

Quick start guide

Finger gripper mGrip Circular

Note

The Quick Start Guide were originally written in German. Store in a safe place for future reference. Subject to technical changes without notice. No responsibility is taken for printing or other types of errors.

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1 Important Information

1.1 The technical documentation is part of the product

1. For problem-free and safe operation, follow the instructions in the documents.
 2. Keep the technical documentation in close proximity to the product. The documentation must be accessible to personnel at all times.
 3. Pass on the technical documentation to subsequent users.
- ⇒ Failure to follow the instructions in these Quick Start Guide may result in injuries!
- ⇒ Schmalz is not liable for damage or malfunctions that result from failure to heed these instructions.

If you still have questions after reading the technical documentation, contact Schmalz Service at:

www.schmalz.com/services

1.2 Symbols



This symbol indicates useful and important information.

- ✓ This symbol represents a prerequisite that must be met before an action is performed.
- ▶ This symbol represents an action to be performed.
- ⇒ This symbol represents the result of an action.

Actions that consist of more than one step are numbered:

1. First action to be performed.
2. Second action to be performed.

2 Fundamental Safety Instructions

2.1 Intended Use

The finger gripper mgrip Circular gripper is designed and manufactured in a hygienic design for industrial transport tasks. For Circular configurations with 3, 4, 5 and 6 fingers.

It is intended to be used in combination with a robot or a handling system for gripping and holding sensitive products of the maximum specified size, including products in the food industry. The size depends on the dimensions of the products and the type of gripping.

The finger gripper is an incomplete machine as defined by the Machinery Directive 2006/42/EC. It must only be operated in combination with a robot or handling system.

The product is intended for industrial use.

Intended use includes observing the technical data and the installation and operating instructions in this manual.

2.2 Non-Intended Use

Schmalz accepts no liability for damages caused by the use of the product for purposes other than those described under "Intended Use." The use of the product for loads that are not specified in the order confirmation or have different physical properties than those specified in the order confirmation shall be considered non-intended use.

2.3 Personnel Qualifications


Unqualified personnel cannot recognize dangers and are therefore exposed to higher risks!

1. Task only qualified personnel to perform the tasks described in these Quick Start Guide.
2. The product must be operated only by persons who have undergone appropriate training.

These Quick Start Guide are intended for fitters who are trained in handling the product and who can operate and install it.

2.4 Warnings in This Document

Warnings warn against hazards that may occur when handling the product. The signal word indicates the level of danger.

Signal word	Meaning
 CAUTION	Indicates a low-risk hazard that could result in minor or moderate injury if not avoided.
NOTE	Indicates a danger that leads to property damage.

2.5 Residual Risks



CAUTION

Noise pollution caused by exhaust air or leakage during operation

Hearing damage!

- ▶ In the event of leakage, check connections and lines and remedy leakages.
- ▶ Wear ear protection.



CAUTION

Risk of a gripping finger bursting if the air pressure is too high when the gripping fingers are activated.

Risk of injury

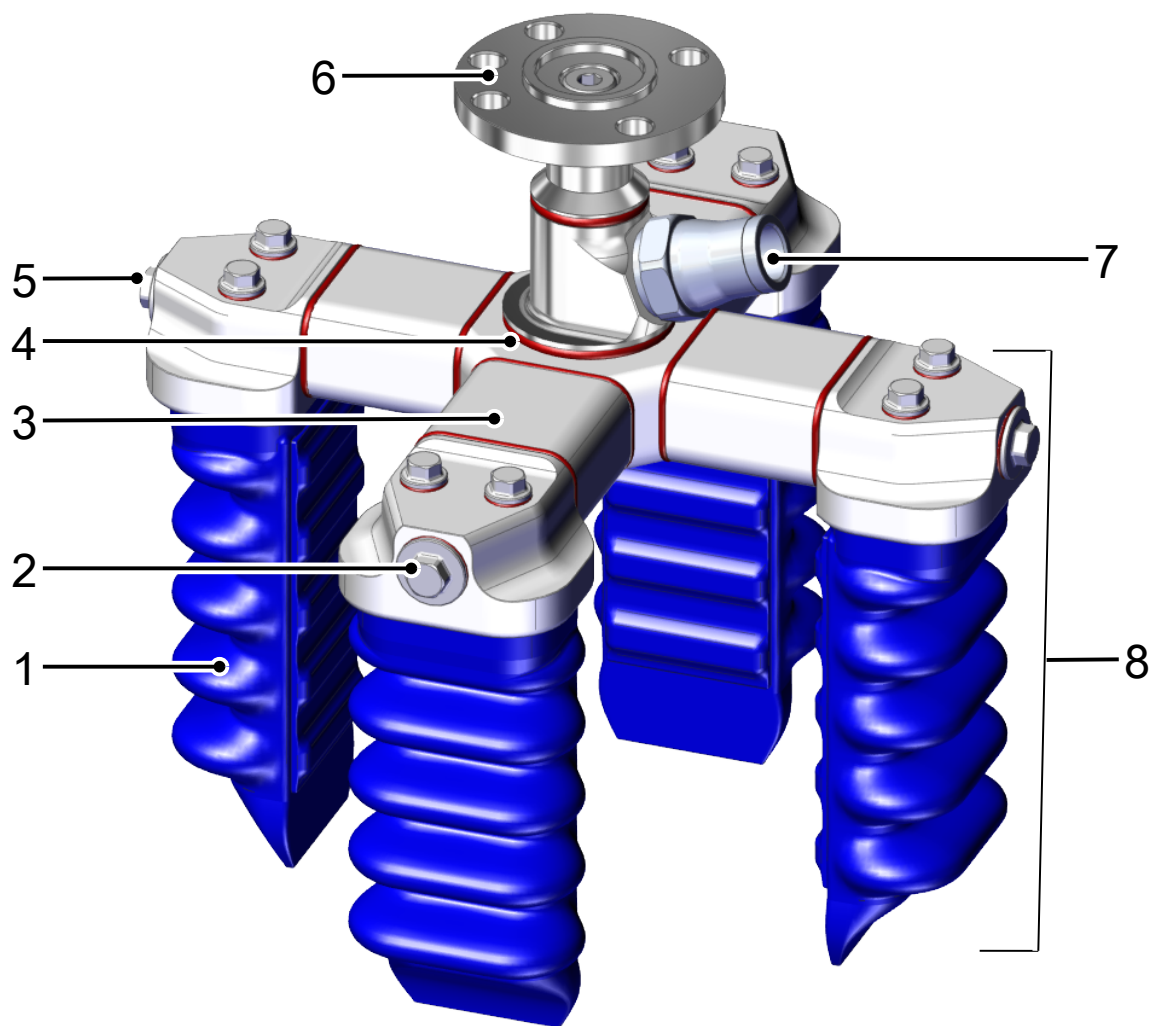
- ▶ Ensure that the gripper is operated only with the mGrip SRCUs control unit.
- ▶ Wear ear plugs and protective glasses.

