Assembly and Operating Manual

GSM-Z

Rotary gripping module with centric gripper
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

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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.

Illustrations in this manual are provided for basic understanding and may differ from the actual product design.

In addition to these instructions, the documents listed under Applicable documents [6] are applicable.

1.1.1 Presentation of Warning Labels

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

⚠️ DANGER

Danger 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 *
- Assembly and operating manuals of the accessories *
The documents marked with an asterisk (*) can be downloaded on our homepage schunk.com

1.1.3 Sizes
This operating manual applies to the following sizes:
- GSM-Z 30
- GSM-Z 38
- GSM-Z 45

1.1.4 Variants
This operating manual applies to the following variations:
- GSM-Z without gripping force maintenance
- GSM-Z with gripping force maintenance "O.D. gripping" (AS)
- GSM-Z with gripping force maintenance "I.D. gripping" (IS)

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 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.

1.3 Scope of delivery
The scope of delivery includes
- Rotary gripping module with centric gripper GSM-Z in the version ordered
- Assembly and Operating Manual
- Accessory pack

1.3.1 Accessory pack rotational speed rotor FAN
Position of the item numbers Drawings [► 53]

Content of the accessory pack:
- Centering sleeves (205 or 206)
- O-rings (207)
- Steel balls (108)
- Locking screws (230)
- Screws (231 / 232)
### General

**Rotational speed rotor FAN**

<table>
<thead>
<tr>
<th>Rotational speed rotor</th>
<th>ID number</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAN 40</td>
<td>5514441</td>
</tr>
<tr>
<td>FAN 64</td>
<td>5514442</td>
</tr>
</tbody>
</table>

#### 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 Sealing kit

Seal kits contain all seals necessary for maintaining a SCHUNK component.

<table>
<thead>
<tr>
<th>Seal kit for</th>
<th>ID.-No. of the seal kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSM-Z 30</td>
<td>5516276</td>
</tr>
<tr>
<td>GSM-Z 38</td>
<td>5516277</td>
</tr>
<tr>
<td>GSM-Z 45</td>
<td>5516278</td>
</tr>
<tr>
<td>FAN 40</td>
<td>5516256</td>
</tr>
<tr>
<td>FAN 64</td>
<td>5516257</td>
</tr>
</tbody>
</table>

Contents of the sealing kit, [Drawings](#) [53].
2 Basic safety notes

2.1 Intended use
The module has been designed to grip, hold, release, rotate and position workpieces or objects.

- The product may only be used within the scope of its technical data, Technical data [►16].
- 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/system. The applicable guidelines 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
It is not intended use if the product is used, for example, as a pressing tool, stamping tool, lifting gear, guide for tools, cutting tool, clamping device or a drilling tool.

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

2.3 Constructional changes
Implementation of structural changes
By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- 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 Gripper fingers

Requirements for the gripper fingers
Stored energy within the product creates the risk of serious injuries and significant property damage.

- Arrange the gripper fingers in a way that the product reaches either the position "open" or "closed" in a de-energized state.
- Only exchange the gripper fingers when no residual energy remains in the product.
- Make sure that the product and the top jaws are a sufficient size for the application.

2.6 Environmental 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 a sufficient size for the application.
- Ensure that maintenance and lubrication intervals are observed, Maintenance and care [1] 40.
- 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.

2.7 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.

### 2.8 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.
2.9 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.

2.10 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.

2.11 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.
2.12 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.

2.13 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.

2.13.1 Protection during handling and assembly

Incorrect handling and assembly
Incorrect handling and assembly can make the product unsafe and pose a risk of serious injuries and considerable material damage.

- Order all work to be performed only by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention regulations.

2.13.2 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.
2.13.3 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.

2.13.4 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.
2.14 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 crushing and impacts!
Serious injury could occur during the base jaw procedure and when breaking or loosening the gripper fingers.
- 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.

**WARNING**

Danger of injury due to uncontrolled movements!
Due to incorrect control and incorrect operation, loss of workpieces and uncontrolled movement of the product may occur and can cause serious injuries.

- Take checks in the user's program.
- The danger zone must be secured by suitable measures.

**WARNING**

Risk of injury from rotating components!
In the case of swivel units or rotary tables with a rotary drive, serious injuries can be caused by rotating components.

- Take appropriate protective measures to secure the danger zone.

**WARNING**

Risk of injury by parts becoming detached and destruction of the rotary actuator if the shock absorbers are defective.
*Avoidance measures:* Regular visual inspections of individual components for wear and damage.
### 3 Technical data

<table>
<thead>
<tr>
<th>Designation</th>
<th>GSM-Z 30</th>
<th>GSM-Z 38</th>
<th>GSM-Z 45</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise emission [dB(A)]</td>
<td></td>
<td>≤ 70</td>
<td></td>
</tr>
<tr>
<td>IP rating</td>
<td></td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Pressure medium</td>
<td></td>
<td>Compressed air, compressed air quality according to ISO 8573-1:4 4</td>
<td></td>
</tr>
<tr>
<td>Nominal working pressure [bar]</td>
<td></td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Min. pressure [bar] for gripping</td>
<td></td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>without gripping force maintenance</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>with gripping force maintenance</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Min. pressure [bar] for swiveling</td>
<td>3.5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Max. pressure [bar]</td>
<td></td>
<td></td>
<td>6.5</td>
</tr>
</tbody>
</table>

More technical data is included in the catalog data sheet. Whichever is the latest version.
4 Design and description

4.1 Design

Rotary gripping module with centric gripper

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Compressed air main connection</td>
</tr>
<tr>
<td>2</td>
<td>Feed-through compact module DKM GSM</td>
</tr>
<tr>
<td>3</td>
<td>Base jaws</td>
</tr>
<tr>
<td>4</td>
<td>Gripping module ZGM</td>
</tr>
<tr>
<td>5</td>
<td>Rotor drive FAN</td>
</tr>
</tbody>
</table>

4.2 Description

Rotary gripping module with centric gripper
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 diagrams and information in the catalog data sheet.

