

Maintenance

Series 8a Angle Valve



Fig. 1 – Series 8a Angle Valve



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

In these maintenance and assembly instructions, the term skilled staff refers to individuals who are able to judge the responsibilities assigned to them as well as recognize potential hazards due to their specialized training, knowledge, and experience as well as their special knowledge of the relevant standards.

1. Design, operation, and dimensions

Design, operation, and dimensions as well as all further details and technical data can be found in **Data Sheet <TB 08a_EN>**.

2. Installation, start-up and maintenance

Instructions for the installation, start-up and maintenance are to be found in **Operating Instructions**
< BA 01a-01_EN > for pneumatic angle valves,
< BA 01a-02_EN > for manually operated angle valves.

0. Introduction

These instructions are intended to assist the user on assembling and repairing Series 8a Angle Valves.

Specifications are subject to change without notice.
The text and drawings do not necessarily display the scope of supply or any ordering of spare parts.

Drawings and graphics are not to scale.
Customer-specific designs not in accordance with our standard product range are not shown.

These instructions may only be passed on to third parties with written approval of Pfeiffer Chemie-Armaturenbau GmbH.

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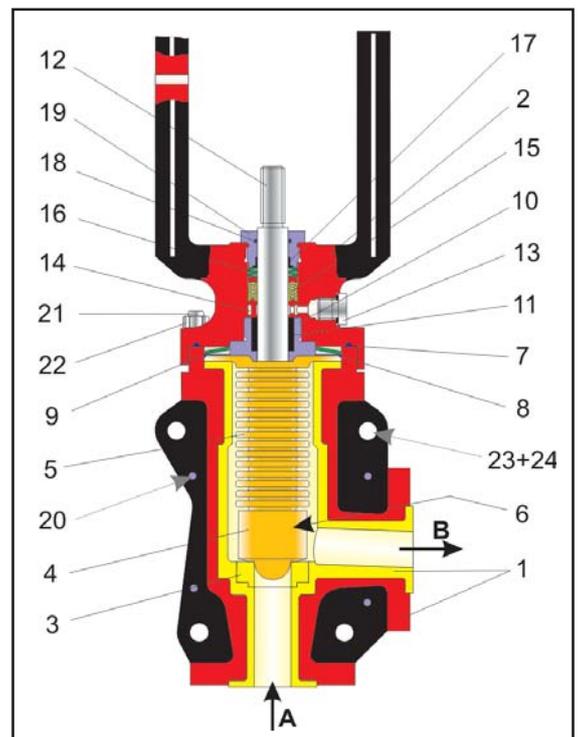
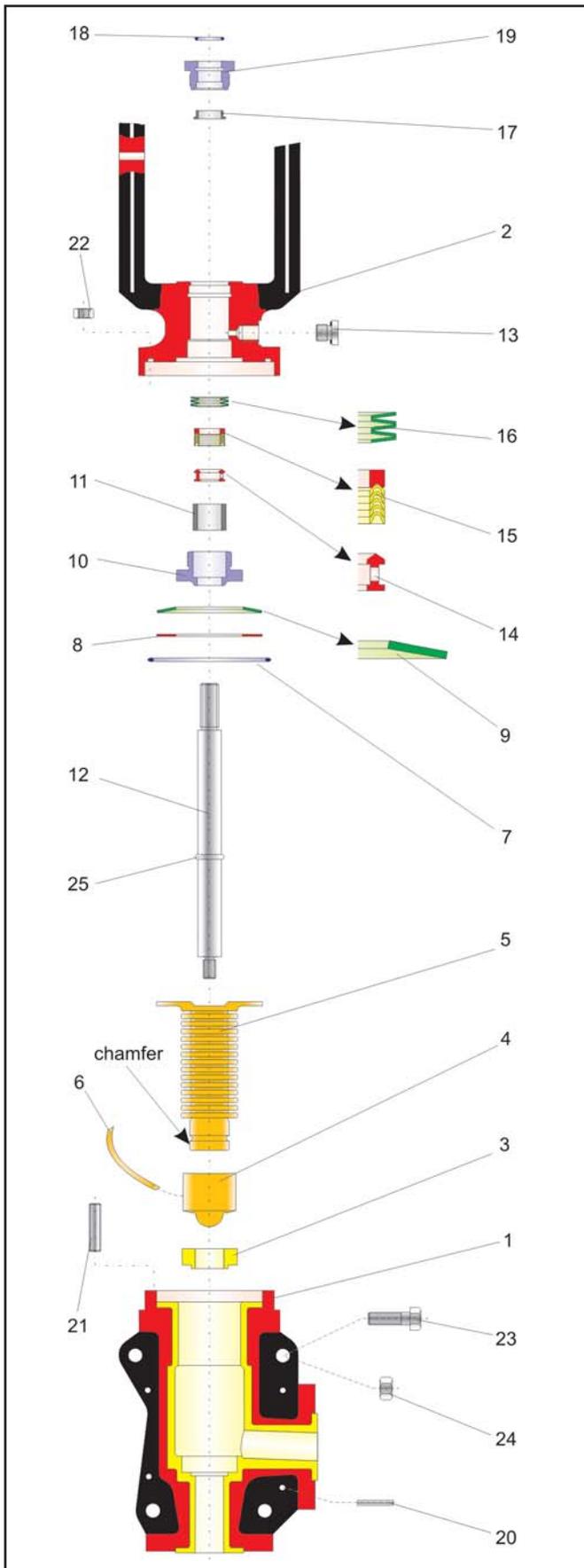


