

Assembly and repair instructions

5/4-way diverting valve Series 29b



Fig 1 - 5/4-Way piggyback diverting valve, series 29b with actuator 31a



This equipment may only be dismantled and disassembled by skilled personnel, who are familiar with the assembly, start-up and operation of this product.

Skilled staff in the sense of these repair and assembly instructions, are persons, who as a result of their training, experience and knowledge of the relevant standards, are able to judge the tasks assigned to them, and to recognise possible dangers.

1. Design, operation and dimensions

Design, operation and dimensions, also all further technical details may be found in the **Data sheet < TB 29b_EN >**

2. Installation, start-up and maintenance

Guidelines for the installation, start-up and maintenance can be found in the **Operating instructions**

< BA 29a-01_EN > for automatic diverting valves, i.e.

< BA 29a-02_EN > for manually operated diverting valves.

0. Introduction

These instructions are intended to support the user in the assembly and repair of the 5/4 Way piggyback diverting valve, series 29b

Technical details, as a result of further development of the valve mentioned in these instructions are subject to modification without notice. The text and illustrations do not necessarily display the scope of supply, or an eventual order of spare parts. Drawings and graphics are not to scale. Customer related designs, which are not in accordance with our standard offer, are not shown.

The transfer of these instructions to third parties is only allowed with written approval of Pfeiffer Chemie-Armaturenbau GmbH.

All documents are protected according to the laws of the German Copyright Act. The transmission and / or duplication of documents, even in abstracts, also the exploitation and communication of contents is not permitted, unless expressly granted.

Violations are an offence and liable to claims for damages. We reserve all rights for the exercise of industrial property rights.

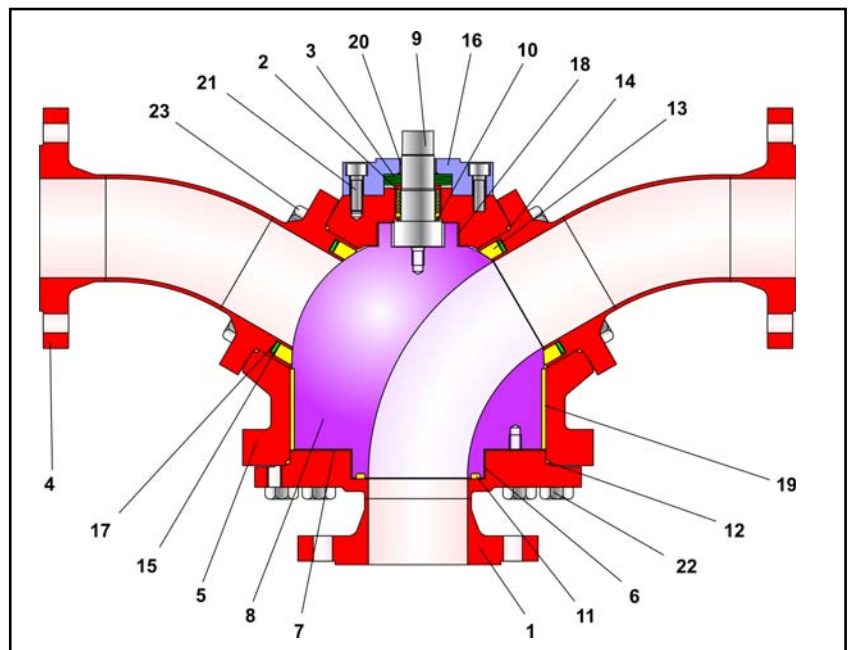


Fig. 2 - Sectional view of a 5/4-Way diverting valve, series 29b => Parts list, see table 1 on page 3

