

**Mi-503 EN**

# **Service and operating instruction**

## **Pneumatic actuators**

**Type A - DA**

Double acting actuator

**Type A - SC**

Single acting actuator (spring to close)

**Type A - SO**

Single acting actuator (spring to open)



## Introduction

This operating manual is intended for the operating, maintenance and supervisory personnel.

This operating manual also describes components, equipment and ancillary units which are not or only partially included in the scope of supply.

The scope of supply applies always to the supply specification acc. to Chapter 7 Product key.

The operating personnel must have read, understood and must comply with this operating manual.

We keep the right to do any technical changes which are necessary to improve the product without prior notice.

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# 1 Preliminary remarks

To enable you to find information quickly and reliably in the operation manual, this chapter familiarises you with the structure of the operating manual.

This manual uses symbols and special characters which make it easier for you to find information. Please read the explanations of the symbols given in the section below.

Ensure that you read all the safety instructions in this operating manual very carefully.

You will find safety instructions in section 2, in the foreword to the sections and before any working instructions.

## 1.1 Explanation of warnings, symbols and signs

Warnings are used in this operating manual to warn against injury and material damage. Always read and observe these warnings! Warnings are identified by the following symbols:

In this manual are used diverse types of safety and warning notices:

|                                                                                                                                                                                                        |                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| <b>Danger!</b><br>Type of danger.<br>Advise for imminent danger. Not attention of the advices could be mortal or cause severe injuries as a consequence.<br>Explanation of the countermeasures.        | International<br>Safety symbol |
| <b>Warning!</b><br>Type of danger.<br>Advise for imminent danger. Not attention of the advices could cause severe injuries or property damage as a consequence.<br>Explanation of the countermeasures. | International<br>Safety symbol |
| <b>Attention!</b><br>Type of danger.<br>Advise for possible danger. Not attention of the advices could cause property damage as a consequence.<br>Explanation of the countermeasures.                  | International<br>Safety symbol |



**Note**

Advices and give tips for better understanding of the manual or a better handling of the valve.



**1.1.2 Symbols and signs**

Symbols and signs are used in this operating manual to provide fast access to information.

**1.1.2.1 Symbols and signs in the text**

| Symbol   | Denotation                            | Explanation                                                                                                                                                |
|----------|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ⇒        | Operating instructions                | This means there is an action to be carried out.                                                                                                           |
| 1.<br>2. | Operating instructions,<br>multi-step | Work instructions must be carried out in the<br>sequence shown.<br>Deviations from the sequence shown may result in<br>damages to the valve and accidents. |
| •<br>–   | Lists, two-stage                      | No activities are linked with lists.                                                                                                                       |
| →        | Cross-reference                       | References to images, tables, other sections or other<br>instructions.                                                                                     |

Tab.1-1 Symbols in the text



## 2 Safety

### 2.1 Safety instructions

#### 2.1.1 General dangers

Sources of danger resulting in general hazards:

- Mechanical hazards
- Electrical hazards

#### 2.1.2 Hazards due to electrical equipment

Due to the permanent dampness, electrically-operated machine parts represent a potential source of danger.

Comply with all regulations on electrical equipment in damp areas!

#### 2.1.3 Additional hazards

##### 2.1.3.1 Entanglement, crushing and cut/sever hazards

- by moving actuator parts left exposed, by removing covers for inspection, sampling, etc.
- by automatic operated valves

##### 2.1.3.2 Burning or scalding hazards

- by opening or leaving open function-check and/or sampling openings on systems operating at high temperatures (above 40°C)
- by operating temperature  $\geq 70^\circ\text{C}$ . Short contacts (approx. 1s) of the skin with the surface of the valve may cause burns (pr EN 563)
- by operating temperature = 65°C. Longer contacts (approx. 3s) of the skin with the surface of the valve may cause burns (pr EN 563)
- by operating temperature 55°C...65°C. Longer contacts (approx. 10 ... 3s) of the skin with the surface of the valve may cause burns (pr EN 563)

##### 2.1.3.3 Explosion hazards

A high surface temperature on a valve and actuator, constitutes (a risk for burn injuries, and) a risk of ignition of explosive atmospheres in ATEX applications.

The surface temperature of the equipment is not dependent on the equipment itself, but on the ambient conditions and the process conditions. The protection from the surface temperature is the responsibility of the end user, and must be effectuated before the equipment is put into service.



#### **2.1.4 State of the art**

This product has been built by Somas Instrument AB in accordance with state-of-the-art standards and the recognized safety rules. Nevertheless, its use may constitute a risk to life and limb of the user or of third parties, or cause damage to the valve and to other material property, if:

- the product is not used as designated
- the product is operated or repaired by untrained personnel
- the product is modified or converted improperly and/or
- the safety instructions are not observed

Therefore, every person involved in erecting, operating, inspecting, maintaining, servicing and repairing the valve must read, understand and observe the complete operating instructions, particularly the safety instructions.

#### **2.1.5 Preconditions for using the actuator**

The actuator only has to be used:

- in perfect technical condition
- as designated
- according to the instructions in the operating manual, and only by safety-conscious persons who are fully aware of the risks involved in operating the actuator
- if all protective devices are installed and operative

Rectify immediately any functional disorders, especially those affecting the safety of the actuator!

## **2.2 Designated use of the actuator**

### **2.2.1 Use**

Pneumatic actuators type A are suitable to be assembled on the industrial shut-off or control valves from Somas.

If you want to use the actuator with another shut off and control valve please contact Somas Instrument AB.

The specified operating and limit values as well as the ambient temperature must be complied.

Particular data to the operation and limit values are specified on the data sheet „Si-503EN“.

The operating values, limit values and setting data must not deviate from the values specified in the operating manual and corresponding information sheet without consulting the manufacturer! The manufacturer cannot be held liable for any damages resulting from non-observance of the operating manual.



### **2.2.2 Liability for non-designated use.**

Using the actuators for other purposes than those mentioned previously is considered contrary to its designated use. For resulting damages of this, Somas Instrument AB is not liable! The user take the risk.

## **2.3 Organizational measures**

### **2.3.1 Availability of operating manual**

The operating manual has to be stored and be readily available!

### **2.3.2 Additional regulations**

In addition to the operating manual, it have to be observed all other generally applicable legal and other mandatory regulations relevant to accident prevention and environmental protection! Direct the personnel to comply with them!

### **2.3.3 Checks**

Periodically check that the personnel carry out the work in compliance with the operating manual and that they pay attention to risks and safety factors.

### **2.3.4 Protective equipment**

Use when necessary protective equipment.

### **2.3.5 Rebuilds or modifications at the actuator**

Do not make any rebuilds or modifications at the actuator yourself, which can affect the security of the actuator.

### **2.3.6 Replacing damaged parts**

Actuator parts that are not in perfect condition must be replaced immediately with original spare parts! Use only original spare and wear parts from Somas Instrument AB.

On unauthorized parts is not guarantee that they have been designed and manufactured according to the application.

## **2.4 Selection and qualification of personnel**

Operation, maintenance and repairing works require special knowledge and may only be carried out by trained technical specialists or qualified personnel authorized by the user.



## 2.5 Pneumatic actuators type A, ATEX

Somas Actuators type A, with additional type indication -E, is in compliance with the ATEX-directive 2014/34/EU.

### 2.5.1 Ex-marking

The Actuator has the following EX-marking:



II 2 G Ex h IIC T6-T3 Gb



II 2 D Ex h IIIC T65-T125 °C Db

#### Explanations:

II Equipment group II (applications except mines and underground).

2 Equipment category 2, for use in zone 1 and 2, and zone 21 and 22.

G Intended for gas atmospheres.

D Intended for dust atmospheres.

Ex h Ignition protection according to standards for constructional safety for mechanical products.

IIC Subdivision for use in gas atmospheres requiring subdivision IIA, IIB or IIC equipment.

IIIC Subdivision for use in dust atmospheres requiring subdivision IIIA, IIIB or IIIC equipment.

T6-T3 Equipment temperature class in gas atmospheres (equipment group II), according to below table 2-1.

T65-

T125 °C Equipment temperature in dust atmospheres (equipment group III), according to below table 2-1.

| Tambient (°C) | Tmedia (°C) | Temperature class<br>group II | Temperature (°C)<br>group III |
|---------------|-------------|-------------------------------|-------------------------------|
| 60°C          | <150        | T6                            | T65                           |
| 60°C          | 150-300     | T5                            | T95                           |
| 90°C          | <300        | T4                            | T95                           |
| 90°C          | 300-500     | T4                            | T105                          |
| 120°C         | <500        | T3                            | T125                          |

Tab. 2-1 *Tambient* - maximum ambient temperature  
*Tmedia* - media temperature in valve

Gb Equipment protection level EPL Gb, for use in zone 1 and 2, gas atmospheres

Db Equipment protection level EPL Db, for use in zone 21 and 22, dust atmospheres



### **2.5.2 Protection from potential ignition sources**

Ignition risk from hot surfaces outside and inside the actuator is prevented by specifying temperature classes and temperatures depending on ambient temperatures and temperature of valve media according to table 2-1.

Ignition risk from a breaking return spring, an unexpected failure, is prevented by restricting use to zone 1 and 2, 21 and 22, equipment protection level Gb and Db.

Ignition risk from light metals is prevented by restricting use to zone 1 and 2, 21 and 22, equipment protection level Gb and Db.

Ignition risk from charged and isolated conductive parts is prevented by the design of the actuator, and by resistance measurement at assembly and maintenance.

Ignition risk from brush discharges from non-conductive layers like paint and stickers on earthed metal is prevented by limiting the paint thickness and the stickers thickness or surface areas according to subdivision IIC.



### 2.5.3 Installation, operation, and maintenance requirements

#### **Danger!**



- Only trained specialists or authorized personnel shall handle the actuator
- The actuator shall be earthed. Maximum resistance to earth shall be  $<1 \text{ M}\Omega$
- Brackets in unpainted stainless steel shall be used for mounting the actuator on valves
- Brackets in unpainted stainless steel or the Somas mounting block shall be used for mounting of accessories
- Stainless steel tubing shall be used to connect the actuator to the accessories
- Maintenance and adjustment in Ex zone require Ex-approved tools
- Adjustment of end position screws shall be done according to instruction
- Assembly and disassembly of an actuator shall only be made outside Ex area or according to end user approval
- Make sure there is electrical contact between the actuator, the valve, the accessories, and between all components in the actuator during assembly and maintenance (resistance  $<1 \text{ M}\Omega$ )
- A high surface temperature poses an ignition risk. End user shall consider ambient temperatures and media temperatures according to table 2-1
- High temperature valves may need insulation to prevent radiant heating of the actuator
- Cleaning can be made by manual rubbing. High pressure cleaning or compressed air shall not be used
- Dust layers on the equipment shall be avoided
- Additional painting including touch up-painting, or other modifications, is not permitted
- Applying additional stickers and signs is not permitted
- Quick closing and opening of a valve shall be avoided to prevent ignition risk from pressure shock waves in the process
- Use of quick closing actuators only after Somas Instrument AB approval
- Actuators are lubricated at delivery and require no additional lubrication. If lubrication is wiped off during repair, new lubrication shall be applied.



## 2.5.4 Declaration of Conformity



# Declaration of Conformity

According to ATEX Directive 2014/34/EU

Actuators type A1, A2, A3, A4 and A5, double acting and spring return, with option -E have been designed and manufactured according to ATEX Directive 2014/34/EU and are marked:

II 2 G Ex h IIC T6-T3 Gb

II 2 D Ex h IIIC T65-T125 °C Db

Above stated product have been subjected to a conformity assessment procedure according to Internal Quality Assurance Procedures.

**Valid harmonised standards have been:**

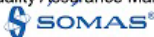
EN IEC 60079-0:2018 EN ISO 80079-36:2016 EN ISO 80079-37:2016

**Other technical specifications:**

EN 1127-1:2019

Säffle 2024-09-13

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## 2.6 Safety instructions for pneumatic actuators

Operation of the actuator is always subject to the local safety and accident prevention regulations.

### Danger!

Risk of injury!

Do not place hands and fingers in the area of moving parts of the valve or of the actuator when the actuator is connected to the compressed air supply.

Single action actuators may move to "open" or "closed" position without being connected to the air system.



### Warning!

Before carrying out maintenance or repair work on the valve with actuator or installation and removal of the valve from the pipeline, always disconnect the compressed air supply to the actuator. Single action actuators may move to "open" or "closed" position without being connected to the air system.



### Warning!

Ensure that personnel who work with, install or repair the actuator are appropriately trained. This prevents unnecessary damage and accidents or injury to personnel.

The maintenance and assembly personnel must be familiar with the process of installing and disassembling the actuator in a process line, the special and possible risks of the process and the most important safety regulations.

The repair and assembly personnel must be familiar with the risks when handling pressurised equipment, hot and cold surfaces, dangerous substances and substances which represent a hazard to health.