NOTE

- Observe the requirements for the compressed air supply, Technical data [16].
- In case of compressed air loss (cutting off the energy line), the components lose their dynamic effects and do 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. Product variants are also offered with mechanical gripping force via springs, which also ensure a minimum clamping force in the event of a pressure drop.
- Check the evenness of the mounting surface, Mechanical connection [▶ 20].
- Only open the required air connections (main connection or direct connection), Pneumatic connection [▶ 22].
- Connect the product via the hose-free direct connection.
  ✓ Use O-rings from the accessory pack.
  ✓ Seal main air connections which are not required with locking screws.
- OR: Connect compressed air lines to the main air connections "A" and "B".
  ✓ Screw in air connections (plug connections).
    OR: Screw on throttle valve in order to be able to perform sufficient throttling and/or dampening.
- Screw the product to the machine/system, Mechanical connection [▶ 20].
  ✓ If necessary, use appropriate connection elements (adapter plates).
  ✓ Observe the maximal tightening torque, admissible screw-in depth and, if necessary, strength class.
  ✓ When mounting from the rear or at the side: use cylindrical pins for fixing the product in place.
- Secure the gripper fingers to the base jaws, Mechanical connection [▶ 20].
  ✓ Use centering sleeves from the enclosed accessory pack.
- Connect air purge connection if necessary.
- Connect the sensor, see assembly and operating manual of the sensor.
- Mount the sensor, Mounting the sensor [▶ 23].
5.2 Connections

5.2.1 Mechanical connection

To ensure the function of the sensors, the A2 screws from the accessory pack are to be used. For process-reliable monitoring, adapter plates should be made of non-ferromagnetic material.

<table>
<thead>
<tr>
<th>Item</th>
<th>GSM - SFL basic size</th>
<th>40</th>
<th>64</th>
</tr>
</thead>
<tbody>
<tr>
<td>1A</td>
<td>Centering sleeve for lateral mounting of the unit and fitting depth in the mounting plate</td>
<td>ø8 2.5 deep Item 206</td>
<td>ø10 3 deep Item 205</td>
</tr>
<tr>
<td>1B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1C</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Centering sleeve for mounting the unit on the base side and fitting depth in the mounting plate</td>
<td>ø6 2.5 deep Item 205</td>
<td>ø10 3 deep Item 205</td>
</tr>
<tr>
<td>3A</td>
<td>Thread diameter for screwing through for mounting the unit at the side</td>
<td>M4 Item 232</td>
<td>M5 Item 232</td>
</tr>
</tbody>
</table>
### Mounting the Unit

#### Mounting the unit on the base side
(with adapter plate similar to A, B or C; see "Mounting the GSM at the side and on the base side")

The assembly of the unit can be carried out from the side of the unit using the screws (6).

There are threads in the housings for mounting from the customer-specific opposite side (screws 5 and 6 are not included in the scope of delivery).

Centering sleeves (2) are to be used for the secure transmission of shearing forces and positioning of the unit.

#### Mounting the unit at the side
(with adapter plate similar to A, B or C)

The assembly of the unit can be carried out from the side of the unit using the A2 screws included in the accessory pack (3A, 3B or 3C).

For mounting from the customer-specific opposite side, there are threads in the housings (the A2 screws (4A, 4B or 4C) are included in the accessories pack).

Centering sleeves (1A, 1B or 1C) are to be used for the secure transmission of shearing forces and positioning of the unit.

---

**NOTE**

In order to guarantee process reliability for monitoring with magnetic switches, most especially the adapter plates and the attachments located near the unit should be made of non-ferromagnetic material. Otherwise, monitoring with magnetic sensors could be impaired considerably [Accessories](#) [7].

---

**NOTE**

When monitoring with magnetic switches, a minimum distance of 10 mm is to be observed between the units in the event of the assembly of several units next to each other [Accessories](#) [7].

---

<table>
<thead>
<tr>
<th>Item</th>
<th>GSM - SFL basic size</th>
<th>40</th>
<th>64</th>
</tr>
</thead>
<tbody>
<tr>
<td>4A, 4B, 4C</td>
<td>Thread diameter and max. depth of engagement for screw connection for lateral mounting</td>
<td>M5 19 deep Item 231</td>
<td>M6 25 deep Item 231</td>
</tr>
<tr>
<td>5</td>
<td>Thread diameter for screwing through for mounting the unit on the base side</td>
<td>M3</td>
<td>M5</td>
</tr>
<tr>
<td>6</td>
<td>Thread diameter and maximum depth of engagement for screw connection for mounting on the base side</td>
<td>M4 8 deep</td>
<td>M6 11 deep</td>
</tr>
</tbody>
</table>
5.2.2 Pneumatic connection

**WARNING**
Risk of injury during connection!
- Switch off the energy supply.

**NOTICE**
The central air unit must be equipped with a maintenance unit that is located as near as possible to the consumer.

**NOTICE**
If the end positions of the stroke and swivel movements are not impact-free and bounce-free, the respective movements must be adjusted with the exhaust throttle.

**NOTICE**
Observe the requirements for the air supply
Technical data [► 16].
"A" - "D" are main connections, "a" - "d" are direct connections

<table>
<thead>
<tr>
<th>Connection</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hose connection A</td>
<td>Swivel in the direction of 180° or 90° position</td>
</tr>
<tr>
<td>Hose-free direct connection a</td>
<td></td>
</tr>
<tr>
<td>Hose connection B</td>
<td>Swivel in the direction of 0° position</td>
</tr>
<tr>
<td>Hose-free direct connection b</td>
<td></td>
</tr>
<tr>
<td>Hose connection C</td>
<td>Move gripper to &quot;CLOSED&quot; position</td>
</tr>
<tr>
<td>Hose-free direct connection c</td>
<td></td>
</tr>
<tr>
<td>Hose connection D</td>
<td>Move gripper to &quot;OPEN&quot; position</td>
</tr>
<tr>
<td>Hose-free direct connection d</td>
<td></td>
</tr>
</tbody>
</table>

If direct connections "a" – "d" are used, use the locking screws included in the accessory pack for the corresponding main connections "A" – "D".

