

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

The manufacturer	Pfeiffer Chemie-Armaturenbau GmbH, 47906 Kempen, Germany
declares that:	Multi-way diverting valves Series 29a and Series 29b, with 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 <BA29a-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. (For diverting valves which are intended for dead-end service, see section 2.3).</p>	

Applied standards:

AD 2000 Regulations DIN-EN 292-2000	Regulations for pressurized valve body parts Safety of Machinery, Part 2: Technical requirements
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Type designation and technical features:

Pfeiffer data sheets <TB29a_EN and TB29b_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:

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:

TÜV Anlagentechnik GmbH Am Grauen Stein 51101 Köln Germany	0035
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These Declarations become invalid when modifications are made to the diverting valves and/or assemblies that affect the technical data of the diverting 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 June 2004

Lorenz Stolzenberg, Managing Director

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

Operating instructions

Multi-way diverting valve actuated


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0 Introduction

These instructions are designed to assist the user during installation, operation and maintenance of multi-way diverting valves from the Series 29a and Series 29b.


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

 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 diverting valves are designed exclusively for use within the permissible pressure and temperature ranges. The valves are used to shut off or divert the flow.

The permissible pressure and temperature ranges for these diverting valves are specified in the data sheets <TB29a_EN or TB29b_EN>.

 Danger	<p>Do not operate a diverting valve when its permissible pressure/temperature rating is not sized for the operating conditions specified in the data sheets <TB29a_EN or TB29b_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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Interpretation of declaration to the Directive 94/9/EC

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

2 Safety instructions

2.1 General safety instructions



For diverting 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 diverting 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 diverting valve, make sure the following instructions are observed:

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

 Warning	<p>Preventing misuse of the diverting valve:</p> <p>It is especially important to make sure that the selected materials for wetted parts in the diverting valve are 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>
 Warning	<p>Protection against using the wrong pig:</p> <p>The valve shape and size have been adapted to the pigs to be used according to the customer specifications. In case other pigs are to be used, Pfeiffer must check and confirm the valve's suitability first.</p> <p>Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.</p>






⇒ An actuator unit mounted later onto the valve must fit the diverting valve properly and be correctly adjusted in all the intended positions of the multi-way diverting valve.

⇒ 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.
- ⇒ Diverting 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 diverting 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 diverting valve from the pipeline, process medium may escape from the pipe or out of the diverting valve. In the case of process media that can damage health or are dangerous, drain the pipeline completely before removing the diverting 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 <EB29a_EN or EB29b_EN>.
 Warning	<i>For diverting 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 diverting valve is properly protected against unauthorized operation.
 Warning	If a diverting 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.

2.4 Designation of the diverting valve

The designation of the diverting valve includes the following details:

Details	Designation	Comments
Manufacturer	Pfeiffer	Address, see section 8 <Information>
Valve type	BR (and number)	e.g. BR 29a = Series 29a, see Pfeiffer catalog
Body material	e.g.: 1.4571	Material number acc. to DIN 10272
Size	DN (and number)	Value in mm, e.g. DN 80
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	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>203</p> <p>0153</p> <p>/001</p> <p>/001</p> </div> <div style="margin-left: 10px;"> <p>Valve no. in the item</p> <p>Item in order</p> <p>Order</p> <p>Year of manufacture (e.g. 203=2003)</p> </div> </div>
year of manufacture	e.g.: 2003	On request of customer 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

Table 1 – Designation of the diverting 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

Diverting 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 diverting 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 actuator and the end connections intended to connect the valve to the pipeline are not damaged through mechanical or other influences.
- ⇒ Store the diverting valves in the condition they were delivered in. Do not operate/activate the actuating device.