Fig. 2 - Cross-section through a Series 8a Angle Valve => see Table 1 for list of parts

Angle Valve Series 8a



Item	Description	Material
1	Body with steel casing	EN-JS 1049 / PTFE
2	Bonnet flange	EN-JS 1049
3	Seat	PTFE
4	Plug	PTFE
5	Bellows	PTFE
6	Cord	PTFE
7	O-ring	EPDM
8	Thrust washer	1.4305
9	Disc spring	1.8159 / Delta Tone
10	Guide bushing	1.4305
11	Bearing bushing	PTFE with 25% carbon
12	Stem connector	1.4571
13	Locking screw	Steel
14	Distance bushing	1.4571
15	V-ring packing	1.4305 / PTFE
16	Set of Belleville washers	1.8159 / Delta Tone
17	Bearing bushing	PTFE with 25% carbon
18	O-ring	Viton
19	Stuffing box	1.4571
20	Grooved pin	1.4301
21	Stud	A2-70
22	Nut	A2-70
23	Screw	A2-70
24	Nut	A2-70
25	Retainer ring	1.4310

Table 1 - Parts list and materials of construction

3. Assembly of the Angle Valve

3.1 Preparation for assembly

Before assembling the control valve, carefully clean all parts and place them on a soft surface (rubber mat or similar). Plastic parts are nearly always soft and very sensitive. Take particular care when handling the sealing surfaces to ensure that they do not get damaged.



Note! A high-performance grease paste is used during manufacturing to prevent the screws from cold welding in the bodies (e.g. Gleitmo 805 by Fuchs).

Do not use this lubricant with valves intended for oxygen service. Use a lubricant suitable for valves that are free of grease, especially for oxygen service.



Note! The position and arrangement of the individual parts shown in the detail drawing are to be observed during assembly.

3.2 Preassembling the stem connector

Push the retainer ring (25) from the short thread side into the groove of the stem (12). Lubricate the stem (12) at the bottom thread (e.g. with MicroGleit GP350).



Note! Some versions have a stem consisting of three parts with the guide ready-mounted to the stem with a snap ring.

Screw the bellows (5), with shim and ENSAT bushing preassembled on it, tight onto the lubricated thread of the stem (12).

Fig. 3 - Detail drawing of Series 8a Angle Valve



Due to the PTFE's ability to slide, we recommend using an emery cloth to prevent it from slipping when screwing on the bellows.

