

Compensation unit AGE-F-XY 31-80

Assembly and Operating Manual



Imprint

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Dear customer,

congratulations on choosing a SCHUNK product. By choosing SCHUNK, you have opted for the highest precision, top quality and best service.

You are going to increase the process reliability of your production and achieve best machining results – to the customer's complete satisfaction.

SCHUNK products are inspiring.

Our detailed assembly and operation manual will support you.

Do you have further questions? You may contact us at any time – even after purchase.

Kindest Regards

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1 About this manual

This instruction is an integral part of the product and contains important information for a safe and proper assembly, commissioning, operation, maintenance and help for easier trouble shooting.

Before using the product, read and note the instructions, especially the chapter "Basic safety notes".

1.1 Warnings

The following key words and symbols are used to highlight dangers.

1.1.1 Key words

DANGER	Dangers for persons. Non-compliance will inevitably cause irreversible injury or death.
WARNING	Dangers for persons. Non-compliance may cause irreversible injury or death.
CAUTION	Dangers for persons. Non-observance may cause minor injuries.
NOTICE	Information about avoiding material damage

1.1.2 Symbols



Warning about a danger point



Warning about hand injuries



General mandatory sign to prevent material damage

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 www.schunk.com.

2 Basic safety notes

2.1 Intended use

The product was designed for mechanical adjustment and storing a positioning point of workpieces or objects.

The product is intended for installation in a machine/system. The requirements of the applicable guidelines must be observed and complied with.

The product may be used only in the context of its defined application parameters ([👉 6, Page 11](#)).

The product is designed for industrial use.

To use this unit as intended, it is also essential to observe the technical data and installation and operation notes in this manual and to comply with the maintenance intervals.

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 Environmental and operating conditions

- Ensure that the module and the top jaws are adequately dimensioned according to the application
- Ensure that the environment is clean. Observe the maintenance and lubrication intervals "Maintenance intervals" ([👉 9.1, Page 21](#))
- Ensure that the environment is free of splashing water and vapors, and also of abrasive dust and process dust. Excepted are modules that are designed especially for contaminated environments.

2.4 Product safety

Dangers arise from the product, if:

- the product is not used in accordance with its intended purpose.
- the product is not installed or maintained properly.
- the safety and installation notes are not observed.

Avoid any manner of working that may interfere with the function and operational safety of the product.

Wear protective equipment.

NOTE

More information is contained in the relevant chapters.

2.4.1 Protective equipment

Provide protective equipment per EC Machinery Directive.

2.4.2 Constructional changes

Making constructional changes

Attachments and modifications, constructional changes and subsequent work, e.g. additional threads, drill holes and safety devices may impair the operation and safety or damage the product.

- Constructional changes may only be done with SCHUNK's permission.

2.5 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.
- Pneumatics specialist** Pneumatics specialists have been trained for this particular area of responsibility and know the relevant standards and regulations.
- Hydraulic specialist** Hydraulic specialists have been trained for this particular area of responsibility and knows 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.

2.6 Using personal protective equipment

When using this product, observe the relevant industrial safety regulations and use the personal protective equipment (PPE) required!

- Use protective gloves, safety shoes and safety goggles..
- Observe safe distances.

2.7 Notes on particular risks

Generally valid:

- Remove the energy supplies before installation, modification, maintenance, or adjustment work.
- Make sure that no residual energy remains in the system.
- Do not move parts by hand when the energy supply is connected.
- Do not reach into the open mechanism or the movement area of the unit.
- Perform maintenance, modifications, and additions outside the danger zone.
- Secure the product during all operations against uncontrolled activation.
- Take a precautionary approach by maintenance and disassembly.
- Only specially trained staff should disassemble the product.



WARNING

Risk of injury due to unexpected movement of the machine/system!

- Switch off the energy supply.



WARNING

Risk of injury from falling objects or module falling!

- Follow the assembly instructions.
- Provide protective equipment to prevent objects or the module from falling, such as processed workpieces, tools, chips, fragments, rejects.

