

Assembly and operation manual

DRG

Radial Gripper

Original Operating Manual

Hand in hand for tomorrow

Imprint

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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 ▶ 1.1.2 [6] 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.

NOTICE

Material damage!

Information about avoiding material damage.

1.1.2 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.

1.1.3 Sizes

This operating manual applies to the following sizes:

- DRG 44
- DRG 54
- DRG 64
- DRG 80
- DRG 100

1.1.4 Variants

This operating manual applies to the following variations:

- DRG with gripping force maintenance "O.D. gripping" (AS)
- DRG with gripping force maintenance "O.D. gripping" (AS) – high-temperature (V/HT)

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. ▶ 3 [📄 16]
- Observe the ambient conditions and operating conditions, ▶ 2.5 [📄 9]
- Observe the specified maintenance and lubrication intervals, ▶ 7 [📄 32]

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

1.3 Scope of delivery

The scope of delivery includes

- Radial Gripper DRG in the version ordered
- Safety information (product-specific instructions available online)
- Accessory pack

Content of the accessory pack:

Sizes 44–80

- 2 x O-ring for hose-free direct connection

- 2 x locking screw for hose connections
- 2 x screws, fully threaded
- 2 x thread seals
- 1 x nut

Size 100

- 2x throttle check valves
- 6 x centering sleeves for mounting
- 2 x cylindrical pins

Sizes 44 – 80:

Size	ID number
44	5510242
44 (V/HT)	395510242
54	5510243
54 (V/HT)	395510243
64	5510244
64 V/HT	395510244
80	5510245
80 V/HT	395510245
100	5510246
100 V/HT	395510246

Tab.: ID.-No. of the accessory pack

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.

Size	ID number
44	5519863
44 (V/HT)	395519863
54	5519864
54 (V/HT)	395519864
64	5519865
64 (V/HT)	395519865
80	5519866
80 (V/HT)	395519866
100	5519867
100 (V/HT)	395519867

Tab.: ID. No. spare part kit "Seal kit"

2 Basic safety notes

2.1 Intended use

The product is designed exclusively for gripping and temporarily holding workpieces or objects.

- The product may only be used within the scope of its technical data, ▶ 3 [16].
- 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. Its use outside enclosed spaces is only permitted if suitable protective measures are taken against outdoor exposure. The product is not suitable for use in salty air.
- The product can be used within the permissible load limits and technical data for holding workpieces during simple machining operations, but is not a clamping device according to EN 1550:1997+A1:2008.
- Appropriate use of the product includes compliance with all instructions in this manual.
- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.2 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.

2.3 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.

2.4 Gripper fingers

Requirements of gripper fingers

Accumulated energy can make the product unsafe and risk the danger of serious injuries and considerable material damage.

- Execute the gripper fingers in such a way that the product reaches either the "open" or "closed" position in a de-energized state.
- Only change gripper fingers if no residual energy can be released.
- Make sure that the product and the top jaws are a sufficient size for the application.

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 [16].
- Make sure that the product is a sufficient size for the application.
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

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.

2.13 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 from sharp edges and corners!

Sharp edges and corners can cause cuts.

- Use suitable protective equipment.



⚠ 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 crushing and impacts!

Serious injury could occur during movement of the base jaw, due to breakage or loosening of the gripper fingers or if the workpiece is lost.

- Wear suitable protective equipment.
- Do not reach into the open mechanism or the movement area of the product.



⚠ WARNING

Risk of injury due to spring forces!

Parts are under spring tension on products which clamp using spring force or which have gripping force maintenance. While disassembling components can move unexpectedly and cause serious injuries.

- Disassemble the product cautiously.
- Make sure that no residual energy remains in the system.



⚠ WARNING

Risk of injury from objects falling during energy supply failure

Products with a mechanical gripping force maintenance can, during energy supply failure, still move independently in the direction specified by the mechanical gripping force maintenance.

- Secure the end positions of the product with SCHUNK SDV-P pressure maintenance valves.

3 Technical data

Connection data

Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]
-----------------	---

Nominal operating pressure [bar]	6
Min. pressure [bar]	4.0
Max. pressure [bar]	6.5

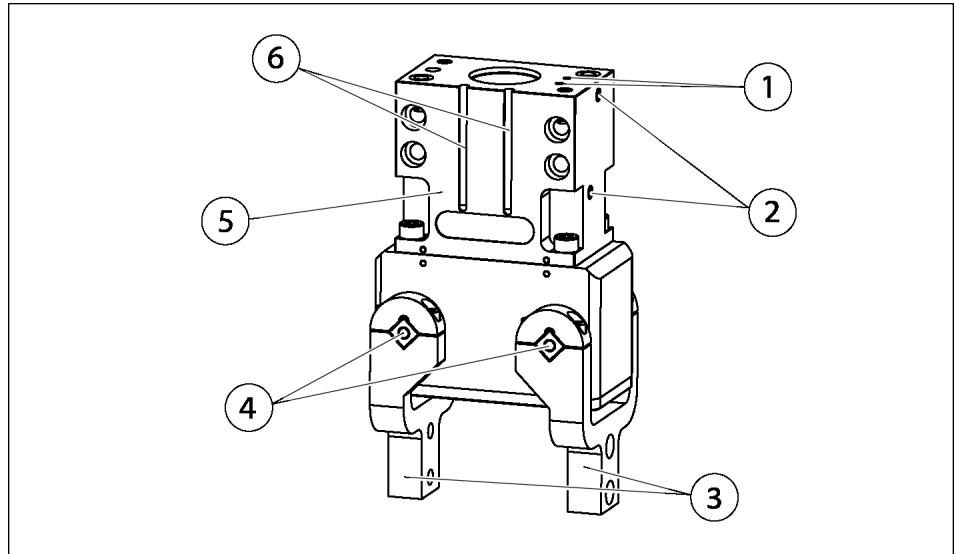
Ambient conditions and operating conditions

Ambient temperature [°C] min.	+5
Ambient temperature [°C] max.	+90
Ambient temperature [°C] max. (Variant V/HT)	+130
IP rating	67
Noise emission [dB(A)]	≤70

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

4 Design and description

4.1 Design



Radial gripper DRG

1	Hose-free direct connection at the base
2	Main air connections
3	Base fingers
4	Thread for control cams
5	Case
6	Groove for magnetic switch

4.2 Characterization

Sealed 180° angular gripper for use in contaminated environment.

5 Assembly

5.1 Installing 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.

NOTICE

Damage to the gripper is possible!

If the maximum permissible finger weight or the permissible mass moment of inertia of the fingers is exceeded, the gripper can be damaged.

- A jaw movement always has to be without jerks and bounce.
- You must therefore implement sufficient reduction and/or damping.
- Observe the information in the catalog data sheet.

1. Check the flatness of the mounting surface, ▶ 5.2.1 [19].
2. Connect the product via the hose-free direct connection, ▶ 5.2.2 [21].
3. OR: Connect supply lines to the main air connections A and B, ▶ 5.2.2 [21].
 - ⇒ Unscrew locking screws.
 - ⇒ Screw on air connections.
 - ⇒ OR: Screw on throttle valve in order to be able to perform sufficient throttling and/or dampening.
4. Screw the product to the machine/system, ▶ 5.2.1 [19].
 - ⇒ Use suitable connecting elements (adapter plates) if necessary.
 - ⇒ Observe the permissible depth of engagement as well as strength class, if required.
5. Connect the sensor, see Sensor Assembly and Operating Manual.
6. Install the sensor, ▶ 5.3 [23].