### Warning!

Before carrying out maintenance or repair work, installation and removal of an actuator from a valve in the pipeline, always depressurise the valve in the pipeline, isolate the valve and remove the medium.

The pressurised medium may lead to injuries to personnel.



### Warning!

Protect yourself against noise - use the relevant safety equipment.



**Warning!**

Beware of very cold or hot surfaces!

The actuator and/or actuator parts may become very cold or very hot during operation. Protect yourself against frostbite and burns.

**Danger!**

Risk of injury!

Always release the spring tension before unscrewing the end cover of the cylinder.

**Warning!**

When transporting and handling the actuator, observe the weight of the actuator or of the whole unit. Never lift the valve by its positioner, limit switch, solenoid valve or piping. Place the hoisting ropes securely according to lift instruction.

The actuator may injure persons if dropped.

Do not walk under suspended loads.





## 3 Description

### 3.1 General information

Somas pneumatic actuators type A are available in two designs:

- double acting - type DA
- single acting - type SC (spring to close) or SO (spring to open)

The actuator offers a patented backlash-free transmission coupling and a special friction coupling which eliminate the play between the actuator and the valve.  
(Valid for valves with a shaft diameter  $\leq 50$  mm).

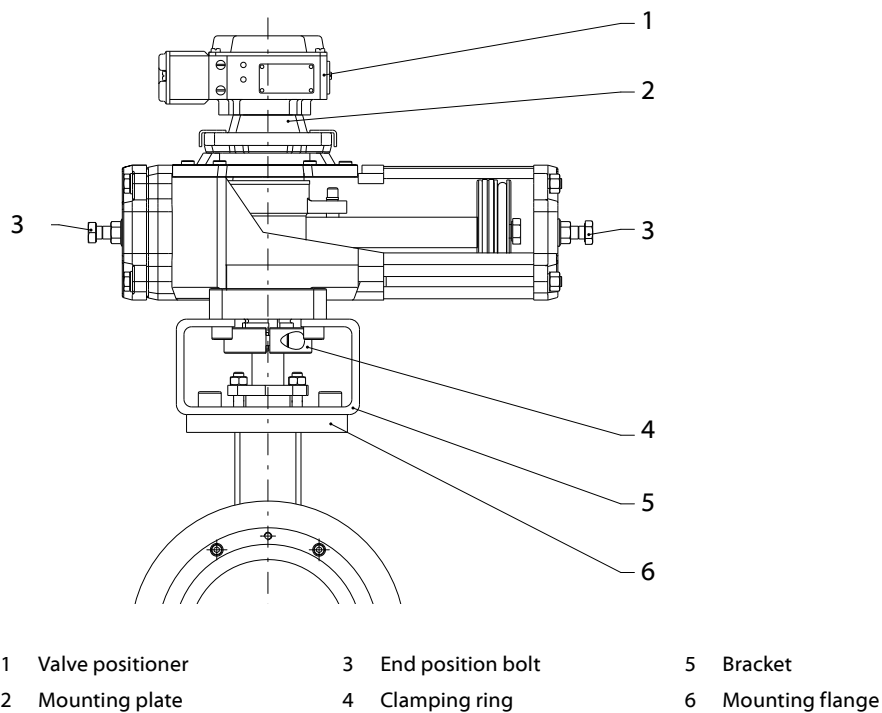
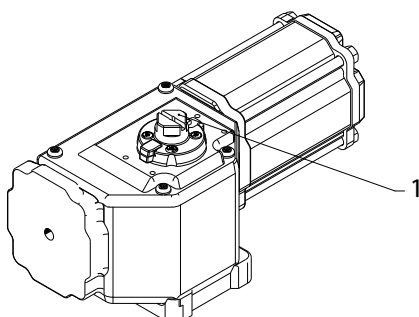


Fig.3-1 Controlling valve with integrated actuator type A and a electropneumatic valve positioner

### 3.2 Important advice

The driver may only be used to operate the actuator during installation. Do never use the driver for a emergency operation.



1 Driver

Fig.3-2 Driver



### 3.3 Air connections codes

The air connections of the actuator are identified as follows:

- 4 CLOSE** Rising pressure has a rotary motion clockwise as a consequence - Somas valve closes
- 2 OPEN** Rising pressure has a rotary motion counterclockwise as a consequence - Somas valve opens

Type A size A11, A21 and so on has one cylinder.

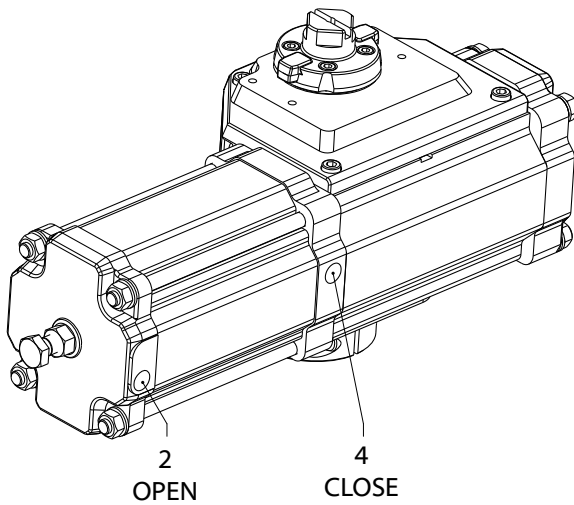


Fig.3-3 Air connections on type A size A11, 21... with one cylinder

Type A size A22, A32 and so on has two cylinders.

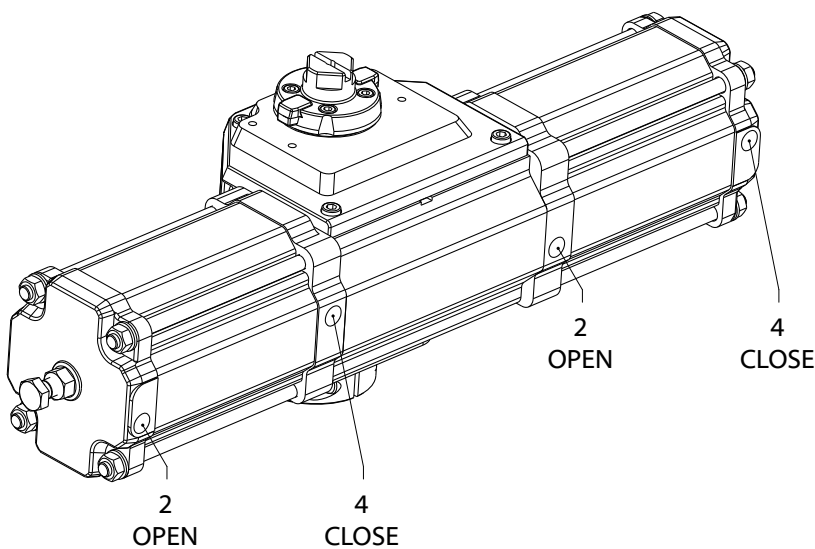


Fig.3-4 Air connections on type A size A22, 32... with two cylinders

### 3.4 Air pipes connection

The following connection descriptions refer to the following function: Connection pressurisation “CLOSE” has a rotary motion clockwise as a consequence.

#### Attention!

The air supply shall be dry and clean instrument air acc. to ISO 8573-1. The pressure must be constant at 4 - 8 bar (0.4 - 0.8 MPa).  
The maximum supply air pressure shall not exceed the stated maximum value of the positioner.

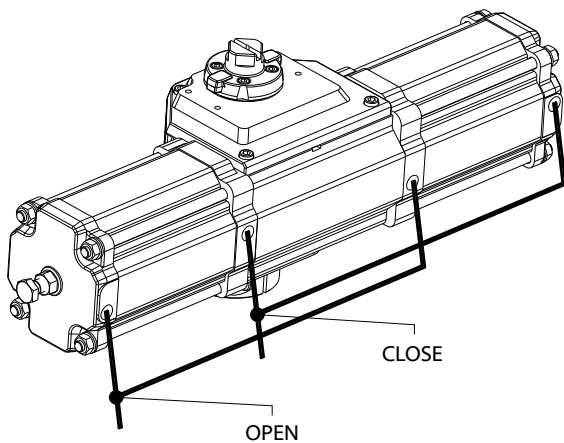


Fig.3-5 Pneumatic actuator type A with two cylinders and schematic drawing of the to-connect air pipes (double acting - A-DA)

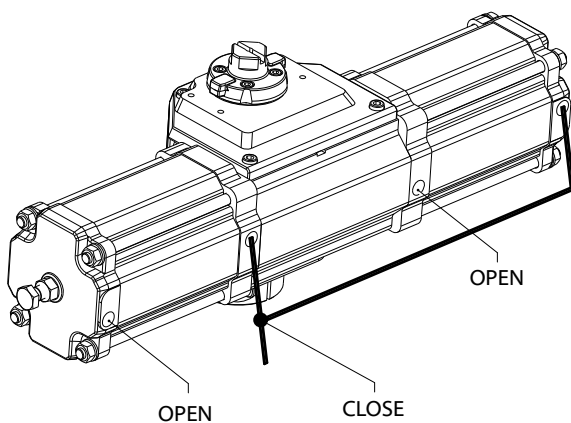
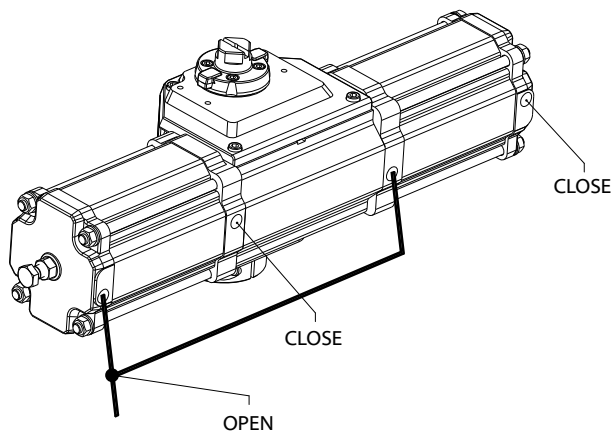


Fig.3-6 Pneumatic actuator type A with two cylinders and schematic drawing of the to-connect air pipes (single acting - spring to open A-SO). The ports “2 / open” are equipped with silencers



*Fig.3-7 Pneumatic actuator type A with two cylinders and schematic drawing of the to-connect air pipes (single acting - spring to close A-SC)  
The ports "4 / close" are equipped with silencers.*

### 3.5 Accessories

Actuator type A can be equipped with diverse accessories, e.g. valve positioners, position limit switches and solenoid valves. Please observe the assembly instructions for each component.



## 4 Assembly

### 4.1 Unpacking, storage and transportation

Inspect the actuator for transport damage when unpacking. The protective caps on the connections must only be removed immediately before assembly. The actuator must be stored on a suitable base on a dry, cold and clean place and be protected against dirt until installed, see also Technical Information sheet, Ti-935 that is available at [www.somas.se](http://www.somas.se).

#### Warning!

When transporting and handling the actuator, observe the weight of the actuator or of the whole unit. Never lift the valve by its positioner, limit switch, solenoid valve or piping. Place the hoisting ropes securely according to lift instruction. The actuator may injure persons if dropped. Do not walk under suspended loads.



- Transportation must be carried out with suitable hoisting equipment
- Use lifting straps to lift the actuator, when this is installed on the valve (→ Fig.4-1). The picture shows a standard situation. Please note that all possible situations that can occur cannot be covered in this lift instruction

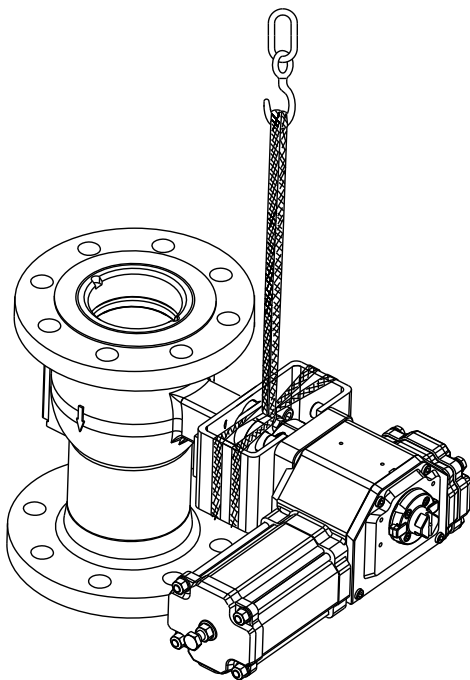


Fig.4-1 Lifting



## 4.2 Assembly of the pneumatic actuator

### Warning!

Before carrying out maintenance or repair work, installation and removal of an actuator from a valve in the pipeline, always depressurise the valve in the pipeline, isolate the valve and remove the medium.

The pressurised medium may lead to injuries to personnel.