2.6 Modifications to the Product

Schmalz assumes no liability for consequences of modifications over which it has no control:

1. The product must be operated only in its original condition as delivered.
2. Use only original spare parts from Schmalz.
3. The product must be operated only in perfect condition.

3 Product Design



- | | |
|---|--|
| 1 | Finger module insert (FING-MONT) |
| 2 | Sealing screw (VRS-HEX)
Tension rod (TIE-ROD) |
| 3 | Spacer (SPACER) |
| 4 | Distributor (HUB-MOd) |

- | | |
|---|---------------------------|
| 5 | Sealing screw (VRS-CAP) |
| 6 | Robot adapter (ROB-AD) |
| 7 | Pneumatic connection |
| 8 | Finger modules (FING-MOD) |

4 Configurations

Circular with 3 fingers EOAT (End Of Arm Tool)

	Compact finger modules		Mini finger modules	
Gripping distance [mm]	Spacer size [mm]	Tension rod length [mm]	Spacer size [mm]	Tension rod length [mm]
N/A	Dummy plate	20	Dummy plate	20
30	None	40	—	—
40	5	45	—	—
50	10	50	None	45
60	15	55	5	50
70	20	60	10	55
80	25	65	15	60
90	30	70	20	65
100	35	75	25	70
110	40	80	30	75
120	—	—	35	80
130	—	—	40	85

Circular with 4 fingers EOAT (End Of Arm Tool)

	Compact finger modules		Mini finger modules	
Gripping distance [mm]	Spacer size [mm]	Tension rod length [mm]	Spacer size [mm]	Tension rod length [mm]
N/A	Dummy plate	25	Dummy plate	25
45	None	45	—	—
55	5	50	—	—
65	10	55	None	50
75	15	60	5	55
85	20	65	10	60
95	25	70	15	65
105	30	75	20	70
115	35	80	25	75
125	40	85	30	80
135	—	—	35	85
145	—	—	40	90

Circular with 5 fingers EOAT (End Of Arm Tool)

	Compact finger modules		Mini finger modules	
Gripping distance [mm]	Spacer size [mm]	Tension rod length [mm]	Spacer size [mm]	Tension rod length [mm]
N/A	Dummy plate	30	Dummy plate	30
55	None	50	—	—
65	5	55	—	—
75	10	60	None	55
85	15	65	5	60
95	20	70	10	65
105	25	75	15	70
115	30	80	20	75
125	35	85	25	80
135	40	90	30	85
145	—	—	35	90
155	—	—	40	95

Circular with 6 fingers EOAT (End Of Arm Tool)

	Compact finger modules		Mini finger modules	
Gripping distance [mm]	Spacer size [mm]	Tension rod length [mm]	Spacer size [mm]	Tension rod length [mm]
N/A	Dummy plate	35	Dummy plate	35
65	None	—	—	—
75	5	60	—	—
85	10	65	None	60
95	15	70	5	65
105	20	75	10	70
115	25	80	15	75
125	30	85	20	80
135	35	90	25	85
145	40	95	30	90
155	—	—	35	95
165	—	—	40	100

