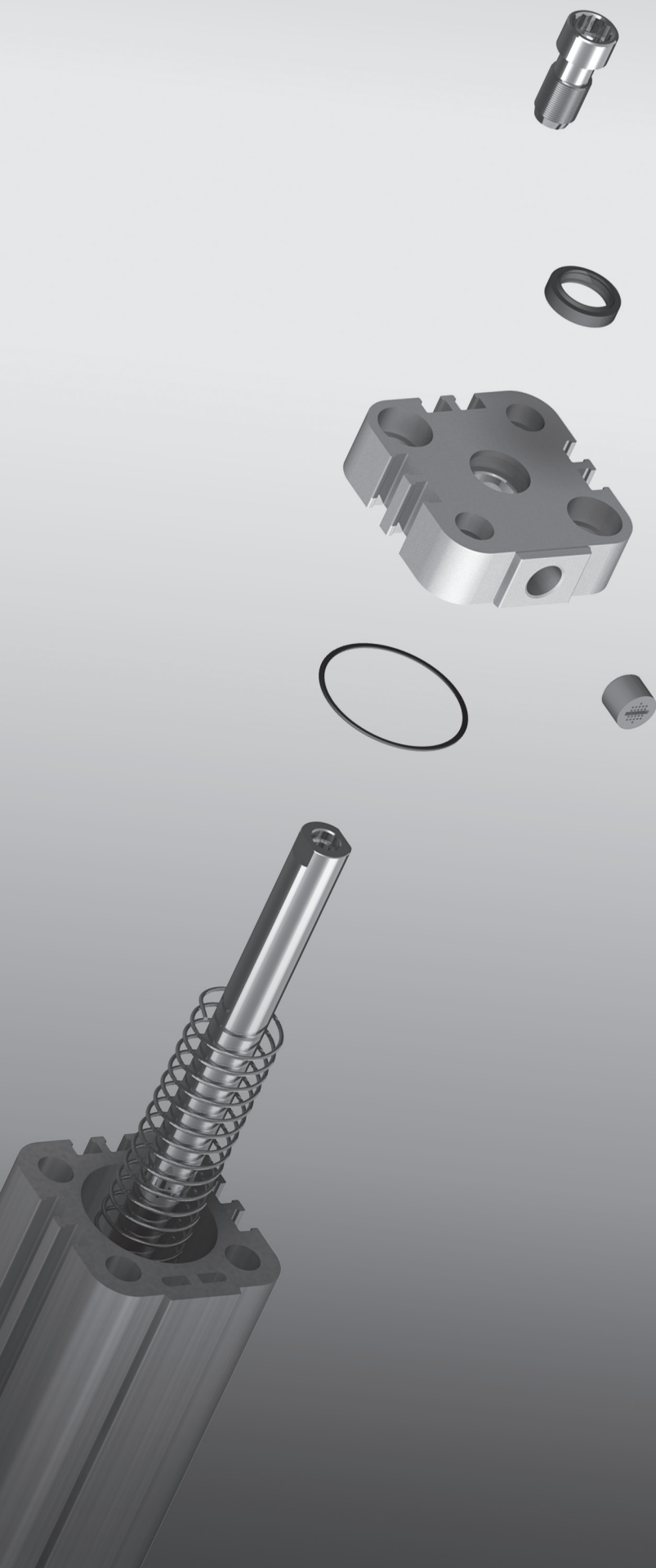


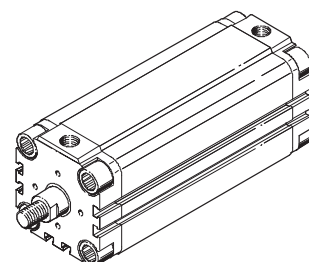
# Compact cylinder

ADVU / AEVU



**FESTO**

Repair  
instructions (en)



7ADVU / AEVUb\_en

## **Imprint**

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Copyright:  
©Festo SE & Co. KG  
Ruiter Straße 82  
73734 Esslingen  
Germany

Editorial team:  
Spare Part Documentation and  
Support

Phone:  
+49 / 711 / 347-0

Fax:  
+49 / 711 / 347-2144

E-mail:  
service\_international@festo.com

Internet:  
[www.festo.com](http://www.festo.com)

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All technical data are subject to change according to technical updates.

## **Preface**

These repair instructions are valid for the compact cylinders listed on the title page to the exclusion of any liability claims.

There may be deviations from the descriptions in these repair instructions depending on the version and/or modification status of the compact cylinder. The user must check this prior to carrying out the repair and take the deviations into consideration if necessary.

These repair instructions have been prepared with care.

Festo SE & Co. KG does not, however, accept liability for any errors in these repair instructions or their consequences. Likewise no liability is accepted for direct or consequential damage resulting from improper use of the products.

More detailed information on this can be found in chapter [8 "Liability"](#).

The relevant regulations on occupational safety, safety engineering and interference suppression as well as the stipulations contained in these repair instructions must be observed when working on the products.

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## 1 Important information

### 1.1 About these repair instructions

This document contains important information about the proper repair of the compact cylinders of type ADVU... / AEVU....

The compact cylinders ADVU... / AEVU.... are fully repairable in the event of damage due to normal wear. The entire cylinder must be replaced in the event of damage to the cylinder barrel.

These repair instructions do **not** apply to ADVU... / AEVU... compact cylinders with a piston diameter of 12, 16, 20 and 25 mm. These compact cylinders can generally not be repaired and have to be replaced.

Before carrying out a repair, the relevant chapter in these instructions must be read in full and followed consistently.

For reasons of clarity, these repair instructions do not contain complete detailed information. The following documents should therefore also be available while doing repair work on the compact cylinder:

- **Operating instructions**

Contains information about the operating elements and connections of the compact cylinder as well as the function, structure, application, installation, commissioning, maintenance and care, etc. can be found on the Festo website (→ [www.festo.com](http://www.festo.com)).

- **Spare parts documentation**

Contains an overview of the spare and wearing parts as well as information on their installation. Can be found in the online spare parts catalogue on the Festo website (→ [www.festo.com/spareparts](http://www.festo.com/spareparts)).

- **Tools and repair accessories**

Contain an overview of available assembly aids such as lubricating greases, screw locking agents, maintenance tools, etc. (aids for assembly and maintenance). Can be found in the online spare parts catalogue on the Festo website (→ [Tools and repair accessories.pdf](#)).

### 1.2 Pictograms used in these repair instructions



#### Warning

This sign indicates a dangerous situation for persons and/or the product. Failure to observe this warning can result in injury to persons and/or damage to the device.



#### Note

This sign provides important tips and information that can make your work easier.



#### Environment

This sign provides information on the steps required for environmentally-friendly use of materials and equipment, as well as the guidelines and regulations that may need to be observed.



#### Accessories

This sign contains information on accessories and attachments relevant to the context.



#### Documents

This sign contains references to other chapters or documents containing additional information.

### 1.3 General safety instructions



#### Warning

The compact cylinder must only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using genuine spare parts (of the appropriate type and version).

Installation and repair by unauthorised and untrained persons, repairs using non-original spare parts or without the technical documentation required for installation and/or repair are dangerous and therefore not permitted.

Repairs must only be carried out in conjunction with these repair instructions and the device-specific operating instructions.



#### Note

Instead of carrying out the repair yourself, your local Festo sales office offers the option of having the repair carried out by Festo.



#### Environment

Components and equipment replaced as part of a repair must be disposed of in accordance with the locally valid environmental protection regulations.

