Declaration of Conformity as per Directive 97/23 EC

The manufacturer	**Pfeiffer Chemie-Armaturenbau GmbH, 47906 Kempen, Germany**
declares that:	**PFA/PTFE-lined control valves Series 1a, Series 1b, Series 1c, Series 1z, Series 6a and Series 8a, with PTFE bellows seal or diaphragm seal** • **with hand wheel**
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. They may only be operated observing the operating instructions <**BA01a-01_EN**> delivered together with the valve.	

Applied standards:

AD 2000 Regulations	**Regulations for pressurized valve body parts**

Type designation and technical features:

Pfeiffer data sheets <**TB01a_EN**, **TB01b_EN**, **TB01c_EN**, **TB01z_EN**, **TB06a_EN** and **TB08a_EN**>
NOTE: This Manufacturer's Declaration applies to all valve types listed in this catalogue.

Applied conformity assessment procedure:

Conforming to Annex III of the Pressure Equipment Directive 97/23/EC, Module H

Name of notified body:	*Identification number of the notified body:*
TÜV Rheinland Service GmbH Am Grauen Stein 51101 Köln Germany	**0035**

These Declarations become invalid when modifications are made to the control valves and/or assemblies that affect the technical data of the control 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. August 2012 Lorenz Stolzenberg, Managing Director

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

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Operating instructions
Control valve with PFA/PTFE lining
manually operated

Contents

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0. Introduction

These instructions are designed to assist the user during installation, operation and maintenance of PFA/PTFE-lined control valves from the **Series 1a**, **Series 1b**, **Series 1c**, **Series 1z**, **Series 6a** and **Series BR8a**.

Note	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. 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, manually operated control 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 control valves are specified in the data sheets <**TB01a_EN**, **TB01b_EN**, **TB01c_EN**, **TB01z_EN**, **TB06a_EN** and **TB08a_EN**>.

Danger	Do not operate a control valve when its permissible pressure/temperature rating is not sized for the operating conditions specified in the data sheets <**TB01a_EN**, **TB01b_EN**, **TB01c_EN**, **TB01z_EN**, **TB06a_EN** and **TB08a_EN**>. Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.

Observation of conformity with the Directive 94/9/EC

Note	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. 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. 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 (109 Ohm) in accordance with paragraph 7.4 of DIN EN 13463-1:2001.

⇨ Parts subject to wear are not covered by the warranty.

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

2. Safety instructions

2.1 General safety instructions

For control valves, the same safety regulations apply as for the pipelines in which they are installed. These instructions only specify those safety instructions which need to be additionally observed concerning control valves.

2.2 Safety instructions for the operator

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

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

 **Warning**	*Preventing misuse of the control valve:* It is especially important to make sure that the selected lining for wetted parts in the control valve is suitable for the media used as well as the prevailing pressures and temperatures. **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.**

⇨ Make sure that the pipeline has been installed correctly and is checked at regular intervals. The valve body wall thickness must be designed to take into account an additional load Fz in the usual order ($Fz = \pi/4 \cdot DN^2 \cdot PS$) for a correctly sized pipeline.

⇨ The valve needs to be connected correctly to the 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.

⇨ Control 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

 **Danger**	Prior to removing the control 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 control valve from the pipeline, process medium may escape from the pipe or out of the control valve. In the case of process media that can damage health or are dangerous, drain the pipeline completely before removing the control 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 <**EB01a_EN**, **EB01b_EN**, **EB01c_EN**, **EB01z_EN, EB06a_EN** or **EB08a_EN**>.
 **Warning**	*For control valves intended for dead-end service:* 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 control valve is properly protected against unauthorized operation.
 **Warning**	If a control 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!**
 **Warning**	*For control valves, Series 1a with an optional discharge bore:* The discharge bore with thread, can be found in the valve body, where the name plate is attached. If the PTFE-Liner tears or rips, the product medium, which in most cases is toxic, and extreme reactive, can immediately discharge from this bore. For this reason, the discharge bore must be: a) sealed with the an existing plug screw. b) connected to an appropriate piping, so that any immediate threat of danger is prevented. **Take into account, that in most cases the medium concerned is always dangerous!**

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2.4 Designation of the control valve

The designation of the control valve includes the following details:

Details	Designation	Comments
Manufacturer	Pfeiffer	Address, see section 8 <Further information>
Valve type	BR (and number)	e.g. BR 1a = Series 1a, see Pfeiffer catalogue
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. 2009 onwards	e.g.: 221234/001/001	22 1234 /001 /001 Valve no. within item Item in order Order Year of manufacture (e.g. 29=2009, 20=2010, 21=2011)
Serial no. up to 2008	e.g.: 2080153/001/001	208 0153 /001 /001 Valve no. within item Item in order Order Year of manufacture (e.g. 206=2006, 207=2007, 208=2008)
Year of manufacture	e.g.: 2008	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 Rheinland Service GmbH
Direction of flow	➔	Note: see note in section 4.2 <Installation instructions>

Table 1 – Designation of the control valve

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

3. Transport and storage

Control 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 control 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 in the pipeline are not damaged through mechanical or other influences. Do not stack control valves!

⇨ As a rule, control valves are delivered in the completely closed position. Store the valves in the condition they were delivered in. Do not operate the hand wheel.

