


# Maintenance

## Series 1c Aseptic Control Valve



Fig. 1 – Series 1c Aseptic Control 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 01c\_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 aseptic control valves, **<BA 01a-02\_EN>** for manually operated aseptic control valves.

### 0. Introduction

These instructions are intended to assist the user on assembling and repairing Series 1c Aseptic Control 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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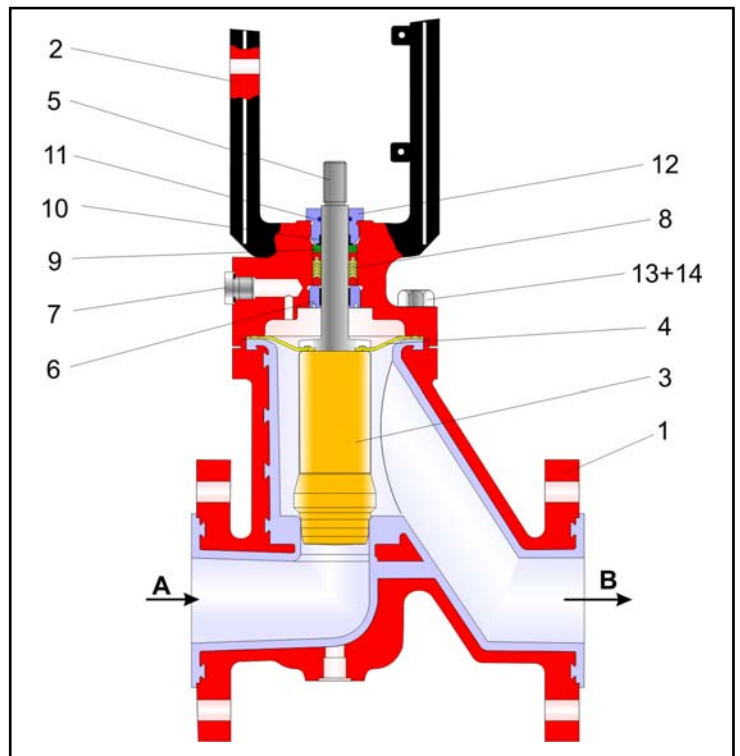
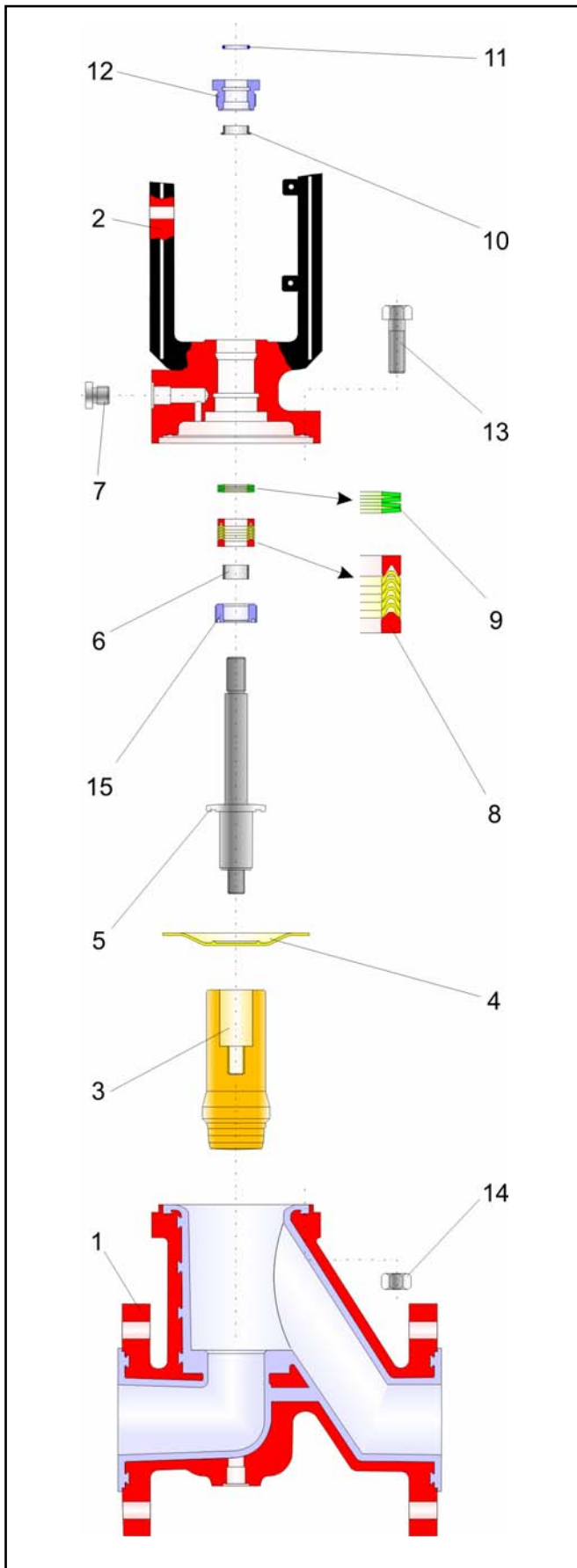


