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Operating instructions Installation / Maintenance Pneumatic actuator Series AP/APM

General

Please read these operating instructions carefully and keep them for maintenance and repair works nearby the actuator.
The actuator parts are subject to normal wear and tear and must be checked and exchanged whenever necessary. The service life of the actuator depends on the application and the environmental conditions.

- Medium to operate the actuator: dry or lubricated, filtered air. For other fluids such as non corrosive gases, water or hydraulic oil consult GEFA Processtechnik GmbH. In case of single acting actuators it is recommended to use a filter for the free bore of the spring chamber to avoid the contamination of the inside of the cylinder by dust or dirt.
- When fully depressurized the actuator can be optionally operated by handle or gear box.
- All actuators have a 90° stroke, adjustable by +/-3° in open position (+/-5° for series APM - in open/closed position).

Safety measures

- Never exceed the maximum pressure stated on the identification plate.
- Ensure that the compressed air supply is correctly connected to guarantee the proper function of the actuator - especially after maintenance works on the actuator.
- Disconnect the pneumatic actuator from the compressed air and power supply before starting maintenance or repair works. Bleed the actuator. Then remove the actuator from the valve.
- Don't try to dismantle the spring units, as this can lead to serious injuries. Replace the complete spring units only if they are defective.

Mounting the actuator on the valve

- Verify that distances between centres and holes of the actuator correspond to those of the valve or that of the mounting unit.
- The actuator can be mounted in any position. Before mounting the actuator on the valve, make sure that the pinion of the actuator and the stem of the valve are properly aligned to avoid any friction.
- If the valve has already been installed between the flanges, make sure that there is no pressure in the tubing so that the disc will not accidentally be opened or closed.
- Mounting of the actuator on the valve can be carried out directly (figures 1A and 1B) or by using a mounting bracket (figures 2A and 2B).

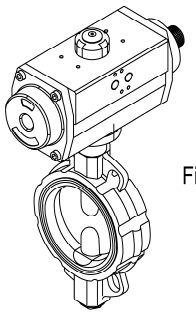


Fig. 1A

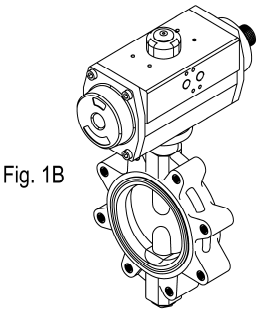


Fig. 1B

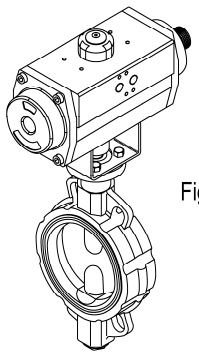


Fig. 2A

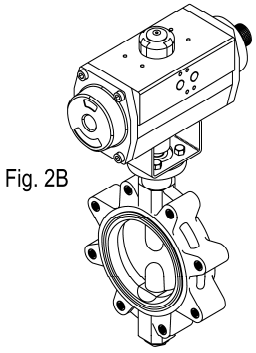


Fig. 2B

Mounting the actuator directly on the valve (Fig. 1A and Fig. 1B)

- Position the actuator over the top plate of the valve.
- Insert the square of the valve shaft into the square shaped connector of the actuator and position the actuator until it comes to rest against the top plate of the valve.
- Centre the holes of the top plate with those of the holes of the actuator. Insert and turn screws several turns. Do not yet tighten the screws.
- Open and close the valve two or three times. If no problems arise, tighten the screws.
- If necessary adjust the travel stop: please see next chapter.