### Warning!

Before carrying out maintenance or repair work on the valve with actuator or installation and removal of the valve from the pipeline, always disconnect the compressed air supply to the actuator. Single action actuators may move to "open" or "closed" position without being connected to the air system.

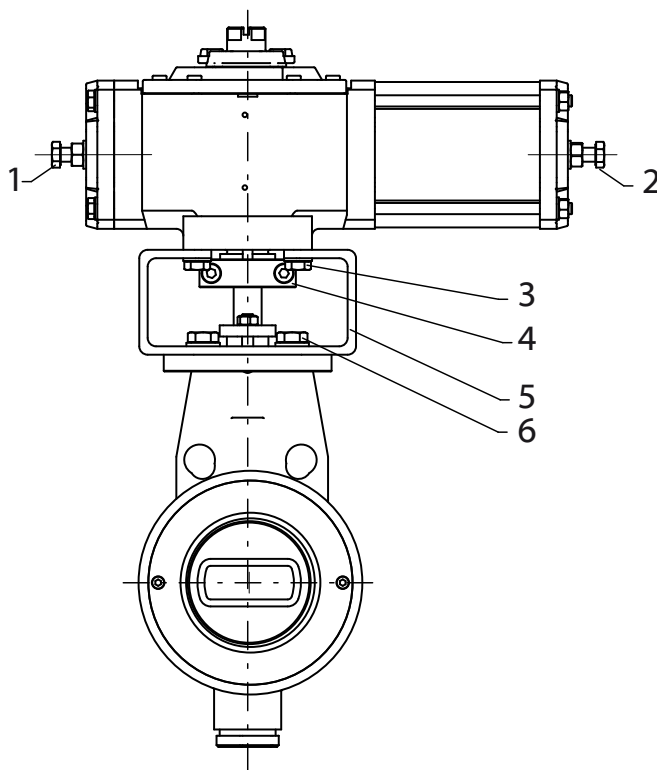


### Danger!

Risk of injury!

Do not place hands and fingers in the area of moving parts of the valve or of the actuator when the actuator is connected to the compressed air supply.

Single action actuators may move to "open" or "closed" position without being connected to the air system.



1 End stop bolt

3 Bolt

5 Bracket

2 End stop bolt

4 Clamping ring

6 Bolt

Fig.4-2 Assembly of the actuator (schematic diagram)



#### 4.2.1 Installing position of the Actuator and the Positioner

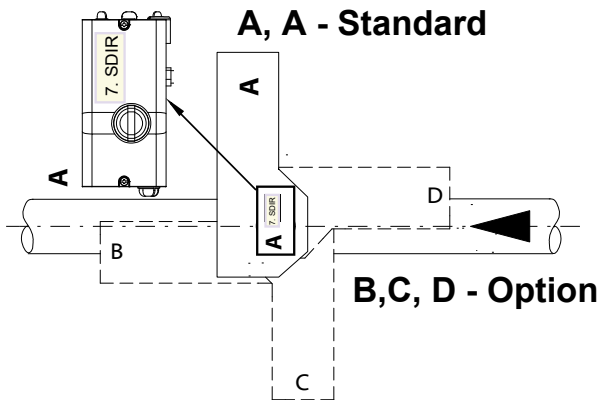


Fig.4-3a Mounting positions of the Actuator

Installation position A, A (→ Fig. 4-3a) - perpendicular to the pipeline is the standard mounting for both Actuators and Positioners. Mounting positions B, C, D for Actuator (→ Fig. 4-3a) and the Positioner (→ Fig. 4-3ab) can be selected depending on the installation option. The Valve and Actuators mounting position relative the horizontal line. A mounting position with the Valve shaft pointing upwards (vertical) is often considered to be standard. If the media contains sticky or other difficult impurities, that tend to collect at the bottom of the pipe, it is advised to mount the valve with an angle of vertical. In this way it is avoided that the impurities collect and eventually clog and glue the bottom bearing of the valve shaft.

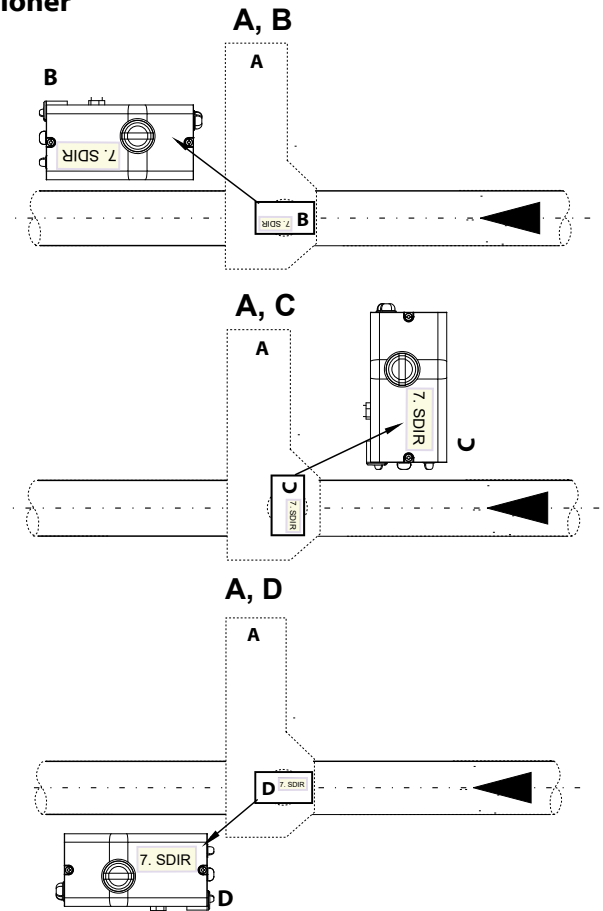


Fig.4-3ab Mounting positions of the Positioner

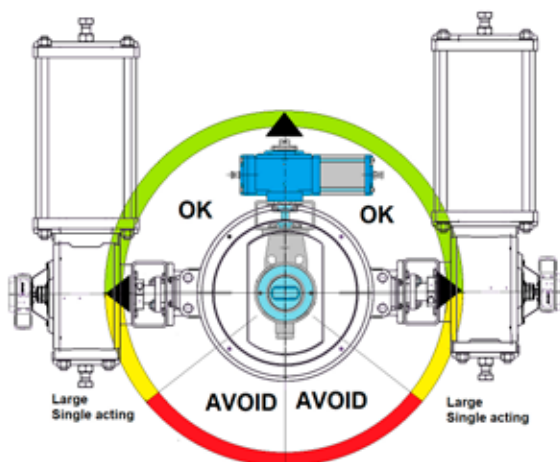


Fig.4-3b Mounting position

When large actuators (both single - and double acting) are used in vertical pipes, install them with the cylinder in the pipe direction. This will result in less wear and easier maintenance. (→ Fig.4-3b).

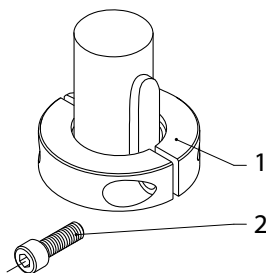
**Note**

To prevent damage, do not fit the actuator with force.

When large actuators (both single - and double acting) are used in vertical pipes, install them with the cylinder in the pipe direction. This will result in less wear and easier maintenance.

**Procedure**

1. When using double acting and spring-closed actuators, ensure that the valve is in “closed” position.
2. When using spring opened actuators, ensure that the valve is in “open” position.
3. Lubricate the shaft and the key.
4. Fix the bracket (→ Fig.4-2/5) to the actuator with the aid of the bolts (→ Fig.4-2/3).
5. Place the actuator with the bracket (→ Fig.4-2/5) in the required position (A, B, C or D) (→ Fig.4-3a). on the shaft of the valve and fix the unit with the aid of the bolts. (→ Fig.4-2/6).
6. Connect the clamping ring to shaft end of the valve and the actuator (→ Fig.4-2/4). The clamping ring is to be mounted in such a way that its yellow markings indicate the position of the ball segment/ball/disc. When the valve is closed, the markings must then be offset to the direction of flow by 90°.



Clamping ring / backlash-free transmission coupling are pre-assembled on the actuator in mounting positions A or C at delivery (→ Fig.4-3). For the mounting positions B or D the clamping ring has to be turned through 90°.

- 1 Clamping ring                      2 Allen bolt

*Fig.4-4 Mounting clamping ring*

1. Tighten the bolts (→ Fig.4-4/2) on the clamping ring (→ Fig.4-4/1).
2. Then set the end positions (→ Chap.4.4).

### 4.3 Disassembly of the pneumatic actuator

#### Warning!

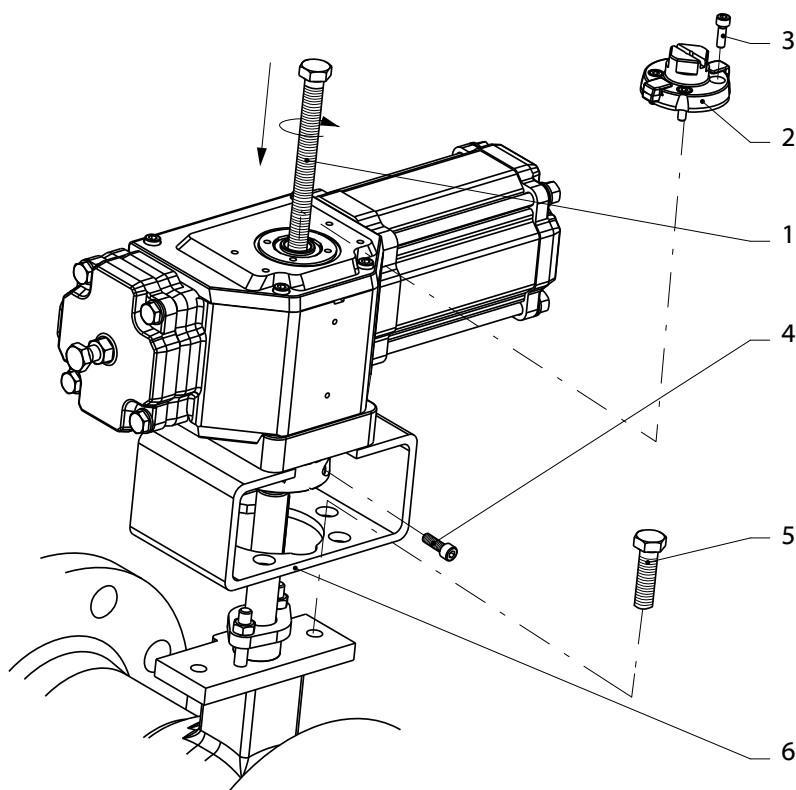
Before carrying out maintenance or repair work, installation and removal of an actuator from a valve in the pipeline, always depressurise the valve in the pipeline, isolate the valve and remove the medium.

The pressurised medium may lead to injuries to personnel.



#### Warning!

Before carrying out maintenance or repair work on the valve with actuator or installation and removal of the valve from the pipeline, always disconnect the compressed air supply to the actuator. Single action actuators may move to "open" or "closed" position without being connected to the air system.



1 Puller

2 Driver

3 Screw

4 Clamping ring bolts

5 Bolt

6 Bracket

Fig.4-5 Disassembly of the actuator (schematic diagram)



Use a puller to remove the actuator from the valve. This prevents damage to the seat and the ball segment/ball/disc of the valve.

#### Pullers

| Actuator size | A11   | A13   | A21   | A22   | A23   | A24   | A31   | A32   |
|---------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Article no.   | 34786 | 34786 | 34786 | 34786 | 34786 | 34786 | 34787 | 34787 |
| Actuator size | A33   | A34   | A41   | A42   | A43   | A44   | A51   | A52   |
| Article no.   | 34787 | 34787 | 34788 | 34788 | 34788 | 34788 | 34788 | 34788 |

1. Undo the clamping ring bolts (→ Fig.4-5/4).
2. Remove the accessory parts such as positioners and end position limit switches.
3. Remove the screws (→ Fig.4-5/3), to remove the driver (→ Fig.4-5/2).
4. Remove the bracket (→ Fig.4-5/6) from the valve by removing the bolts (→ Fig.4-5/5).
5. Press the actuator off the valve with the puller (→ Fig.4-5/1). Turn the puller in until the actuator can be removed from the valve shaft.
6. Lift the actuator off and turn the puller out again.



## 4.4 Adjustment of the end positions

**Danger!**

Risk of injury! Do not place hands and fingers in the area of moving parts of the valve or of the actuator when the actuator is connected to the compressed air supply. Single action actuators may move to “open” or “closed” position without being connected to the air system.

