



# Assembly and Operating Manual

## SRM

### Pneumatic swivel unit

Translation of Original Operating  
Manual

## Imprint

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### Technical changes:

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**Document number:** 1346850

**Version:** 18.00 | 08/07/2024 | en

Dear Customer,

Thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

Customer Management

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**Please read the operating manual in full and keep it close to the product.**

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# 1 General

## 1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

In addition to these instructions, the documents listed under ▶ 1.1.4 [ 8 ] are applicable.

**NOTE:** The illustrations in this manual are intended to provide a basic understanding and may deviate from the actual version.

### 1.1.1 Presentation of Warning Labels

To make risks clear, the following signal words and symbols are used for safety notes.



#### **⚠ DANGER**

##### **Dangers for persons!**

Non-observance will inevitably cause irreversible injury or death.



#### **⚠ WARNING**

##### **Dangers for persons!**

Non-observance can lead to irreversible injury and even death.



#### **⚠ CAUTION**

##### **Dangers for persons!**

Non-observance can cause minor injuries.

#### **CAUTION**

##### **Material damage!**

Information about avoiding material damage.

### 1.1.2 Definition of Terms

The term "product" replaces the product name on the title page in this manual.

### 1.1.3 Symbol definition

The following symbols are used in this manual:

■ Prerequisite for an action

1. Action 1

2. Action 2

⇒ Intermediate results

⇒ Final results

▶ 1.1.3 [📄 8]: chapter number and [page number] in hyperlinks

### 1.1.4 Applicable documents

- General terms of business \*
- Catalog data sheet of the purchased product \*

The documents labeled with an asterisk (\*) can be downloaded from [schunk.com/downloads](https://www.schunk.com/downloads).

### 1.1.5 Sizes

This operating manual applies to the following sizes:

- SRM 10
- SRM 12
- SRM 14
- SRM 16
- SRM 20
- SRM 25
- SRM 32
- SRM 40



### 1.1.6 Variants

This operating manual applies to the following variations:

#### Size 10 – 14

- SRM with absorber variant E, H or S
- SRM with absorber variant E, H or S and fluid feed-through (MDF)
- SRM with damper variant E or H and pneumatic center position (M)
- SRM with absorber variant E or H, pneumatic center position (M), and fluid feed-through (MDF)
- SRM with external stop (X)
- SRM with external stop (X) and fluid feed-through (MDF)

#### Size 16 – 40

- SRM Angle of rotation 90° or 180°
- SRM End position adjustability  $\pm 3^\circ$  or  $+3^\circ/-90^\circ$
- SRM with fluid feed-through (MDF)
- SRM With electrical feed-through (EDF)
- SRM with inductive sensor and adjustable cam (SI)
- SRM with inductive sensor and fixed cam (SF)
- SRM With pneumatic center positioning (M)

## 1.2 Warranty

If the product is used as intended, the warranty is valid for 24 months from the ex-works delivery date under the following conditions:

- Observe the maximum service life
- Observe the specified maintenance and lubrication intervals
- Observe the ambient conditions and operating conditions

Parts touching the workpiece and wear parts are not included in the warranty.

Size	Cycles, maximum number [mil.] *
10	15
12	15
14	15
16	10
20	9
25	8
32	6.5
40	5

\*) Depending on the variant, a cycle consists of two swiveling procedures:

- 0° to 180° and 180° to 0° or
- 0° to 90° and 90° to 0°

## 1.3 Scope of delivery

The scope of delivery includes

- Pneumatic swivel unit SRM in the version ordered
- Assembly and Operating Manual
- Accessory pack

### 1.3.1 Accessories pack

Size	ID number
10	1402902
12	1402833
14	1352394
16	1333486
20	1406702
25	1011311
32	1352419
40	1333212

## 1.4 Accessories

A wide range of accessories are available for this product  
For information regarding which accessory articles can be used with the corresponding product variants, see catalog data sheet.

### 1.4.1 Spare parts packages

Spare parts packages allow for the maintenance and repair of individual components. For information on the range of the spare parts packages, see [www.schunk.com](http://www.schunk.com) > Service.

The following spare parts packages are available for this product:

- Spare part package "Sealing kit"
- Spare part package "Shock absorber"

#### Seal kit

Size	ID number
Base unit:	
10	1407715
12	1407662
14	1346995
16	1346986
20	1457853
25	1346971
32	1405116
40	1346937
Base unit with center position (M):	
10-M	1483913
12-M	1483920
14-M	1483924
16-M	1483926
20-M	1490555
25-M	1483929
32-M	1483945
40-M	1483954
Fluid feed-through (MDF):	
16-MDF	1346989
20-MDF	1457856
25-MDF	1346977
32-MDF	1405121
40-MDF	1346946

**Shock absorber**

Size	ID number
Base unit:	
10	1407726
12	1407664
12-S	1520585
14	1346992
14-S	1409885
16	1346980
20	1457861
25	1346959
32	1405125
40	1346927
with external stop (X):	
10-X	1407727
12-X	1407665
14-X	1346998

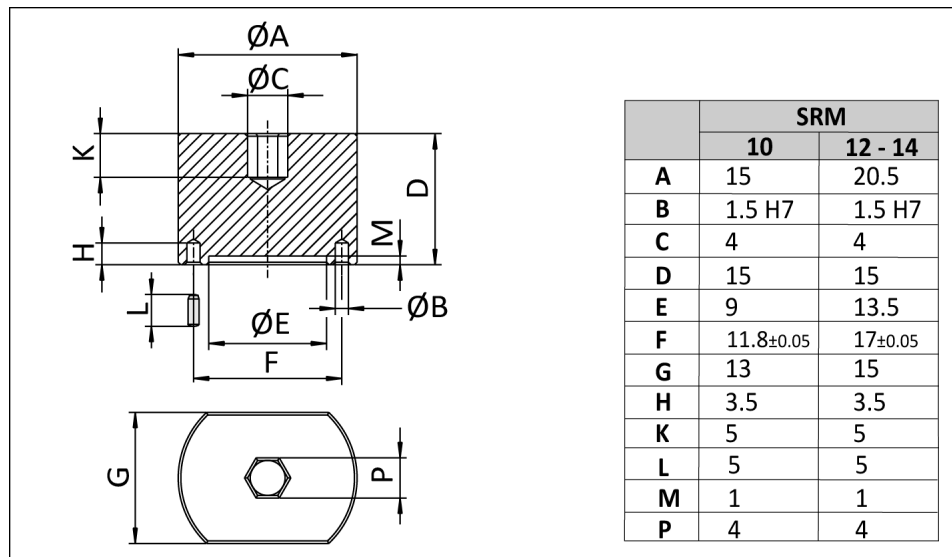
**1.4.2 "Inductive monitoring" mounting kit**

Size	ID number
16-SI	1483226
16-SF	1483228
16-SI (4P) *	1496586
16-SF (4P) *	1496612
20-SI	1483229
20-SF	1483230
25-SI	1483232
25-SF	1483234
32-SI	1483236
32-SF	1483238
40-SI	1483240
40-SF	1483242

\* SRM 16 combined with a fluid feed-through (MDF) requires an attachment kit with the abbreviation (4P).

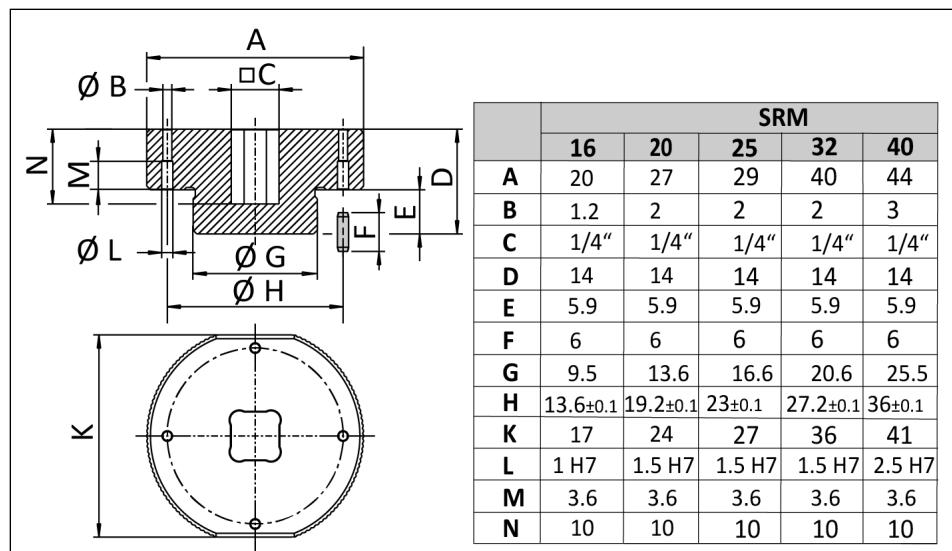
### 1.4.3 Tools

#### Size 10 – 14



Tool for dismantling the product, specifications in mm

#### Size 16 – 40



Tool for dismantling the product, specifications in mm

Size	ID number
10	1407760
12	1346923
14	1346923
16	1331216
20	1331218
25	1331220
32	1331221
40	1331223

## 2 Basic safety notes

### 2.1 Intended use

The product may only be used for swiveling permissible attachment parts or workpieces.

- The product may only be used within the scope of its technical data, ▶ 3 [📄 23].
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/ automated system. The applicable guidelines for the machine/ automated system must be observed and complied with.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

### 2.2 Not intended use

Inappropriate use includes using the product as a cutting tool or drilling tool, for example.

It is forbidden to use the product outdoors, underground or in explosive atmospheres.

- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

### 2.3 Constructional changes

#### Implementation of structural changes

Modifications, changes or reworking, e.g. additional threads, holes, or safety devices, can damage the product or impair its functionality or safety.

- Structural changes should only be made with the written approval of SCHUNK.

## 2.4 Spare parts

### Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

## 2.5 Ambient conditions and operating conditions

### Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

- Make sure that the product is used only in the context of its defined application parameters, ▶ 3 [📄 23].

## 2.6 Personnel qualification

### Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

#### Trained electrician

Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.

#### Qualified personnel

Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.

#### Instructed person

Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.

#### Service personnel of the manufacturer

Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

## 2.7 Personal protective equipment

### Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

## 2.8 Notes on safe operation

### Incorrect handling of the personnel

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.



## 2.9 Transport

### Handling during transport

Incorrect handling during transport may impair the product's safety and cause serious injuries and considerable material damage.

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

## 2.10 Malfunctions

### Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

## 2.11 Disposal

### Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

## 2.12 Fundamental dangers

### General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

### 2.12.1 Protection during handling and assembly

#### Incorrect handling and assembly

Incorrect handling and assembly may impair the product's safety and cause serious injuries and considerable material damage.

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

#### Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

## 2.12.2 Protection during commissioning and operation

### Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

## 2.12.3 Protection against dangerous movements

### Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- Never rely solely on the response of the monitoring function to avert danger. Until the installed monitors become effective, it must be assumed that the drive movement is faulty, with its action being dependent on the control unit and the current operating condition of the drive. Perform maintenance work, modifications, and attachments outside the danger zone defined by the movement range.
- To avoid accidents and/or material damage, human access to the movement range of the machine must be restricted. Limit/prevent accidental access for people in this area due through technical safety measures. The protective cover and protective fence must be rigid enough to withstand the maximum possible movement energy. EMERGENCY STOP switches must be easily and quickly accessible. Before starting up the machine or automated system, check that the EMERGENCY STOP system is working. Prevent operation of the machine if this protective equipment does not function correctly.

## 2.12.4 Protection against electric shock

### Possible electrostatic energy

Components or assembly groups may become electrostatically charged. When the electrostatic charge is touched, the discharge may trigger a shock reaction leading to injuries.

- The operator must ensure that all components and assembly groups are included in the local potential equalisation in accordance with the applicable regulations.
- While paying attention to the actual conditions of the working environment, the potential equalisation must be implemented by a specialist electrician according to the applicable regulations.
- The effectiveness of the potential equalisation must be verified by executing regular safety measurements.

## 2.13 Notes on particular risks



### **⚠ DANGER**

#### **Risk of fatal injury from suspended loads!**

Falling loads can cause serious injuries and even death.

- Stand clear of suspended loads and do not step within their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.
- Wear suitable protective equipment.



### **⚠ WARNING**

#### **Risk of injury from objects falling and being ejected!**

Falling and ejected objects during operation can lead to serious injury or death.

- Take appropriate protective measures to secure the danger zone.



### **⚠ WARNING**

#### **Risk of injury due to unexpected movements!**

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.



### **⚠ WARNING**

#### **Risk of injury from sharp edges and corners!**

Sharp edges and corners can cause cuts.

- Use suitable protective equipment.



### **⚠ WARNING**

#### **Risk of burns through contact with hot surfaces!**

Surfaces of components can heat up severely during operation. Skin contact with hot surfaces causes severe burns to the skin.

- For all work in the vicinity of hot surfaces, wear safety gloves.
- Before carrying out any work, make sure that all surfaces have cooled down to the ambient temperature.



### **⚠ WARNING**

#### **Risk of injury from parts coming loose!**

If the shock absorbers are faulty, the product can become damaged. Parts coming loose in this way can lead to injuries.

- Regularly check the components for wear and damage.



**⚠ WARNING**

**Risk of injury if the condition or behavior of the product is undefined!**

Cutting off the compressed air supply in an uncontrolled manner could lead to undefined states and behavior. This may cause personal injury or material damage.

- The operator must define suitable emergency stop and restarting strategies.
  - ⇒ Emergency stop strategies: e.g. by means of controlled shut down
  - ⇒ Restarting strategies: e.g. using pressure build-up valves or suitable valve switching sequences



**⚠ WARNING**

**Risk of injury due to magnetic fields in the immediate vicinity!**

In case of exposure to magnetic fields, the product may malfunction. Workpieces may fall down or be ejected and cause severe injuries.

- Sufficiently shield magnetic fields in the immediate vicinity of the product.
- Make sure that the product is prevented from malfunctioning.



**⚠ WARNING**

**Risk of injury due to contact with lubricants!**

Lubricant may cause irritation and allergic reactions if it contacts the skin or eyes.

- Avoid contact between lubricant and skin or eyes.
- Wear safety goggles and protective gloves.
- Observe information on the safety data sheet of the lubricant.

## 3 Technical data

### 3.1 Basic data, size 10 – 14

Designation	Value
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
Nominal operating pressure [bar]	6
Min. pressure [bar], Variant -S	3
Min. pressure [bar], Variant -H	3
Min. pressure [bar], Variant -E	4.5
Min. pressure [bar], Variant -X	3
Max. pressure [bar]	6.5

More technical data is included in the catalog data sheet. Whichever is the latest version.

The catalog data sheet contains diagrams for designing the maximum permissible mass moment of inertia.

The SCHUNK contact person provides support for designing further applications.

#### Ambient conditions and operating conditions

Designation	Value
Ambient temperature [°C]	
Min.	+5
Max.	+60
Protection class IP	40
Noise emission [dB(A)]	≤ 70

### 3.2 Basic data, size 16 – 40

Designation	Value
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
Nominal operating pressure [bar]	6
Min. pressure [bar]	4
Max. pressure [bar]	6.5
Max. pressure [bar] with MDF	8
Designation	Value
Max. Voltage [V]	48
Max. Current per wire [A]	1

Tab.: Connection data for variant with electrical rotary feed-through "EDF"

More technical data is included in the catalog data sheet. Whichever is the latest version.

The catalog data sheet contains diagrams for designing the maximum permissible mass moment of inertia.

The SCHUNK contact person provides support for designing further applications.

#### Ambient conditions and operating conditions

Designation	Value
Ambient temperature [°C]	
Min.	+5
Max.	+60
Protection class IP	65
Noise emission [dB(A)]	≤ 70

Designation	Value	
	EDF 48 V / 1 A	EDF 48 V / 750 mA
Ambient temperature [°C]		
Min.	+5	+50
Max.	+50	+60
Protection class IP	65	
Noise emission [dB(A)]	≤ 70	

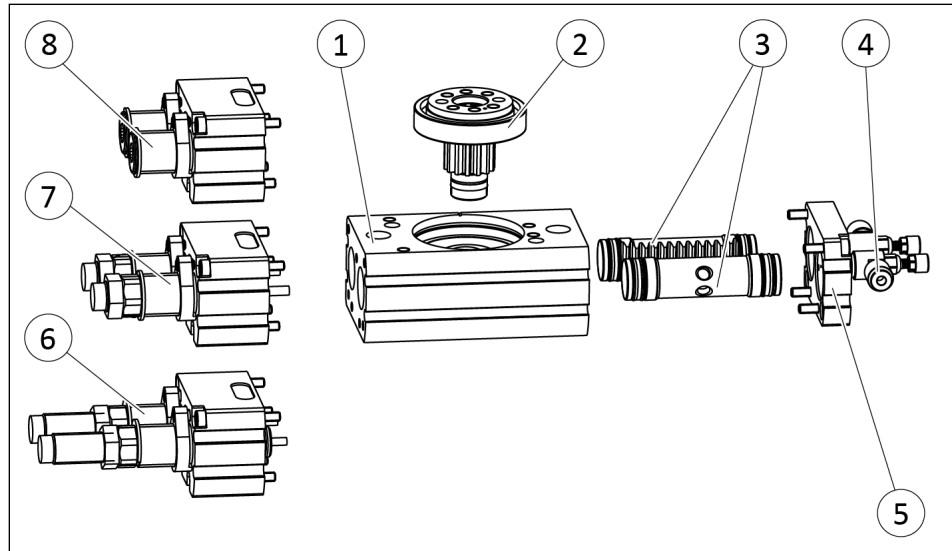
Tab.: Ambient conditions and operating conditions for variant with electrical rotary feed-through (EDF)



## 4 Design and description, size 10 – 14

### 4.1 Design

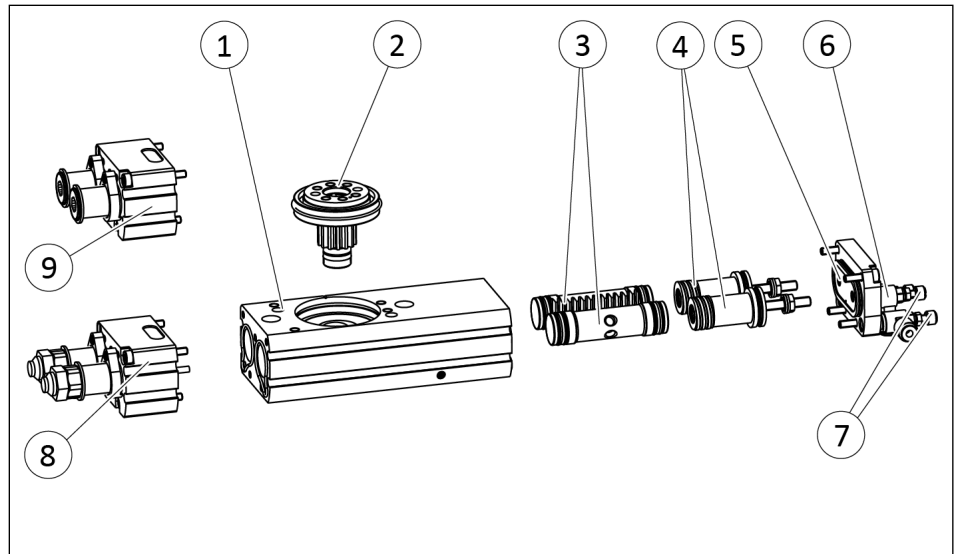
#### 4.1.1 Base unit with absorber, variant -E / -H / -S



Structure base unit with absorber, variant -E / -H / -S

1	Housing
2	Pinion
3	Piston
4	Compressed air connections
5	Cover
6	Optional: stops with speed absorber, variant -S
7	Optional: stops with speed absorber, variant -H
8	Stops with absorber, variant -E

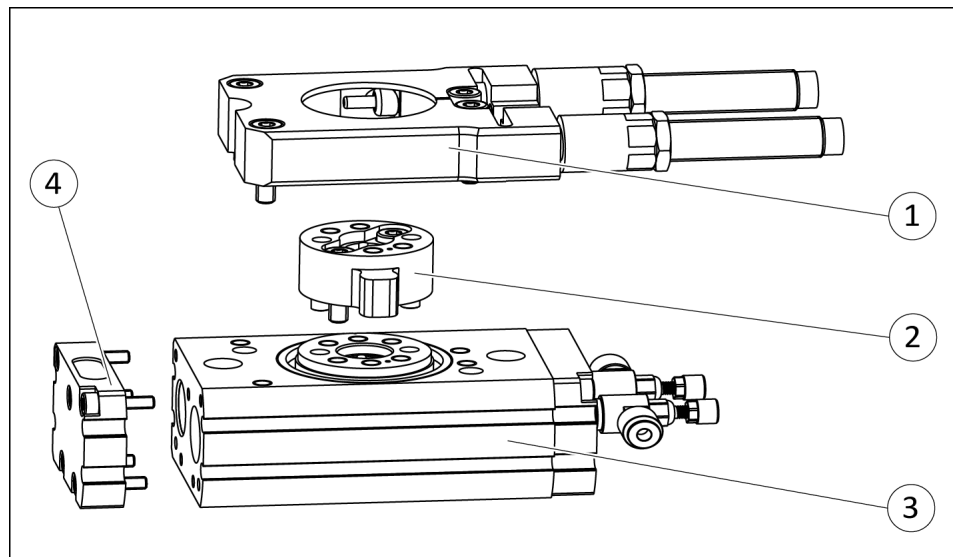
### 4.1.2 Base unit with center position (variant -M) and damper variant -E / -H



Base unit structure with center position (variant -M) and absorber variant -E / -H

1	Housing
2	Pinion
3	Piston
4	Centering piston
5	Cover
6	Flow control valve
7	Exhaust air throttle valve
8	Optional: Stops with absorber, variant -H
9	Stops with absorber, variant -E

### 4.1.3 Base unit with external stop (variant -X)

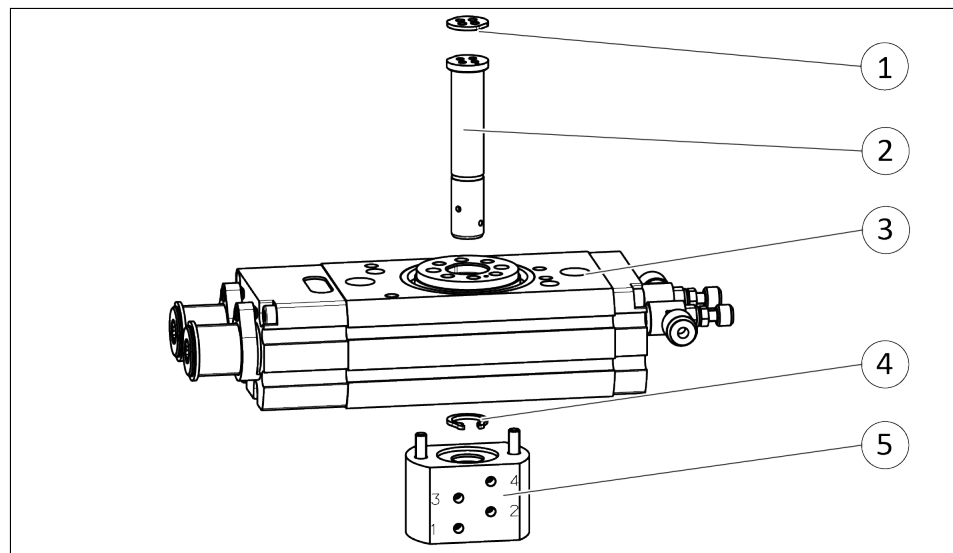


Base unit with external stop (variant -X)

- |   |                    |
|---|--------------------|
| 1 | Housing with stops |
| 2 | Stop lever         |
| 3 | Base unit          |
| 4 | Closure plate      |

### 4.1.4 Variant with fluid feed-through (MDF)

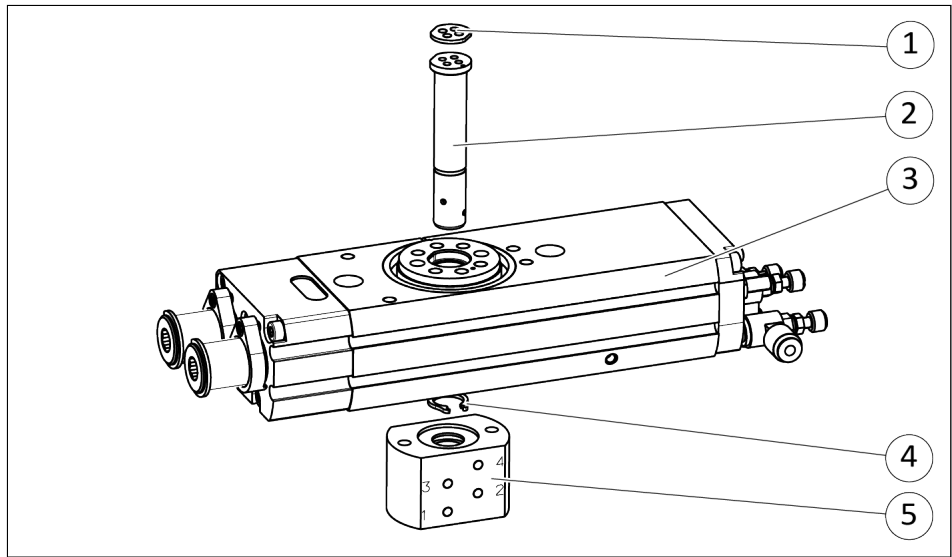
#### Absorber variant -E / -H / -S



Base unit with fluid feed-through (MDF)

- |   |                                   |
|---|-----------------------------------|
| 1 | Flat gasket                       |
| 2 | Shaft fluid feed-through          |
| 3 | Base unit with fluid feed-through |
| 4 | Safety ring                       |
| 5 | Distributor                       |

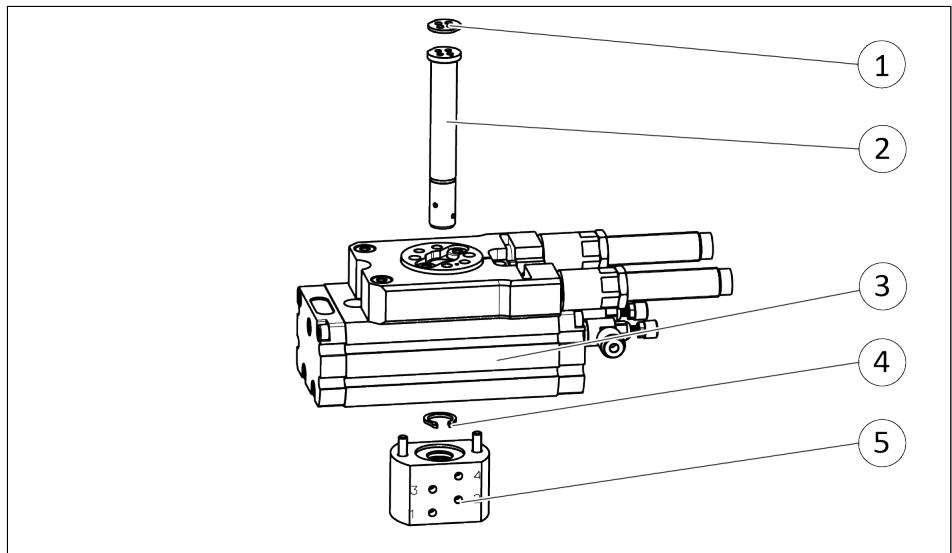
**Base unit with center position (Variant -M)**



*Base unit with center position (variant -M) and fluid feed-through (MDF)*

- |   |                                   |
|---|-----------------------------------|
| 1 | Flat gasket                       |
| 2 | Shaft fluid feed-through          |
| 3 | Base unit with fluid feed-through |
| 4 | Safety ring                       |
| 5 | Distributor                       |

**Absorber variant -X**



*Base unit with fluid feed-through (MDF)*

- |   |                                   |
|---|-----------------------------------|
| 1 | Flat gasket                       |
| 2 | Shaft fluid feed-through          |
| 3 | Base unit with fluid feed-through |
| 4 | Safety ring                       |
| 5 | Distributor                       |

## 4.2 Description

The product is a pneumatic rotary actuator for rotating and swiveling movements.

The following designs are possible for the product:

### Angle of rotation

- In the -E / -H / -S variants, the angle of rotation is 180° and can be adjusted from +5° to -95° for each end position.
- In variant X, the angle of rotation is 90° or 180° and can be adjusted by +/- 3° for each end position.

### Center position variant (M)

With the center position variant, a third (center) position can be approached.

### Fluid feed-through (MDF) variant

With the fluid feed-through variant, gasses can be fed through without hoses.

### Variant with external stop (X)

In the variant external stop, the load is screwed directly onto a stop lever and intercepted. The impact energy in the end position is not dissipated via the drive pinion. Thus, higher loads are possible.

### Possible combinations of variants

The following variants can be mounted together on the product:

- Fluid feed-through (MDF)
- External stop (X)

### Possible combination of variants for center position

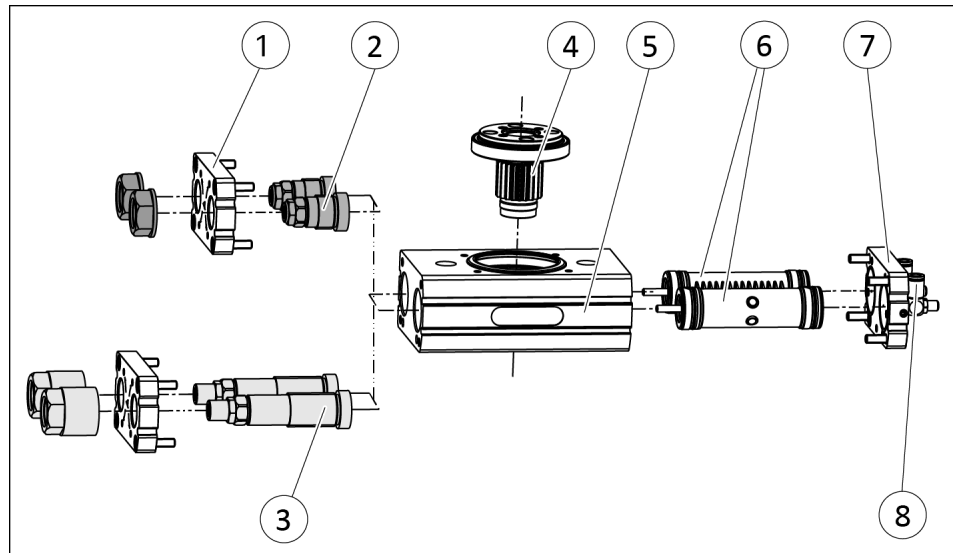
The following variants can be mounted together on the product with center position (variant -M):

- Fluid feed-through (MDF)
- Stops with absorber, variant -H or -E

## 5 Design and description, size 16 -40

### 5.1 Design

#### 5.1.1 Base unit

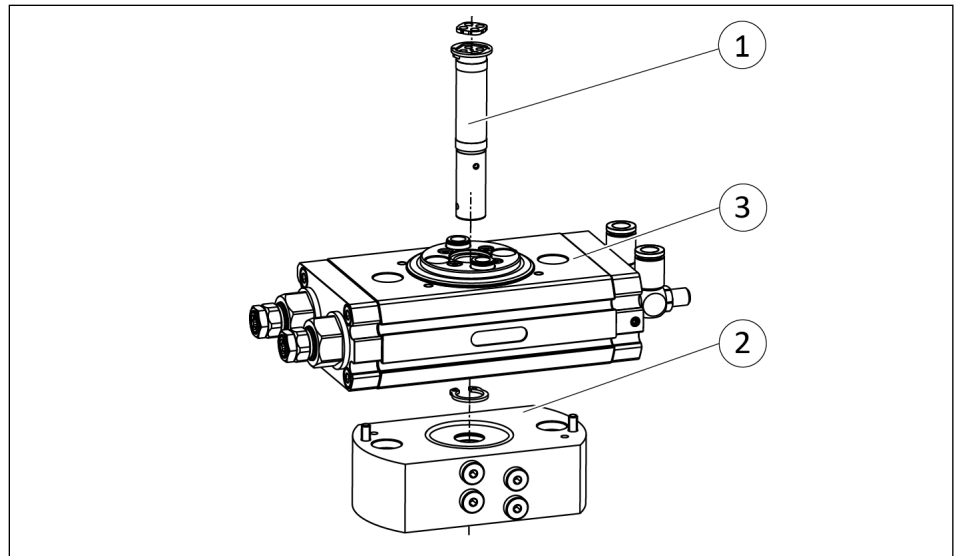


Base unit setup

1	Stop cover
2	Stops for adjusting the end positions for variant "End position adjustability $\pm 3^\circ$ "
3	Optional: Stops for adjusting the end positions for variant "End position adjustability $\pm 3/-90^\circ$ "
4	Pinion
5	Housing
6	Pistons with shock absorbers
7	Cover
8	Compressed air connections

### 5.1.2 Variant with fluid feed-through (MDF)

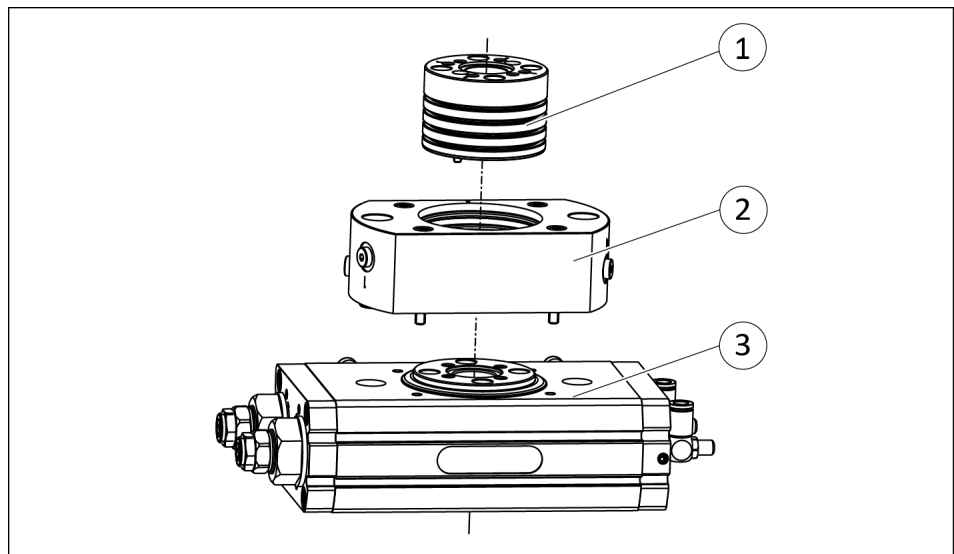
#### Size 16



Base unit with fluid feed-through (MDF)

- |   |                                 |
|---|---------------------------------|
| 1 | Flange shaft fluid feed-through |
| 2 | Fluid feed-through housing      |
| 3 | Base unit                       |

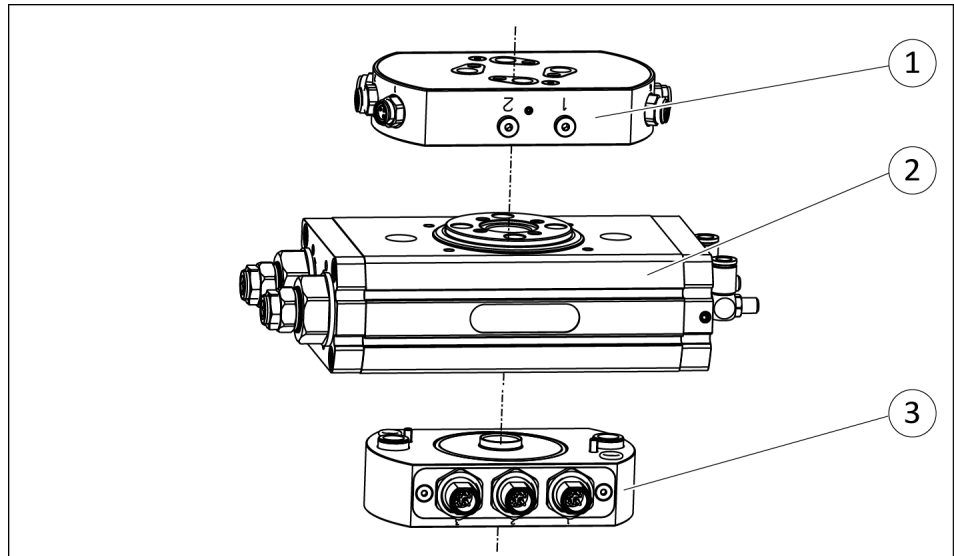
#### Size 20 - 40



Base unit with fluid feed-through (MDF)

- |   |                                 |
|---|---------------------------------|
| 1 | Flange shaft fluid feed-through |
| 2 | Fluid feed-through housing      |
| 3 | Base unit                       |

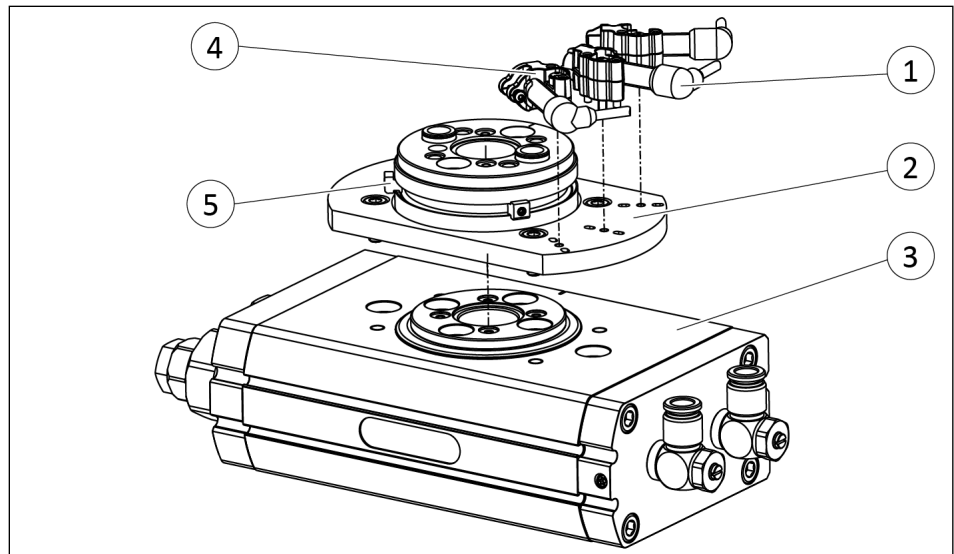
### 5.1.3 Variant with electric rotary feed-through (EDF)



Assembly with EDF

- |   |                   |
|---|-------------------|
| 1 | Distributor plate |
| 2 | Base unit         |
| 3 | EDF flange        |

### 5.1.4 Variant with inductive sensor (SI) / (SF)

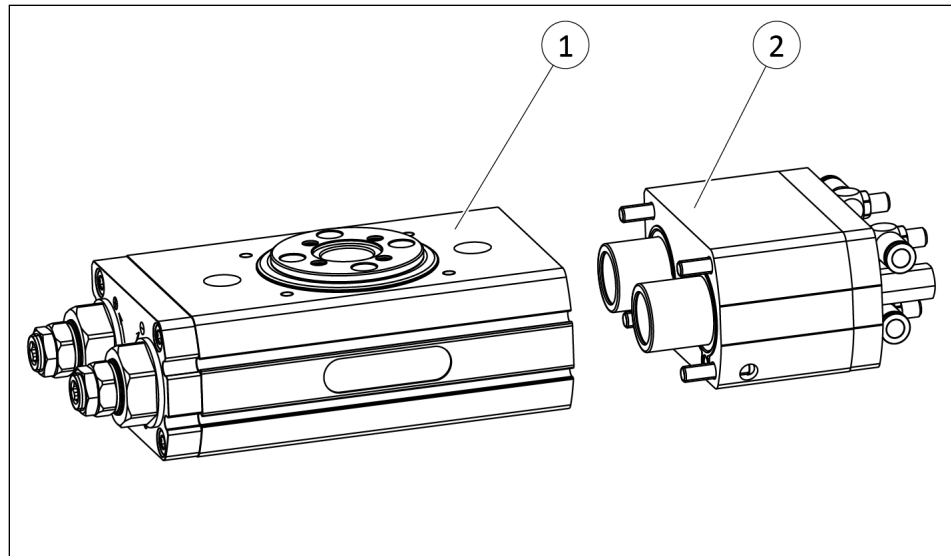


Base unit with inductive sensor (SI) / (SF)

- |   |                            |
|---|----------------------------|
| 1 | Sensor                     |
| 2 | Base plate                 |
| 3 | Base unit                  |
| 4 | Sensor bracket             |
| 5 | Cams for sensor monitoring |
|   | – SI variant: adjustable   |
|   | – SF variant: fixed        |



### 5.1.5 Base unit with center position (variant -M)



Base unit structure with center position (variant -M)

1	Base unit
2	Attaching center position (0°-90°-180°)

## 5.2 Description

The product is a pneumatic rotary actuator for rotating and swiveling movements.

