Repair instructions
Micro-flow Valve Series 6a

Fig. 1 - Micro-flow valve Series 6a with Samson control actuator

0. Introduction

These instructions are intended to support the user in the assembly and repair of micro-flow valves of the series 6a.

Technical details, as a result of further development of the valves mentioned in these instructions are subject to modification.
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.

This equipment may only be dismounted and disassembled by skilled staff, who are familar with the assembly, start-up and the operation of this product.

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

1. Design, operation and dimensions

Design, operation and dimensions, as well as all further technical details can be found in the **Data sheet < TB 06a_EN >**

2. Installation, start-up and maintenance

Guidelines for the installation, start-up and maintenance can be found in the respective **operating instructions**
< BA 01a-01_EN > for automatic control valves, i.e.
< BA 01a-02_EN > for manually operated control valve,

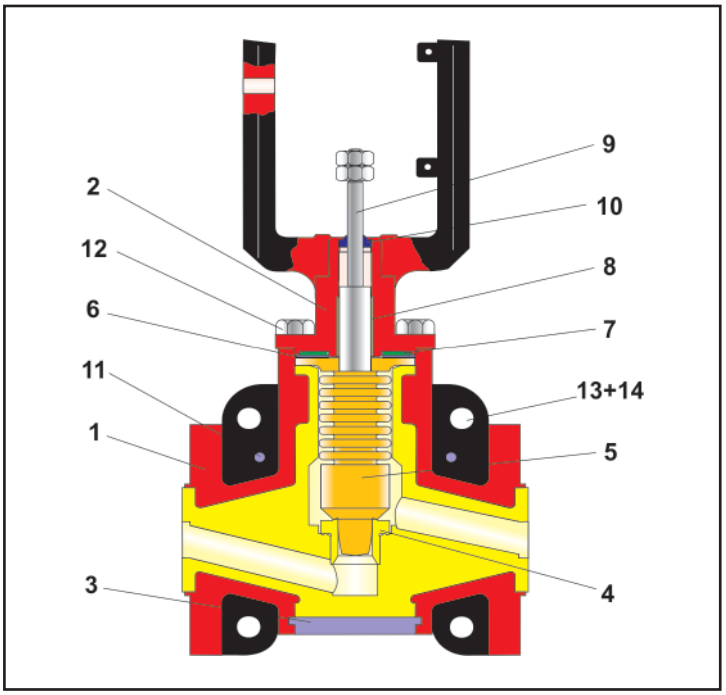

Fig. 2 - Sectional view of a micro-flow valve, Series BR 6a => Parts list, see Table 1 on page 2

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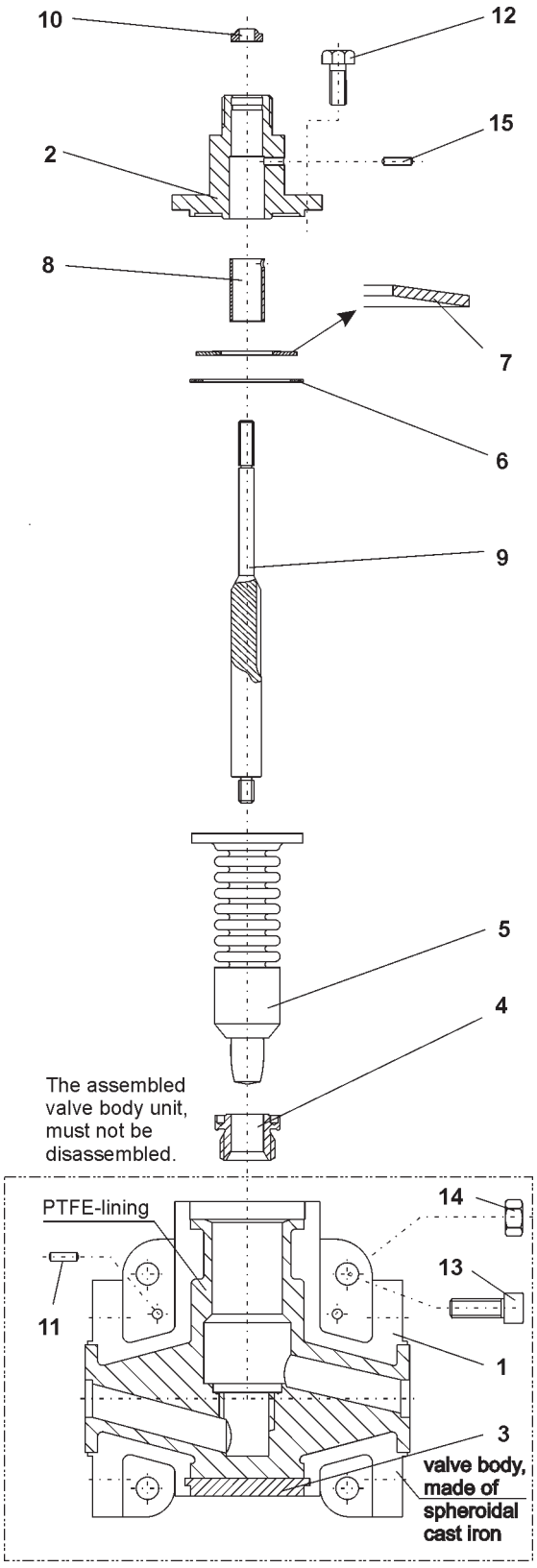

