

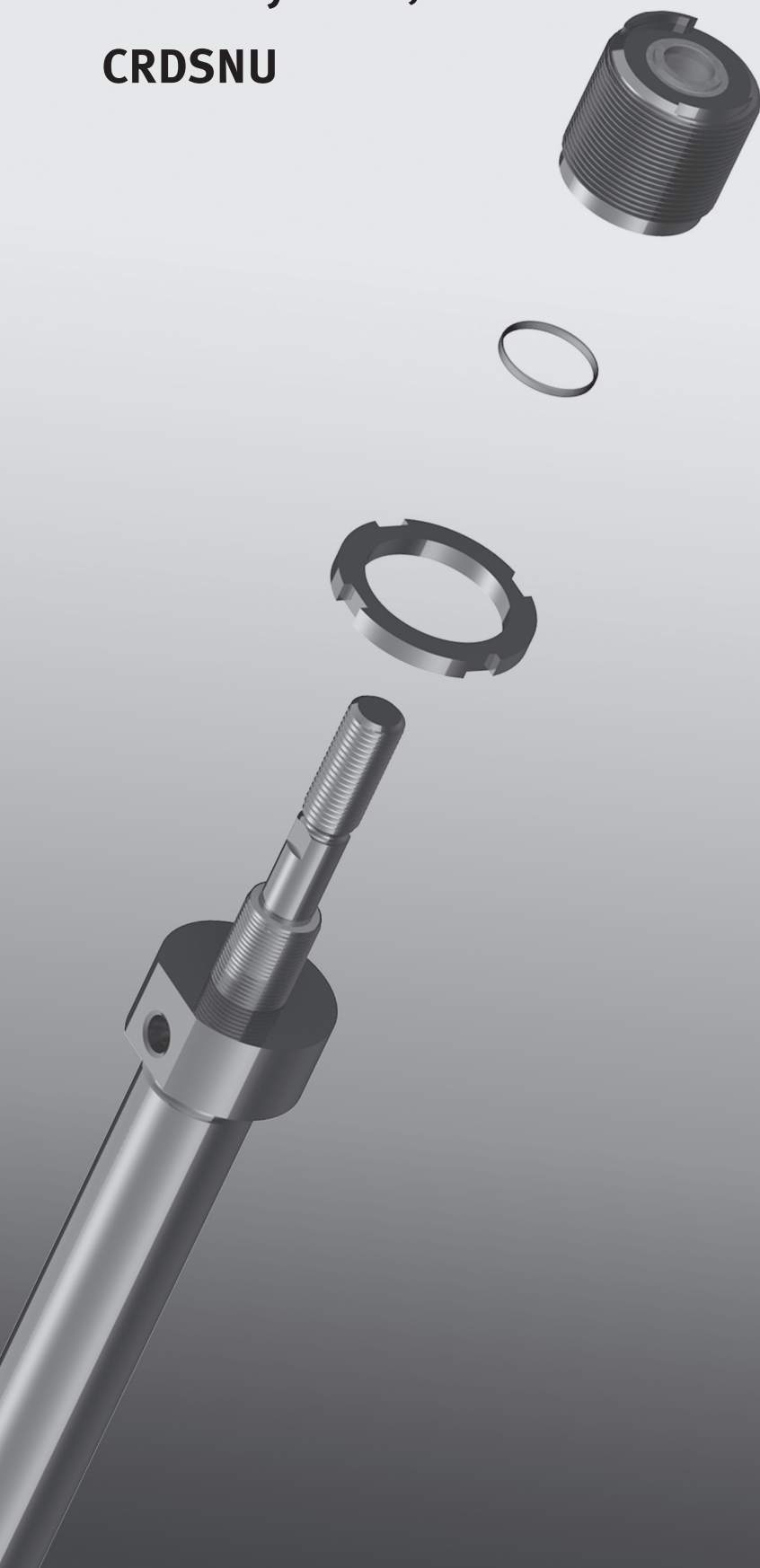
Cylinder with piston rod

Standard cylinder to ISO 6432,
stainless steel

CRDSNU

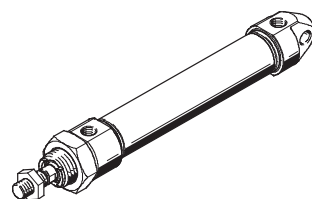
Round cylinder, stainless steel

CRDSNU



FESTO

Repair
instructions (en)



Imprint

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All technical data are subject to
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updates.

