

Assembly and repair instructions

3-Way diverting valve Series 29a



Fig 1 - Diverting valve Series 29a with AT-Actuator series 31a



This equipment may only be dismantled and disassembled by skilled personal, 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 can be found in the Data sheet < TB 29a_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 piggable 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 diverting piggable valve, series 29a.

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.

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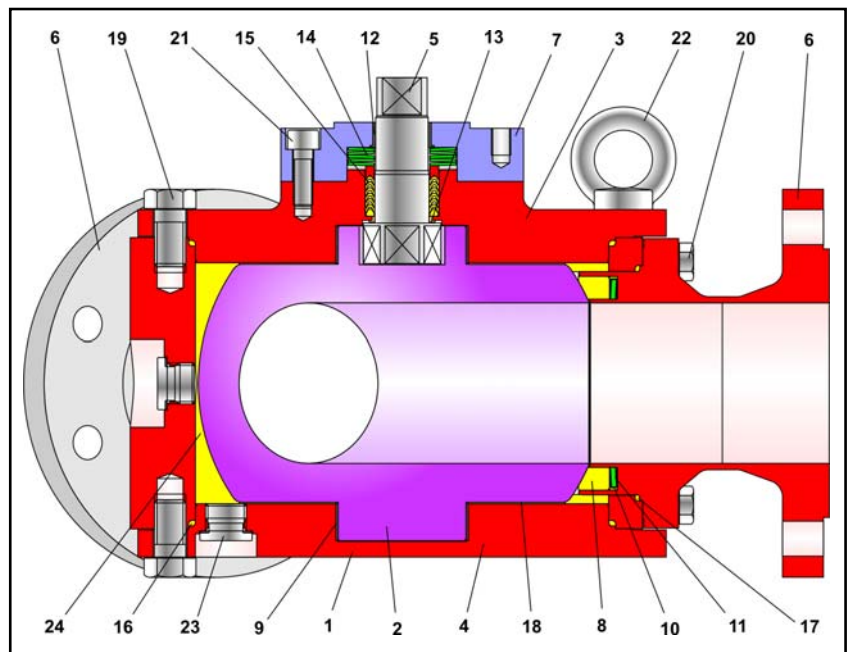


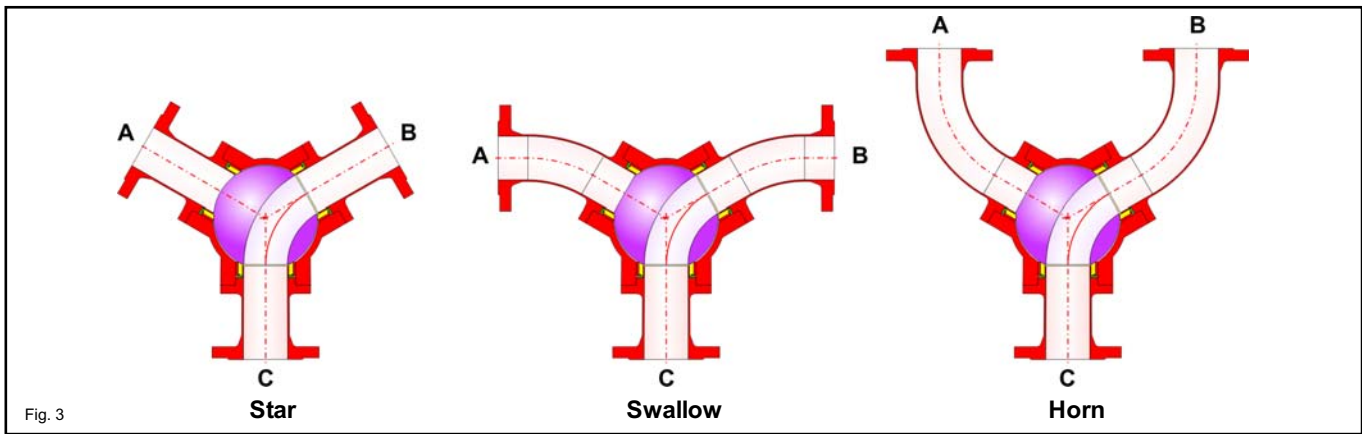
Fig. 2 - Sectional view of diverting valve, series 29a => Parts list, see Table 1 on page 3