3 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:

- Intended use in 1-shift operation
- Observe the mandatory maintenance and lubrication intervals
- Observe the environmental and operating conditions

Parts touching the work piece and wear parts are not part of the warranty.

4 Scope of delivery

The scope of delivery includes

- Compensation unit with spring return AGE-F-XY in the version ordered

5 Accessories

A wide range of accessories are available for this product

For information about which accessories can be used with the appropriate product version see catalog.

5.1 Sensors

Overview of the compatible sensors

Designation	Type
Programmable magnetic switch	MMS22

- Exact type designation of the compatible sensors see catalog.
- Informationen über die Handhabung von Sensoren unter www.de.schunk.com oder bei den SCHUNK-Ansprechpartnern.

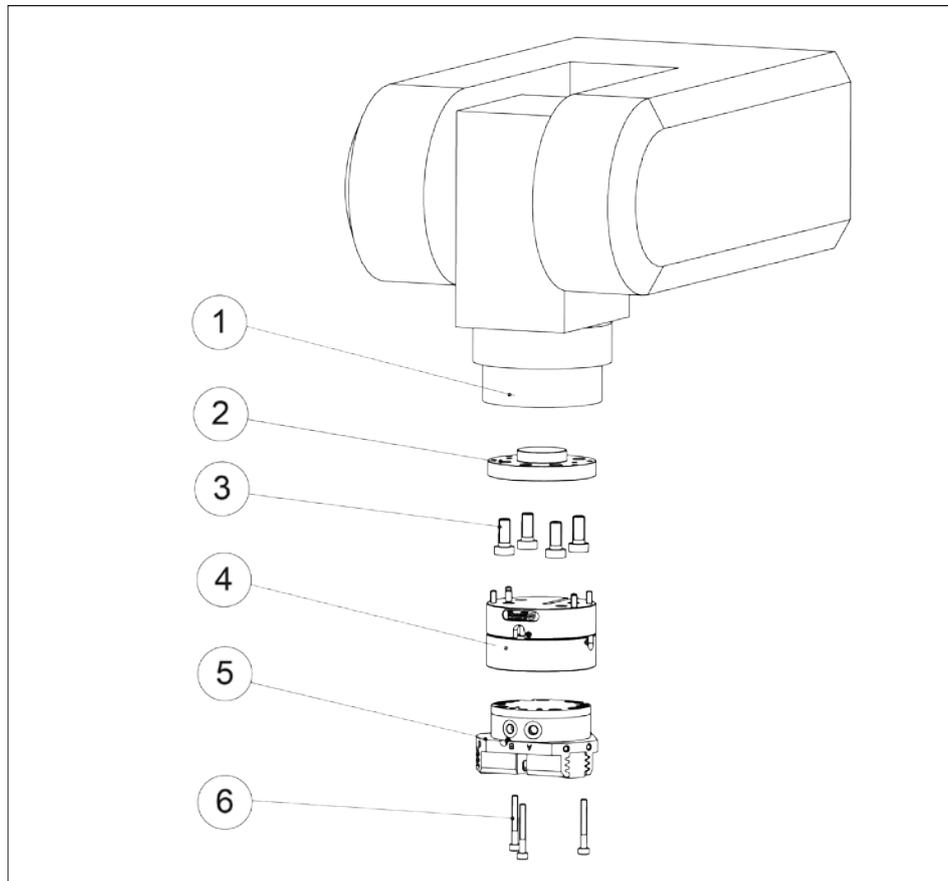
6 Technical data

Size	31	40	63	80
Recommended workpiece weight [kg]	1.5	4.0	12.5	32.3
Max. payload / load capacity F_{pull} [N]	100	200	300	2800
Max. payload / load capacity F_{pressure} [N]	200	500	3000	12000
Weight [kg]	0.123	0.23	0.78	3.13
Max. return force [N]				
Version - 1	2.0	3.0	20.0	70.0
Version - 2	3.5	5.0	32.0	130.0
Version - 3	7.0	7.0	45.0	190.0
Noise emission [dB(A)]	≤ 70			
Ambient temperature [°C]				
Min.	5			
Max.	80			