5.2 Connections

5.2.1 Mechanical connection

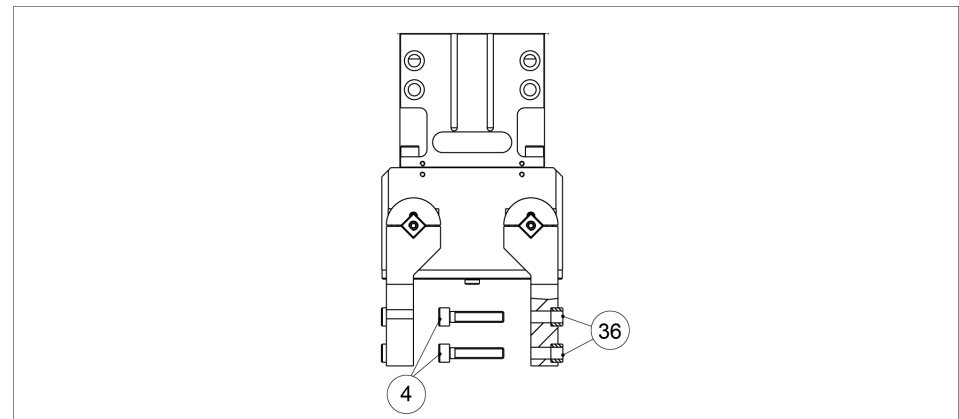
Evenness of the mounting surface

The values apply to the whole mounting surface to which the product is mounted.

Edge length	Permissible unevenness
< 100	< 0.02
> 100	< 0.05

Tab.: Requirements for evenness of the mounting surface (Dimensions in mm)

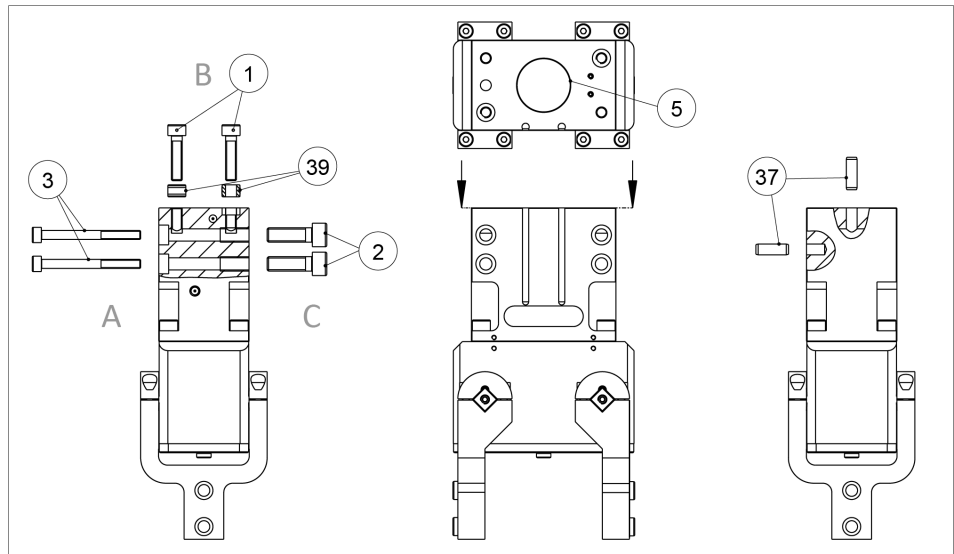
Connections on the base fingers



Size	④ Screws
44	M3
54	M4
64	M5
80	M6
100	M8

Connections at the housing

The product can be mounted from three sides.



Assembly options

Size	side A ③ Screws	side B ① Screws * ⑤ Centering diameter	side C ② Screws *
44	-	M4 x max. 9 20 ^{H7}	M4 / 7
54	M4 x 40	M5 / 12 20 ^{H7}	M5 / 10
64	M5 x 45	M6 / 14 25 ^{H7}	M6 / 12
80	M5 x 55	M6 / 14 30 ^{H7}	M8 / 16
100	M8 x 65	M10 / 20	M10 / 20

* Thread / max. depth of engagement from locating surface [mm]

NOTE

The cylindrical pins (37) or centering sleeves (39) needed for centering are supplied in the accessory kit:

Fastening on side B

1. Mount the module using the guide sleeves (39) supplied. Alternatively, use the cylindrical pins (37) and the centering diameter (5).
2. Fasten the module using the fixing bores provided.
3. Fasten the top jaws using the fixing bores provided.

Fastening on side A or C

1. Mount the module using the cylindrical pins (37) provided.
2. Fasten the module using the fixing bores provided.
3. Fasten the top jaws using the fixing bores provided.

5.2.2 Pneumatic connection

NOTICE

Damage to the gripper is possible!

If the maximum permissible finger weight or the permissible mass moment of inertia of the fingers is exceeded, the gripper can be damaged.

- A jaw movement always has to be without jerks and bounce.
- You must therefore implement sufficient reduction and/or damping.
- Observe the information in the catalog data sheet.

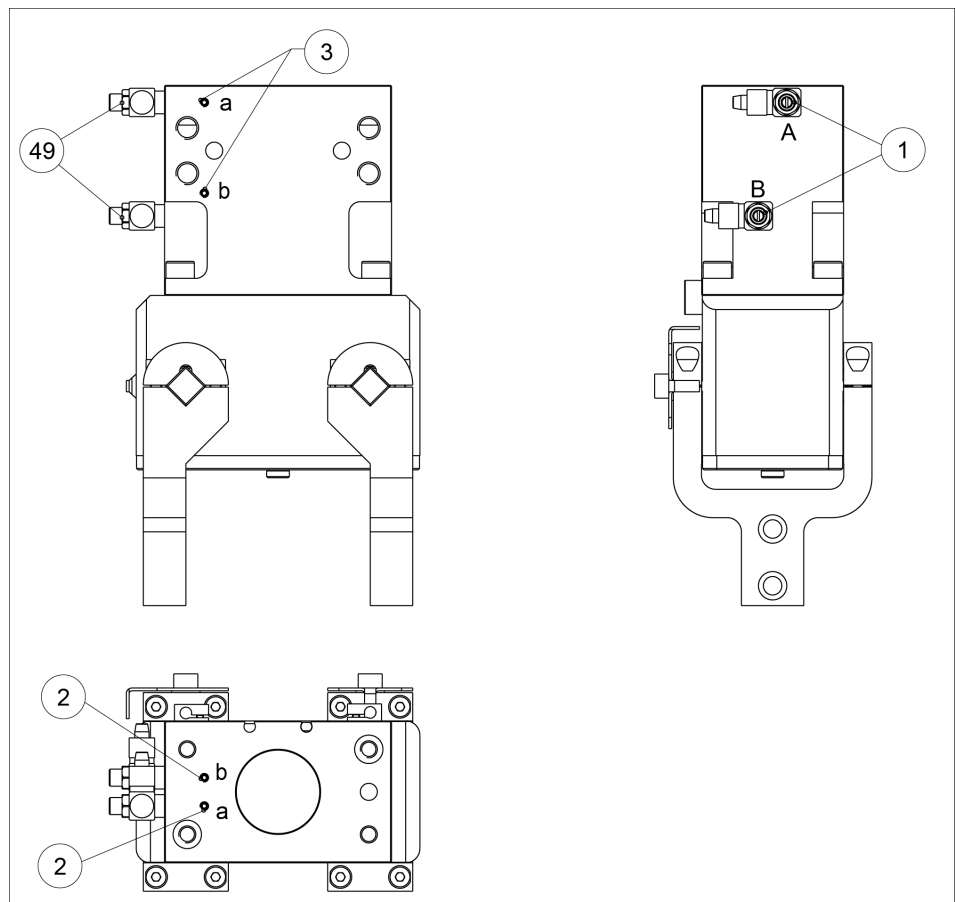
NOTICE

Throttling of the product must be done by external throttle glands.