4 Installation in the pipeline

4.1 General

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


 Note	The mating flanges must have smooth facings Contact the manufacturer if you intend to use other flange forms.
 Warning	<i>The actuating device is set for the operating data specified in the order.</i> The setting is adapted to the switching position of the valve and may not be changed without manufacturer's prior consent.
 Danger	In case the actuator unit is mounted later, the torque, direction of rotation, opening angle and limit stops must be adapted to match the positions of the diverting valve. Failure to follow these safety precautions may result in personal injury and can damage equipment installed in the pipeline.
 Warning	<i>Only for diverting 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. Remedy any faults as quickly as possible. See section 7 <Troubleshooting>. <i>See the instructions for the electric actuator for further details.</i>

The following warnings are to be observed for actuators:


 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 diverting valve.
 Warning	<i>Actuators that weigh more than the diverting 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

- ⇒ 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 diverting valve or actuator.
- ⇒ Make sure that only diverting valves are installed when their pressure rating, end connections and face to face dimensions match the conditions of application. See the designation of the diverting valve.

 Danger	Do not install a diverting 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.
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- ⇒ Make sure the end connections of the pipeline are aligned with the diverting 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.

 Note	Multi-way diverting valves are delivered with the appropriate ball depending on the function of the valve. The schematics of the 3-way diverting valve Series 29a (see Fig. 1) are shown in Fig. 2. The schematics of the 5/4-way diverting valve Series 29b (see Fig. 3) are shown in Fig. 4.
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- ⇒ The supplied 3-way diverting valve Series 29a must be suitable for the pipe section.
The diverting valve ports designated A, B and C must be connected as shown in Fig. 2 in accordance with the intended switching positions in the pipeline. Prior to installation, check the valve's function.

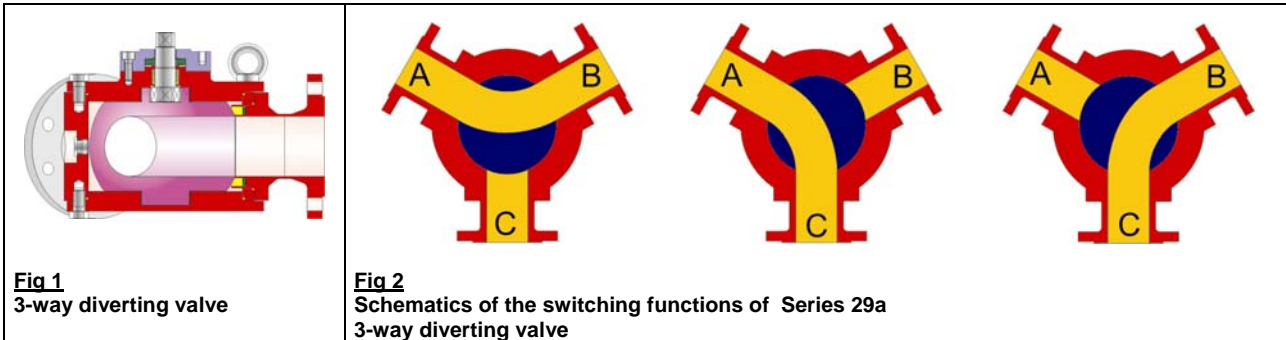


Fig 1
3-way diverting valve

Fig 2
Schematics of the switching functions of Series 29a
3-way diverting valve

- ⇒ The supplied 5/4-way diverting valve Series 29b must be suitable for the pipe section. The diverting valve ports designated A, B, C and D must be connected as shown in Fig. 4 in accordance with the intended switching positions in the pipeline. Prior to installation, check the valve's function.