The following designs are possible for the product:

### Angle of rotation

Depending on the variant, an angle of rotation of 180° or 90° is possible for the product.

### End position adjustability

Depending on the variant, the end positions can be set in the ranges of + 3° / -3° or + 3° / -90°.

### Fluid feed-through (MDF) variant

With the fluid feed-through variant, gasses can be fed through without hoses.

### Electrical rotary feed-through (EDF) variant

With the electrical rotary feed-through (EDF) variant, signals for supplying the product can be carried out with operational safety.

### Variant with inductive sensor (SI) / (SF)

In the variant with inductive sensor (SI), up to three swivel positions can be queried.

In the variant with inductive sensor and fixed cam (SF), the swivel positions 0°, 90° and 180° can be queried.

### **Center position variant (M)**

With the center position variant, a third (center) position can be approached.

The following variants can be mounted together on the product:

- Fluid feed-through (MDF) \*
- Electrical rotary feed-through (EDF)
- Inductive sensor (SI) / (SF)
- Center position (M)

\* MDF and EDF **cannot** be combined for size 16.

## 6 Assembly and settings, size 10 – 14

### 6.1 Assembling and connecting



#### **⚠ WARNING**

##### **Risk of injury due to unexpected movements!**

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

#### **CAUTION**

##### **Material damage due to faulty settings and assembly.**

If the end position is approached too abruptly, the product may be damaged.

- Ensure the turning / swiveling movement is carried out without bouncing or bumping.
- Therefore provide sufficient throttling and damping.
- Please observe the information in the catalog data sheet.

#### **CAUTION**

##### **Material damage due to opened exhaust air throttle valves!**

If during first actuation the exhaust throttle valves are open, the product may move in an uncontrolled manner.

- Close the exhaust air throttle valves completely before applying pressure.

#### **NOTE**

- Observe the requirements for the compressed air supply, ▶ 3 [□ 23].
- In case of compressed air loss (cutting off the energy line), the product loses its dynamic effects and does not remain in a secure position. However, the use of a SDV-P pressure maintenance valve is recommended in this case in order to maintain the dynamic effect for some time.

## Overview

1. Screw the product to the machine/system, ▶ 6.2.1 [437].
  - ⇒ Use centering sleeves from the enclosed accessory pack.
  - ⇒ Observe the tightening torque for the mounting screws.
2. Fasten attachment with cylindrical pins and fastening screws to the pinion. **IMPORTANT! Insert the cylindrical pins by hand. Do not hammer the pinion.**
3. In the main air connections "A" and "B", screw in throttle valves and connect compressed air lines, ▶ 6.2.2 [441].
  - ⇒ **IMPORTANT! Property damage caused by missing components!** Mount fixed throttle and throttle valves from the accessory pack in the compressed air lines for air connections "a" and "b".
  - ⇒ Use O-rings from the accessory pack.
4. **Variant with center position (M):** Screw flow control valve into the main air connection "C" and connect compressed air line, ▶ 6.2.2 [441].
5. Check that all of the throttle valves are closed.
6. Screw in locking screws in open and not required air connections where appropriate.
7. **Variant with fluid feed-through:** remove locking screws from required connections. Screw in suitable connections and connect hoses, ▶ 6.2.3 [444].
8. Adjust end positions, ▶ 6.3.1 [448].
9. Mount the sensor, ▶ 6.4 [458].
10. Adjust swiveling speed, ▶ 6.3.2.1 [453].
11. Adjust shock absorber stroke, ▶ 6.3.2.3 [455].

## 6.2 Connections

### 6.2.1 Mechanical connection

#### NOTE

Adapter plates between the product and the machine/system as well as the product and the attachment part must be made of high-strength aluminum or steel. The tolerance class for the fitting bore is H7.

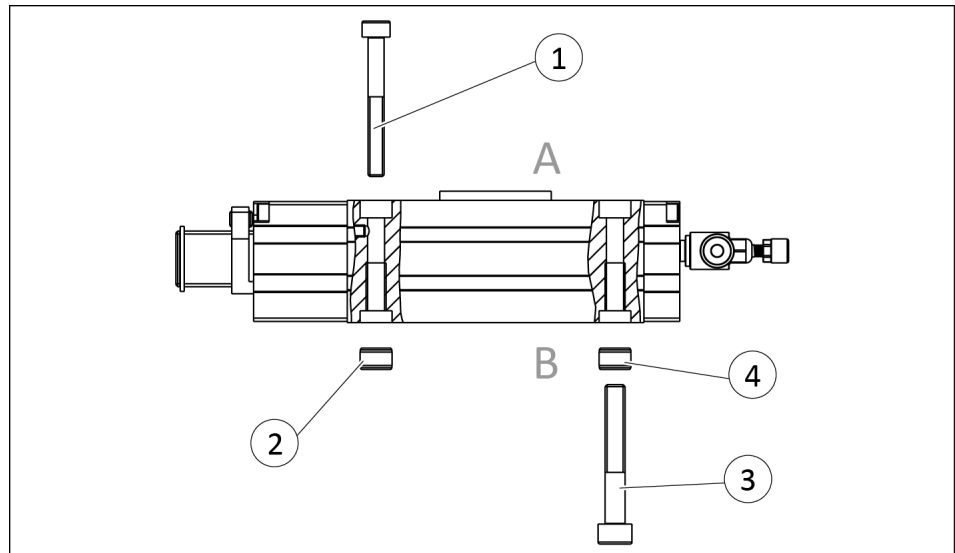
#### Connections on housing

The product can be assembled from two sides.

- On the attachment side via through-bores
- On the side of the apparatus via threaded holes

Centering sleeves for the mounting screws are included in the accessory pack.

#### Absorber variant -E / -H / -S



Assembly options

#### Connection-Side A

Size	① Screws *	② Centering sleeve
10	M3	Ø6
12	M3	Ø6
14	M4	Ø8

\* Mounting screw according to standard DIN EN ISO 4762

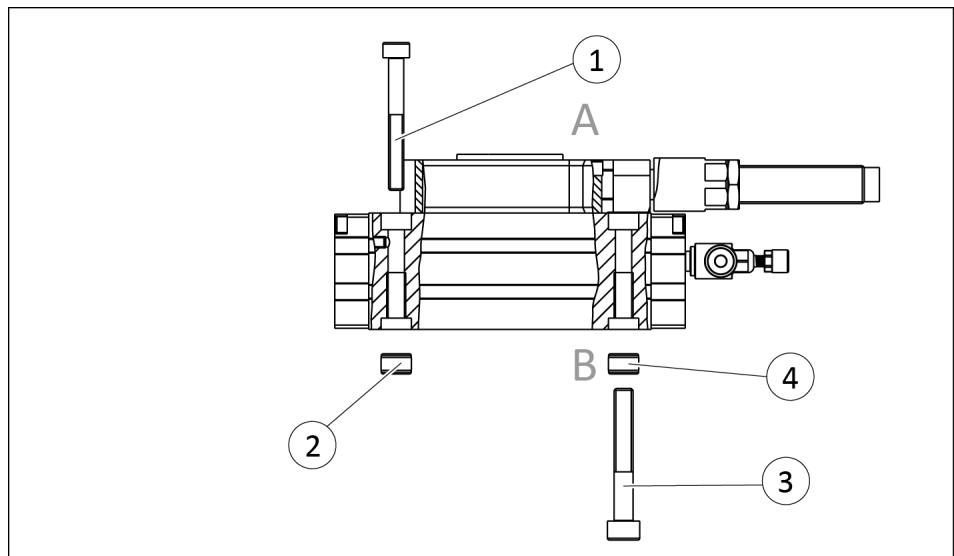
### Connection-Side B

Size	③ Screws *	④ Centering sleeve
10	M4 / 12**	Ø6
12	M4 / 12**	Ø6
14	M5/15**	Ø8

\* Mounting screw according to standard DIN EN ISO 4762, Max. strength class 8.8

\*\* Max. depth of engagement from locating surface [mm]

### Absorber variant -X



Assembly options

### Connection-Side A

Size	① Screws *	② Centering sleeve
10	M3	Ø6
12	M3	Ø6
14	M4	Ø8

\* Mounting screw according to standard DIN EN ISO 4762

### Connection-Side B

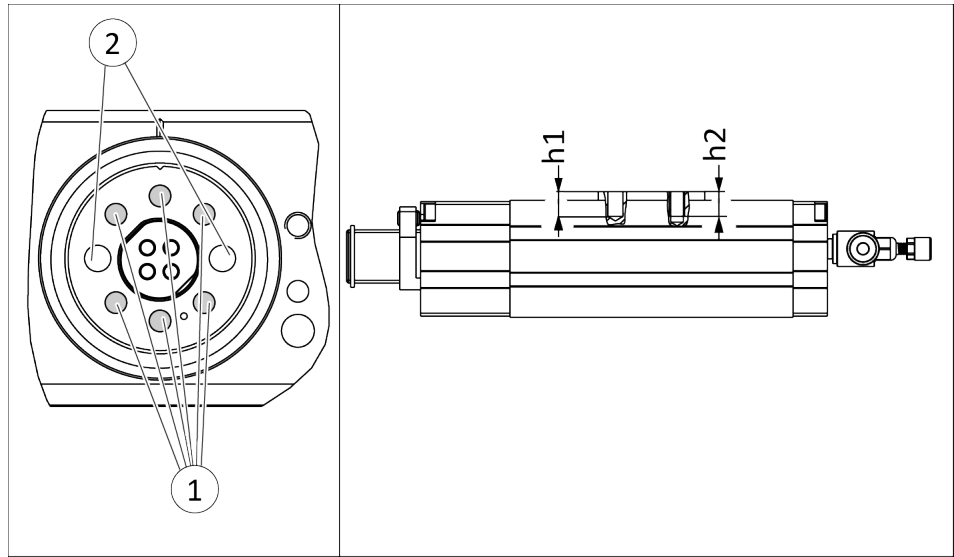
Size	③ Screws *	④ Centering sleeve
10	M4 / 12**	Ø6
12	M4 / 12**	Ø6
14	M5/15**	Ø8

\* Mounting screw according to standard DIN EN ISO 4762, Max. strength class 8.8

\*\* Max. depth of engagement from locating surface [mm]

**Connections on the pinion**

**Absorber variant -E / -H / -S**



Connections on the pinion - Illustration of the pinion in the top view and side view SRM

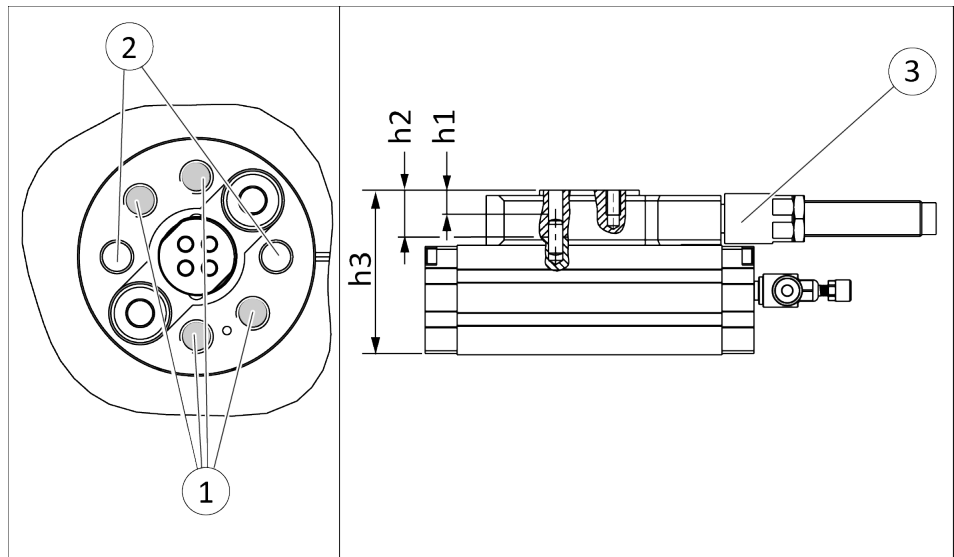
Size	① Thread *, 6x	② Fitting bore diameter for cylindrical pins [mm], 2x	h1 [mm]	h2 [mm]
10	M3	∅3	4	4.5
12	M3	∅3	4	6
14	M4	∅4	5	6.5

\* Mounting screw according to standard DIN EN ISO 4762, Strength class 12.9 for fastening the customer's load

h1 Depth of fitting for cylindrical pin

h2 Max. Screw-in depth from pinion surface

**Absorber variant -X**



Connections on the pinion - Illustration of the pinion in the top view and side view SRM

Size	① Thread *, 4x	② Fitting bore diameter for cylindrical pins [mm], 2x	h1 [mm]	h2 [mm]	h3 [mm]
10	M3	∅3	5	10.5	35.5
12	M3	∅3	5	11	41.5
14	M4	∅4	5	13.2	46.2

\* Mounting screw according to standard DIN EN ISO 4762, Strength class 12.9 for fastening the customer's load

h1 Depth of fitting for cylindrical pin

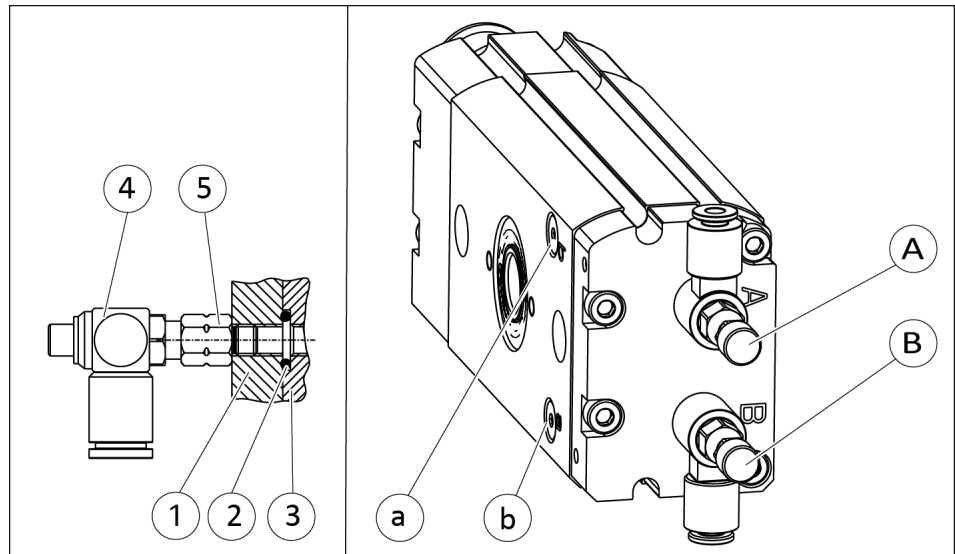
h2 Height of external stop (3)

h3 Total height



## 6.2.2 Pneumatic connection

### Base unit



Compressed air connection, base unit

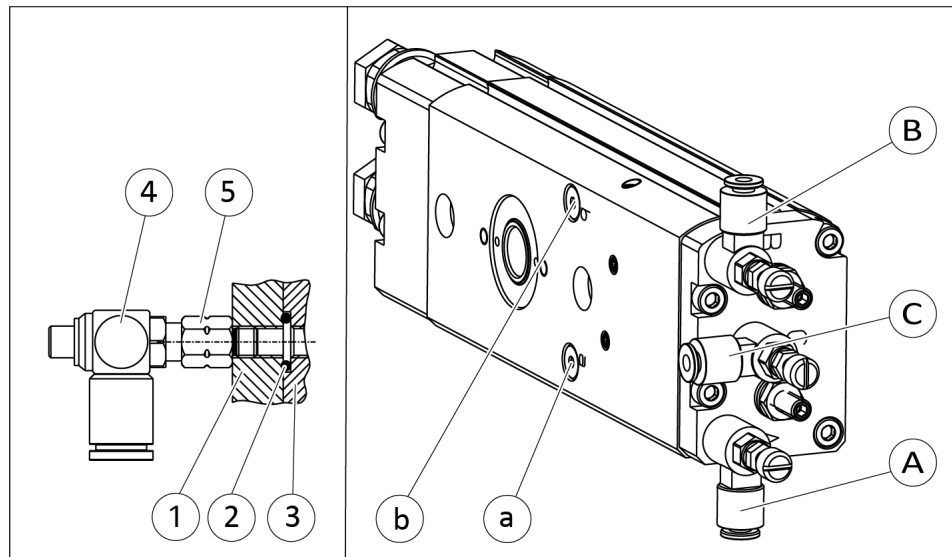
Designation	Function
Main air connections	
A *	Exhaust air throttle valve Swiveling 0° - 180°
B *	Exhaust air throttle valve Swiveling 180° - 0°
Hose-free direct connection	
a	Swiveling 0° - 180°
b	Swiveling 180° - 0°
1	Attachment
2 *	O-ring
3	Product
4 *	Exhaust air throttle valve
5 *	Fixed throttle

\* Contained in accessory pack.

### Dimensions

Item	Designation	Dimensions
A, B	Main connections	M 3
a, b	O-ring [mm] - (Hose-free direct connection)	Ø4 x 1.5

### Base unit with center position (Variant -M)



Compressed air connection, Base unit with center position (Variant -M)

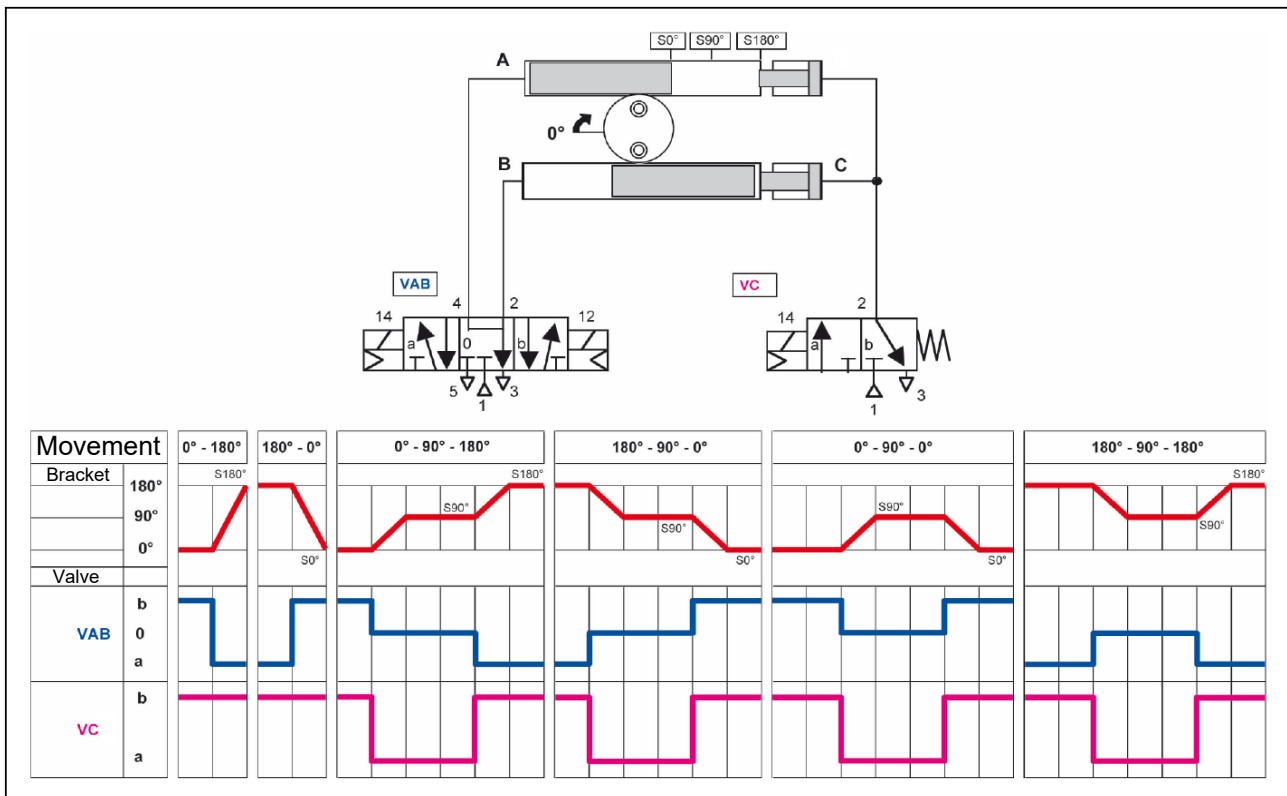
Designation	Function
Main air connections	
A *	Exhaust air throttle valve Swiveling 0° - 180°
B *	Exhaust air throttle valve Swiveling 180° - 0°
C *	Flow control valve Swiveling in center position 0° - 90°, 180° - 90°
Hose-free direct connection	
a	Swiveling 0° - 180°
b	Swiveling 180° - 0°
1	Attachment
2 *	O-ring
3	Product
4 *	Exhaust air throttle valve
5 *	Fixed throttle

\* Contained in accessory pack.

### Dimensions

Item	Designation	Dimensions
A, B, C	Main connections	M 3
a, b	O-ring [mm] - (Hose-free direct connection)	Ø4 x 1.5

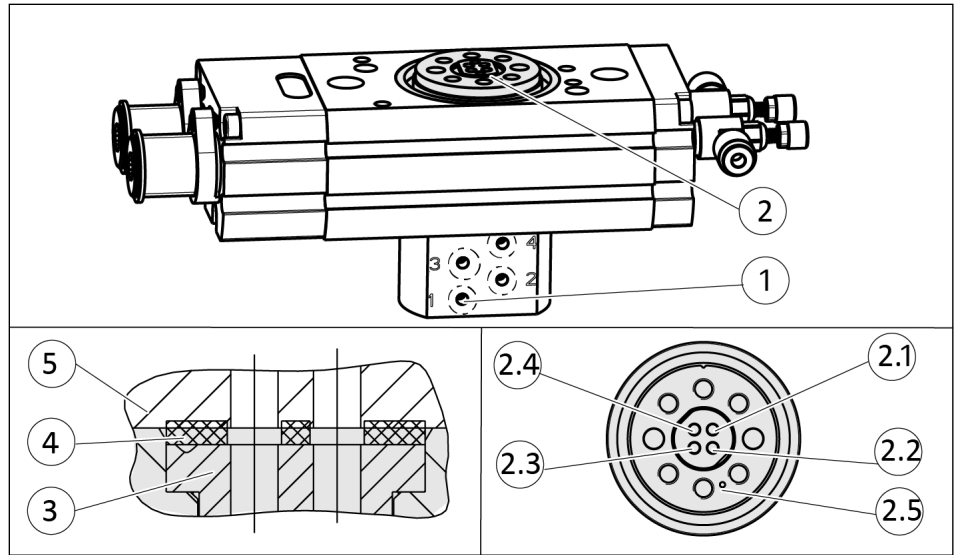
## Wiring diagram



Electrical circuit diagram actuation with one 5/3 and one 3/2 directional control valve, example

### 6.2.3 Connections to the fluid feed-through (MDF)

#### Absorber variant -E / -H / -S



Connections on the MDF, base unit with absorber, variant -E / -H / -S

1	Fluid connection – Input
2	Fluid connection – Output Hose-free direct connection
2.1	Connection "1"
2.2	Connection "2"
2.3	Connection "3"
2.4	Connection "4"
2.5	Reference point for connections – marking on the pinion
Hose-free direct connection	
3	Product
4 *	Flat gasket
5	Attachment

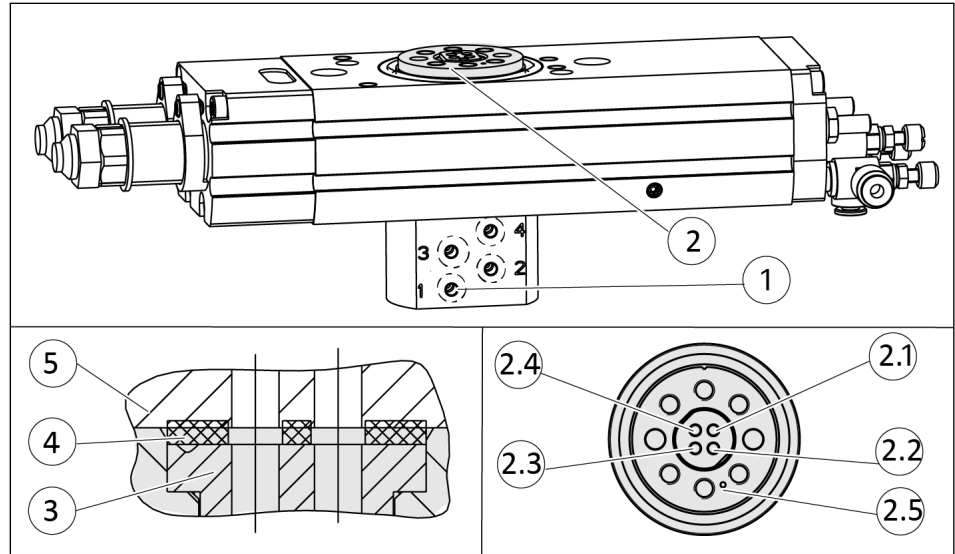
\* Contained in accessory pack.

Note: At the factory all connections have been closed with screw plugs. Remove screw plugs only if connections are needed.

**Dimensions**

Size	Item 1		Item 5	
	Fluid connection Input	Max. Ø outside [mm]	Contact surface seal	Max. Ø connection hole [mm]
10	M 3	Ø 8.5	Rz 4.5	Ø 1.5
12	M 3	Ø 8.5	Rz 4.5	Ø 2
14	M 3	Ø 8.5	Rz 4.5	Ø 2

**Base unit with center position (Variant -M)**



Connections on the MDF, base unit with center position (Variant -M)

1	Fluid connection – Input
2	Fluid connection – Output Hose-free direct connection
2.1	Connection "1"
2.2	Connection "2"
2.3	Connection "3"
2.4	Connection "4"
2.5	Reference point for connections – marking on the pinion Hose-free direct connection
3	Product
4 *	Flat gasket
5	Attachment

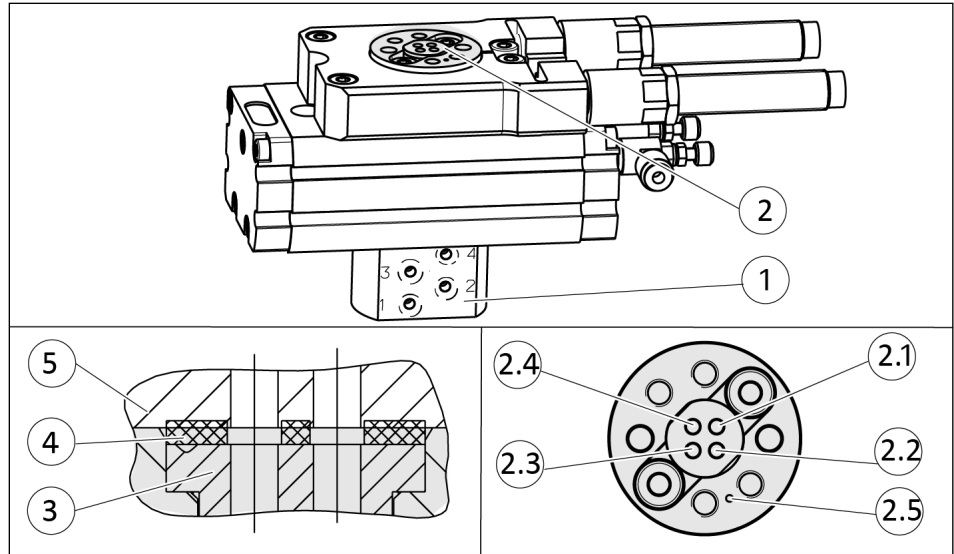
\* Contained in accessory pack.

Note: At the factory all connections have been closed with screw plugs. Remove screw plugs only if connections are needed.

**Dimensions**

Size	Item 1		Item 5	
	Fluid connection Input	Max. Ø outside [mm]	Contact surface seal	Max. Ø connection hole [mm]
10	M 3	Ø 8.5	Rz 4.5	Ø 1.5
12	M 3	Ø 8.5	Rz 4.5	Ø 2
14	M 3	Ø 8.5	Rz 4.5	Ø 2

**Absorber variant -X**



Connections on the MDF for variant with external stop (Variant -X)

1	Fluid connection – Input
2	Fluid connection – Output Hose-free direct connection
2.1	Connection "1"
2.2	Connection "2"
2.3	Connection "3"
2.4	Connection "4"
2.5	Reference point for connections – marking on the pinion
Hose-free direct connection	
3	Product
4 *	Flat gasket
5	Attachment

\* Contained in accessory pack.

Note: At the factory all connections have been closed with screw plugs. Remove screw plugs only if connections are needed.

**Dimensions**

Size	Item 1		Item 5	
	Fluid connection Input	Max. Ø outside [mm]	Contact surface seal	Max. Ø connection hole [mm]
10	M 3	Ø 8.5	Rz 4.5	Ø 1.5
12	M 3	Ø 8.5	Rz 4.5	Ø 2
14	M 3	Ø 8.5	Rz 4.5	Ø 2

**6.3 Settings**

**CAUTION**

**Material damage due to erroneous settings!**

If the end position is approached too hard, the product may be damaged.

- Adjust exhaust throttle valve and shock absorber so that the movement is braked smoothly.

For operation, the angle of rotation, the swiveling speed and the absorber stroke must be set.

The settings must always be configured under subsequent operational conditions. If the operating conditions change, e. g. weight of the workpiece, check that the movement decelerates smoothly. If necessary, readjust angle of rotation, swiveling speed and absorber stroke.

**Angle of rotation**

The angle of rotation is set in order to achieve a fine adjustment of the end positions.

If the end positions are adjusted, the swiveling speed and absorber stroke might also have to be readjusted.

**Swiveling speed and absorber stroke**

In order to ensure a smooth operating cycle for the respective operating conditions, swivel speed and absorber stroke must be attuned to one another, ▶ 6.3.4 [ 57].

Each end position is set separately. The position of the exhaust throttle valve and shock absorber may deviate from one another.

**Center position**

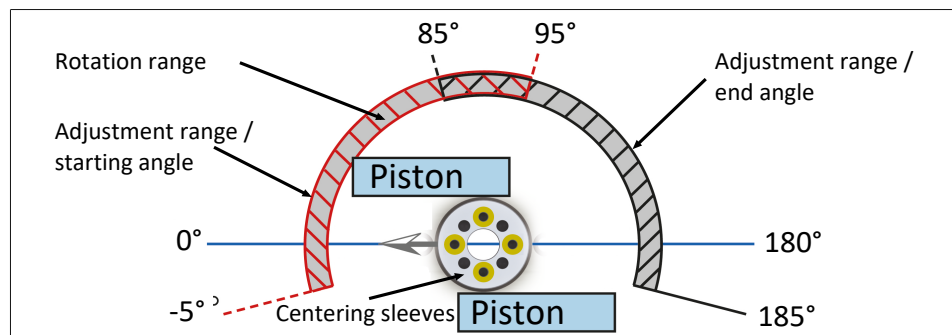
For variants with center position (M) , the center position can be adjusted by ±45°. If the center position is adjusted, the rotating angle, swiveling speed and absorber stroke also have to be readjusted.