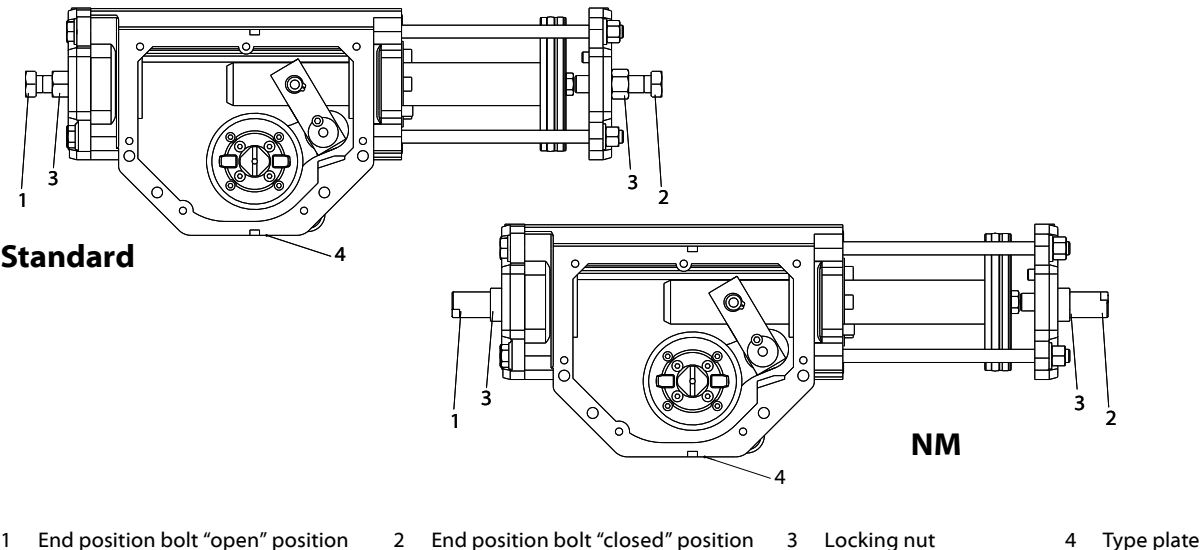


Fig.4-6 End position bolts on pneumatic actuator

Types A-DA A11, A21 and s.o. has one cylinder.  
Types A-DA A22, A32 and s.o. has two cylinders.

The movement of the actuator is limited through end position bolts. The final position for the open or closed setting can be adjusted with the end position bolts.

In closed position, the adjustment screw allows for adjustment of  $\pm 5$  degree.

The end position bolt on the open position, functions as a limit of the valve stroke of the piston. The stroke of the piston depends on the function of the valve.

**Attention!**

Damage to PTFE seats!  
While adjusting butterfly valves equipped with PTFE seats keep attention not to close the valve to firm. This causes damage to the seat!



### 4.4.1 Tightening torque, tie-rods and nuts

The table below shows the maximum permitted tightening torques for tightening tie-rods and nuts when the actuator has been dismantled (→ Tab.4-1).

| Thread | Max. torque (Nm) |
|--------|------------------|
| M8     | 10               |
| M12    | 30               |
| M16    | 50               |
| M24    | 75               |

Tab.4-1 Tightening torque, tie-rods and nuts



## 5 Maintenance

### 5.1 Maintenance

#### Warning!

Before carrying out maintenance or repair work on the valve with actuator or installation and removal of the valve from the pipeline, always disconnect the compressed air supply to the actuator. Single action actuators may move to "open" or "closed" position without being connected to the air system.



#### Warning!

When transporting and handling the actuator, observe the weight of the actuator or of the whole unit. Never lift the valve by its positioner, limit switch, solenoid valve or piping. Place the hoisting ropes securely according to lift instruction. The actuator may injure persons if dropped. Do not walk under suspended loads.



Overhauling and repair work at the actuator may only be executed by Somas Instrument AB or another service center who is authorised by Somas Instrument AB. Repair work at the actuator may only be carried out by qualified personnel.

For the realisation of repairing work the instructions on the "additional instructions for repair work" must be observed. Additional instructions as well as corresponding repairing and sealing kit sets (→ Chap.5.2) are available on request.

#### Note

Note the details stated on the type plate (→ Fig.4-6/4, Fig. 5-0) before contacting Somas Instrument AB regarding service or maintenance. Only use original spare parts from Somas Instrument AB.



#### 5.1.1 Type plate and Ex-marking placement

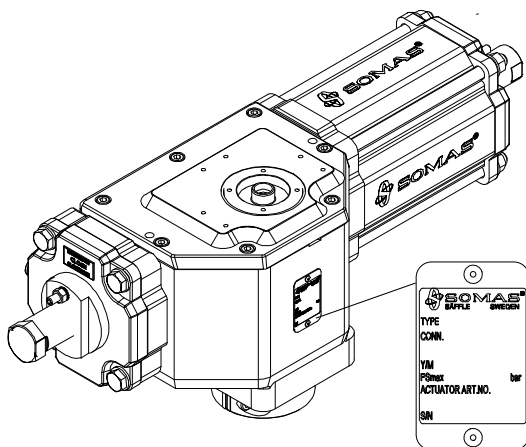
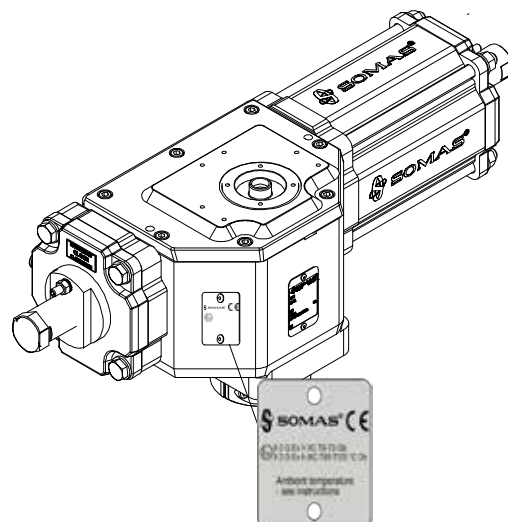


Fig.5-0 The placement of the Type Plate.



The placement of the Ex-marking Plate (only for ATEX-versions Option E.)



## 5.2 Sealing and repair kits

**Double-acting actuator, type A-DA standard and option -E (ATEX)**

| Actuator size           | A11-DA | A13-DA | A21-DA | A22-DA | A23-DA | A24-DA | A31-DA | A32-DA |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Sealing kit             | 35584  | 35585  | 35586  | 35587  | 35588  | 35589  | 35590  | 35591  |
| Repair kit for standard | 35607  | 35608  | 35609  | 35610  | 35611  | 35612  | 35613  | 35614  |
| Repair kit for ATEX     | 42000  | 42001  | 42002  | 42003  | 42004  | 42005  | 42006  | 42007  |
| Actuator size           | A33-DA | A34-DA | A41-DA | A42-DA | A43-DA | A44-DA | A51-DA | A52-DA |
| Sealing kit             | 35592  | 35593  | 35594  | 35595  | 35596  | 35597  | 35598  | 35599  |
| Repair kit for standard | 35615  | 35616  | 35617  | 35618  | 35619  | 35620  | 35621  | 35622  |
| Repair kit for ATEX     | 42008  | 42009  | 42010  | 42011  | 42012  | 42013  | 42014  | 42015  |

Tab.5-1 Double-acting actuator, type A-DA standard and option -E (ATEX)

**Double-acting actuator, type A-DA, High-temperature design standard and option -E (ATEX)**

| Actuator size           | A11-DA | A13-DA | A21-DA | A22-DA | A23-DA | A24-DA | A31-DA | A32-DA |
|-------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| Sealing kit             | 35630  | 35631  | 35632  | 35633  | 35634  | 35635  | 35636  | 35637  |
| Repair kit for standard | 35653  | 35654  | 35655  | 35656  | 35657  | 35658  | 35659  | 35660  |
| Repair kit for ATEX     | 42016  | 42017  | 42018  | 42019  | 42020  | 42021  | 42022  | 42023  |
| Actuator size           | A33-DA | A34-DA | A41-DA | A42-DA | A43-DA | A44-DA | A51-DA | A52-DA |
| Sealing kit             | 35638  | 35639  | 35640  | 35641  | 35642  | 35643  | 35644  | 35645  |
| Repair kit for standard | 35661  | 35662  | 35663  | 35664  | 35665  | 35666  | 35667  | 35668  |
| Repair kit for ATEX     | 42024  | 42025  | 42026  | 42027  | 42028  | 42029  | 42030  | 42031  |

Tab.5-2 Double-acting actuator, type A-DA, High-temperature design standard and option -E (ATEX)

**Single-acting actuator, type A-SC/SO standard and option -E (ATEX)**

| Actuator size           | A13-SC/SO | A23-SC/SO | A24-SC/SO | A33-SC/SO | A34-SC/SO | A43-SC/SO | A44-SC/SO |
|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Sealing kit             | 35600     | 35601     | 35602     | 35603     | 35604     | 35605     | 35606     |
| Repair kit for standard | 35623     | 35624     | 35625     | 35626     | 35627     | 35628     | 35629     |
| Repair kit for ATEX     | 42032     | 42033     | 42034     | 42035     | 42036     | 42037     | 42038     |

Tab.5-3 Single-acting actuator, type A-SC/SO standard and option -E (ATEX)

**Single-acting actuator, type A-SC/SO, High-temperature design standard and option -E (ATEX)**

| Actuator size           | A13-SC/SO | A23-SC/SO | A24-SC/SO | A33-SC/SO | A34-SC/SO | A43-SC/SO | A44-SC/SO |
|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| Sealing kit             | 35646     | 35647     | 35648     | 35649     | 35650     | 35651     | 35652     |
| Repair kit for standard | 35669     | 35670     | 35671     | 35672     | 35673     | 35674     | 35675     |
| Repair kit for ATEX     | 42039     | 42040     | 42041     | 42042     | 42043     | 42044     | 42045     |

Tab.5-4 Single-acting actuator, type A-SC/SO, High-temperature design standard and option -E (ATEX)



## 5.3 Replacing the sealing kit

⇒ For actuators in option -E (ATEX) (→ Chap.2.5).

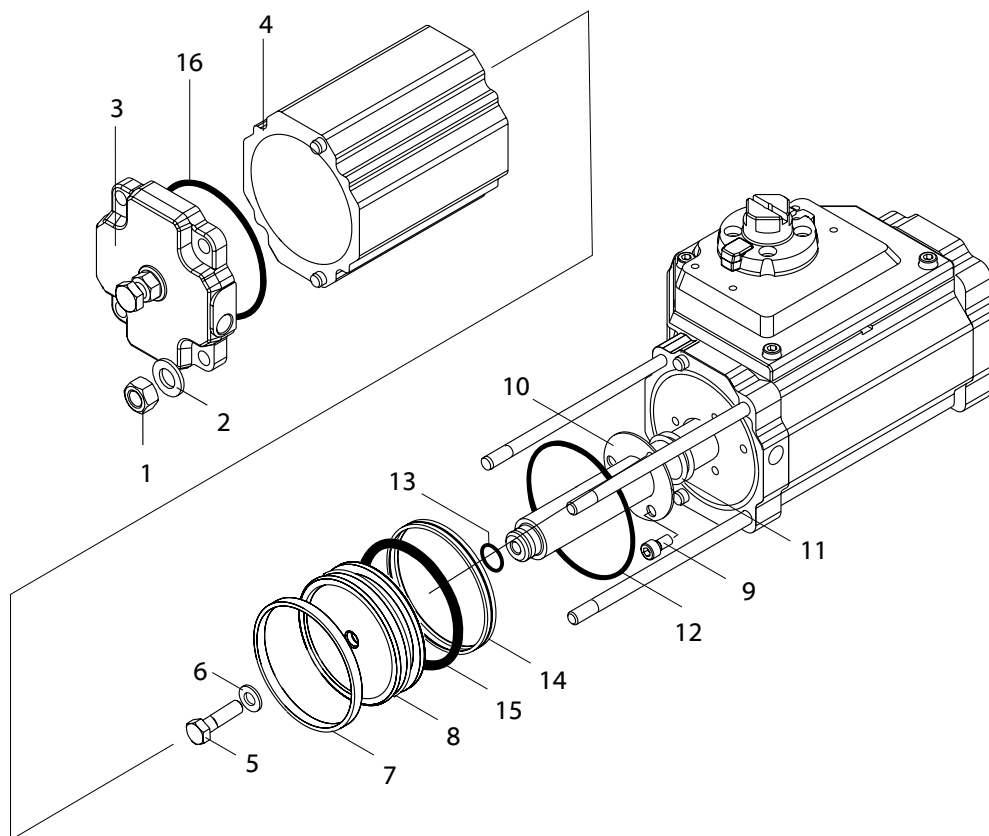
### **Danger!**

Risk of injury!

Always release the spring tension before unscrewing the end cover of the cylinder.