Preface

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

Deviations compared to the descriptions in these repair instructions may arise depending on the design and/or modification status of the cylinder with piston rod. 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 [Chapter 8 on page 17](#).

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 professional repair of the cylinder with piston rod of the type CRDSNU.

The cylinder with piston rod CRDSNU is 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.

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 when repairing the cylinder with piston rod:

- **Operating instructions for the respective cylinder with piston rod**

Contains information about the control sections and connections of the cylinder with piston rod as well as the function, structure, application, installation, commissioning, maintenance and care, etc. Can be found on the Festo website (→ 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).

- **Assembly aids**

Contain an overview of available assembly aids such as lubricating greases, locking agents, maintenance tools, etc. (aids for assembly and maintenance). Can be found in the online spare parts catalogue on the Festo website (→ www.Festo.com).

1.2 Symbols 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 cylinder with piston rod must only be repaired by authorised and trained persons in accordance with the specifications in the technical documentation and using original spare parts.

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.



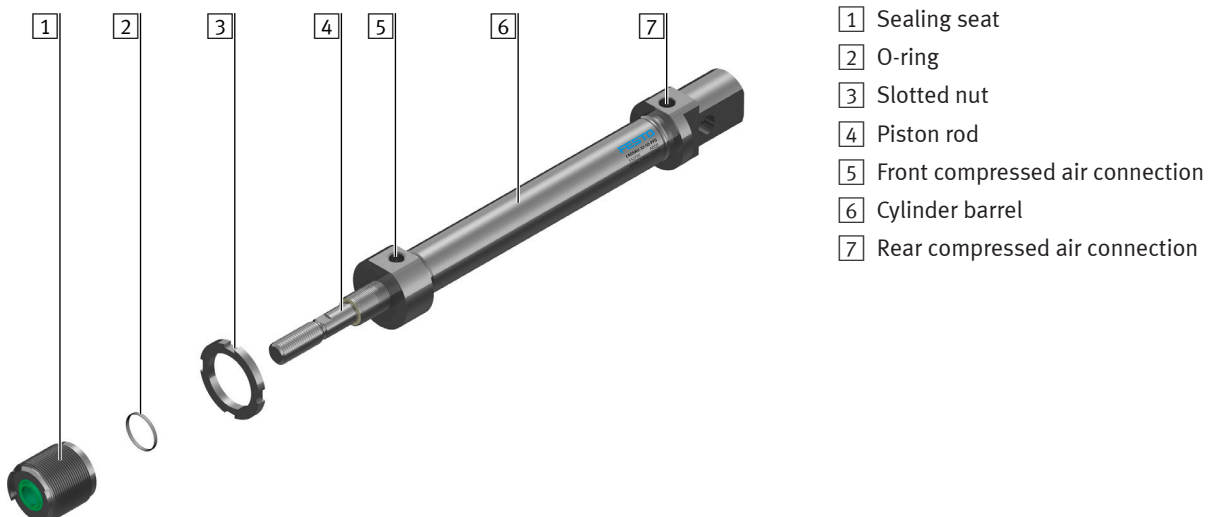
Environment

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

2 General product description

2.1 Functional description

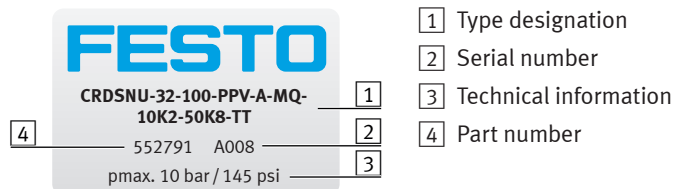
The piston moves in the cylinder barrel when the cylinder chamber is pressurised. The piston rod transmits the movement to the outside. The advanced piston rod is retracted again when the other cylinder chamber is pressurised.