### 6.3.1 Adjust swivel angle

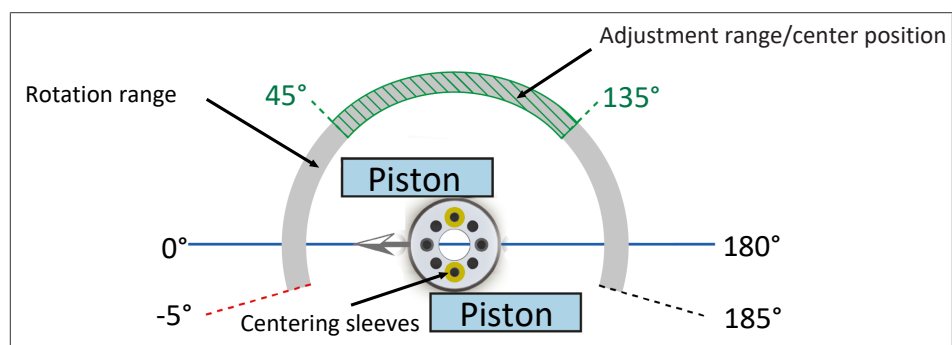
The angle of rotation is set in order to attain a fine adjustment of the end positions.

- Adjustment range of the end positions for variant -E / -H / -S:  $+5^\circ/-95^\circ$
- Adjustment range of the center position for variant -M:  $+45^\circ/-45^\circ$
- Adjustment range of the end positions for variant X:  $\pm 3^\circ$

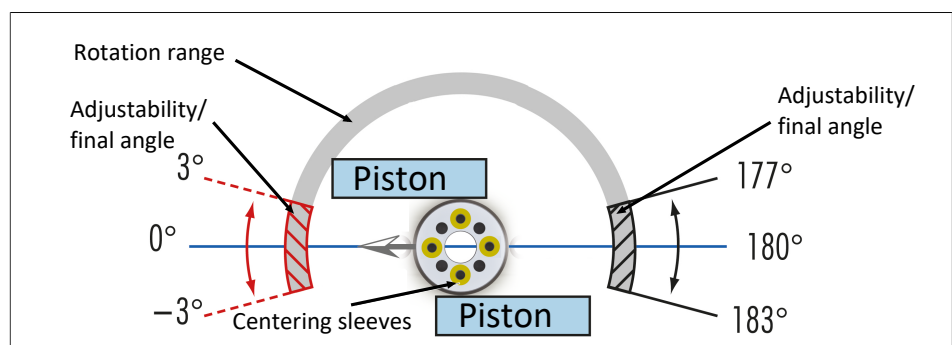
#### Adjustment ranges



Adjustability of the end positions at angle of rotation  $180^\circ$ , variant -E / -H / -S

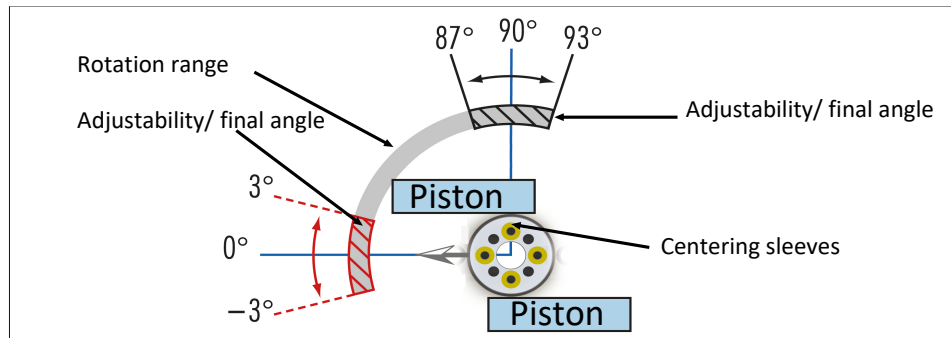


Adjustability of the center position, variant -M



Adjustability of the end positions at angle of rotation  $180^\circ$ , variant with external stop (-X)





Adjustability of the end positions at angle of rotation 90°, variant with external stop (-X)

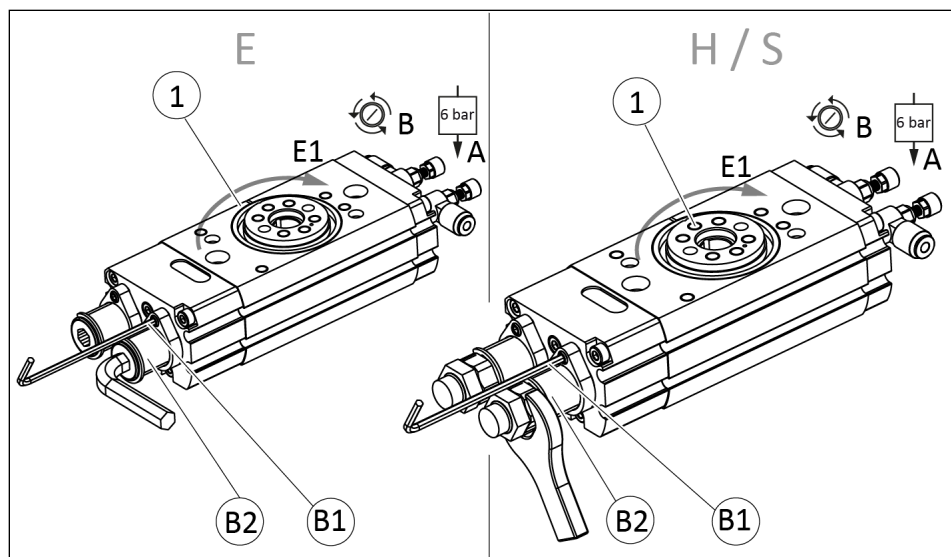
## CAUTION

### Material damage due to erroneous settings!

Due to erroneous adjustment of the angle of rotation, individual components may become loose and the product may be damaged and its seal broken.

- Only trained staff may set the angle of rotation.
- Before setting the angle of rotation, relieve the pressure.

### Adjust end positions – absorber variant –E (with elastomer) or –H / –S (with hydraulic stop)



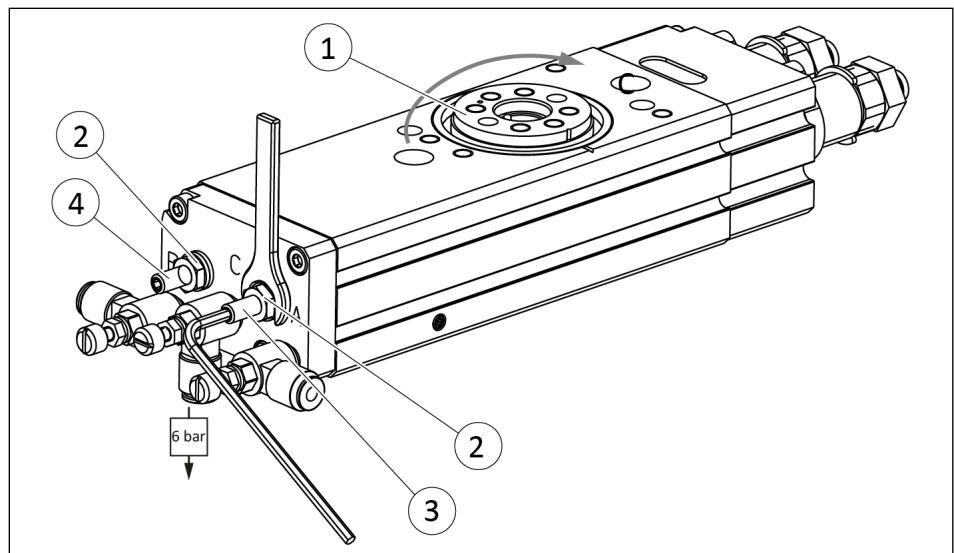
1. Loosen set-screw (B1).
2. Apply pressurized air to air connection "A".
3. Open the exhaust air throttle valve at the air connection "B" approx. two turns until the pinion (1) moves to the end position "E1".
4. Turn the adjusting sleeve (B2) and set the desired end position. **IMPORTANT! Observe permissible adjustment range.**
5. Check end position.

- ⇒ To do this, ventilate air connection "A" and pressurize it again, if necessary adjust end position.
- 6.** Tighten set-screw (B1).
  - ⇒ Tightening torque: SRM 10-E / -H: 0.4 Nm;  
SRM 12-E / -H: 0.6 Nm; SRM 14-E / -H / -S: 0.7 Nm
  - ⇒ End position "E1" is set.
- 7.** Adjust other end position analogously.
- 8.** Swivel repeatedly to test the setting, adjust if necessary.

### Setting the center position – basic unit with center position (Variant -M)

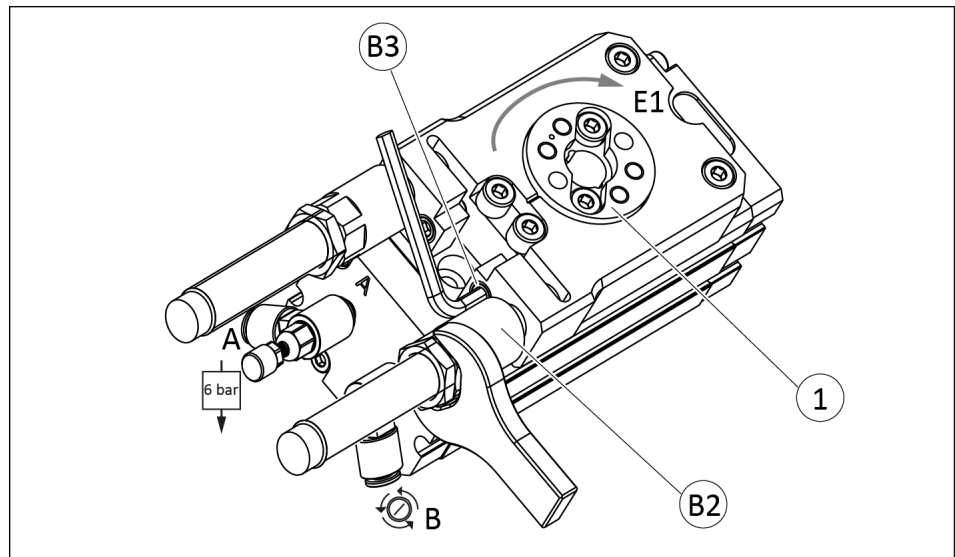
#### NOTE

The center position can be adjusted by  $\pm 45^\circ$ . When approaching this position, over-swiveling and settling may occur.



- 1.** Loosen nut (2).
- 2.** Apply pressurized air to air connection "C".
  - ⇒ Pinion swivels to center position
- 3.** Unscrew the stop spindle (4) slightly.
- 4.** Turn pinion (1) clockwise to the stop and keep it pressed.
- 5.** Turn stop spindle (3) and set the desired center position.
- 6.** Screw in stop spindle (4) until the center position is free of play again. **IMPORTANT! If the stop spindle is screwed in too far, the play increases again.**
- 7.** Tighten nut (2).
  - ⇒ Tightening torque: 1.2 Nm
  - ⇒ Center position is set.
- 8.** Swivel repeatedly to test the setting, readjust if necessary.

### Set end positions – variant with external stop -X



1. Loosen set-screw (B3).
2. Apply pressurized air to air connection "A".
3. Open the exhaust air throttle valve at the air connection "B" approx. two turns until the pinion (1) moves to the end position "E1".
4. Turn the adjusting sleeve (B2) and set the desired end position. **IMPORTANT! Observe permissible adjustment range.**
5. Check end position.
  - ⇒ To do this, ventilate air connection "A" and pressurize it again, if necessary adjust end position.
6. Tighten set-screw (B3).
  - ⇒ Tightening torque: SRM 10-X / 12-X: 1.2 Nm; SRM 14-X: 3 Nm
  - ⇒ End position "E1" is set.
7. Adjust other end position analogously.
8. Swivel repeatedly to test the setting, adjust if necessary.

### 6.3.2 Set swivel time and absorber stroke, variants -E / -H / -S

#### 6.3.2.1 Set swivel time

#### NOTE

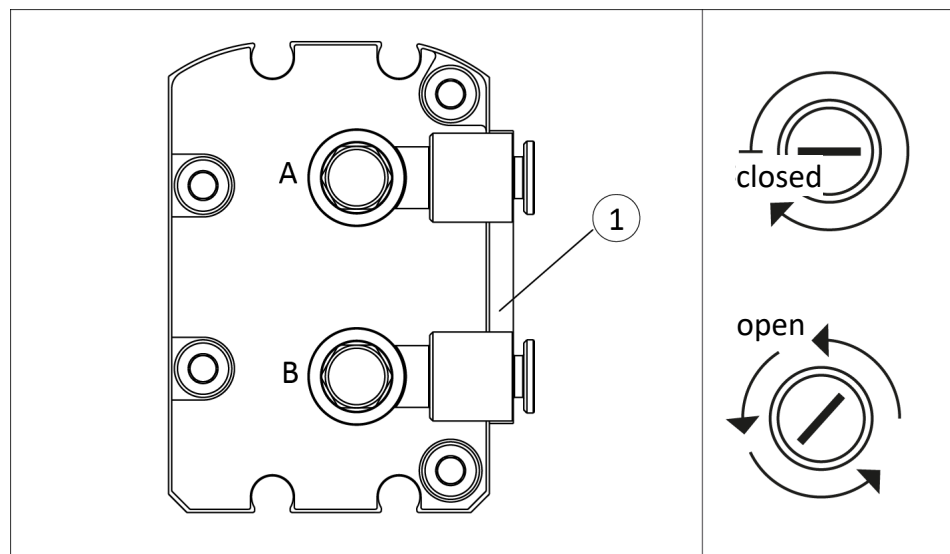
The optimal swiveling speed is achieved by adjusting the swiveling time on the exhaust air throttles and adjusting the absorber stroke. Schematic illustration of the optimal adjustment, ▶ 6.3.4 [ 57].

## CAUTION

### Material damage due to too high swiveling speed!

If the swiveling speed is too high, the assembly will be decelerated abruptly by the shock absorber and will continue to oscillate until reaching the end position. This will overload the shock absorber and may cause damage to it.

- Adjust the swiveling speed in a way, that the movement decelerate smoothly in the end position.



- Load that corresponds to the operating conditions is mounted on the pinion (1).
- 1. Close exhaust throttle valve on air connection "A" and "B" completely.
- 2. Apply pressurized air to air connection "A".
- 3. Open exhaust air throttle valve "B" incrementally until the desired swiveling time has been achieved.
  - ⇒ The product swivels into the end position.
- 4. Observe movement of the load in front of and in the end position.
  - ⇒ The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
  - ⇒ OR: springing back or swiveling of the load visible **in** the end position. Increase absorber stroke, ▶ 6.3.2.3 [ 55].

⇒ OR: Springback or oscillation of the load visible **before** the end position, then slow rotary movement to the end position. Turn off exhaust air throttle valve "B" incrementally, if necessary reduce the absorber stroke, ▶ 6.3.2.3 [ 55].

5. Swivel repeatedly to test the setting, readjust if necessary.
6. Adjust swivel time for the other end position analogously.

### 6.3.2.2 Set swiveling time, variant -M

#### NOTE

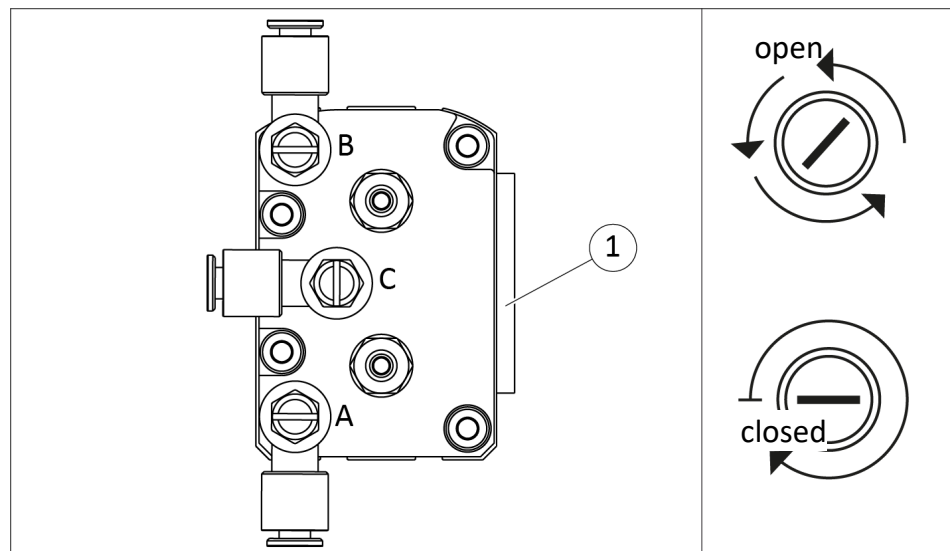
The optimal swiveling speed is achieved by adjusting the swiveling time on the exhaust air throttles and adjusting the absorber stroke. Schematic illustration of the optimal adjustment, ▶ 6.3.4 [ 57].

#### CAUTION

#### Material damage due to too high swiveling speed!

If the swiveling speed is too high, the assembly will be decelerated abruptly by the shock absorber and will continue to oscillate until reaching the end position. This will overload the shock absorber and may cause damage to it.

- Adjust the swiveling speed in a way, that the movement decelerate smoothly in the end position.



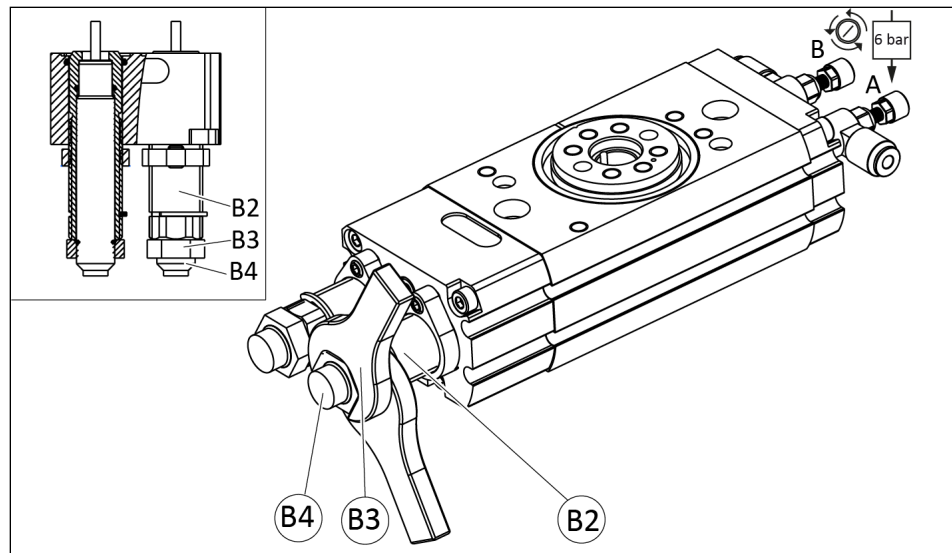
- The load that corresponds to the operating conditions is mounted on the pinion (1).
- Swiveling time for end positions 0° and 180° are set, ▶ 6.3.2.2 [ 53].

1. Close flow control valve "C" completely.
2. Apply pressurized air to air connection "C".
  - ⇒ The product swivels to the center position.
3. Open flow control valve "C" gradually until the desired swiveling time in the center position is reached and the over-swiveling and settling of the load in the center position is low. **IMPORTANT! Too high a swiveling speed leads to more frequent over-swiveling and settling of the load and thus to increased wear of the product.**
4. Apply pressurized air to air connection "A".
  - ⇒ The product swivels from the center position to end position 1.
5. Adjust flow control valve "C". In addition, observe the movement of the load in front of and in the end position 1.
  - ⇒ The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
  - ⇒ OR: Springing back or swiveling of the load visible **in** the end position. Increase absorber stroke, ▶ 6.3.2.3 [□ 55].
  - ⇒ OR: Springing back or swiveling of the load visible **in front of** the end position, then slow rotary movement to the end position. Turn off flow control valve "C" gradually, if necessary reduce the absorber stroke, ▶ 6.3.2.3 [□ 55]. If the spring back cannot be eliminated, gradually close exhaust air throttle valve "B".
6. **IMPORTANT! If the flow control valve "C" is not sufficiently open, no adequate air cushion can build up in the pressure chamber "C" to dampen the swiveling process from the center position to the end position.** Therefore, with different pause times, check whether the swiveling behavior changes from the center position to the end position. If this is the case, open flow control valve "C" further.
7. Swivel repeatedly to test the setting, readjust if necessary.
8. Adjust swivel time for the other end position analogously.

### 6.3.2.3 Adjust absorber stroke

#### NOTE

The absorber stroke has been pre-set in the factory and can be adjusted in order to achieve the optimal swiveling time.



1. Observe movement of the load in the end positions.
  - ⇒ If the absorber stroke is too long, the end position is reached too slowly.
  - ⇒ If the absorber stroke is too short, the attachment strikes the end position.
  - ⇒ Note: schematic illustration of the rotating motion, ▶ 6.3.4 [ 57].
2. Loosen nuts (B3) and counter-support the adjusting sleeve (B2).
  - ⇒ **Reduce** absorber stroke: unscrew absorber (B4) with hexagon socket wrench incrementally approx. 1/4 revolution.  
OR
  - ⇒ **Increase** absorber stroke: Screw in absorber (B4) with hexagon socket wrench. **IMPORTANT! An absorber stroke that is too long reduces the lifespan of the shock absorbers.**
3. Tighten nuts (B3) and counter-support the adjusting sleeve (B2).
  - ⇒ Tightening torque: SRM 10 / 12: 3 Nm; SRM 14: 5 Nm
4. Swivel repeatedly to test the setting, readjust if necessary.
  - ⇒ The end positions must be approached gently.
5. Check swiveling time and adjust if necessary, ▶ 6.3.2.2 [ 53].
6. Repeat the steps for the other end position.

**NOTE**

Depending on the loading condition, the settings for the two shock absorbers may deviate widely from each other.

**Restoring the factory setting of the absorber stroke**

It is possible to reset the absorber stroke to the factory settings:

1. Loosen the nuts (B3) and counter-support the adjusting sleeve (B2).
2. Screw in the absorber (B4) using a hexagon socket wrench.
3. Unscrew the absorber (B4) again, see the following table for the number of turns.

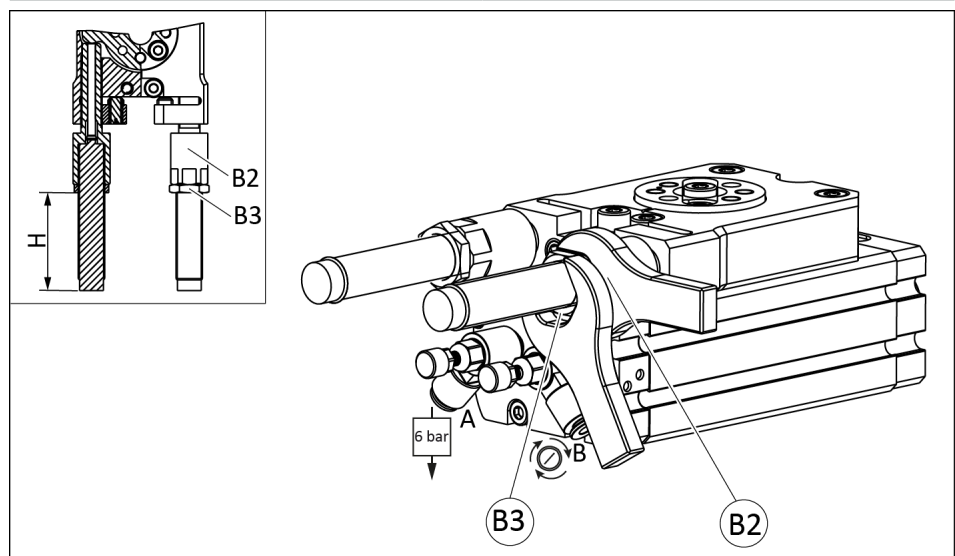
Size	Revolutions [pce.]
10-H	3/4
12-H	3/4
12-S	1
14-H	2.5
14-S	4

**6.3.3 Adjust swiveling time and absorber stroke, variant -X**

**NOTE**

At the factory, the maximum possible absorber stroke was preset.

Size	Projection "H" - factory setting [mm]
10	32
12	31
14	37.5



1. Close exhaust throttle valve "A" and "B" completely.



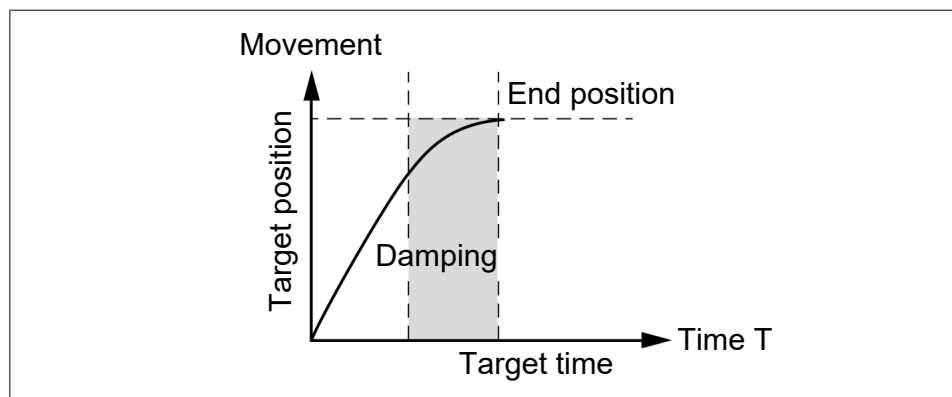
2. Open exhaust throttle valves depending on the load in accordance with the following diagram.
3. Loosen nuts (B3) and counter-support the adjusting sleeve (B2).
4. Set the absorber to dimension "H" according to the following diagrams.
5. Tighten nuts (B3) and counter-support the adjusting sleeve (B2).  
 ⇒ Tightening torque: SRM 10-X / 12-X: 3 Nm; SRM 14-X: 5 Nm
6. Swivel repeatedly to test the setting, readjust if necessary.  
 ⇒ The end positions must be approached gently.
7. Repeat the steps for the other end position.

**NOTE**

Depending on the loading condition, the settings for the two shock absorbers may deviate widely from each other.

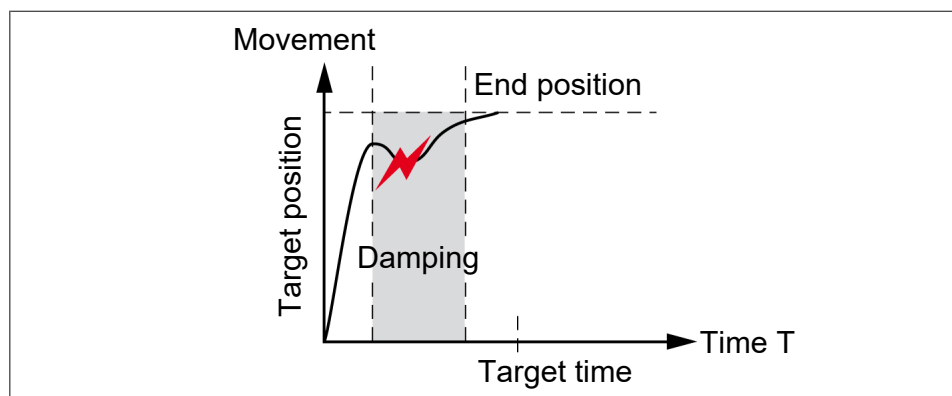
**6.3.4 Diagram of swiveling movement**

**Optimal setting**

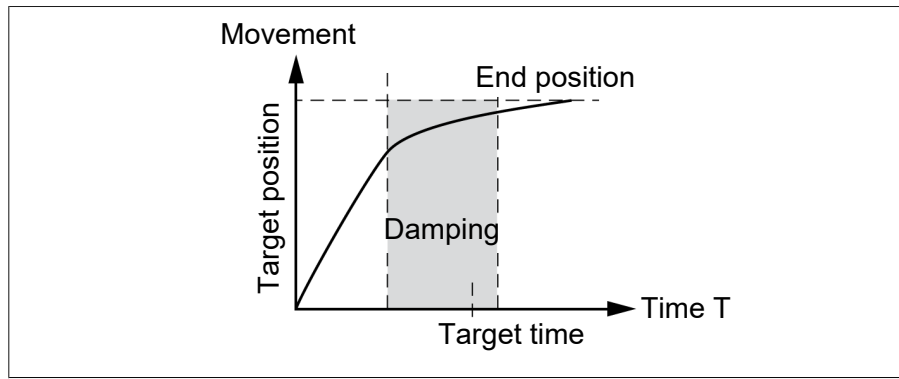


Swiveling speed and absorber stroke are optimal.

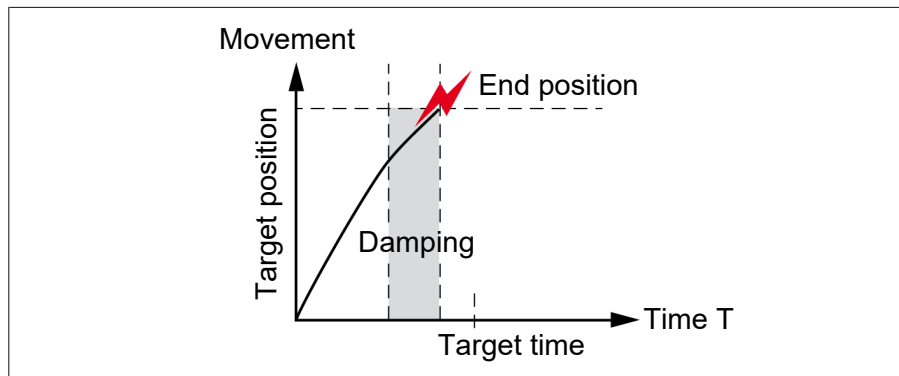
**Erroneous adjustment**



Swiveling speed too high. Assembly oscillates back.



Absorber stroke is too long. End position is reached too slowly.



Absorber stroke is too short. Assembly hits the end position.

## 6.4 Mounting the sensor

### NOTE

Observe the assembly and operating manual of the sensor for mounting and connecting.

The product is prepared for the use of sensors.

- For the exact type designations of suitable sensors, please see catalog datasheet and ▶ 6.4.1 [ 58].
- For technical data for the suitable sensors, see assembly and operating manual and catalog datasheet.
  - The assembly and operating manual and catalog datasheet are included in the scope of delivery for the sensors and are available at schunk.com.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.

### 6.4.1 Overview of sensors

Size	MMS 22
10	✓
12	✓
14	✓

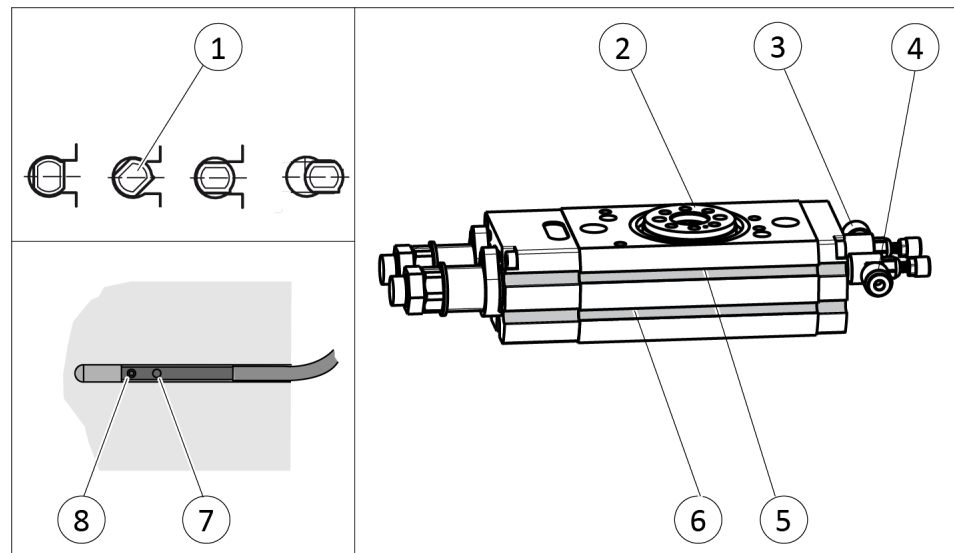
## 6.4.2 Mounting magnetic switch MMS 22 / reed switch RMS 22

### CAUTION

#### Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.

The sensors can be mounted via four grooves in the housing of the product.



1. Connect sensor and secure cable, see the Sensor Assembly and Operating Manual.
2. Apply air pressure to connection "A" (4).  
⇒ Pinion (2) swivels towards the end position.
3. Insert or screw the first sensor (1) into the groove (5).
4. Move the sensor along the groove until it actuates.
5. Tighten set screw (8).  
⇒ Tightening torque: 10 Ncm
6. Bleed connection "A" (4).
7. Actuate connection "B" (3).  
⇒ Pinion (2) swivels into the other end position.
8. Insert or screw the second sensor (1) into the groove (6).
9. Move the sensor along the groove until it actuates.
10. Tighten set screw (8).  
⇒ Tightening torque: 10 Ncm
11. Check the switching position and test its function.

## 7 Assembly and settings, size 16 – 40

### 7.1 Assembling and connecting



#### **⚠ WARNING**

##### **Risk of injury due to unexpected movements!**

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

#### **CAUTION**

##### **Material damage due to faulty settings and assembly.**

If the end position is approached too abruptly, the product may be damaged.

- Ensure the turning / swiveling movement is carried out without bouncing or bumping.
- Therefore provide sufficient throttling and damping.
- Please observe the information in the catalog data sheet.

#### **CAUTION**

##### **Material damage due to opened exhaust air throttle valves!**

If during first actuation the exhaust throttle valves are open, the product may move in an uncontrolled manner.

- Close the exhaust air throttle valves completely before applying pressure.

#### **NOTE**

- Observe the requirements for the compressed air supply, ▶ 3 [□ 23].
- In case of compressed air loss (cutting off the energy line), the product loses its dynamic effects and does not remain in a secure position. However, the use of a SDV-P pressure maintenance valve is recommended in this case in order to maintain the dynamic effect for some time.

#### **SDV-P with variant MDF**

For the variant with fluid feed-through (MDF), the SDV-P pressure maintenance valve must be attached directly to the end effector **after** the fluid feed-through.

## Overview

1. Screw the product to the machine/system, ▶ 7.2.1 [ 62].
  - ⇒ Use centering sleeves from the enclosed accessory pack.
  - ⇒ Observe the tightening torque for the mounting screws.
2. Fasten attachment with centering sleeves and fastening screws onto the pinion. **IMPORTANT! Insert centering sleeves by hand. Do not hammer the pinion.**
3. In the main air connections "A" and "B", screw in throttle valves and connect compressed air lines, ▶ 7.2.2 [ 66].
  - ⇒ **IMPORTANT! Property damage caused by missing components!** Mount fixed throttle and throttle valves from the accessory pack in the compressed air lines for air connections "a" and "b".
  - ⇒ Use O-rings from the accessory pack.
4. **Variant with center position (M):** Screw supply air throttle valves into the main air connections "C" and "D" and connect compressed air line, ▶ 7.2.2 [ 66].
5. Check that all of the throttle valves are closed.
6. Screw in locking screws in open and not required air connections where appropriate.
7. **Variant with fluid feed-through:** remove locking screws from required connections. Screw in suitable connections and connect hoses, ▶ 7.2.3 [ 70].
  - ⇒ For hose-free direct connections, use the O-rings from the accessory pack.
8. **Variant with electrical rotary feed-through:** connect connection cable, ▶ 7.2.4 [ 72].
  - ⇒ If necessary, connect hoses for fluid feed-through.
  - ⇒ For hose-free direct connections, use the O-rings from the accessory pack.
  - ⇒ Seal those connections that are not needed using the protective caps from the accessory kit.
9. Adjust end positions, ▶ 7.3.1 [ 75].
10. Mount the sensor, ▶ 7.4 [ 85].
11. Adjust swiveling speed, ▶ 7.3.2 [ 78].
12. Adjust shock absorber stroke, ▶ 7.3.3 [ 82].