5 Technical Parameters

Max. load	≤ 10 kg ¹⁾
Operating pressure	- 0.69 to 0.97 bar
Operating medium	Compressed air, oiled or unoled in accordance with ISO 8573-1:2010 [5:5:4]
Operating temperature	from -20 to 45 °C
Workpiece width	20 to 300 mm (more through special configurations)
Workpiece temperature	from -40 to 100° C
Protection class	IP69K
Materials	Finger: Silicone Gripper with food-safe design: POM, stainless-steel, silicone Gripper with industrial design: POM, aluminum, silicone

¹⁾ Depending on the application

6 Transportation and Storage

6.1 Checking the Delivery

1. Compare the entire delivery with the supplied delivery notes to make sure nothing is missing.
2. Damage caused by defective packaging or occurring in transit must be reported immediately to the carrier and J. Schmalz GmbH.

6.2 Storage



NOTE

The effects of ozone, light (especially UV), heat, oxygen, humidity as well as mechanical influences can reduce the service life of rubber products.

Damage to the finger gripper due to incorrect storage!

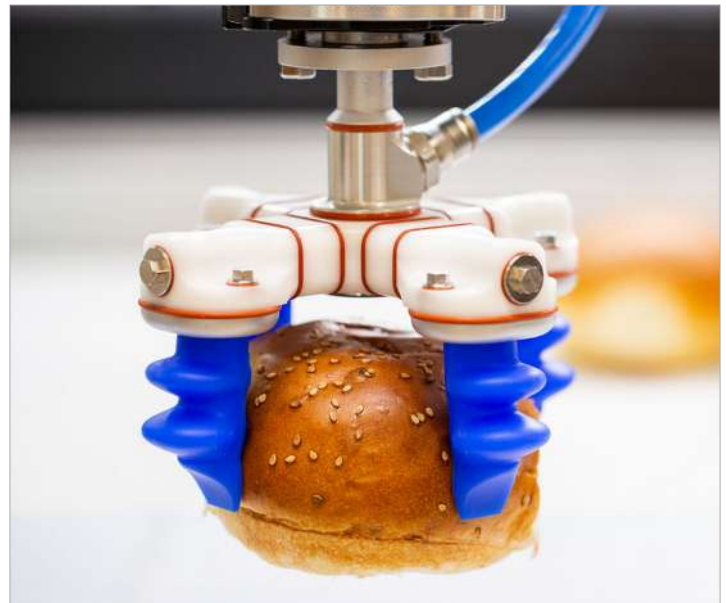
- ▶ Store the finger gripper in a cool place (0° C to +15°C, max. 25° C) that is dark, dry, low in dust and offers protection from the weather, ozone and drafts. It should also be free of tension (e.g. stacked appropriately to avoid deformation).

- ▶ Close all openings with adhesive tape.

7 Description of the Function

The finger gripper operates using the air pressure inside the gripping fingers.

In order for the gripping fingers to move, one side of the material is designed in such a way that it is less stretchy or does not stretch at all. When the pressure inside increases, the finger therefore bends around this side. When the pressure is released, the finger retracts. The gripping fingers are made from soft, stretchy plastic to ensure optimum gripping force.



8 Installation

8.1 Installation Instructions



CAUTION

Compressed air or vacuum in direct contact with the eye

Severe eye injury!

- ▶ Wear eye protection.
- ▶ Do not look into compressed air openings.
- ▶ Do not look into vacuum openings, e.g. suction cups.



CAUTION

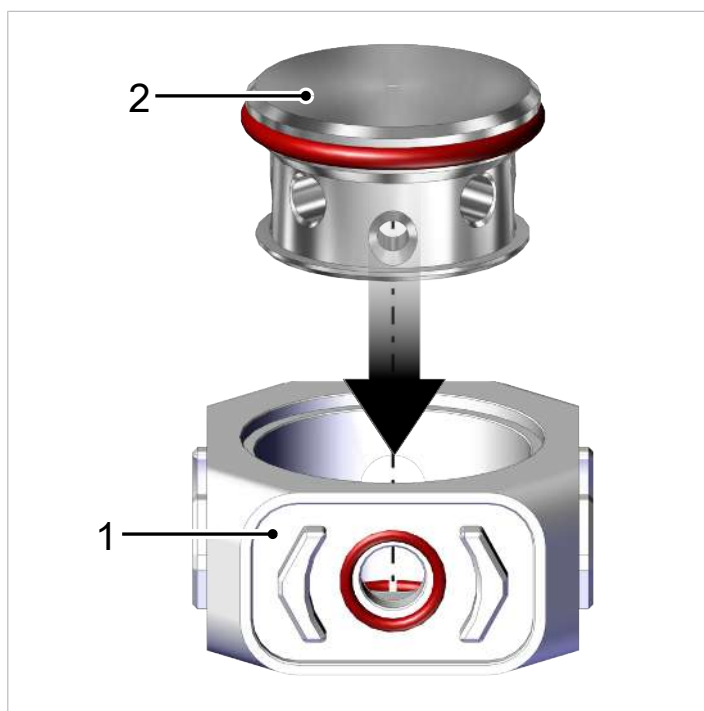
Noise pollution caused by exhaust air or leakage during operation

Hearing damage!