- Attach the supplied flow control couplings on the product.

NOTICE

Observe the requirements for the air supply, ▶ 3 [16].



Compressed air connections

1	Hose connection (A = open, B = close)
2	Hose-free direct connection at the base (a = open, b = close)
3	Hose-free direct connection at the side (a = open, b = close)
49	One-way flow control valve

Size	① Hose connection	②③ Hose-free direct connection
44	2 x M5	2 x M3
54	2 x M5	2 x M3
64	2 x M5	2 x M3
80	2 x M5	2 x M3
100	2 x G $\frac{1}{8}$ "	-

Tab.: Thread diameter of the air connections

- Open only the air connections that are needed.
- Close unused main air connections using the screw plugs from the enclosed pack.
- For a hose-free direction connection, use the O-rings from the enclosed pack.

5.3 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 ▶ 5.3.1 [23].
- 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.

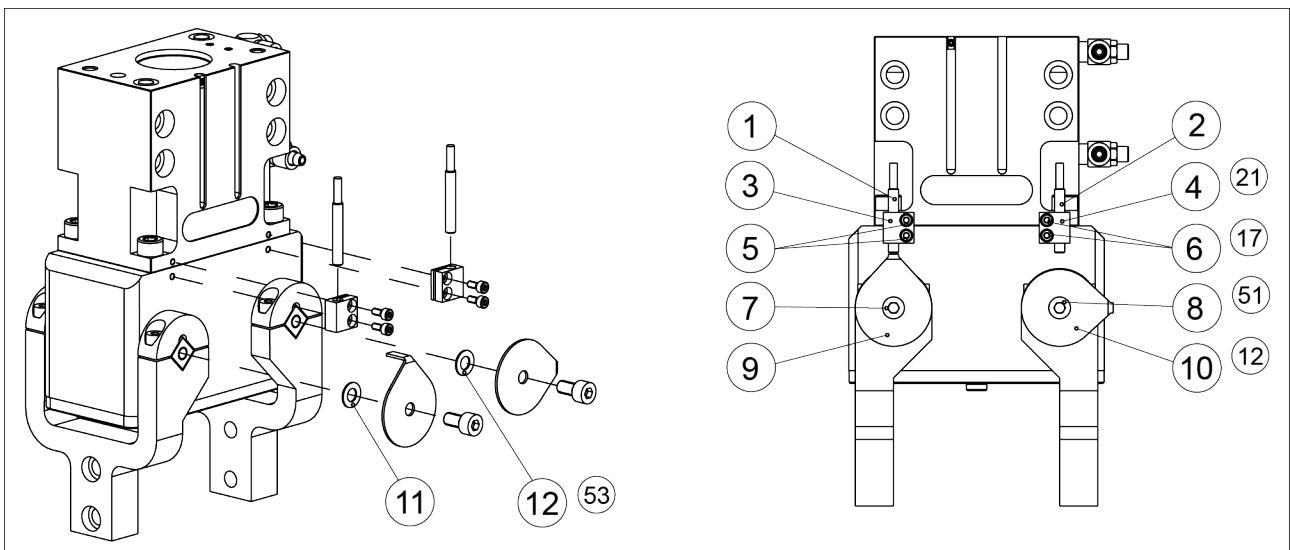
5.3.1 Overview of sensors

Size	IN 40	IN 80	MMS 22
44	✓	✓	✓
54	✓	✓	✓
64	✓	✓	✓
80	✓	✓	✓
100	⊘	✓	✓

5.3.2 Mounting inductive proximity switch IN

Mounting kit

To use the inductive sensor, the gripper has to be retrofitted with a special mounting kit. This mounting kit is available from SCHUNK for the models below.



Assembly mounting kit IN40 for size 44 - 80

1. Fasten brackets (3 / 4) with screws (5 / 6) to the housing.
2. Fasten the control cams (9 / 10) with the screws (7 / 8) to the bolts. Place the washers (11 / 12) between the control cams and the bolts.

Assembly proximity switch

The switching points of the positions "Gripper open" and "Gripper closed" were set at the factory by SCHUNK.

Gripper open

1. Set the product to position "Gripper open".
2. Undo screws (1) and carefully push bracket 1 (3) to the control cam until it touches the control cam (9).
3. Pull the bracket approx 0.5 mm back.
4. Fasten the bracket by tightening the screw (5).
5. Set the product to position "Gripper open" and test the function.

Gripper closed

1. Set the product to position "Gripper closed".
2. Undo screws (2) and carefully push bracket (4) to the control cam until it touches the control cam (10).
3. Pull the bracket approx 0.5 mm back.
4. Fasten the bracket by tightening the screw (6).
5. Set the product to position "Gripper closed" to test the function.

Part gripped (O.D. gripping)

1. Clamp the part to be gripped.
2. Unfasten the screw (8).
3. Turn the control cam (10) so that the lug is parallel to the bracket (4).
4. Fasten the control cam by tightening the screw (8).
5. Carefully slide the proximity switch (2) into the bracket (4) until it touches the switching cam (10).
6. Pull the bracket approx 0.5 mm back.
7. Fasten the proximity switch by tightening the screws (6).
8. Set the product to position "Gripper open" and then again in position "Gripper closed" to test the function.

