

# Maintenance and repair instructions

## Piggable Ball valve series 28y



Fig 1 - piggable ball valve series 28y with actuator series 31a



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

Skilled personal in the sense of these assembly and repair 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 recognise possible dangers.

### 1. Design, operation and dimensions

Design, operation and dimensions, also all other technical details can be found in the **Data sheet < TB 28y\_EN >**.

### 2. Installation, start-up and maintenance

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

< BA 28y-01\_EN > for automatic piggable ball valves i.e.

< BA 28y-02\_EN > for manual operated piggable ball valves.

### 0. Introduction

These instructions are intended to support the user in the assembly and repair of piggable ball valves for series 28y.

Technical details, as a result of further development of the valves mentioned in these instructions are subject to modification without notice.

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 the written approval of Pfeiffer Chemie-Armaturenbau GmbH.

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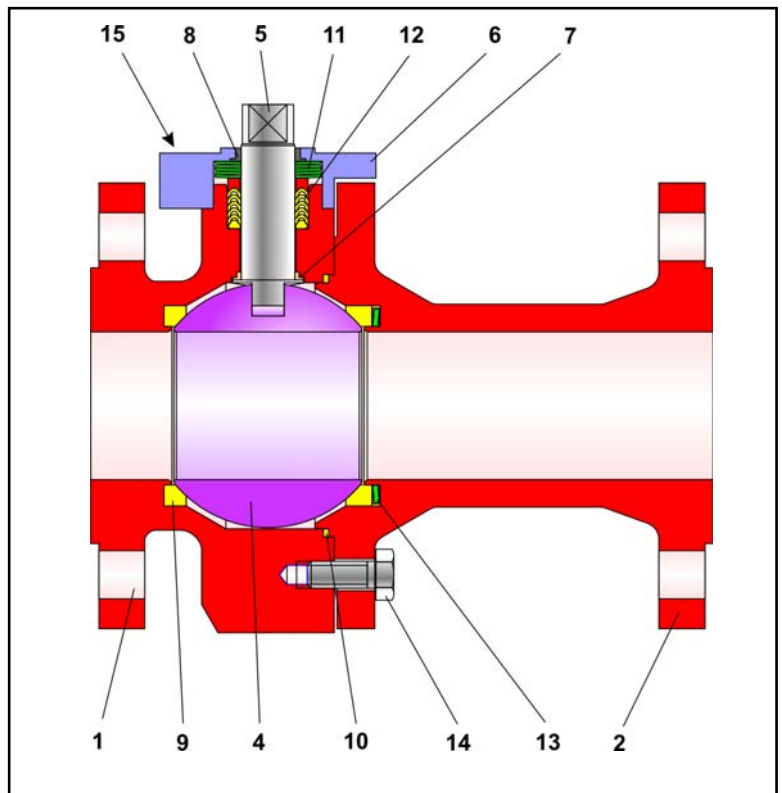


Fig 2 - Sectional view of piggable flange ball valve, series 28y => Parts list, see table 1 on page 2

# Pig ball valve Series 28y

## 3. Assembly of the pig ball valve

### 3.1 Preparation for assembly

Before assembling the ball valve, all parts must first be cleaned, and carefully layed on a soft surface, e.g. ( 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 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.