To ensure that the plug stem can be pushed on straight, carve a small notch in the bellows to allow air to escape. Push the plug (4) onto the bellows (5). Secure the connection between the plug stem and bellows by inserting the PTFE cord (6) as far as it will go.

3.3 Preassembling the cover flange

Insert O-ring (18) into the groove inside the stuffing box (19). Press the top bearing bushing (17) into the bottom part of the stuffing box (19). Lubricate the thread of the stuffing box (19) and screw it into the top thread of the cover flange (2) so that the external undercut can still be seen.



Note: Do not screw the stuffing box (19) as far as it will go into the cover flange.

Clamp the cover flange (2) at the yoke in a vise with the flange opening facing upwards. Place the set of Belleville washers (16) into the borehole intended for it. Refer to the exploded view diagram (Fig. 3) for the arrangement.

Insert the final ring, PTFE V-rings (15) and spacer (14) one after the other. Refer also to the exploded view diagram (Fig. 3) for the arrangement.

Press the bottom bearing bushing (11) into the groove of the guide bushing (10).

Screw the guide bushing (10) lubricated at the thread into the cover flange (2).



Note: Make sure that the threaded bushing does not get jammed on screwing it into the cover flange.

3.4 Final assembly of the cover flange

Place disc spring (9), thrust washer (8) and O-ring (7) into the cover flange (2). Refer also to the exploded view diagram (Fig. 3) for the components' arrangement.

Place the preassembled stem unit (see section 3.3) into the cover and press the flange of the bellows into the groove of the cover flange.

To complete the cover flange assembly, insert and fasten the locking screw (13).

3.5 Preassembling the valve body

The valve body, made of spheroidal cast iron, forms together with the PTFE-liner a complete unit, which together with the grooved pins, (20) socket head screws, (23) and hexagon nuts (24) are screwed together.



Note: The assembled valve body unit, must not be disassembled.

With the use of a special tool, screw the PTFE-seat (3) into the specified seat bore of the body. (1)
The tightening torques are as follows:

Nominal size	DN 15 / 1/2"	DN 25 / 1"	DN 40 / 1 1/2"	DN 50 / 2"
Tightening torques	Approx. 2Nm	Approx. 7Nm	Approx. 10Nm	Approx. 10Nm

Table 2 - Tightening torques

Following this, the seat inside diameter must be remachined to size.

To complete the initial assembly, the lightly greased stud screws (21) are screwed into body (1).

3.6 Final assembly of the valve

Carefully place the pre-assembled valve body (see section 3.5) onto the bonnet flange.

The stud screws of the body are fitted into the bores of the bonnet flange, and are aligned together with the nuts (22). Following this the nuts are tightened evenly and in alternating pattern.



Note! The pneumatic connection (13) in the bonnet flange and the nameplate on the valve body (1) must face the same direction.



Note! Tightening the bolts causes the position of the plug to change. Therefore, make sure that the plug remains centric.

Move the stem (12) while tightening the bolts to test whether it can still move easily. If the stem gets jammed, the plug, seat and guide could be damaged as a result.

After adjusting the valve, tighten the stuffing box (19).

Thread the hexagon nuts onto the stem (refer to section 3.8 for adjusting the nuts).

3.7 Travel adjustment

When the valve and Samson actuator are delivered separately, set the dimension A from the top of the stem connector nut to the top of the yoke as specified in Table 3. Check this dimension on assembling the valve and actuator together.

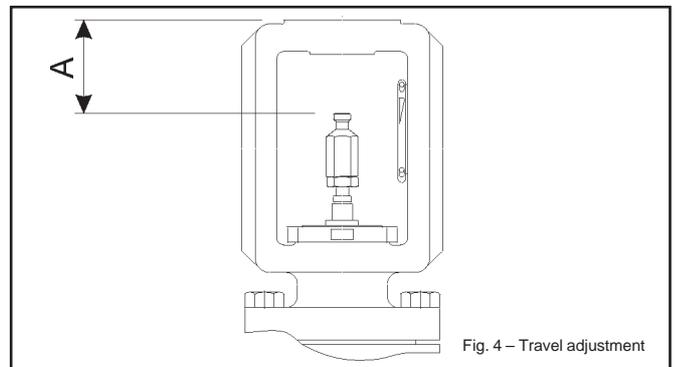


Fig. 4 – Travel adjustment

Travel adjustment (Samson actuators) (Valve closed)		
DN	Inch	A
15 to 50	1/2" to 2"	75 ± 0,1

