

## Declaration of Conformity as per Directive 97/23/EC

The manufacturer	<b>Pfeiffer Chemie-Armaturenbau GmbH, 47906 Kempen, Germany</b>
declares that:	<b>Rotary plug valve Series 23a, Series 23b, Series 23k and Series 23s, with PTFE seat seal</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. They may only be operated observing the operating instructions &lt;BA23a-01&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 rotary plug valves which are intended for dead-end service, see section 2.3).</p>	

*Applied standards:*

<b>AD 2000 Regulations</b>	<b>Regulations for pressurized valve body parts</b>
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*Type designation and technical features:*

<b>Pfeiffer data sheets &lt;TB23a, TB23b, TB23k and TB23s&gt;</b> <i>NOTE: This Manufacturer's Declaration applies to all valve types listed in this catalogue.</i>
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*Applied conformity assessment procedure:*

<b>Conforming to Annex III of the Pressure Equipment Directive 97/23/EC, Module H</b>
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*Name of notified body:*

*Identification number of the notified body:*

<b>TÜV Rheinland Service GmbH</b> Am Grauen Stein 51101 Köln Germany	<b>0035</b>
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These Declarations become invalid when modifications are made to the rotary plug valves and/or assemblies that affect the technical data of the rotary plug 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, 23. June 2014      Marcus Miertz, Managing Director      Stefan Czayka, QM Representative

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

# Operating instructions

## Rotary plug valve actuated


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## 0 Introduction

These instructions are designed to assist the user during installation, operation and maintenance of rotary plug valves from the Series 23a, Series 23b, Series 23k and Series 23s.


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

 <b>Note</b>	<p>The WARNING and CAUTION 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.</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 rotary plug valves are designed exclusively for shutting off or controlling media within the permissible pressure and temperature ranges.

The permissible pressure and temperature ranges for these rotary plug valves are specified in the data sheets <TB23a\_EN, TB23b\_EN, TB23k\_EN or TB23s\_EN>.

 <b>Danger</b>	<p>Do not operate a rotary plug valve when its permissible pressure/temperature rating is not sized for the operating conditions specified in the data sheets &lt;TB23a_EN, TB23b_EN, TB23k_EN or TB23s_EN&gt;.</p> <p><b>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</b></p>
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### Interpretation of declaration to the Directive 94/9/EC

 <b>Note</b>	<p>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.</p> <p>Relating to this directive a CE-marking is not permissible. The valve could be incorporated into potential compensation of plants independent of the directive, valid for metallic parts in hazardous areas.</p>
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Observe the limitations in the above mentioned data sheets if the rotary plug 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 rotary plug 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 rotary plug 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 rotary plug 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>Warning</b>	<p><b>Preventing misuse of the rotary plug valve:</b></p> <p>It is especially important to make sure that the selected materials for wetted parts in the rotary plug valve are suitable for the media used as well as the prevailing pressures and temperatures.</p> <p><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></p>
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⇒ An actuator unit mounted subsequently onto the valve must fit the rotary plug valve properly and its final positions, especially the open 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.

⇒ 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.

- ⇒ The valve needs to be connected correctly to the pipeline and to the control equipment.
- ⇒ Rotary plug 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.
- ⇒ The valve should only be operated and serviced by personnel appropriately qualified for pressurized pipelines.

### 2.3 Particular hazards

 <b>Danger</b>	Prior to removing the rotary plug valve from the pipeline or unscrewing the bolts at the bonnet flange, <b>relieve pressure entirely in the pipeline</b> to ensure the process medium cannot escape uncontrollably from the pipeline.
 <b>Warning</b>	Should it be necessary to remove a rotary plug valve from the pipeline, process medium may escape from the pipe or out of the rotary plug valve. In the case of process media that can damage health or are dangerous, drain the pipeline completely before removing the rotary plug valve from the pipeline. 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>
 <b>Warning</b>	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 <EB23a_EN, EB23b_EN, EB23k_EN or EB23s_EN>.
 <b>Warning</b>	<i>For rotary plug valves intended for dead-end service:</i> 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 rotary plug valve is <b>properly protected against unauthorized operation.</b>
 <b>Warning</b>	If a rotary plug 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.

### 2.4 Designation of the rotary plug valve

The designation of the rotary plug 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 23b = Series 23b, see Pfeiffer catalog																									
Body material	e.g.: <b>1.4571</b>	Material number acc. to DIN EN 10272																									
Size	<b>DN (and number)</b>	Value in mm, e.g. DN50																									
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>2030153/001/001</b>	<table style="border: none;"> <tr> <td style="text-align: center; vertical-align: middle;">203</td> <td style="text-align: center; vertical-align: middle;">0153</td> <td style="text-align: center; vertical-align: middle;">/001</td> <td style="text-align: center; vertical-align: middle;">/001</td> <td></td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">Valve No. into the Item</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">Item in Commission</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">Commission</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td style="text-align: right;">year of manufacture (e.g. 203=2003)</td> </tr> </table>	203	0153	/001	/001						Valve No. into the Item					Item in Commission					Commission					year of manufacture (e.g. 203=2003)
203	0153	/001	/001																								
				Valve No. into the Item																							
				Item in Commission																							
				Commission																							
				year of manufacture (e.g. 203=2003)																							
year of manufacture	e.g.: <b>2003</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 rotary plug 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

