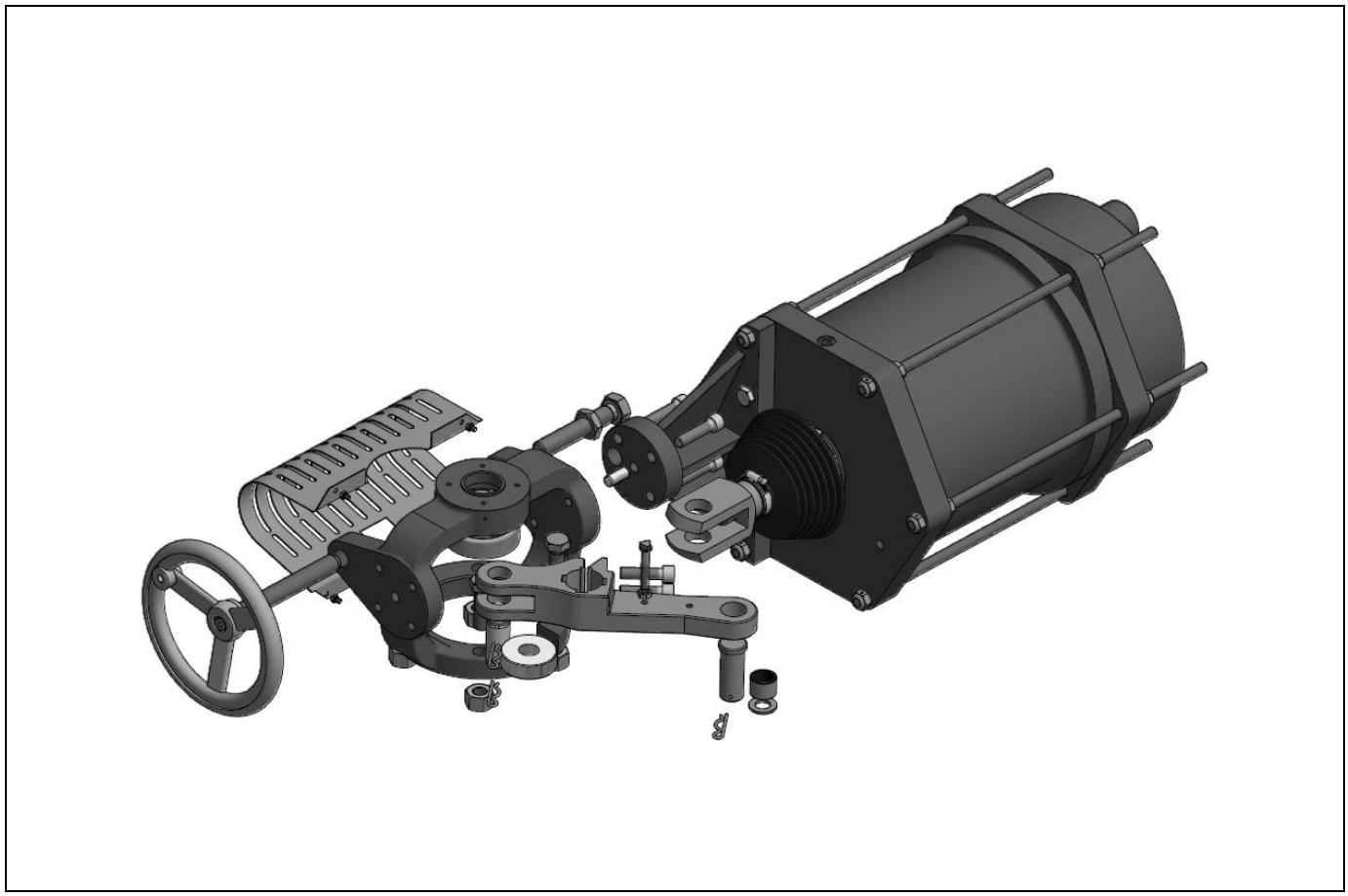
MOUNTING INSTRUCTIONS

EB019.075 en -12 (03-05)

Chap. 12 Repair/Maintenance · Replacing the Actuator

Translation of original instructions



Pneumatic Actuator Type R

Design: rolling diaphragm · single acting · internal centrally located spring(s)

Edition March 2023 (Rev.04/25.11.2025)

Note on these maintenance instructions

The work described in this instruction is only to be performed by personnel qualified for the assignment accordingly. These instructions assist you in safely servicing (repairing) the actuator. The instructions are binding for handling VETEC devices.