### 5.3.1 Double-acting actuator types A11, 21, 31, 41, 51 - DA



- |                 |               |                                 |                |
|-----------------|---------------|---------------------------------|----------------|
| 1 Nut           | 5 Screw       | 9 Screw                         | 13 O-ring      |
| 2 Washer        | 6 Washer      | 10 Sealing bracket              | 14 Piston seal |
| 3 End cover     | 7 Guide ring  | 11 Piston rod seal <sup>1</sup> | 15 O-ring      |
| 4 Cylinder tube | 8 Piston disc | 12 O-ring                       | 16 O-ring      |

<sup>1</sup> O-ring + PTFE-ring

Fig.5-1 Replacing the sealing kit

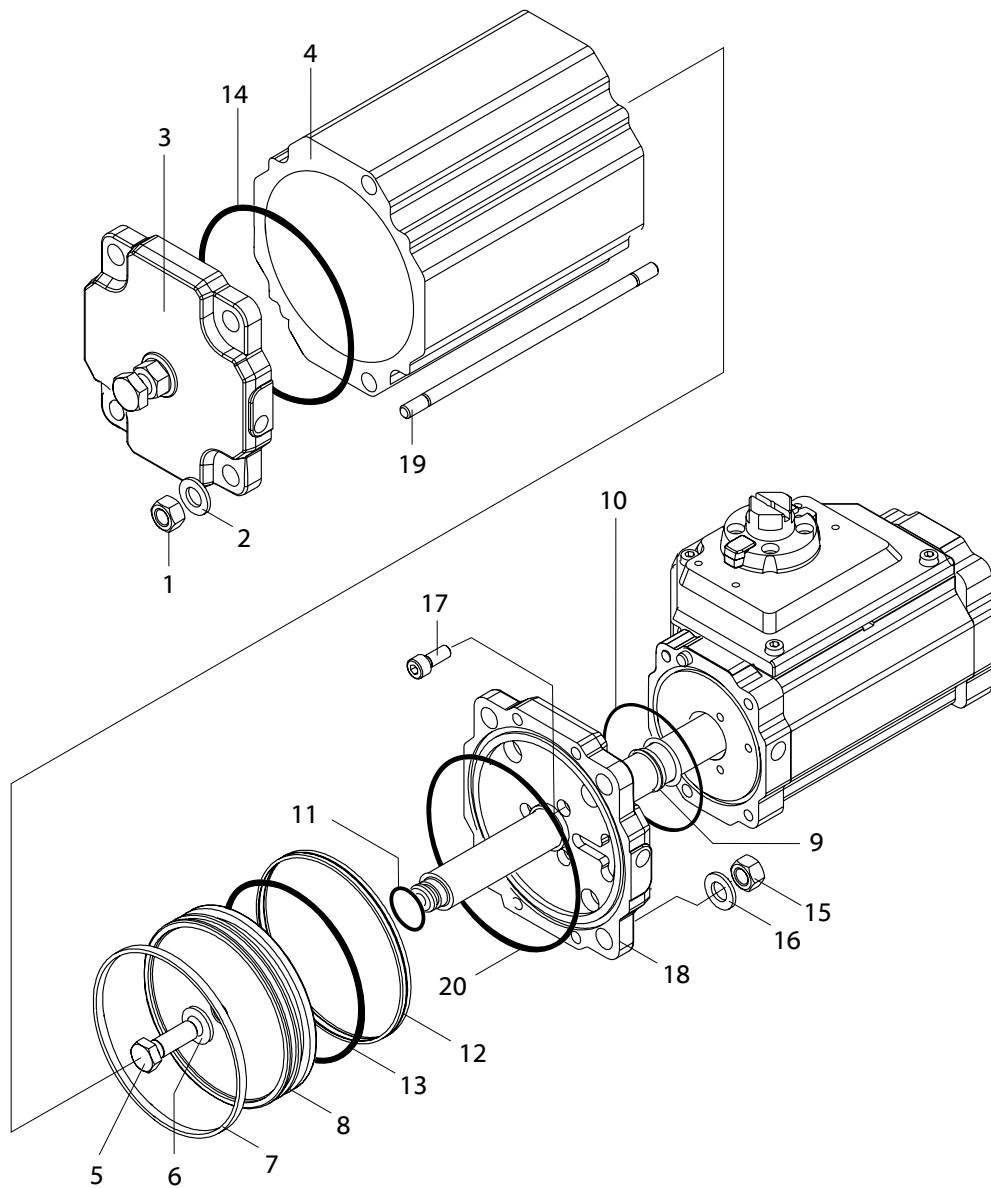


## Procedure

1. Disconnect internal air piping.
2. Unscrew the nuts (→ Fig.5-1/1), remove the washers (→ Fig.5-1/2) and the end cover (→ Fig.5-1/3).
3. Dismantle the cylinder tube (→ Fig.5-1/4).
4. Dismantle the screw (→ Fig.5-1/5), washer (→ Fig.5-1/6), guide ring (→ Fig.5-1/7) and piston (→ Fig.5-1/8).
5. Loosen the screws (→ Fig.5-1/9) and dismantle the sealing bracket (→ Fig.5-1/10).
6. Replace the piston rod seal (→ Fig.5-1/11) and refit the sealing bracket.
7. Replace the O-ring (→ Fig.5-1/12) in the housing end cover and the O-ring (→ Fig.5-1/13) on the piston rod.
8. Fit a new piston seal (→ Fig.5-1/14) and a new O-ring (→ Fig.5-1/15) on the piston disc (→ Fig.5-1/8). Screw together the complete package on the piston rod and fit a new guide ring (→ Fig.5-1/7).
9. Replace the O-ring (→ Fig.5-1/16) on the end cover. Refit the cylinder tube and end cover.



### 5.3.2 Double-acting actuator types A13, 23, 33, 43 - DA



|                 |                                |                        |                        |
|-----------------|--------------------------------|------------------------|------------------------|
| 1 Nut           | 6 Washer                       | 11 O-ring              | 16 Washer <sup>2</sup> |
| 2 Washer        | 7 Guide ring                   | 12 Piston seal         | 17 Screw               |
| 3 End cover     | 8 Piston disc                  | 13 O-ring <sup>1</sup> | 18 Front end cover     |
| 4 Cylinder tube | 9 Piston rod seal <sup>1</sup> | 14 O-ring              | 19 Tie-rod             |
| 5 Screw         | 10 O-ring                      | 15 Nut <sup>2</sup>    | 20 O-ring              |

<sup>1</sup> O-ring + PTFE-ring

<sup>2</sup> Not available for A13-DA

Fig.5-2 Replacing the sealing kit



## Procedure

1. Disconnect internal air piping.
2. Unscrew the nuts (→ Fig.5-2/1), remove the washers (→ Fig.5-2/2) and the end cover (→ Fig.5-2/3).
3. Loosen the nuts (→ Fig.5-2/15), dismantle the washers (→ Fig.5-2/16) the cylinder tube (→ Fig.5-2/4) and the tie-rods (→ Fig.5-2/19).
4. Unscrew the screw (→ Fig.5-2/5), dismantle the washer (→ Fig.5-2/6) and piston disc (→ Fig.5-2/8).
5. Unscrew the screws (→ Fig.5-2/17) and remove front end cover (→ Fig.5-2/18).
6. Replace the piston rod seal (→ Fig.5-2/9) and O-ring (→ Fig.5-2/10).
7. Refit the front end cover.
8. Replace the O-ring (→ Fig.5-2/20) in the front end cover and the O-ring (→ Fig.5-2/11) on the piston rod.
9. Fit a new piston seal (→ Fig.5-2/12) and new O-ring (→ Fig.5-2/13) on the piston disc.
10. Screw together the complete package on the piston rod and fit a new guide ring (→ Fig.5-2/7).
11. Replace the new O-ring (→ Fig.5-2/14) in the end cover.
12. Refit the cylinder tube, tie-rods and end cover.

### 5.3.3 Double-acting actuator types A22, 32, 42, 52 - DA

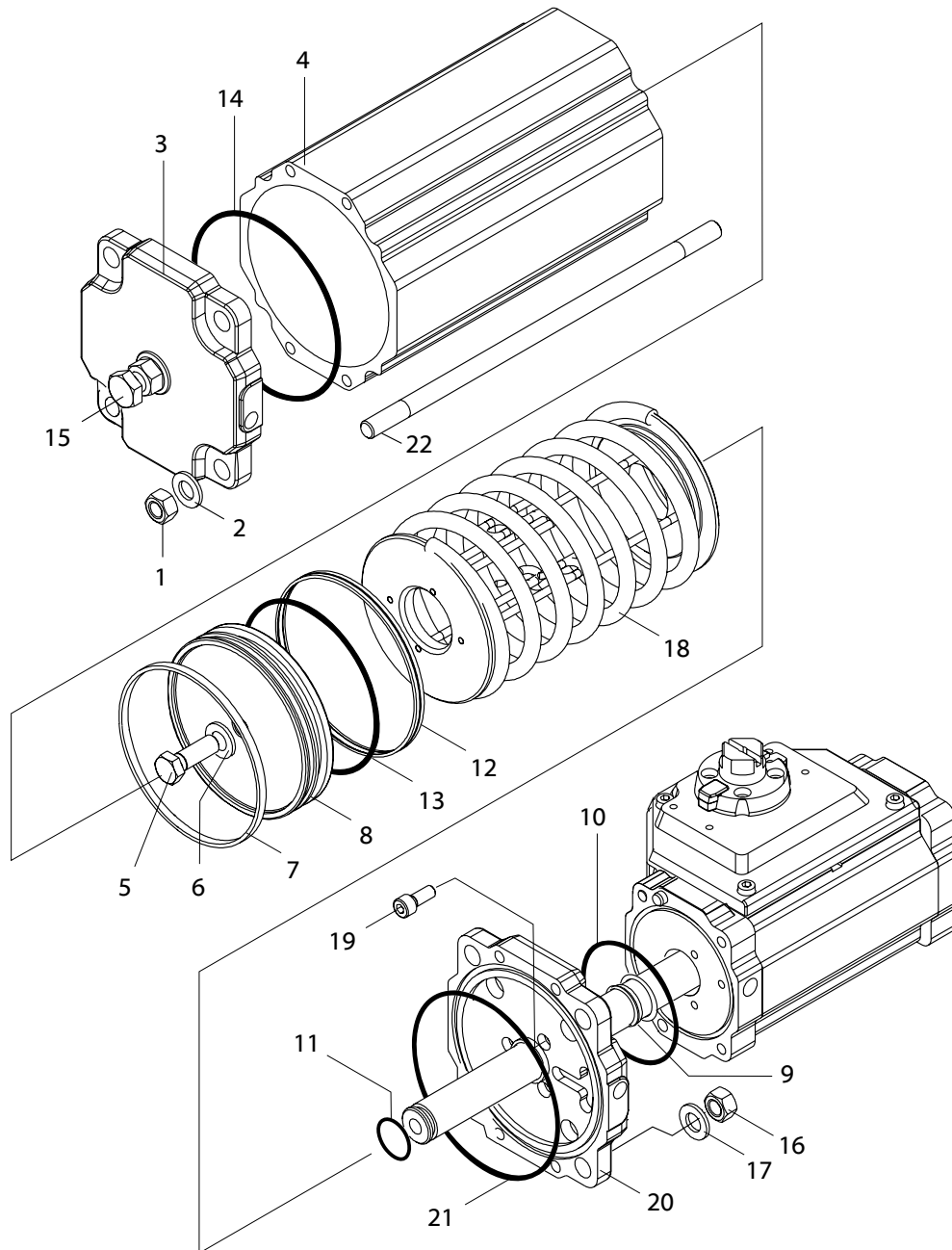
See “Double-acting actuator types A11, 21, 31, 41, 51 - DA” (→ Chap.5.3.1).

### 5.3.4 Double-acting actuator types A24, 34, 44 - DA

See “Double-acting actuator types A11, 21, 31, 41, 51 - DA” (→ Chap.5.3.1) and “Double-acting actuator types A13, 23, 33, 43 - DA” (→ Chap.5.3.2).



### 5.3.5 Single-acting actuator types A13, 23, 33, 43 - SC



- |                 |                                |                        |              |
|-----------------|--------------------------------|------------------------|--------------|
| 1 Nut           | 7 Guide ring                   | 13 O-ring              | 19 Screw     |
| 2 Washer        | 8 Piston disc                  | 14 O-ring              | 20 End cover |
| 3 End cover     | 9 Piston rod seal <sup>1</sup> | 15 Adjusting screw     | 21 O-ring    |
| 4 Cylinder tube | 10 O-ring                      | 16 Nut <sup>2</sup>    | 22 Tie-rod   |
| 5 Screw         | 11 O-ring                      | 17 Washer <sup>2</sup> |              |
| 6 Washer        | 12 Piston seal                 | 18 Spring kit          |              |

<sup>1</sup> O-ring + PTFE-ring

<sup>2</sup> Not available for A13-SC

Fig.5-3 Replacing the sealing kit



## Procedure

1. Disconnect internal air piping.
2. Unscrew the adjusting screw (→ Fig.5-3/15) to its outermost position.
3. Loosen the nuts (→ Fig.5-3/16), alternating crosswise.