2.2 Type codes (ascertaining the features of a cylinder)

The precise features of the current cylinder with piston rod 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 this rating plate provides the following information:

CRDSNU	Cylinder of the type CRDSNU
32	Piston diameter 32 mm
100	Stroke 100 mm
PPV	Adjustable end-position cushioning
A	Sensing option (magnetic piston)
MQ	Short end cap without swivel mounting
10K2	Piston rod thread extended by 10 mm
50K8	Piston rod extended by 50 mm at one end
TT	Low-temperature seal

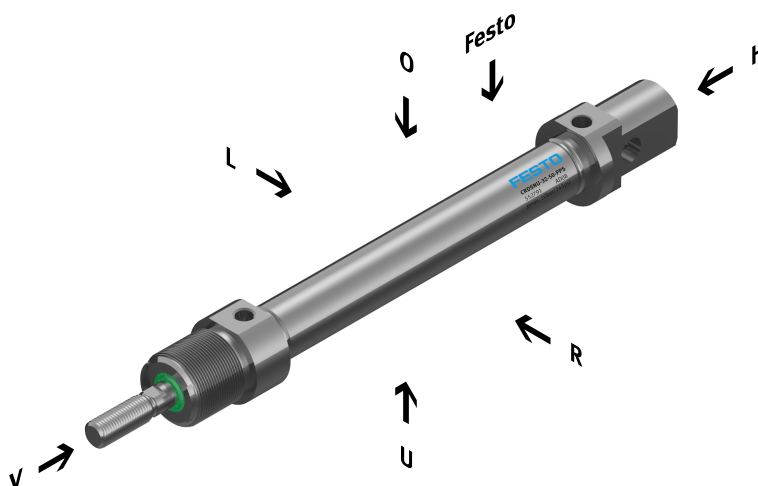


Note

A list and description of all possible equipment features of the cylinder with piston rod can be found in the data sheet. It is available on the Festo website (→ www.Festo.com).

2.3 Orientation designations and bearing cap variants

This diagram provides an overview of the orientation designations for the cylinder with piston rod.



Orientation:

Festo = product identification (rating plate) as reference point

O = top

U = underneath

R = right

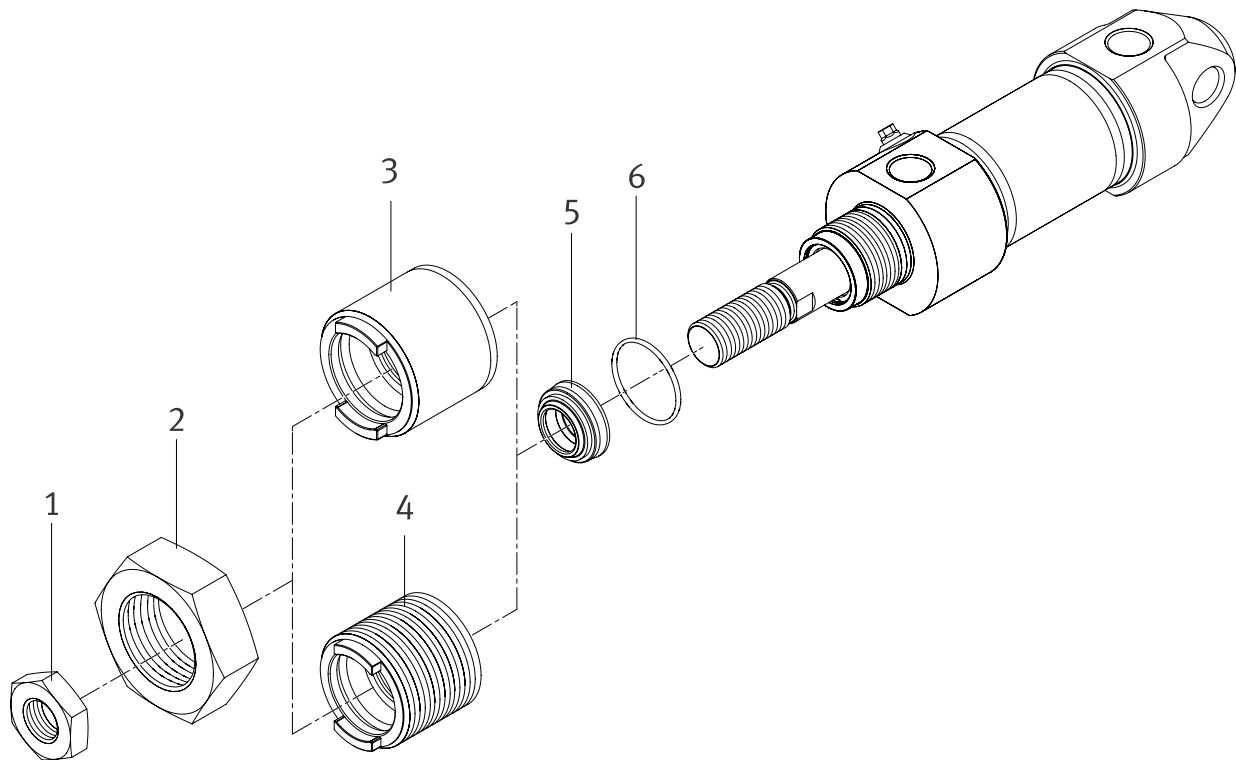
L = left

V = front

H = rear

3 Component overview

3.1 Standard cylinder, to ISO 6432, stainless steel, CRDSNU-... (incl. S6, A1, A3 without A2 and TT)



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).

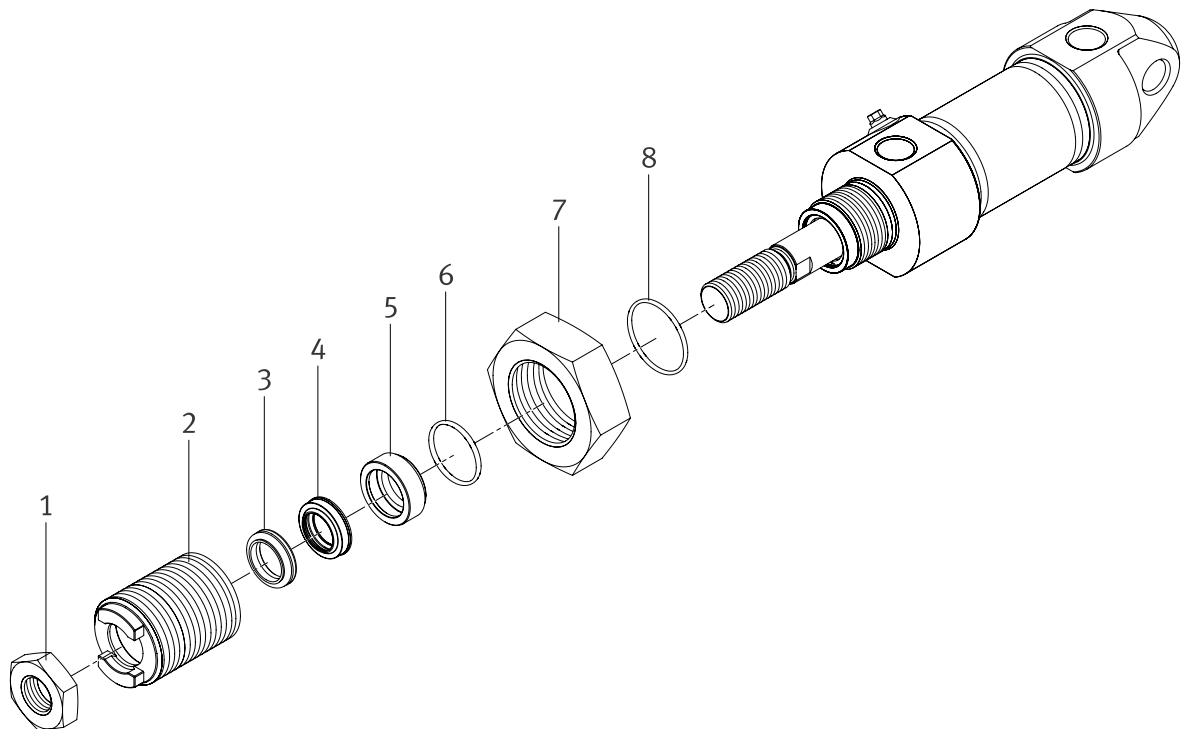
Item	Designation	Note
1	Hex nut, piston rod	Not with CRDSNU-12 / 16 / 20-...
2	Hex nut, sealing seat	Not with -MG-
3	Sealing seat MG	
4	Sealing seat	
5	Wiper seal	
6	O-ring	



Note

Only the fully assembled sealing seat (item 3 or 4 and 5, see above) can be ordered as a spare part. It is recommended to order the O-ring (item 6, see above) at the same time.