### 1.4 Orientation designations

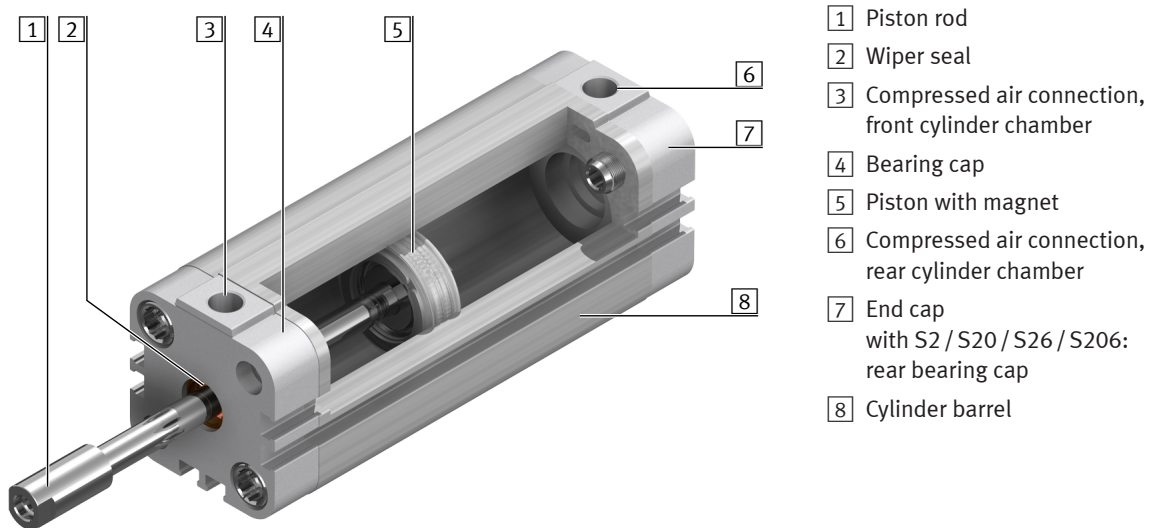
This diagram provides an overview of the orientation designations for the compact cylinder.



## 2 General product description

### 2.1 Functional description of compact cylinder ADVU (double-acting)

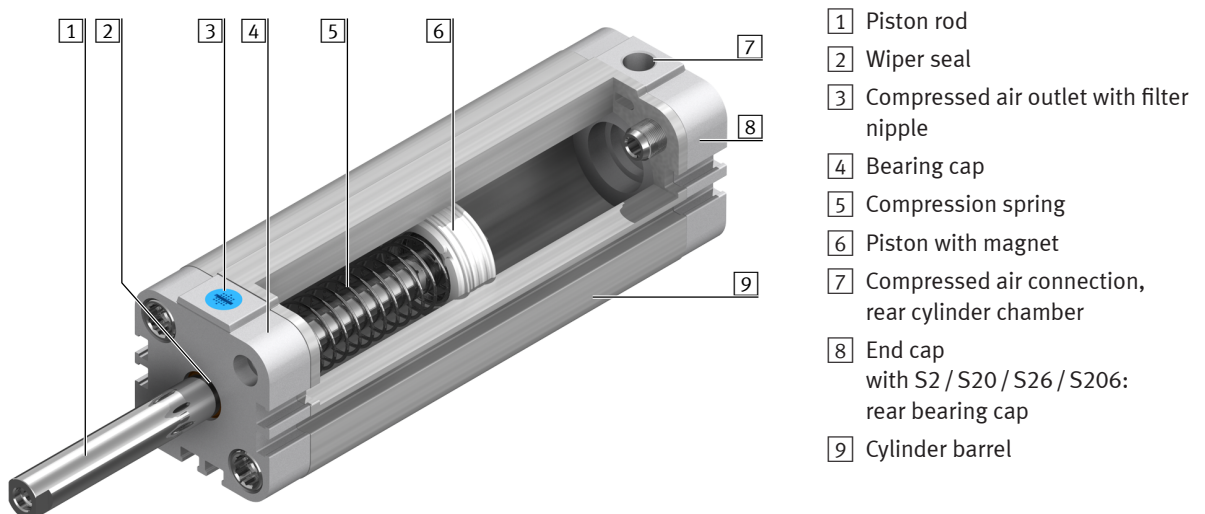
The piston moves forward in the cylinder barrel when the rear cylinder chamber is pressurised. The piston rod transmits the movement to the outside. The advanced piston rod is retracted again when the front cylinder chamber is pressurised.



### 2.2 Functional description of compact cylinder AEVU (single-acting, pushing/pulling)

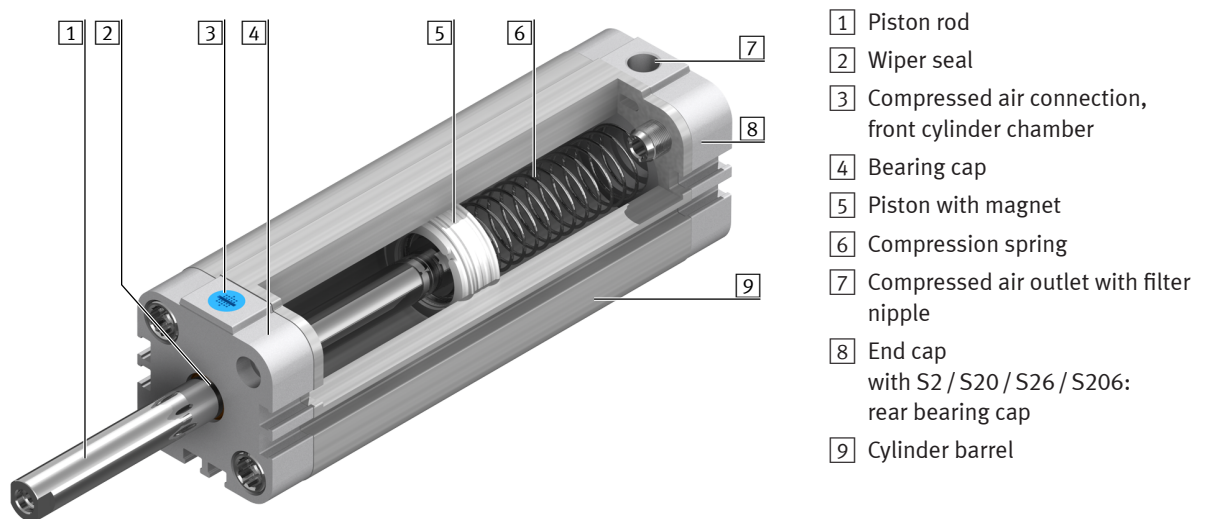
#### 2.2.1 "Pushing" functional mode

During "pushing" functional mode, the piston rod is fully retracted through the integrated compression spring in the front cylinder chamber. The piston moves forward in the cylinder barrel when the rear cylinder chamber is pressurised. The piston rod transmits the "pushing" movement to the outside. The advanced piston rod is retracted again through the spring force when the rear cylinder chamber is depressurised.



### 2.2.2 "Pulling" functional mode

During "pulling" functional mode, the piston rod is advanced to the maximum length through the integrated compression spring in the rear cylinder chamber. The piston moves in the cylinder barrel when the front cylinder chamber is pressurised. The piston rod transmits the "pulling" movement to the outside. The retracted piston rod is advanced again through the spring force when the front cylinder chamber is depressurised.

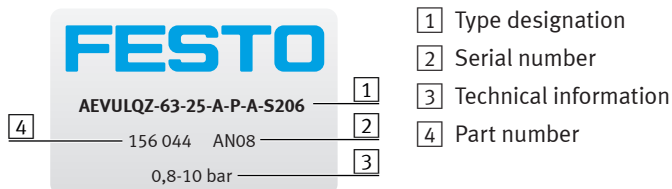




## 2.3 Type codes (ascertaining the features of a cylinder)

The precise features of the current compact cylinder can be ascertained with the help of the rating plate on the cylinder. The type designation is located directly beneath the Festo logo and describes the cylinder's features separated by a hyphen (-).