### Note

Do not unscrew the nuts completely. Make sure that the spring force is released. The end cover has to be completely loose before removing the nuts and washers (→ Fig.5-3/17) completely. Check with Somas if "tension" from the spring remains.

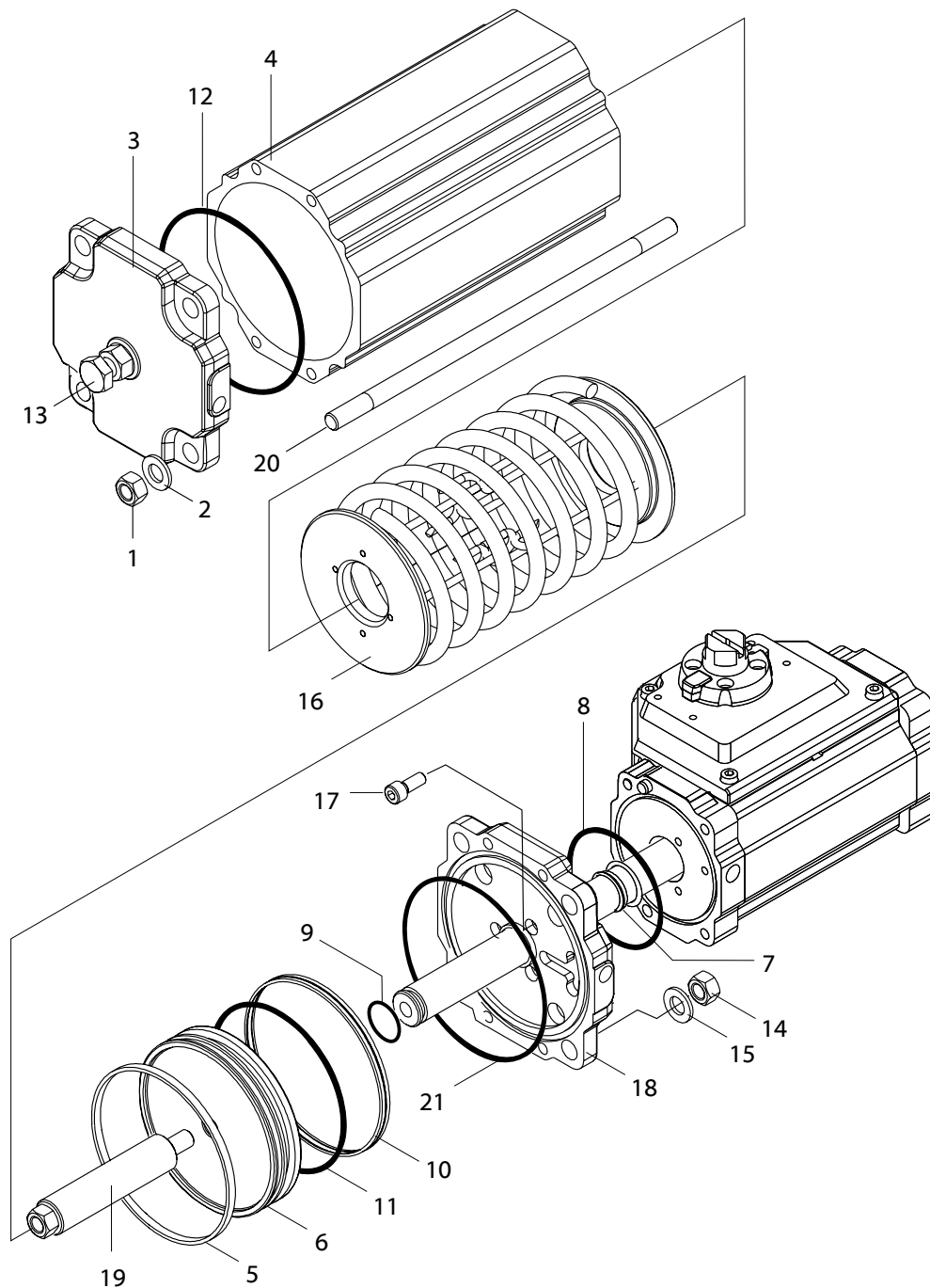


4. For actuator size A13-SC loosen the nuts (→ Fig.5-3/1) in the same way.
5. Dismantle the end cover (→ Fig.5-3/3), cylinder tube (→ Fig.5-3/4) and tie-rods (→ Fig.5-3/22).
6. Unscrew the screw (→ Fig.5-3/5), dismantle the guide ring (→ Fig.5-3/7), piston disc (→ Fig.5-3/8) and spring kit (→ Fig.5-3/18).
7. Unscrew the screws (→ Fig.5-3/19). Remove the front end cover (→ Fig.5-3/20). Replace the piston rod seal (→ Fig.5-3/9) and O-ring (→ Fig.5-3/10). Refit the front end cover.
8. Replace the O-ring (→ Fig.5-3/21) in the front end cover and the O-ring (→ Fig.5-3/11) on the piston rod.
9. Refit the spring kit.
10. Fit a new piston seal (→ Fig.5-3/12) and O-ring (→ Fig.5-3/13) on the piston disc. Screw together the complete package on the piston rod and fit a new guide ring (→ Fig.5-3/7).
11. Replace the O-ring (→ Fig.5-3/14) on the end cover.
12. Refit the cylinder tube, tie-rods and end cover.
13. Tighten the nuts (→ Fig.5-3/16), alternating crosswise. Do not exceed maximum tightening torques for tightening (→ Tab.4-1).

An end position adjustment should be made if the device is fitted on a valve (→ Chap.4).



### 5.3.6 Single-acting actuator types A13, 23, 33, 43 - SO



|                 |                                |                        |            |
|-----------------|--------------------------------|------------------------|------------|
| 1 Nut           | 7 Piston rod seal <sup>1</sup> | 13 Adjusting screw     | 19 Spacer  |
| 2 Washer        | 8 O-ring                       | 14 Nut <sup>2</sup>    | 20 Tie-rod |
| 3 End cover     | 9 O-ring                       | 15 Washer <sup>2</sup> | 21 O-ring  |
| 4 Cylinder tube | 10 Piston seal                 | 16 Spring kit          |            |
| 5 Guide ring    | 11 O-ring                      | 17 Screw               |            |
| 6 Piston disc   | 12 O-ring                      | 18 End cover           |            |

<sup>1</sup> O-ring + PTFE-ring

<sup>2</sup> Not available for A13-SO

Fig.5-4 Replacing the sealing kit



## Procedure

1. Disconnect internal air piping.
2. Screw the adjusting screw (→ Fig.5-4/13) to its outermost position.
3. Loosen the nuts (→ Fig.5-4/14) alternating crosswise.

### Note

Do not unscrew the nuts completely. Make sure that the spring force is released. The end cover has to be completely loose before removing the nuts and washers (→ Fig.5-3/15) completely. Check with Somas if "tension" from the spring remains.



4. For actuator size A13-SO loosen the nuts (→ Fig.5-4/1) in the same way.
5. Dismantle the end cover (→ Fig.5-4/3), cylinder tube (→ Fig.5-4/4), tie-rods (→ Fig.5-4/20) and spring kit (→ Fig.5-4/16).
6. Unscrew the spacer (→ Fig.5-4/19) and dismantle the piston disc (→ Fig.5-4/6).
7. Unscrew the screws (→ Fig.5-4/17). Remove the front end cover (→ Fig.5-4/18). Replace the piston rod seal (→ Fig.5-4/7) and O-ring (→ Fig.5-4/8). Refit the front end cover.
8. Replace the O-ring (→ Fig.5-4/21) in the front end cover and the O-ring (→ Fig.5-4/9) on the piston rod.
9. Fit a new piston seal (→ Fig.5-4/10) and O-ring (→ Fig.5-4/11) on the piston disc and screw the entire package on the piston rod.
10. Fit a new guide ring (→ Fig.5-4/5) and refit the spacer.
11. Refit the spring kit and fit a new O-ring (→ Fig.5-4/12) in the end cover.
12. Refit the cylinder tube, tie-rods and end cover.
13. Tighten the nuts (→ Fig.5-4/14), alternating crosswise. Do not exceed maximum tightening torques for tightening (→ Tab.4-1).

An end position adjustment should be made if the device is fitted on a valve (→ Chap.4).

### 5.3.7 Single-acting actuator types A24, 34, 44 - SC

See "Single-acting actuator types A13, 23, 33, 43 - SC" (→ Chap.5.3.5).

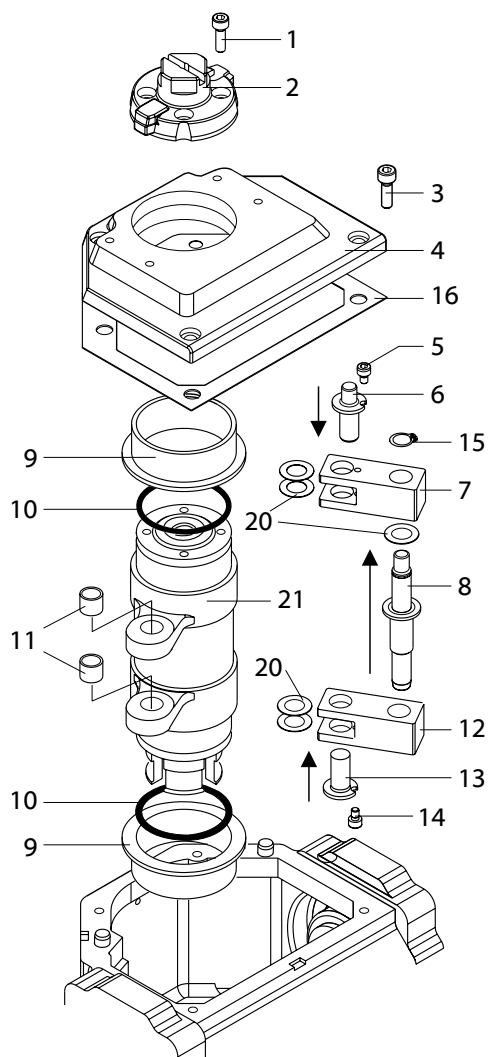
### 5.3.8 Single-acting actuator types A24, 34, 44 - SO

See "Single-acting actuator types A13, 23, 33, 43 - SO" (→ Chap.5.3.6).

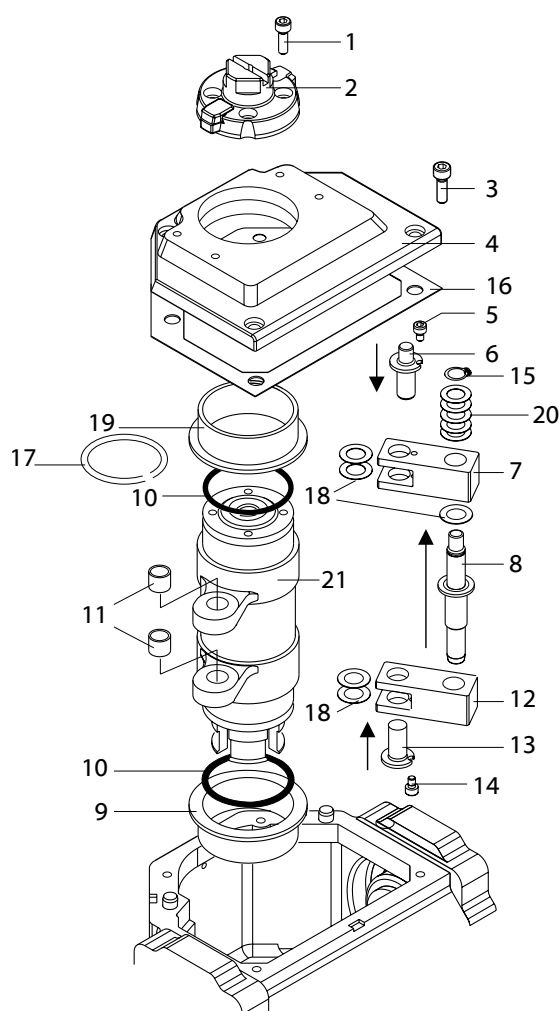


## 5.4 Replacing the repair kit

⇒ For actuators in option -E (ATEX), see Chapter 2.5).