Table 3 - Travel adjustment

3.8 Mechanical limit stop

- **Mechanical limit stop for actuator fail-safe action "Actuator stem extends"**

The mechanical limit stop for the actuator fail-safe action Air-to-open is set at the factory by a retainer ring (25) which is mounted inside on the valve stem.

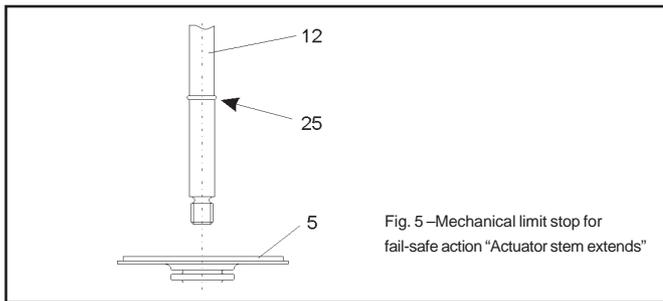


Fig. 5 - Mechanical limit stop for fail-safe action "Actuator stem extends"

• **Mechanical limit stop for actuator fail-safe action "Actuator stem retracts"**

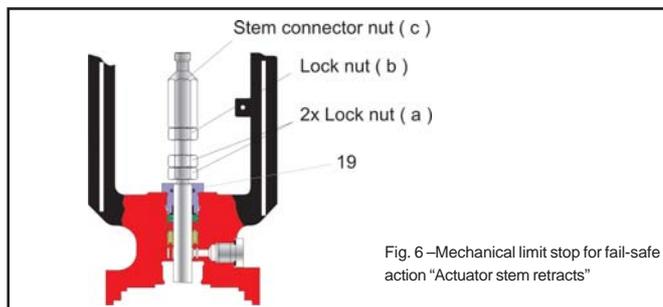


Fig. 6 - Mechanical limit stop for fail-safe action "Actuator stem retracts"

The mechanical limit stop for the actuator fail-safe action Air-to-close is made by two hexagon nuts (a), which are mounted outside on the valve stem.

The nuts (a) are secured in position with approximately 2 mm safety distance from the top of the stuffing box (19).

Theoretical travel (Samson actuator) 15 mm + 0.5 to 1 mm

Assembly of the control valve is now completed.

4. Troubleshooting

Refer to section 7 of **Operating Instructions**

<BA 01a-01_EN> for pneumatic angle valves,

<BA 01a-02_EN> for manually operated angle valves.

5. Repair of the valve

5.1 Replacing the bellows seal

If a leak is detected at the test connection (13), the bellows seal (5) may be defective. We recommend checking the condition of the bellows.

To remove the bellows, disassemble the valve in reverse order to that described in section 3.

Check the bellows and all plastic parts for damage. In case of doubt, replace the parts with new ones.

5.2 Replacing the bellows seal and V-ring packing

If the valve leaks at the stuffing box (19), the V-ring packing (15) and bellows seal (5) may be defective. We recommend checking the condition of all the packing rings and the bellows.

To remove the packing and bellows, disassemble the valve in reverse order to that described in section 3.

Check the V-rings of the packing, bellows, and all plastic parts for damage. In case of doubt, replace the parts with new ones.

5.3 Further repair work

In case of severe damage, we recommend the repair work to be carried out by Pfeiffer.

6. Customer inquiries

Should you have any inquiries, please submit the following details:

1. Order number (embossed on the control valve body)
2. Type, product number, nominal size, and version of the valve
3. Pressure and temperature of the process medium
4. Flow rate in m³/h
5. Installation sketch, if possible

For your special requirements please contact our technical sales department.

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