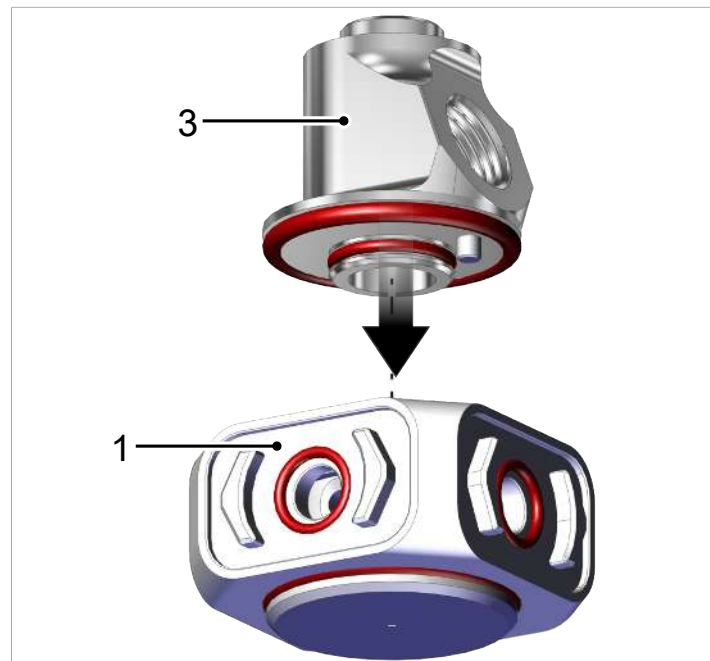
- ▶ In the event of leakage, check connections and lines and remedy leakages.
- ▶ Wear ear protection.

8.2 Mounting

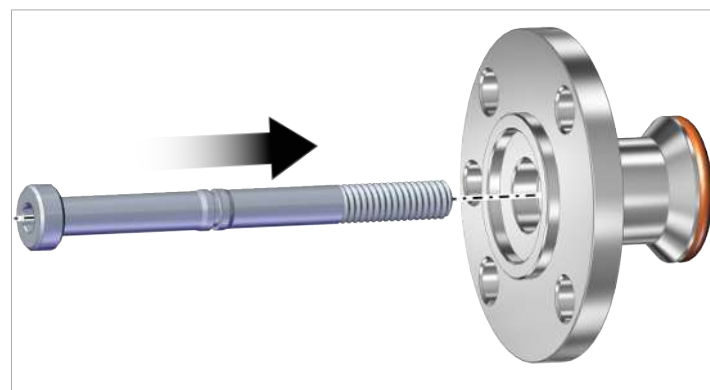
1. For the 3-finger configuration, proceed to step 4.
Mount the lower hub bracket (2) in the distributor (1) if it is not already installed.



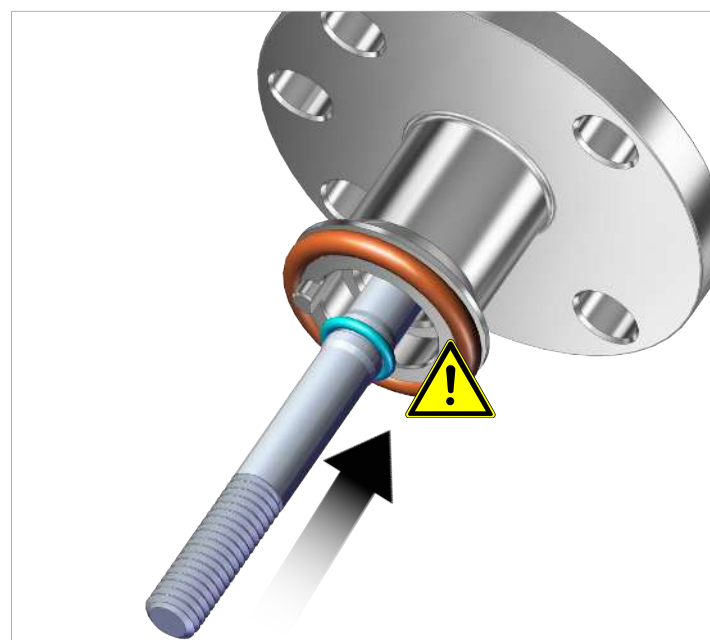
2. Mount the upper hub bracket (3) including the O-rings in the distributor (1) in the correct position. Make sure the contact surfaces are clean and dry.



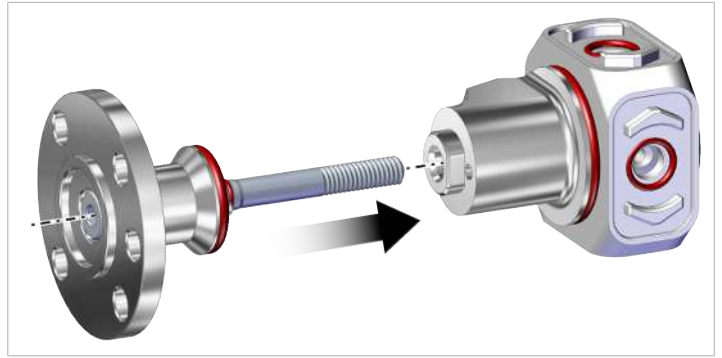
3. Mount the hub bolt in the robot adapter.