**Standard**



**ATEX**

- |          |               |                 |
|----------|---------------|-----------------|
| 1 Screw  | 6 Pivot pin   | 11 Bushing      |
| 2 Driver | 7 Link arm    | 12 Link arm     |
| 3 Screw  | 8 Swivel bolt | 13 Pivot pin    |
| 4 Cover  | 9 Bushing     | 14 Screw        |
| 5 Screw  | 10 O-ring     | 15 Locking ring |

- |                         |
|-------------------------|
| 16 Gasket               |
| 17 Spring washer (ATEX) |
| 18 Washer, wave (ATEX)  |
| 19 Bushing, brass ATEX) |
| 20 Washer               |
| 21 Lever                |

Fig.5-5 Replacing the repair kit

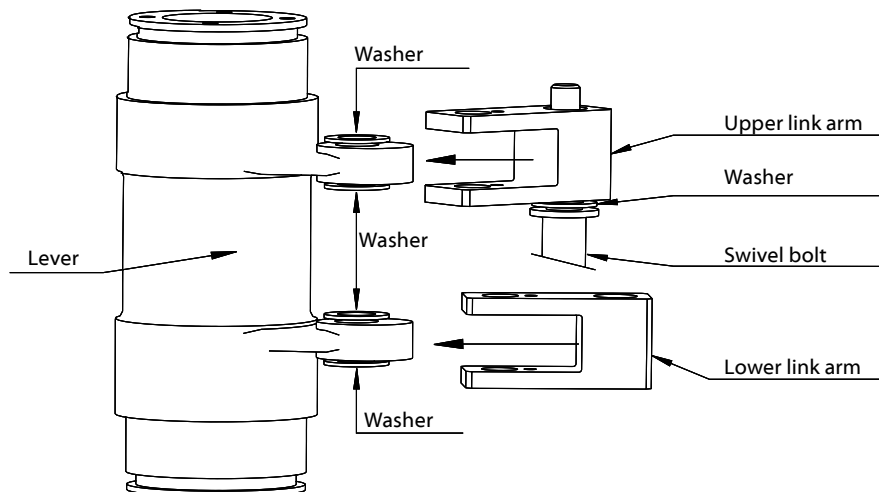


Fig.5-6 Standard

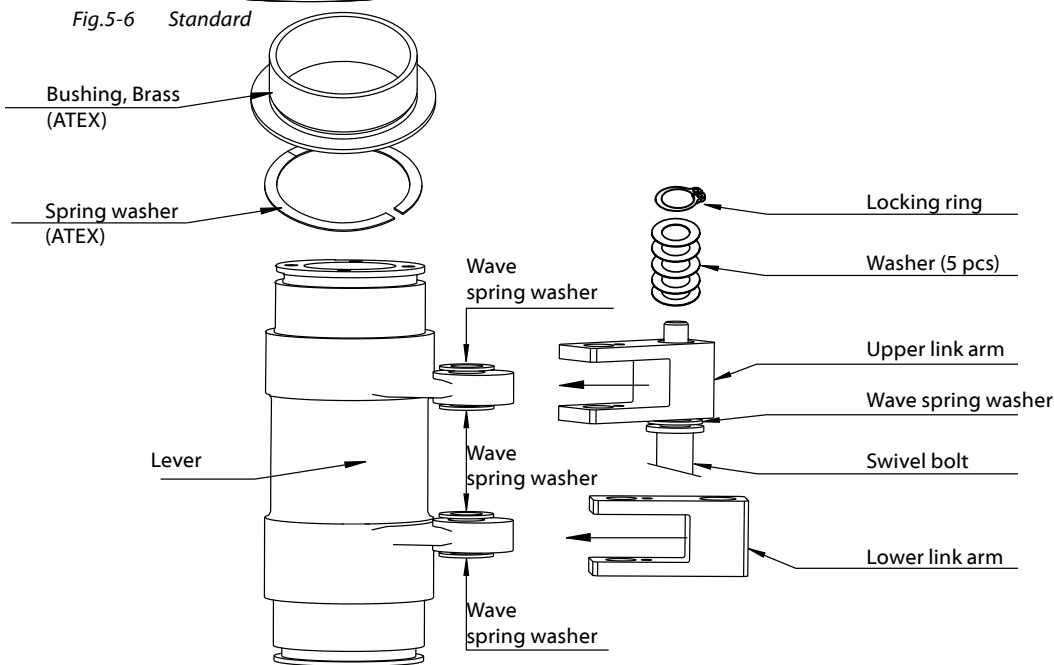


Fig.5-7 ATEX

1. Dismantle the actuator from the valve.
2. Dismantle the driver (→ Fig.5-5/2) by loosening the screws (→ Fig.5-5/1). If your actuator includes a positioner, dismantle the positioner/switch box and mounting block first.
3. Loosen the screws (→ Fig.5-5/3) and dismantle the cover (→ Fig.5-5/4).
4. Dismantle the screw (→ Fig.5-5/5) and lift up the pivot pin (→ Fig.5-5/6).
5. Twist the upper link arm (→ Fig.5-5/7) off of the lever and pull it out from the piston rod together with the swivel bolt (→ Fig.5-5/8).
6. Move the piston rod so that the whole lever can be lifted out of the housing and dismantle the lower link arm (→ Fig.5-5/12) from the lever.F



7. Fit the new bushings (→ Fig.5-5/9, Fig.5-5/19 ATEX) in the cover (→ Fig.5-5/4) respective bottom of the housing. For ATEX version: The brass bushing in ATEX (Fig.5-5/19) must be glued to the cover with locking fluid type Scantech S-25 or equal. The Bushing is then lubricated with universal grease.
8. Install new O-rings (→ Fig.5-5/10) and new bushings (→ Fig.5-5/11) on the lever. For ATEX version: mount the new spring washer (→ Fig.5-5/17 ATEX) on the lever.
9. Fit the new lower link arm (→ Fig.5-5/12) with pivot pin (→ Fig.5-5/13) on the lever. Lock with the screw (→ Fig.5-5/14).

**Note**

Observe the position of the washers.



10. Fit the new pin bolt (→ Fig.5-5/8) and washer on the new upper link arm (→ Fig.5-5/7) and lock with locking ring (→ Fig.5-5/15).
11. Refit the lever in the actuator housing.
12. Align the piston rod and lower link arm with each other and insert the pin bolt through the piston rod.
13. Secure the upper link arm on the lever by inserting the pivot pin (→ Fig.5-5/6).

**Note**

The right position for the washers is demonstrated in the drawing (→ Fig.5-6). Lock with screw (→ Fig.5-5/5).



14. Fit a new gasket (→ Fig.5-5/16) and refit the cover and the driver.
- See “Replacing the sealing kit” (→ Chap.5.3) to replace other parts in the repair kit.

**Note**

When replacing the piston rod seal, the bushing in the housing end cover should be replaced. The bushing is included in the repair kit but not in the sealing kit.





## 5.5 Components

### 5.5.1 Actuator type A-DA

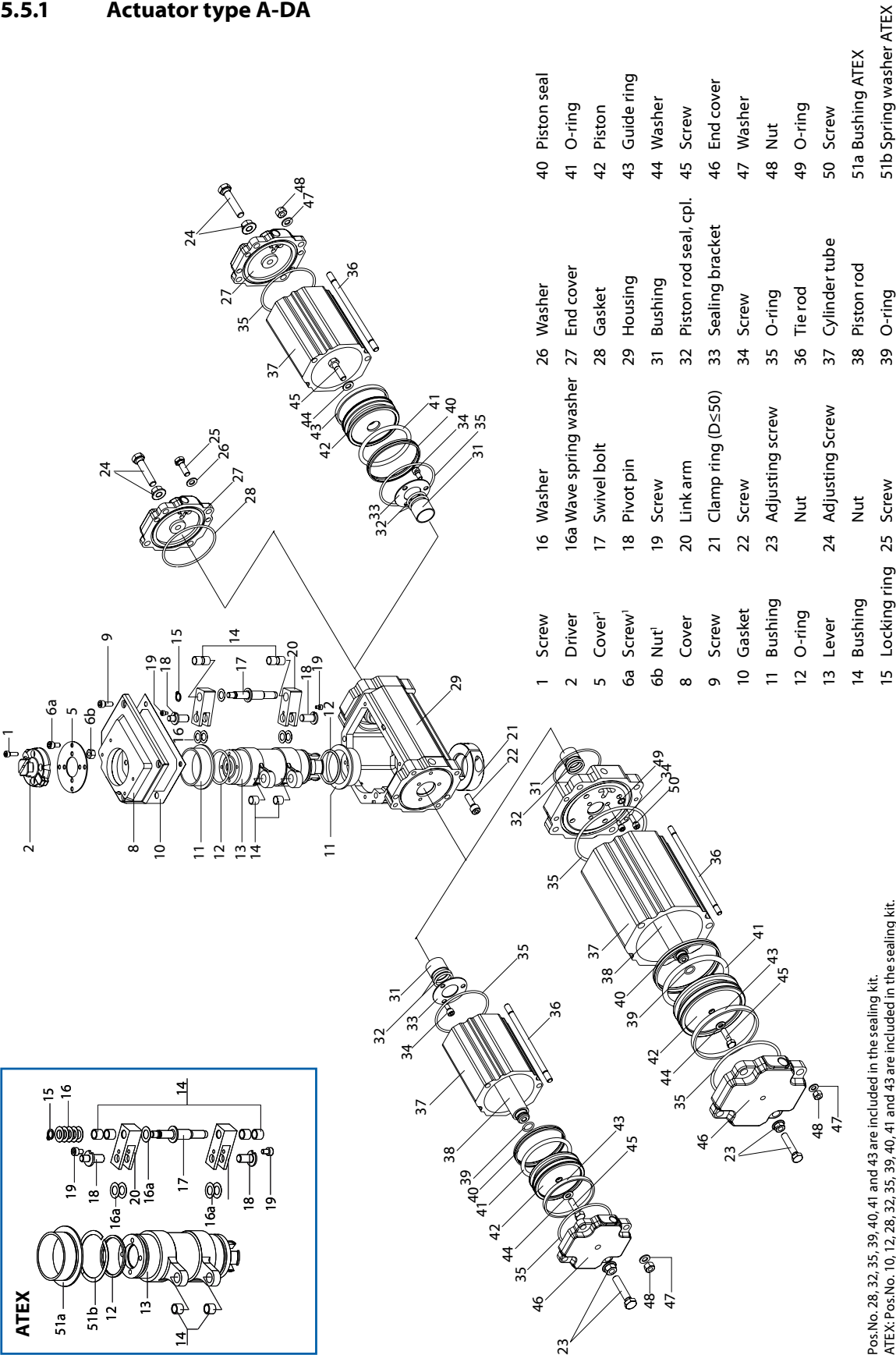
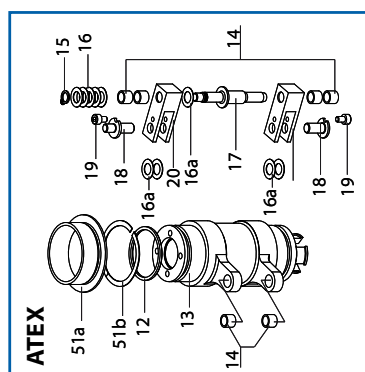


Fig. 5-8 Actuator type A-DA

Pos.No. 28, 32, 35, 39, 40, 41 and 43 are included in the sealing kit.  
ATEX: Pos.No. 10, 12, 28, 32, 35, 39, 40, 41 and 43 are included in the sealing kit.  
Pos.No. 10, 11, 12, 14, 15, 16, 17, 18, 20, 28, 31, 32, 35, 39, 40, 41, 43 are included in the repair kit.  
ATEX: Pos.No. 10, 11, 12, 14, 15, 16, 17, 18, 20, 28, 31, 32, 35, 39, 40, 41, 43, 51a, 51b included in the repair kit

## 5.5.2 Actuator type A-SC



|    |                    |     |                    |    |                       |     |                      |
|----|--------------------|-----|--------------------|----|-----------------------|-----|----------------------|
| 1  | Screw              | 16  | Washer             | 26 | Washer                | 41  | O-ring               |
| 2  | Driver             | 16a | Wave spring washer | 27 | End cover             | 42  | Piston               |
| 5  | Cover <sup>1</sup> | 17  | Swivel bolt        | 28 | Gasket                | 43  | Guide ring           |
| 6a | Screw <sup>1</sup> | 18  | Pivot pin          | 29 | Housing               | 44  | Washer               |
| 6b | Nut <sup>1</sup>   | 19  | Screw              | 31 | Bushing               | 45  | Screw                |
| 8  | Cover              | 20  | Link arm           | 32 | Piston rod seal, cpl. | 46  | End cover            |
| 9  | Screw              | 21  | Clamp ring (D≤50)  | 34 | Screw                 | 47  | Washer               |
| 10 | Gasket             | 22  | Screw              | 35 | O-ring                | 48  | Nut                  |
| 11 | Bushing            | 23  | Adjusting screw    | 36 | Tie rod               | 49  | O-ring               |
| 12 | O-ring             | 24  | Nut                | 37 | Cylinder tube         | 50  | Screw                |
| 13 | Lever              | 25  | Adjusting screw    | 38 | Piston rod            | 51a | Bushing ATEX         |
| 14 | Bushing            | 26  | Nut                | 39 | O-ring                | 51b | Spring washer ATEX   |
| 15 | Locking ring       | 27  | Screw              | 40 | Piston seal           | 52  | Spring kit           |
|    |                    | 28  |                    |    |                       | 53  | Spacer, end position |