The images shown in these instructions are for illustration purposes only. The actual product may vary.

➔ For the safe and proper use of these instructions, read them carefully and keep them for later reference.

➔ We accept no responsibility for damage and operational faults caused by failure to comply with these instructions.

➔ If you have any questions about these instructions, contact VETEC After-sales Service Department: sales-vetec-de@samsongroup.com, phone +49 6232 6412 0.

Definition of signal words

DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

CONTENT

1. Safety instructions and measures

⚠ DANGER

Risk of bursting due to incorrect opening of pressurized equipment or components!

Control valves and pipelines are pressure equipment that can burst if pressurised impermissibly or opened improperly. Projectile-like flying components, fragments and medium released under pressure can cause serious injuries or even death.

Before starting any work on the control valve:

➔ *Observe the maximum permissible pressure for valve and plant.*

➔ *Depressurize all plant sections affected as well as the valve. Residual energies are also to be released.*

➔ *Drain the process medium from all the plant sections concerned as well as the valve.*

⚠ DANGER

Risk due to suspended loads falling!

➔ *Stay clear of suspended or moving loads.*

➔ *Close off and secure the transport paths.*

⚠ WARNING

Crush hazard due to moving parts (e.g. Shaft, Plug, actuator lever)!

➔ *Do not insert hands or finger into the bracket while the air supply is connected to the actuator.*

➔ *Before working on the control valve, disconnect and lock the pneumatic air supply as well as the control signal.*

➔ *Do not impede the movement of the actuator and plug stem by inserting objects into the bracket.*

➔ *Before unblocking the actuator and plug stem after they have become blocked, release any stored energy in the actuator (e.g. spring compression). See associated actuator documentation.*

⚠ WARNING

Risk of personal injury due to preloaded springs!

Actuator with preloaded springs are under tension.

➔ *Before starting any work on the actuator, relieve the compression from the preloaded springs (see associated actuator documentation).*

⚠ WARNING

Risk of lifting equipment tipping over and risk of damage to lifting accessories due to exceeding the rated lifting capacity!

➔ *Only use approved lifting equipment and accessories whose minimum lifting capacity is higher than the weight of the valve (including actuator and packaging, if applicable).*

⚠ WARNING

Risk of injury due to incorrect lifting without the use of lifting equipment!

Lifting the control valve without the use of lifting equipment may lead to injuries (back injury in particular) depending on the weight of the control valve.

➔ *Observe the occupational health and safety regulations valid in the country of use.*

➔ *The selection of the appropriate lifting method is the responsibility of the plant operator.*

⚠ WARNING

Risk of personal injury due to the control valve tipping over!

➔ *Observe the valve's centre of gravity.*

➔ *Secure the valve against tipping over or turning.*

⚠ WARNING

Risk of personal injury due to exhaust air being vented!

While the valve is operating, air is vented from the actuator, for example, during closed-loop operation or when the valve opens or closes.

➔ *Install the control valve so that the actuator does not vent at eye level.*

➔ *Wear eye protection when working in close proximity to the control valve.*

NOTICE

Risk of valve damage due to excessively high or low tightening torques!

The components of the control valve must be tightened with specified torques. Excessive tightening torques lead to parts wearing out more quickly. Parts that are too loose may cause leakage.

➔ *Observe the specified torques. Request via sales-vetec-de@samsongroup.com.*

NOTICE

Risk of valve/actuator damage due to the use of unsuitable tools!

➔ *Only use tools that are suitable and tested for this purpose.*

➔ *Special tools from VETEC on request via sales-vetec-de@samsongroup.com*

NOTICE

Risk of valve/actuator damage due to the use of unsuitable lubricants!

➔ Only use approved lubricants that have been tested for pressure, temperature and media resistance.

Note

- Only use original VETEC spare parts that comply with the original specification.

Note

- When replacing components, seals, diaphragm and O-rings already in use must be replaced with new parts.

Note

- Apply anti-welding and lubricant to all threads and friction surfaces before assembly. Apply multi-purpose grease to all other surfaces to facilitate assembly.

The following documents are also required for the service of the control valve:

- Mounting and operating instructions of the control valve
- Mounting instructions for attached actuator and accessories
- BN004.092 - Special tools
- BN004.229 - Tightening torques

2. Repair work

The actuators do not require maintenance. However, they are subject to natural wear, whose extent depends on the operating conditions.
If the actuator does not function properly according to how it was originally sized or does not function at all, it is defective and must be repaired or exchanged.
For sending in control valves or for returns handling, contact VETEC after-sales-service sales-vetec-de@samsongroup.com or call up the information at www.vetec.de.