**Example:**



The type designation on these rating plates provides the following information:

- AEVU** Cylinder of type AEVU (single-acting)
- LQ** Square piston rod (protected against rotation)
- Z** "Pulling" design
- 63** Piston diameter 63 mm
- 25** Stroke 25 mm
- A** Male thread
- P** Elastic cushioning rings/pads at both ends
- A** Sensing option (magnetic piston)
- S206** Through, hollow piston rod, heat-resistant seals

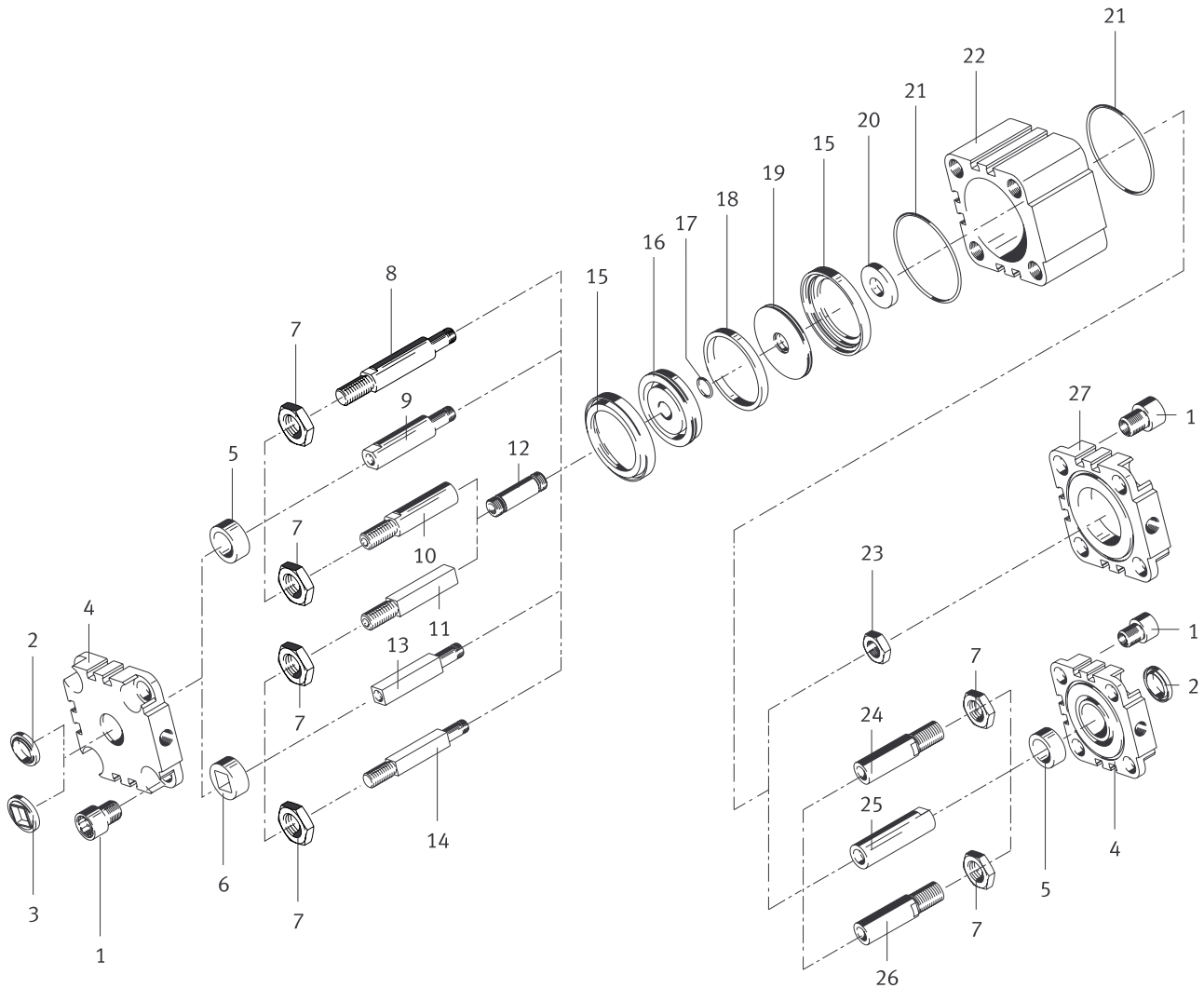


### Note

A list and description of all possible equipment features of the compact cylinder can be found in the data sheet. It is available on the Festo website (→ [www.festo.com](http://www.festo.com)).

### 3 Component overview

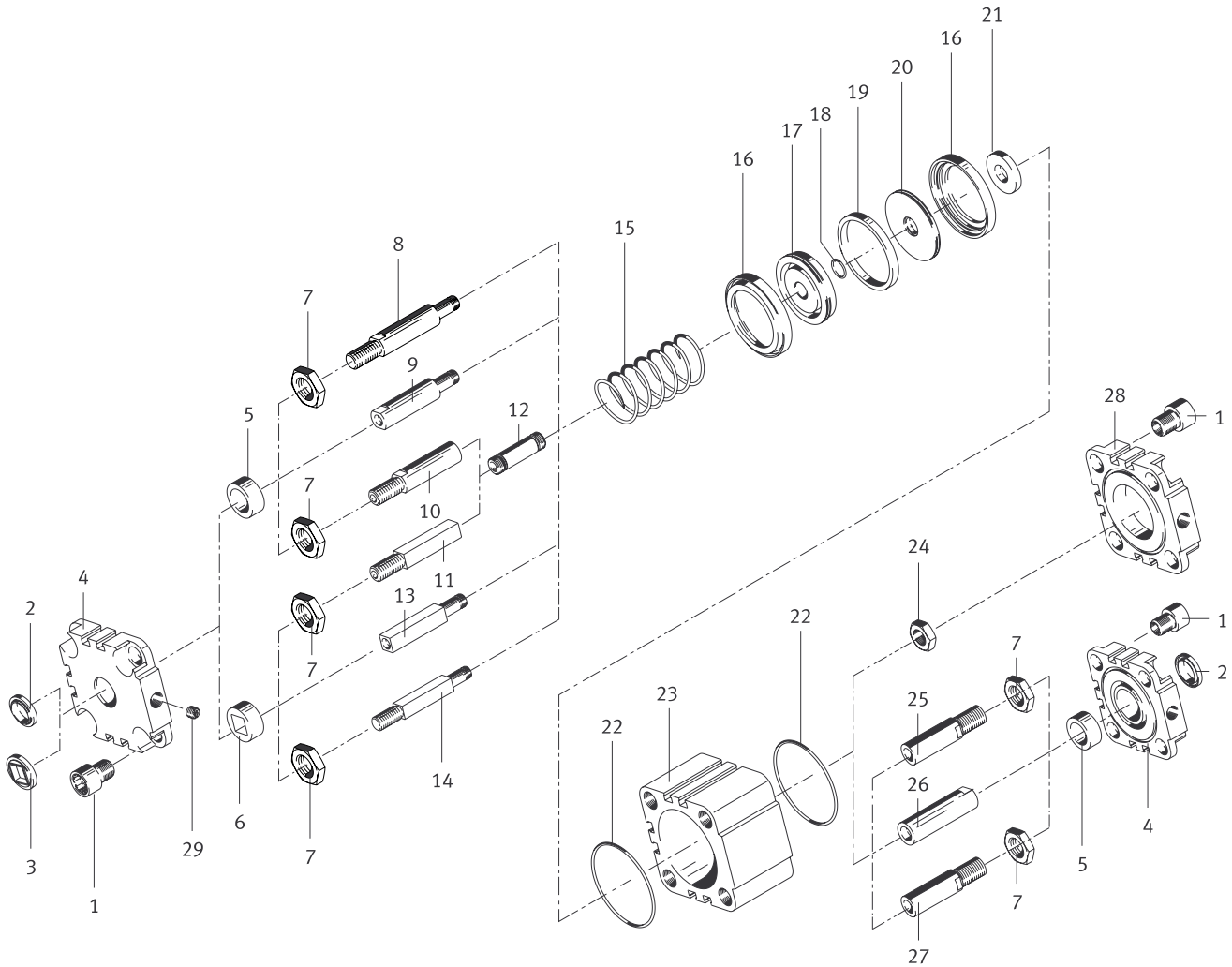
#### 3.1 ADVU-...-P-A / -...-P-A-S2 / ...-A-P-A / -...-A-P-A-S2 ADVULQ-...-P-A / -...-P-A-S2 / ...-A-P-A / -...-A-P-A-S2 ADVU-...-A-P-A-S20 / -S206, ADVULQ-...-A-P-A-S20 / -S206



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (→ [www.festo.com/spareparts](http://www.festo.com/spareparts)).