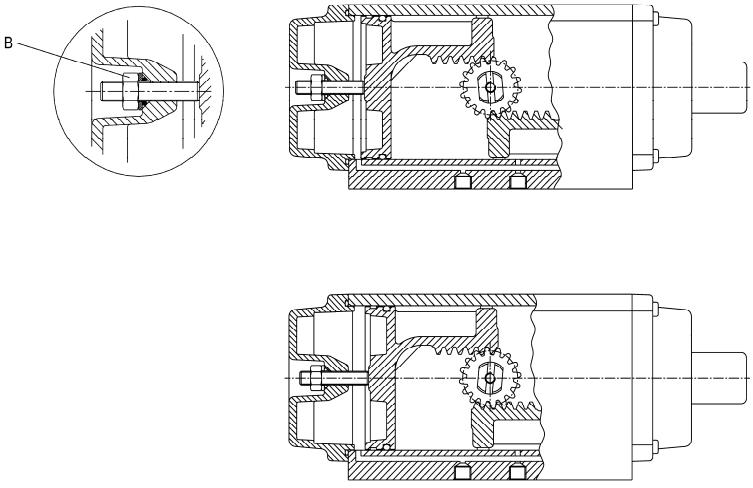
Mounting the actuator on the valve by using a mounting bracket (Fig. 2A and Fig. 2B)

- Insert the adapter in the square of the actuator.
- Position the mounting bracket over the adapter. Align the bores of the mounting bracket and those of the actuator. Hand-tighten the screws.
- Take the entire block, consisting of the actuator and the mounting kit, and place it on top of the valve.
- Insert the square end of the shaft into the adapter and move the mounting bracket until it comes into contact with the top plate of the valve.
- Centre the holes of the top plate with those of the mounting kit, insert the screws. Manually tighten the nuts and washers. Do not yet tighten them completely.
- Open and close the valve two or three times. If no problems arise, tighten the screws.
- If necessary adjust the travel stop: please see next chapter.

Travel stop adjustment

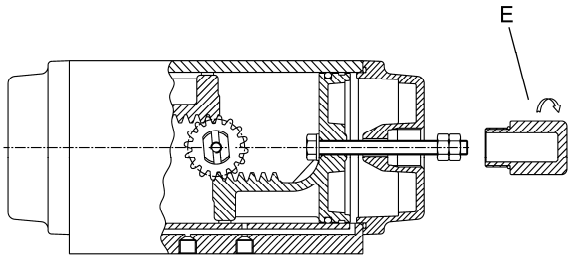
“Open”-position of valve
(actuator pistons move outward)

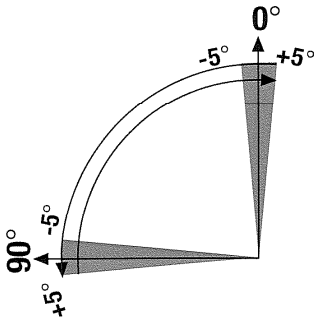
- Close the valve, so that nut B for the travel stop adjustment is free to be tightened or loosened.
- Loosen nut B by a couple of turns.
- Tightening the grub screw effects a travel stop adjustment to an opening angle of less than 90°. Loosening the grub screw by a couple of turns allows an adjustment of the travel stop to obtain an opening angle of more than 90° (see pictures).
- After having tightened or loosened the grub screw based on whether you require increased or limited opening, verify the position of the valve. If the required position has not been reached, repeat above procedure.
- Once having found the desired position, open the valve and tighten nut B.

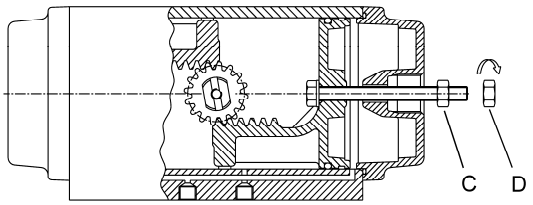


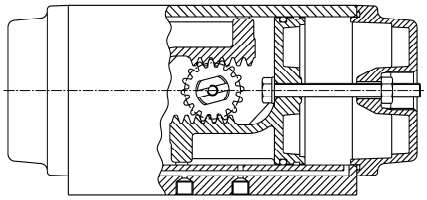
“Closed”-position of valve
(for series APM only)
(actuator pistons move inward)

- Open the valve, so that the two nuts C and D are free to be tightened or loosened.
- Remove the aluminium end cap (E).
- Loosen the nut D and take it out.
- Loosening nut C means an adjustment of the travel stop to an angle between 0° and +5°. Tightening nut C leads to an adjustment of the travel stop to an angle of -5°C to 0° (please see pictures).