2.1. Preparing the actuator for repair work/maintenance

NOTICE

Risk of actuator damage due to work being carried out by personnel not qualified for such tasks!

➔ *Maintenance and repair work, as well as assembly and operation, may only be carried out by qualified personnel who have been trained by VETEC.*

➔ *Contact VETEC after-sales-service sales-vetec-de@samsongroup.com.*

Note

The actuator was checked by VETEC before it left the factory.

➔ *Certain test results certified by VETEC lose their validity when the actuator housing is opened.*

➔ *The product warranty becomes void if any service/repair work is carried out on the device (valve, actuator, accessories).*

Before servicing the actuator, make sure the following conditions are met:

→ The control valve is put out of operation, see related documentation of the control valve.

→ The control valve has been removed from the pipeline, see related documentation of the control valve.

→ The valve has been decontaminated in accordance with the safety regulations. This is the responsibility of the operator.

→ The accessories (e.g. positioner, solenoid valves, piping etc.) has been removed.

Proceed as follows:

1. Lay out the necessary material and tools to have them ready for the service work.
2. Place the valve in a suitable, safe position for disassembly.

➔ The images shown in these instructions are for illustration purposes only. The actual product may vary.

2.2. Remove the actuator from the valve

For the repair work proceed as follows:

1 

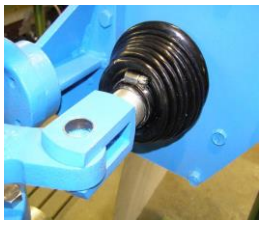
Place the valve in a suitable, safe position for disassembly.

2 

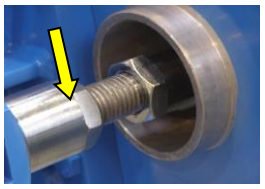
Remove the cotter pin at the bottom of the bolt.

3 

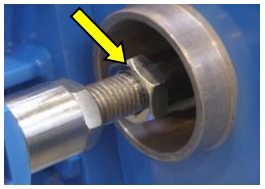
Pressurize the actuator with air and extend the piston until the bolt can be pulled out.

4 

Completely remove the bolt and vent the actuator.

5 

For Fail-safe action (FC) – fail to close:
If no supply air is available losen the front nut.

6 

Do not losen the back nut.

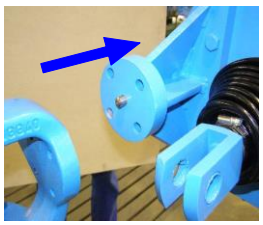
Note

This nut is only used to adjust the spring compresion and is therefore glued to the shaft.

---

7 

Remove the bolts at the side of the fastening bracket.

8 

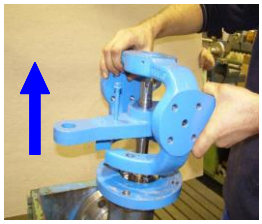
Remove the actuator.

9 

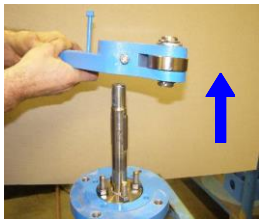
Remove the bolts connecting the fastening bracket and the valve.

10 

Remove the bolt on the lever.

11 

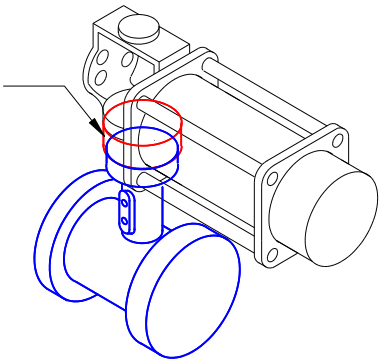
Pull off the fastening bracket.

12 

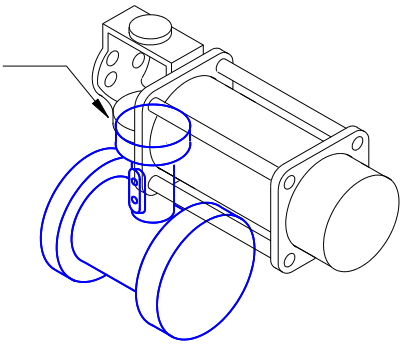
Pull off the lever.