Fig. 2 - Cross-section through a Series 1c Aseptic Control Valve => See Table 1 for list of parts

# Aseptic Control Valve Series 1c



Item	Description	Material
1	Valve body	EN-JS 1049 / PFA
2	Bonnet flange	0.7043
3	Plug	PTFE
4	Diaphragm	EPDM / PTFE
5	Stem connector	1.4571
6	Bearing bushing	PTFE with 25% carbon
7	Locking screw	St, gelb verzinkt
8	V-ring packing	1.4305 / PTFE
9	Set of Belleville washers	1.8159 / Deltatone
10	Bearing bushing	PTFE with 25% carbon
11	O-ring	Viton
12	Stuffing box	1.4305
13	Hexagon screw	A2-70
14	Hexagon nut	A2-70
15	Guide bushing	1.4305

Table 1 - Parts list and materials of construction

## 3. Assembly of the Aseptic Control Valve

### 3.1 Preparation for assembly

Before assembling the aseptic 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 valve body

The aseptic valve does not have an exchangeable screwed-in seat. The „seat“ is integrated in the PTFE-lining of the valve body ( 1 ). Therefore, depending on the version, the seat inside diameter must be adapted accordingly

### 3.3 Preassembling the stem unit

The diaphragm ( 4 ) is pushed onto the shaft ( 5 ). For the position of the diaphragm, refer to the explosion drawing ( Fig. 3 ). Lubricate the stem ( 12 ) at the bottom thread ( e.g. with MicroGleit GP350 ).

Screw the Plug ( 3 ), with shim and ENSAT bushing preassembled on it, tight onto the lubricated thread of the stem ( 5 ).

Fig. 3 - Detail drawing of Series 1c Aseptic Control Valve



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

### 3.4 Preassembling the cover flange

Insert O-ring ( 11 ) into the groove inside the stuffing box ( 12 ). Press the top bearing bushing ( 10 ) into the bottom part of the stuffing box ( 12 ). Lubricate the thread of the stuffing box ( 12 ) 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 ( 12 ) 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 ( 9 ) into the borehole intended for it. Refer to the exploded view diagram ( Fig. 3 ) for the arrangement.

Insert the final ring and PTFE V-rings ( 8 ) one after the other. Refer also to the exploded view diagram ( Fig. 3 ) for the arrangement.

Press the bottom bearing bushing ( 6 ) into the groove of the guide bushing ( 15 ). Screw the guide bushing ( 15 ) 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.

### 3.5 Final assembly of the cover flange

Place the preassembled stem unit ( 5 ) ( see section 3.3 ) into the cover and press the diaphragm into the groove of the cover flange.



**Attention:** Make sure, that the diaphragm is not damaged.

To complete the cover flange assembly, insert and fasten the locking screw ( 7 ).

### 3.6 Final assembly of the valve

Clamp the preassembled body ( see section 3.2 ) in a vise with the opening facing upwards.

Carefully place the preassembled cover flange ( see section 3.5 ) on the body.