If air connections "a" – "d" are used, ensure sufficient throttling, which can be set by means of exhaust air throttling. To do this, the throttle reductions for the main connections, which are designed for a medium load, can be attached to the adapter plate, for example.

- 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 **Overview of sensors** [24].
- 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

<table>
<thead>
<tr>
<th>Designation</th>
<th>GSM-Z</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>30</td>
</tr>
<tr>
<td>Programmable magnetic switch MMS-P 22</td>
<td>X</td>
</tr>
<tr>
<td>Inductive proximity switch IN 40</td>
<td>X</td>
</tr>
</tbody>
</table>

5.3.2 Sensor monitoring range

**NOTE**

The monitoring of swiveling and grasping movements with an inductive proximity switch and magnetic switch can yield reliable results only in the ranges of 0°±3° and 180°±3° or 0°±3° and 90°±3°.

*Rotating angle setting and monitoring range GSM*
5.3.3 Settings for magnetic switch

**NOTE**
The installation dimensions shown only apply if the clamping position of the sensor is not specified by a T-nut.

<table>
<thead>
<tr>
<th>GSM Type</th>
<th>Dimension l₁</th>
<th>Dimension l₂</th>
<th>Dimension l₃</th>
</tr>
</thead>
<tbody>
<tr>
<td>GSM-Z 30</td>
<td>8.9</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>GSM-Z 30-AS</td>
<td>21.7</td>
<td>12.8</td>
<td>7.8</td>
</tr>
<tr>
<td>GSM-Z 30-IS</td>
<td>8.9</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>GSM-Z 38</td>
<td>13.9</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>GSM-Z 38-AS</td>
<td>31.45</td>
<td>22.55</td>
<td>17.55</td>
</tr>
<tr>
<td>GSM-Z 38-IS</td>
<td>13.9</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>GSM-Z 45</td>
<td>8.9</td>
<td>0</td>
<td>-</td>
</tr>
<tr>
<td>GSM-Z 45-AS</td>
<td>24.3</td>
<td>15.4</td>
<td>10.4</td>
</tr>
<tr>
<td>GSM-Z IS</td>
<td>13.9</td>
<td>5</td>
<td>0</td>
</tr>
</tbody>
</table>
5.3.4 Switch-off hysteresis for magnetic switch MMS-P 22

The smallest detectable difference in stroke is defined in the following table:

*The smallest detectable difference in stroke based on the nominal stroke*

<table>
<thead>
<tr>
<th>For grippers with X mm nominal stroke per jaw</th>
<th>Min. query range per jaw/min. queried stroke difference per jaw</th>
</tr>
</thead>
<tbody>
<tr>
<td>X ≤ 5 mm</td>
<td>30% of the nominal stroke per jaw</td>
</tr>
<tr>
<td>X &gt; 5 mm to X ≤ 10 mm</td>
<td>20% of the nominal stroke per jaw</td>
</tr>
<tr>
<td>X &gt; 10 mm</td>
<td>10% of the nominal stroke per jaw</td>
</tr>
</tbody>
</table>

**Example:** Product with 7 mm nominal stroke per jaw

7 mm * 20% = 1.4 mm

**NOTE**

The table of values applies only to sensors whose hysteresis has been taught. For further information see assembly and operating manual of the sensor.

5.3.5 Assembly and setup of the MMS-P 22

1. Sensor MMS-P (left groove) Monitoring gripper position 1 and gripper position 2 in the left rotating angle end position (signals SGL1 and SGL2)

2. Sensor MMS-P (right groove) Monitoring gripper position 1 and gripper position 2 in the right rotating angle end position (signals SGR1 and SGR2)

3. Stop for MMS-P Determining the clamping position of the MMS-P sensor

*Position and installation of the MMS-P magnetic switches*
Monitoring GSM locations/positions/end positions:
SGL1: left rotating angle end position, gripper position 1
SGL2: left rotating angle end position, gripper position 2
SGR1: right rotating angle end position, gripper position 1
SGR2: right rotating angle end position, gripper position 2

By each of the two sensors MMS-P, 2 gripper positions can be monitored. If the gripper is in a third position, the rotation angle end position can only be monitored by additional sensors.

- The left rotating angle end position is always reached, when a swichting point of the sensor of the left groove (SGL1 or SGL2) is active.
- The right rotating angle end position is always reached, when a swichting point of the sensor of the right groove (SGR1 or SGR2) is active.

The sequence of the swivel and closing movements (process sequence) defined during the teach process must also be followed during operation. Otherwise, incorrect sensor signals may be outputted.

With many GSM variants, it is possible to combine magnetic switch monitoring with inductive monitoring, Inductive monitoring via INW 40 [27].

- If you require further information on sensor operation, contact your SCHUNK contact person or download information from our homepage.
- Technical data for the sensors can be found in the data sheets (included in the scope of delivery).