- After having done the adjustment check for correct position of the valve. If the required position has not been reached, repeat above procedure.
  Once having determined the correct position, open the valve and tighten nut D until it comes to rest against nut C. Tighten both nuts paying careful attention that nut C does not alter position when placed against counter nut.
- Screw on the aluminium end cap.

Maintenance

The lubrication of the actuators carried out at the factory will last for their entire service life under normal operating conditions, but the actuators should be checked at regular intervals.
The guide rods and seals should be exchanged after approximately 500.000 switch cycles under normal operating and environmental conditions. In case of extreme working and environmental conditions the intervals have to be shortened.
GEFA Processtechnik GmbH recommends to use only original spare parts and to do maintenance by competent and qualified personal.

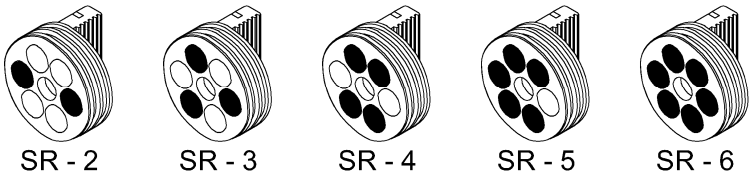
Important

Before starting maintenance works, take care that the pneumatic actuator has been disconnected from the compressed air and power supply and that it has been bled if necessary.
For single acting actuators loosen the screws (18) located at the end caps (3), loosen the end cap screws (18) crosswise and step by step. Slowly unbend the springs. Take the springs/the spring cartridge out.
If the actuator was equipped with a reduced number of springs, mount the springs as shown on the next page.

Disassembly:

- Remove the screws (18) from the end caps (3).
- Remove the aluminium cap (24) and replace the O-ring (25). Unscrew the counter nut and nut (17).
- Remove the end caps (3) and replace O-rings (19 and 15).
- Rotate pinion (4) in anticlockwise direction until pistons (2) move out of the body (1). Replace O-ring (21) and piston guide ring (20).
- Remove the snap ring (10) from the pinion (4).
- Remove pinion (4) from the lower part of the body (1) simply finger pressing from above. Replace O-rings (7 and 9) and the pinion guide rings (6 and 8).