4. Installation in the pipeline

4.1 General

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

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Caution	*The valve is lined with PTFE/PFA:* Handle with special care and follow the instructions for flange connection.
Note	The facings of the valve body are lined with plastic. 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

4.2 Installation instructions

Caution	*The lined surface of the valve must be specially protected before/during installation:* Transport the valve in its original packaging right up to the point of installation. Remove packaging first at the point of installation.

⇨ Check valve for signs of damage that may have occurred during transportation. Do not install a damaged control valve.

⇨ Prior to installation, carry out a function check. The valve must open and close properly. Any function errors that are recognized must be remedied before commissioning. See also section 7 <Troubleshooting>.

⇨ Make sure that only control 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 control valve.

Danger	Do not install a control 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.**

⇨ Make sure the end connections of the pipeline are aligned with the control valve's end connections and their ends have parallel planes. Connecting flanges that are not parallel can damage the PFA/PTFE lining during installation!

⇨ 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.

⇨ Make sure, in particular, that flange facings (and any flange gaskets) are free from any dirt prior to installation.

⇨ 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 flange gaskets) into a ready mounted pipeline, keep a certain clearance between the pipeline ends to ensure that all facings (and gaskets) remain undamaged.

Caution	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.

DN [mm]	25	40	50	80	100	150
MA [Nm]	25	50	60	65	75	140

Table 2 – Flange torques for DIN flanges

Size [inch]	1“	1 1/2“	2“	3“	4“	6“
MA [Nm]	15	30	40	65	50	100

Table 3 – Flange torques for ANSI flanges

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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 that PTFE/PFA plastic facings have a tendency to flow, we strongly recommend to check flange bolt torques as specified in section 4.2 after commissioning and the normal operating temperature has been reached.

⇨ Normal manual force is sufficient to operate the manual operation. Turn the handwheel clockwise to close the valve. It is not permissible to use extensions to increase the operation torque.

⇨ The shaft is sealed with a PTFE bellows seal or diaphragm and does not require any maintenance.

⇨ Regular maintenance work on the control valves is not necessary. Control valves with bellows seal or diaphragm are equipped with a leak-off connection (e.g. 1/4“) between bellows seal / diaphragm and the external shaft seal which allows you to check whether the bellows seal or diaphragm are leaking.

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

7. Troubleshooting

Observe the safety instructions listed in section 2 on troubleshooting.

 **Warning**	*To remove a valve from a pipeline containing dangerous media and to take it out of the plant:* Decontaminate the valves properly first.

Type of fault	Action to be taken	Comment
Leak at the connection to the pipeline	Tighten flange bolts.  **Caution**! The permissible tightening torque of the flange bolts is restricted. See table 2 or 3 in section 4.2 <Installation instructions>. *If the medium leaks out at the flanges of the lined valve:* 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 %. *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 <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.	**Note 1:** When ordering spare parts, include all the specifications listed in the valve designation. Only use original parts from Pfeiffer. **Note 2:** If, after removing the valve from the pipeline, it is found that the PFA/PTFE lining is not sufficiently resistant to the process medium, select parts made of a suitable material.

For further help see next Page

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Type of fault	Action to be taken	**Comment**
Leak at the connection between valve body parts	For the permissible tightening torque to retighten the body halves of the valve, see Pfeiffer repair instructions <**EB01a_EN**, **EB01b_EN**, **EB01c_EN**, **EB01z_EN**, **EB06a_EN** or **EB08a_EN**> *If the valve still leaks:* Replace the flange gasket and/or valve.	
Leak at the shaft seal	*If medium leaks out at the leak-off connection:* Remove the valve (observing the instructions in section 2.3 <Particular hazards>), dismantle the valve and replace the bellows seal or diaphragm. Contact Pfeiffer for spare parts and necessary instructions. *If with the option „adjustable stuffing box" the medium escapes at the stuffing box:* This version does not have a leak-off connection on the bonnet. The backup stuffing box is not gas tight from around 2 bar in the delivered state. This is reached by 3 mms of posset way of the security stuffing box sealed with red varnish. If the valve leaks at the stuffing box, the bellows is defective. **Caution!** All necessary safety measures must be taken to avoid any possible accidents. Always take into account that you are nearly always dealing with dangerous medium. Tighten the stuffing box. **Caution!** The valve no longer leaks, however, it should be repaired as quickly as possible, as there is no primary sealing. The sealing through the stuffing box should only be for a short period. Remove the valve (observing the instructions in section 2.3 <Particular hazards>), dismantle the valve and replace the bellows seal. Contact Pfeiffer for spare parts and necessary instructions.	**Note 1:** When ordering spare parts, include all the specifications listed in the valve designation. Only use original parts from Pfeiffer. **Note 2:** If, after removing the valve from the pipeline, it is found that the PFA/PTFE lining is not sufficiently resistant to the process medium, select parts made of a suitable material.
No tight shut-off when the valve is closed	Remove the valve (observing the instructions in section 2. 3 <Particular hazards>) and check it. *If the valve is damaged:* If it must be repaired, remove the valve, observing section 2.3 <Particular hazards>. Contact Pfeiffer for spare parts and necessary instructions.	
Malfunction	*If the valve is damaged:* If it must be repaired, remove the valve, observing section 2.3 <Particular hazards>. Contact Pfeiffer for spare parts and necessary 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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