## 7.2 Connections

### 7.2.1 Mechanical connection

#### NOTE

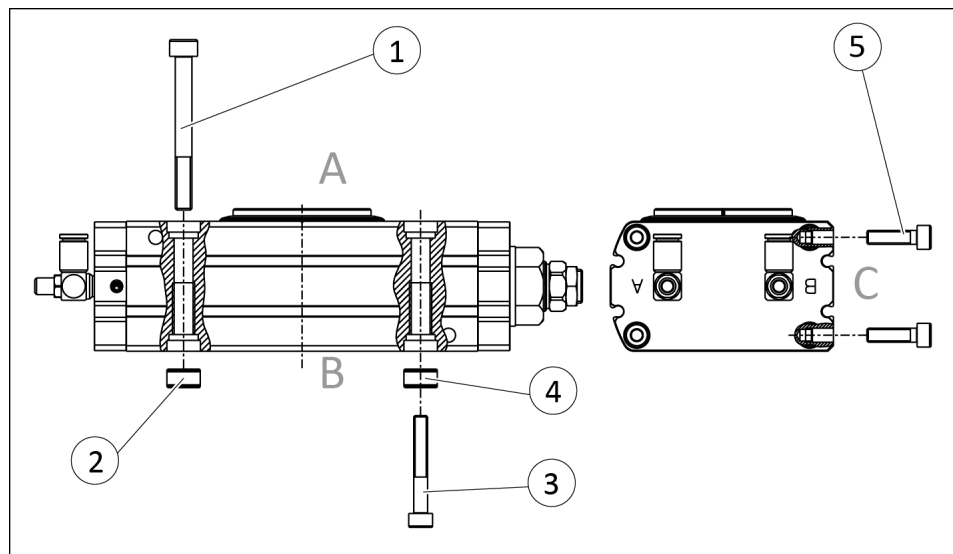
Adapter plates between the product and the machine/system as well as the product and the attachment part must be made of high-strength aluminum or steel. The tolerance class for the fitting bore is H7.

#### Connections on the housing

The product can be assembled from three sides.

- On the side of the apparatus via threaded holes
- On the attachment part side via through-bores
- On the side via threaded holes

Centering sleeves for the mounting screws are included in the accessory pack.



Assembly options

#### Connection-Side A

Size	① Screws*	② Centering sleeve
16	M5	Ø10
20	M6	Ø12
25	M6	Ø12
32	M6	Ø12
40	M8	Ø14

\* Mounting screw according to standard DIN EN ISO 4762

The connection to Side A is **not** possible for variants:

- electrical rotary feed-through (EDF)
- sensor inductive (SI)

### Connection-Side B

Size	③ Screws *	④ Centering sleeve
16	M6/16**	Ø10
20	M8/22**	Ø12
25	M8/22**	Ø12
32	M8/26**	Ø12
40	M10/33**	Ø14

\* Mounting screw according to standard DIN EN ISO 4762, Max. strength class 8.8

\*\* Max. depth of engagement from locating surface [mm]

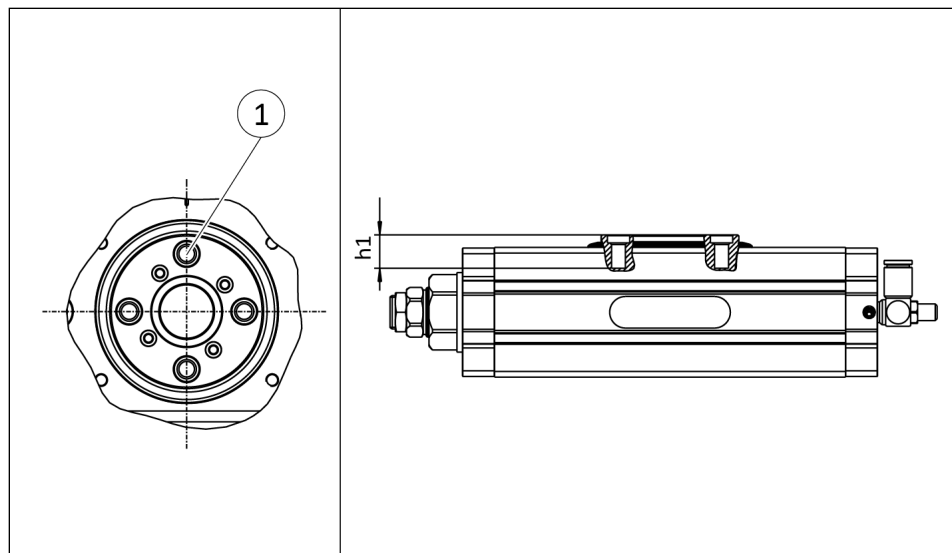
### Connection-Side C

Size	⑤ Screws *
16	M4/8**
20	M5/9**
25	M5/10**
32	M8/16**
40	M8/17**

\* Mounting screw according to standard DIN EN ISO 4762, Max. strength class 8.8

\*\* Max. depth of engagement from locating surface [mm]

### Connections on the pinion, base unit



Connections on the pinion – Illustration of the pinion in the top view and side-on view, base unit

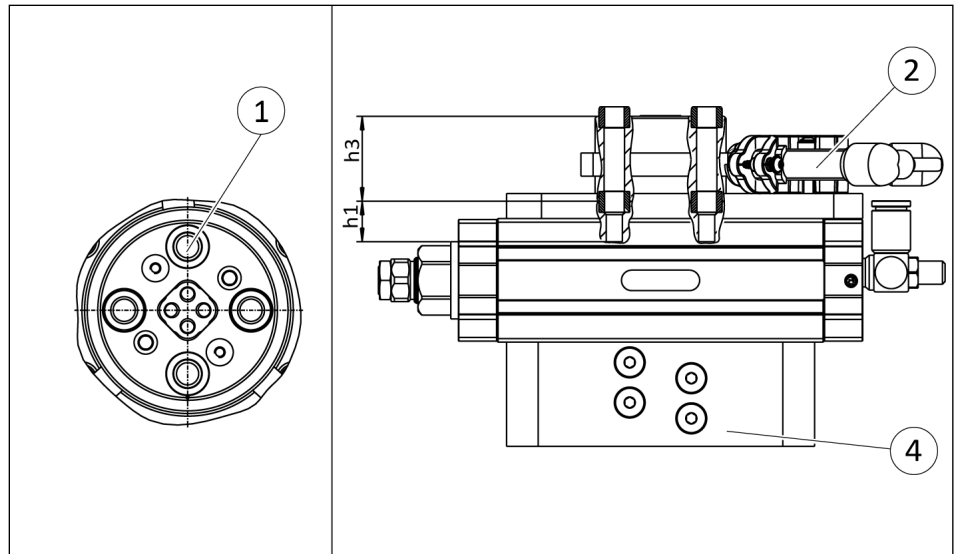
Size	① Thread *, 4x	h1 [mm]
16	M5	9
20	M6	10
25	M6	10

Size	① Thread *, 4x	h1 [mm]
32	M8	12.5
40	M8	13

\* Mounting screws for fastening the customer's load Strength class 8.8  
 When selecting the screw length, the maximum screw-in depth from the pinion surface (h1) must be observed.

h1 Max. Screw-in depth from pinion surface

**Connections on the pinion, SRM 16, MDF, SI/SF**



Connections on the pinion - Illustration of the pinion in the top view and side-on view SRM with attachments SI / SF (2), MDF (4)

Size	① Thread *, 4x	h1 [mm]	h3 [mm]
16	M5	9	22

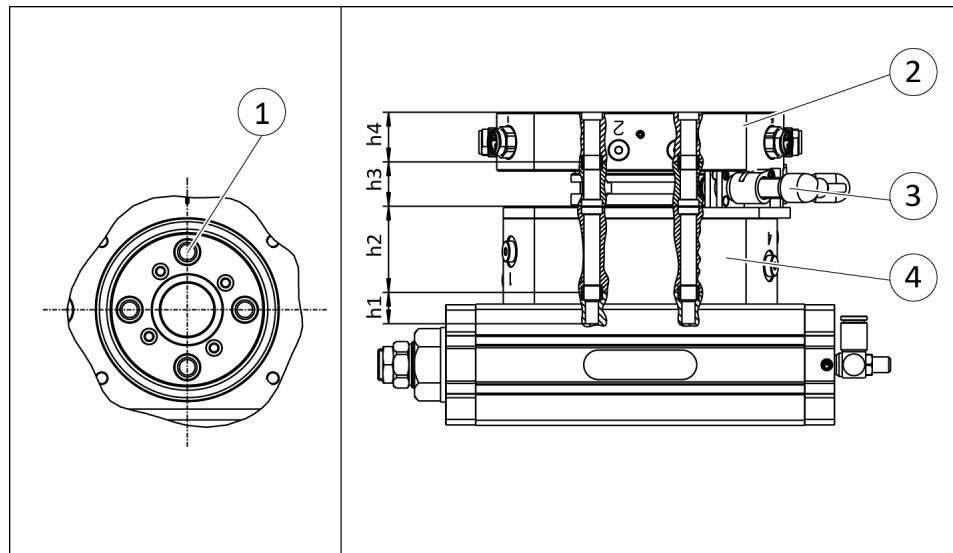
\* Mounting screws for fastening the customer's load Strength class 8.8  
 When selecting the screw length, the maximum screw-in depth from the pinion surface (h1) must be observed.

h1 Max. Screw-in depth from pinion surface

h3 Height of attachment kit inductive sensor



**Connections on the pinion, SRM 20 – 40, MDF, EDF, SI/SF**



Connections on the pinion - Illustration of the pinion in the top view and side-on view SRM with attachments EDF (2), SI/SF (3), MDF (4)

Size	① Thread *, 4x	Centering sleeve [mm], 2x	h1 [mm]	h2 [mm]	h3 [mm]	h4 [mm]
16	M5	Ø8	9	27	22	19
20	M6	Ø8	10	33	22	19
25	M6	Ø8	10	33	22	19
32	M8	Ø12	12.5	48	22	18.5
40	M8	Ø12	13	46	22	24

\* Mounting screws for fastening the customer's load Strength class 8.8

When selecting the screw length, the maximum screw-in depth from the pinion surface (h1) must be observed.

The height of the attachments (h2, h3, h4) must also be observed.

h1 Max. Screw-in depth from pinion surface

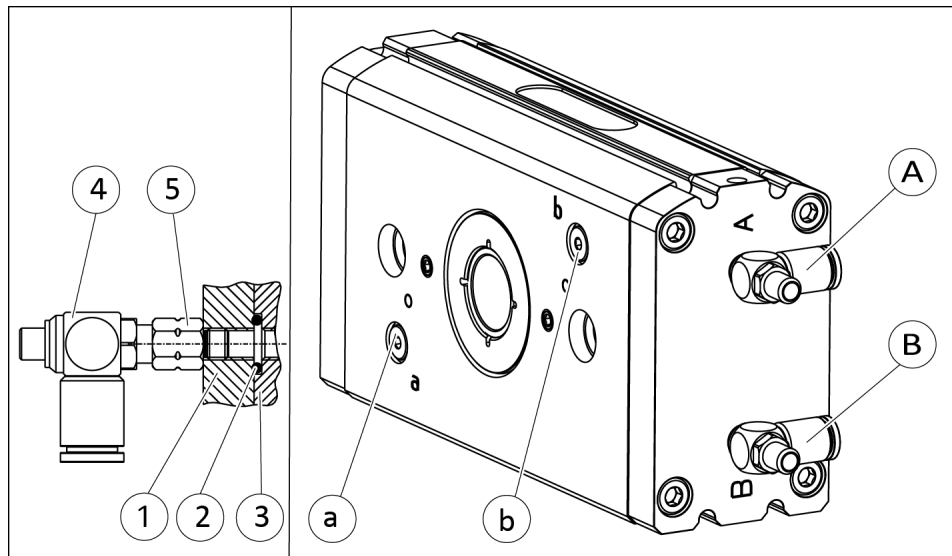
h2 Height of fluid feed-through

h3 Height of attachment kit inductive sensor

h4 Height of electrical rotary feed-through

## 7.2.2 Pneumatic connection

### 7.2.2.1 Base unit



Compressed air connection, base unit

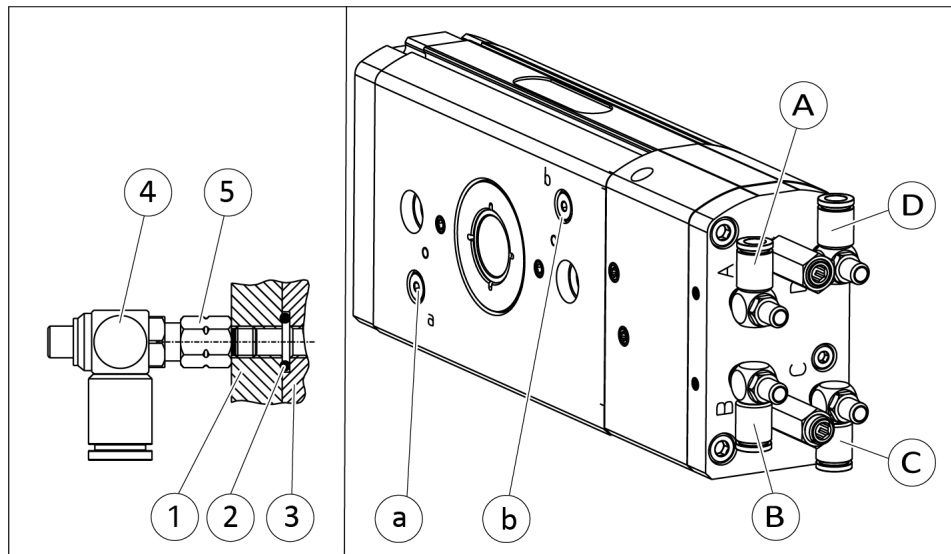
Designation	Function
<b>Main air connections</b>	
A *	Exhaust air throttle valve Swiveling 0° – 90° or 0° – 180°
B *	Exhaust air throttle valve Swiveling 90° – 0° or 180° – 0°
<b>Hose-free direct connection</b>	
a	Swiveling 0° – 90° or 0° – 180°
b	Swiveling 90° – 0° or 180° – 0°
1	Attachment
2 *	O-ring
3	Product
4 *	Exhaust air throttle valve
5 *	Fixed throttle

\* Contained in accessory pack.

### Dimensions

Size	Main connections A, B	O-ring [mm] - (Hose-free direct connection) a, b
16	M5	Ø4 x 1.5
20	M5	Ø6 x 1.5
25	M5	Ø6 x 1.5
32	G1/8"	Ø6 x 1.5
40	G1/8"	Ø6 x 1.5

### 7.2.2.2 Base unit with center position (variant -M)



Compressed air connection, Base unit with center position (Variant -M)

Designation	Function
Main air connections	
A *	Exhaust air throttle valve Swiveling 0° - 180°
B *	Exhaust air throttle valve Swiveling 180° - 0°
C *	Supply air throttle valve
D *	Swiveling in center position 0° - 90°, 180° - 90°
Hose-free direct connection	
a	Swiveling 0° - 180°
b	Swiveling 180° - 0°
1	Attachment
2 *	O-ring
3	Product
4 *	Exhaust air throttle valve
5 *	Fixed throttle

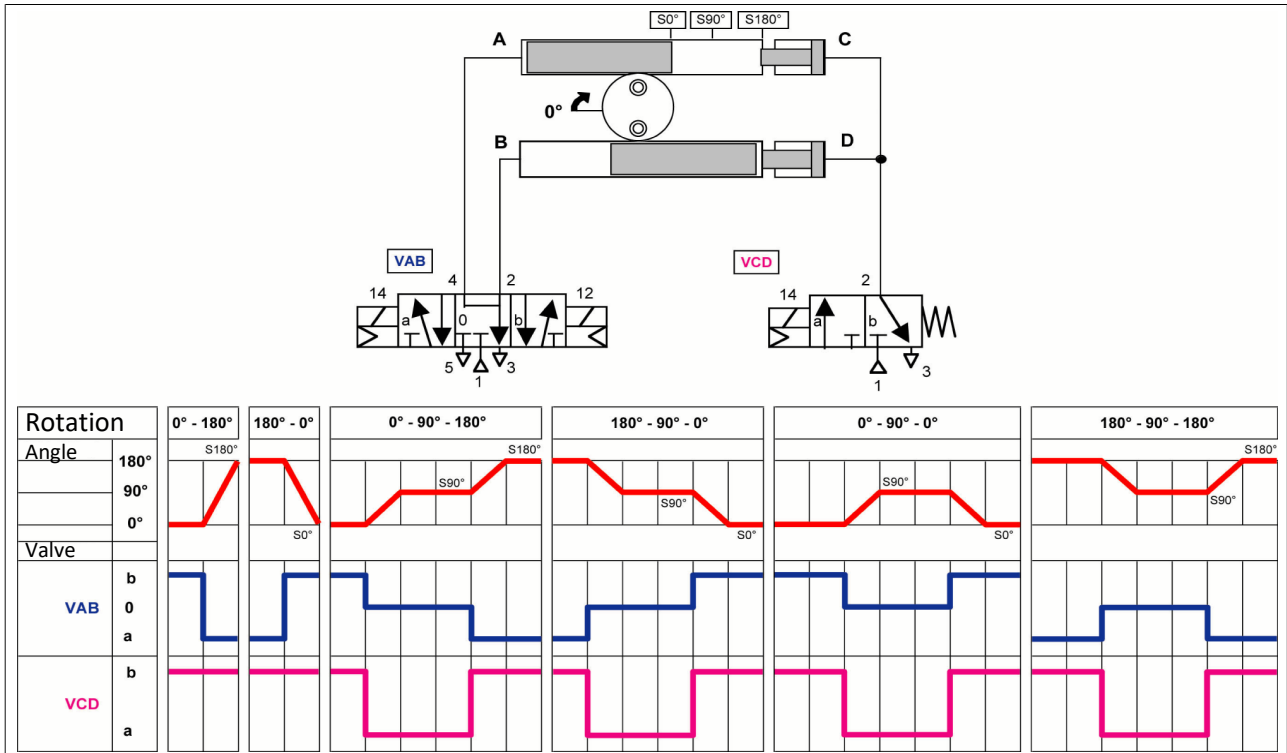
\* Contained in accessory pack.

### Dimensions

Size	Main connections A, B, C, D	O-ring [mm] - (Hose-free direct connection) a, b
16	M5	Ø4 x 1.5
20	M5	Ø6 x 1.5
25	M5	Ø6 x 1.5
32	A B: G1/8"; C D: M5	Ø6 x 1.5

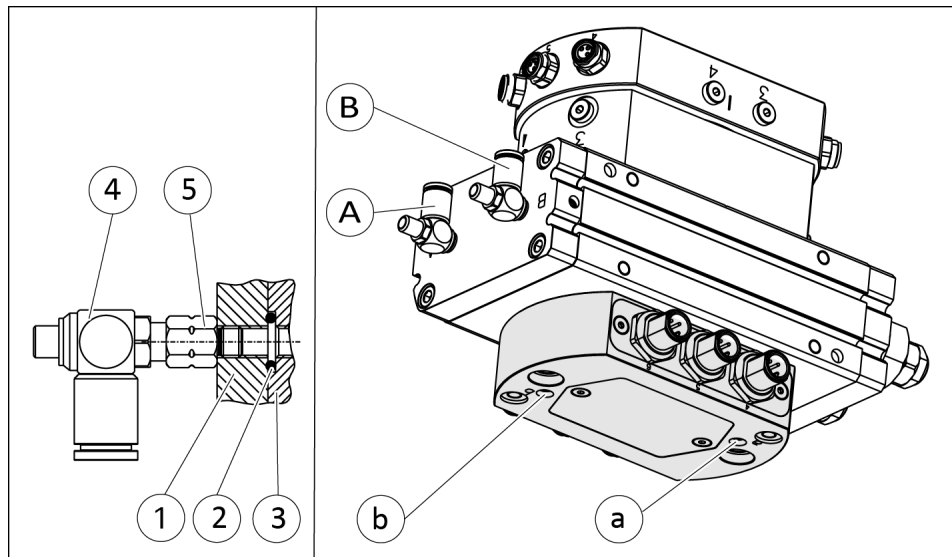
Size	Main connections A, B, C, D	O-ring [mm] - (Hose-free direct connection) a, b
40	A B: G1/8"; C D: M5	∅6 x 1.5

**Wiring diagram**



Electrical circuit diagram actuation with one 5/3 and one 3/2 directional control valve, example

### 7.2.2.3 Base unit with EDF flange



Compressed air connection, base unit with EDF flange

Designation	Function
Main air connections	
A *	Exhaust air throttle valve Swiveling 0° - 90° or 0° - 180°
B *	Exhaust air throttle valve Swiveling 90° - 0° or 180° - 0°
Hose-free direct connection	
a	Swiveling 0° - 90° or 0° - 180°
b	Swiveling 90° - 0° or 180° - 0°
1	Attachment
2 *	O-ring
3	Product
4 *	Exhaust air throttle valve
5 *	Fixed throttle

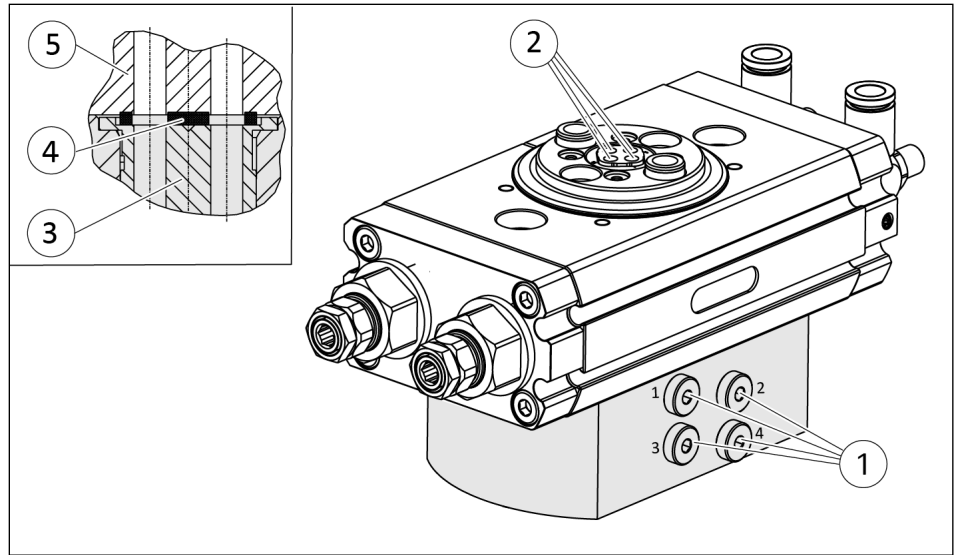
\* Contained in accessory pack.

### Dimensions

Size	Main connections	O-ring [mm] - (Hose-free direct connection)
	A, B	a, b
16	M5	Ø4 x 1.5
20	M5	Ø6 x 1.5
25	M5	Ø6 x 1.5
32	G1/8"	Ø6 x 1.5
40	G1/8"	Ø6 x 1.5

### 7.2.3 Connections to the fluid feed-through (MDF)

#### Size 16



Connections on the MDF

- 1 Fluid connection – Input
- 2 Fluid connection – Output  
Hose-free direct connection

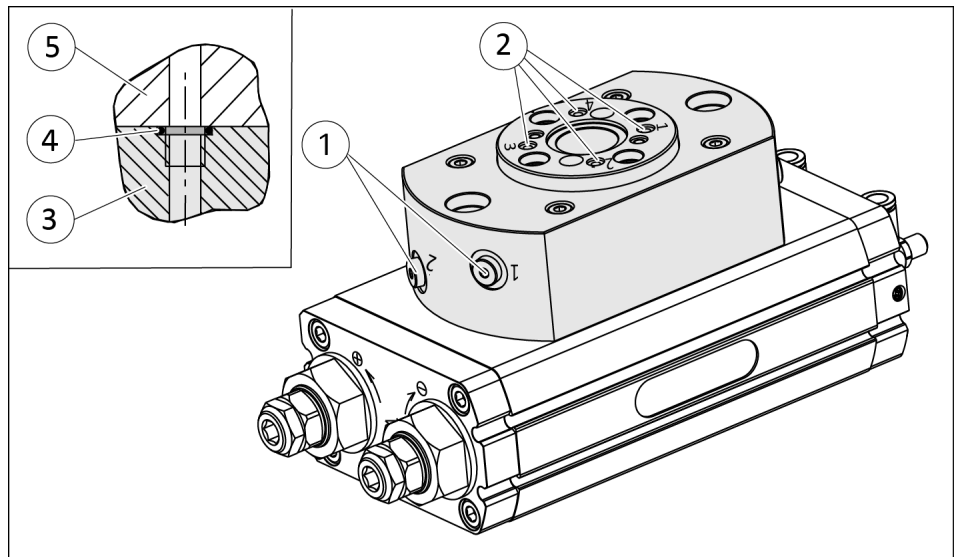
Hose-free direct connection

- 3 Product
- 4 \* Rubber bushing
- 5 Attachment

#### Dimensions

Size	① Fluid connection Input	④ Rubber bushing [mm] (Output – Hose-free direct connection)
16	M5	9.4 x 9.4 x 1

**Size 20 – 40**



*Connections on the EDF*

- 1 Fluid connection – Input
- 2 Fluid connection – Output  
Hose-free direct connection

Hose-free direct connection

- 3 Product
- 4 \* O-ring
- 5 Attachment

\* Contained in accessory pack.

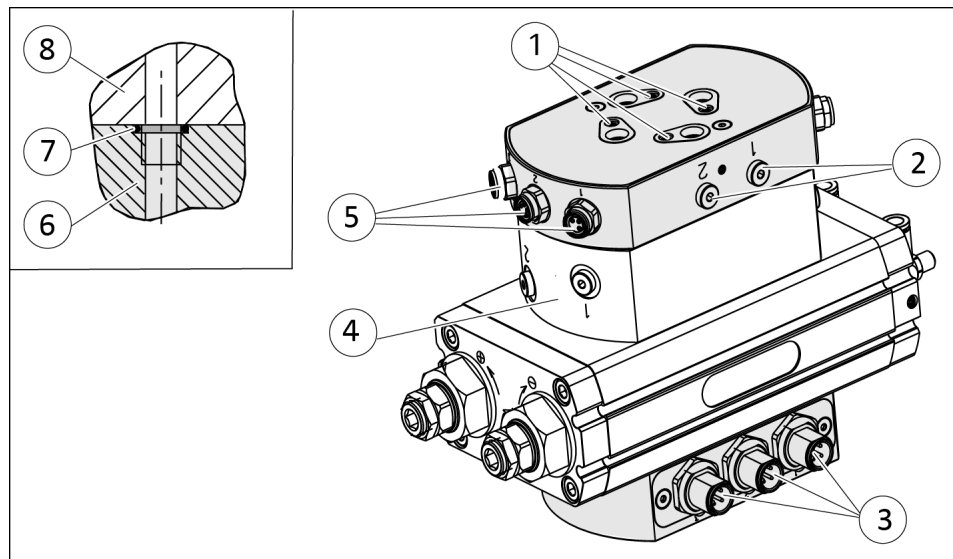
**NOTE**

- On the fluid feed-through, associated inlets and outlets are marked with numbers.
- If two channels are pressurized simultaneously: Use channels 1 + 2 or 3 + 4.

**Dimensions**

Size	① Fluid connection Input	④ Rubber bushing [mm] (Output – Hose-free direct connection)
20	M5	Ø3 x 1
25	M5	Ø3 x 1
32	M5	Ø5 x 1
40	G1/8"	Ø5 x 1

## 7.2.4 Connections on the electrical rotary feed-through (EDF)



Connections on the EDF

1 \*\* Output – Hose-free direct connection

2 \*\* Output – Fluid connection

3 \*\*\* Connector

4 Optional: Fluid feed-through (MDF), ▶ 7.2.3 [ 70]

5 \*\*\* Socket

Hose-free direct connection

6 Product

7 \* O-ring

8 Attachment

\* Contained in accessory pack.

\*\* Note: only use the connections in combination with the fluid feed-through (MDF).

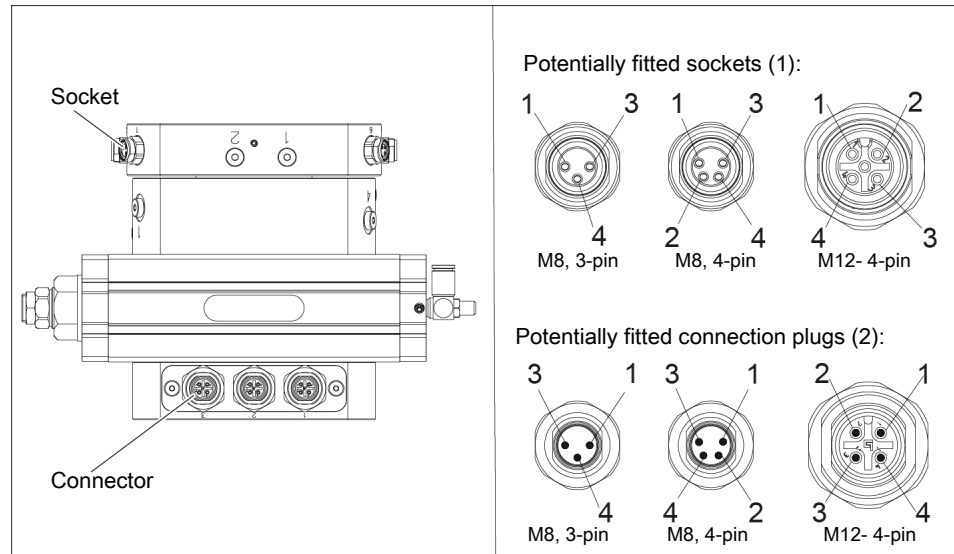
\*\*\* Seal the unused connection plugs and sockets using the protective caps from the accessory kit.

### Dimensions of the fluid connections

Size	② Output Fluid connection	⑦ O-ring (Output – Hose-free direct connection)
16	M5	∅3 x 1
20	M5	∅3 x 1
25	M5	∅3 x 1
32	M5	∅5 x 1
40	G1/8"	∅5 x 1



### Pin arrangement and dimensions of the connection plugs and sockets



Pin arrangement of the connection plugs and sockets

#### NOTE

On the electrical rotary feed-through, associated connection plugs and sockets are color-coded and marked with numbers. For combination with 3-pin socket and 4-pin connection plug, pin "2" is not assigned.

#### Dimensions SRM 16

Designation	Socket - Distributor plate	Connector - EDF flange
1	M8, 3-pin	M8, 3-pin
2	M8, 4-pin	M8, 4-pin
3	M8, 3-pin	M8, 3-pin
4	M8, 3-pin	M8, 3-pin
5	M8, 4-pin	M8, 4-pin
6	M8, 3-pin	M8, 3-pin

#### Dimensions SRM 20, SRM 25

Designation	Socket - Distributor plate	Connector - EDF flange
1	M8, 3-pin	M12, 4-pin
2	M8, 4-pin	M12, 4-pin
3	M8, 3-pin	M12, 4-pin
4	M8, 3-pin	M12, 4-pin
5	M8, 4-pin	M12, 4-pin
6	M8, 3-pin	M12, 4-pin

**Dimensions SRM 32**

Designation	Socket - Distributor plate	Connector - EDF flange
1	M8, 3-pin	M12, 4-pin
2	M8, 4-pin	M12, 4-pin
3	M8, 3-pin	M12, 4-pin
4	M8, 3-pin	M12, 4-pin
5	M8, 4-pin	M12, 4-pin
6	M8, 3-pin	M12, 4-pin

**Dimensions SRM 40**

Designation	Socket - Distributor plate	Connector - EDF flange
1	M12, 4-pin	M12, 4-pin
2	M8, 4-pin	M12, 4-pin
3	M8, 3-pin	M12, 4-pin
4	M8, 3-pin	M12, 4-pin
5	M12, 4-pin	M12, 4-pin
6	M12, 4-pin	M12, 4-pin
7	M8, 4-pin	M12, 4-pin
8	M8, 3-pin	M12, 4-pin
9	M8, 3-pin	M12, 4-pin
10	M12, 4-pin	M12, 4-pin

**7.3 Settings**

**CAUTION**

**Material damage due to erroneous settings!**

If the end position is approached too hard, the product may be damaged.

- Adjust exhaust throttle valve and shock absorber so that the movement is braked smoothly.

For operation, the angle of rotation, the swiveling speed and the absorber stroke must be set.

The settings must always be configured under subsequent operational conditions. If the operating conditions change, e. g. weight of the workpiece, check that the movement decelerates smoothly. If necessary, readjust angle of rotation, swiveling speed and absorber stroke.

**Angle of rotation**

The angle of rotation is set in order to achieve a fine adjustment of the end positions.

If the end positions are adjusted, the swiveling speed and absorber stroke might also have to be readjusted.

**Center position**

For variants with center position (M) , the center position can be adjusted by  $\pm 3^\circ$ . If the center position is adjusted, the rotating angle, swiveling speed and absorber stroke might also have to be readjusted.

**Swiveling speed and absorber stroke**

In order to ensure a smooth operating cycle for the respective operating conditions, swivel speed and absorber stroke must be attuned to one another, ▶ 7.3.4 [ 84].

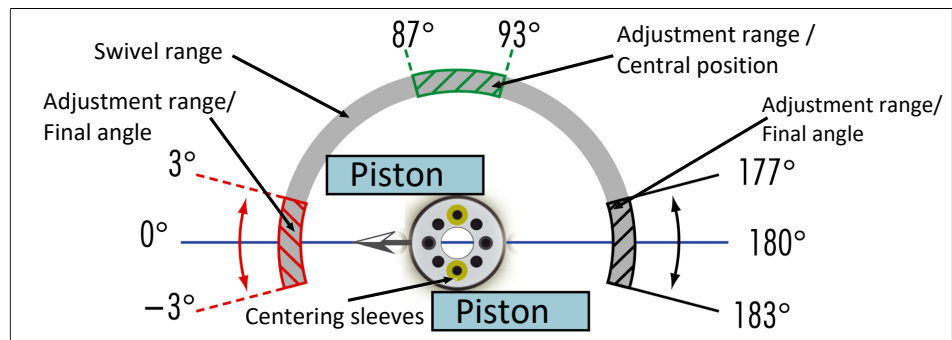
Each end position is set separately. The position of the exhaust throttle valve and shock absorber may deviate from one another.

**7.3.1 Adjust swivel angle**

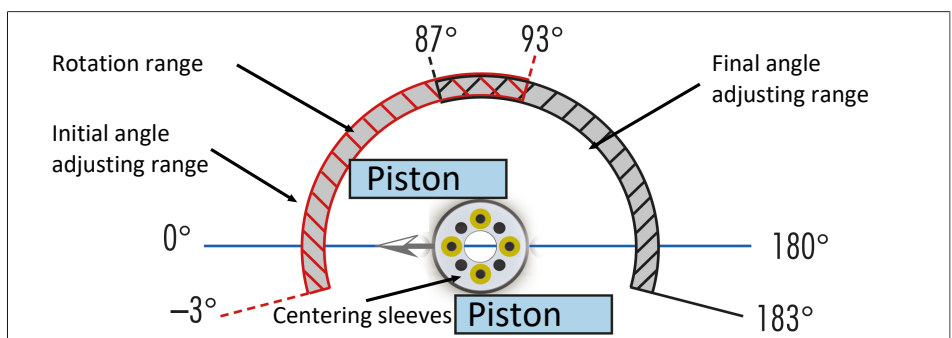
The angle of rotation is set in order to achieve a fine adjustment of the end positions. The end positions can be adjusted by  $\pm 3^\circ$  or  $+3^\circ/-90^\circ$  depending on the variant.