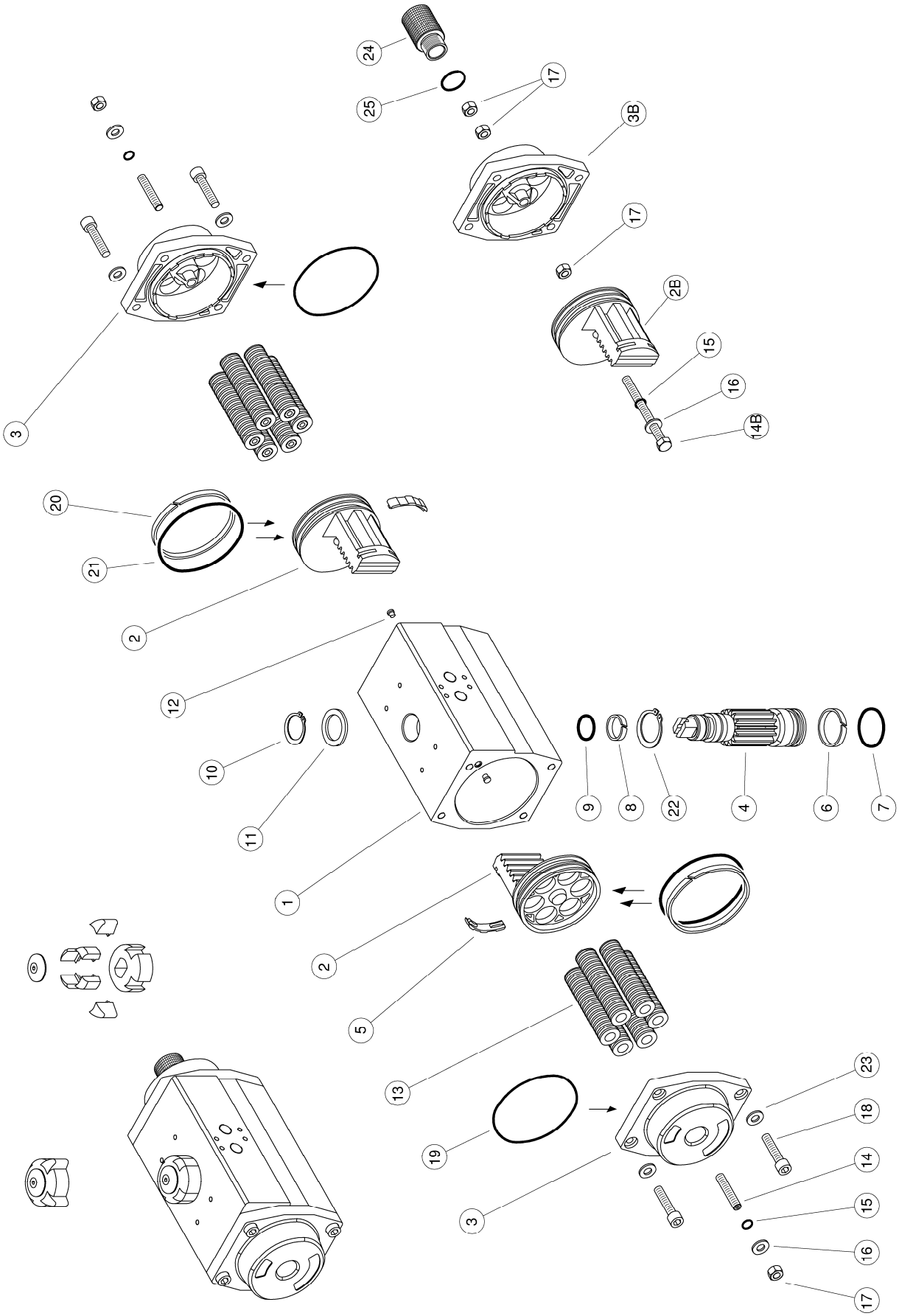
Actuator parts, pinion and guide rings should be lubricated with silicone-free Lithium-based grease.



For reassembly follow above procedure in reverse steps.

Item	Description	Qty
1	Body	1
2	Piston	2[*2)]
2B	Piston for type APM	1
3	End cap	2[*2)]
3B	End cap for type APM	1
4	Pinion	1
5[*1)]	Piston guide	2
6[*1)]	Pinion guide ring	1
7[*1)]	O-ring	1
8[*1)]	Pinion guide ring	1
9[*1)]	O-ring	1
10	Snap ring	1
11	Nylon washer	1
12[*1)]	Plug	2
13	Spring	4-12
14	Screw for travel stop adjustment	2[*2)]
14B	Screw for travel stop adjustment for type APM	1
15[*1)]	O-ring	2
16	Washer	2
17	Nut	2[*3)]
18	Screw for end cap	8
19[*1)]	O-ring	2
20[*1)]	Piston guide ring	2
21[*1)]	O-ring	2
22	Snap ring	1
23	Washer	8
24	Aluminium cap for type APM	1
25[*1)]	O-ring for type APM	1

[*1)] Suggested spare parts for maintenance
[*2)] for type APM only one piece necessary
[*3)] for type APM three pieces necessary



Technical data are subject to modifications without notice.

13.01.2014