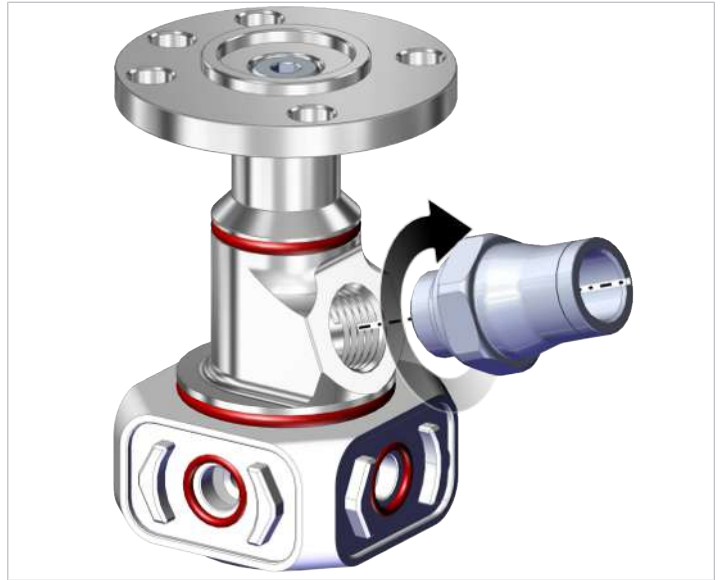
4. Mount the small O-ring on the hub bolt.
Note: We recommend grease for the O-ring and anti-seize gel for the bolt.



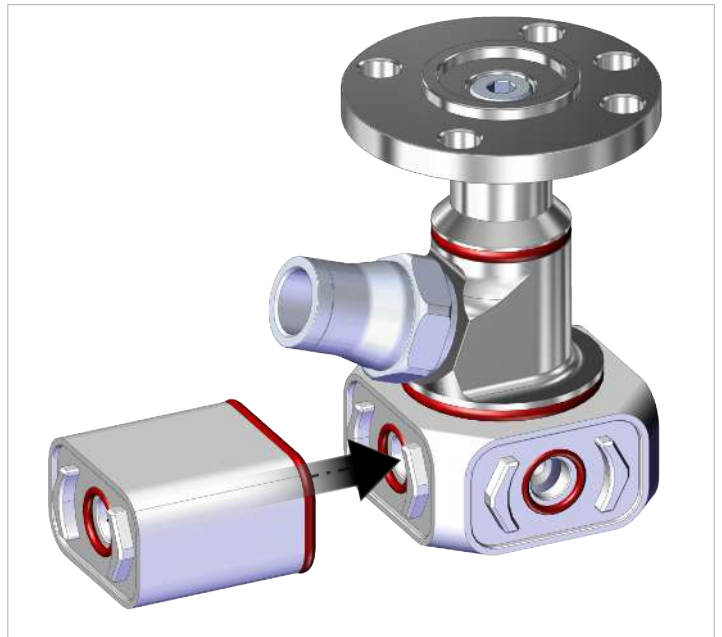
5. Mount the robot adapter in the correct position (note the cam position) and flat on the upper hub bracket. Make sure the contact surfaces are clean and dry. Tighten the hub bolt to 7.4 Nm.



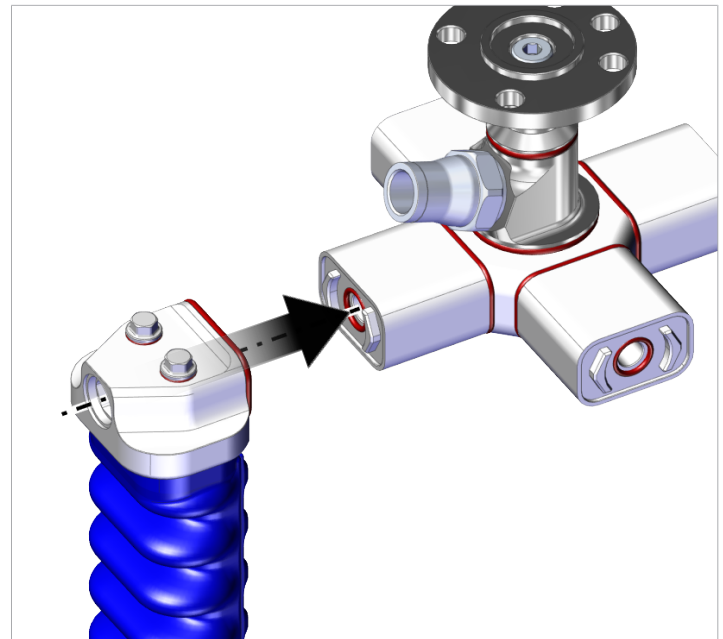
6. Mount the plug-in screw union in the upper hub bracket, and tighten it to 6 Nm.
Note: This does not apply to the 3-finger configuration.