Item	Designation	Note
1	Flange screw	
2	Polyurethane wiper seal	For cylindrical piston rod, for S6 / S26 fluororubber
3	Polyurethane wiper seal	For square piston rod, for S6 / S26 fluororubber
4	Bearing cap	
5	Bearing	For cylindrical piston rod
6	Bearing	For square piston rod
7	Hex nut	For piston rod with male thread
8	Cylindrical piston rod with male thread	
9	Square piston rod with female thread	
10	Cylindrical hollow piston rod with male thread	
11	Square hollow piston rod with male thread	
12	Hollow bolt	
13	Square piston rod with female thread	
14	Square piston rod with male thread	
15	Piston seal	
16	Piston for magnet	
17	O-ring	
18	Magnet	
19	Piston	
20	Washer	
21	O-ring	
22	Cylinder barrel	
23	Hex nut	
24	Piston rod with male thread	
25	Piston rod with female thread	
26	Hollow piston rod with male thread	
27	End cap	

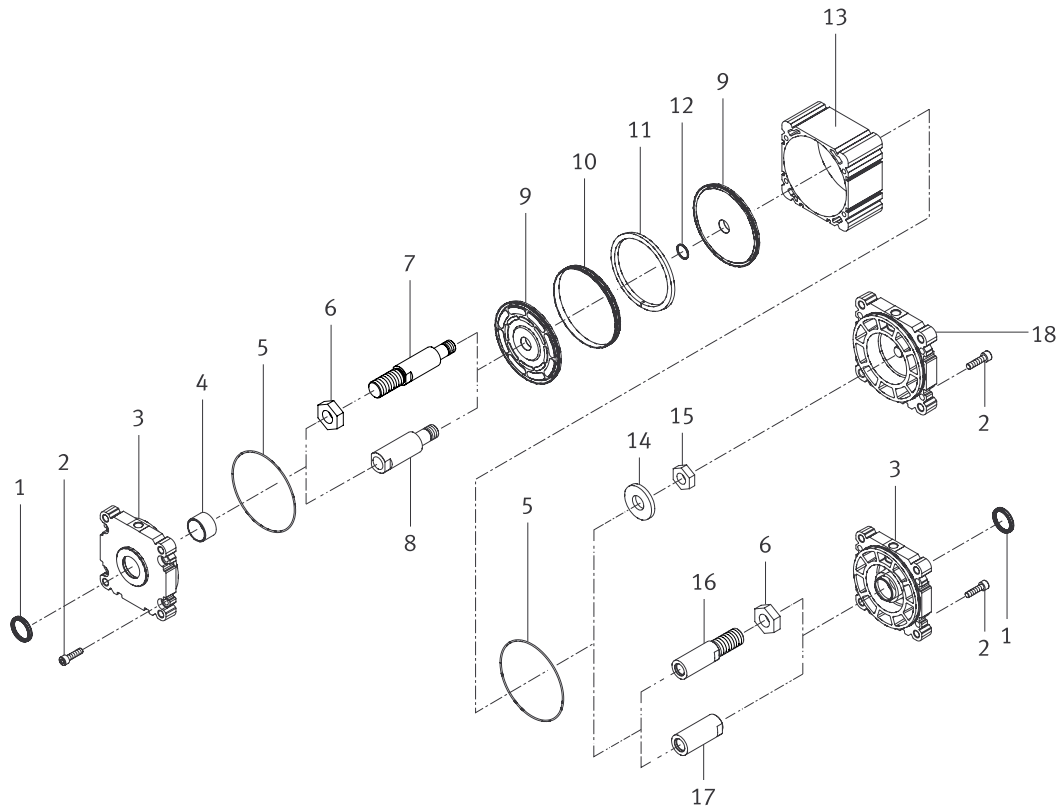
**3.2 AEVU-...-P-A / -...-P-A-S2 / ...-A-P-A / -...-A-P-A-S2**  
**AEVULQ-...-P-A / -...-P-A-S2 / ...-A-P-A / -...-A-P-A-S2**  
**AEVU-...-A-P-A-S20 / -S206, AEVULQ-...-A-P-A-S20 / -S206**



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (➔ [www.festo.com/spareparts](http://www.festo.com/spareparts)).

Item	Designation	Note
1	Flange screw	
2	Polyurethane wiper seal	For cylindrical piston rod, for S6 / S26 fluororubber
3	Polyurethane wiper seal	For square piston rod, for S6 / S26 fluororubber
4	Bearing cap	With seat for compression spring
5	Bearing	For cylindrical piston rod
6	Bearing	For square piston rod
7	Hex nut	For piston rod with male thread
8	Cylindrical piston rod with male thread	
9	Square piston rod with female thread	
10	Cylindrical hollow piston rod with male thread	
11	Square hollow piston rod with male thread	
12	Hollow bolt	
13	Square piston rod with female thread	
14	Square piston rod with male thread	
15	Compression spring	
16	Piston seal	
17	Piston for magnet	
18	O-ring	
19	Magnet	
20	Piston	
21	Washer	
22	O-ring	
23	Cylinder barrel	
24	Hex nut	
25	Piston rod with male thread	
26	Piston rod with female thread	
27	Hollow piston rod with male thread	
28	End cap	
29	Filter nipple	

### 3.3 ADVU-125-...-P-A / -P-A-S2 / -A-P-A / -A-P-A-S2



This diagram is intended only to provide an overview of the individual components. To order spare and wearing parts, please use the online spare parts catalogue on the Festo website (→ [www.festo.com/spareparts](http://www.festo.com/spareparts)).

Item	Designation	Note
1	Polyurethane wiper seal	For cylindrical piston rod, fluororubber for S6
2	Self-tapping screw	
3	Bearing cap	
4	Bearing	
5	O-ring	
6	Hex nut	
7	Piston rod with male thread	
8	Piston rod with female thread	
9	Piston seal	
10	Guiding band	
11	Magnetic strip	
12	O-ring	
13	Cylinder barrel	
14	Washer	
15	Hex nut	
16	Piston rod with male thread	
17	Piston rod with female thread	
18	End cap	

## 4 Repair steps

### 4.1 Preparation

- Before starting the repair, remove any attachments (e.g. yoke plate on ADVUL) in accordance with the accompanying operating instructions.
- Keep your working environment tidy.
- Only use the spare parts and assembly aids (grease, locking agent, etc.) provided in the set of wearing parts.



#### Warning

Make sure that the bearing or end cap, particularly with types AEVU-... / AEVUZ-... cannot suddenly come flying off.

- Remove the non-return valves and tubing connection from the cylinder and depressurise the cylinder completely so that any pressure present is not suddenly released when the cylinder is opened.
- Use suitable support devices.

To prevent damage to sealing rims or guide surfaces, do not use pointed or sharp-edged assembly aids.

### 4.2 Visual inspection

Check the cylinder for visible damage that might impair its function (e.g. warping of the piston rod) as well as deposits and scoring. The entire cylinder must be replaced if the cylinder barrel is showing signs of significant damage.