5.3.3 Mounting inductive proximity switch IN 80

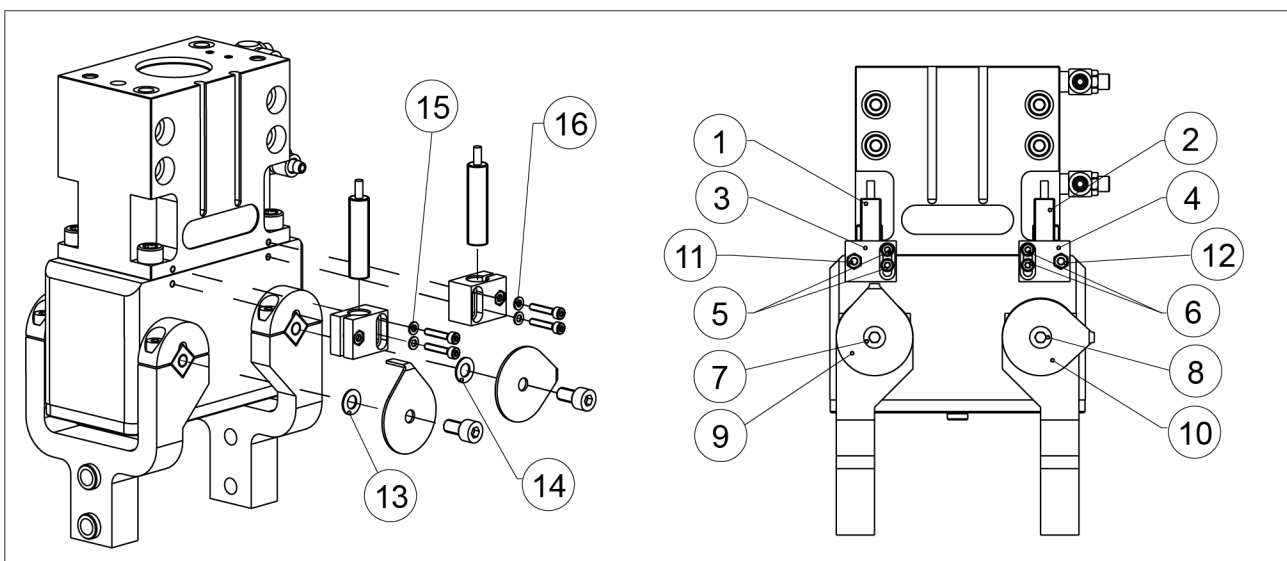
Mounting kit

To use the inductive sensor, the gripper has to be retrofitted with a special mounting kit. This mounting kit is available from SCHUNK for the models below.

Contents of the mounting kit:

- Holder with stop for proximity switches IN 80 (2x)
- Washer DIN 125 (4x)
- Screws ISO 4762/A2-M2.5x13.5 (4x)
- Screws ISO 4762/A2-M3x8 (2x)
- Nut DIN 439/A2-M3 (2x)

ID number of the mounting kit: 0304131



Assembly IN80

Assembly mounting kit IN80

⑮ ⑯: only size 44 – 80

1. Fasten screws with nuts (11 / 12) to the brackets (3 / 4).
2. Fasten brackets (3 / 4) with screws (5 / 6) and the washers* (15 / 16) to the housing.
3. Push the brackets down as far as possible (away from the bolts).
4. Fasten the control cams (9 / 10) with the screws (7 / 8) to the bolts. Place the washers (11 / 12) between the control cams and the bolts.

Assembly proximity switch

The switching points of the positions "Gripper open" and "Gripper closed" were set at the factory by SCHUNK.

Gripper open

1. Set the gripper to the "Gripper open" position.
2. Push the proximity switch (1) to the stop of the bracket (3).
3. Fasten the proximity switch by tightening the screw (15) in the bracket.

4. Undo screws (5) and carefully push bracket 1 (3) to the control cam until it touches the control cam (9).
5. Pull the bracket approx 0.5 mm back.
6. Fasten the bracket by tightening the screw (5).
7. Set the gripper to the "Gripper open" position and test the function.

Gripper closed

1. Set the gripper to the "Gripper closed" position.
2. Push the proximity switch (2) to the stop of the bracket (4).
3. Fasten the proximity switch by tightening the screw (16) in the bracket.
4. Undo screws (6) and carefully push bracket (4) to the control cam until it touches the control cam (10).
5. Pull the bracket approx 0.5 mm back.
6. Fasten the bracket by tightening the screw (6).
7. Set the gripper to the "Gripper closed" position and test the function.

Part gripped (O.D. gripping)

1. Clamp the part to be gripped.
2. Unfasten the screw (8).
3. Turn the control cam (10) so that the lug is parallel to the bracket (4).
4. Fasten the control cam by tightening the screw (8).
5. Push the proximity switch (2) to the stop of the bracket (4).
6. Fasten the proximity switch by tightening the screw (16) in the bracket.
7. Undo screws (6) and carefully push bracket (4) to the control cam until it touches the control cam (10).
8. Pull the bracket approx 0.5 mm back.
9. Fasten the bracket by tightening the screw (6).
10. Set the product to position "Gripper open" and then again in position "Gripper closed" to test the function.

5.3.4 Mounting magnetic switch MMS 22

NOTICE

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.

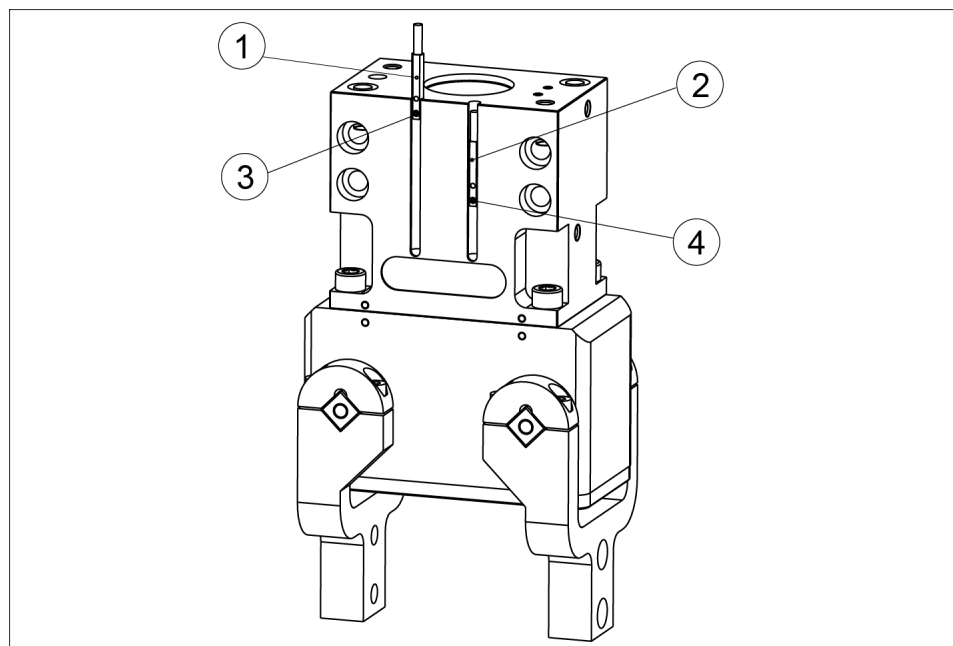
NOTICE

Material damage due to ferromagnetic chips!

Ferromagnetic chips sticking to the sensor can lead to incorrect information.

- Remove the chips.

Positioning the magnetic switch



Positioning the magnetic switches

Gripper open:

1. Switch product to "OPEN" position.
2. Push the magnetic switch (1) into the groove until it reaches the housing.
3. Pull magnetic switch (1) back again slowly until it switches.
4. Tighten the set-screw (3) to clamp the magnetic switch in this position in the groove.
5. Close the product and open it again in order to test its function.

Gripper closed:

1. Switch product to "closed" position.
2. Push the magnetic switch (2) into the groove towards the middle of the gripper until it switches.

3. Clamp the magnetic switch in this position in the groove by tightening the set-screw (4).
4. Open the product and close it again in order to test its function.

Part gripped (O.D. gripping):

1. Clamp the part to be gripped.
2. Push the magnetic switch (2) into the groove towards the middle of the gripper until it switches.
3. Clamp the magnetic switch in this position in the groove by tightening the set-screw (4).
4. Open the product and close it again in order to test its function.