5/4-way diverting valve Series 29b

3. Control positions for 5/4-way diverting valve Series 29b

3.1 Diverting designs, and identification of connections (embossed on flange):

Top view = Shaft at the top

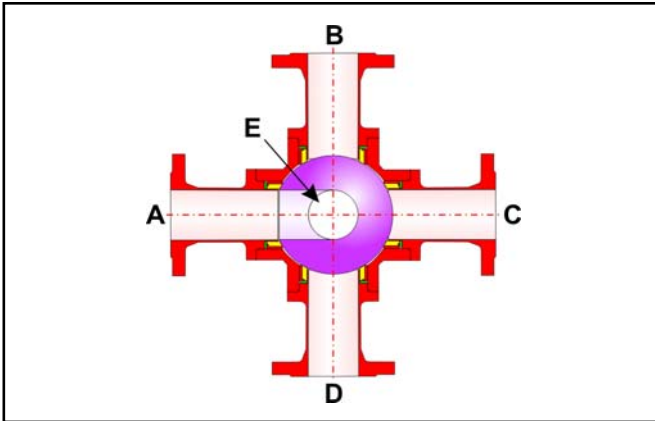


Fig. 3 Control positions

3.2 Set-up arrangement of actuator:

Top view = Actuator at the top

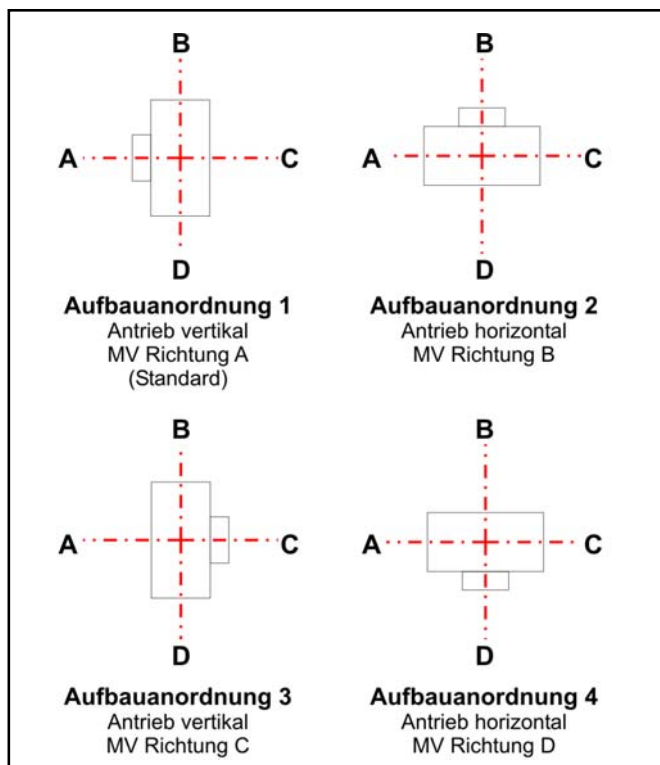


Fig. 4 - Set-up arrangement

3.3 Control function of the actuator:

The different switch positions, starting from direction E, in directions A, B, C D are achieved with a incremental controlled coupling. A definition for each initial- and switch position is therefore not necessary.

4. Assembly of the 5/4-way diverting valve

4.1 Preparation for assembly

To assemble the 5/4-way diverting valve, first clean all parts carefully, and lay them on a soft padded surface (rubber mat or similar). Take into consideration, that parts made of plastic are generally soft and sensitive, in particular the sealing surfaces must be handled with care, and not be damaged.



Attention: To avoid cold corrosion of the screws in the bodies der Schrauben, the manufacturer has used a high performance lubricating grease (Gleitmo 805. from Fuchs). This grease however, may not be applied to valves which are used in an oxygen environment. Valves which must be free of grease, especially for use in oxygen, an appropriate lubrication must be used.



Note: The position and arrangement of the individual parts shown in the explosion drawing must be observed when assembling the valve.

4.2 Pre-assembly of the base flange (E)

The assembly begins with the base flange (1). Press the bearing bushing (6) into the base flange (1). The O-ring of the body sealing (12) is placed in the respective position of the flange.

4.3 Pre-assembly of the side body (A, B, C and D)

Place the lined spring washers (15 and 17) in each of the side bodies (4). Refer to drawing (Fig. 5) for assembly position. The sealing ring (13) is pressed onto the spring washer (15)

4.4 Pre-assembly of the main body

Press the bearing bush (18) in the main body (5). With a slight rotating movement, the bearing bush (10) is pressed onto the control shaft. (9) The control shaft (9) together with the bearing bushing (10) is then guided from the inside, through the control shaft opening in the main body (5).



Note: The sealing surface of the control shaft (9) must not be damaged. Also make sure that, the bearing bushing (10) and the control shaft (9) are vertically positioned when guided into the opening for the control shaft, and not slanted.

Carefully place the ball (8) in the main body.



Note: From DN 80 use a hoist when placing the ball into the body.

The ball is rotated until the control shaft engages. The ball can now glide cleanly into the main body.