Diverting valve Series 29a

3. Control positions for diverting valve, series 29a

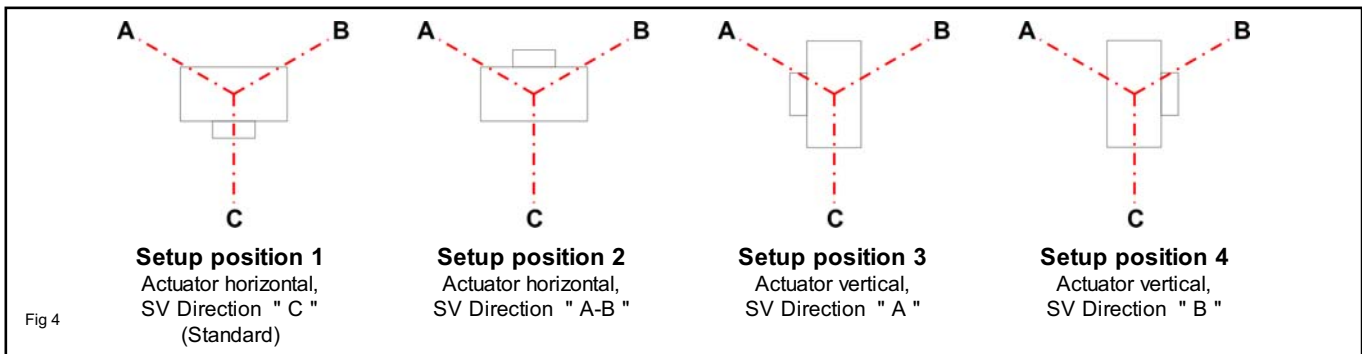
3.1 Diverting designs, and identification of the connections (embossed on flange):

Top view = Shaft at the top



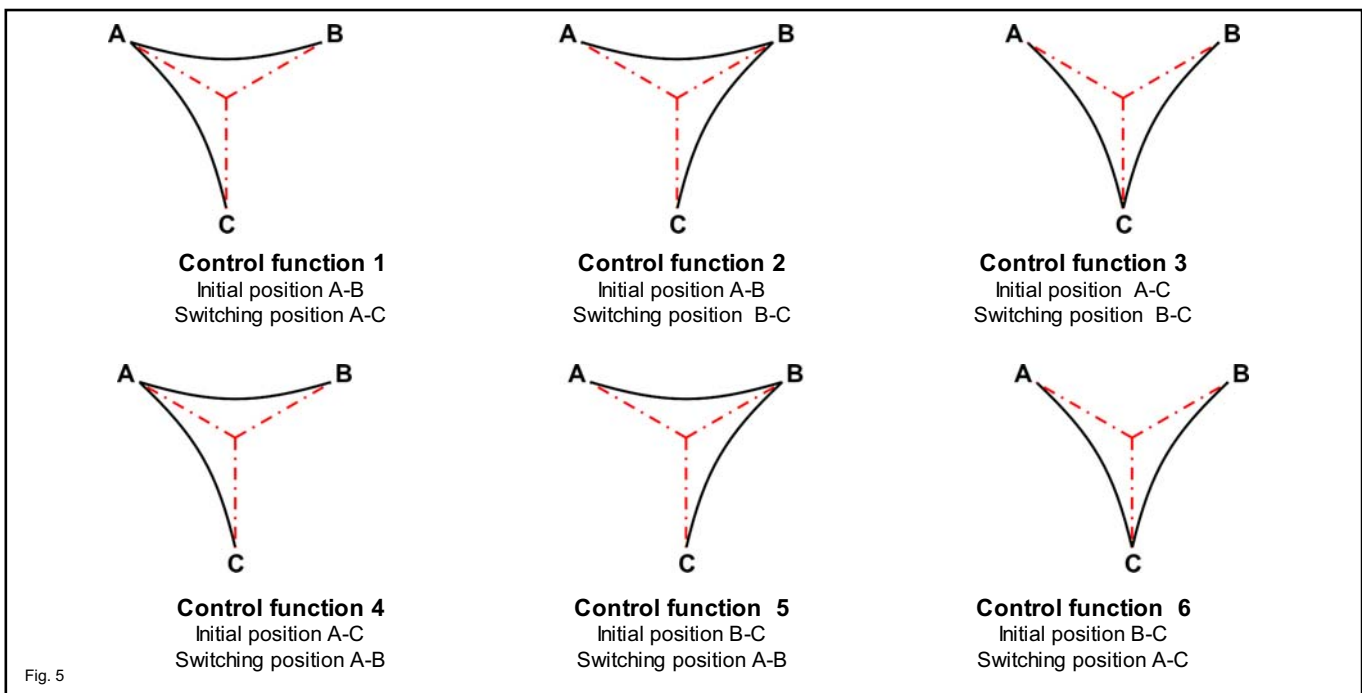
3.2 set-up position of the actuator:

Top view = Actuator at the top



3.3 Control function of the actuator:

Top view = Actuator at the top



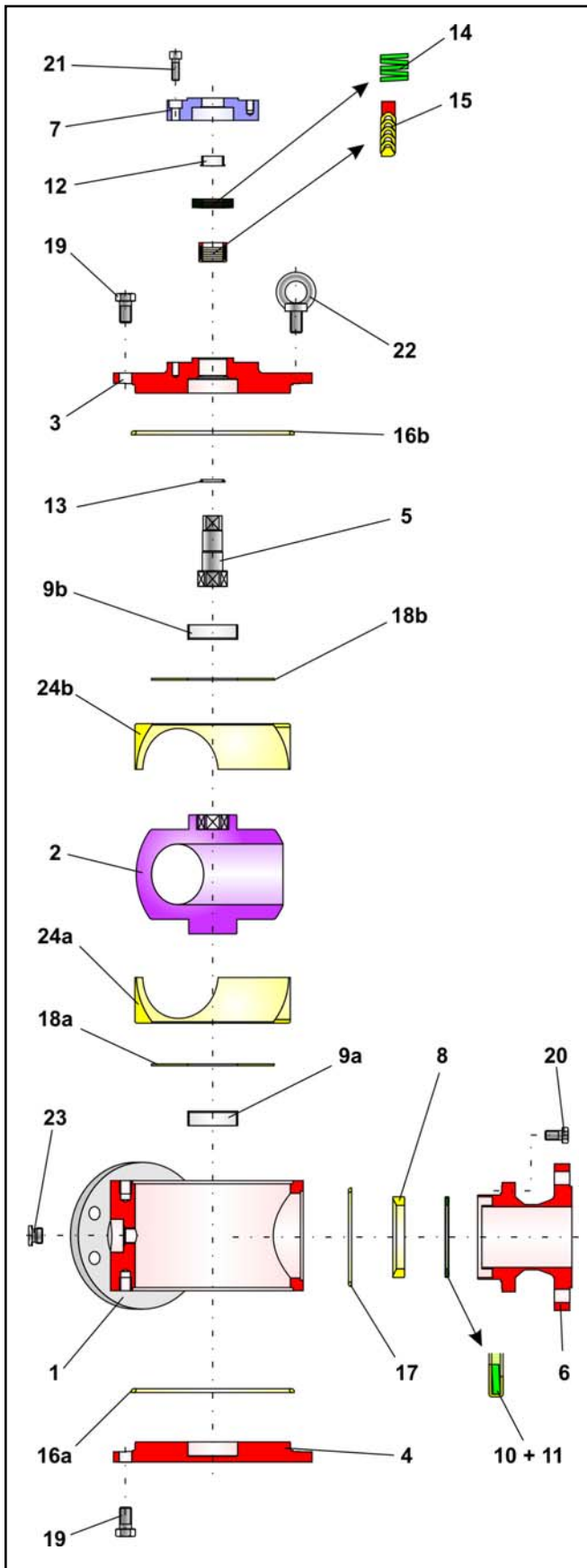


Fig. 6 - Explosion drawing of the 3-way diverting valve 29a

Pos.	Qty.	Description	Material	S-Part
1	1	Main body	1.4408	
2	1	Ball	1.4571	
3	1	Bonnet flange	1.4571	
4	1	Base flange	1.4571	
5	1	Control shaft	1.4462	
6	1	Side body	1.4571	
7	1	Stuffing box	1.4571	
8	1	Sealing unit	TFM (PTFE)	S
9	2	Bearing bush	TFM / 50%VA-filled	
10	3	Lining for spring washer	PTFE	S
11	3	Spring washer	1.4310	S
12	1	Bearing bush	PTFE with carbon	
13	1	Bearing bush	PTFE with glass	
14	1	Spring washer set	1.8159 / Delta Tone	S
15	1	V-ring packing	1.4305 / PTFE	S
16	2	O-ring	PTFE	S
17	3	O-ring	PTFE	S
18	2	Disc	TFM	
19	var	Screw	A2-70	
20	var	Screw	A2-70	
21	4	Screw	A2-70	
22	3	Ring screw	C15	
23	4	Plug screw	1.4571 / PTFE	
24	2	Half shell	PTFE	

Table 1 - Parts list

4. Assembly of the 3-way piggable diverting valve

4.1 Preparation for assembly

To assemble the 3-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, 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 main body

The assembly begins with the main body (1). Place the bottom O-ring (16a) in the main body (1). The base flange (4) is mounted onto the main body (1) and aligned with the screws (19). Tighten the screws (19) evenly and in alternating pattern. First insert the bearing bush (9a) and then the disc (18a) in the main body. The bottom half shell (24a) is inserted into the body.



Note: Align the recesses of both half shells, with the outputs of the side body.

Carefully insert the ball (2) into the main body



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

Place the top half of the shell (24b) on the ball.



Note:
Pay attention also to the position of the recesses.

First place the disc (18b) and then the bearing bush (9b) on the ball.

4.3 Bonnet flange assembly

With a light rotating movement, push the bearing bushing (13) onto the control shaft (5). The control shaft (5) together with the bearing bushing (13) is then guided from inside, through control shaft opening in the bonnet flange (3).



Note: Make sure the sealing surface of the control shaft (5) is not damaged. Also make sure, that the bearing bushing (13) with the control shaft (5) are positioned straight when guided into the opening of the bonnet flange (3) and not slanted.