The center position can be adjusted by  $\pm 3^\circ$ .

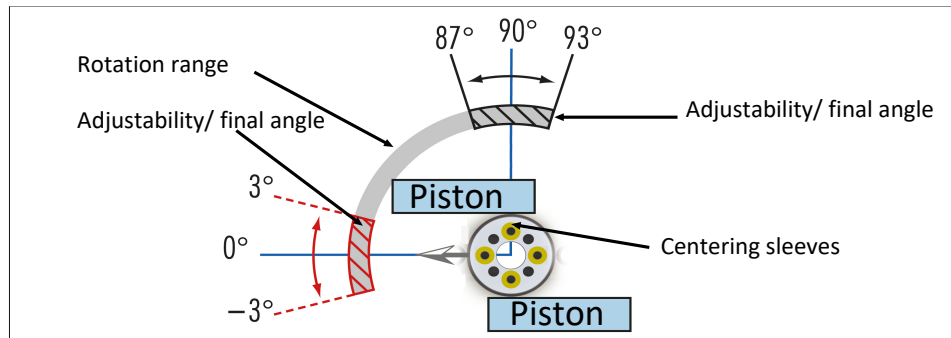
**Adjustment ranges**



*Adjustability of the end positions and center position at angle of rotation 180°*



*Adjustability of the end positions at angle of rotation 180°*



Adjustability of the end positions at angle of rotation 90°

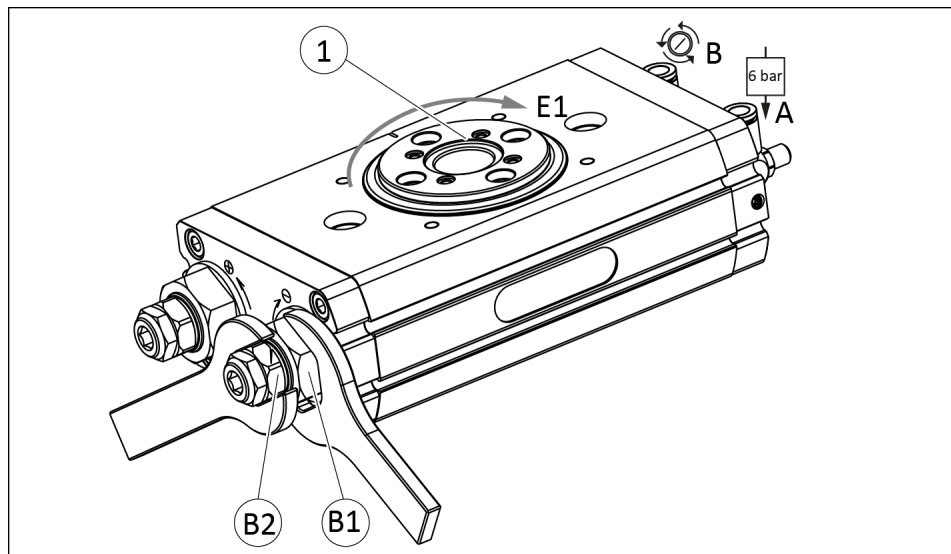
## CAUTION

### Material damage due to erroneous settings!

Due to erroneous adjustment of the angle of rotation, individual components may become loose and the product may be damaged and its seal broken.

- Only trained staff may set the angle of rotation.
- Before setting the angle of rotation, relieve the pressure.

### 7.3.1.1 Base unit



1. Loosen nut (B1).
2. Apply pressurized air to air connection "A".
3. Open the exhaust air throttle valve at the air connection "B" approx. two turns until the pinion (1) moves to the end position "E1".
4. Turn the adjusting sleeve (B2) and set the desired end position. **IMPORTANT! Do not unscrew adjusting sleeve too far. The product may become leaky.**
5. Check the end position.

⇒ To do this, ventilate air connection "A" and pressurize it again, if necessary adjust end position.

**6. Tighten nut (B1).**

⇒ Tightening torque: SRM 16: 11 Nm; SRM 20: 18 Nm; SRM 25: 20 Nm; SRM 32: 35 Nm; SRM 40: 40 Nm;

⇒ End position "E1" is set.

**7. Adjust other end position analogously.**

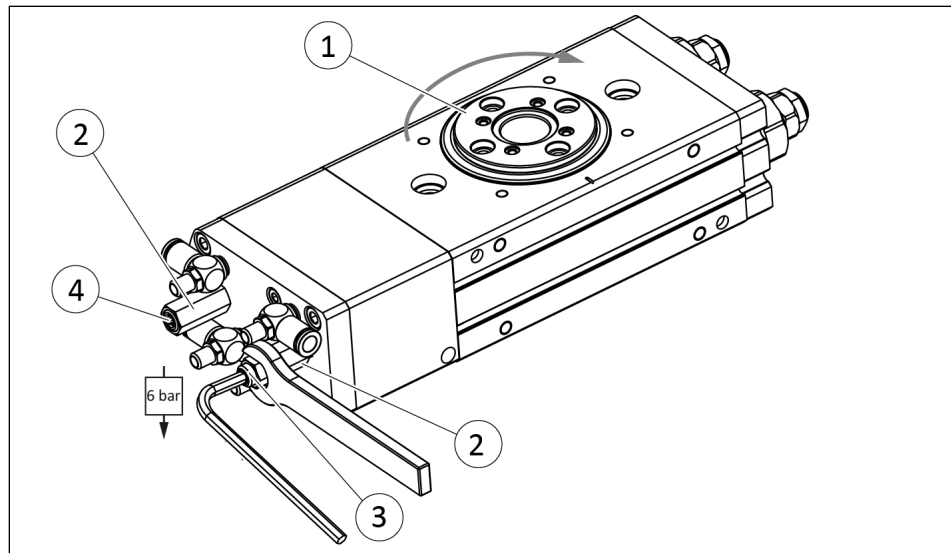
**8. Swivel repeatedly to test the setting, readjust if necessary.**

**7.3.1.2 Base unit with center position (variant -M)**

**Adjust end position**

see ▶ 7.3.1.1 [ 76 ]

**Adjust center position**



*Adjust center position*

**1. Loosen nut (2).**

**2. Apply pressurized air to air connection "C" and "D".**

⇒ Pinion (1) swivels to center position.

**3. Unscrew the stop spindle (4) slightly.**

**4. Turn pinion (1) clockwise to the stop and keep it pressed.**

**5. Turn stop spindle (3) and set the desired center position.**

**6. Screw in stop spindle (4) until the center position is free of play again. **IMPORTANT! If the stop spindle is screwed in too far, the play increases again.****

**7. Tighten nut (2).**

⇒ Tightening torque: SRM 16: 3 Nm; SRM 20: 3 Nm; SRM 25: 8 Nm; SRM 32: 9 Nm; SRM 40: 12 Nm

⇒ Center position is set.

**8. Swivel repeatedly to test the setting, readjust if necessary.**

## 7.3.2 Set swivel time

### NOTE

The optimal swiveling speed is achieved by adjusting the swiveling time on the exhaust air throttles and adjusting the absorber stroke. Schematic illustration of the optimal adjustment, ▶ 7.3.4 [📄 84].

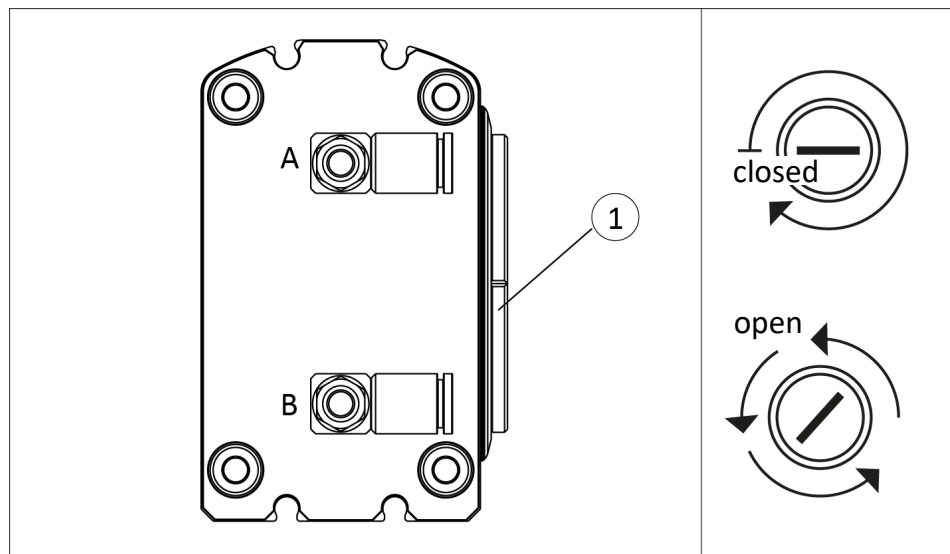
### CAUTION

#### Material damage due to too high swiveling speed!

If the swiveling speed is too high, the assembly will be decelerated abruptly by the shock absorber and will continue to oscillate until reaching the end position. This will overload the shock absorber and may cause damage to it.

- Adjust the swiveling speed in a way, that the movement decelerate smoothly in the end position.

### 7.3.2.1 Base unit



- Load that corresponds to the operating conditions is mounted on the pinion (1).
1. Close exhaust throttle valve on air connection "A" and "B" completely.
  2. Apply pressurized air to air connection "A".
  3. Open exhaust air throttle valve "B" incrementally until the desired swiveling time has been achieved.
    - ⇒ The product swivels into the end position.
  4. Observe movement of the load in front of and in the end position.

- ⇒ The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
- ⇒ OR: springing back or swiveling of the load visible **in** the end position. Increase absorber stroke, ▶ 7.3.3 [ 82].
- ⇒ OR: Springback or oscillation of the load visible **before** the end position, then slow rotary movement to the end position. Turn off exhaust air throttle valve "B" incrementally, if necessary reduce the absorber stroke, ▶ 7.3.3 [ 82].

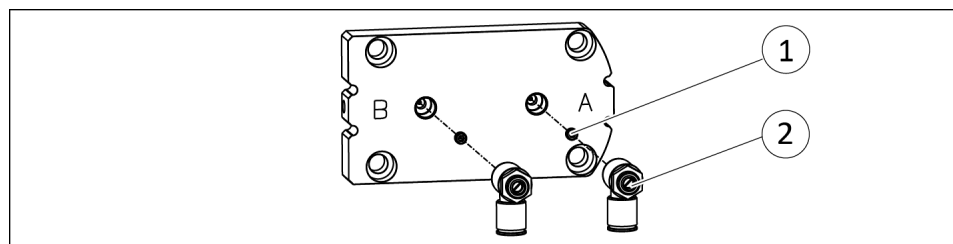
5. Swivel repeatedly to test the setting, readjust if necessary.
6. Adjust swivel time for the other end position analogously.

**Note for size 40**

**NOTE**

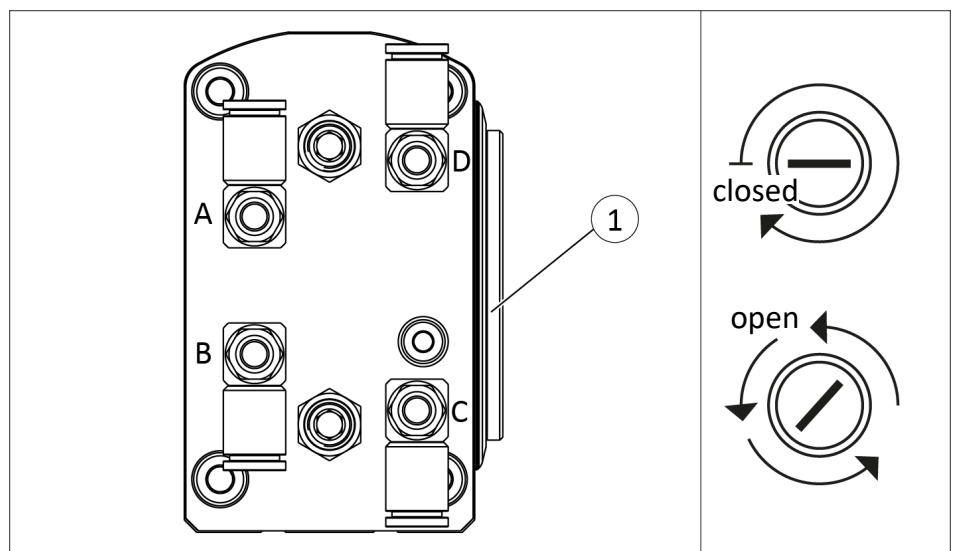
For low loads and horizontal swivel axis, it may be the case that the desired swivel time is no longer achieved.

If the desired swiveling time is no longer achieved:



1. Remove exhaust air throttle valve (2).
2. Remove grub screws (1).
3. Screw in exhaust air throttle valves (2).
4. Adjust swiveling time again.

**7.3.2.2 Base unit with center position (variant -M)**



### Adjustment for end position 1

- Load that corresponds to the operating conditions is mounted on the pinion (1).
- 1. Turn the pinion clockwise to the stop.
- 2. Close exhaust or supply air throttle valve on air connection "A", "B", "C" and "D" completely.
- 3. Apply pressurized air to air connection "C" and "D".
  - ⇒ The product swivels to the center position.
- 4. Open the exhaust air throttle valve "A" incrementally until the desired swiveling time in the center position is reached and the over-swiveling and settling of the load in the center position is low. **IMPORTANT! Too high a swiveling speed leads to more frequent over-swiveling and settling of the load and thus to increased wear of the product.**
- 5. Apply pressurized air to air connection "A".
  - ⇒ The product swivels from the center position to end position 1.
- 6. Open supply air throttle valve "C" and "D" incrementally until the desired swiveling time in the end position is reached.
- 7. Observe movement of the load in front of and in the end position.
  - ⇒ The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
  - ⇒ OR: Springing back or swiveling of the load visible **in** the end position. Increase absorber stroke, ▶ 7.3.3 [□ 82].
  - ⇒ OR: Springing back or swiveling of the load visible **in front of** the end position, then slow rotary movement to the end position. Turn off supply air throttle valve "C" and "D" incrementally; if necessary reduce the absorber stroke, ▶ 7.3.3 [□ 82].
- 8. Swivel repeatedly to test the setting, readjust if necessary.

### Adjustment for end position 2

- Load that corresponds to the operating conditions is mounted on the pinion (1).
- 1. Turn the pinion counter-clockwise to the stop.
- 2. Apply pressurized air to air connection "C" and "D".
  - ⇒ The product swivels to the center position.
- 3. Open the exhaust air throttle valve "B" incrementally until the desired swiveling time in the center position is reached and the over-swiveling and settling of the load in the center



position is low. **IMPORTANT! Too high a swiveling speed leads to more frequent over-swiveling and settling of the load and thus to increased wear of the product.**

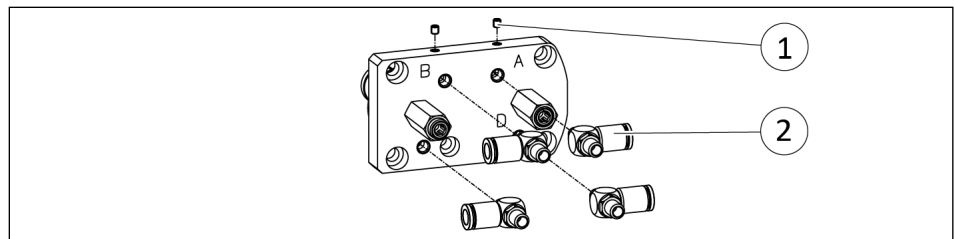
4. Apply pressurized air to air connection "B".
  - ⇒ The product swivels from the center position to end position 2.
5. Observe movement of the load in front of and in the end position.
  - ⇒ The movement brakes smoothly, **no** springing back or swiveling of the load is visible. The product is correctly adjusted.
  - ⇒ OR: Springing back or swiveling of the load visible **in** the end position. Increase absorber stroke, ▶ 7.3.3 [ 82].
  - ⇒ OR: Springing back or swiveling of the load visible **in front of** the end position, then slow rotary movement to the end position. Turn off supply air throttle valve "C" and "D" incrementally; if necessary reduce the absorber stroke, ▶ 7.3.3 [ 82].
6. Swivel repeatedly to test the setting, readjust if necessary.

**Note for size 40–M**

**NOTE**

For low loads and horizontal swivel axis, it may be the case that the desired swivel time is no longer achieved.

If the desired swiveling time is no longer achieved:



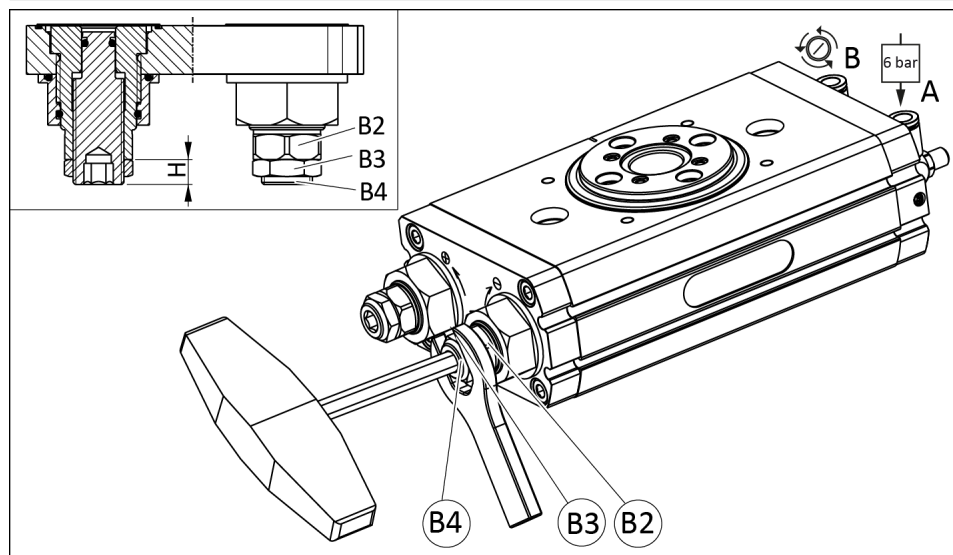
1. Remove exhaust air throttle valve (2).
2. Remove grub screws (1).
3. Screw in exhaust air throttle valves (2).
4. Adjust swiveling time again.

### 7.3.3 Adjust absorber stroke

#### NOTE

The absorber stroke has been pre-set in the factory and can be adjusted in order to achieve the optimal swiveling time.

Size	Projection "H" - factory setting [mm]
16	3.3
20	3.8
25	5.9
32	8.4
40	7.0



1. Observe movement of the load in the end positions.
  - ⇒ If the absorber stroke is too long, the end position is reached too slowly.
  - ⇒ If the absorber stroke is too short, the attachment strikes the end position.
  - ⇒ Note: schematic illustration of the rotating motion, ▶ 7.3.4 [ 84].
2. Loosen the nuts (B3) and counter-support the adjusting sleeve (B2).
  - ⇒ **Reduce** absorber stroke: unscrew stop pin (B4) with hexagon socket wrench incrementally approx. 1/4 revolution. **IMPORTANT! Do not unscrew stop pin too far, the product may become leaky.**
  - OR

- ⇒ **Increase** absorber stroke: screw in stop pin (B4) with hexagon socket wrench incrementally approx. 1/4 revolution. **IMPORTANT! An absorber stroke that is too long reduces the lifespan of the shock absorbers.**
- 3.** Swivel repeatedly to test the setting, readjust if necessary.
  - ⇒ The end positions must be approached gently.
- 4.** Tighten nuts (B3) and counter-support the adjusting sleeve (B2).
  - ⇒ Tightening torque: SRM 16: 9 Nm; SRM 20: 11 Nm; SRM 25: 12 Nm; SRM 32: 20 Nm; SRM 40: 25 Nm
- 5.** Check swiveling time and adjust if necessary, ▶ [7.3.2 \[ 78\]](#)
- 6.** Repeat the steps for the other end position.

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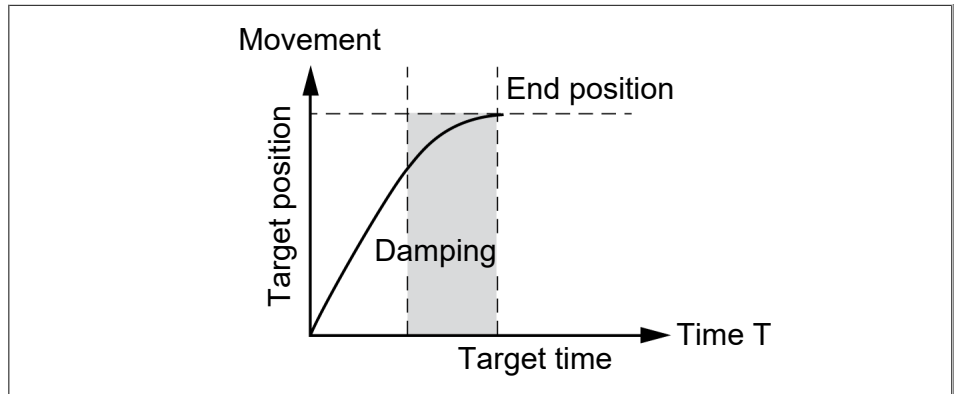
### NOTE

Depending on the loading condition, the settings for the two shock absorbers may deviate widely from each other.

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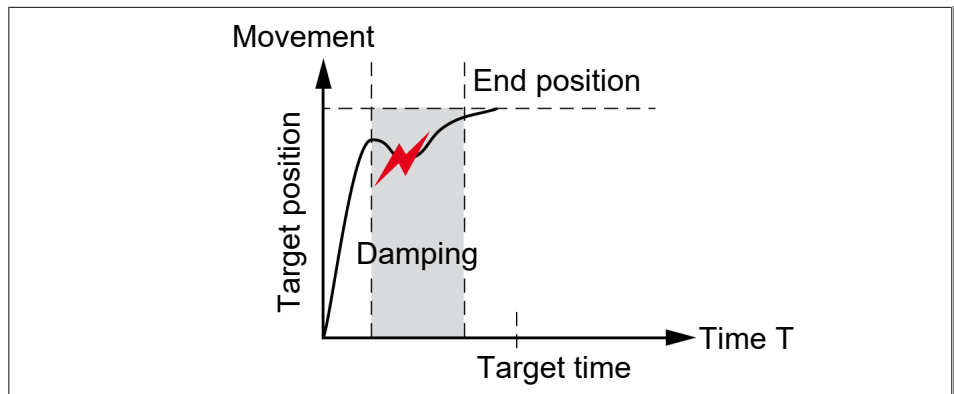
### 7.3.4 Diagram of swiveling movement

#### Optimal setting

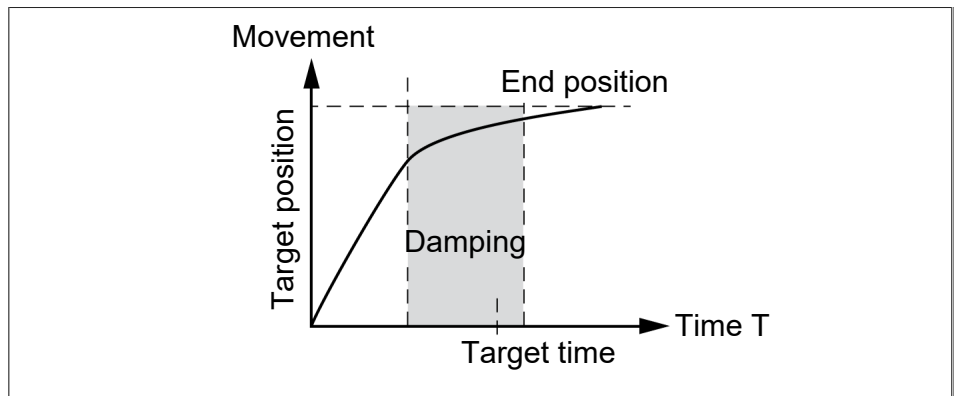


Swiveling speed and absorber stroke are optimal.

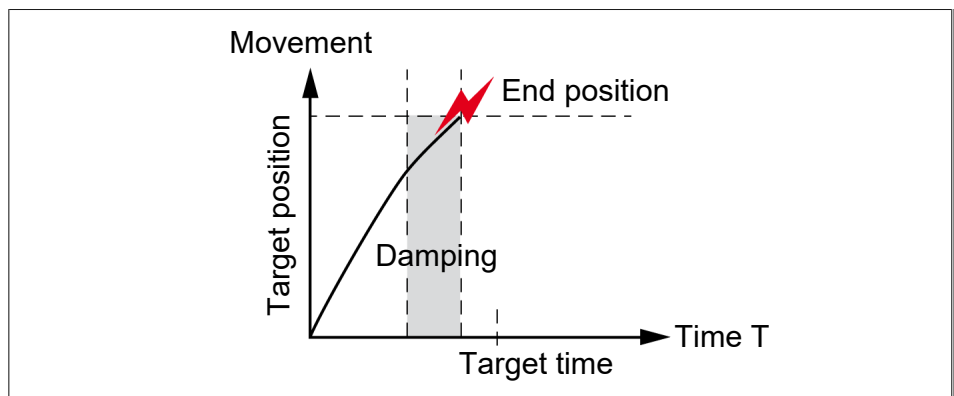
#### Erroneous adjustment



Swiveling speed too high. Assembly oscillates back.



Absorber stroke is too long. End position is reached too slowly.



Absorber stroke is too short. Assembly hits the end position.

## 7.4 Mounting the sensor

### NOTE

Observe the assembly and operating manual of the sensor for mounting and connecting.

The product is prepared for the use of sensors.

- For the exact type designations of suitable sensors, please see catalog datasheet and ▶ 7.4.1 [📄 85].
- For technical data for the suitable sensors, see assembly and operating manual and catalog datasheet.
  - The assembly and operating manual and catalog datasheet are included in the scope of delivery for the sensors and are available at schunk.com.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.

### 7.4.1 Overview of sensors

Size	MMS 22	MMS 22-PI1	RMS 22	IN 80
16	✓	✓	✓	✓
20	✓	✓	✓	✓
25	✓	✓	✓	✓
32	✓	✓	✓	✓
40	✓	✓	✓	✓

## 7.4.2 Mounting magnetic switch MMS 22 / reed switch RMS 22

### CAUTION

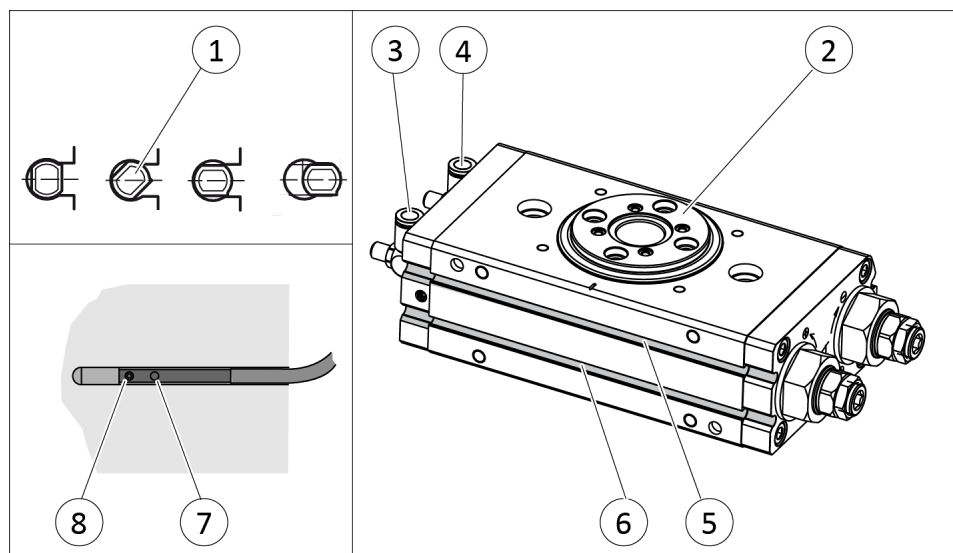
#### Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.

The sensors can be mounted via four grooves in the housing of the product.

We recommend the use of four magnetic switches to monitor the center position:

- Monitoring the end position *A*
- Monitoring the end position *B*
- Monitoring for the approach to the center position from end position *A*
- Monitoring for the approach to the center position from end position *B*



1. Connect sensor and secure cable, see the Sensor Assembly and Operating Manual.
2. Apply air pressure to connection "A" (4).  
⇒ Pinion (2) swivels towards the end position.
3. Insert or screw the first sensor (1) into the groove (5).
4. Move the sensor along the groove until it actuates.
5. Tighten set screw (8).  
⇒ Tightening torque: 10 Ncm
6. Bleed connection "A" (4).
7. Actuate connection "B" (3).  
⇒ Pinion (2) swivels into the other end position.
8. Insert or screw the second sensor (1) into the groove (6).

**Center position variant**

9. Move the sensor along the groove until it actuates.
10. Tighten set screw (8).
  - ⇒ Tightening torque: 10 Ncm
11. Check the switching position and test its function.
 

Rotate unit in the center position and mount sensor analogously.

**7.4.3 Mounting programmable magnetic switch MMS 22-PI1**

**CAUTION**

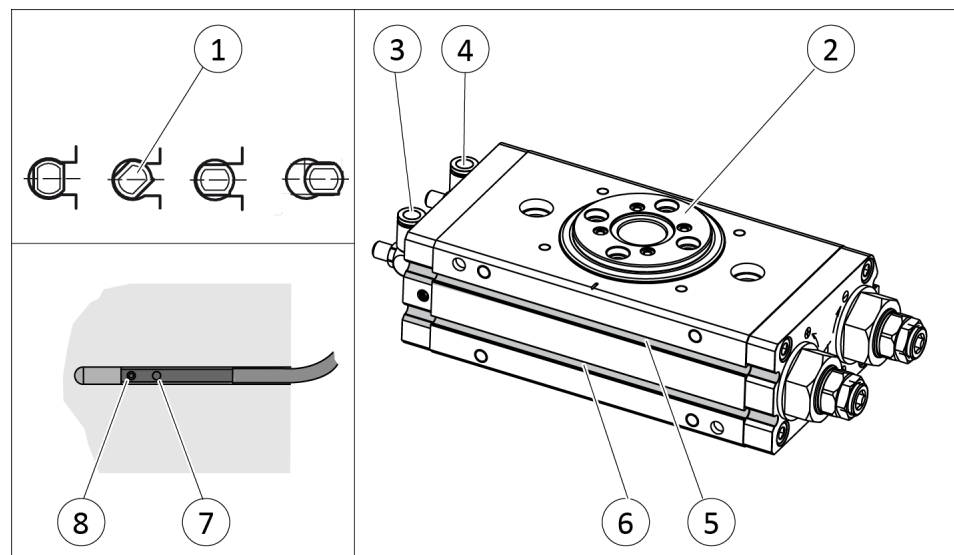
**Risk of damage to the sensor during assembly!**

- Observe the maximal tightening torque.

The sensors can be mounted via four grooves in the housing of the product.

We recommend the use of four magnetic switches to monitor the center position:

- Monitoring the end position *A*
- Monitoring the end position *B*
- Monitoring for the approach to the center position from end position *A*
- Monitoring for the approach to the center position from end position *B*



1. Connect sensor and secure cable, see the Sensor Assembly and Operating Manual.
2. Apply air pressure to connection "A" (4).
  - ⇒ Pinion (2) swivels towards the end position.
3. Hold teaching tool to the sensor (1) until the sensor flashes.

- 4.** Insert or screw the sensor (1) into the groove (5), until the sensor flashes rapidly.
  - 5.** Tighten set screw (8).  
⇒ Tightening torque: 10 Ncm
  - 6.** Bleed connection "A" (4).
  - 7.** Actuate connection "B" (3).  
⇒ Pinion (2) swivels into the other end position.
  - 8.** Repeat steps for the second sensor.
  - 9.** Check the switching position and test its function.
- Rotate unit in the center position and mount sensor analogously.

**Center position  
variant**



### 7.4.4 Mounting inductive proximity switch IN 80

#### NOTE

The sensor can only be used with the variants "SI" or "SF".

#### CAUTION

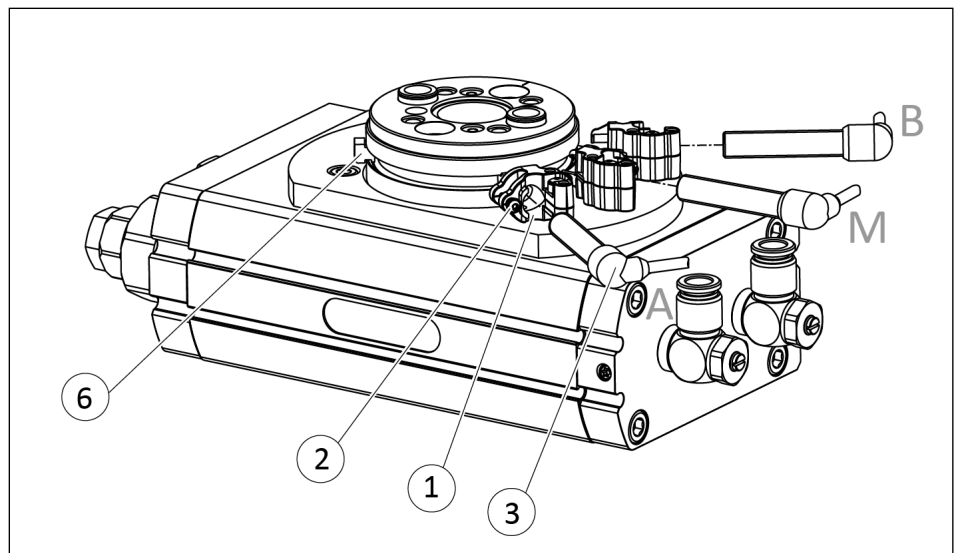
#### Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.

With the sensors, three positions can be queried:

- End position "A"
- Center position "M"
- End position "B"

The following assembly steps are the same for all three positions:



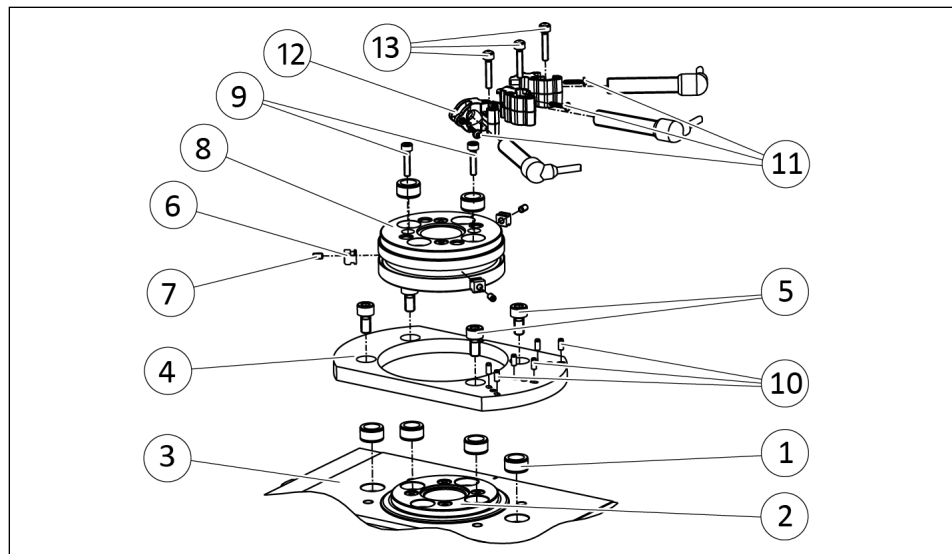
#### NOTE

- The switching cams (6) have been factory set at 0°, 90° and 180°. With the variant "SI", the switching cams can be adjusted.
- An "inductive sensing" mounting kit is optionally available as an accessory from SCHUNK, ▶ 1.4 [□ 11]. Notes on installing the mounting kit ▶ 7.4.4.1 [□ 90].