### 5.3.6 Inductive monitoring via INW 40

*Mounting kits for INW 40*

<table>
<thead>
<tr>
<th>GSM-Z mounting kit for INW 40</th>
<th>ID number</th>
</tr>
</thead>
<tbody>
<tr>
<td>AS-GSM-Z-30, mounting kit for INW 40</td>
<td>0304944</td>
</tr>
<tr>
<td>AS-GSM-Z-38, mounting kit for INW 40</td>
<td>0304945</td>
</tr>
<tr>
<td>AS-GSM-Z-45, mounting kit for INW 40</td>
<td>0304946</td>
</tr>
</tbody>
</table>
Schematic diagram of inductive monitoring with INW 40 for GSM for 090 variants

- **1**: Dampened sensor
- **2**: Rotating angle end position in counterclockwise direction with opened gripper
- **3**: Rotating angle end position in counterclockwise direction with closed gripper
- **4**: Rotating angle end position in clockwise direction with opened gripper
- **5**: Rotating angle end position in clockwise direction with closed gripper
Schematic diagram of inductive monitoring with INW 40 for GSM for 180 variants

Schematic diagram of inductive monitoring with INW 40 of GSM

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dampened sensor</td>
</tr>
<tr>
<td>[1]</td>
<td>Rotating angle end position in counterclockwise direction with opened gripper</td>
</tr>
<tr>
<td>[2]</td>
<td>Rotating angle end position in counterclockwise direction with closed gripper</td>
</tr>
<tr>
<td>[3]</td>
<td>Rotating angle end position in clockwise direction with opened gripper</td>
</tr>
<tr>
<td>[4]</td>
<td>Rotating angle end position in clockwise direction with closed gripper</td>
</tr>
</tbody>
</table>

**NOTE**

One of the two inductive proximity switches for the "gripping" monitoring is briefly crossed over during swiveling action by "second switching lug gripping".

**NOTICE**

The maximum tightening torque for the clamping screws (301 and/or 303) at the holder (300) is 125 Ncm. Remove bracket (8).
NOTICE

Risk of damage due to incorrect adjustment of the proximity switches!
Disconnect the energy supply before installing or adjusting the inductive proximity switches.

Installation steps for assembly of the mounting kit and mounting of the proximity switch

- Mount the plastic holders (300) onto the designated spaces with the screws (301 and/or 303). Depending on the mounting kit, offset pieces (94) may have to be installed.
- Remove the retaining plate (8) and the distance plate (7). Mount switching lug(s) grippers (91+92) onto the base jaw which lies in the 0° swivel position exactly above the 0° swivel position.
- Mount the inductive proximity switch INW 40 into the plastic holders (300). It is advised to set the switching distance of all four proximity switches under the swiveling switching lug (93). By gently applying the clamping screws (301 or 303), the proximity switch can be lightly clamped. A feeler gauge tape with a thickness of 0.5 mm can be very helpful as well, because the proximity switch can thus be installed on "blocked/stop", which prevents a collision during a swiveling movement.
- Move the unit with the energy supply switched off in the respective rotating angle end position and set two of the proximity switches on the swiveling switching lug (93) and tighten the clamping screws (301 or 303). **CAUTION: observe permissible tightening torque. When setting the switching distances, make sure that none of the switching flags can collide with a proximity switch.**
- Check the function of each proximity switch and check the output signals of the proximity switch by moving to different gripper positions in the two rotating angle end positions with connected energy supply.
- Should one or more proximity switches not send a signal, repeat step 3 of the setting instructions and slightly reduce the switching distance until the desired function is achieved.
- Should a signal be received "too early", this can be corrected by increasing the switching distance, which, however, also affects the sensitivity of the switching function.
Assembly of GSM with inductive monitoring with INW 40

Assembly of GSM 090 variants with inductive monitoring
* Not included in the Z-30 mounting kit
** With Z-30, item 303 is identical to item 301.

Assembly of GSM 180 variants with inductive monitoring
* Not included in the Z-30 mounting kit
** With Z-30, item 303 is identical to item 301.
5.4 Mounting a customized construction

**NOTICE**

Damage to the unit during assembly!
When inserting the cylindrical pins or centering sleeves, the unit must not be subjected to any impact.

**Mounting of a customized construction to the gripper fingers GSM-Z**

It is recommended to use the width of the gripper finger which is designed as the fit size for the centering of the customized top jaws. It is also recommended to use the upper contact surface of the gripper finger to support the customized top jaws.

No mounting screws are included in the scope of delivery.
5.5 Adjusting the end positions

Position of the item numbers, Drawings [53].

Adjustment of the end position for elastomer dampening:

- Connect connections A and B to the compressed air supply.
- Actuate connections A and B alternately and allow the unit to swivel.
- Actuate connection B; the swivel unit will reach the end position in counterclockwise direction.
- Place the unit sideways on a measuring table with the air connections facing up.
- Loosen the counter nut (124) and twist the stop (83). To increase the rotating angle range, screw out the stop, but only up to the maximum projection dimension B. (For projection dimensions A and B, see the following table "Total rotation angle range"). When the rotating angle is set, tighten the counter nut (124).
- Actuate connections A and B alternately and allow the unit to swivel.
- Check the set rotating angle several times. Repeat steps 5 and 6 until the desired position is reliably reached even after repeated rotation.
- To set the second end position, proceed according to steps 5 to 7, but actuate connection A.

Stepless angular adjustment with balls

For angles between "0°" and "180°" or "0°" and "90°", insert additional steel balls (108) in the ball guide rail. The number of steel balls required and the permissible minimum or maximum projections of the stops, can be determined using the table "Total rotating angle range".
Adjustment of the end position for hydraulic dampening by means of shock absorbers:
Proceed according to steps 1 to 8 of the elastomer dampening. Use the shock absorbers (120) instead of the stops (83) and the shock absorber nut (121) instead of the counter nut (124).
For angles between "0°" and "180°" or "0°" and "90°", insert additional steel balls (108) in the ball guide rail. The number of steel balls required and the permissible minimum or maximum projections, (S variants: shock absorber projections)/(E variants: back stop projections) can be determined using the table "Total rotating angle range".
The ball insertion is described in the following chapters:
• for S variants Replacing a shock absorber for S variants
• for E variants Replacing an elastomer for E variants

**NOTICE**
The permissible minimum and maximum projections are to be strictly observed; should a rotating angle not be achieved by adjusting the shock absorbers (120) or stops (83), it must be done by inserting or removing steel balls (108). However, at least one ball must be mounted on each side.