5.4 Setting the opening angle limits, size 44 - 80

NOTE

- The further the adjusting screw is screwed into the cover, the smaller the opening angle becomes.
 - If the adjusting screw protrudes too far over the cover, then use a shorter screw from the accessory pack (3 different lengths) or shorten the adjusting screw as required.
-

Parts required from the accessory pack:

- 1x adjusting screw
(3 different lengths available, depending on opening angle)
 - 1x thread seal
 - 1x nut
1. Switch off the compressed air supply and leave the gripper unpressurized in the "Gripper closed" position.
 2. Unscrew the locking screw (14).
 3. Turn the nut onto the adjusting screw
 4. Slide the thread seal onto the adjusting screw.
 5. Screw in the adjusting screw, instead of the locking screw(14), into the cover (10) and set the required opening angle.
 6. Using the nut, tighten the adjusting screw
 7. Test the set opening angle by actuating the gripper with compressed air.
If necessary, switch off the compressed air supply and repeat the previous 2 steps.

5.5 Setting the opening angle limits, size 100

1. Switch off the compressed air supply and leave the gripper unpressurized in the "Gripper closed" position.
2. Unscrew the locking screw (14).
3. Unscrew the adjustment screw (15) using a hexagon socket wrench SW6 until the desired opening angle is reached.
4. Test the set opening angle by actuating the gripper with compressed air. If necessary, switch off the compressed air supply and repeat previous step.

6 Troubleshooting

6.1 Procukt does not move

Possible cause	Corrective action
Base jaws jam in housing, e.g. mounting surface is not sufficiently even.	Check the evenness of the mounting surface. ▶ 5.2.1 [19] Loosen the mounting screws of the product and actuate the product again.
Pressure drops below minimum.	Check air supply. ▶ 5.2.2 [21]
Compressed air lines switched.	Check compressed air lines. ▶ 5.2.2 [21]
Proximity switch defective or set incorrect.	Readjust or change sensor.
Unused air connections open.	Close unused air connections.
Flow control valve closed.	Open the flow control valve.
Component part defective.	Replace component or send it to SCHUNK for repair.
The aperture angle is limited to 0°.	Check opening angle limitation.

6.2 Product is not executing the complete stroke

Possible cause	Corrective action
Dirt deposits between cover and piston.	Clean and if necessary re-lubricate.
Dirt deposits between basic jaws and guidance.	Disassemble and clean the product.
Pressure drops below minimum.	Check air supply. ▶ 5.2.2 [21]
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface. ▶ 5.2.1 [19]
Component part defective.	Replace component or send it to SCHUNK for repair.

6.3 Product opens or closes abruptly

Possible cause	Corrective action
Too little grease in the mechanical guiding areas.	Clean and lubricate product. ▶ 7 [32]
Compressed air lines blocked.	Check compressed air lines of damage.
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface.
One-way flow control valve is missing or adjustet incorrectly.	Install and adjust one-way flow control valve.
Loading too large.	Check permissible weight and length of the gripper fingers.

6.4 Product does not achieve the opening and closing times

Possible cause	Corrective action
Compressed air lines are not installed optimally.	<p>If present: Open the flow control couplings on the product to the maximum that the movement of the jaws occurs without bouncing and hitting.</p> <hr/> <p>Check compressed air lines.</p> <hr/> <p>Inner diameters of compressed air lines are of sufficient size in relation to compressed air consumption.</p> <hr/> <p>Keep compressed air lines between the product and directional control valve as short as possible.</p> <hr/> <p>Flow rate of valve is sufficiently large relative to the compressed air consumption.</p> <hr/> <p>NOTICE! The throttle check valve must not be removed, even if the product has not reached the opening and closing times.</p> <hr/> <p>If you still cannot achieve the open and close times in the latest catalog, we recommend the use of quick-air-vent-valves directly at the product.</p>
Loading too large.	<p>Check permissible weight and length of the gripper fingers.</p>

6.5 Gripping force is dropping

Possible cause	Corrective action
Compressed air can escape.	<p>Check seals, if necessary, disassemble the product and replace seals.</p>
Too much grease in the mechanical movement space.	<p>Clean and lubricate product.</p>
Pressure drops below minimum.	<p>Check air supply. ▶ 3 [16]</p>
Component part defective.	<p>Replace component or send it to SCHUNK for repair.</p>

7 Maintenance

7.1 Notes



⚠ WARNING

Risk of injury from electric shock due to contact with live parts!

- Before starting any work: Disconnect the power supply from the mains and secure against accidental switch-on.
- Work may only be performed by appropriately qualified personnel.

Original spare parts

Use only original spare parts of SCHUNK when replacing spare and wear parts.

7.2 Maintenance and lubrication intervals

NOTICE

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.

Interval [Mio. cycles]	2
------------------------	---

7.3 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.

Greasing area	Lubricant
Metallic sliding surfaces	SCHUNK grease 3
Seals and sealing surfaces	SCHUNK grease 1

Details regarding SCHUNK lubricant designations are available at schunk.com/lubricants.

The product contains food-compliant lubricants as standard.

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.

7.4 Disassembly, size 44 – 80

Position of the item numbers ▶ 7.7 [38]



⚠ 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.

1. Remove compressed air lines.
2. **WARNING! Danger of injury due to spring forces! In case of defect, the cover housing can be spring tensioned. Carefully disassemble the module.** Secure the cover housing (2) by suitable means.
3. Unscrew and remove the screws (16).
4. Carefully remove the cover housing (2) safety.
5. Dismantle the cover housing (2) and the housing (1).
6. Unscrew and remove the screws (20). Remove the cover (10).
7. Mark the installation position between the cylinder piston (6) and the cover housing (2).
8. **WARNING! Danger of injury due to spring forces! The cylinder piston is under spring tension. Carefully disassemble the module.** Secure the cylinder piston (6) by suitable means.
9. Unscrew and remove the screw (18).
10. Carefully remove the cylinder piston safety.
11. Remove the cylinder piston (6) and springs (31).
12. Remove the screws (51), washers (53) and switching lugs (12).
13. Remove the screws (43), clamping components (42) and gripper fingers (3).
14. Unscrew the set-screws (61) and remove the cylindrical pins (60).
15. Push the cylindrical pins (24) up from the bottom until the bolts (7) can be pushed out. Mark the assembly position for the bolts.
16. Remove the entire lever mechanism and mark the assembly position of the joints (4) and the piston rod (5).

7.5 Disassembly, size 100

Position of the item numbers ▶ 7.7 [38]



⚠ 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.

1. Place a workpiece with a length of 78 mm between the fingers (3).
2. Remove compressed air lines.
3. **WARNING! Danger of injury due to spring forces! In case of defect, the safety ring (45) and the cover (44) can be under spring tension. Carefully disassemble the module.**
4. Secure the cover (44) by suitable means.
5. Remove safety ring (45) for cover (44).
6. Carefully remove the cover safety (44).
7. Pull cover (44) out of the housing (1).
8. Mark the installation position between the cylinder piston (6) and the housing (1).
9. **WARNING! Danger of injury due to spring forces! The cylinder piston is under spring tension. Carefully disassemble the module.** Secure the cylinder piston (6) by suitable means.
10. Unscrew and remove the screws (18).
11. Carefully remove the cylinder piston (6) safety.
12. Pull cylinder piston (6), springs (31) and shock absorber ring (48) out of the housing.
13. Remove the screws (19), washers (53) and switching lugs (12).
14. Remove the screws (43), clamping components (42) and gripper fingers (3).
15. Unscrew the set-screws (61) and remove the cylindrical pins (60).
16. Unscrew and remove the screws (20). Remove the cover (10).
17. Push the cylindrical pins (24) right down until the bolts (7) can be pushed out. Mark the assembly position for the bolts.