1. Connect sensor and secure cable, see Sensor Assembly and Operating Manual.
2. Slide sensor (3) into the sensor bracket (1) until the stop.
3. Tighten screw (2).
4. **Only for variant "SI":** Turn the product counter-clockwise to the desired position.

5. **Only for variant "SI":** Loosen the set-screw of the control cam (6) and move the control cam until it is positioned at the height of the corresponding bracket (1).
6. **Only for variant "SI":** Mount switching cam (6) with set-screw.  
⇒ Tightening torque: 0.5 Nm
7. Check the switching positions and test the function, re-adjust the position if necessary.

#### 7.4.4.1 Installing the "inductive monitoring" mounting kit



1. Insert four centering sleeves (1) into the pinion (2) and housing (3).
2. Fasten the base plate (4) to the housing (3) with four screws (5).
3. **Only for variant "SI":** Mount control cam (6) to adapter disk (8) with set-screw (7).
4. Fasten adapter disk (8) to pinion (2) with screws (9).
5. Install two centering pins (10) and one screw (11) in each sensor holder (12).
6. Mount sensor holder (12) to base plate (4) with screw (13).
7. Mount the sensor, ▶ 7.4.4 [ 89].

## 8 Troubleshooting

### 8.1 Product does not move smoothly to the end positions

Possible cause	Corrective action
Swivel time too short.	<p>Set swivel time.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14: <ul style="list-style-type: none"> <li>• ▶ 6.3.2 [📄 51]</li> <li>• ▶ 6.3.3 [📄 56]</li> </ul> </li> <li>• Size 16 – 40: <ul style="list-style-type: none"> <li>• ▶ 7.3.2 [📄 78]</li> </ul> </li> </ul>
Absorber stroke too small.	<p>Adjust absorber stroke.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14: <ul style="list-style-type: none"> <li>• ▶ 6.3.2 [📄 51]</li> <li>• ▶ 6.3.3 [📄 56]</li> </ul> </li> <li>• Size 16 – 40: <ul style="list-style-type: none"> <li>• ▶ 6.3.2.3 [📄 55]</li> </ul> </li> </ul>
Shock absorber defective.	<p>Check or, if need be, replace the shock absorber.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14: <ul style="list-style-type: none"> <li>• ▶ 9 [📄 95]</li> </ul> </li> <li>• Size 16 – 40: <ul style="list-style-type: none"> <li>• ▶ 10 [📄 111]</li> </ul> </li> </ul>

## 8.2 Product does not travel through the rotating angle

Possible cause	Corrective action
Dirt deposits between stop and the piston.	<p>Clean and lubricate product.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14: <ul style="list-style-type: none"> <li>• ▶ 9 [📄 95]</li> </ul> </li> <li>• Size 16 – 40: <ul style="list-style-type: none"> <li>• ▶ 10 [📄 111]</li> </ul> </li> </ul>
End positions are adjusted incorrectly.	<p>Adjust end position.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14: <ul style="list-style-type: none"> <li>• ▶ 6.3.1 [📄 48]</li> </ul> </li> <li>• Size 16 – 40: <ul style="list-style-type: none"> <li>• ▶ 7.3.1 [📄 75]</li> </ul> </li> </ul>
Pressure drops below minimum.	<p>Check air supply.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14: <ul style="list-style-type: none"> <li>• ▶ 6.2.2 [📄 41]</li> </ul> </li> <li>• Size 16 – 40: <ul style="list-style-type: none"> <li>• ▶ 7.2.2 [📄 66]</li> </ul> </li> </ul>
Components have come loose e.g. due to overloading.	<p>Send product with a SCHUNK repair order or dismantle product.</p>
Shock absorber defective.	<p>Check or, if need be, replace the shock absorber.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14: <ul style="list-style-type: none"> <li>• ▶ 9.4 [📄 97]</li> </ul> </li> <li>• Size 16 – 40: <ul style="list-style-type: none"> <li>• ▶ 10.4 [📄 114]</li> </ul> </li> </ul>

### 8.3 Product rotates jerkily

Possible cause	Corrective action
Too little grease in the mechanical guiding areas.	Clean and lubricate product. <ul style="list-style-type: none"> <li>• Size 10 – 14:                             <ul style="list-style-type: none"> <li>• ▶ 9 [📄 95]</li> </ul> </li> <li>• Size 16 – 40:                             <ul style="list-style-type: none"> <li>• ▶ 10 [📄 111]</li> </ul> </li> </ul>
Compressed air lines blocked.	Check compressed air lines of damage.
Swiveling speed too high.	Adjust swiveling speed. <ul style="list-style-type: none"> <li>• Size 10 – 14:                             <ul style="list-style-type: none"> <li>• ▶ 6.3.2 [📄 51]</li> <li>• ▶ 6.3.3 [📄 56]</li> </ul> </li> <li>• Size 16 – 40:                             <ul style="list-style-type: none"> <li>• ▶ 7.3.2 [📄 78]</li> </ul> </li> </ul>

### 8.4 Product does not move

Possible cause	Corrective action
Component part defective.	Replace component or send it to SCHUNK for repair. Have Schunk check the application.
Pressure drops below minimum.	Check air supply. <ul style="list-style-type: none"> <li>• Size 10 – 14:                             <ul style="list-style-type: none"> <li>• ▶ 6.2.2 [📄 41]</li> </ul> </li> <li>• Size 16 – 40:                             <ul style="list-style-type: none"> <li>• ▶ 7.2.2 [📄 66]</li> </ul> </li> </ul>
Compressed air lines switched.	Check compressed air lines.
Unused air connections open.	Close unused air connections. <ul style="list-style-type: none"> <li>• Size 10 – 14:                             <ul style="list-style-type: none"> <li>• ▶ 6.2.2 [📄 41]</li> </ul> </li> <li>• Size 16 – 40:                             <ul style="list-style-type: none"> <li>• ▶ 7.2.2 [📄 66]</li> </ul> </li> </ul>
Both exhaust air throttle valves are closed.	Open one exhaust air throttle valve.
Proximity switch defective or set incorrect.	Adjust sensor or if necessary change sensor. <ul style="list-style-type: none"> <li>• Size 10 – 14:                             <ul style="list-style-type: none"> <li>• ▶ 6.4 [📄 58]</li> </ul> </li> <li>• Size 16 – 40:                             <ul style="list-style-type: none"> <li>• Mounting the sensor</li> </ul> </li> </ul>

## 8.5 Torque is diminishing

Possible cause	Corrective action
Compressed air can escape.	<p>Check seals, if necessary, disassemble the product and replace seals.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14:</li> <li>• ▶ 9.5 [📄 98]</li> <li>• Size 16 – 40:</li> <li>• ▶ 10.5 [📄 115]</li> </ul>
Too much grease in the mechanical movement space.	<p>Clean and lubricate product.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14:</li> <li>• ▶ 9 [📄 95]</li> <li>• Size 16 – 40:</li> <li>• ▶ 10 [📄 111]</li> </ul>
Pressure drops below minimum.	<p>Check air supply.</p> <ul style="list-style-type: none"> <li>• Size 10 – 14:</li> <li>• ▶ 6.2.2 [📄 41]</li> <li>• Size 16 – 40:</li> <li>• ▶ 7.2.2 [📄 66]</li> </ul>

## 9 Maintenance, size 10 – 14



### ⚠ WARNING

#### Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

### 9.1 Maintenance interval

#### CAUTION

#### Material damage due to hardening lubricants!

Lubricants harden more quickly at temperatures above 60°C, leading to possible product damage.

- Reduce the lubricant intervals accordingly.

Size 10 – 14

Interval (million cycles)	Maintenance work
daily	Visually inspect the function of the shock absorbers, ▶ 9.3 [97].
3	Check that the shock absorbers are working, if necessary replace shock absorber, ▶ 9.4 [97].
3	Clean all parts thoroughly, check for tightness, replace seals if necessary, ▶ 9.5 [98].

## 9.2 Lubricants/Lubrication points (basic lubrication)



### **⚠ WARNING**

#### **Risk of injury due to contact with lubricants!**

Lubricant may cause irritation and allergic reactions if it contacts the skin or eyes.

- Avoid contact between lubricant and skin or eyes.
- Wear safety goggles and protective gloves.
- Observe information on the safety data sheet of the lubricant.

SCHUNK recommends the lubricants listed.

During maintenance, treat all greased areas with lubricant. Thinly apply lubricant with a lint-free cloth.

#### **Size 10 – 14, Basic:**

Lubricant point	Lubricant
The teeth and the pinion	SCHUNK grease 9
Seals and sealing surfaces	SCHUNK grease 9

#### **Size 10 – 14, MDF:**

Lubricant point	Lubricant
The teeth and the pinion	SCHUNK grease 9
Seals and sealing surfaces	SCHUNK grease 9

Details regarding SCHUNK lubricant designations are available at [schunk.com/lubricants](https://www.schunk.com/lubricants).

The product contains food-compliant lubricants as standard. Components such as rolling bearings, linear guides, or shock absorbers are not provided with food-compliant lubricants.

**The requirements of standard EN 1672-2:2020 are not fully met.**

### **NOTE**

- Change contaminated food-compliant lubricant.
- Observe information in the safety data sheet from the lubricant manufacturer.



### 9.3 Inspect shock absorbers

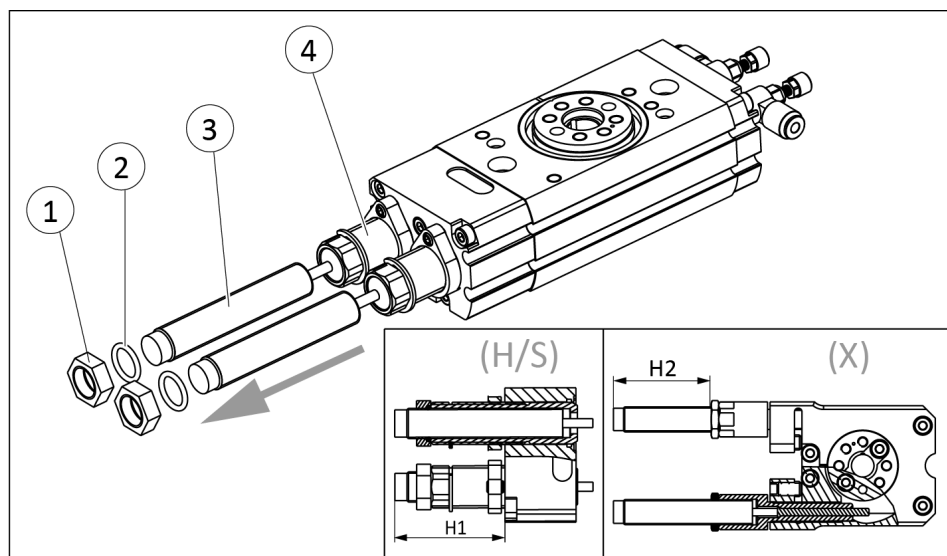
The shock absorbers are specially tested and can only be acquired from SCHUNK. The shock absorbers have a limited lifespan, depending on the load.

- Regularly check that the shock absorbers are working.
  - ⇒ The shock absorber is working correctly if the product moves softly into the end positions when set correctly and the prescribed swiveling time is reached.

### 9.4 Replace shock absorber

#### NOTE

- Shock absorbers have to be replaced only for variants -H, -S and -X.
- With variant -S, only the hydraulic shock absorbers can be replaced by the customer.  
Worn seals and dampening rings (elastomer) in the speed assembly can only be exchanged using a special tool. To do this, send the product to SCHUNK Service.
- In variant -E, the elastomer plugs are fatigue-proof.



Size - Variant	Designation Shock absorber
10 -H	WP - M 0.1 -143
10 -X	WP - M 0.1 -149
12 -H	WP - M 0.1 -144
12 -X	WP - M 0.1 -149
12 -S	WP - M 0.1 - 166 - 2
14 -H	WP - M 0.15 -186
14 -X	WP - M 0.15 -176

Size – Variant	Designation Shock absorber
14 –S	WP – M 0.15 –157

### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.
3. Measure shock absorber projection "H1" or "H2".
4. Loosen nut (1) and counter-support the adjusting sleeve (4).
5. **Variant –H / –S:** Remove nut (1) and O-ring (2).  
**Variant –X:** Remove nut (1).
6. Unscrew the shock absorber (3).

### Assembling

1. Screw in new shock absorber.
2. Set determined shock absorber projection "H1" or "H2".
3. **Variant –H / –S:** Fit new O-ring (2) and fasten nut (1).  
**Variant –X:** Fasten nut (1).
4. Check absorber stroke and readjust if necessary.
5. Mount product onto the system/machine.

### NOTE

- With variant –S, only the hydraulic shock absorbers can be replaced by the customer.

## 9.5 Replacing seals



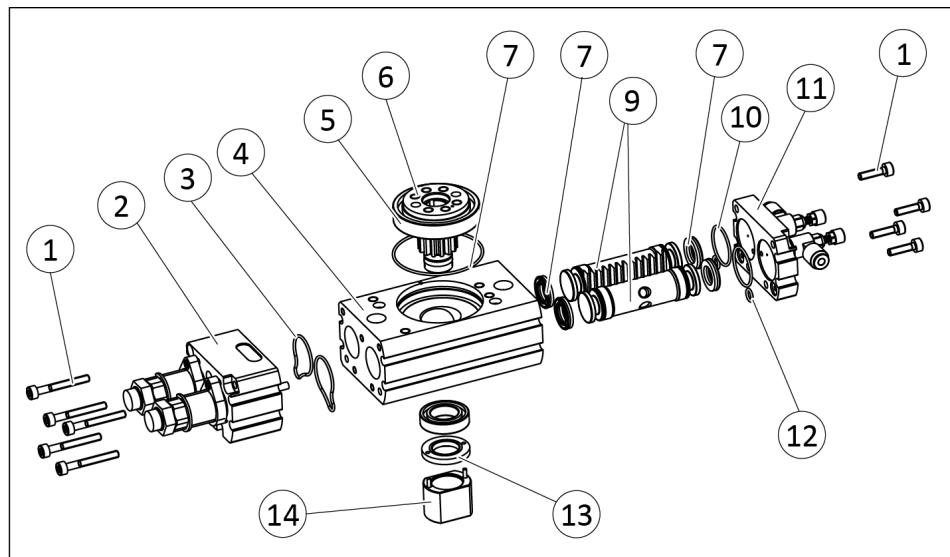
### ⚠ WARNING

#### Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

## 9.5.1 Base unit



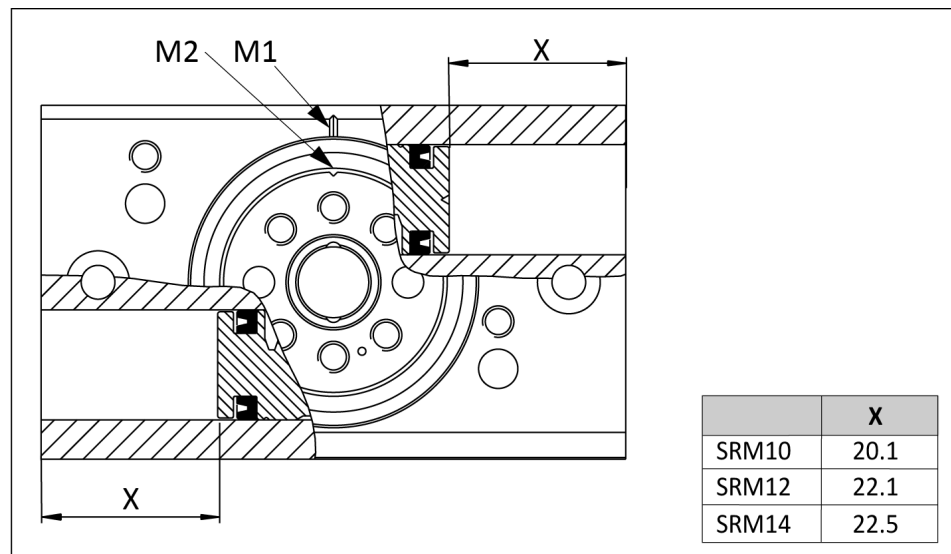
### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.
3. Disassemble sensors if necessary.
4. Insert disassembly tool (14) with the cylindrical pins into the bearing nuts (13).  
Note: the disassembly tool is available as an accessory from SCHUNK. ▶ 1.4.3 [ 13 ]
5. Carefully turn the disassembly tool (14) with a hexagon socket wrench and unscrew the bearing nut (13).
6. Push pinion (6) with bearing (5) from below upwards out of the housing.
7. Remove the screws (1).
8. Remove cover (2) and stop cover (11).
9. Remove O-rings (3, 10, 12).
10. Pull both pistons (9) out of the housing.
11. Remove piston seals (7).
12. Clean all parts thoroughly, check for damage and wear and grease with a lint-free cloth or brush.

### Assembling

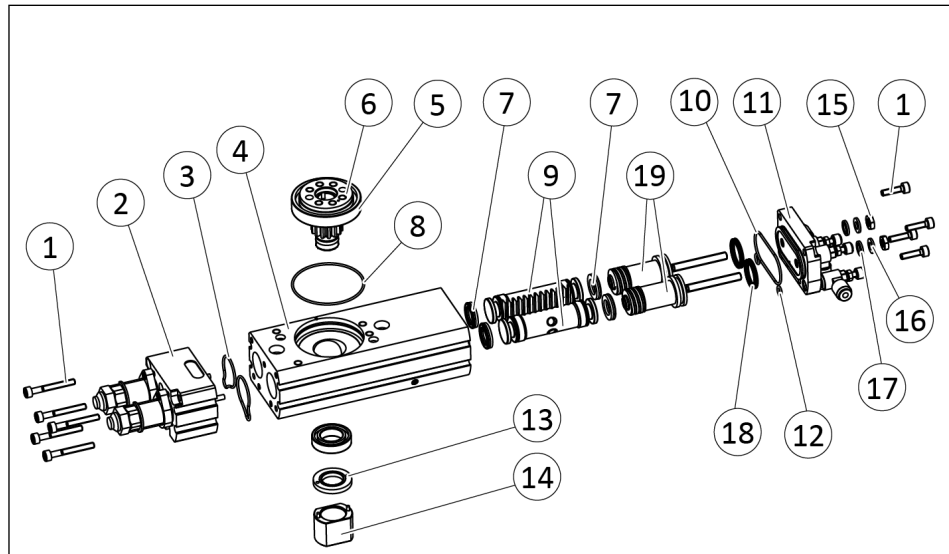
1. Sufficiently grease the serration of the pinion (6) and the piston (9). Insert new greased seals.
2. Position piston (9) on the dimension "X" in the housing, see following illustration.
3. Insert pinion (6) so that the marking on the pinion (M2) and on the housing (M1) are aligned.

4. Carefully degrease the thread of the pinion (6) and the bearing nut (13) with the chemical cleaner, coat with activator Loctite 7649 and leave to flash off.
5. Fully coat the thread of bearing nut (13) with Loctite no. 542.
6. Coat the tread of the pinion (6) on the outer thread turns with Loctite no. 542.
7. Screw on and tighten bearing nut.
  - ⇒ Tightening torque SRM10: 0.1 Nm; SRM12 / 14: 0.15 Nm
8. Assemble product in the reverse order.
  - ⇒ Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
9. Mount product onto the system/machine.



Installation dimension "X" and markings on pinion and housing

## 9.5.2 Base unit with center position (variant -M)

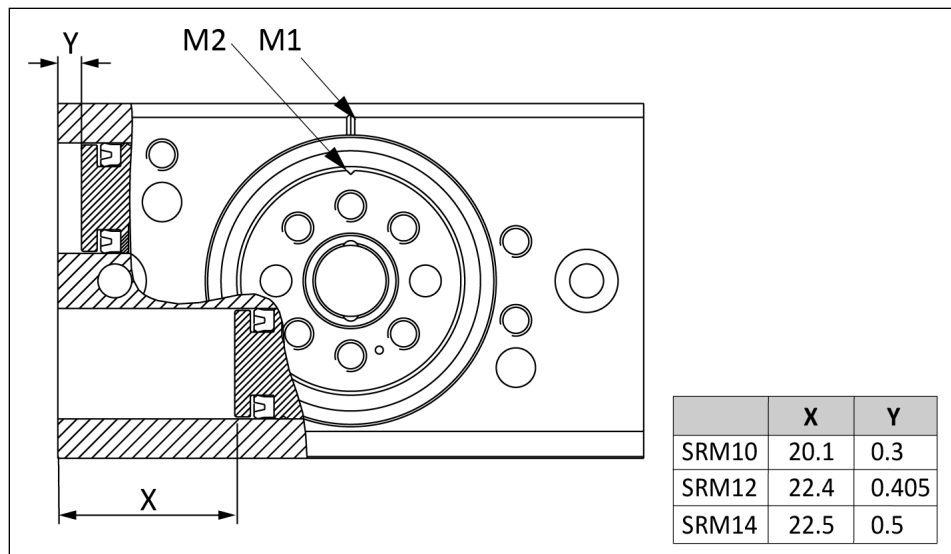


### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.
3. Disassemble sensors if necessary.
4. Insert disassembly tool (14) with the cylindrical pins into the bearing nuts (13).  
Note: the disassembly tool is available as an accessory from SCHUNK. ▶ 1.4.3 [ 13 ]
5. Carefully turn the disassembly tool (14) with a hexagon socket wrench and unscrew the bearing nut (13).
6. Push pinion (6) with bearing (5) from below upwards out of the housing.
7. Remove the screws (1).
8. Remove cover (11) and stop cover (2).
9. Remove O-rings (3, 8, 10, 12).
10. Pull both pistons (9) out of the housing.
11. Remove piston seals (7).
12. Loosen nuts (15).
13. Remove fitting disks (16) and seals (17).
14. Remove the seal (18) from the centering piston (19).
15. Clean all parts thoroughly, check for damage and wear and grease with a lint-free cloth or brush.

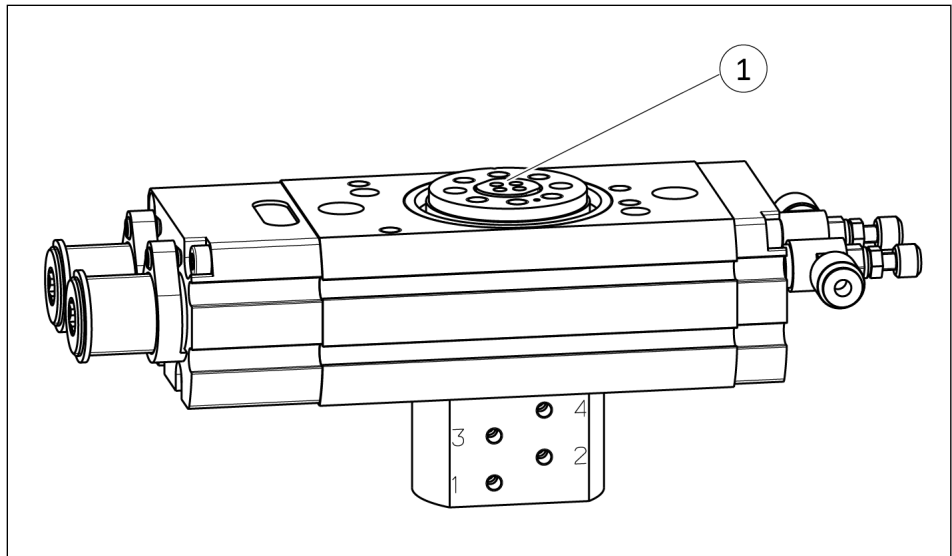
### Assembling

1. Sufficiently grease the serration of the pinion (6) and the piston (9). Insert new greased seals.
2. Position piston (9) at the dimension "X" or "Y" in the housing, see following illustration.
3. Insert pinion (6) so that the marking on the pinion (M2) and on the housing (M1) are aligned.
4. Carefully degrease the thread of the pinion (6) and the bearing nut (13) with the chemical cleaner, coat with activator Loctite 7649 and leave to flash off.
5. Fully coat the thread of bearing nut (13) with Loctite no. 542.
6. Coat the tread of the pinion (6) on the outer thread turns with Loctite no. 542.
7. Screw on and tighten bearing nut.
  - ⇒ Tightening torque SRM10: 0.1 Nm; SRM12 / 14: 0.15 Nm
8. Assemble product in the reverse order.
  - ⇒ Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
9. Mount product onto the system/machine.



Installation dimension "X" and markings on pinion and housing

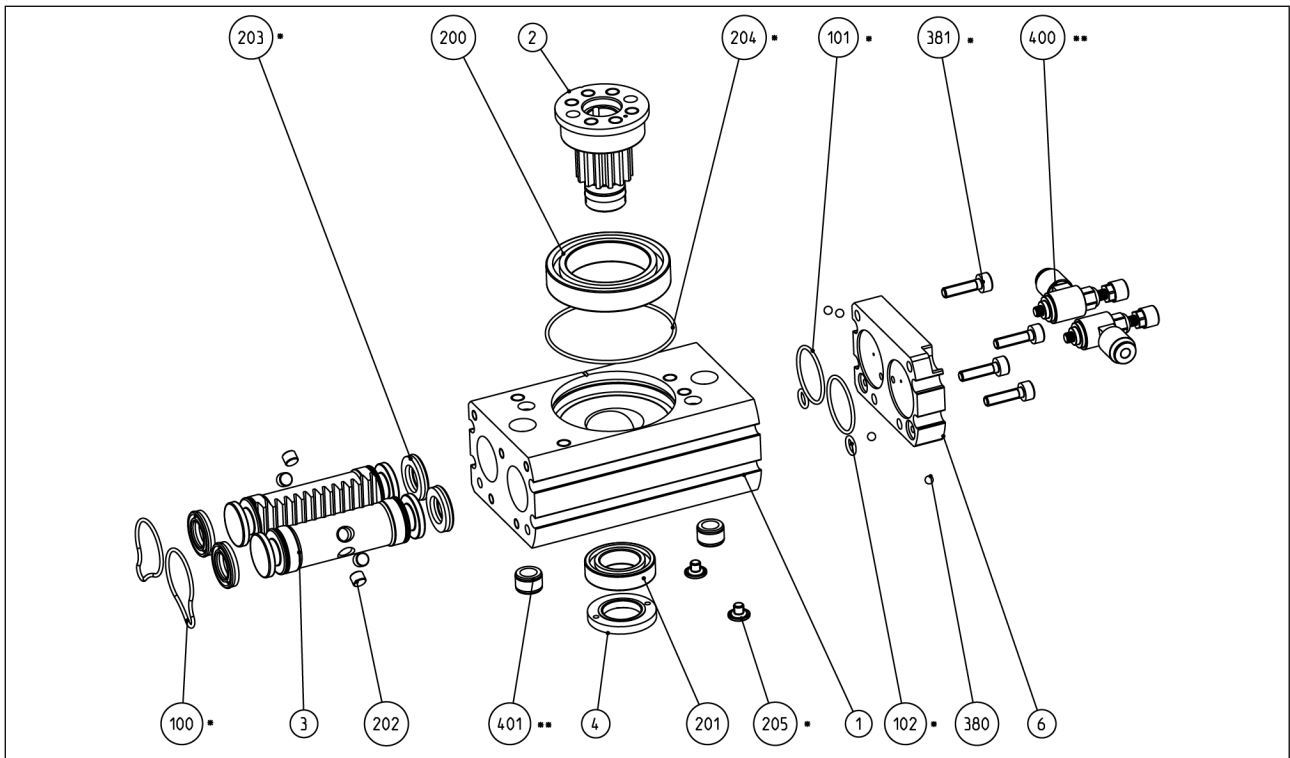
### 9.5.3 Fluid feed-through (MDF) variant



1. Ventilate the product.
2. Disassemble the attachments on the pinion.
3. Check flat gasket (1) for damage, replace if necessary.
  - ⇒ Remove the self-adhesive film from the new flat gasket.
  - ⇒ When fitting the new, greased seal, ensure that it is correctly positioned! ▶ 9.2 [ 96].
4. Check product for leaks. If leaking, send the product to SCHUNK for repair.

## 9.6 Assembly drawings

### 9.6.1 Base unit

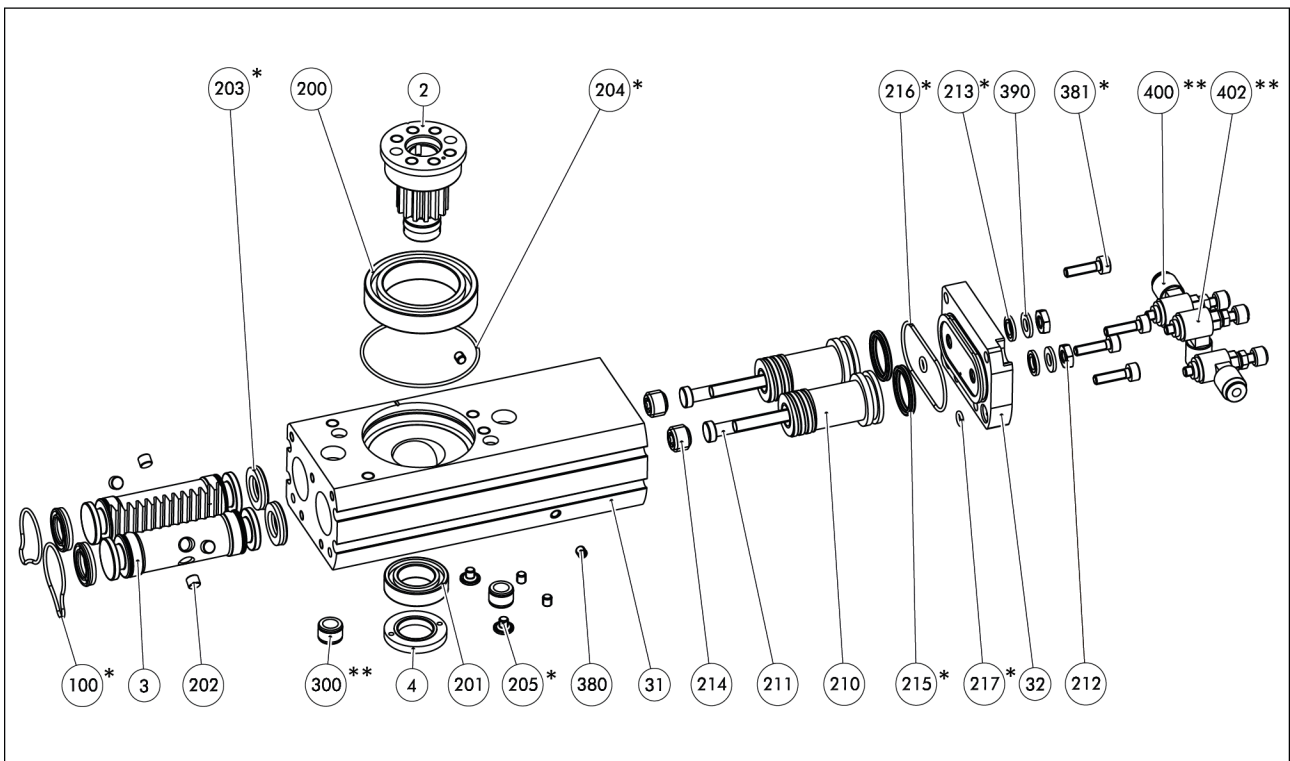


\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

\*\* Contained in accessory pack.



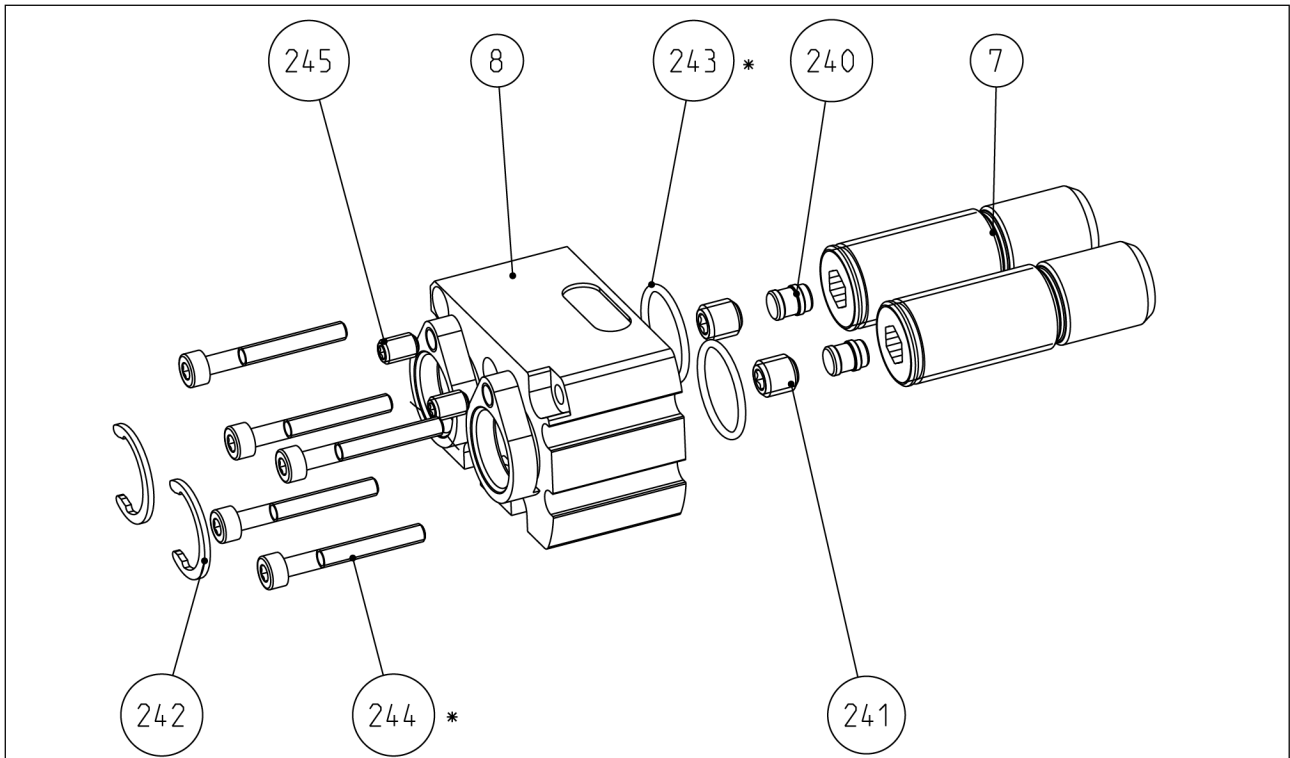
### 9.6.2 Base unit with center position (variant -M)



\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

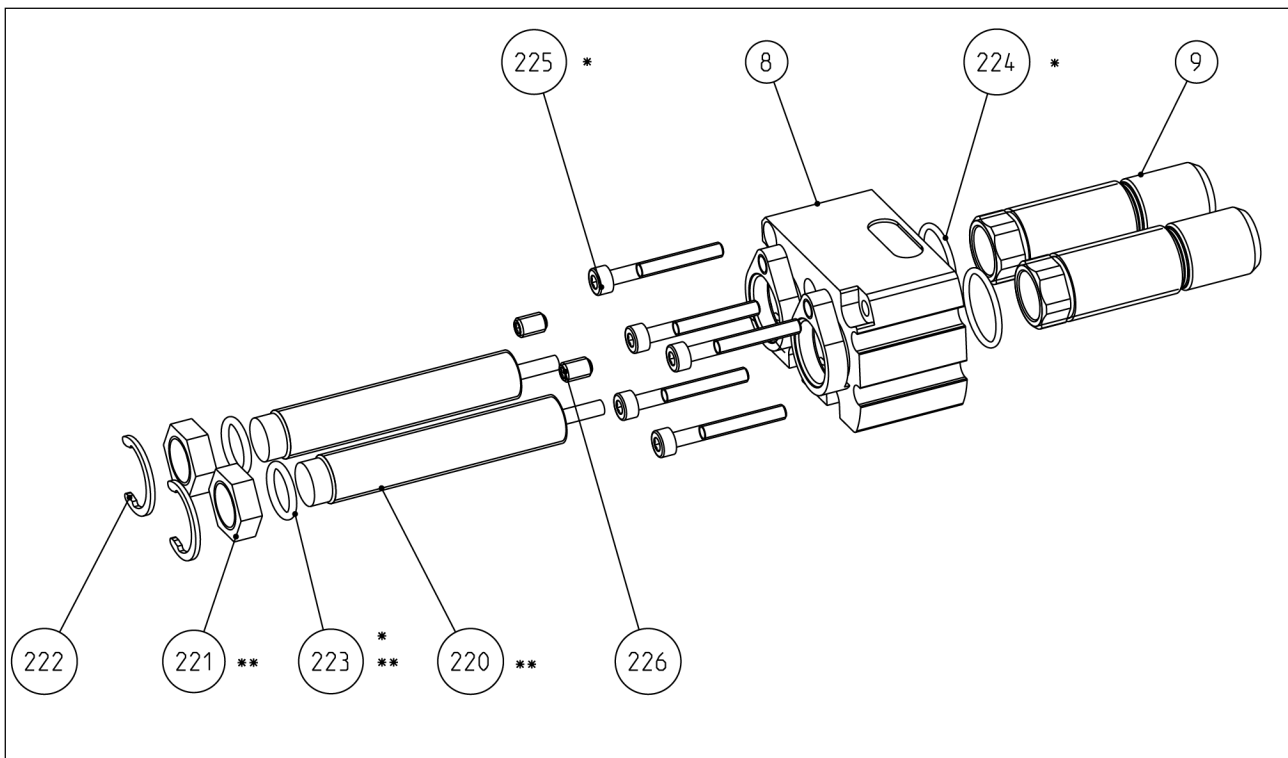
\*\* Contained in accessory pack.