3.2 Standard cylinder, to ISO 6432, stainless steel, CRDSNU-... (A2 or TT only)



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).

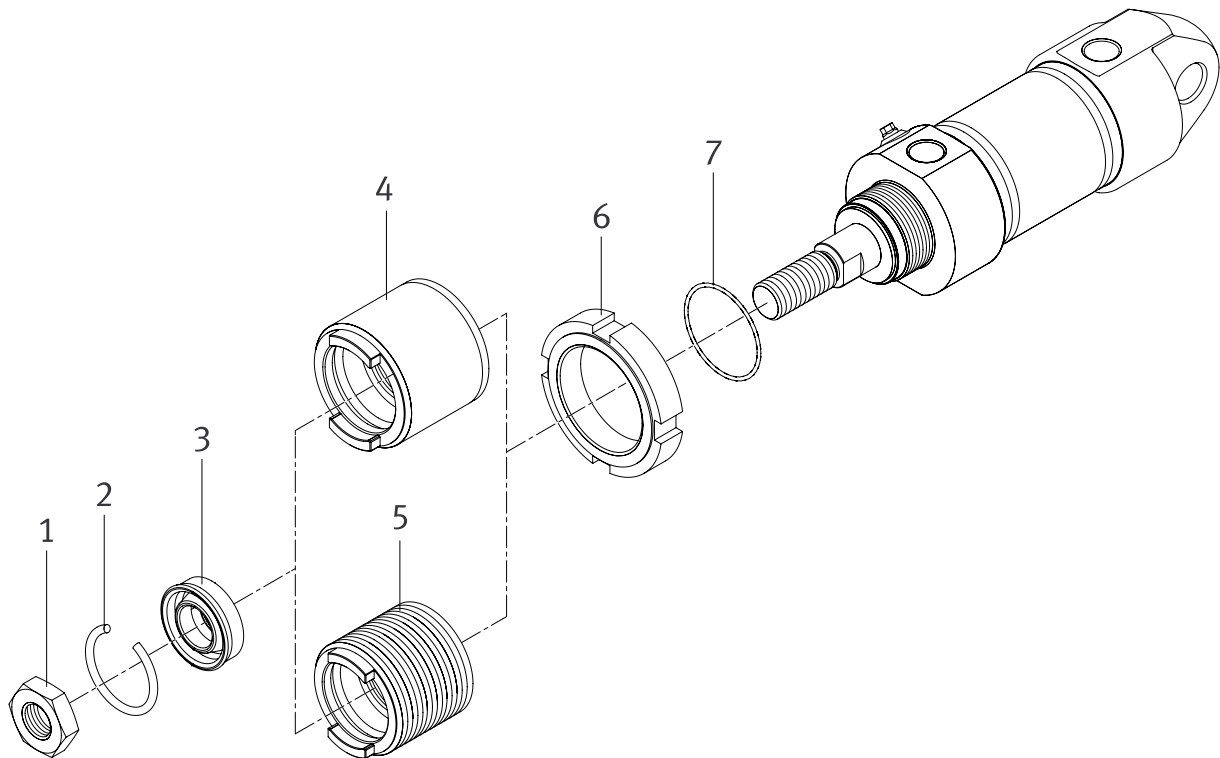
Item	Designation	Note
1	Hex nut, piston rod	Not with CRDSNU-12 / 16 / 20-...
2	Sealing seat	
3	Excluder module	
4	Wiper seal	
5	Insert	
6	O-ring	
7	Hex nut, sealing seat	
8	O-ring	



Note

Only the fully assembled sealing seat (item 2 to 6, see above) can be ordered as a spare part. It is recommended to order the O-ring (item 8, see above) at the same time.

3.3 Round cylinder, stainless steel, CRDSNU-... (incl. S6, A1, A3 without A2 and TT)



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).