- 18.** Remove the entire lever mechanism and mark the assembly position of the joints (4) and the piston rod (5).

7.6 Servicing and assembling the product

Maintenance

- Clean all parts thoroughly and check for damage and wear.
- Treat all greased areas with lubricant.
 - ▶ 7.3 [📄 32]
- Oil or grease bare external steel parts.
- Replace all wear parts / seals.
 - Position of the wearing parts ▶ 7.7 [📄 38]
 - Seal kit ▶ 1.4 [📄 7]

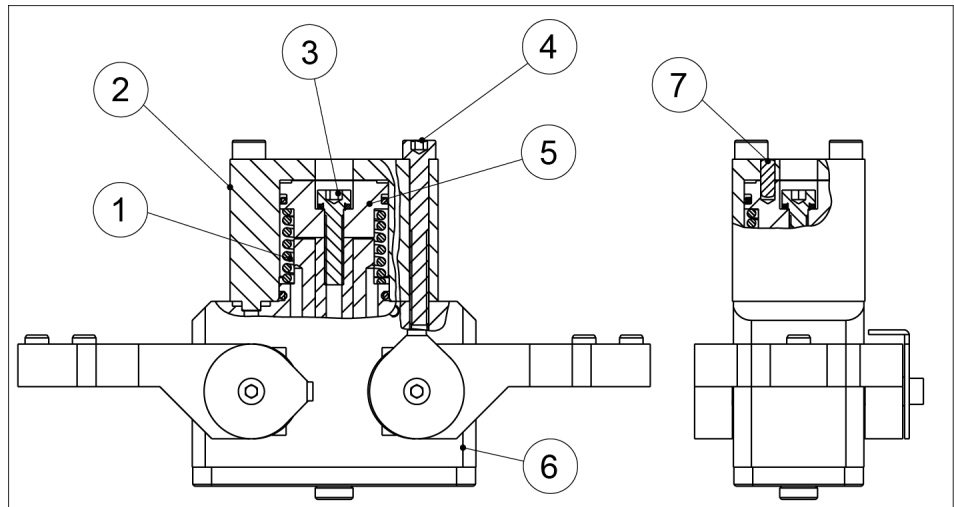
Assembly

Assembly takes place in the opposite order to disassembly. Observe the following:

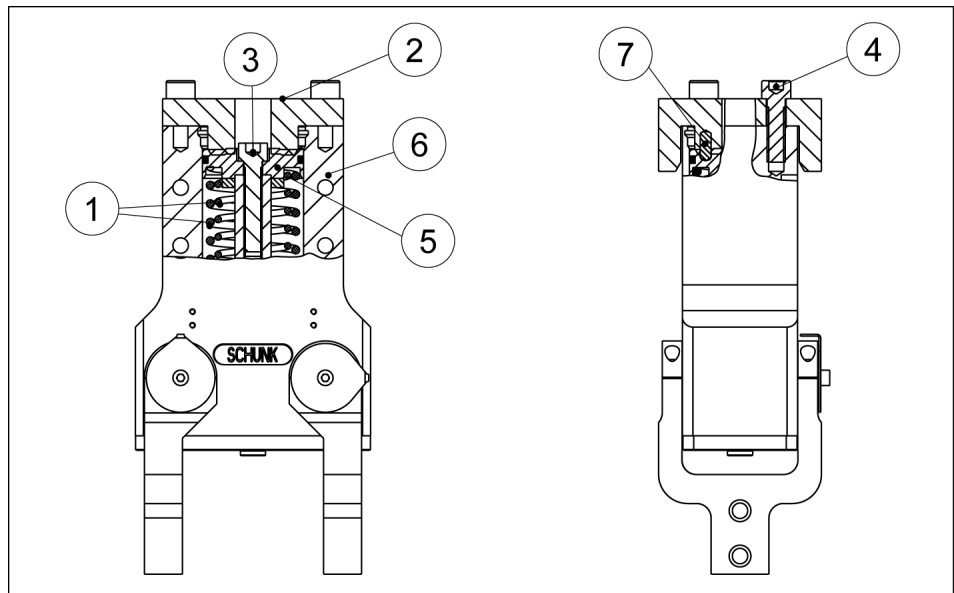
- Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.
- Use a cylinder piston assembly device for mounting ▶ 7.6.1 [📄 36]. Zeichnungen und Maße der Montagevorrichtung ▶ 7.6.2 [📄 37].