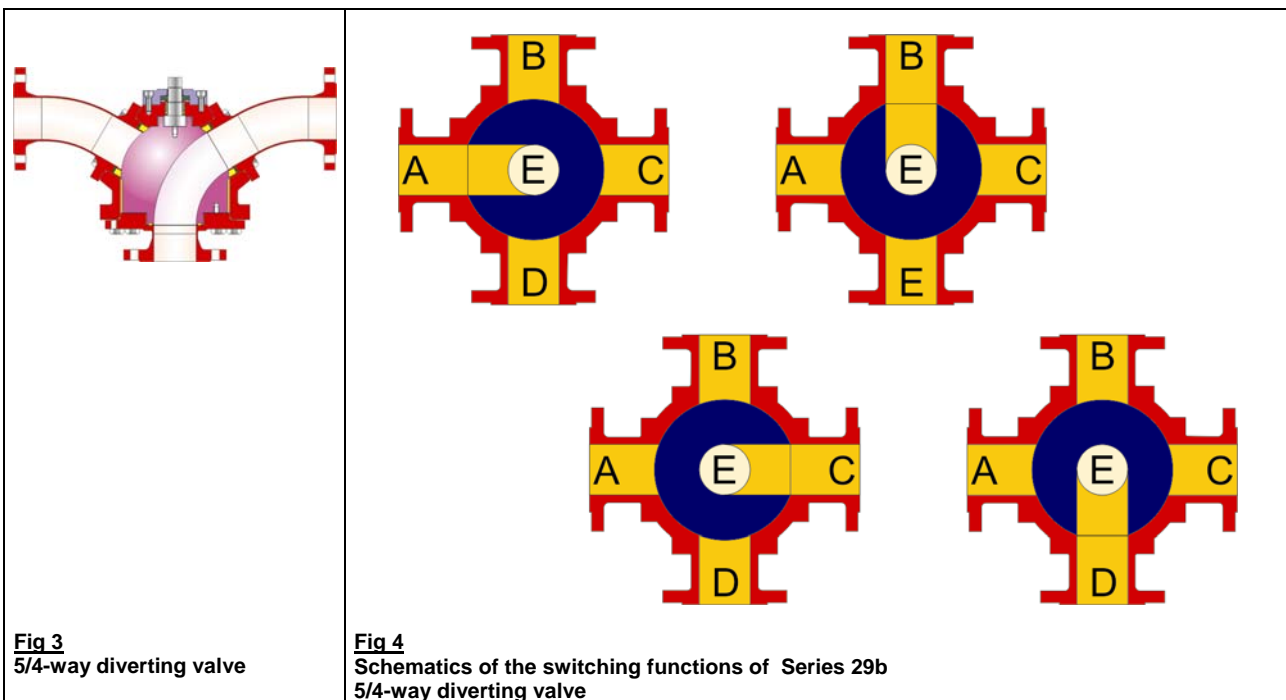


Fig 3
5/4-way diverting valve

Fig 4
Schematics of the switching functions of Series 29b
5/4-way diverting valve

- ⇒ The valve can be installed in any position. However, if possible, the actuator should not be located directly underneath the diverting valve.
- ⇒ The connecting specifications for the actuator unit must match those of the control equipment. See nameplate(s) on the actuator unit.
- ⇒ 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.



Warning

Actuators that are mounted onto the valve later must be fitted with supports if their size and mounting position cause an unintended bending stress on the mounting kit between valve and actuator.

- ⇒ 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. Diverting 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 diverting valves is not necessary. But, on checking the pipeline section, there should be no leakage at the flanged and bolted connections of the valve body or 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.

 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>	
Type of fault	Action to be taken	Comment
Leak at the connection to the pipeline	Tighten flange bolts. <i>If the medium leaks out at the flanges even after tightening the flange bolts: Remove the valve (observing the instructions in section 2.3 <Particular hazards>) and replace the gaskets.</i>	Note 1: <i>When ordering spare parts, include all the specifications listed in the valve designation. Only use original parts from Pfeiffer.</i> Note 2: <i>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.</i>
Leak at the connection between valve body parts	Tighten bolts/screws with a torque wrench, see Pfeiffer repair instructions <EB29a_EN or EB29b_EN <i>If the valve still leaks: Remove the valve (observing the instructions in section 2.3 <Particular hazards>) and replace the gaskets. Contact Pfeiffer for spare parts and necessary instructions.</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.	
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: If it must be repaired, remove the valve, observing section 2.3 <Particular hazards>. Contact Pfeiffer for spare parts and necessary instructions.</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 <Particular hazards>) and check it.</i> <i>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.</i>	
If a pneumatic actuator with springs must be removed from the valve	 Caution: Risk of injury 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.

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