2.3. Mount the new actuator

An adapter plate and a longer shaft are required for mounting a larger actuator/ bracket.



Smaller actuator can be mounted directly.

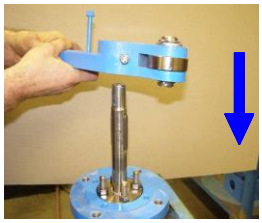


13 

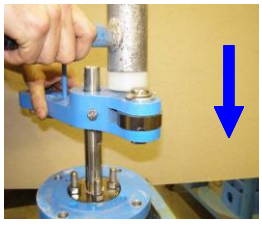
Mount a new ball bearing into the yoke.

14 

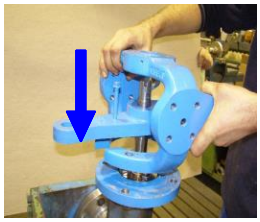
Mount the fastening bracket.

15 

Position the lever properly.

16 

Mount the lever.

17 

Mount the fastening bracket.

18 

Pull the bracket evenly over the guiding.

19 

Lubricate the thread of the bolts with a suitable anti-seize agent.

20 

Tighten the bolts. For tightening torques refer to BN004.229.

21 

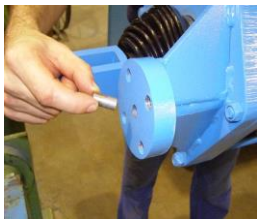
If applicable, mount the stop bolt and pressure roller to the lever.

22 

Adjust the stop bolt.

23 

Adjust the lever height and tighten the lever bolt.

24 

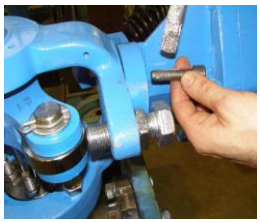
Push the mounting pin into the actuator.

25 

Properly position the actuator.

26 

Place the actuator onto the fastening bracket.

27 

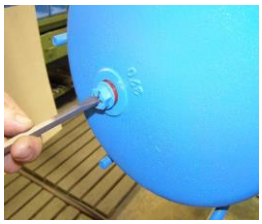
Lubricate the thread of the bolts with a suitable anti-seize agent, mount the bolts.

28 

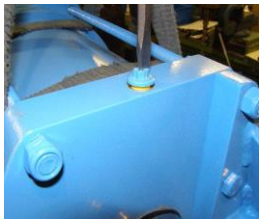
Use a piece of measuring equipment to check that the mounting position of the actuator is parallel; if necessary, correct the mounting position.

29 

Tighten the bolts. For tightening torques refer to BN004.229.

30 

Prepare the supply air connection (ventilation).

31 

Remove the stopper so that the air can escape from the spring chamber when the spring is compressed.

32 

Connect the supply air line.

33 

Unscrew the bellows fastening.

34 

Pressurize the actuator to extend the piston.

35 

Extend the piston.

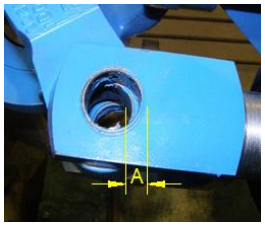
36 

Move the piston to the lever's position.

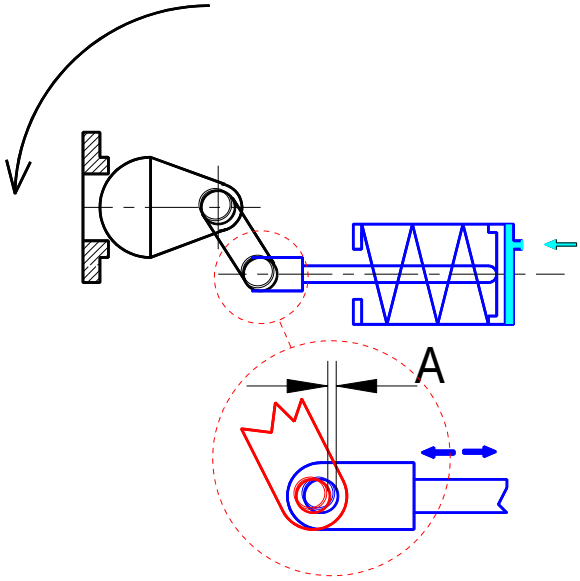
Adjusting the spring compression for fail-safe-action: fail-close (FC)
Step 37 to 44

37 

Push the lever to its mechanical stop in CLOSED position.