Press the cavity disc (19) in the gap between main body and ball. Place the O-ring (11) in the intended groove of the ball (8). Also place the disc (12) on the running surface of the ball.

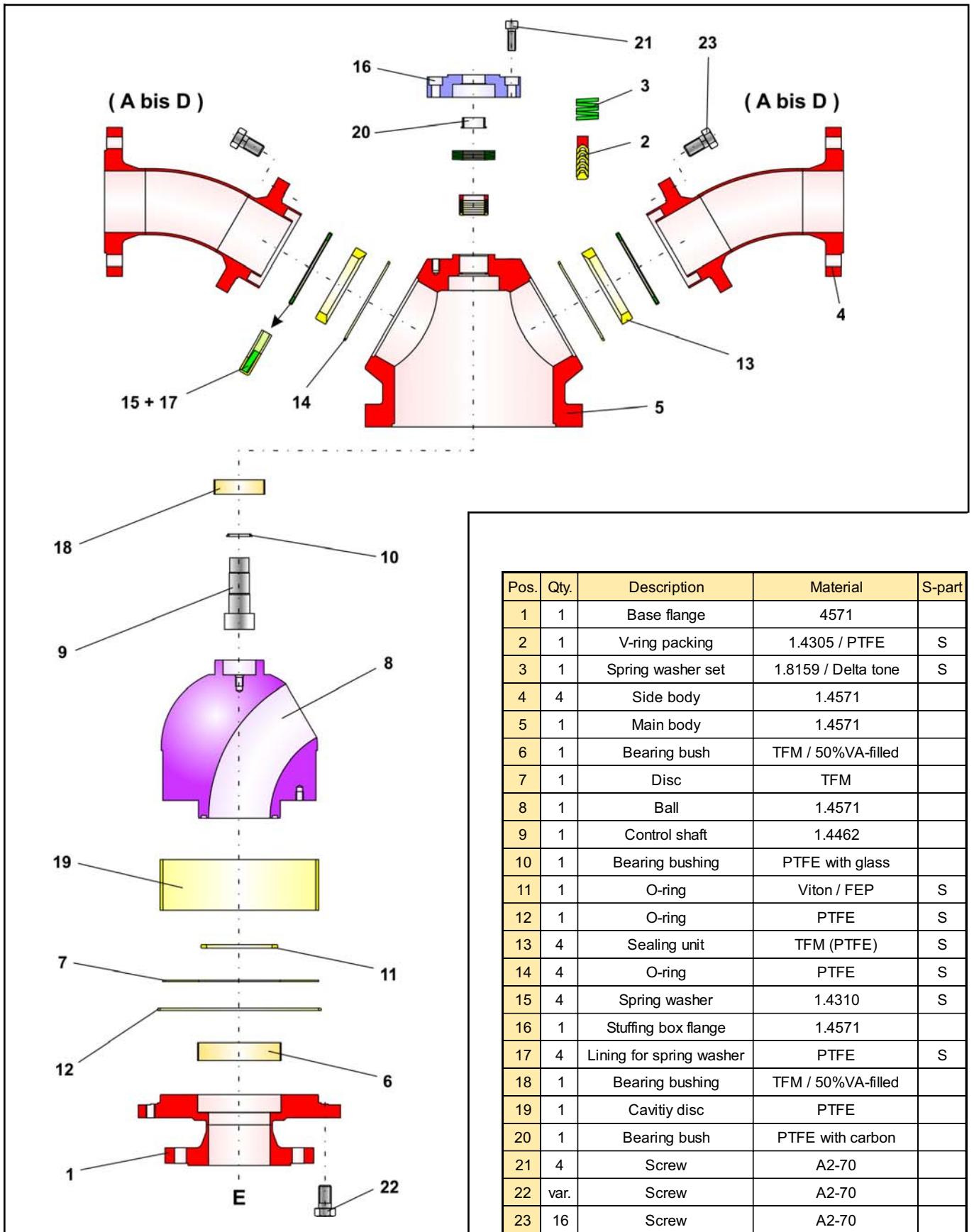


Fig. 5 - Explosion drawing of the 3-Way diverting valve, series 29a

Pos.	Qty.	Description	Material	S-part
1	1	Base flange	4571	
2	1	V-ring packing	1.4305 / PTFE	S
3	1	Spring washer set	1.8159 / Delta tone	S
4	4	Side body	1.4571	
5	1	Main body	1.4571	
6	1	Bearing bush	TFM / 50%VA-filled	
7	1	Disc	TFM	
8	1	Ball	1.4571	
9	1	Control shaft	1.4462	
10	1	Bearing bushing	PTFE with glass	
11	1	O-ring	Viton / FEP	S
12	1	O-ring	PTFE	S
13	4	Sealing unit	TFM (PTFE)	S
14	4	O-ring	PTFE	S
15	4	Spring washer	1.4310	S
16	1	Stuffing box flange	1.4571	
17	4	Lining for spring washer	PTFE	S
18	1	Bearing bushing	TFM / 50%VA-filled	
19	1	Cavity disc	PTFE	
20	1	Bearing bush	PTFE with carbon	
21	4	Screw	A2-70	
22	var.	Screw	A2-70	
23	16	Screw	A2-70	

Table 1 - Spare parts list

4.5 Final assembly of the main body

Place the pre-assembled base flange, (E) as described in section 4.2, carefully without slanting, onto the pre-assembled main body.



Attention: The O-ring (12) of the body sealing must not be damaged.

After applying grease to the screws, (22) tighten the flange with the main body together, evenly and in alternating pattern.

Now place the main body on the base flange (E).

The O-rings (14) are inserted in the respective Positions of the main body.

The pre-assembled side bodies, (A, B, C and D) as described in section 4.3, are mounted onto the main body.

Mount the side bodies carefully in the main body, so that the sealing rings are laying correctly on the ball.



Attention: The sealing ring seats, (13) and the O-rings (14) of the body sealing must not be damaged.

Apply grease to the screws, (23) and tighten the side bodies with the main body together, evenly and in alternating pattern.

4.6 Final assembly of the 5/4-Way diverting valve

With a light rotating movement, press the V-ring packing (2) over the control shaft, (9) and place in the packing chamber of the main body (5).

For the arrangement of the V-rings, refer to the explosion drawing (Fig. 5). Now the spring washer set (3) is placed on the V-ring packing. For the arrangement of the spring washers, refer to (Fig. 5).