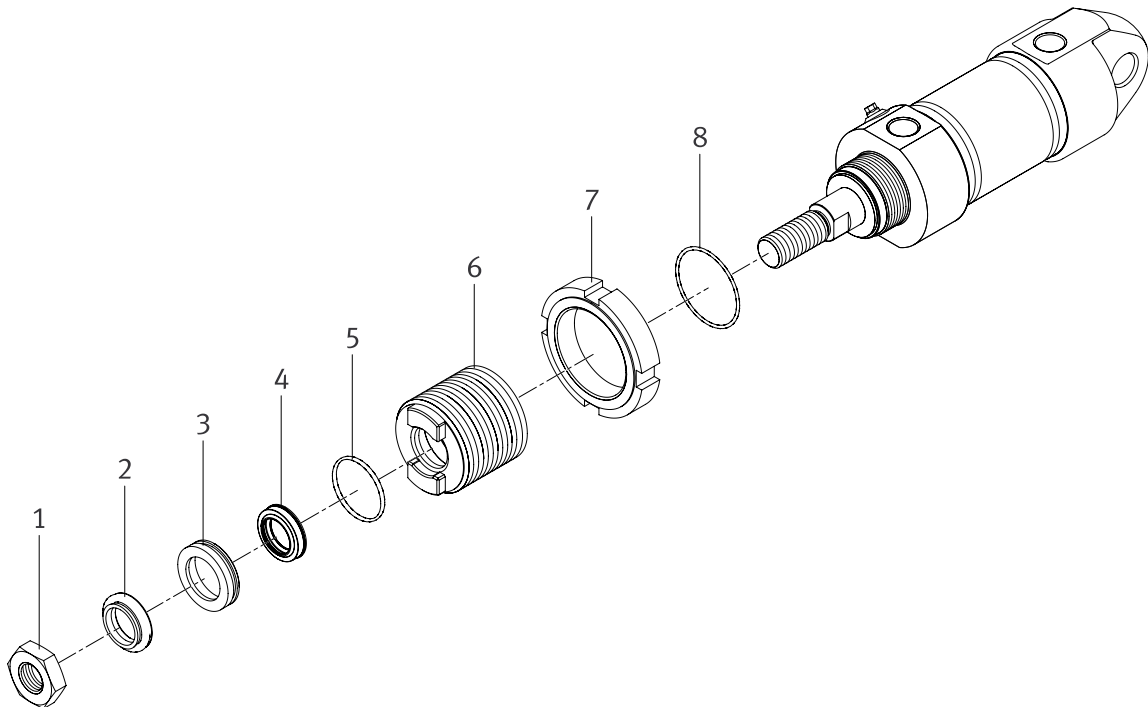
Item	Designation	Note
1	Hex nut, piston rod	
2	Circlip	S6 only
3	Wiper seal	
4	Sealing seat MG	
5	Sealing seat	
6	Slotted nut	Not with -MG-
7	O-ring	



Note

Only the fully assembled sealing seat (item 2, 3 and 4 or 5, see above) can be ordered as a spare part. It is recommended to order the O-ring (item 7, see above) at the same time.

3.4 Round cylinder, stainless steel, CRDSNU-... (A2 or TT only)



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).

Item	Designation	Note
1	Hex nut, piston rod	
2	Sealing seat	
3	Excluder module	
4	Insert sleeve	
5	Wiper seal	
6	O-ring	
7	Slotted nut	
8	O-ring	



Note

Only the fully assembled sealing seat (item 2 to 6, see above) can be ordered as a spare part. It is recommended to order the O-ring (item 8, see above) at the same time.

4 Repair steps

Only the complete sealing seat can be replaced on the cylinder of the type CRDSNU.

4.1 Preparation

- Before starting the repair, remove any attachments in accordance with the instructions in 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 sealing seat 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.

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 the cylinder CRDSNU-...-A1

The description in this chapter can be used to repair cylinders of the type CRDSNU-...-A1 with the following features:

Code	Description	Code	Description
P	Elastic cushioning rings/pads at both ends	S2	Through piston rod (not possible with MQ and MG)
PPS	Self-adjusting pneumatic cushioning	...K2	Extended male piston rod thread (not possible with K3)
PPV	Adjustable pneumatic cushioning	K3	Female piston rod thread (not possible with K2 and K5)
A	Position sensing	...K5	Special piston rod thread (not possible with K3)
MQ	Short end cap without swivel mounting (not possible with S2)	...K8	Extended piston rod at front
MG	Sealing seat without mounting thread (not possible with S2)		

Repair steps (→ [Chapter 4.8 on page 14](#)).