Fig. 3 - Explosion drawing of a micro-flow valve Series 6a

Item	Description	Material
1	Body with casing	EN-JS 1049 (GGG 40.3)
2	Bonnetr flange	1.0037
3	Bottom flange	1.0037
4	Seat	PTFE
5	Bellows unit with plug	PTFE
6	Thrust washer	1.4305
7	Spring washer	1.8159
8	Bushing	Glycodur
9	Stem connector	1.4571
10	Wiper ring	Buna
11	Grooved pin	1.4301
12	Screw	A2-70
13	Screw	A2-70
14	Nut	A2-70
15	Grooved pin	1.4301

Table 1 - Parts list

3. The assembly of a micro valve

3.1 Preparation for assembly

To assemble the control valve, first clean all parts thoroughly, 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 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 (i.e. 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 (Fig. 3) must be observed when assembling the valve.

3.2 Pre-assembly of the spindel unit

Apply grease to lower threaded end of the single unit stem. (9)

Note: With the single versions, the stem consists of three single parts. With a retainer ring, the guide is pre-assembled with the stem.

The pre-assembled bellow unit (5) with the thread insert and plug, is screwed tightly onto the guide stem. (9)
(Due to a slide tendency of PTFE when the bellow unit is screwed onto the stem, the use of a sandpaper lining has proven to help avoid sliding.)

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The pressure ring (6) and the spring washer (7) are placed on the upper side of bellow flange. (5)
Refer to the explosion drawing (Fig. 3) when positioning the spring washers.

3.3 Pre-assembly of the bonnet flange

Press the glycodur bushing (8) with loctite in the bonnet flange. (2)
Through the existing bore in the bonnet flange, (2) drill a 3 mm hole in one side of the glycodur bushing. (8) Now press the locating groove pin (15) into the bore.

The wipe off ring (10) is inserted into the upper part of the bonnet flange. (2) Following this, insert the pre-assembled stem unit (see section 3.2) into the bonnet.

Note: The locating groove pin in the bonnet flange must be guided into the slot of the stem unit.

3.4 Pre-assemble of the valve body

The valve body, made of spheroidal cast iron, forms together with the PTFE - liner and the bonnet flange (3) a complete unit, which together with the grooved pins, (11) socket head screws, (13) and hexagon nuts (14) are screwed together.

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

With the use of a special tool, screw the PTFE - seat (4) into the specified seat bore of the body. (1)

Note:
The tightening torque is 2 Nm.

3.5 Final assembly of the valve

Clamp the pre-assembled body (see section 3.4) with the bonnet opening facing upwards in a vice.

The pre-assembled bonnet flange (see section 3.3) is placed carefully onto the body, and aligned with the screws. (12)

Attention: To avoid damage to the parts during assembly, the bonnet flange, (2) of the valve plug (5) must not come in contact with the seat. (4)

Tighten the screws (12) evenly, and in alternating pattern.

3.6 Stroke adjustment

If the micro valve and the Samson control actuator are delivered separately, the dimension „ *A* “ from the top of the stem shaft nut to the top of the shell can be adjusted according to table 2. This can be checked on assembly.

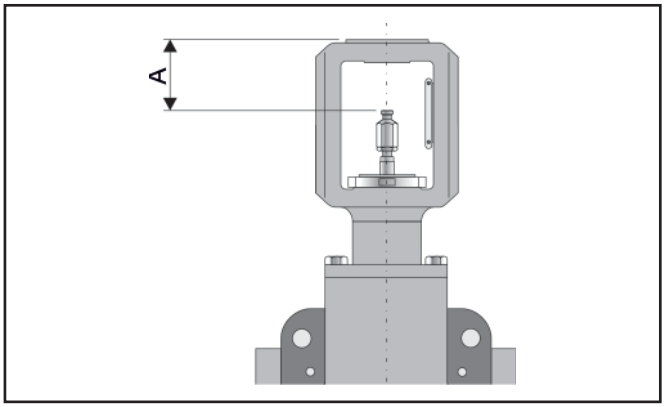

Fig. 4 - Stroke adjustment

Stroke adjustment with Samson actuator (valve closed)	
DN	A
6 bis 15	75 ± 0,1

Table 2 - Stroke adjustment

3.7 Stroke limit

- **Stroke limit at 10 mm with the operation mode „Actuator shaft retracting - STEF“**

The limit for operation mode STEF, is effective by means of a spacing washer with an inside thread. (1) This is screwed and cemented with loctite onto the actuator shaft, (4) and situated between diaphragm shell (7) and diaphragm disc. (3) During the assembly, the springs under the diaphragm surface are under tension.