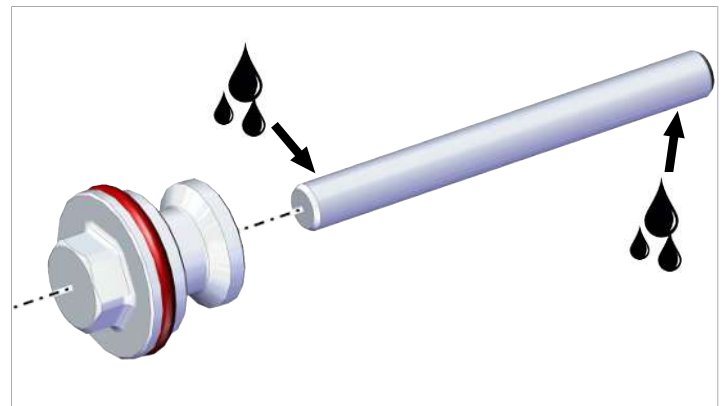
7. Mount the selected spacers in the correct position on the distributor (if required) and press them firmly into place.



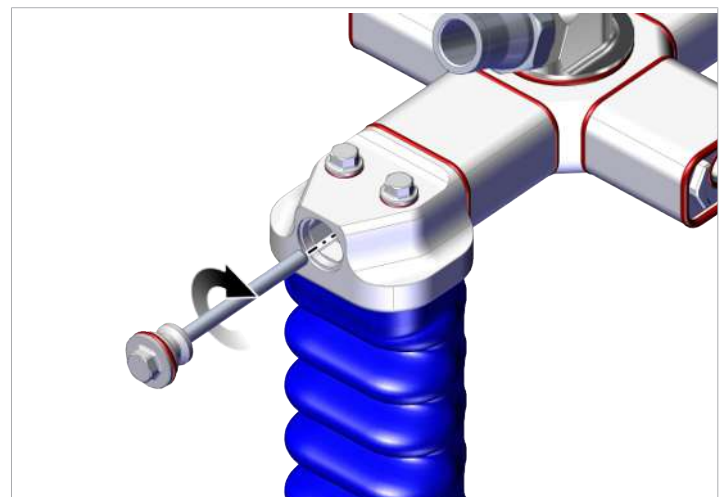
8. Mount the finger module on the spacer.
Note: If no spacers are used, the finger modules can be mounted directly on the distributor.



9. Apply anti-seize gel to both ends of the tension rod, and tighten the hexagonal nut on the tension rod.
Note: Use the spacer and tension rod table ([> See ch. 4 Configurations, p. 5](#)) to determine which tension rod is best for your gripper.

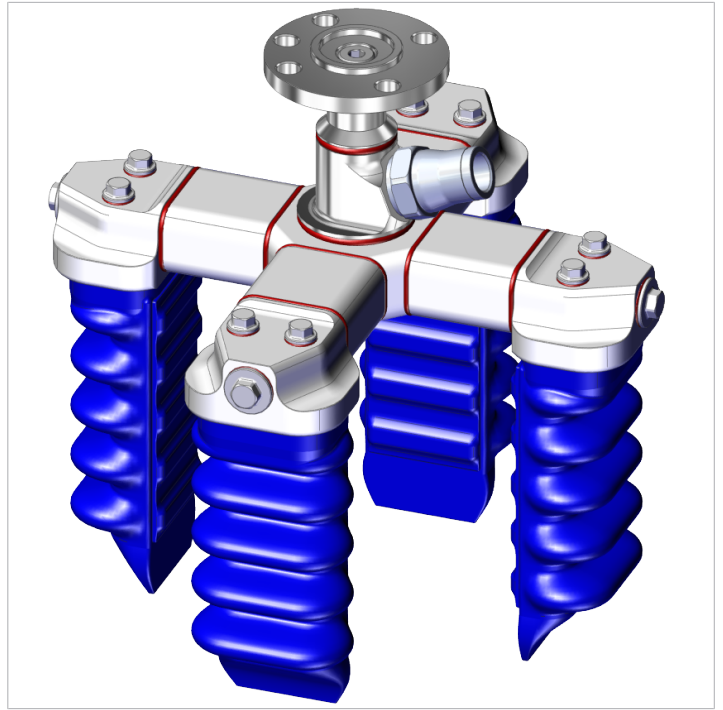


10. **Note:** Before mounting the tension rod, make sure that all O-rings and seals are in place and positioned correctly.
To attach to the hub, thread the tension rod through the installed finger module and spacer (if installed). Tighten the sealing screw on the tension rod to 2.2 Nm.



11. **Note:** If dummy plates are used, follow steps 6, 8, 9 and 10.

