60	96	153	210	256	283	308	446	-
<b>Series 74b</b>	<b>Series 16</b>	-	-	118	166	217	260	301	348	454	-
<b>Series 14t</b>	$\varnothing Di1$	53	77	127	172	223	256	-	-	-	-
	$\varnothing Di2$	44	59	119	170	221	267	-	-	-	-



DN		50	80	100	150	200	250	300	600
<b>Series 14e</b>	$\varnothing Di$	26	66	86	140	191	241	290	580

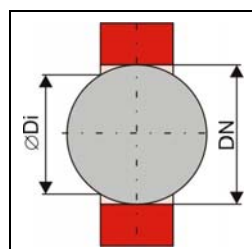




Table 2 – Minimum required inside diameter Di of the mating flanges

- ⇒ Prior to installation, carefully clean the valve and the connecting section of the pipeline from dirt, especially hard foreign material.
- ⇒ The preferable mounting position for butterfly valves is with the shaft in a horizontal position. However, if possible, the actuator should not be located directly underneath the butterfly valve.
- ⇒ Make sure the arrow on the valve body corresponds with direction of pressure in the pipeline.

 <b>Note</b>	In special cases, it may be necessary for the valve to be tightly shut against the pressure direction. The installation in such special cases <b>must be determined by the operator of the pipeline</b> (e.g. to protect a pump).
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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.

 <b>Attention</b>	For butterfly valves with re-adjustable stuffing box.: The necessary torques for tightening the adjustable stuffing box can taken for table 3 . The use of torque wrenches ensure, that the torques are reached.
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DN [mm]	80	100	150	200	250	300
MA [Nm]	4	5	6	7	7	9

Table 3 – Tightening values for the adjustable stuffing box

- ⇒ 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>.

 <b>Warning</b>	Control commands that are not carried out correctly <b>may result in personal injury and can damage equipment installed in the pipeline.</b>
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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 before operating the valve.
- ⇒ **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

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

Depending on the design and construction in use, the operating shaft sealings are maintenance free.

- The operating shaft with a PTFE-V-ring pack sealing, is pre-loaded with a spring washer set, and therefore maintenance free.


- The operating shaft with PTFE-meshwork pack sealing is pre-loaded with a compression spacer and must only be adjusted when required.



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 butterfly valves is not necessary. When checking the pipeline section, make sure that no medium leaks out at the flanged and threaded ends of the body and at the shaft packing. If a valve leaks, proceed as described in section 7 <Troubleshooting>.

## 7 Troubleshooting

Observe the safety instructions listed in section 2 on troubleshooting.

	<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 or at the cover	Tighten flange bolts. <i>If the medium leaks out at the flanges even after tightening the flange bolts: Unscrew the flange bolts and remove the valve (on doing so, observe the instructions in section 2.3 &lt;Particular hazards&gt;).</i>	
Leak at the shaft packing	Remove the valve (observing the instructions in section 2.3 <Particular hazards>), dismantle the valve and replace the shaft packing. Contact Pfeiffer for spare parts and necessary instructions. <i>For Butterfly valves with adjustable Stuffing box: Alternately tighten both bolts at the stuffing box gland by turning them clockwise (in steps of 1/4 turns) until the leakage stops.</i> <i>If the valve still leaks: The valve must be repaired. Contact Pfeiffer for spare parts and necessary instructions.</i> <i>On loosening or unscrewing the nuts at the stuffing box gland (counterclockwise):</i>  <b>Danger:</b> To protect the operator, relieve pressure entirely in the pipeline upstream and downstream of the valve prior to loosening the nuts. Observe instructions in section 2.3 <Particular hazards>.	<b>Note 1:</b> <i>When ordering spare parts, include all the specifications listed in the valve designation. Only use original parts from Pfeiffer.</i>
No tight shut-off when the valve is closed	Check whether the valve is 100% closed. <i>If the valve is closed: Check whether the actuator closes with full torque.</i> <i>If actuator closes with full torque: Open/close the pressurized valve several times.</i> <i>If the valve still leaks: Increase the actuator torque in CLOSED position up to a maximum value of 1.1 x the rated torque.</i> <i>If the valve still leaks: The valve must be repaired: replace the seat ring (observing the instructions in section 2.3 &lt;Particular hazards&gt;). Contact Pfeiffer for spare parts and necessary instructions.</i>	<b>Note 2:</b> <i>If, after removing the valve from the pipeline, it is found that the internal parts are not sufficiently resistant to the process medium, select parts made of a suitable material.</i>
Malfunction	Check actuator unit and control signals. <i>If actuator and control equipment are in order: Remove the valve (observing the instructions in section 2.3 &lt;Particular hazards&gt;) and check it.</i> <i>If the valve is damaged: The valve must be repaired. Contact Pfeiffer for spare parts and necessary instructions.</i>	
If a pneumatic actuator with springs must be removed from the valve	 <b>Caution: Risk of injury</b> Before removing the actuator from the valve, disconnect the signal pressure.	

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.

### Pfeiffer Chemie-Armaturenbau GmbH

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