7.6.1 Assembling with assembly device

Use a cylinder piston assembly device for mounting



Assembly device DRG 44-80



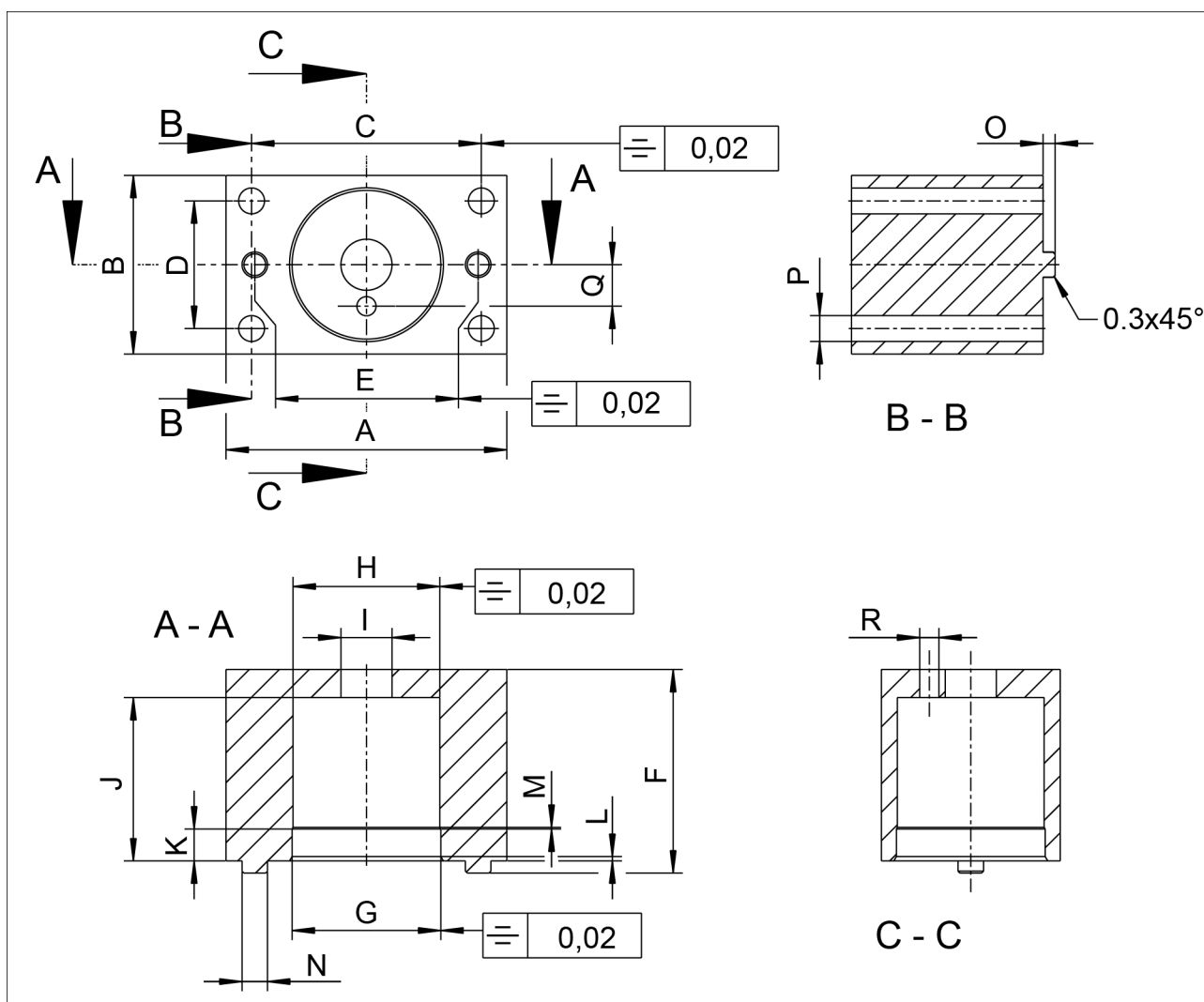
Assembly device DRG 100

Size	④ Screw	⑦ Cylindrical pin
44	M4 x 35	Ø3m6x8
54	M4 x 40	Ø3m6x8
64	M5 x 45	Ø4m6x8
80	M6 x 55	Ø4m6x10
100	M10 x 35	Ø6m6x16

1. Insert the cylinder pin (7) into the assembly device (2).
2. Insert the springs (1) into the housing (6).
3. Place the cylinder piston (5) with screws (3) onto the springs.
4. Check the installation position of the cylinder piston to the cover housing / housing.

5. Put the assembly device (2) over the cylinder piston, at this plug the cylinder pin (7) into the assembling hole of the cylinder piston (5).
6. Press the assembly device onto the housing and secure it with suitable screws (4).
7. Tighten the screw (3).
8. Unscrew the screws (4) and remove the assembly device (2).
9. Check the installation position between the cylinder pistons and housing.

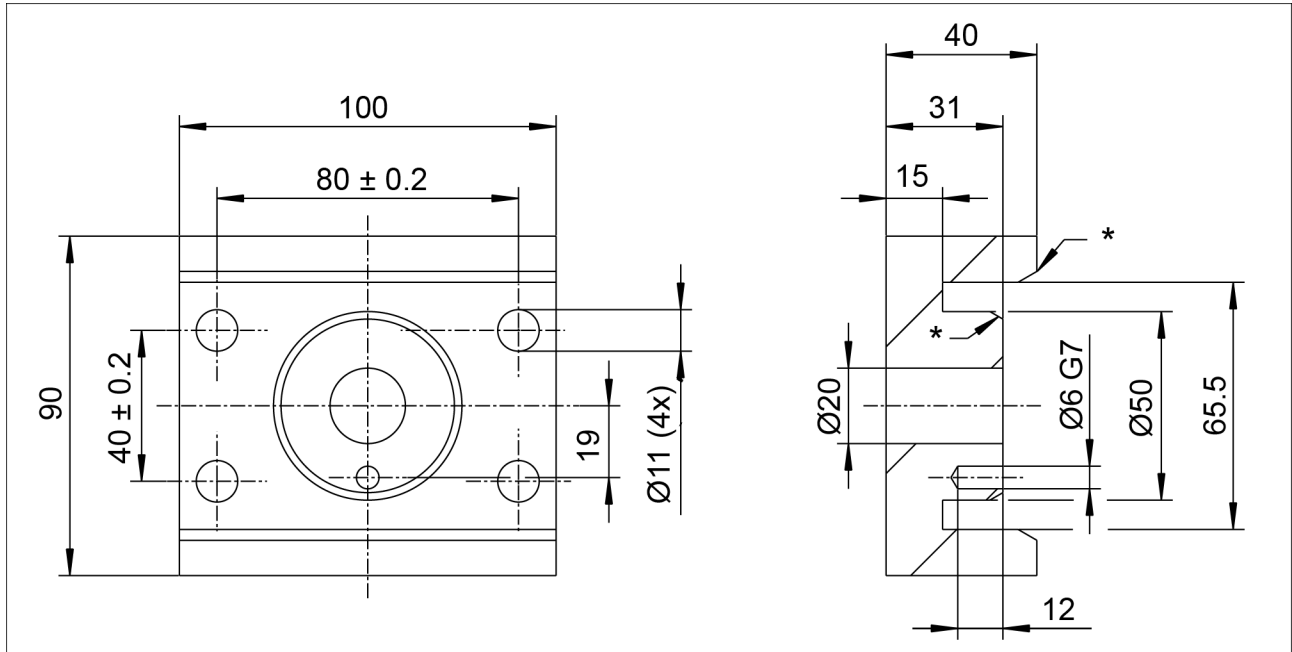
7.6.2 Assembly device



Assembly devices for sizes DRG 44 - 80

Size	A	B	C ± 0.1	D ± 0.1	E ± 0.1	F	G \varnothing^{H7}	H \varnothing^{H7}	I
44	44	28	36	20	35	30	23.3	23	8
54	54	35	46	27	44	32	30.3	30	8
64	64	40	54	30	52	36	35.3	35	10
80	80	50	69	39	65	45	44.8	44.5	12

Size	J ±0.1	K	L	M	N h7	O ±0.1	P	Q ±0.2	R Ø ^{H7}
44	25.6	5	1x 30°	30°	4	1.9	4	6.5	3
54	26.5	10	1x 30°	30°	5	2.2	4	8	3
64	31.1	15	1x 30°	30°	6	2.8	5	10	4
80	38.1	15	1x 30°	30°	8	2.8	6	12	4