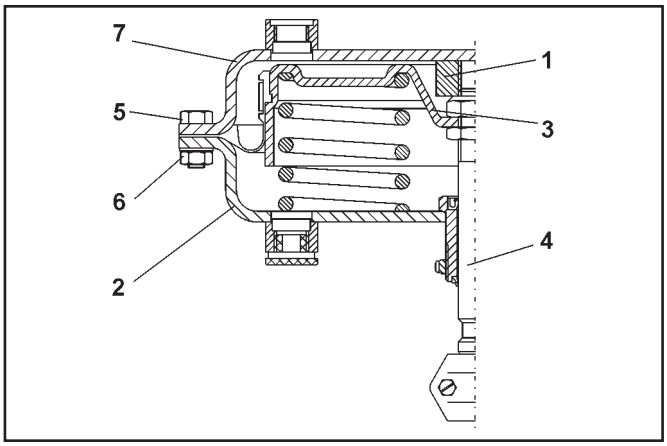

Fig. 5 - Stroke limit with STEF

- For adjusting the hub limit, loosen the screws (5) and nuts (6) and remove the upper diaphragm (7).
- The distance washer (1) is screwed and cemented with loctite onto the actuator shaft. (4)
- Following this, tighten the upper diaphragm (7) with the screws (5) and nuts (6) evenly, and in alternating pattern.

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• **Stroke limit at 10 mm with the 0peration mode „Actuator shaft extended - STAF“**

The stroke limit for operation mode STAF for kvs 0,005; 0,01; 0,05 and a bore seat of 2 mm can be set by using the positioning screw
The max. stroke of 10 mm must on no account be exceeded. Otherwise the plug when opened, will not be guided into the seat, this means a central guidance in the bore seat can not be ensured, which could cause extreme damage or even break off, when the valve is closed.

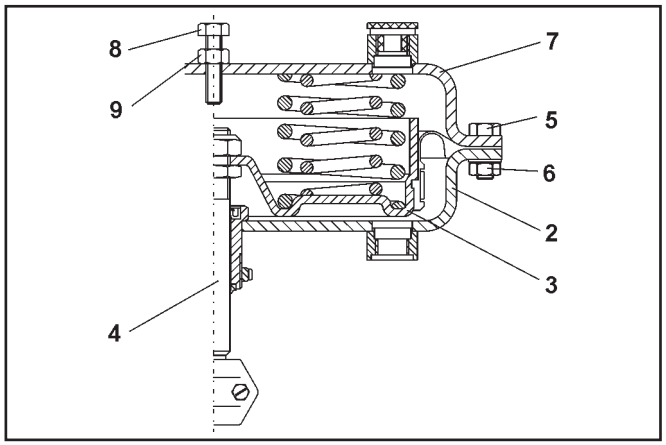

Fig. 6 - Stroke limit with STAF

- For adjusting the stroke, a hole for a threaded screw M10 x 1 is bored in the middle of the upper part of the diaphragm (7).
- When the assembly of the actuator on the valve is completed, the screw M10 x 1 (8) with the counter nut (9) is screwed in position.
- With this screw (8) the exact stroke limit can now be set, and with the counter nut (9) locked in position.

Assembly of the control valve is now completed.

4. Trouble shooting

Action to be taken in the event of malfunction is described in the **Operating instructions** under **section 7**
< BA 01a-01_EN > for automatic control valves, i.e.
< BA 01a-02_EN > for hand operated control valves.

5. Repair of the micro valve

5.1 Replacing the bellow unit and the wipe off ring

If leakage is located at the stuffing box, the wipe off ring, and the bellow unit may be defect. It is therefore recommended to check the condition of all seals and the bellow unit.
To dismantle the wipe off ring and the bellow unit, proceed in reverse order to the assembly instructions for the valve in section 3
As with all other plastic parts, proceed to check the wipe off ring, and the bellow unit for damage, and if necessary replace these parts.

5.2 Other repairs

We recommend larger repairs to be carried out in our factory, by our skilled at Pfeiffer.

6. Customer inquiries

(by inquiries, please state the following:)

1. Commission number (embossed on the type plate)
2. Type, manufacturer number, nominal diameter, and control valve design.
3. Pressure and temperature of the media flow
4. Through flow in m³/h

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