### 4.3 Repairing compact cylinder ADVU... / AEVU...

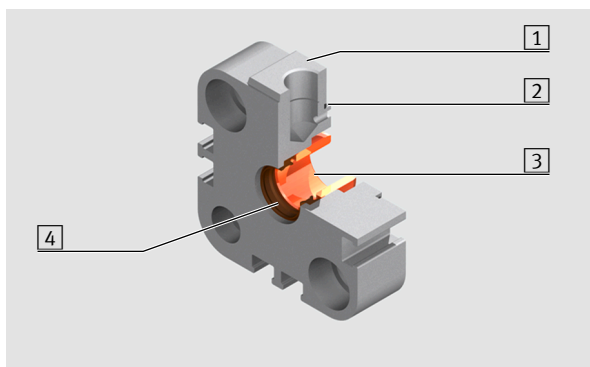
with piston diameter 32 / 40 / 50 / 63 / 80 / 100

The description in this chapter can be used to repair compact cylinders of type ADVU...-.../AEVU...-...:

Code	Description
L	Protection against rotation (e.g. yoke plate)
Q	Square piston rod
Z	Pulling
A	Male thread
P	Elastic cushioning rings/pads
A	Position sensing

Code	Description
S1	Reinforced piston rod
S2	Through piston rod
S6	Seals heat-resistant up to 120°C
S20	Through, hollow piston rod
S26	Through piston rod, heat resistant up to 120°C
S206	Through, hollow piston rod, heat-resistant up to 120°C
R3	Increased corrosion protection

#### 4.3.1 Structure of the bearing cap



- 1 Bearing cap
- 2 O-ring
- 3 Bearing
- 4 Wiper seal

### 4.3.2 Removing the bearing and end caps

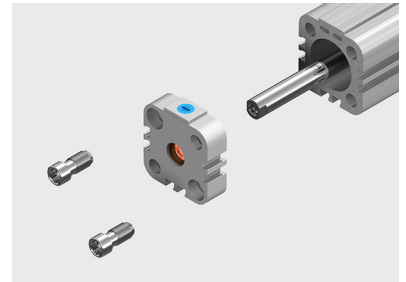


#### Warning

The compression spring of the compact cylinder AEVU...-... is pretensioned. This means that the bearing and end caps can be ejected during disassembly resulting in injury to persons and/or damage to the device.

Attach appropriate support devices.

- Loosen the screws in the bearing and end caps (the rear bearing cap on cylinders with through piston rod (S2 / S20 / S26 / S206)) and remove them.
- Pull the bearing and end caps away from the cylinder barrel and piston rod.



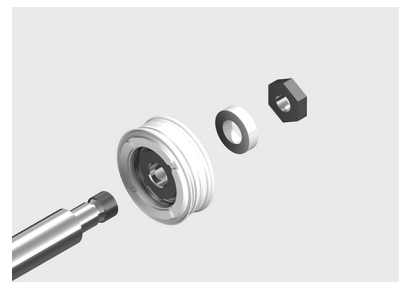
### 4.3.3 Replacing the piston components

- Pull the piston rod out of the cylinder barrel.
- Check the cylinder barrel and piston rod for damage.  
The entire cylinder must be replaced if the cylinder barrel (particularly the bearing surface) is showing significant damage.



#### ADVU...-... / AEVU...-...- basic type / -...-S2 / -...-S26

- Unscrew the hex nut (the rear part of the piston rod on cylinders with through piston rod (S2 / S26)) from the piston rod.
- Remove the piston components from the piston rod, noting the order and orientation.
- Remove any residue of the screw locking agent from the threads of the piston rod and hex nut.
- Replace the components with those included in the set of wearing parts and reassemble the piston components on the piston rod in the correct order.



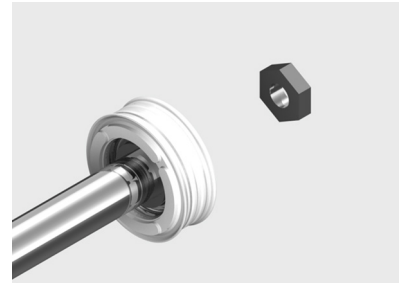
#### Note

Make a note of the position of the slot for the compression spring on the piston of compact cylinder AEVU...



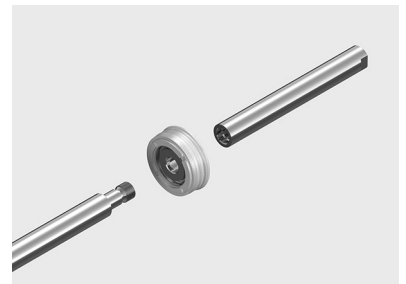
- Apply the screw locking agent contained in the set of wearing parts to the inside of the hex nut (the rear part of the piston rod on cylinders with through piston rod (S2 / S26)) and screw it onto the piston rod with the corresponding torque (see table).

Type	Torque
ADVU/AEVU-32	9.5 Nm
ADVU/AEVU-40	9.5 Nm
ADVU/AEVU-50	23 Nm
ADVU/AEVU-63	23 Nm
ADVU/AEVU-80	45 Nm
ADVU/AEVU-100	82 Nm



### ADVU....-... / AEVU....-...-S20 / -...-S206

- Unscrew the rear part on cylinders with through **hollow** piston rod (S20 / S206) from the piston rod. The screw connection between the front piston rod and hollow bolt or the hollow bolt and rear piston rod can be loosened during this process.
- Remove the piston components from the hollow bolt, noting the order and orientation.
- Unscrew the hollow bolt from the piston rod.
- Remove any residue of the screw locking agent from all of the threads.
- Apply the screw locking agent included in the set of wearing parts to the thread of the hollow bolt and screw the hollow bolt in to the front piston rod.



#### Note

The next two work steps must be completed before the screw locking agent hardens (approx. 10 min. after application).

- Replace the components with those included in the set of wearing parts and reassemble the piston components on the assembled hollow bolt in the correct order.



#### Note

Make a note of the position of the slot for the compression spring on the piston of compact cylinder AEVU...

- Apply the screw locking agent included in the set of wearing parts to the thread of the hollow bolt and screw the rear piston rod on to the hollow bolt with the corresponding torque (see table).

Type	Torque
ADVU/AEVU-32	9.5 Nm
ADVU/AEVU-40	9.5 Nm
ADVU/AEVU-50	23 Nm
ADVU/AEVU-63	23 Nm
ADVU/AEVU-80	45 Nm
ADVU/AEVU-100	82 Nm

#### 4.3.4 Inserting the piston rod into the cylinder barrel

- Clean the inside surface of the cylinder barrel as described in chapter [5.1 "Cleaning"](#).
- Apply the grease included in the set of wearing parts to the following parts:

Component	Greasing
Inside surface of cylinder barrel	Thin film <sup>1)</sup>
Surface of piston rod	Thin film <sup>1)</sup>
Piston seals	Thin film <sup>1)</sup> on outside
Piston surface between piston seals (grease reservoir <sup>2)</sup> )	Fill 2/3 with grease

<sup>1)</sup> See chapter [5.2.2 "Thin grease film"](#)

<sup>2)</sup> See chapter [5.2.3 "Grease reservoir"](#)

- Place the piston flat against the front side of the cylinder barrel and insert the piston seal into the cylinder barrel by tilting and turning it slightly.

**The lip of the piston seal must not fold back against the side of the piston.**



##### Note

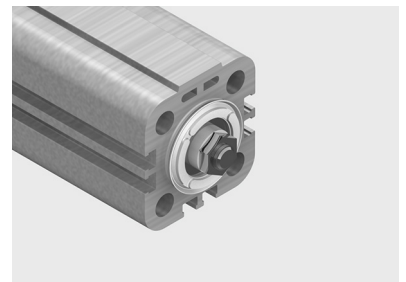
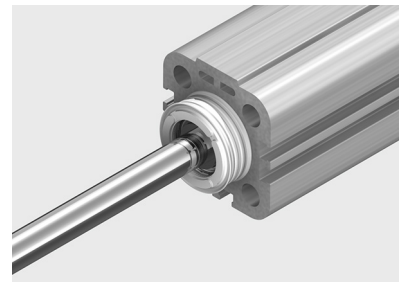
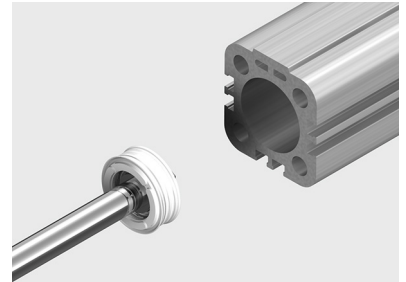
If necessary use a flat and blunt-edged object to insert the piston seal into the cylinder barrel.