### 9.6.3 Stop with damper variant -E



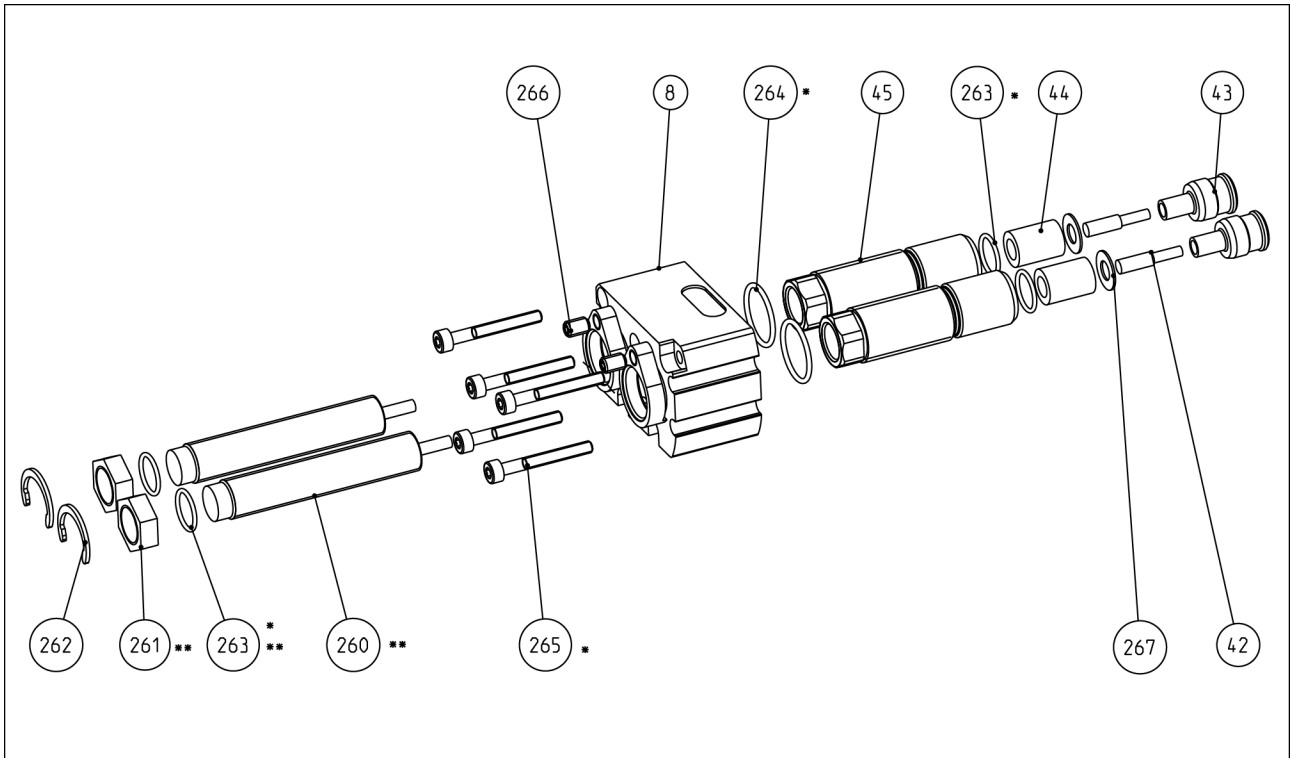
\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

### 9.6.4 Stop with damper variant -H



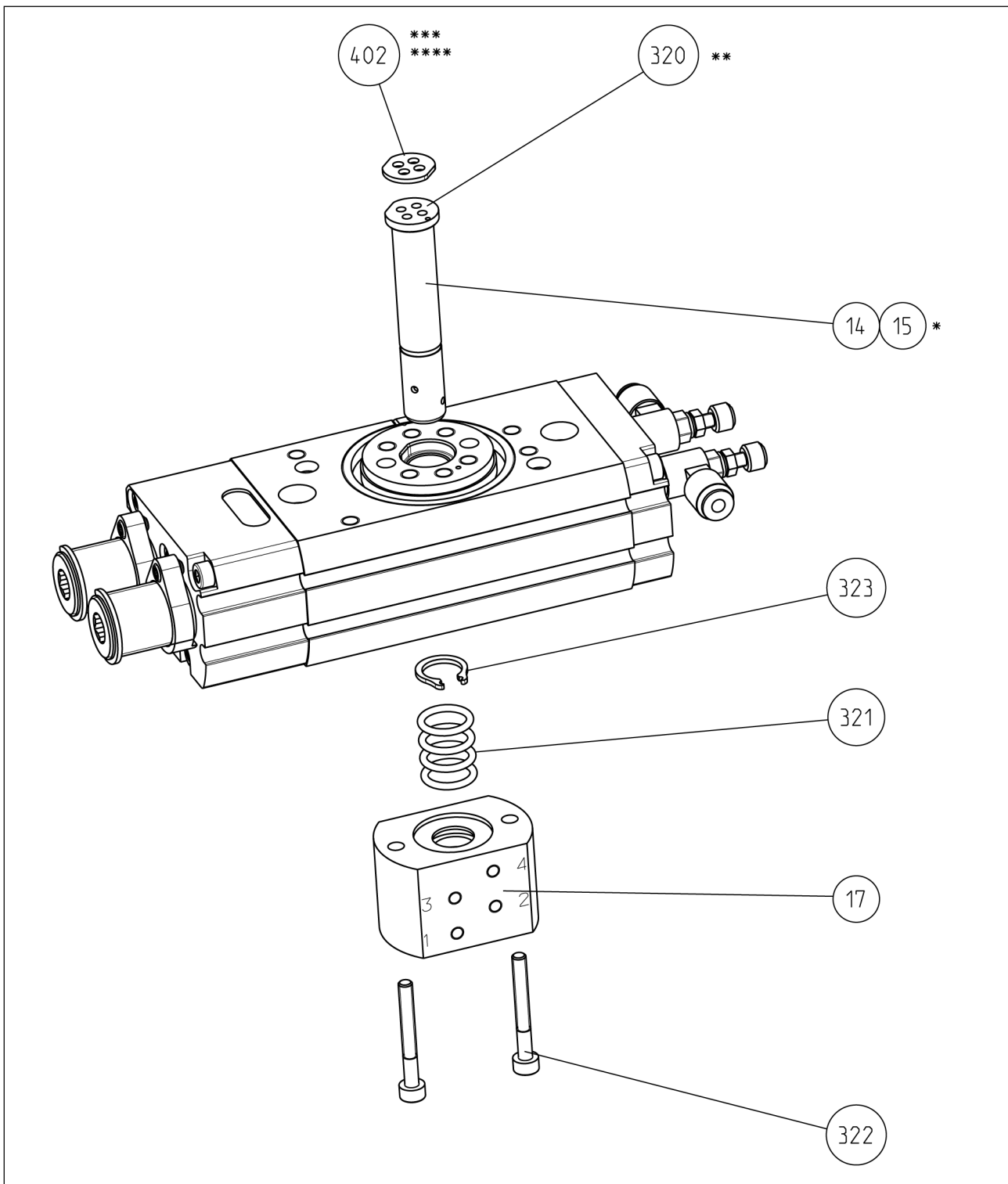
- \* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.
- \*\* Included in the "shock absorber" spare parts package. The spare parts package can only be ordered as a whole.

### 9.6.5 Stop with absorber variant –S



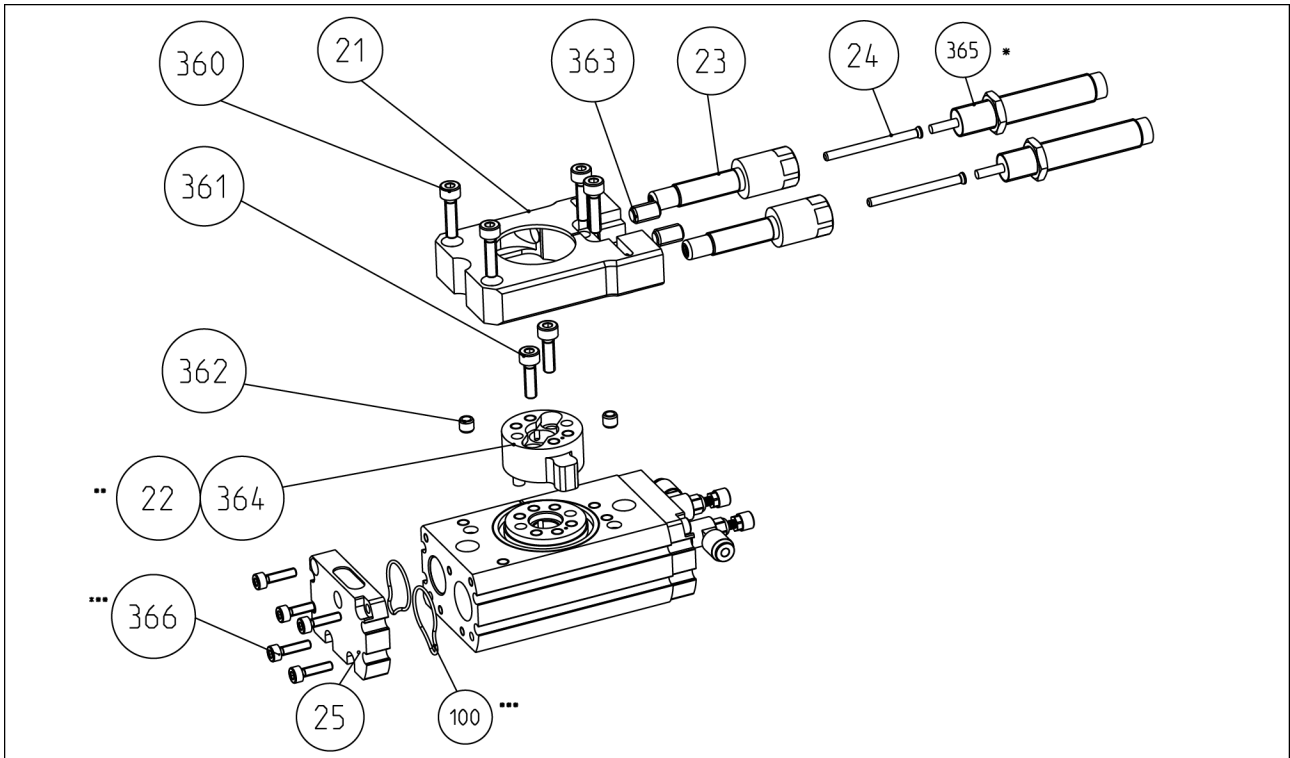
- \* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.
- \*\* Included in the "shock absorber" spare parts package. The spare parts package can only be ordered as a whole.

### 9.6.6 Variant with fluid feed-through (MDF)



- \* For fluid feed-through with external stop
- \*\* Bonded with pos. 14/15
- \*\*\* Contained in accessory pack.
- \*\*\*\* Contained in seal kit.

### 9.6.7 Variant with external stop -X



\* Included in the "shock absorber" spare parts package. The spare parts package can only be ordered as a whole.

\*\* Observe whether version 90° or 180°

\*\*\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

## 10 Maintenance, size 16 – 40



### ⚠ WARNING

#### Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

### 10.1 Maintenance interval

#### CAUTION

#### Material damage due to hardening lubricants!

Lubricants harden more quickly at temperatures above 60°C, leading to possible product damage.

- Reduce the lubricant intervals accordingly.

#### All sizes

Interval	Maintenance work
daily	Visually inspect the function of the shock absorbers, ▶ 10.3.1 [113].

#### Size 16, 20, 25

Interval (million cycles)	Maintenance work
2	Check that the shock absorbers are working, if necessary replace shock absorber, ▶ 10.4 [114].
2	Clean all parts thoroughly, check for tightness, replace seals if necessary, ▶ 10.5 [115].
2	Treat all grease areas with lubricant, ▶ 10.2 [112].

#### Size 16–MDF

Interval (million cycles)	Maintenance work
2	Check that the shock absorbers are working, if necessary replace shock absorber, ▶ 10.4 [114].
1.5	Clean all parts thoroughly, check for tightness, replace seals if necessary, ▶ 10.5 [115].
2	Treat all grease areas with lubricant, ▶ 10.2 [112].

**Size 32, 40**

Interval (million cycles)	Maintenance work
1.3	Check that the shock absorbers are working, if necessary replace shock absorber, ▶ 10.4 [📄 114].
1.3	Clean all parts thoroughly, check for tightness, replace seals if necessary, ▶ 10.5 [📄 115].
2	Treat all grease areas with lubricant, ▶ 10.2 [📄 112].

**10.2 Lubricants/Lubrication points (basic lubrication)**

During maintenance, treat all greased areas with lubricant. Thinly apply lubricant with a lint-free cloth. SCHUNK recommends the lubricants listed.

Lubricant point	Lubricant
The teeth and the pinion	SCHUNK grease 1
Seals and sealing surfaces	SCHUNK grease 1

Details regarding SCHUNK lubricant designations are available at [schunk.com/lubricants](https://www.schunk.com/lubricants).

The product contains food-compliant lubricants as standard. Components such as rolling bearings, linear guides, or shock absorbers are not provided with food-compliant lubricants.

**The requirements of standard EN 1672-2:2020 are not fully met.**

**NOTE**

- Change contaminated food-compliant lubricant.
- Observe information in the safety data sheet from the lubricant manufacturer.



## 10.3 Inspect and set shock absorbers

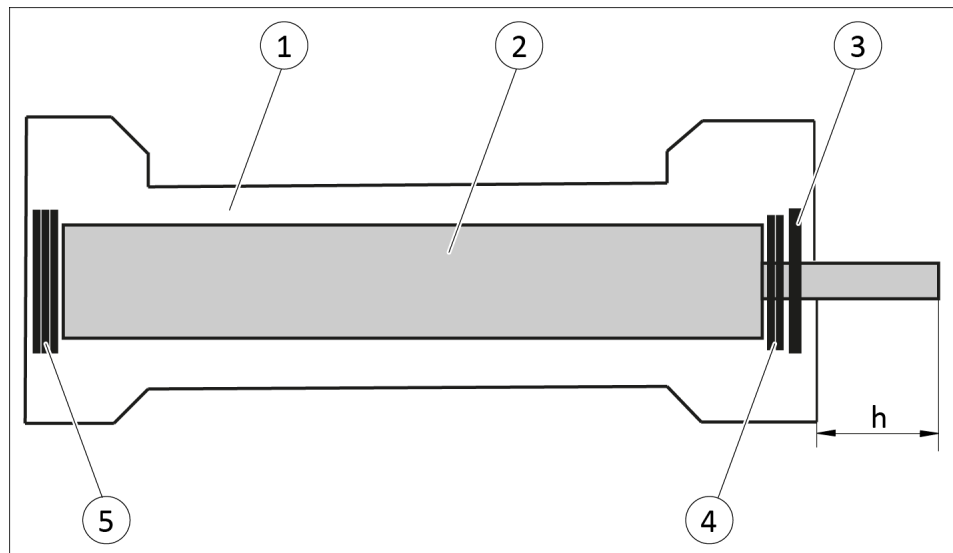
### 10.3.1 Inspect shock absorbers

The shock absorbers are specially tested and can only be acquired from SCHUNK. The shock absorbers have a limited lifespan, depending on the load.

- Regularly check that the shock absorbers are working.
  - ⇒ The shock absorber is working correctly if the product moves softly into the end positions when set correctly and the prescribed swiveling time is reached.

### 10.3.2 Set shock absorber overhang

For production reasons, shock absorbers may be of different sizes. If a shock absorber is exchanged, the new shock absorber with fitting disks must be set to the corresponding shock absorber overhang (h).

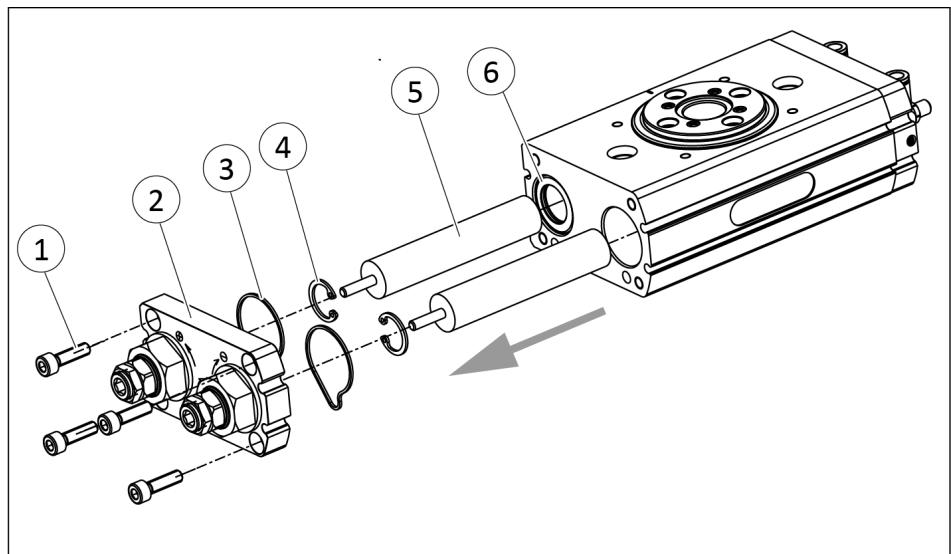


1. First set the shock absorber overhang (h) of the shock absorber (2) in the piston (1) with fitting disks (5) ► 10.3.3 [114].
2. After this, reduce the play of the shock absorber (2) to the safety ring (3) with fitting disks (4).
  - ⇒ The shock absorber (2) must be fitted in the pistons (1) as free from play as possible.

### 10.3.3 Shock absorber types and overlap

Size	Designation Shock absorber	Shock absorber overlap "h" [mm]	Tolerance [mm]
16	WP-M 0.15-130	8	- 0.4
20	WP-M 0.35 – 641	11	- 0.3
25	WP-M 0.4-609	13.7	- 0.1
32	WP-M 0.6-766	18	- 0.4
40	WP-M 1.0-703	19	- 0.1

### 10.4 Replace shock absorber



#### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.
3. Disassemble sensors if necessary.
4. Remove the screws (1).
5. Remove stop cover (2) with flat gaskets (3).
6. Remove the safety ring (4) on piston (6).
7. Pull out shock absorbers (5).
8. Clean all parts thoroughly, check for damage and wear and grease with a lint-free cloth or brush.

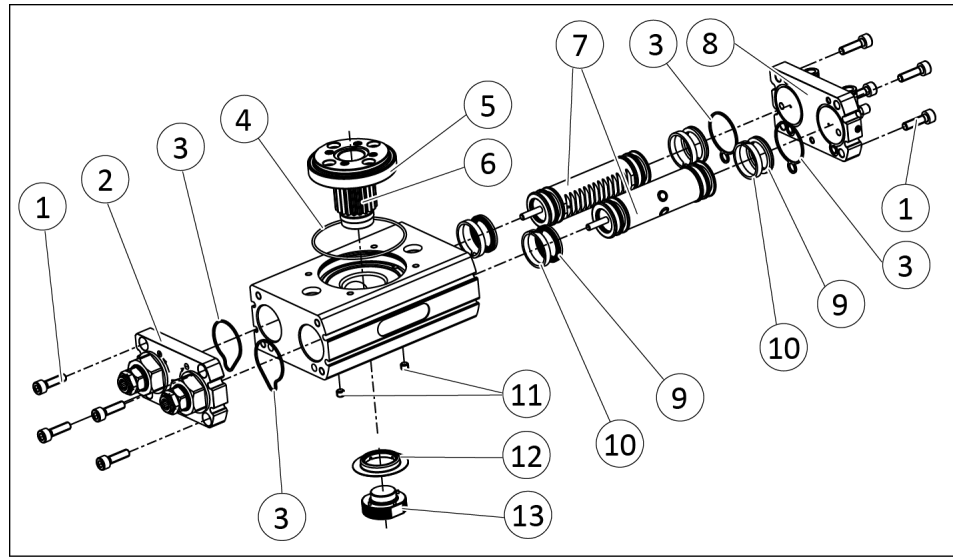
#### Assembling

1. Insert new shock absorbers.
2. Set shock absorber projection (h), ► 10.3.2 [ 113].
3. Set safety ring (4) in the groove of the piston (6).
4. Change the second shock absorber the same way.
5. Insert new flat gaskets (3) into the stop cover (2).

6. Fasten the stop cover (2) to the housing with screws (1).  
 ⇒ Tightening torque: SRM 16: 2.2 Nm; SRM 20: 4.3 Nm;  
 SRM 25: 4.3 Nm; SRM 32: 7.3 Nm; SRM 40: 18 Nm
7. Check absorber stroke and readjust if necessary.
8. Mount product onto the system/machine.

## 10.5 Replacing seals

### 10.5.1 Base unit



Size	Tightening torque [Nm]		
	① Screw	⑪ Set-screw	⑫ Thread ring
16	2.2	1	0.7
20	4.3	4.3	2.0
25	4.3	4.3	4
32	7.3	4.3	5
40	18	18	8

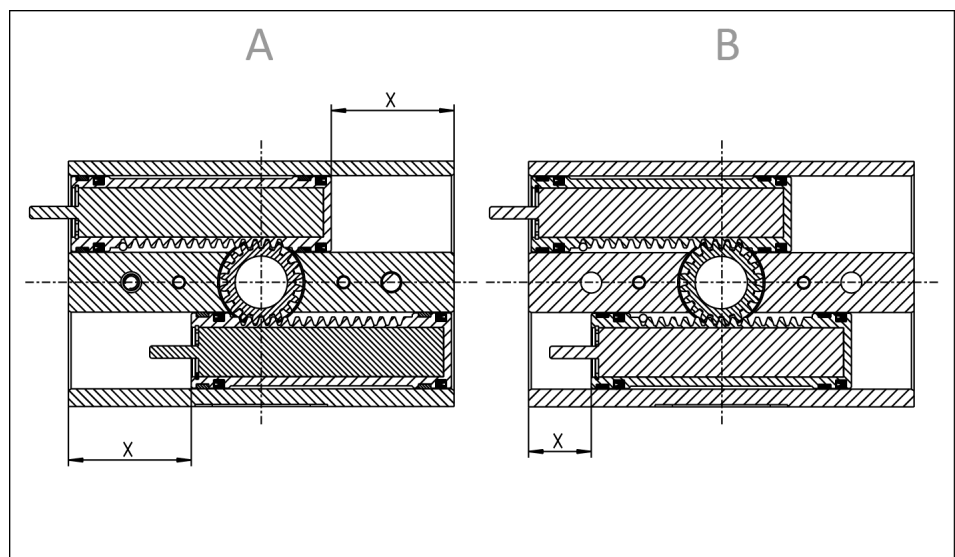
#### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.
3. Disassemble sensors if necessary.
4. Insert disassembly tool (13) with the cylindrical pins into the threaded ring (12).  
 Note: the disassembly tool is available as an accessory from SCHUNK, ▶ 1.4.3 [□ 13].
5. Carefully turn the disassembly tool (13) with a wrench and unscrew the threaded ring (12).
6. Remove set-screws (11).

7. Screw the screws that come with the spare parts package alternately into the loosened threaded holes, pushing the pinion (6) upwards out of the housing. Make sure that the pinion does not tilt when pressed out.
8. Remove pinion (6) with bearing (5) from above.
9. Remove O-ring (4).
10. Remove the screws (1).
11. Remove stop cover (2) and cover (8).
12. Remove flat gaskets (3).
13. Pull both pistons (7) out of the housing.
14. Remove piston seals (9) and guide straps (10).
15. Disassemble the stop cover, (2) if necessary.
16. Clean all parts thoroughly, check for damage and wear and grease with a lint-free cloth or brush.

### Assembling

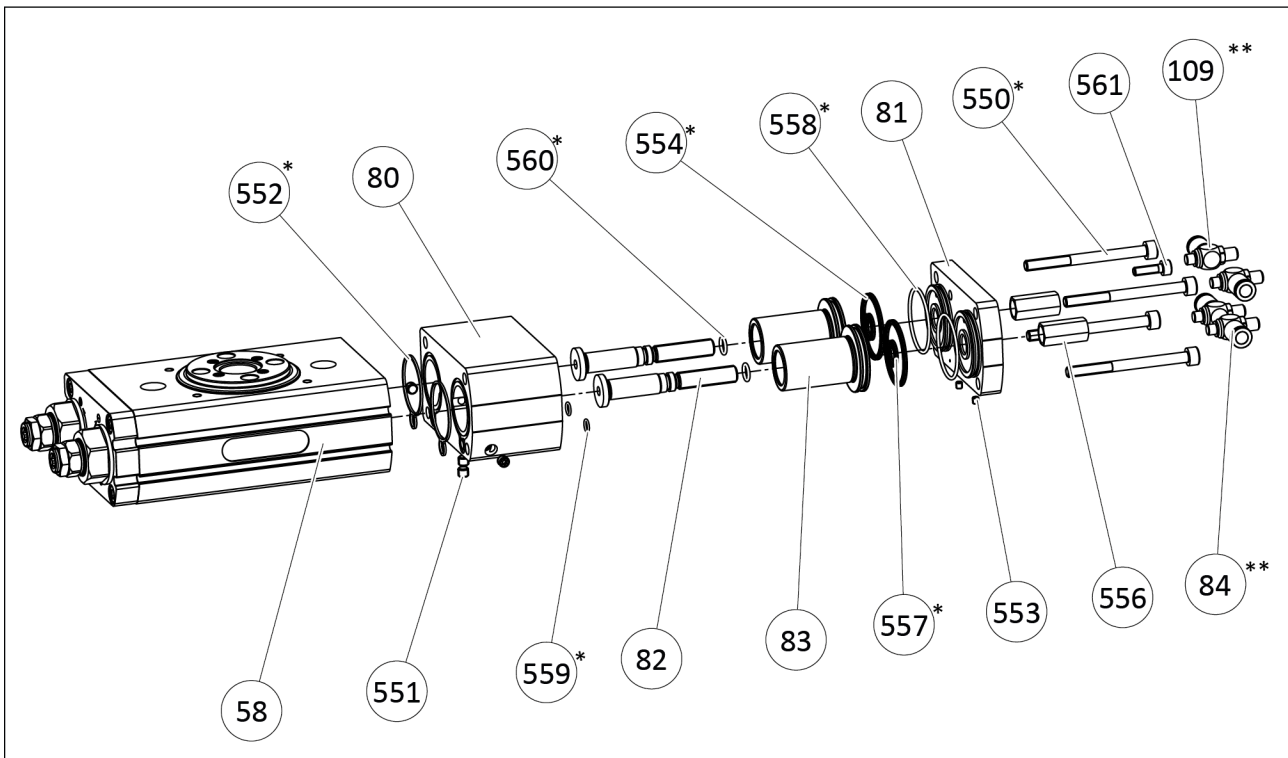
1. Assemble product in the reverse order. Observe the following when doing this:
  - ⇒ Insert new greased seals.
  - ⇒ Make sure that the serrations of the pinion and the piston are sufficiently greased.
  - ⇒ Before inserting the pinion (6): position piston (7) on the dimension "X" in the housing, see following illustration.
  - ⇒ Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
2. Mount product onto the system/machine.



Installation dimension "X" for variant angle of rotation 180°/3° (A) and 90°/3° (B)

Size	Installation dimension "X"	
	Rotating angle 180°/3° (A)	Rotating angle 90°/3° (B)
16	25.6	13.0
20	32.2	16.5
25	40.1	20.5
32	48.0	24.5
40	63.9	32.5

### 10.5.2 Variant with center position (variant -M)



Size	Tightening torque [Nm]	
	Screw (item 550)	Screw (item 561)
16	2.2	1
20	4.3	2.2
25	4.3	2.2
32	7.3	2.2
40	18	2.2

#### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.
3. Disassemble sensors if necessary.
4. Remove the throttle valves (84, 109).

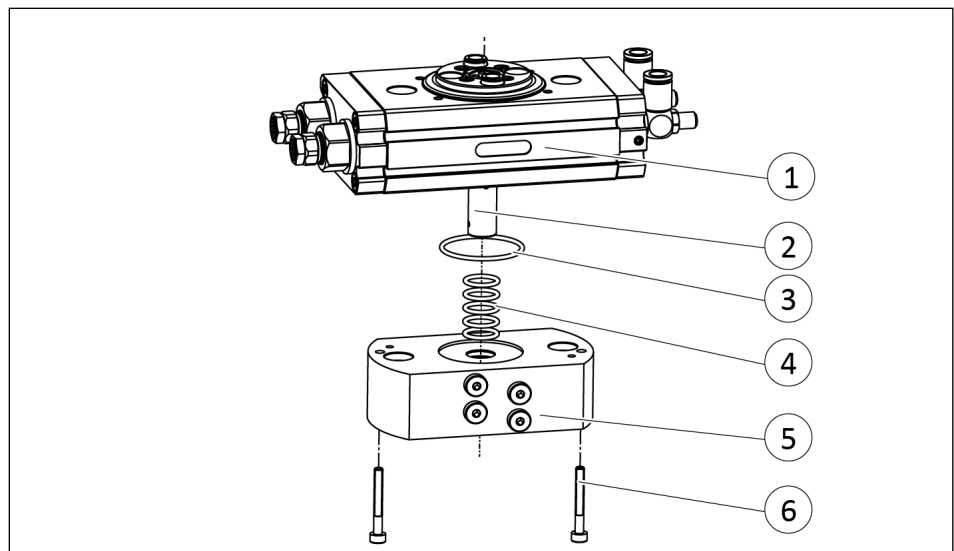
5. Remove the screws (550).
6. Remove the center position housing (80) from the base unit (58).
7. Remove the flat gasket (552).
8. Remove the screw (561).
9. Remove the cover (81) with centering piston (83) and stops (82).
10. Loosen nuts (556).
11. Remove the stops (82) and centering piston (83).
12. Remove the O-rings (554, 558, 560) and quad rings (557, 559).
13. If necessary, change seals on the base unit, ▶ 10.5.1 [ 115].
14. Clean all parts thoroughly, check for damage and wear and grease with a lint-free cloth or brush.

### Assembling

1. Assemble product in the reverse order. Observe the following when doing this:
  - ⇒ Insert new greased seals.
  - ⇒ Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
2. Mount product onto the system/machine.

### 10.5.3 Variant with fluid feed-through (MDF)

Size 16



### Disassembling

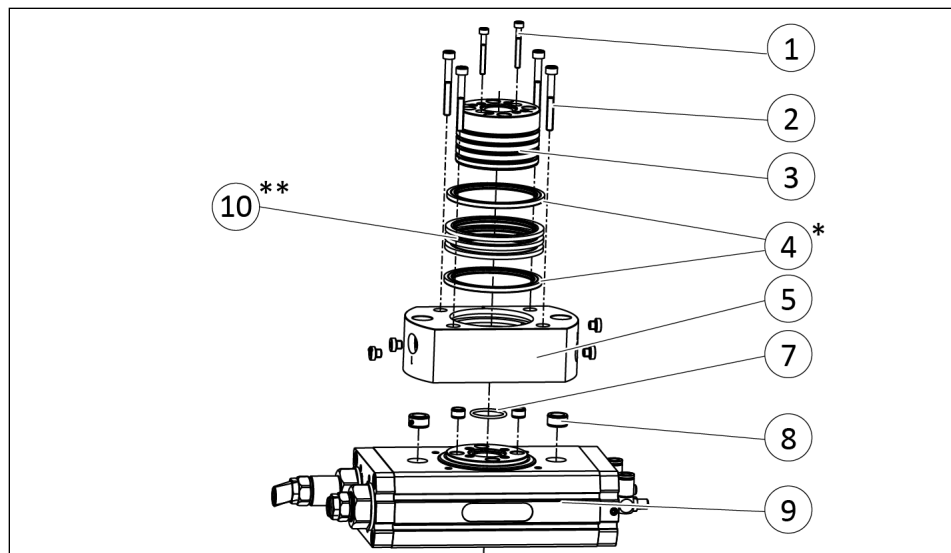
1. Ventilate the product.
2. Remove product from the system/machine.
3. Disassemble sensors if necessary.

4. Loosen screws (6) and pull housing (5) of the fluid feed-through down out of the base unit (1).
5. Remove the seals (4) from the housing.
6. If necessary, change seals on the base unit, ▶ 10.5.1 [115].

### Assembling

1. Assemble product in the reverse order. Observe the following when doing this:
  - ⇒ Insert new greased seals (4).
  - ⇒ Make sure that O-ring (3) and all centering sleeves are inserted in the base unit (1).
  - ⇒ Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.  
Tightening torque: 0.94 Nm
2. Mount product onto the system/machine.

### Size 20–40



\* Size 20 – 25: 2 pieces, Size 32 – 40: 5 pieces

\*\* only for size 20 – 25: 3 pieces

Size	Tightening torque [Nm]	
	① Screw	② Screw
20	0.94	2.2
25	0.94	2.2
32	0.94	2.2
40	4.3	4.3

### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.

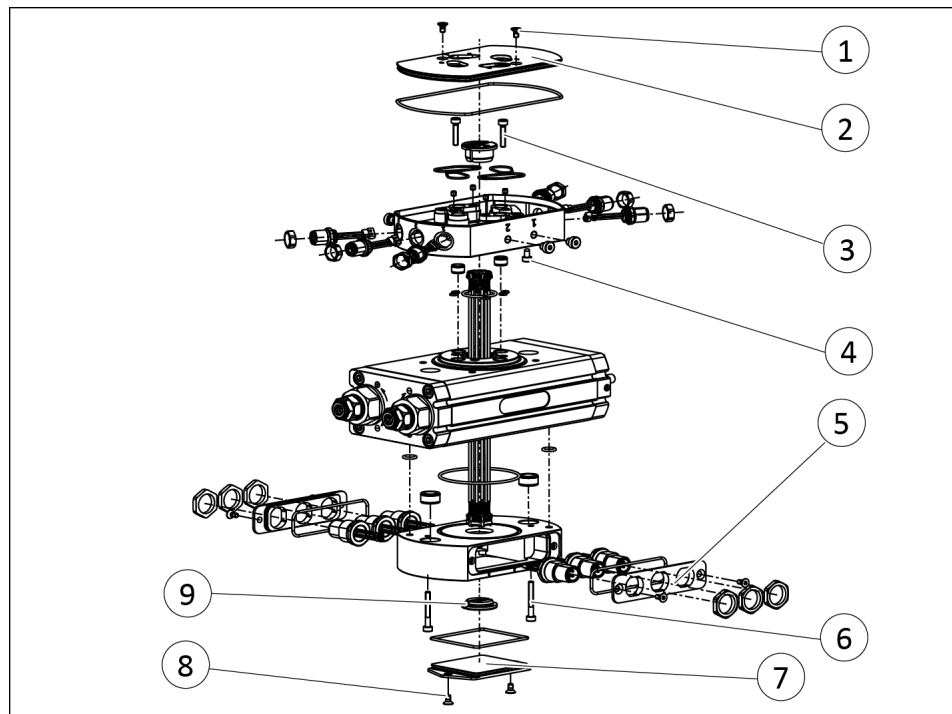
3. Disassemble sensors if necessary.
4. Loosen screws (2) and pull housing (5) of the fluid feed-through up out of the base unit (9).  
Note: Due to friction on the seals, an increased force may be required when pulling out.
5. Loosen screws (1) and pull flange shaft (3) up off the pinion.  
⇒ Seals (4/10) become accessible.
6. **Size 20 – 25:** Remove seals (4/10) from the housing (5).
7. **Size 32 – 40:** Pull off the seals (10) from the flange shaft (3).
8. If necessary, change seals on the base unit, ▶ 10.5.1 [□ 115].