<sup>1</sup> From actuator size 3

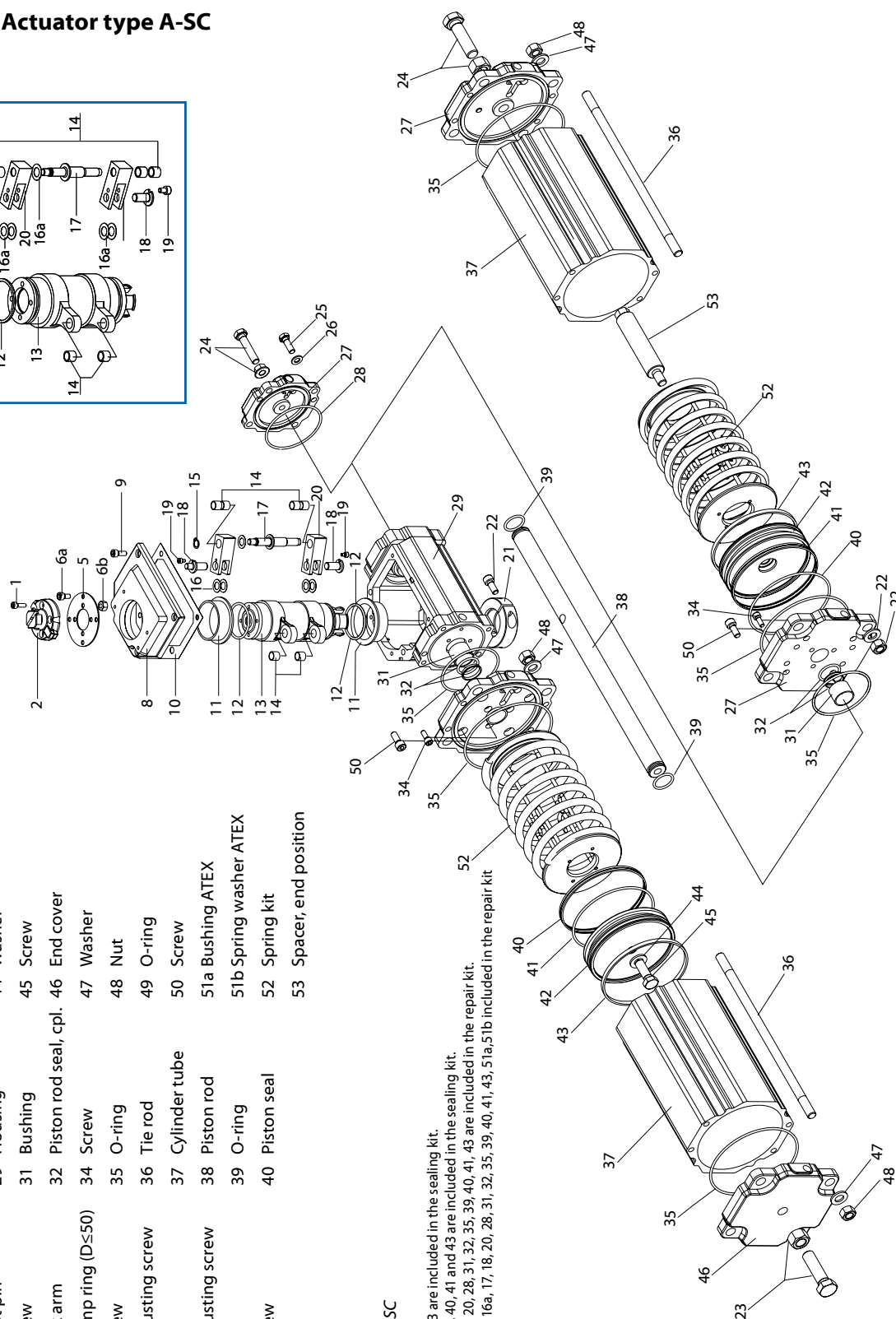
Fig. 5-9 Actuator type A-SC

Pos.No. 28, 32, 35, 39, 40, 41 and 43 are included in the sealing kit.

ATEX: Pos.No. 10, 12, 28, 32, 35, 39, 40, 41 and 43 are included in the sealing kit.

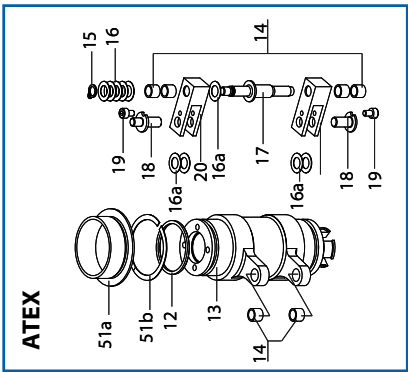
Pos.No. 10, 11, 12, 14, 15, 16, 17, 18, 20, 28, 31, 32, 35, 39, 40, 41, 43 are included in the repair kit.

ATEX: Pos.No. 10, 11, 12, 14, 15, 16, 17, 18, 20, 28, 31, 32, 35, 39, 40, 41, 43, 51a, 51b are included in the repair kit





5.5.3 Actuator type A-SO

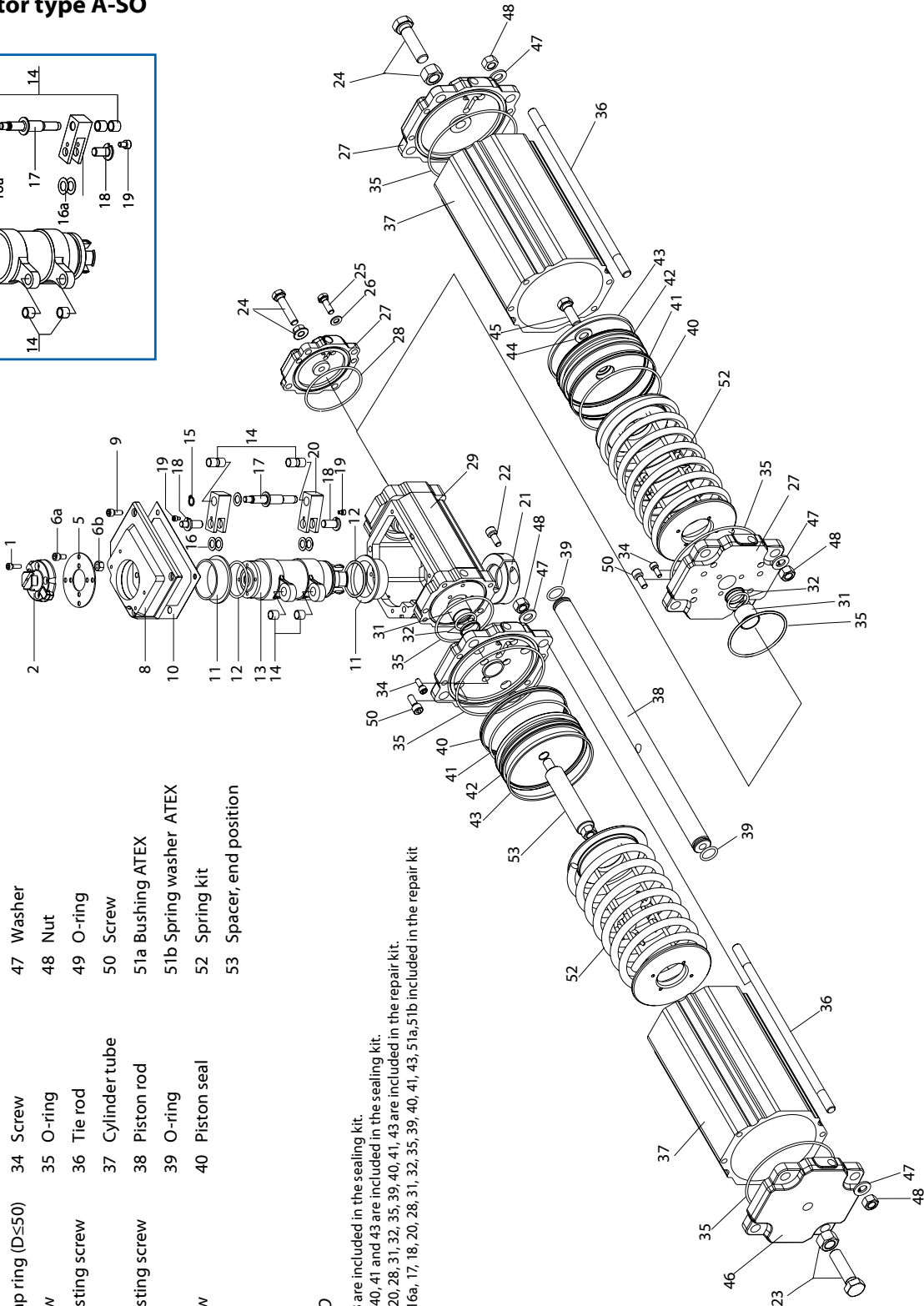


|    |                    |     |                    |    |                       |     |                      |
|----|--------------------|-----|--------------------|----|-----------------------|-----|----------------------|
| 1  | Screw              | 16  | Washer             | 26 | Washer                | 41  | O-ring               |
| 2  | Driver             | 16a | Wave spring washer | 27 | End cover             | 42  | Piston               |
| 5  | Cover <sup>1</sup> | 17  | Swivel bolt        | 28 | Gasket                | 43  | Guide ring           |
| 6a | Screw <sup>1</sup> | 18  | Pivot pin          | 29 | Housing               | 44  | Washer               |
| 6b | Nut <sup>1</sup>   | 19  | Screw              | 31 | Bushing               | 45  | Screw                |
| 8  | Cover              | 20  | Link arm           | 32 | Piston rod seal, cpl. | 46  | End cover            |
| 9  | Screw              | 21  | Clamp ring (D≤50)  | 34 | Screw                 | 47  | Washer               |
| 10 | Gasket             | 22  | Screw              | 35 | O-ring                | 48  | Nut                  |
| 11 | Bushing            | 23  | Adjusting screw    | 36 | Tie rod               | 49  | O-ring               |
| 12 | O-ring             | 24  | Nut                | 37 | Cylinder tube         | 50  | Screw                |
| 13 | Lever              | 24  | Adjusting screw    | 38 | Piston rod            | 51a | Bushing ATEX         |
| 14 | Bushing            | 25  | Screw              | 39 | O-ring                | 51b | Spring washer ATEX   |
| 15 | Locking ring       | 25  | Screw              | 40 | Piston seal           | 52  | Spring kit           |
|    |                    |     |                    |    |                       | 53  | Spacer, end position |

<sup>1</sup> From actuator size 3

Fig.5-10 Actuator type A-SO

Pos.No. 28, 32, 35, 39, 40, 41 and 43 are included in the sealing kit.  
ATEX: Pos.No. 10, 12, 28, 32, 35, 39, 40, 41 and 43 are included in the sealing kit.  
Pos.No. 10, 11, 12, 14, 15, 16, 17, 18, 20, 28, 31, 32, 35, 39, 40, 41, 43 are included in the repair kit.  
ATEX: Pos.No. 10, 11, 12, 14, 15, 16, 16a, 17, 18, 20, 28, 31, 32, 35, 39, 40, 41, 43, 51a, 51b included in the repair kit





## 6 Material specification

|                                   |                                                                       |
|-----------------------------------|-----------------------------------------------------------------------|
| <b>Housing, cover, end cover:</b> | Aluminium (painted)                                                   |
| <b>Cylinder:</b>                  | Aluminium (painted)                                                   |
| <b>Tie rod:</b>                   | EN 1.4305, EN 1.4404 (option)                                         |
| <b>Piston seal:</b>               | Carbon filled PTFE- +<br>O-ring made of cold-resistant nitrile rubber |
| <b>Screws/nuts:</b>               | Stainless steel                                                       |
| <b>Connection<sup>1</sup>:</b>    | Plastic tubing (standard)<br>Stainless steel tubing (option)          |

<sup>1</sup> Between actuator and accessories



# 7 Product key

**A 32 - DA - H - D50 - F14**

1      2      3      4      5      6

**1 Type of actuator**

**2 Acuator size acc. to the selection table**

**3 Function**

- DA = Double-acting actuator
- SC = Single-acting actuator (spring to close)
- SO = Single-acting actuator (spring to open)
- SCL = Single-acting actuator (spring to close)<sup>1</sup>
- SOL = Single-acting actuator (spring to open)<sup>1</sup>

**4 Option**

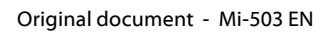
- E = ATEX design
- H = High temperature design
- NM = Emergency operation
- LDC = Locking device (closed position)
- LDO = Locking device (open position)
- V = Larger air connections
- X = Special design
- B = Bronze bushing in lever
- G = Tie rod in 1.4404

**5 Shaft diameter**

**6 Mounting pattern for valve attachment acc. to ISO 5211**

<sup>1</sup> Low air supply design

Tab.7-1 Description product key

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