### 3.2 Final assembly of the ball valve DN 50 to DN 100

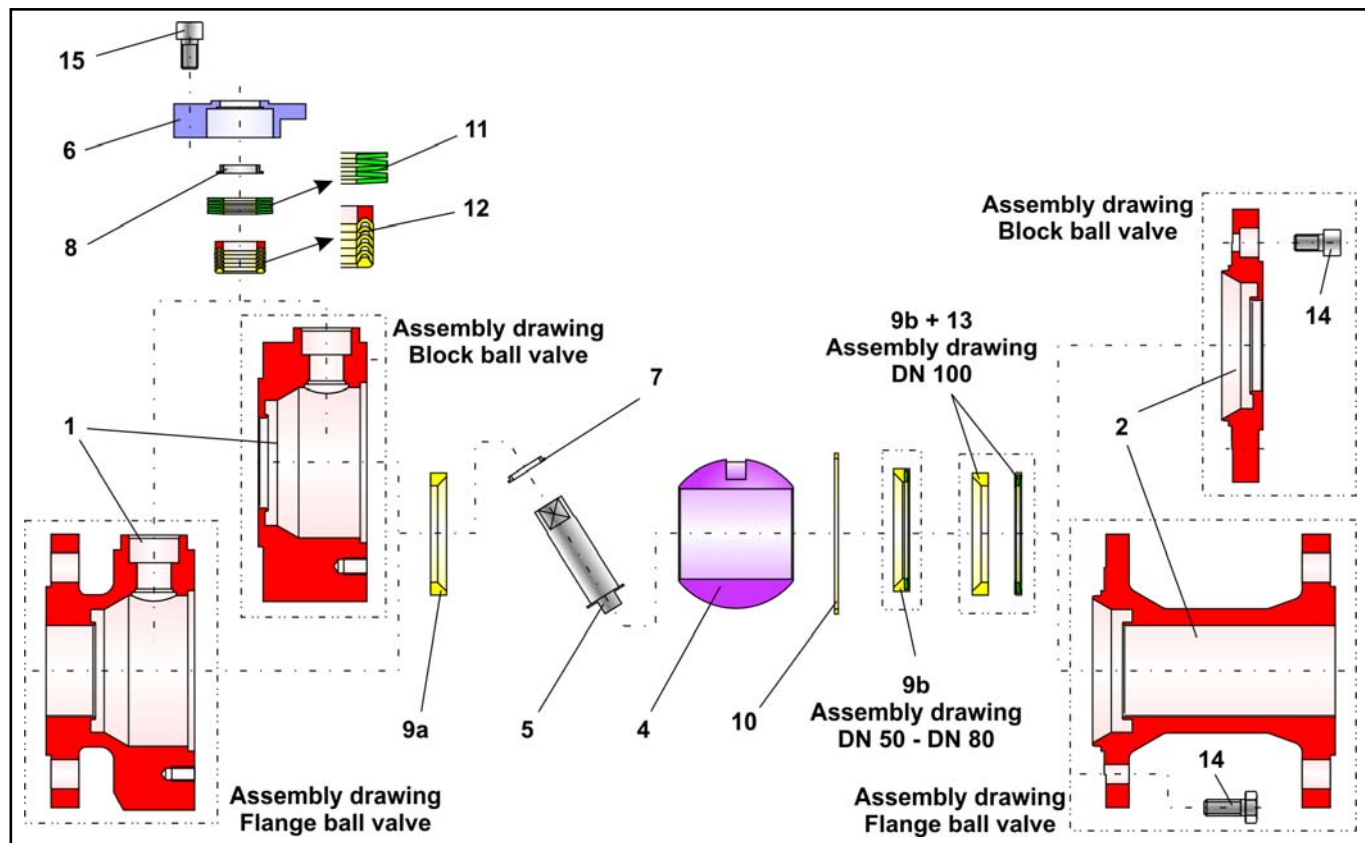


Fig 3 - Explosion drawing of pig ball valves DN 50 to DN 100

Pos.	Qty.	Description	Material	S-Part
1	1	Main body	1.4408 / 1.4571	
2	1	Side body	1.4408 / 1.4571	
4	1	Ball	1.4571	
5	1	Control shaft	1.4571	
6	1	Stuffing box flange	1.4571	
7	1	Bearing bushing	PTFE with glass	
8	1	Bearing bushing	PTFE with carbon	
9	1	Sealing seat	PTFE	S
10	1	Body sealing	PTFE	S
11	1	Spring washer set	1.8159 / Delta tone	S
12	1	V-ring packing	1.4305 / PTFE	S
13	1	Tellerfeder	1.4404 / PTFE	S
14	var.	Hexagon screw	A2-70	
15	4	Socket cap screw	A2-70	

Table 1 - Parts list

### 3.2.1 Assembly of main body

The assembly begins with the main body ( 1 ).

Insert the sealing ring ( 9a ) in the main body.

With a light rotating movement, press the bearing bushing ( 7 ) on the control shaft ( 5 ).

The control shaft ( 5 ) together with the bearing bushing ( 7 ) is then guided from the insided of the main body ( 1 ) through the opening for the control shaft.



**Note:** The sealing surface of the control shaft ( 5 ) must not be damaged. Also make sure, that the bearing bushing ( 7 ) with the control shaft ( 5 ) are vertikal when positioned in the opening for the control shaft in the main body ( 1 ) and not slanted.

Rotate the control shaft ( 5 ) so that the two flats are positioned vertikal to the working surface. Now carefully insert the ball ( 4 ). Insert the sealing ring ( 10 ) in the turned recess in the main body ( 1 ).

### 3.2.2 Assembly of the side body

**for version: DN 50 to DN 80**

Place the sealing ring ( 9b ) in the side body ( 2 ).

**for version: DN 100**

Insert the lined spring washer ( 13 ) in the side body ( 2 ).

Refer to drawing ( Fig 3 ) for the position of the spring washer.

Press the sealing ring ( 9b ) onto the the spring washer.

### 3.2.3 Further assembly for both versions

The side body ( 2 ) together with the pre-assembled sealing ring ( 9b ) carefully mounted onto the main body ( 1 ).