<table>
<thead>
<tr>
<th>Total rotating angle range</th>
<th>Basic size 40</th>
<th>Basic size 64</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard total rotating angle range</td>
<td>90° or 180°</td>
<td>Can be reduced down to 0° for any position within the total rotating angle range of the standard unit</td>
</tr>
<tr>
<td>Minimum rotating angle range</td>
<td>Angle limitation per ball [°]</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>Min. projection A [mm], E variants</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Max. projection B [mm], E variants</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Min. projection A [mm], S variants</td>
<td>19.5</td>
</tr>
<tr>
<td></td>
<td>Max. projection B [mm], S variants</td>
<td>23.5</td>
</tr>
</tbody>
</table>
Swivel range
Adjustment range of start angle
Adjustment range of end angle
Swapping range of sensor

Rotating angle setting and monitoring range with GSM-Z

Total rotating angle range
6 Commissioning

**NOTICE**

Damage to the rotary module possible!
The rotary module can be damaged if it arrives too abruptly in the end position.

- The rotary motion must reach the end position without jerk or bounce.
- Therefore flow control valves and shock absorbers must be used, Setting the speed [36] and Adjustment of the shock absorber stroke [37].
- Please observe the information in the catalog pages.

6.1 Setting the speed

**NOTICE**

Risk of damage to the product!
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.

- Close exhaust throttle valve completely.

- Open exhaust throttle valve until the product starts to move.
Continue to open the exhaust throttle valve incrementally until the movement decelerates smoothly.

- If the speed is too low, the product will brake too soon and the end position will be reached too slowly.
- If the speed is too high, the product will impact against the end position and the shock absorber will be overloaded.

**NOTE**
A smooth motion may also be too slow in many use-cases. Further settings can be made via the shock absorbers, Adjustment of the shock absorber stroke [37].

### 6.2 Adjustment of the shock absorber stroke

**NOTE**
When received from the factory, the unit is set to utilize the maximum shock absorber stroke.

The shock absorber stroke is too long and the end position is reached too slowly.

The shock absorber stroke is too short and the unit arrives in the end position too abruptly.
Optimal shock absorber stroke.

### 6.3 Restart after long standstill

During a longer standstill no compressed air must be allowed to be present at the gripper.

If problems occur during restart, see Swivel movement is not executed immediately [39].
## 7 Troubleshooting

### 7.1 Product does not achieve the opening and closing times

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compressed air lines are not installed optimally.</td>
<td>If present: Open the flow control couplings on the product to the maximum that the movement of the jaws occurs without bouncing and hitting.</td>
</tr>
<tr>
<td></td>
<td>Check compressed air lines.</td>
</tr>
<tr>
<td></td>
<td>Inner diameters of compressed air lines are of sufficient size in relation to compressed air consumption.</td>
</tr>
<tr>
<td></td>
<td>Keep compressed air lines between the product and directional control valve as short as possible.</td>
</tr>
<tr>
<td></td>
<td>Flow rate of valve is sufficiently large relative to the compressed air consumption.</td>
</tr>
<tr>
<td></td>
<td><strong>NOTICE! The throttle check valve must not be removed, even if the product has not reached the opening and closing times.</strong></td>
</tr>
<tr>
<td></td>
<td>If, despite optimum air connections, the opening and closing times specified in the catalogue are not achieved, SCHUNK recommends the use of quick-air-vent-valves directly at the product.</td>
</tr>
<tr>
<td>Loading too large.</td>
<td>Check permissible weight and length of the gripper fingers.</td>
</tr>
</tbody>
</table>

### 7.2 Swivel movement is not executed immediately

<table>
<thead>
<tr>
<th>Possible cause</th>
<th>Corrective action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product stood still for a longer time.</td>
<td>• Vent piston chamber</td>
</tr>
<tr>
<td></td>
<td>• Open and close gripper 1x</td>
</tr>
<tr>
<td></td>
<td>• Depressurise gripper</td>
</tr>
</tbody>
</table>
8 Maintenance and care

8.1 Notes

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

Replacement of the housing and base jaws
The cover housing (11), base jaws (3) and bushing (44 or 46) are adapted to each other. To replace these parts, send the complete module together with a repair order to SCHUNK or order the housing with base jaws as a set.

8.2 Maintenance and care 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.

| Maintenance and care intervals GSM-Z |
|-------------------------------|------------------|
| Size GSM-Z                    | 30 - 45          |
| Interval [Mio. cycles]        | 2                |

| Maintenance and care intervals DKM |
|-------------------------------|------------------|
| Size DKM                      | 40 / 64          |
| Interval [Mio. cycles]        | 2                |

| Maintenance and care intervals FAN |
|-------------------------------|------------------|
| Size FAN                      | 40 / 64          |
| Interval [Mio. cycles]        | 2                |
### 8.3 Grease/greasing areas

Position of the item numbers [Drawings](#) [53]

#### Types of grease used

<table>
<thead>
<tr>
<th>Designation</th>
<th>ZGM</th>
<th>DKM</th>
<th>FAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renolit HLT 2</td>
<td>For cylinder surfaces and seals</td>
<td>Item 42</td>
<td>Item 131</td>
</tr>
<tr>
<td>(not on surfaces that assume a function on the rotary feed-through)</td>
<td>(item 4, 23, 24, 25, 36, 39, 44, 46)</td>
<td>Item 43</td>
<td>Item 44</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Item 46</td>
<td>Item 109</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Item 109</td>
<td>Item 110</td>
</tr>
<tr>
<td>GP303-P</td>
<td>Item 3</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Ilsoflex-Topas NCA 52 (MPG grease)</td>
<td>-</td>
<td>Item 85</td>
<td>Item 122</td>
</tr>
<tr>
<td>Mixture of Interflon Fin assembly grease for</td>
<td>Item 103</td>
<td>Item 11</td>
<td>Item 51</td>
</tr>
<tr>
<td>Interflon Fin Lupe EP (mass ratio 1:1)</td>
<td>Item 82, Item 42</td>
<td>Item 52</td>
<td>Item 53</td>
</tr>
<tr>
<td></td>
<td>Item 43</td>
<td>Item 53</td>
<td>Item 58</td>
</tr>
<tr>
<td></td>
<td>Item 44</td>
<td>Item 59</td>
<td>Item 58</td>
</tr>
<tr>
<td></td>
<td>Item 46 *</td>
<td>Item 109</td>
<td>Item 110</td>
</tr>
</tbody>
</table>