Rotary plug 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 rotary plug valves that weigh over approx. 10 kg on pallets (or a similar type of support) right up to the point of installation.
- ⇒ 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 end connections intended to connect the valve to the pipeline are not damaged through mechanical or other influences. Do not stack rotary plug valves after removing the packaging!
- ⇒ As a rule, rotary plug valves are delivered in the completely open position. Store the valves in the condition they were delivered in. Do not activate the actuator.



## 4 Installation in the pipeline

### 4.1 General


The same instructions apply for installing the rotary plug valves in the pipeline as for connecting pipes and similar pipeline equipment. The following instructions additionally apply for rotary plug valves. Also observe section 3 for transporting the rotary plug 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>Danger</b>	If an actuator unit has been mounted subsequently, torque, direction of rotation, operating angle, travel as well as the final positions OPEN and CLOSED must be adapted to the rotary plug valve. <b>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</b>
 <b>Warning</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 rotary plug valves with electric actuator:</i> Make sure that the actuator is switched off in the final positions by the <b>limit switch's signal</b> . If the actuator is switched off in an intermediate position by the <b>torque switch's signal</b> , this signal should be used additionally for fault indication. <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 rotary plug valve.
 <b>Warning</b>	<i>Actuators that weigh more than the rotary plug valve:</i> Support any actuator which due to its size and/or mounting situation would otherwise cause the valve to bend under the load.

The following warnings are to be observed for Series 23k Rotary Plug Valves including a seat with metal sealing:

 <b>Caution</b>	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.
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### 4.2 Installation instructions

- ⇒ Transport the valve in its original packaging right up to the point of installation. Remove packaging first at the point of installation to protect it from dirt.
- ⇒ Check valve and actuator for signs of damage that may have occurred during transportation. Do not install a damaged rotary plug valve or actuator.
- ⇒ Make sure that only rotary plug 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 rotary plug valve.

 <b>Danger</b>	Do not install a rotary plug 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 rotary plug valve's end connections and their ends have parallel planes.
- ⇒ Prior to installation, carefully clean the valve and the connecting section of the pipeline from dirt, especially hard foreign material.
- ⇒ The valve can be installed in any position. However, if possible, the actuator should not be located directly underneath the rotary plug valve.
- ⇒ Make sure the arrow on the valve body corresponds with the direction of flow in the pipeline.



**Note**

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).

- ⇒ On inserting the valve (and any flange gaskets) into a ready mounted pipeline, keep a certain clearance between the pipeline ends to ensure that all facings (and gaskets) remain undamaged.
- ⇒ 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>.



**Warning**

Control commands that are not carried out correctly **may result in personal injury and can damage equipment installed in the pipeline.**

## 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

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

The plug stem is sealed with a PTFE / carbon-graphite 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 rotary plug valves is not necessary.


Rotary plug valves with double packing (standard version of Series 23k valve, special version of Series 23a, Series 23b and Series 23s valves) are fitted with a leak-off connection in the packing flange. Open the connection to check whether the V-ring 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.

 <b>Warning</b>	To remove a valve from a pipeline containing dangerous media and to take it out of the plant: Decontaminate the valves properly first.
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Type of fault	Action to be taken	Comment
Leak at the connection to the pipeline	Tighten flange bolts.  <i>If it still leaks:</i> Replace the flange gasket and/or valve (observing the instructions in section 2.3 <Particular hazards>).	
Leak at the connection between valve body parts	Tighten bolts/screws with a torque wrench, see Pfeiffer repair instructions <EB23a_EN, EB23b_EN, EB23k_EN or EB23s_EN>  <i>If the valve still leaks:</i> Remove the valve (observing the instructions in section 2.3 <Particular hazards>) and replace the gaskets. Contact Pfeiffer for spare parts and necessary instructions.	<b>Note 1:</b> When ordering spare parts, include all the specifications listed in the valve designation. Only use original parts from Pfeiffer.
Leak at the stem 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.	
No tight shut-off when the valve is closed	Remove the valve (observing the instructions in section 2.3 <Particular hazards>) and check it.  <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	<b>Note 2:</b> If, after removing the valve from the pipeline, it is found that the body and/or internal parts are not sufficiently resistant to the process medium, select parts made of a suitable material.
Malfunction	Check actuator unit and control signals  <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.  <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.	
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**

Hooghe Weg 41 • 47906 Kempen  
Phone: +49 2152 2005 - 0 • Fax +49 2152 1580  
E-mail: [vertrieb@pfeiffer-armaturen.com](mailto:vertrieb@pfeiffer-armaturen.com) • Internet: [www.pfeiffer-armaturen.com](http://www.pfeiffer-armaturen.com)

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