4.4 Repairing the cylinder CRDSNU-...-S6

The description in this chapter can be used to repair cylinders of the type CRDSNU-...-S6 with the following features:

Code	Description
P	Elastic cushioning rings/pads at both ends
PPV	Adjustable pneumatic cushioning
A	Position sensing
MQ	Short end cap without swivel mounting (not possible with S2)
MG	Sealing seat without mounting thread (not possible with S2)

Code	Description
S2	Through piston rod (not possible with MQ and MG)
...K2	Extended male piston rod thread (not possible with K3)
K3	Female piston rod thread (not possible with K2 and K5)
...K5	Special piston rod thread (not possible with K3)
...K8	Extended piston rod at front

Repair steps (→ [Chapter 4.8 on page 14](#)).

4.5 Repairing the cylinder CRDSNU-...-A3

The description in this chapter can be used to repair cylinders of the type CRDSNU-...-A3 with the following features:

Code	Description
P	Elastic cushioning rings/pads at both ends
PPS	Self-adjusting pneumatic cushioning
PPV	Adjustable pneumatic cushioning
A	Position sensing
MQ	Short end cap without swivel mounting (not possible with S2)
MG	Sealing seat without mounting thread (not possible with S2)

Code	Description
S2	Through piston rod (not possible with MQ and MG)
...K2	Extended male piston rod thread (not possible with K3)
K3	Female piston rod thread (not possible with K2 and K5)
...K5	Special piston rod thread (not possible with K3)
...K8	Extended piston rod at front

Repair steps (→ [Chapter 4.8 on page 14](#)).

4.6 Repairing the cylinder CRDSNU-...-TT

The description in this chapter can be used to repair cylinders of the type **CRDSNU-...-TT** with the following features:

Code	Description
P	Elastic cushioning rings/pads at both ends
PPV	Adjustable pneumatic cushioning
A	Position sensing
MQ	Short end cap without swivel mounting (not possible with S2)
S2	Through piston rod (not with standard cylinder; not possible with MQ)

Code	Description
...K2	Extended male piston rod thread (not possible with K3)
K3	Female piston rod thread (not with standard cylinder; not possible with K2 and K5)
...K5	Special piston rod thread (not possible with K3)
...K8	Extended piston rod at front

Repair steps (→ [Chapter 4.8 on page 14](#)).

4.7 Repairing the cylinder CRDSNU-...-A2

The description in this chapter can be used to repair cylinders of the type **CRDSNU-...-A2** with the following features:

Code	Description	Code	Description
P	Elastic cushioning rings/pads at both ends	S2	Through piston rod (not with standard cylinder; not possible with MQ)
PPS	Self-adjusting pneumatic cushioning	...K2	Extended male piston rod thread
PPV	Adjustable pneumatic cushioning	K3	Female piston rod thread (not with standard cylinder; not possible with K2 and K5)
A	Position sensing	...K5	Special piston rod thread (not possible with K3)
MQ	Short end cap without swivel mounting (not possible with S2)	...K8	Extended piston rod at front

Repair steps (→ [Chapter 4.8 on page 14](#)).

4.8 Repair steps for replacing the sealing seat

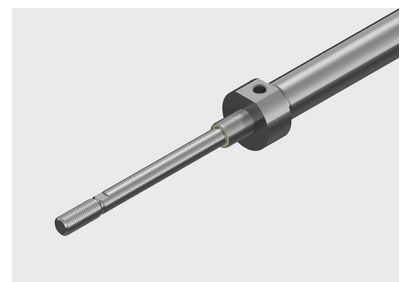
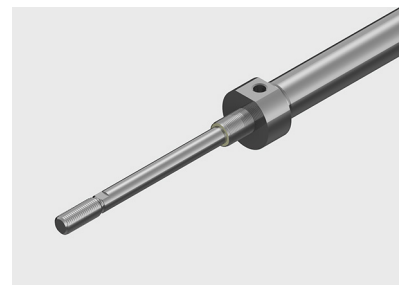
4.8.1 Removing the sealing seat

- Loosen the sealing seat from the bearing cap (the rear bearing cap also on cylinders with through piston rod (S2)) and unscrew it.
- Pull the sealing seat away from the bearing cap and piston rod.
- Clean the thread of the bearing cap.