- Insert the piston fully into the cylinder barrel.
- Push the piston far enough into the cylinder barrel so that the first piston seal protrudes slightly at the other end of the cylinder barrel.
- Pull the piston rod back again until the piston is sitting fully in the cylinder barrel.



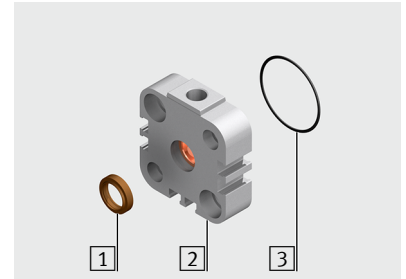
##### Note

This approach ensures that the lips of the two piston seals sit correctly in the cylinder barrel.



#### 4.3.5 Repairing the bearing and end caps ADVU-... / AEVU-...

- Remove the wiper seal [1] from the bearing cap [2] (both bearing caps on cylinders with through piston rod (S2 / S20/S206)).
- Remove the O-ring [3] from the bearing or end cap [2].



#### Warning

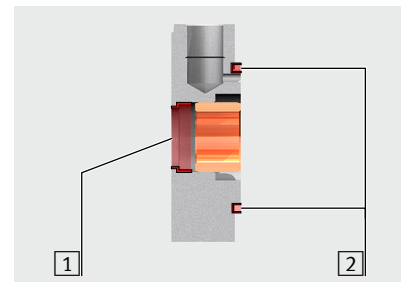
Check the plain bearing in the bearing cap (the front and rear bearing caps on cylinders with through piston rod (S2 / S20/S26/S206)) for visible damage that might impair its function, such as deposits and scoring. The entire bearing cap must be replaced if the plain bearing is showing significant damage.

- Clean the seat of the wiper seal [1] and the O-ring [2].
- Grease the new wiper seal (one per bearing cap on cylinders with through piston rod (S2 / S20/S26/S206)) as follows:

Component	Greasing
[1] Grease reservoir <sup>2)</sup> for piston rod	Fill 2/3 with grease
[2] External surface for bearing cap	Thin film <sup>1)</sup>
[3] Grease reservoir <sup>2)</sup> for bearing	Fill 2/3 with grease

<sup>1)</sup> See chapter [5.2.2 "Thin grease film"](#)

<sup>2)</sup> See chapter [5.2.3 "Grease reservoir"](#)



- Insert the new wiper seal into the bearing and end caps (both bearing caps on cylinders with through piston rod (S2 / S20 / S26 / S206)).

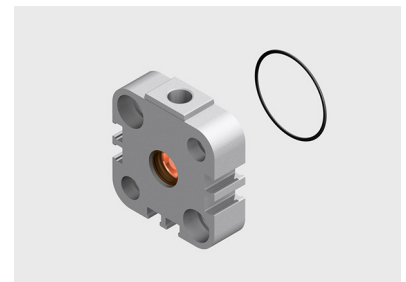


#### Note

Observe the installation position on cylinders with a square piston rod.

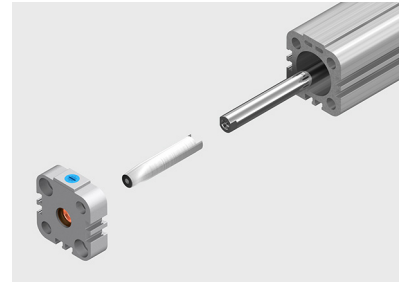


- Grease the new O-rings from the set of wearing parts and insert them into the bearing and end caps (in both bearing caps on cylinders with through piston rod (S2 / S20/S26/S206)).

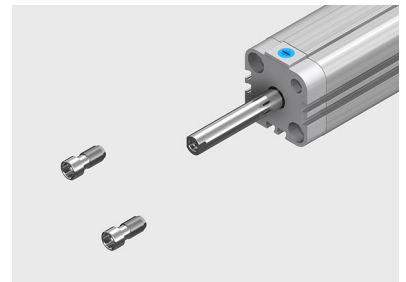


#### 4.3.6 Attaching the bearing and end caps ADVU...-...

- To protect the bearing and seals, place the appropriate mounting sleeve (see chapter [7.2 "Special tools"](#)) on the thread of the piston rod to prevent damage.
- Guide the bearing cap (both bearing caps on cylinders with through piston rod (S2/S20/S26/S206)) over the mounting sleeve (see chapter [7.2 "Special tools"](#)) onto the piston rod as far as the cylinder barrel.
- Place the end cap at the other end of the cylinder barrel.



- Apply the screw locking agent included in the set of wearing parts to the screws.
- Turn the screws through the bearing and end caps (through both bearing caps on cylinders with through piston rod (S2/S20/S26/S206)) into the cylinder barrel.
- Align the bearing and end caps flush with the cylinder barrel.
- Tighten the screws using the appropriate torque (see table).



Type	Torque
ADVU-32	25 Nm
ADVU-40	25 Nm
ADVU-50	30 Nm
ADVU-63	35 Nm
ADVU-80	35 Nm
ADVU-100	35 Nm

- Perform a functional test as per the operating instructions (enclosed with the cylinder or can be called up on the Festo website (→ [www.festo.com](http://www.festo.com))) and commission the repaired cylinder.

#### 4.3.7 Attaching the bearing and end caps AEVU...-...



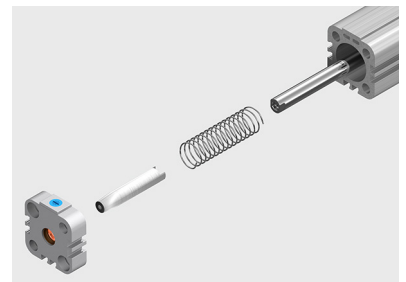
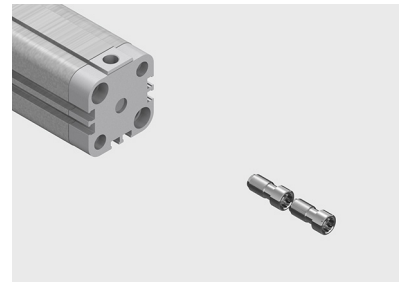
##### Warning

The compression spring of cylinder types AEVU...-... is pretensioned. This means that the bearing and end caps can be ejected during assembly resulting in injury to persons and/or damage to the device.

Attach appropriate support devices.

##### AEVU...-... (pushing)

- Attach the end cap to the rear end of the cylinder barrel.
- **Only applies to compact cylinders with through piston rod**  
To protect the bearing and seals, place the appropriate mounting sleeve (see chapter 7.2 "Special tools") on the thread of the rear piston rod to prevent damage.  
Push the bearing cap over the mounting sleeve (see chapter 7.2 "Special tools") onto the piston rod to the rear end of the cylinder barrel.
- Apply the screw locking agent included in the set of wearing parts to the four screws.
- Fasten the screws through the end cap/bearing cap into the cylinder barrel.
- Align the end cap/bearing cap flush with the cylinder barrel.
- Tighten the screws using the appropriate torque (see table).
- Place the compression spring into the seat of the piston.
- To protect the bearing and seals, place the appropriate mounting sleeve (see chapter 7.2 "Special tools") on the thread of the piston rod to prevent damage.
- Push the bearing cap over the mounting sleeve (see chapter 7.2 "Special tools") onto the piston rod. The compression spring must be fixed in the seat of the bearing cap.
- Push the bearing cap to the very front of the cylinder barrel using suitable support devices.
- Apply the screw locking agent included in the set of wearing parts to the four screws.
- Fasten the screws through the bearing cap into the cylinder barrel.
- Align the bearing cap flush with the cylinder barrel.
- Tighten the screws using the appropriate torque (see table).