* Especially seals of the rotary feed-through and therefore adjoining surfaces

#### Adhesives used

<table>
<thead>
<tr>
<th>Designation</th>
<th>GSM-Z</th>
<th>DKM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activator from Weicon for all magnets</td>
<td>Item 120</td>
<td>-</td>
</tr>
<tr>
<td>Adhesive from Weicon, 302-10 for all magnets</td>
<td>Item 120</td>
<td>Item 123</td>
</tr>
<tr>
<td>Adhesive from Weicon, 302-43 for all screws</td>
<td>Item 110 / 111</td>
<td>Item 104 / 140</td>
</tr>
</tbody>
</table>

Equivalent adhesives and activators from other manufacturers may be used.
### 8.4 Screw tightening torques

Position of the item numbers [Drawings | 53]

#### Screw tightening torques GSM-Z

<table>
<thead>
<tr>
<th>GSM-Z</th>
<th>Item 19</th>
<th>Item 20</th>
<th>Item 111</th>
<th>Item 115</th>
</tr>
</thead>
<tbody>
<tr>
<td>30</td>
<td>2.7 Nm</td>
<td>0.3 Nm</td>
<td>1.35 Nm</td>
<td>2.7 Nm</td>
</tr>
<tr>
<td>38</td>
<td>5.8 Nm</td>
<td>0.3 Nm</td>
<td>3 Nm</td>
<td>5.8 Nm</td>
</tr>
<tr>
<td>45</td>
<td>12 Nm</td>
<td>0.3 Nm</td>
<td>3 Nm</td>
<td>12 Nm</td>
</tr>
</tbody>
</table>

#### Screw tightening torques DKM

<table>
<thead>
<tr>
<th>Rotary gripper module</th>
<th>Item 121/124</th>
<th>Item 133</th>
<th>Item 140</th>
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<td>Basic size 40x40</td>
<td>1.2 Nm</td>
<td>-</td>
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<td>6 Nm</td>
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<tr>
<td>GSM-Z-45</td>
<td>Basic size 64x64</td>
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<td>-</td>
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#### Tightening torques for screws FAN

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<tr>
<td>FAN 64</td>
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<td>3.1 Nm</td>
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8.5 Disassembly/assembly of the unit in the basic modules

Position of the item numbers Drawings [p. 53]

Disassembly

- Remove the compressed air lines.
- Turn the gripping module (GSM) into the middle position.
- Remove the screws (104) and pull the DKM feed-through compact module (40) off the FAN rotor drive (50).

Assembly

- Turn the rectangular section of the rotor drive (53) with the longer side towards the center of the air connections A and B.
- Turn the DKM back stop 1 (81) with the magnet towards the 90° position, i.e. with the 090 version, one magnet has to point towards the 90° position and the other one towards the 180° position.
- Put the DKM feed-through compact module (40) on the FAN rotor drive (50) and secure the two modules with the screws (104). Observe the permissible tightening torques Screw tightening torques [p. 42].

8.6 Disassembly/assembly of the gripping module

For disassembly/assembly of the gripping modules, observe the assembly drawing Drawings [p. 53].

For assembly, observe the permissible tightening torques as well as the greases and adhesives to be used; Screw tightening torques [p. 42] and Grease/greasing areas [p. 41].

8.6.1 Version without maintenance of gripping force

NOTICE

Mark the position of the gripper fingers (3a and 3b) and piston rod (4).

Disassembly

- Remove the compressed air lines.
- Loosen the screws (111) and remove the bushing (44).
- Remove the magnet (120) (☞ figure "Installing the round magnets").
- Unscrew the screw (19) and pull off the piston (39).
- Pull the sealing rings (25) off the piston (39).
- Loosen the screw (20) and remove the cover (8) from the cover housing (11).
- Push the piston rod (4) out of the cover housing (11) from below and pull the base jaws (3a and 3b) out of the cover housing (11).
- Take the O-ring (23) and sealing ring (24) out of the cover housing.
- Clean all parts thoroughly and check them for defects and wear.
- Replace the seals included in the sealing kit.
Assembly

Observe the permissible screw tightening torques and the greases and adhesives to be used for the assembly (Screw tightening torques [42] and Grease/greasing areas [41]).

- Grease the seal (24) and O-ring (23) and mount them on the cover housing (11).
- Grease the guide grooves in the cover housing (11).
- Grease the running surfaces of the base jaws (3a and 3b).
- Grease the piston rod (4) in the diagonal pull area, separately from the lower part of the piston rod (4) (Grease/greasing areas [41]).
- Push the base jaws (3a and 3b) into the cover housing (11) and insert the piston rod (4) in the cover housing (11) from above. Insert the diagonal pull of the piston rod in the grooves of the base jaws.
- Fasten the cover (8) to the cover housing using the screws (20).
- Grease the seals (25) and mount them on the piston (39).
- Fasten the piston (39) to the piston rod using the screws (19).
- Glue the magnet into the piston Mounting orientation of the magnets, item 120 [46].
- Carefully fit the cover housing (11) with the mounted parts into the bushing (44).
- Screw the cover housing (11) into the bushing (44) using the screws (111).

8.6.2 Version with maintenance of gripping force unit

**WARNING**

Risk of injury due to spring forces

With the "O.D. gripping" version, the bushing (44) or cover housing (11) is under spring tension.

**WARNING**

Risk of injury due to spring forces

With the "I.D. gripping" version, the piston (36) is under spring tension.