12. Repeat steps 7 through 10 to attach the other finger module to the circular distributor.



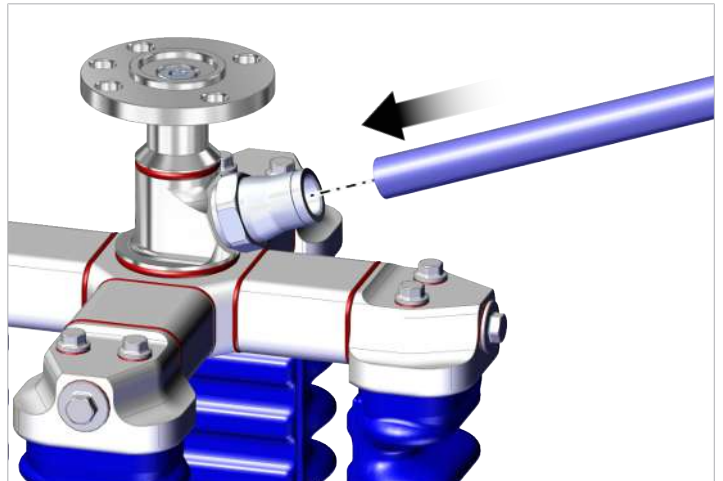
13. After the gripper has been in its operating environment for at least 8 hours, tighten the center hub bolt with a torque of 7.4 Nm.

8.3 Pneumatic connection

The vacuum hose is mounted on the pneumatic connection.

- ✓ The appropriate hose is ready for use.

1. Push the hose into plug-in screw union as far as possible.



2. Manually check the hose for tightness in the plug-in screw union by pulling on the hose.

9 Cleaning the Product



NOTE

Incorrectly cleaning the product and its components

Damage to the product or individual components due to aggressive cleaning agents or excessive temperatures!

- ▶ For cleaning, use only cleaning agents that do not corrode or damage the materials used.
- ▶ Do not use sharp-edged objects (wire brushes, sandpaper, etc.).
- ▶ Do not exceed the specified max. temperature during cleaning.

To safely clean the product, its materials must not react with the cleaning agent and antimicrobial chemicals (disinfectants).

When cleaning the parts, a maximum temperature of 80° C must be observed.



Moisture inside the product may cause malfunctions.

Do **not** clean the inside of the product. The inside of the product must be dry before operation.



The type and frequency of cleaning is the responsibility of the operating company.

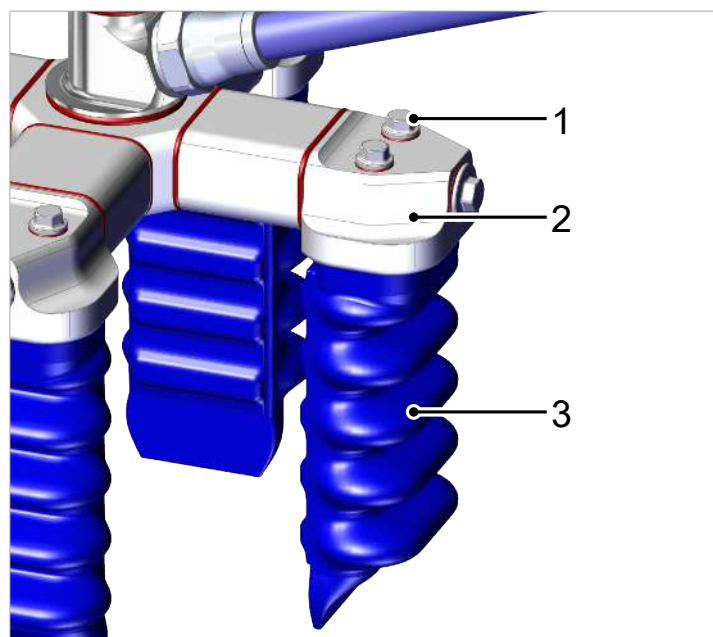
10 Replacing the Finger Module Insert

Overview

The section below explains the work steps for replacing worn or damaged finger module inserts in all Schmalz mGrip™ EOATs with compact finger modules.

Tools required:

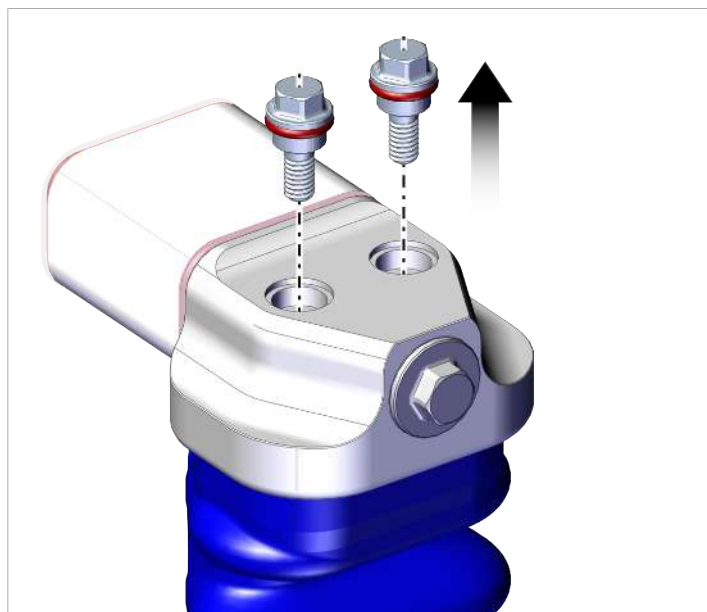
- Torque wrench with 6 mm nut driver bit, suitable for 1.5 Nm
- Food-grade anti-seize thread lubricant