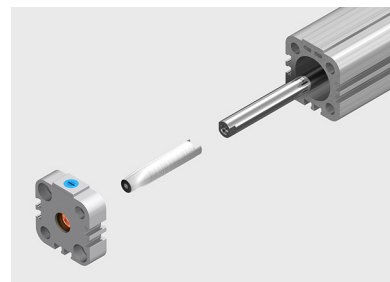


Type	Torque
AEVU-32	25 Nm
AEVU-40	25 Nm
AEVU-50	30 Nm
AEVU-63	35 Nm
AEVU-80	35 Nm
AEVU-100	35 Nm

- Perform a functional test as per the operating instructions (enclosed with the cylinder or can be called up on the Festo website (→ [www.festo.com](http://www.festo.com))) and commission the repaired cylinder.

## AEVU...-... (pulling)

- To protect the bearing and seals, place the appropriate mounting sleeve (see chapter 7.2 "Special tools") on the thread of the front piston rod to prevent damage.
- Push the bearing cap over the mounting sleeve (see chapter 7.2 "Special tools") onto the piston rod to the front end of the cylinder barrel.
- Apply the screw locking agent included in the set of wearing parts to the four screws.
- Fasten the screws through the bearing cap into the cylinder barrel.
- Align the bearing cap flush with the cylinder barrel.
- Tighten the screws using the appropriate torque (see table).



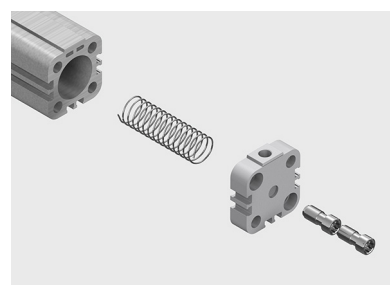
- Place the compression spring into the seat of the piston.
- Place the end cap on the compression spring and fasten it by means of the seat in the end cap.

### • Only applies to compact cylinders with through piston rod

To protect the bearing and seals, place the appropriate mounting sleeve (see chapter 7.2 "Special tools") on the thread of the piston rod to prevent damage.

Push the rear bearing cap over the mounting sleeve (see chapter 7.2 "Special tools") onto the piston rod. The compression spring must be fixed in the seat of the bearing cap.

- Push the end cap/bearing cap to the very rear of the cylinder barrel using suitable support devices.
- Apply the screw locking agent included in the set of wearing parts to the four screws.
- Fasten the screws through the bearing cap into the cylinder barrel.
- Align the bearing cap flush with the cylinder barrel.
- Tighten the screws using the appropriate torque (see table).



Type	Torque
AEVU-32	25 Nm
AEVU-40	25 Nm
AEVU-50	30 Nm
AEVU-63	35 Nm
AEVU-80	35 Nm
AEVU-100	35 Nm

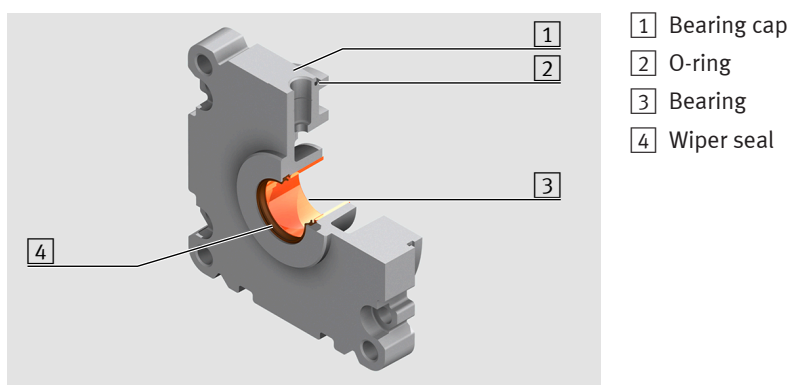
- Perform a functional test as per the operating instructions (enclosed with the cylinder or can be called up on the Festo website (→ [www.festo.com](http://www.festo.com))) and commission the repaired cylinder.

## 4.4 Repairing compact cylinder ADVU-125-...

The description in this chapter can be used to repair compact cylinders of type ADVU-125-....:

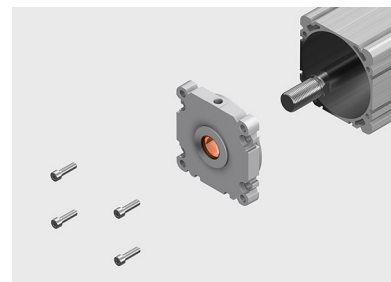
Code	Description
A	Male thread
P	Elastic cushioning discs (only in series up to February 2011)
A	Position sensing
S6	Seals heat-resistant up to 120°C
S2	Through piston rod
R3	Increased corrosion protection

### 4.4.1 Structure of the bearing cap



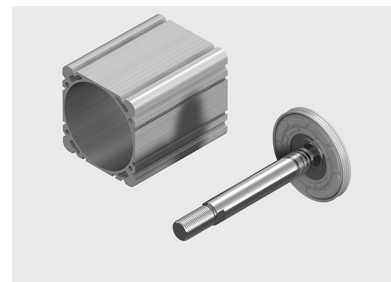
### 4.4.2 Removing the bearing and end caps

- Loosen the self-tapping screws in the bearing and end caps (the rear bearing cap on cylinders with through piston rod (S2)) and remove them.
- Pull the bearing and end caps away from the cylinder barrel and piston rod.



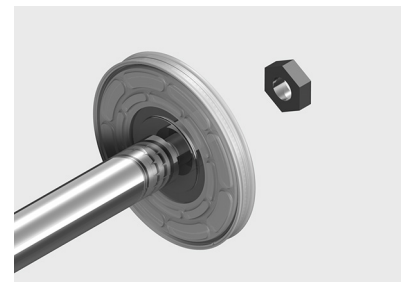
### 4.4.3 Replacing the piston components

- Pull the piston rod out of the cylinder barrel.
- Check the cylinder barrel and piston rod for damage.  
The entire cylinder must be replaced if the cylinder barrel (particularly the bearing surface) is showing significant damage.



- Unscrew the hex nut (the rear part of the piston rod on cylinders with through piston rod (S2)) from the piston rod.
- Remove the piston components from the piston rod, noting the order and orientation.
- Remove any residue of the screw locking agent from the threads of the piston rod and hex nut.
- Replace the components with those included in the set of wearing parts and reassemble the piston components on the piston rod in the correct order.
- Apply the screw locking agent contained in the set of wearing parts to the inside of the hex nut (the rear part of the piston rod on cylinders with through piston rod (S2 / S20)) and screw it onto the piston rod with the corresponding torque (see table).

Type	Torque
ADVU/AEVU-125	72 Nm



#### 4.4.4 Inserting the piston rod into the cylinder barrel

- Clean the inside surface of the cylinder barrel as described in chapter [5.1 "Cleaning"](#).
- Apply the grease included in the set of wearing parts to the following parts:

Component	Greasing
Inside surface of cylinder barrel	Thin film <sup>1)</sup>
Surface of piston rod	Thin film <sup>1)</sup>
Piston seals	Thin film <sup>1)</sup> on outside
Piston surface between piston seals (grease reservoir <sup>2)</sup> )	Fill 2/3 with grease

<sup>1)</sup> See chapter [5.2.2 "Thin grease film"](#)

<sup>2)</sup> See chapter [5.2.3 "Grease reservoir"](#)

- Place the piston flat against the front side of the cylinder barrel and insert the piston seal into the cylinder barrel by tilting and turning it slightly.

**The lip of the piston seal must not fold back against the side of the piston.**



#### Note

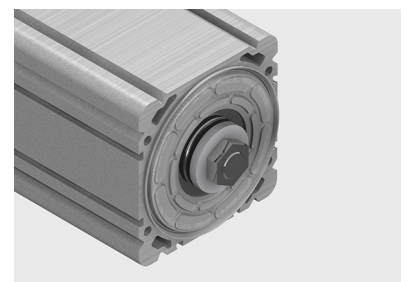
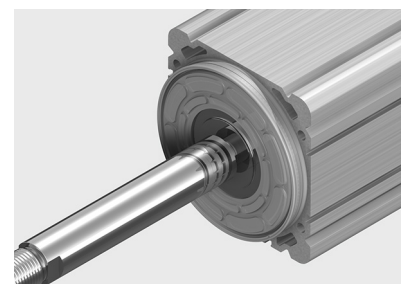
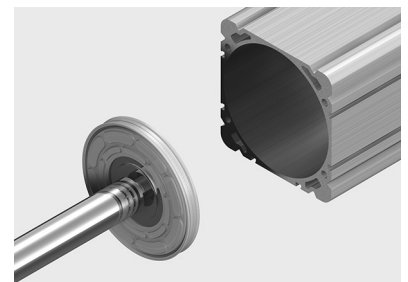
If necessary use a flat and blunt-edged object to insert the piston seal into the cylinder barrel.