Insert bolts ( 13 ) and adjust their position using the nuts ( 14 ).

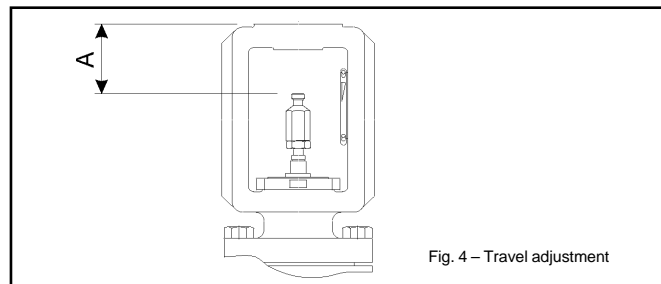


**Note:** To prevent the plug from becoming jammed, pull the stem up as far as it will go before tightening the bolt connections. Tighten the nuts evenly and in a criss-cross pattern.

After adjusting the valve, tighten the stuffing box ( 12 ). Screw both hexagon nuts onto the stem ( refer to section 3.7 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 2. Check this dimension on assembling the valve and actuator together.



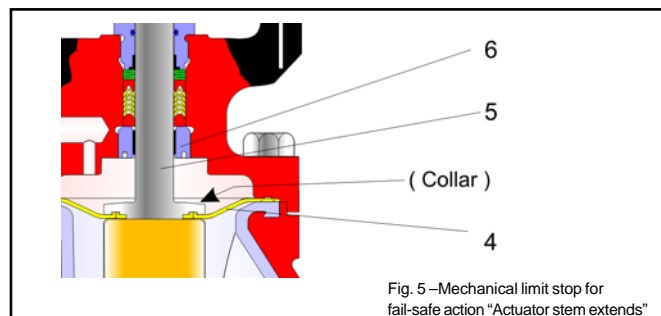
Travel adjustment ( Samson actuators ) ( Valve closed )	
DN	A
25 to 80	75 ± 0.1

Table 2 - Travel adjustment

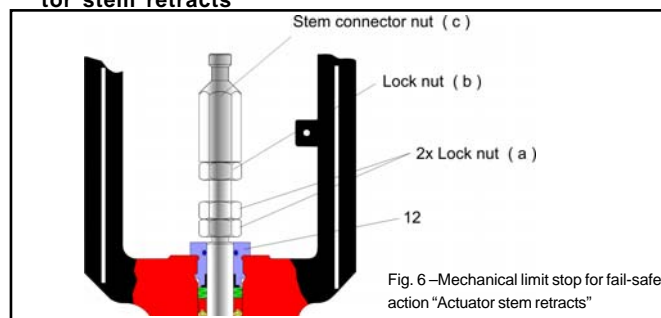
### 3.8 Mechanical limit stop

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

With the operation mode "Air opened" the mechanical stroke limit is pre-set ex works by means of the "Collar" ( 5 ) of the valve stem.



#### • Mechanical limit stop for actuator 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 ( 12 ).

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 aseptic control valves,

<BA 01a-02\_EN> for manually operated aseptic control valves.

## 5. Repair of the valve

### 5.1 Replacing the diaphragm seal

If a leak is detected at the test connection ( 7 ), the diaphragm seal ( 4 ) may be defective. We recommend checking the condition of the diaphragm.

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

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

### 5.2 Replacing the diaphragm seal and V-ring packing

If the valve leaks at the stuffing box, the V-ring packing and diaphragm seal may be defective. We recommend checking the condition of all the packing rings and the diaphragm.

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

Check the V-rings of the packing, diaphragm, 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 m<sup>3</sup>/h
5. Installation sketch, if possible

**Please contact our technical sales team for your special requirements**

**Pfeiffer Chemie-Armaturenbau GmbH**

Hooghe Weg 41 • 47906 Kempen

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

E-Mail: [vertrieb@pfeiffer-armaturen.com](mailto:vertrieb@pfeiffer-armaturen.com) • Internet: [www.pfeiffer-armaturen.com](http://www.pfeiffer-armaturen.com)

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