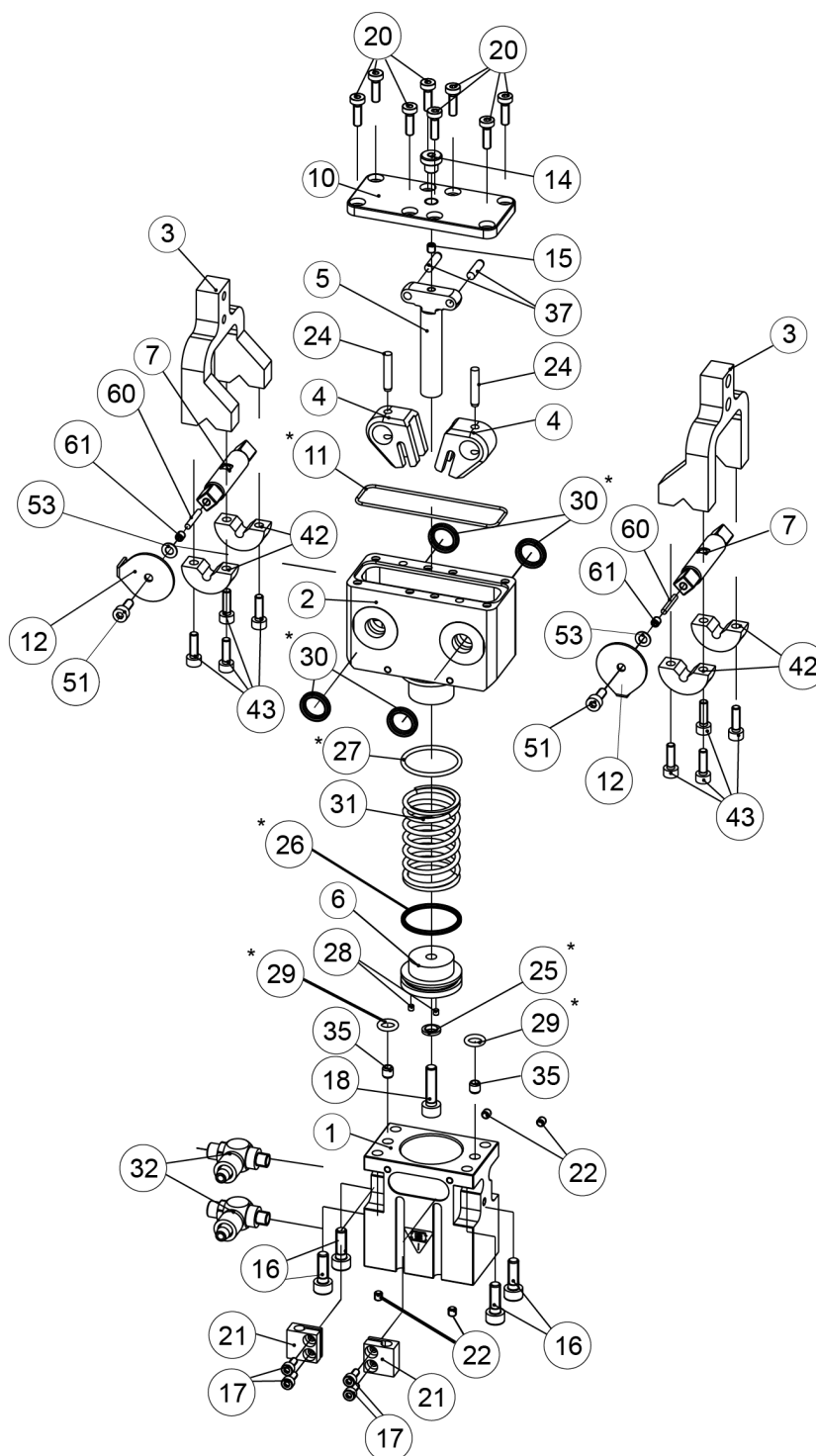


Assembly devices for size DRG 100

* Note the chamfer

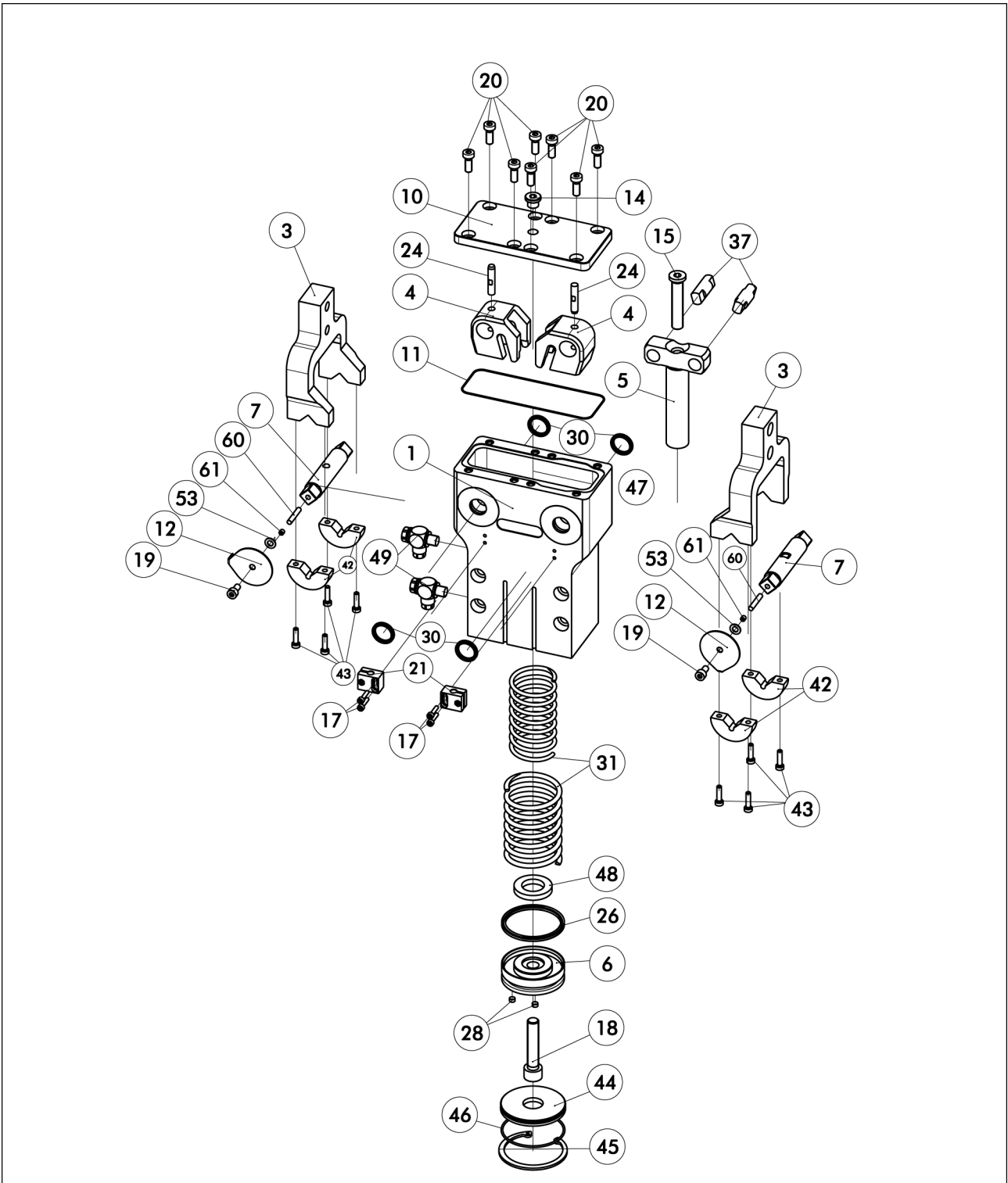
7.7 Drawings

The following figures are example images.
They serve for illustration and assignment of the spare parts.
Variations are possible depending on size and variant.



Assembly of sizes DRG 44 – 80

* Wearing part, replace during maintenance.
Included in the seal kit. Seal kit can only be ordered completely.



Assembly of size DRG 100

* Wearing part, replace during maintenance.
 Included in the seal kit. Seal kit can only be ordered completely.

8 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: Radial Gripper / DRG /pneumatic
ID number 0307106 ... 0307110, 39307106 ... 39307110

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, March 2025

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

10 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.

Signature: see original declaration

Lauffen/Neckar, March 2025

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



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