### Assembling

1. Assemble product in the reverse order. Observe the following when doing this:
  - ⇒ **Size 20 – 25:** Assemble two-piece seals (10). Insert the hard plastic ring into the softer elastomer ring. Insert new greased seals (4) at top and bottom and two-piece seal (10) in the center.
  - ⇒ **Size 32 – 40:** Insert new greased seals (10).
  - ⇒ Make sure that O-ring (7) and all centering sleeves (8) are inserted in the base unit (9).
  - ⇒ Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
2. Mount product onto the system/machine.



### 10.5.4 Electrical rotary feed-through (EDF) variant



Size	Tightening torque [Nm]			
	① Screw	③ Screw	⑥ Screw	⑧ Screw
16	0.94	0.27	0.94	0.94
20	0.94	0.94	0.94	0.94
25	0.94	0.94	0.94	0.94
32	0.94	0.94	2.2	0.94
40	0.94	4.3	4.3	0.94

#### Disassembling

1. Ventilate the product.
2. Remove product from the system/machine.
3. Disassemble sensors if necessary.
4. Loosen screw (1).
5. Rotate the distributor plate 90°. Remove locking screw (4) on the bottom of the distributor plate.
6. Screw a screw into the freed threaded hole and press out the cover (1) upwards.
7. Remove the cover (1).
8. Loosen screw (3).
9. Loosen screw (8).
10. Carefully pull off cover (7).
11. Loosen connection plug of the fed through cables.
12. Remove connection plug plates (5).

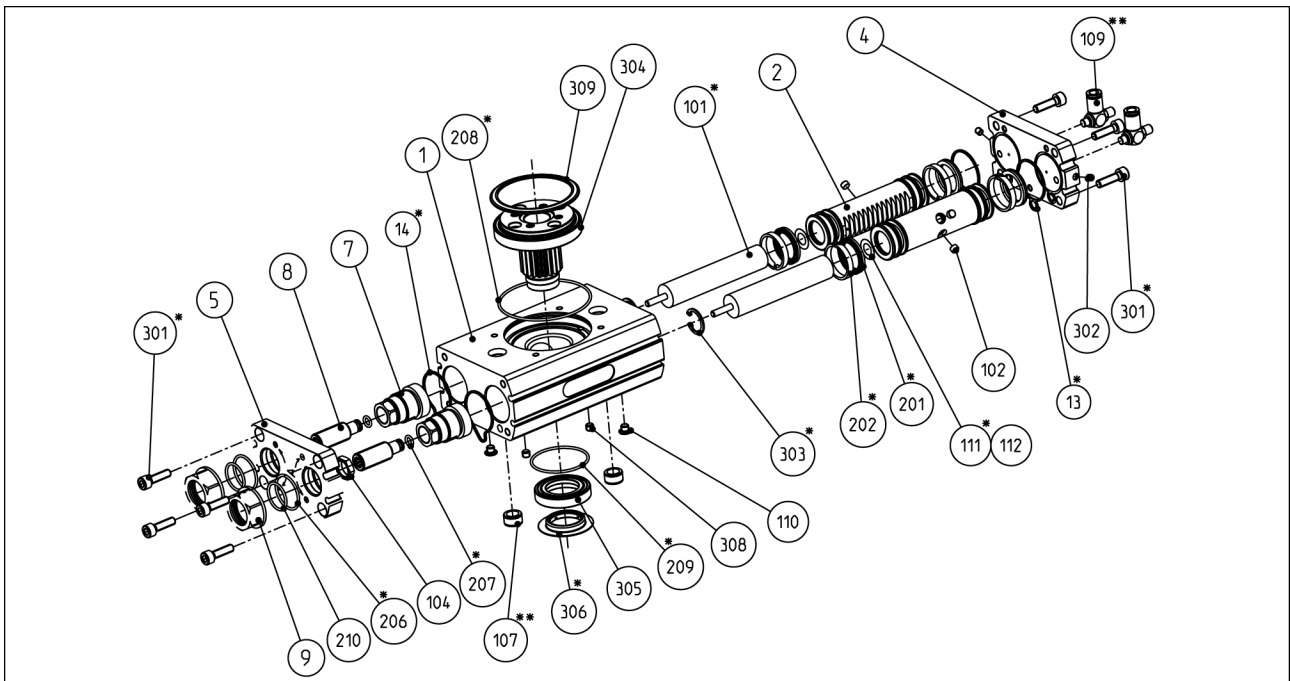
13. Carefully pull strain relief (9) down with a screwdriver.
14. Loosen screw (6).
  - ⇒ Electrical rotary feed-through (EDF) is dismantled.
15. Change all seals.
16. Disassemble base unit and replace seals, ▶ 10.5.1 [□ 115].
17. If necessary, disassemble the fluid feed-through (MDF) and replace seals, ▶ 10.5.3 [□ 118].

### Assembling

1. Assemble product in the reverse order. Observe the following when doing this:
  - ⇒ Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
2. When installing the strain relief, feed through half of the wires per gap. Carefully retighten each wire so that they are slightly tensioned in the base unit. **IMPORTANT! Do not pull on the cable connectors!**
3. Mount product onto the system/machine.

## 10.6 Assembly drawings

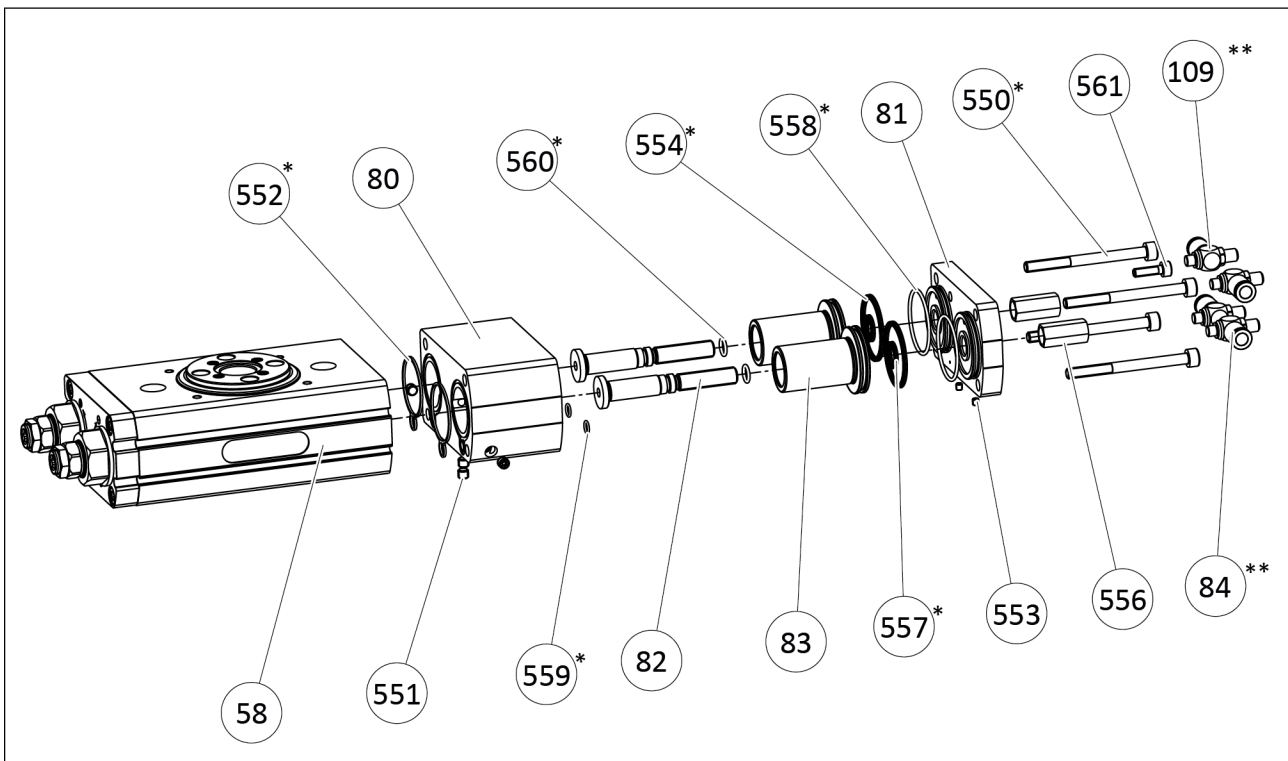
### 10.6.1 Base unit



\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

\*\* Contained in accessory pack.

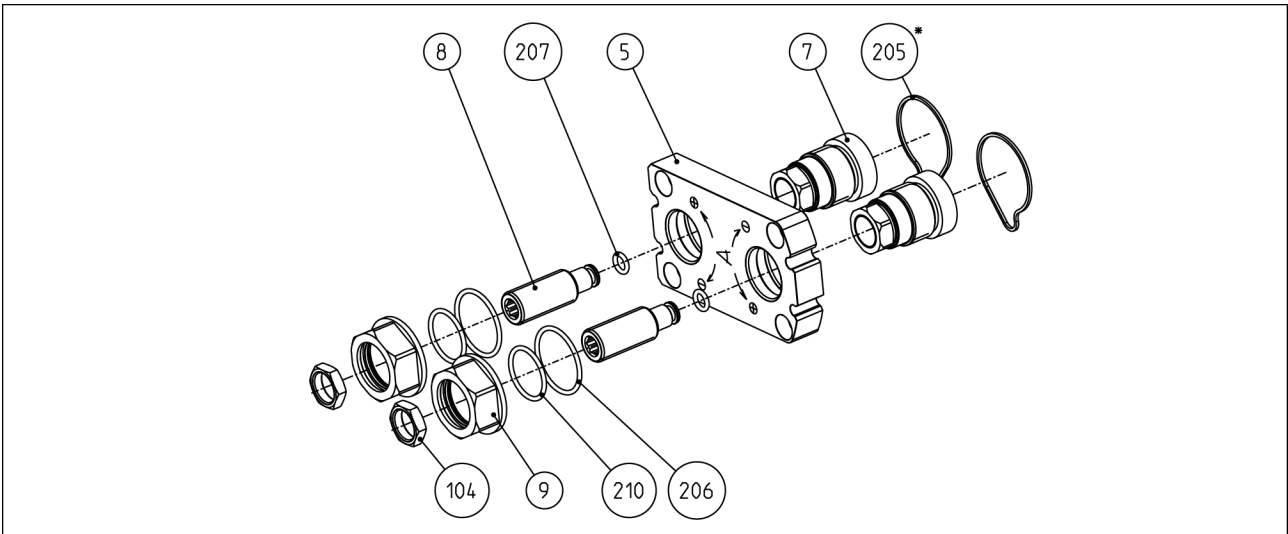
### 10.6.2 Base unit with center position (variant -M)



\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

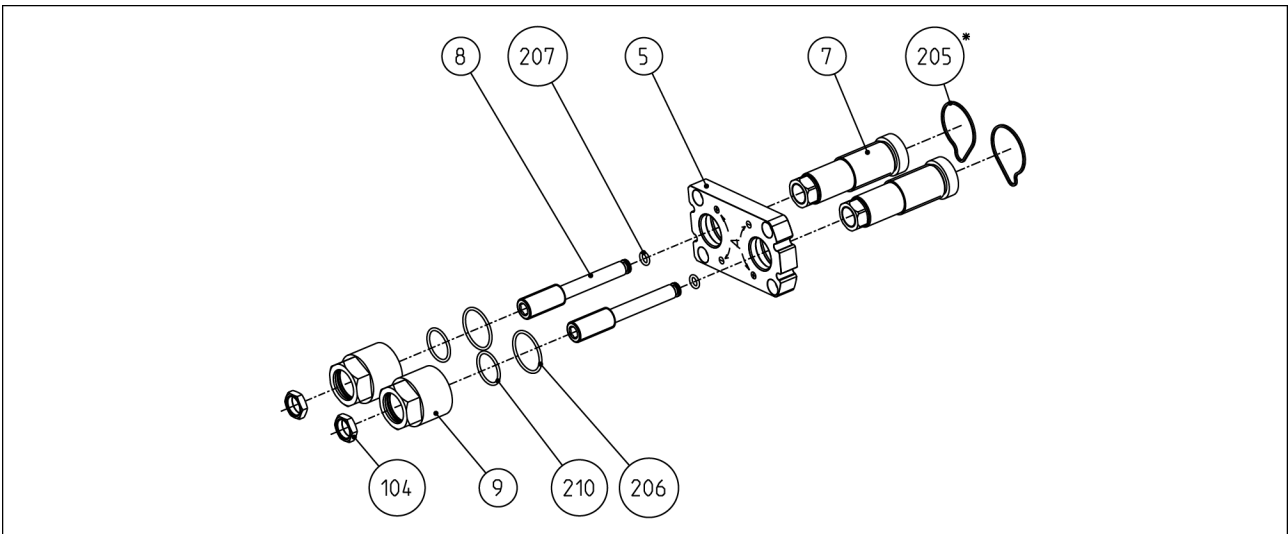
\*\* Contained in accessory pack.

### 10.6.3 Stops with variant "End position adjustment +/- 3°"



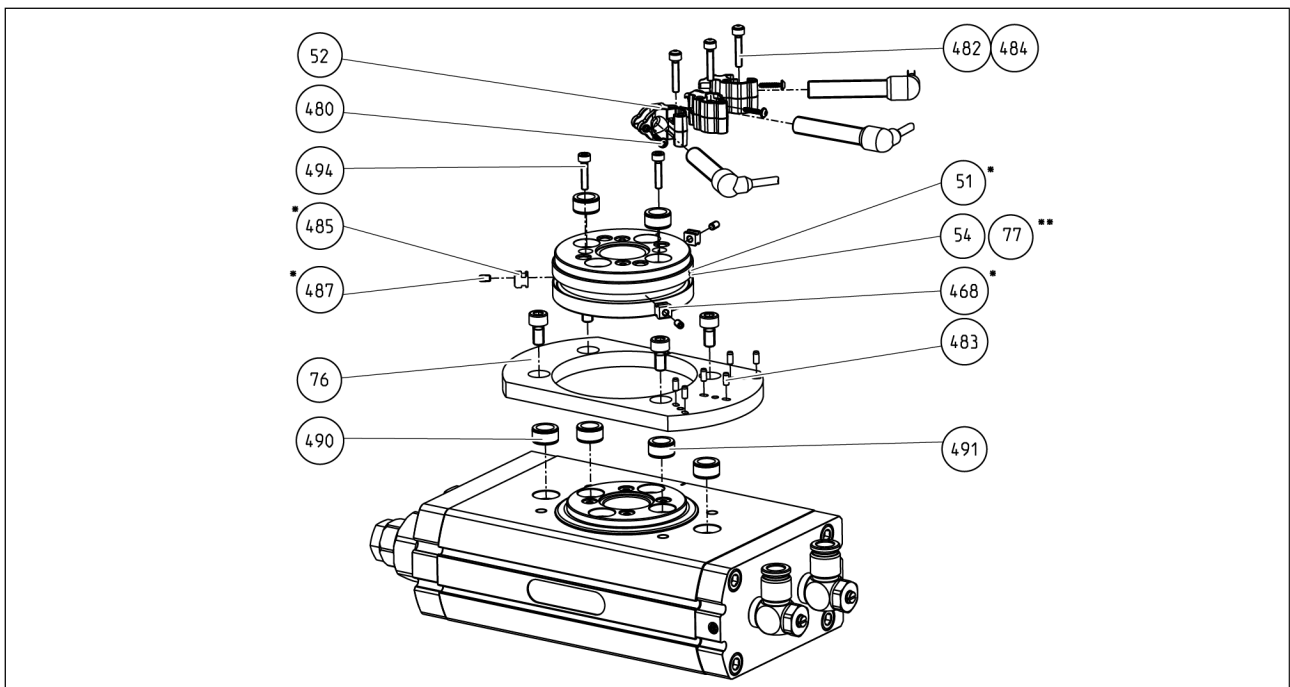
\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

### 10.6.4 Stops with variant "End position adjustment + 3 / -90°"



\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

### 10.6.5 Variant with inductive sensor (SI) / (SF)

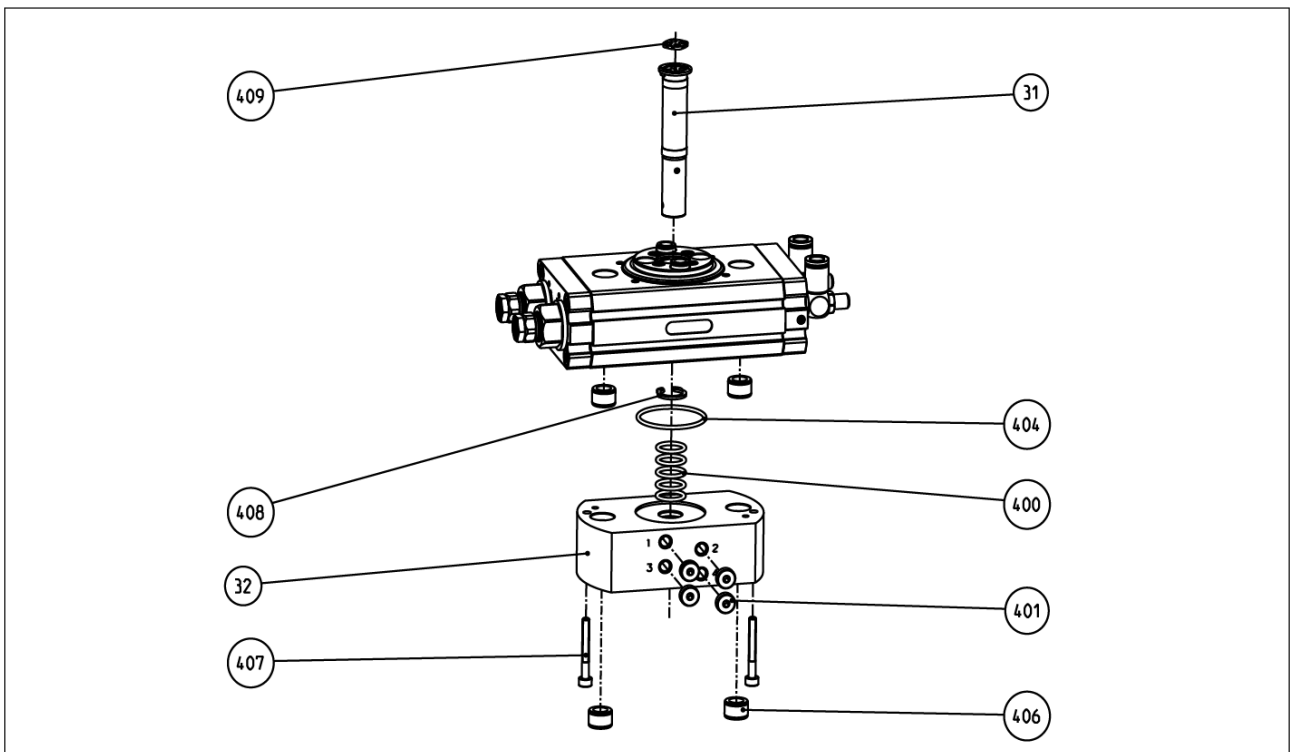


\* only with variant SI

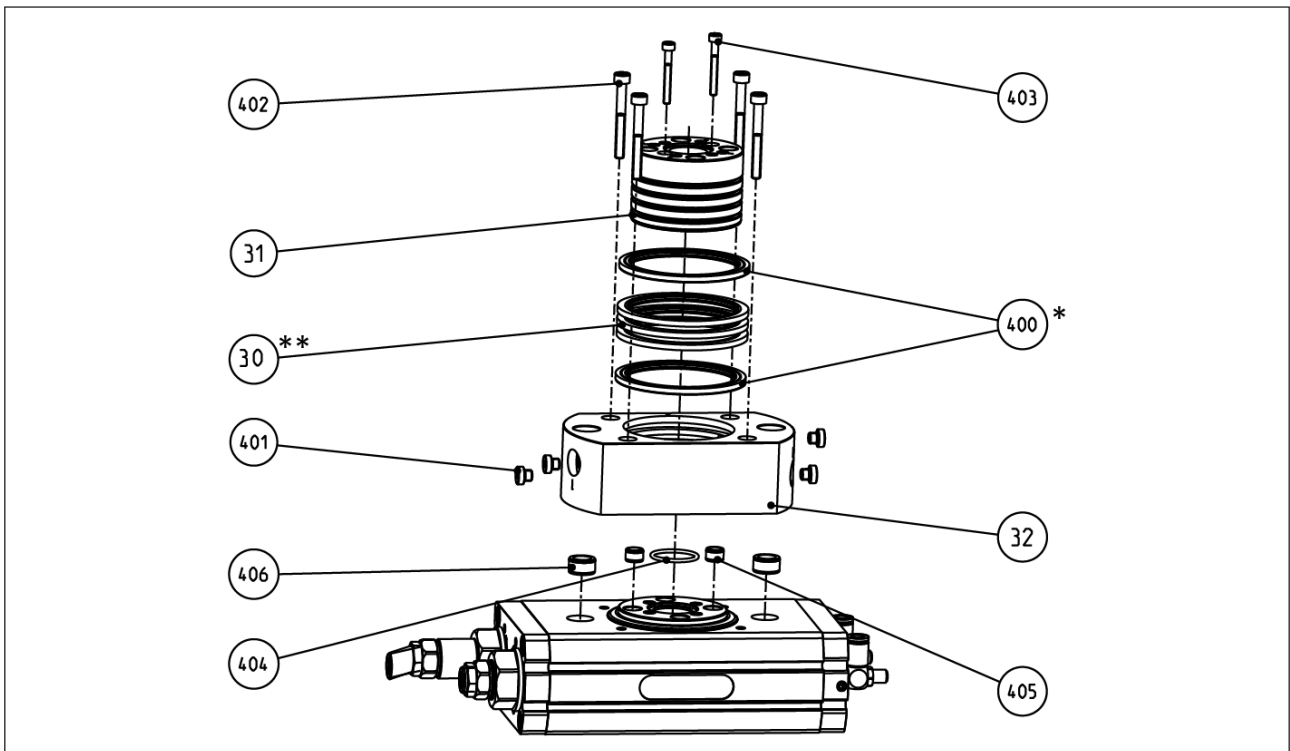
\*\* only with variant SF

### 10.6.6 Variant with fluid feed-through (MDF)

Size 16



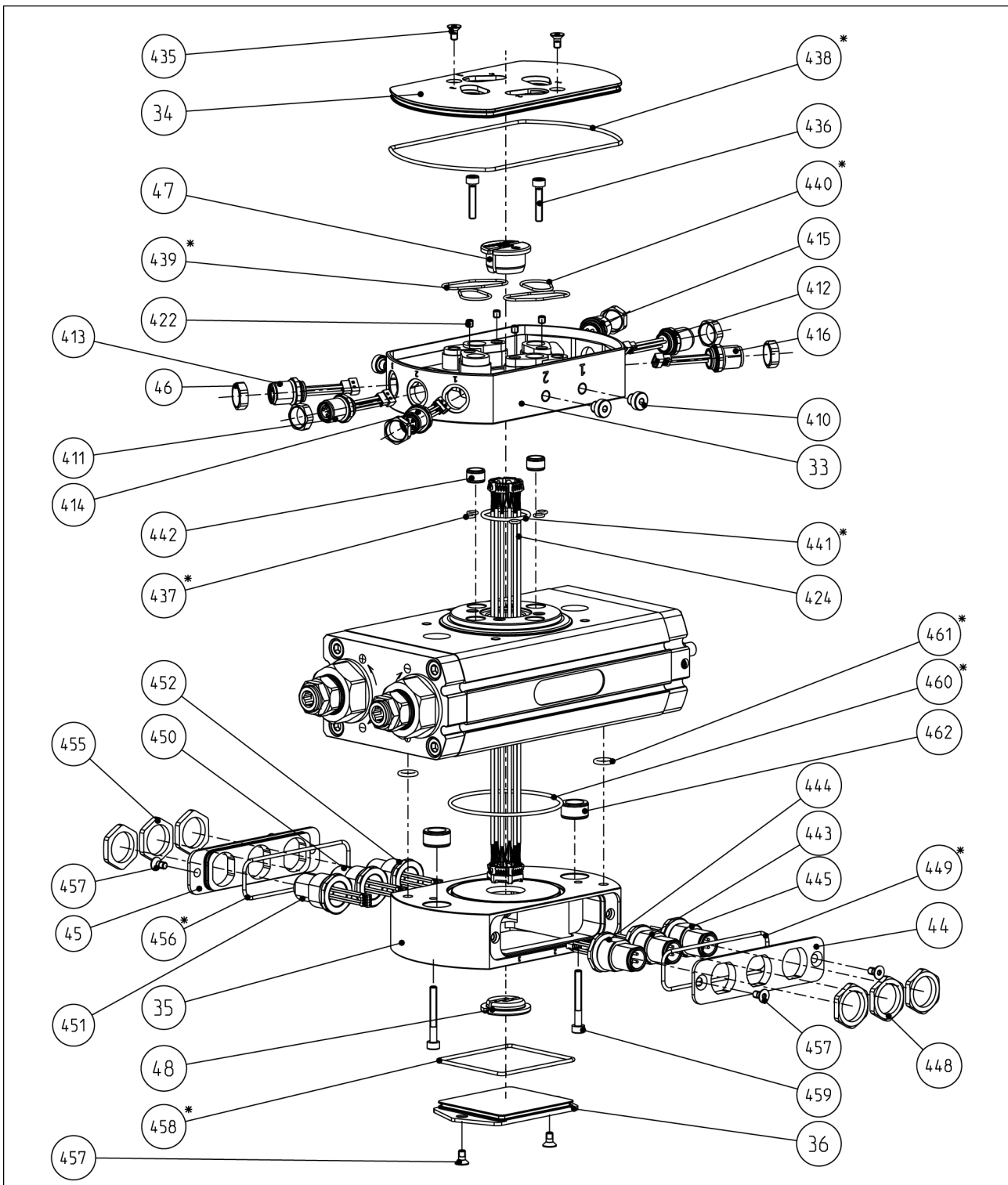
### Size 20 - 40



- \* Size 20 - 25: 2 pieces, Size 32 - 40: 5 pieces
- \*\* only for size 20 - 25: 3 pieces

### 10.6.7 Variant with electrical rotary feed-through (EDF)

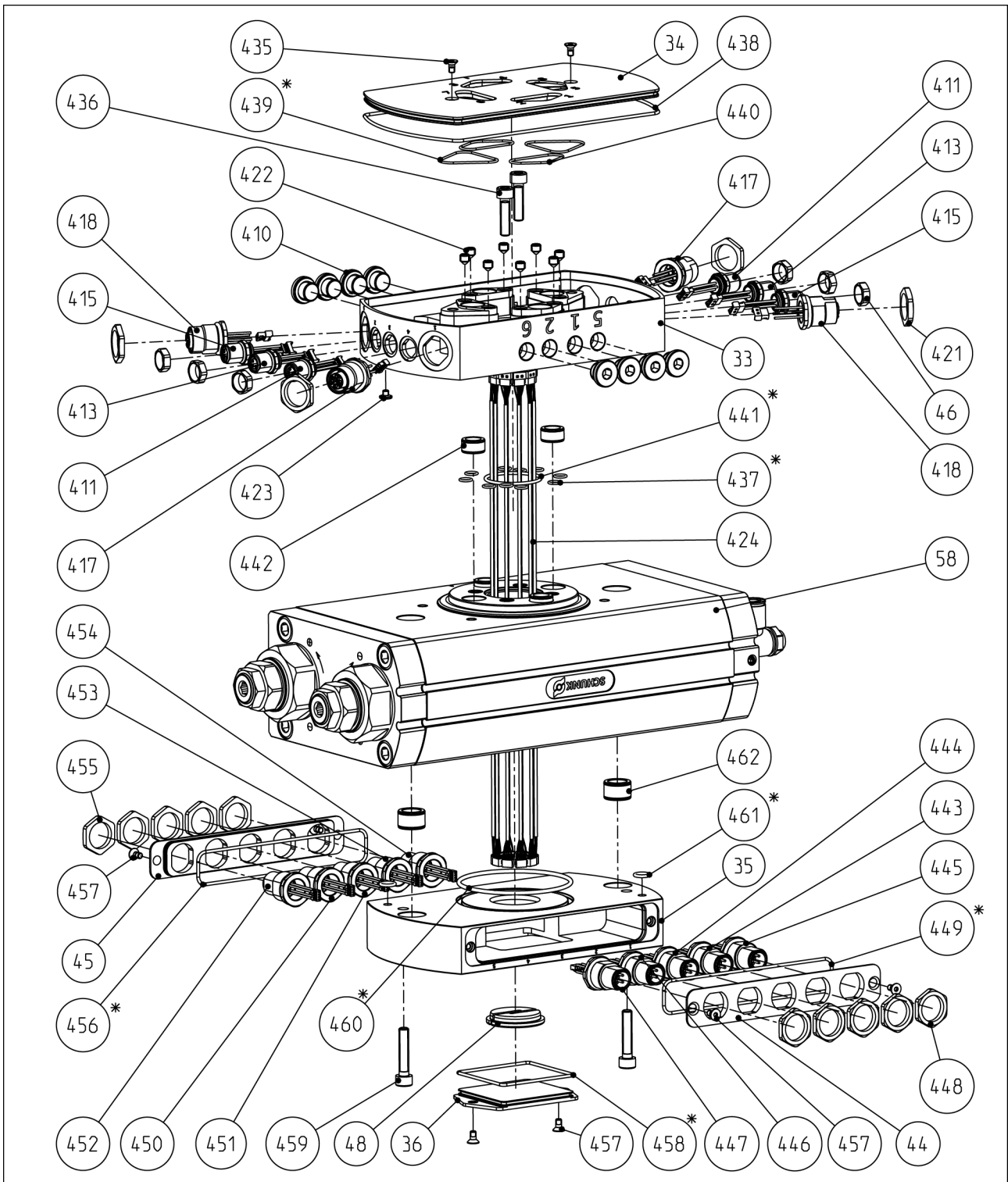
Size 16 - 25



Electrical rotary feed-through, size 16-25

\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.

Size 32 - 40



Electrical rotary feed-through, size 32-40

\* Contained in the spare part kit "seal kit". The spare part kit can be ordered completely only.



## 11 Translation of the original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1 Section B.

Manufacturer/  
Distributor                      SCHUNK SE & Co. KG  
Spanntechnik | Greiftechnik | Automatisierungstechnik  
Bahnhofstr. 106 – 134  
D-74348 Lauffen/Neckar

We hereby declare that the partly completed machine described below

Product designation:            Pneumatic swivel unit / SRM /pneumatic  
ID number                        1324471...1331306, 1347008...1347372, 1347375...1347427,  
1347433...1347461, 1347466...1347526, 1357409...1359583,  
1380217...1398233, 1412969...1414901, 1455606...1455697,  
1457317...1468379, 1482200...1482257, 1490186...1490238,  
1500680...1500703

meets the following basic occupational health and safety of the Machinery Directive 2006/42/EC:  
No. 1.1.1, No. 1.1.2, No. 1.1.3, No. 1.1.5, No. 1.3.2, No. 1.5.3, No. 1.5.4, No. 1.5.6, No. 1.5.8,  
No. 1.5.10, No. 1.5.11, No. 1.5.13

The partly completed machinery may not be put into operation until it has been confirmed that the machine into which the partly completed machinery is to be installed complies with the provisions of the Machinery Directive (2006/42/EC). The declaration shall be rendered invalid if modifications are made to the product.

Applied harmonized standards, especially:

EN ISO 12100:2010                Safety of machinery – General principles for design –  
Risk assessment and risk reduction

The special technical documentation according to Annex VII, Part B, belonging to the partly completed machine, has been created.

Person authorized to compile the technical documentation:  
Stefanie Walter, Address: see manufacturer's address

*Signature: see original declaration*

Lauffen/Neckar, July 2024

Dr.-Ing. Manuel Baumeister,  
Head of Systems Engineering,  
Technology & Innovation

## 12 UKCA declaration of incorporation

in accordance with the Supply of Machinery (Safety) Regulations 2008.

Manufacturer/  
Distributor SCHUNK Intec Limited  
Clamping and gripping technology  
3 Drakes Mews, Crownhill  
MK8 0ER Milton Keynes

We hereby declare that on the date of the declaration the following partly completed machine complied with all basic safety and health regulations found in the "Supply of Machinery (Safety) Regulations 2008".

The declaration shall be rendered invalid if modifications are made to the product.

Product designation: Pneumatic swivel unit / SRM / pneumatic  
ID number 1324471...1331306, 1347008...1347372, 1347375...1347427,  
1347433...1347461, 1347466...1347526, 1357409...1359583,  
1380217...1398233, 1412969...1414901, 1455606...1455697,  
1457317...1468379, 1482200...1482257, 1490186...1490238,  
1500680...1500703

The partly completed machine may not be put into operation until it has been confirmed that the machine into which the partly completed machine is to be installed complies with the provisions of the "Supply of Machinery (Safety) Regulations 2008".

Applied harmonized standards, especially:

EN ISO 12100:2010 Safety of machinery – General principles for design –  
Risk assessment and risk reduction

The special technical documentation according to Annex VII, Part B, belonging to the partly completed machine, has been created.

Person authorized to compile the technical documentation:  
Marcel Machado, address: refer to manufacturer's address

Lauffen/Neckar, July 2024



Dr.-Ing. Manuel Baumeister,  
Head of Systems Engineering,  
Technology & Innovation

## 13 Information on the RoHS Directive, REACH Regulation and Substances of Very High Concern (SVHC)

### RoHS Directive

SCHUNK products are classified as "large-scale stationary installations" or as "large-scale stationary industrial tools" within the meaning of Directive 2011/65/EU and its extension 2015/863/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)", or fulfill their intended function only as part of one. Therefore products from SCHUNK do not fall within the scope of the directive at this time.

### REACH Regulation

Products from SCHUNK fully comply with the regulations of Regulation (EC) No. 1907/2006 "concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)" and its amendment 2022/477. SCHUNK attaches great importance to completely avoiding chemicals of concern to humans and the environment wherever possible.

Only in rare exceptional cases do SCHUNK products contain SVHC substances on the candidate list with a mass content above 0.1%. In accordance with Article. 33 (1) of Regulation (EC) No. 1907/2006, SCHUNK complies with its duty to "communicate information on substances in articles" and lists the components concerned and the substances used in an overview that can be viewed at [schunk.com/SVHC](https://schunk.com/SVHC).

*Signature: see original declaration*

Lauffen/Neckar, July 2024

Dr.-Ing. Manuel Baumeister,  
Head of Systems Engineering,  
Technology & Innovation



**SCHUNK SE & Co. KG**  
Spanntechnik | Greiftechnik | Automatisierungstechnik

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