Press the bearing bushing (20) into the stuffing box flange (16). Following this, place the stuffing box flange (16) over the control shaft and mount onto the main body, and after applying grease to the screws (21) align and tighten the screws evenly in alternating pattern.



Note: Before testing the valve for leakage tightness, the valve should be operated several times to enable the ball to centre and sit correctly in the sealing rings, therefore ensuring a good sealing function.

The assembly for the diverting valve is completed.

5. Trouble shooting

Action to be taken in the case of malfunction is described in the

Operating instructions:

< BA 29a-01_EN > for automatic diverting valves, i.e.

< BA 29a-02_EN > for manually operated diverting valves.

6. Repairing the 5/4-Way diverting valve

6.1 Replacing the V-ring packing

If leakage is located at the stuffing box, the PTFE-rings of the V-ring packing may be defect. It is therefore recommended to check the condition of the packing. To dismantle the packing, proceed in reverse order to the assembly instructions, as described in section 3. As with all other plastic parts, proceed to check the PTFE rings of the V-ring packing for damage, and if necessary replace these parts.

6.2 Replacing the sealing seat and the ball

If leakage is located at the flow through bore in the metering valve, the sealing ring set and the ball may be defect. It is therefore recommended to check these parts. To dismantle the sealing rings and the ball, proceed in reverse order to the assembly instructions as described in section 3.

As with all other plastic parts, proceed to check the sealing rings and ball for damage, and if necessary replace these parts.

6.3 Further repairs

We recommend larger repairs to be carried out in our works by our skilled staff at Pfeiffer.

7. Customer inquiries

(by inquiries, please state the following)

1. Commission number (embossed on the type plate)
2. Type, manufacturer no. nominal diameter, and version of 5/4 -Way diverting valve.
3. Pressure and temperature of the media flow.
4. Through flow in m³/h.
6. Possible circuit diagram.

For your special requirements, please contact our technical sales department.

Pfeiffer Chemie-Armaturenbau GmbH

Hooghe Weg 41 • 47906 Kempen

Telefon: 02152 / 2005-0 • Telefax: 02152 / 1580

E-Mail: vertrieb@pfeiffer-armaturen.com • Internet: www.pfeiffer-armaturen.com

Specifications and versions are subject to change without notice