**NOTICE**

The needle rollers are suitable only for this product and cannot be replaced with needle rollers belonging to another product of the same type and size.
"O.D. gripping" version GSM-...-AS:

- **Disassembly**
  - Repeat steps 1 to 9 of the gripper disassembly without maintenance of the gripping force. A spring (121) is installed for the maintenance of the gripping force.
  - Clamp the gripping module carefully between the cover housing (11) and piston (36) since the two parts are under spring tension.

- **Assembly**
  - Observe the permissible screw tightening torques and the greases and adhesives to be used for the assembly ([Screw tightening torques](#) [42] and [Grease/greasing areas](#) [41]).
  - Repeat steps 1 to 11 of the gripper assembly without maintenance of the gripping force. A spring (121) is installed for the maintenance of the gripping force.
  - With the variant with maintenance of the gripping force, make sure the spring (121) is put on the piston (36) between steps 7 and 8 of assembly without maintenance of the gripping force.

"I.D. gripping" version GSM-...-IS:

- **Disassembly**
  - Repeat steps 1 to 9 of the gripper disassembly without maintenance of the gripping force. A spring (121) is installed for the maintenance of the gripping force.
  - Clamp the gripping module carefully between the cover housing (11) and the piston (44) when loosening the screws (111) since the two parts are under spring tension.

- **Assembly**
  - Observe the permissible screw tightening torques and the greases and adhesives to be used for the assembly ([Screw tightening torques](#) [42] and [Grease/greasing areas](#) [41]).
  - Repeat steps 1 to 11 of the gripper assembly without maintenance of the gripping force. However, the bushing is item 46 and a spring (121) is installed to maintain the gripping force.
  - With the variant with maintenance of the gripping force, make sure the spring (121) is inserted in the bushing (44) between steps 9 and 10 of assembly without maintenance of the gripping force.
8.6.3 Mounting orientation of the magnets, item 120

Top view in rotating angle position for 0°-180° variants

Top view in rotating angle position for 0°-90° variants

8.7 Disassembly/assembly of the DKM feed-through compact module (item 40)

Position of the item numbers Drawings [53]

NOTICE

If the housing (11), bearing ring (82), or bushing (44 or 46) is replaced, a new set of fitting disks (111 and 112) must be ordered.

NOTICE

The balls (142) lie loosely in the ball guide DKM GSM(85).
Disassembly

- In order to start disassembling the DKM, the steps for disassembly/assembly of the unit into the basic modules [Disassembly/assembly of the unit in the basic modules](43) must have been carried out.
- Remove the O-rings (109) and ball guide rail DKM GSM (85) from the housing DKM GSM.
- Remove the balls (142).
- Turn the screws (140) from the bushing of the gripping module (31-34) and pull DKM GSM stop 1 (81) and the set of fitting disks (111/112) off the bushing (44 or 46).
- Pull the gripping module (31-34) from the housing DKM GSM.

**For elastomer variants, proceed as follows:**
Remove the stops (83) after loosening the nuts (124). Also remove the needle rollers (122).

**For shock absorber variants, continue as follows:**
Remove the shock absorber (120) after loosening the nuts (121). Also remove the sleeves (122).

Assembly

For assembly, observe the permissible tightening torques as well as the greases and adhesives to be used; [Screw tightening torques](42) and [Grease/greasing areas](41).

- Grease the housing DKM GSM(11) and the bushing (44 or 46) on the running surfaces and bearings.
- Grease the bearing ring (82).
- Insert the bearing ring with the outer chamfer downwards into the housing DKM GSM.
- Grease the O-rings (103) and mount them into the recesses on the bushing (44 or 46).
- Insert the gripping module into the housing DKM GSM.
- Match up the axial bearing seat of the bushing with the fitting disks (111 or 112).
- Place DKM stop 1 (81) onto the bushing and fasten it to the bushing using the screws (140).
- Grease the ball guide DKM (85).
- Turn the bushing so that DKM stop 1 (81) is pointing 180° away from the bore holes for dampening.
- Grease the needle rollers (122) and put them into the appropriate fits.
For elastomer variants, proceed as follows:
Grease the needle rollers (122) and put them into the appropriate fits.
Place one ball (142) in the housing in front of each needle roller (122) and screw DKM stop 2 (83) into the housing.

For shock absorber variants, continue as follows:
Grease the sleeves (122) and put them on the shock absorbers (120). Insert the sleeve into the fit provided in the housing DKM GSM (11) and screw the shock absorber into the housing. Place one ball (142) in the housing in front of each sleeve (122).

Mount the counter nut (124) onto the stops/shock absorbers.

Connect the DKM module (11) to the rotor drive FAN using the screws (104). When doing this, pay attention to the assembly of the basic modules Disassembly/assembly of the unit in the basic modules [43].
8.8 Replacing a shock absorber for S variants

Position of the item numbers Drawings [53]

The shock absorbers have a limited lifespan, depending on the load. For this reason, their function should be checked regularly. The shock absorber is working correctly if the unit moves gently to the end positions. When replacing it, observe the control number "-446" at the end of the damper designation. These specially tested shock absorbers are only to be ordered from SCHUNK. When replacing a damper, the complete additional parts list for hydraulic dampening should be ordered.

Proceed as follows with the replacement:

- Remove the compressed air lines.
- Loosen the counter nut (124).
- Remove the shock absorber (121) from the unit and remove the sleeve (122). If the latter cannot be loosened from the shock absorber, it may be helpful to use a small bar magnet or turn the unit by hand.

**NOTE**

If the shock absorbers are installed vertically (horizontal axis of rotation of the module), make sure that the sleeve (122) and the ball (142) are secured against falling out.

Clean all parts thoroughly and check all parts for defects and wear. The unit is assembled in reverse order; finish by re-adjusting the end positions Adjusting the end positions [33].
8.9 Replacing an elastomer for E variants

Position of the item numbers **Drawings** [53]

The elastomers have a limited lifespan, depending on the load. For this reason, their function should be checked regularly. The elastomer is working correctly if the unit moves gently to the end positions. When replacing an elastomer, the complete additional parts list for elastomer dampening should be ordered.