Turn the side body ( 2 ) until the bores of both body parts ( 1 and 2 ) are aligned with each other.

After applying grease to the screws ( 14 ) both body parts

( 1 and 2 ) are screwed together, evenly and in alternating pattern.

With a light rotating movement, press the V-ring packing ( 12 ) over the control shaft ( 5 ) and insert into the packing chamber of the main body ( 1 ).

Refer to the explosion drawing ( Fig 3 ) for positioning the V-ring packing. Now the spring washer set ( 11 ) is placed on the packing. Refer to the explosion drawing ( Fig 3 ) for positioning the spring washers. Press the bearing bushing ( 8 ) into the stuffing box flange ( 6 ).

After this, place the stuffing box flange ( 6 ) over the control shaft, and mount onto the main body.

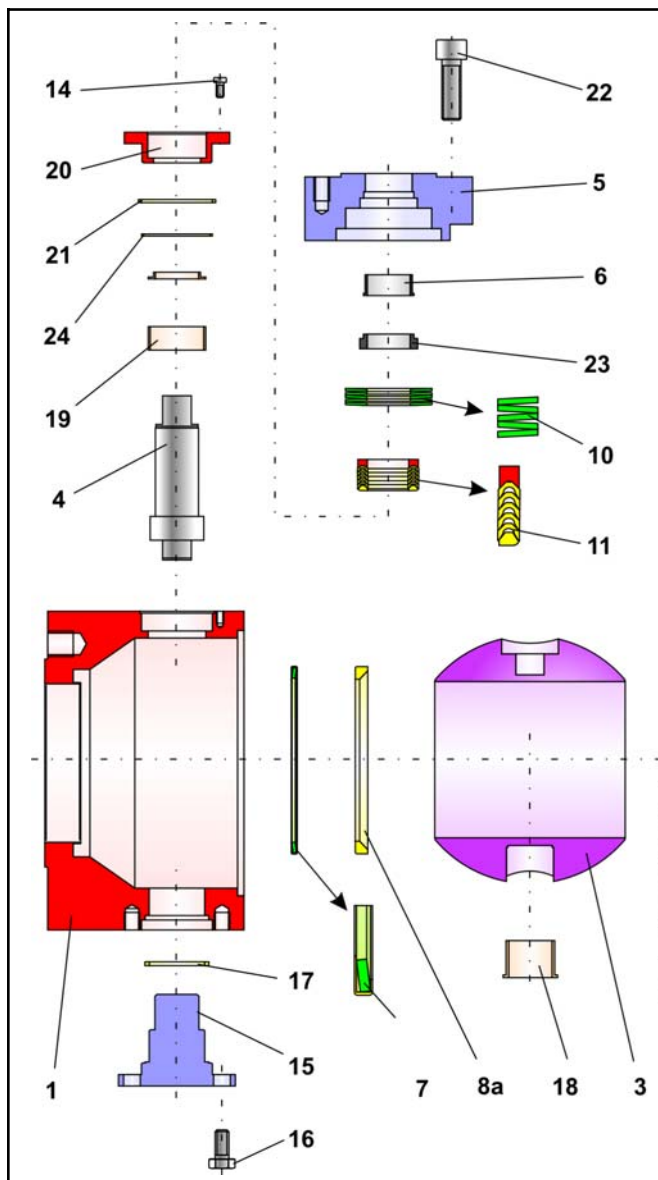
After applying grease to the socket head screws ( 15 ) align and tighten evenly and in alternating pattern.



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

**Assembly of the ball valve is now complete**

### 3.3 Final assembly for ball valves DN 150



Pos.	Qty.	Description	Material	S-Part
1	1	Main body	1.4408 / 1.4571	
2	1	Side body	1.4408 / 1.4571	
3	1	Ball	1.4408	
4	1	Control shaft	1.4571	
5	1	Stuffing box flange	1.4571	
6	1	Bearing bushing	PTFE with carbon	
7	2	Spring washer	1.4404 / PTFE	S
8	1	Sealing ring satz	PFTE	S
9	1	Body sealing	PTFE	S
10	1	Spring washer set	1.8159 / Delta tone	S
11	1	V-ring packing	1.4305 / PTFE	S
12	12	Screws	A2-70	
14	4	Screws	A2-70	
15	1	Bearing pin	1.4571	
16	2	Screw	A2-70	
17	1	Bearing ring	PTFE	S
18	1	Bearing bushing	PTFE with glass	
19	1	Bearing bushing	PTFE with glass	
20	1	Bearing sleeve	1.4571	
21	1	Ring	PTFE	S
22	4	Screw	A2-70	
23	1	Bearing bushing	PTFE with carbon	
24	1	Ring	PTFE	S