- Insert the piston fully into the cylinder barrel.
- Push the piston far enough into the cylinder barrel so that the first piston seal protrudes slightly at the other end of the cylinder barrel.
- Pull the piston rod back again until the piston is sitting fully in the cylinder barrel.



#### Note

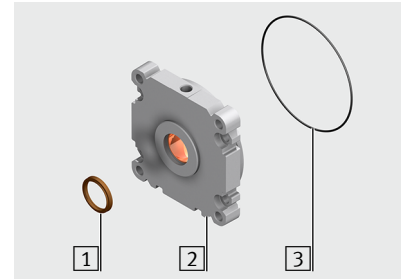
This approach ensures that the lips of the two piston seals sit correctly in the cylinder barrel.





#### 4.4.5 Repairing and attaching the bearing and end caps

- Remove the wiper seal [1] from the bearing cap [2] (both bearing caps on cylinders with through piston rod (S2)).
- Remove the cushioning disc (only installed in series up to February 2011) and the O-ring [3] from the bearing or end cap [2].



#### Warning

Check the plain bearing in the bearing cap (the front and rear bearing caps on cylinders with through piston rod (S2 / S20/S26/S206)) for visible damage that might impair its function, such as deposits and scoring. The entire bearing cap must be replaced if the plain bearing is showing significant damage.

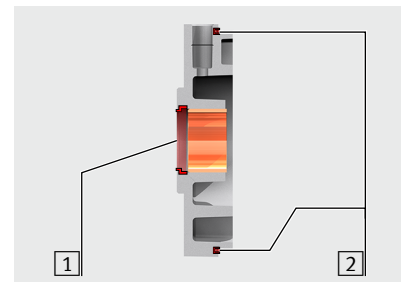
- Clean the seat of the wiper seal [1].
- Grease the new wiper seal (one per bearing cap on cylinders with through piston rod (S2 / S20/S26/S206)) as follows:

Component	Greasing
[1] Grease reservoir <sup>2)</sup> for piston rod	Fill 2/3 with grease
[2] External surface for bearing cap	Thin film <sup>1)</sup>
[3] Grease reservoir <sup>2)</sup> for bearing	Fill 2/3 with grease

<sup>1)</sup> See chapter [5.2.2 "Thin grease film"](#)

<sup>2)</sup> See chapter [5.2.3 "Grease reservoir"](#)

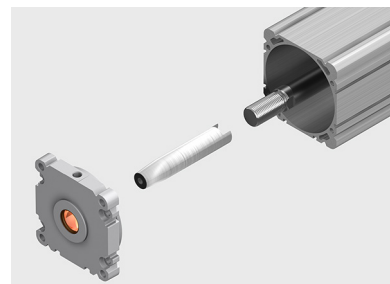
- Insert the new wiper seal into the bearing and end caps (both bearing caps on cylinders with through piston rod (S2 / S20 / S26 / S206)).



- Insert the new O-rings and cushioning discs (only installed in series up to February 2011) from the set of wearing parts into the bearing and end caps (in both bearing caps on cylinders with through piston rod (S2)).

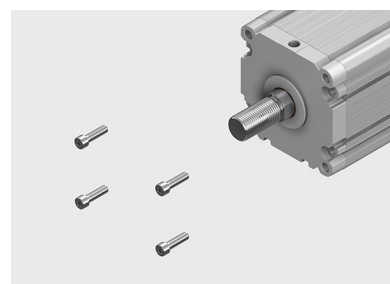


- To protect the bearing and seals, place the appropriate mounting sleeve (see chapter 7.2 "Special tools") on the thread of the piston rod to prevent damage.
- Guide the bearing cap (both bearing caps on cylinders with through piston rod (S2)) over the mounting sleeve (see chapter 7.2 "Special tools") onto the piston rod as far as the cylinder barrel.
- Place the end cap at the other end of the cylinder barrel.



- Apply the screw locking agent included in the set of wearing parts to the screws.
- Turn the screws through the bearing and end caps (through both bearing caps on cylinders with through piston rod (S2)) into the cylinder barrel.
- Align the bearing and end caps flush with the cylinder barrel.
- Tighten the screws using the appropriate torque (see table).

Type	Torque
ADVU/AEVU-125	37.5 Nm



- Perform a functional test as per the operating instructions (enclosed with the cylinder or can be called up on the Festo website (→ [www.festo.com](http://www.festo.com))) and commission the repaired cylinder.

## 5 Cleaning and greasing

### 5.1 Cleaning

The seals are designed so that the lubricant film applied to them is effective for the entire service life of the seal. The cylinder must be cleaned thoroughly to remove all foreign particles, machining residues and old lubricants before it is greased to ensure this life-time lubrication is retained.

All non-abrasive cleaning agents are permissible.



#### Note

Regular removal of the lubricant on the surface of the piston rod reduces its service life.



#### Note

- Clean with a soft, lint-free cloth and non-abrasive cleaning agents.
- Check the compatibility of the cleaning agent with the materials to be cleaned.

### 5.2 Greasing

The various components and seals of the compact cylinder require different levels of greasing depending on a number of factors.



#### Warning

To guarantee the life-time lubrication, the piston rod with assembled piston and piston seals must be moved a number of times across the entire stroke of the cylinder barrel to produce an even lubricant film.

#### 5.2.1 Extremely thin grease film

A barely continuous film of grease covers the bearing surface. The grease can give a sheen to the surface; however, the colour of the grease must not darken it.

##### Recommendation:

Apply the grease using a cloth or similar dipped in the grease.

Remove the excess grease from the seal system components (e.g. by drawing the assembled piston with the piston rod once fully through the greased cylinder barrel) and then remove the excess from the seal components by wiping it off.

#### 5.2.2 Thin grease film

A film of grease covers the bearing surface so that the grease colour darkens the surface slightly.

##### Recommendation:

Apply the grease with a soft brush or similar.

#### 5.2.3 Grease reservoir

There is a certain amount of oil enclosed between two sealing rims or in enclosed ring volumes.

## 6 Maintenance and care

Clean any dirt from the piston rod using a soft cloth.

All non-abrasive cleaning agents are permissible. The cylinders are also maintenance-free as they have been lubricated for life. Regular removal of the lubricant on the surface of the piston rod reduces its service life.

## 7 Tools

This chapter provides an overview of the tools and accessories required to repair and maintain compact cylinders ADVU... / AEVU....

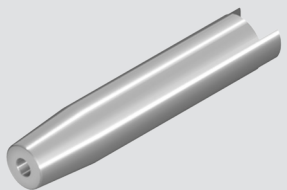
### 7.1 Standard tools

The following standard tools among others are required to repair compact cylinders:

- Screwdriver
- Wrench
- Flat pliers
- Torque wrench (see tables in the corresponding repair steps for values)

### 7.2 Special tools

The following special tools are required for repair and maintenance of compact cylinders:

Designation		Illustration
Mounting sleeve for piston rod	<p>The mounting sleeve for piston rods for protecting the piston rod seal and the bearing in the bearing cap while the repair is being carried out must be produced by the customer.</p> <p>The schematic diagram is included in the information brochure <b>“Tools and repair accessories”</b>.</p>	



#### Documents

Further information on the special tools and on the schematic diagram is included in the **“Tools and repair accessories”** information brochure. The information brochure can be found in the online spare parts catalogue on the Festo website (→ [Tools and repair accessories.pdf](#)).

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