4.8.2 Greasing the piston rod

- Pull the piston rod as far as possible out of the cylinder barrel.
- Check the piston rod for damage.
The entire cylinder must be replaced if the piston rod is showing significant damage.
- Clean the piston rod (→ [Chapter 5.1 on page 16](#)).
- Apply a thin layer of the grease included in the set of wearing parts to the surface of the piston rod (→ [Chapter 5.2.2 on page 16](#)).



4.8.3 Assembling the new sealing seat



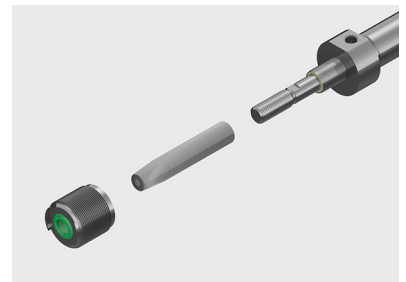
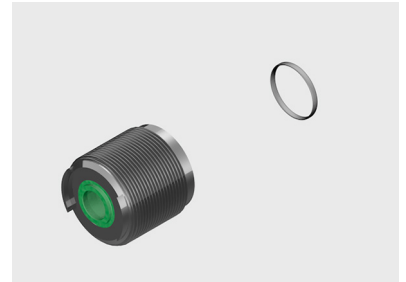
Note

It is recommended to replace the O-ring between the sealing seat and cylinder body with a new one when replacing the sealing seat (→ www.festo.com/spareparts).

- Grease the new O-ring and insert it into the groove of the sealing seat (both sealing seats on cylinders with through piston rod (S2)).
- To protect the bearing and seals, place the appropriate mounting sleeve (→ [Chapter 7.2 on page 17](#)) 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 onto the piston rod as far as the cylinder barrel.
- Screw the sealing seat into the bearing cap (both bearing caps on cylinders with through piston rod (S2)) and tighten it to the corresponding torque (see table).

Type	Torque
Standard cylinder	
CRDSNU-12	18 Nm
CRDSNU-16	18 Nm
CRDSNU-20	45 Nm
CRDSNU-25	45 Nm
Round cylinder	
CRDSNU-32	50 Nm
CRDSNU-40	70 Nm
CRDSNU-50	85 Nm
CRDSNU-63	85 Nm
CRDSNU-80	140 Nm
CRDSNU-100	140 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)) 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 with piston rod must be cleaned thoroughly to remove all foreign particles, machining residues and old lubricants before greasing 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

Festo recommends LOCTITE 7063 and LOCTITE 7070 for cleaning.

If other cleaning products are used, ensure that they do not corrode the seals of the cylinder with piston rod. If in doubt, check the resistance of the seals with the help of the information on the Festo website (→ www.festo.com).

- Use a soft cloth to remove dirt from the piston rod.

5.2 Greasing

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



Note

To ensure the life-time lubrication and so that a uniform lubricant film results:

- After greasing, move the piston rod with mounted piston and wiper seals several times along the entire stroke of the cylinder barrel.

5.2.1 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 paint brush, a fine bristle brush or similar.

5.2.2 Grease reservoir

A defined quantity of grease is enclosed between two edges or in an enclosed ring volume.

6 Maintenance and care

The cylinder with piston rod is maintenance-free due to life-time lubrication.

7 Tools

This chapter provides an overview of the tools and accessories required to repair the cylinder with piston rod.

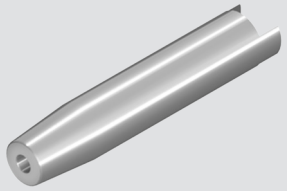
7.1 Standard tools

The following standard tools among others are required to repair the cylinder with piston rod:

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

7.2 Special tools

The following special tools are required to repair and service the cylinder with piston rod:

Designation	Additional information	Illustration
Mounting sleeve for piston rod	<p>The mounting sleeve for piston rods for protecting the Wiper 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 can be found in the information brochure "Tools and repair accessories".</p>	



Documents

Further information on the special tools and schematic diagrams can be found in the information brochure **"Tools and repair accessories"**. It can be found in the online spare parts catalogue on the Festo website (→ [Tools and Repair Accessories.pdf](#)).

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