With a light rotating movement, press the V-ring packing (15) over the control shaft (5) and place in the packing chamber of the bonnet flange (31).

For the arrangement of the V-rings, refer to the explosion drawing (Fig 3) Now the spring washer set (14) is placed on the V-ring packing. For the arrangement of the spring washers, refer also to the explosion drawing (Fig 3).

Press the bearing bushing (12) into the the stuffing box flange (7) Following this, place the stuffing box flange (7) over the control shaft onto the bonnet flange, and after applying grease to the screws (21), align and tighten these evenly and in alternating pattern.

4.4 Final assembly of the main body

Insert the O-ring (16b) in the main body.
Carefully place the pre-assembled bonnet flange onto the man body.



Attention:
The O-ring (16a) must not be damaged

Rotate the bonnet flange, until the control shaft engages in the ball, and the bonnet glides cleanly in the main body.
Turn and position the bonnet flange, so that the bores of both parts are aligned to each other.
Apply grease to the screws (19), also the ring screw (22) and tighten both body parts evenly together in alternating pattern.

4.5 Final assembly for the 3-way diverting valve

The lined spring washer (10 and 11) are pushed onto the side body (6). For the assembly position of the spring washer, refer to the drawing (Fig. 3). The sealing ring (8) is pressed onto the spring washer.

Place the O-ring (17) in the main body.

The pre-assembled side body (6) is mounted onto the main body (1) and carefully pressed together. Turn the side body (6), so that the bores of both body parts are aligned to each other.
Apply grease to the screws (20) and tighten evenly and in alternating pattern.



Note: Before testing 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 diverting pigging valve assembly is now 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 3-way divert pigging valve, i.e.
< BA 29a-02_DE > for manually operated 3-way divert pigging valve

6. Repairing the 3-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 to dismantle the valve in reverse order, as described in the assembly instructions 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 of 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 Other 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 3-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.

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