Table 2 - Parts list

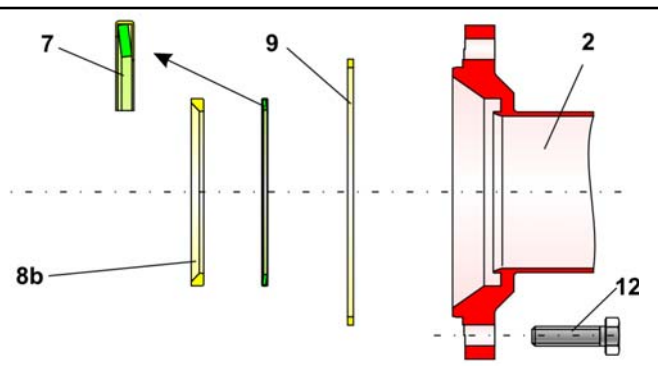


Fig 4 - Explosion drawing of the pig ball valves DN 150

### 3.3.1 Assembly of the main body

The assembly begins with the main body ( 1 ).  
Insert the lined spring washer ( 7 ) in the main body ( 1 ). Refer to the drawing ( Fig 4 ) for the mounting position of the spring washer.  
Place the sealing ring ( 8a ) on the spring washer.  
The bearing bushing ( 18 ) is inserted into the ball ( 3 ).  
Before inserting the bearing pin ( 15 ) place the ring ( 17 ) in the main body ( 1 ). The bearing pin ( 15 ) is then inserted through the ring ( 17 ) into the bearing bushing ( 18 ) in the ball ( 3 ). Align and tighten the screws ( 16 ) evenly and in alternating pattern.  
Turn the bearing bushing ( 19 ) onto the control shaft ( 4 ).  
After that, guide the control shaft ( 4 ) with the bearing bushing ( 19 ) through the main body ( 1 ) into the slot of the ball ( 3 ).



**Note:** If this step is not possible, due to the counter force of the spring washers, then the ball ( 3 ) must be pressed into position. However, before placing under the press, the ball must be protected at all times e.g. by means of a plastic disc or similar.



**Note:** With the ball supported between the control shaft ( 4 ) and the bearing pin ( 15 ) and also considering the tight fitting sealing ring ( 8a ), a light rotation of the ball must be possible.

After inserting the rings ( 21 and 24 ) the bearing ring ( 20 ) is mounted onto the body, and with the screws ( 14 ) tightened evenly and in alternating pattern.

The packing ( 11 ) according to the drawing, is placed over the control shaft ( 4 ) and pressed into the bearing ring ( 20 ). When doing this, the packing must be handled with care!

Insert the bearing bushing ( 6 and 23 ) into the stuffing box flange ( 5 ). Following this, mount the stuffing box flange, with the spring washer set ( 10 ) onto the main body ( 1 ) and tighten with the screws ( 22 ) evenly and in alternating pattern.

### 3.3.2 Assembly of the side body

The sealing ring ( 9 ) is fitted into the side body ( 2 ).  
Following the same procedure as with the main body, place the lined spring washer ( 7 ) and the sealing seat ( 8b ) in the side body ( 2 ).

### 3.3.3 Final assembly of the ball valve

Carefully mount the assembled side body ( 2 ) onto the main body, ( 1 ) align and tighten with the screws ( 12 ) evenly and in alternating pattern.



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

**Assembly of the ball valve is now completed.**

## 4. Trouble shooting

Action to be taken in the case of malfunction is described in the **Operating instructions** in section 7  
< BA 28y-01\_EN > for automatic pig ball valves i.e.  
< BA 28y-02\_EN > for manually operated pig ball valves.

## 5. Repairing the ball valve

### 5.1 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 V-ring packing, proceed in reverse order to the assembly instructions, as described in section 3.

As with all plastic parts, check the Die PTFE-rings of the V-ring packing for damage, and in case of doubt, replace these parts.

### 5.2 Replacing the sealing seat and ball

If leakage is located at the flow bore, the sealing ring set and the ball may be defect. It is therefore recommended to check these parts. To dismantle the sealing ring set and the ball, proceed in the reverse order to the assembly instructions as described in section 3. As with all plastic parts, check the sealing rings and the ball for damage, and in case of doubt, replace these parts

### 5.3 Further repairs

We recommend larger repairs to be carried out in our works, by our highly skilled team at Pfeiffer in Kempen.

## 6. Customer inquiries

( by inquiries, please state the following: )

1. Commission number.  
( Commission number embossed on type plate )
2. Type, manufacturing no. Nominal diameter, and design of the ball valve.
3. Pressure and temperature of the media flow.
4. Through flow in m<sup>3</sup>/h.
6. Possible circuit diagram.

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

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**Specifications and designs are subject to change without notice**