Proceed as follows with the replacement:

- Remove the compressed air lines.
- Loosen the counter nut (124).
- Remove the shock absorber (121) from the unit and remove the sleeve (122). If the latter cannot be loosened from the shock absorber, it may be helpful to use a small bar magnet or turn the unit by hand.

**NOTE**
If the shock absorbers are installed vertically (horizontal axis of rotation of the module), make sure that the sleeve (122) and the ball (142) are secured against falling out.

Clean all parts thoroughly and check all parts for defects and wear. The unit is **assembled** in reverse order; finish by re-adjusting the end positions **Adjusting the end positions** [33].
8.10 Disassembly/assembly of the FAN rotor drive (50)

Position of the item numbers [Drawings] (53)

Disassembly

- Remove the compressed air lines.
- Loosen the screws (101) and take the upper housing (51) off the lower housing (52).
- Remove the O-rings (109) and the centering sleeve (108).
- Take the rotor (53) out of the housing (52) and pull the bearing (100) off the rotor.
- Pull the O-rings (110) off the rotor.
- Remove the stop rotor (58) and pull the stop seal (59) off the stop rotor.
- Clean all parts thoroughly and check all parts for defects and wear.
- Renew the seals listed in the seal set.

Assembly

- Lubricate the upper and lower housing (51 and 52) from the inside.
- Grease the entire stop rotor (58).
- Pull the stop seal (59) into the correct position on the stop rotor (58) and grease the two parts completely again.
- Put the stop rotor in the correct position in the intended fit in the upper rotor housing (51).
- Grease the entire rotor (53) except for the rectangular section.
- Pull both O-rings (110) onto the rotor and lubricate them.
- Stick the ball bearing onto the rotor.
- Stick the rotor with the rectangular part facing down into the upper housing. Move the rotor into the 90° position, which means opposite the stop rotor (53).
- Put the centering sleeve (108) in the upper housing (51) for assembly with the lower housing (52).
- Lubricate four O-rings (109) and place them into the provided mirrored views in the lower housing (52).
- Mount the upper housing with the lower housing and attach both with screws (101). The screws (101) are to be tightened "crosswise".
- Lubricate two O-rings (109) and fit them into the upper housing (51) into the appropriate counterbores.
- Mount the centering sleeve (108) or cylindrical pin (107) onto the upper housing (51).
8.11 Servicing and assembling the module

**Maintenance**
- Clean all parts thoroughly and check for damage and wear.
- Treat all greased areas with lubricant. [Grease/greasing areas](#)
- Oil or grease bare external steel parts.
- Replace all wear parts / seals.
  - Position of the wearing parts [Drawings](#)
  - Seal kit [Sealing kit](#)

**Assembly**
Assembly takes place in the opposite order to disassembly.
Observe the following:
- Unless otherwise specified, secure all screws and nuts with Loc-tite no. 243 and tighten with the appropriate tightening torque.[Screw tightening torques](#)
8.12 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.

8.12.1 Assembly drawing of basic modules

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<td>ZGM gripping module</td>
</tr>
<tr>
<td>40</td>
<td>DKM GSM feed-through compact module</td>
</tr>
<tr>
<td>50</td>
<td>FAN rotor drive</td>
</tr>
</tbody>
</table>
8.12.2 Assembly drawing for the DKM and FAN modules

* Included in the seal kit. Seal kit can only be ordered completely.
** Only for the basic sizes 40 x 40 and 64 x 64
8.12.3 Assembly drawing of the GSM gripping modules

* Included in the parts list for the DKM feed-through compact module
** Item 113 is only available for sizes Z-38 and Z-45.
9 Translation of original declaration of incorporation


Manufacturer/
Distributor SCHUNK GmbH & Co. KG Spann- und Greiftechnik
Bahnhofstr. 106 – 134
D-74348 Lauffen/Neckar

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 directive 2006/42/EC of the European Parliament and of the Council on machinery. The declaration is rendered invalid if modifications are made to the product.

Product designation: Rotary gripping module with centric gripper / GSM-Z / pneumatic

ID number:

The partly completed machine may not be put into operation until conformity of the machine into which the partly completed machine is to be installed with the provisions of the Machinery Directive (2006/42/EC) is confirmed.

Applied harmonized standards, especially:
EN ISO 12100:2010 Safety of machinery - General principles for design - Risk assessment and risk reduction

The manufacturer agrees to forward on demand the relevant technical documentation for the partly completed machinery in electronic form to national authorities.

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

Person authorized to compile the technical documentation:
Robert Leuthner, Address: see manufacturer’s address

Lauffen/Neckar, April 2019

p.p. Ralf Winkler, Manager for development of gripping system components

Signature: see original declaration
10 Annex to Declaration of Incorporation

according 2006/42/EG, Annex II, No. 1 B

1. Description of the essential health and safety requirements pursuant to 2006/42/EC, Annex I that are applicable and that have been fulfilled with:

<table>
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<th>Rotary gripping module with centric gripper</th>
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<tr>
<td>Type designation</td>
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To be provided by the System Integrator for the overall machine

Fulfilled for the scope of the partly completed machine

Not relevant

1.1 Essential Requirements

1.1.1 Definitions X
1.1.2 Principles of safety integration X
1.1.3 Materials and products X
1.1.4 Lighting X
1.1.5 Design of machinery to facilitate its handling X
1.1.6 Ergonomics X
1.1.7 Operating positions X
1.1.8 Seating X

1.2 Control Systems

1.2.1 Safety and reliability of control systems X
1.2.2 Control devices X
1.2.3 Starting X
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1.2.4.1 Normal stop X
1.2.4.2 Operational stop X
1.2.4.3 Emergency stop X
1.2.4.4 Assembly of machinery X
1.2.5 Selection of control or operating modes X
1.2.6 Failure of the power supply X
### 1.3 Protection against mechanical hazards

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### 1.7 Information

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The classification from Annex 1 is to be supplemented from here forward.

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