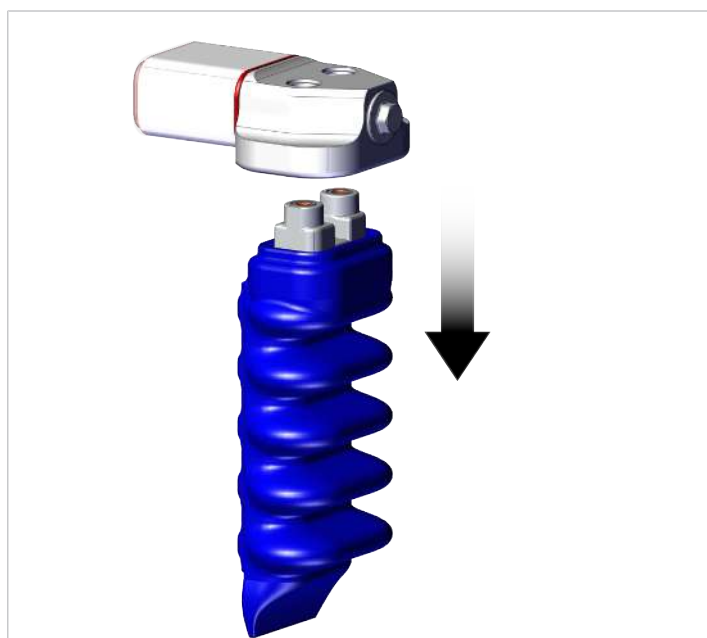
1	Sealing screw	3	Finger module insert (FING-MONT)
2	Finger base (FING-COMP BASE)		

- ✓ You **do not** have to remove the finger base (2) to replace the finger module insert.
- ✓ The corresponding number of replacement finger module inserts (FING-MOUNT) are available.

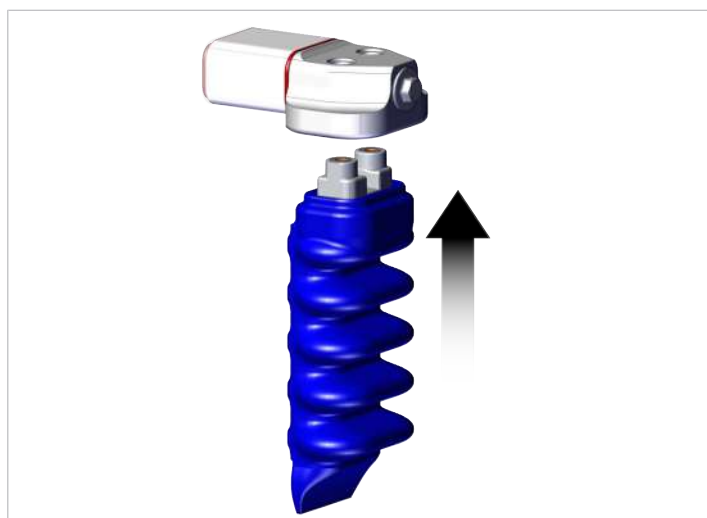
1. Using a 6 mm socket, remove the two M4 seal screws and set them aside for later installation.



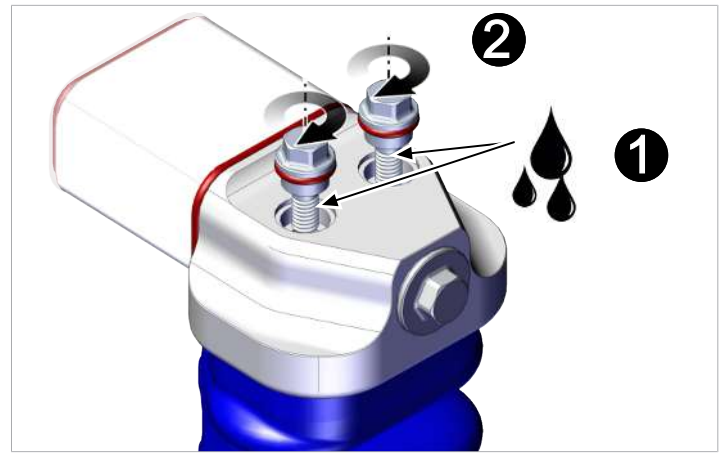
2. Carefully pull the finger module insert away from the finger base.



3. Mount the new finger module insert **in the correct position** on the finger base (FING-COMP BASE).



4. Before mounting, apply food-grade anti-seize thread lubricant to the two M4 sealing screws **1** and then install them. Tighten the screws with a tightening torque of 1.5 Nm. **2**.



11 Disposing of the Product

Recover the disassembled parts for recycling or reuse (provided no agreement on return or disposal has been made).

1. Dispose of the product properly after replacement or decommissioning.
2. Observe the country-specific guidelines and legal obligations for waste prevention and disposal.