38 

Adjust the lever so that dimension A is approx. 2 to 3 mm.
The forkhead must point backward.



39 

Move the lever to its opposite mechanical stop and extend the double lever.

40 

Insert the bolt.

41 

Push in the bolt as far as it will go.

42 

Mount the cotter pin.

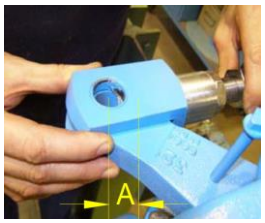
43 

Tighten the forkhead.

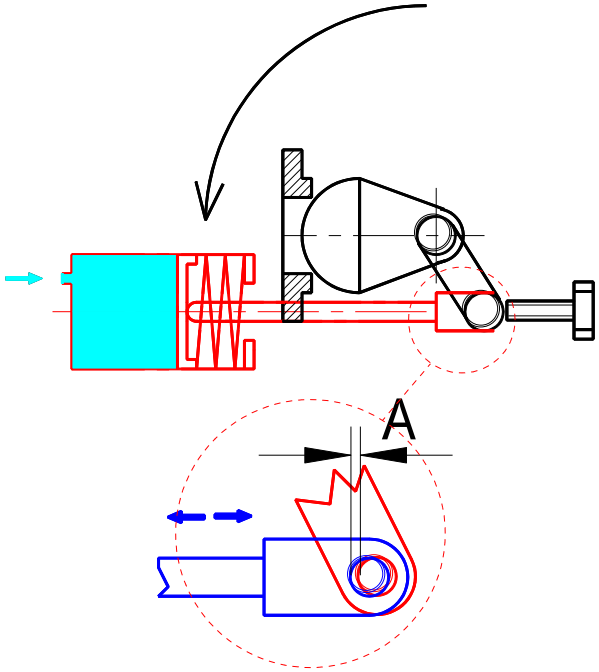
44 

Fasten the bellows.

Adjusting the spring compression for fail-safe-action: fail-open (FO)
Step 45 to 52

45 

Push the lever to its mechanical stop in CLOSED position.
Adjust the lever so that dimension A is approx. 2 to 3 mm.
The forkhead must point backward.



46 

Push in the bolt.

47 

Mount the stop bolt.

48 

Adjust and secure the stop bolt.

49 

Lock the bolt.

50 

Mount the cotter pin.

51 

Tighten the forkhead.

52 

Fasten the bellows.

53

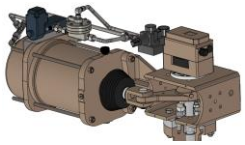
Test the actuator

After completing service work, perform the following tests on the actuator:

Function test:

→ Extend and retract the actuator piston rod (repeat switching cycles)

→ Observe the actuator piston rod. The movement must be linear and not jerky.

54 

Mount accessories (such as positioner, solenoid valve, manual override etc.). See associated documentation.

3. Testing the control valve after service work

The plant operator is responsible for carrying out the tests and selecting the test methods/test equipment, which must comply with national and international standards and regulations.

Test the control valve with all accessories fully assembled:

Before commissioning/recommissioning the control valve, carry out and document the following tests:

- Leak test (internal and external leakage)
- Function test including stroke time
- Fail-safe position of the control valve
- Function of the manual override (if available)

After positive test results:

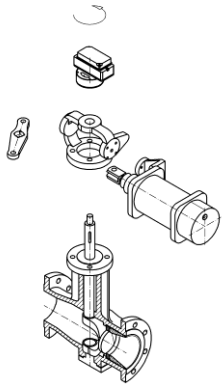
→ Switch off the air supply and vent the actuator.

→ Seal the supply and exhaust air connections with plastic plugs to prevent contamination.

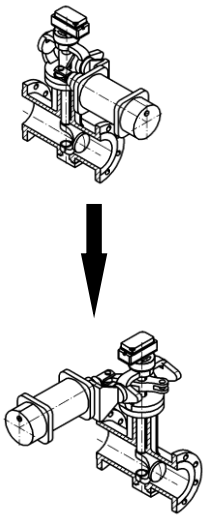
4. Changing the mounting type of the actuator on the valve

To change the mounting type of the actuator on the valve, proceed as follows:

1 Remove the actuator from the valve. See sections 2.1 and 2.2.



2 Select the mounting position according to data sheet **TY005.071**.



3 Mount the actuator in the new position. See sections 2.3.
Then follow the instructions in section 3.