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

7 Assembly and settings

7.1 Assembly example



Assembly on the robot arm

1	Robot arm	3	Mounting screws for adapter plate
2	Adapter plate with interface according to DIN 9409 (optionally to be provided by SCHUNK or by the customer)	4	AGE-F-XY compensation element
		5	Handling device, e.g. gripper
		6	Mounting screws for gripper

- An interface plate with a hole pattern for locating holes is optionally available.
- The adapter plate is screwed with the robot and AGE-F-XY (see catalog for mounting data).
- The handling device is fastened directly to the AGE-F-XY.
- The pneumatic connection and electric cables are fastened, bundled, and mounted with strain relief so that the greatest possible freedom of movement is available during use.

7.2 Mechanical connection

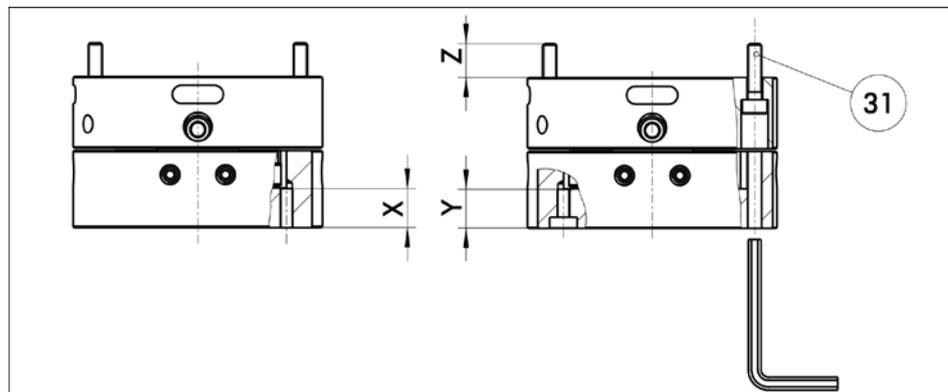
	⚠ WARNING
	Breakage due to faulty assembly possible! Observe max. screw-in depth on robot-side and on tool-side.

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

Requirements for levelness of the mounting surface (Dimensions in mm)

Diameter	Permissible unevenness
< 100	< 0.02
> 100	< 0.05

Mounting



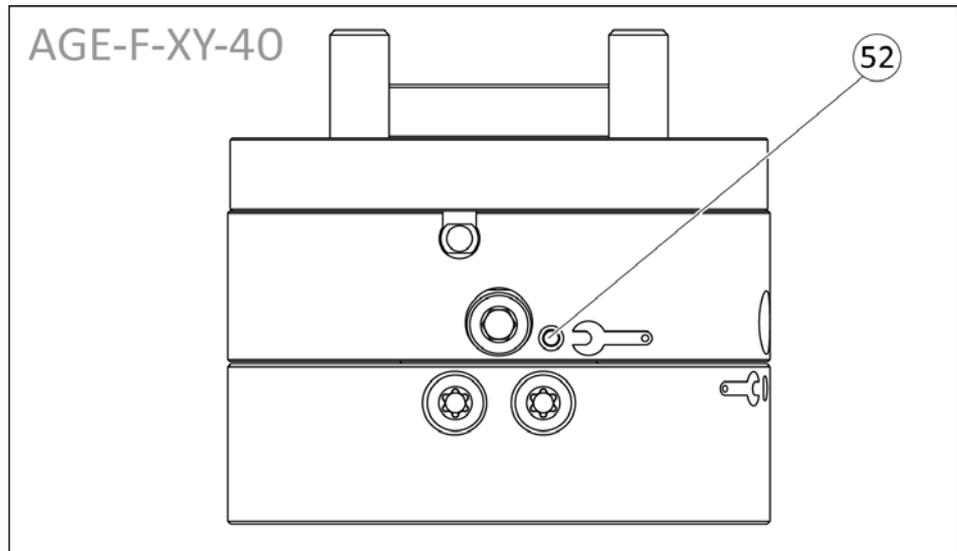
Possibilities of assembly

Mounting material

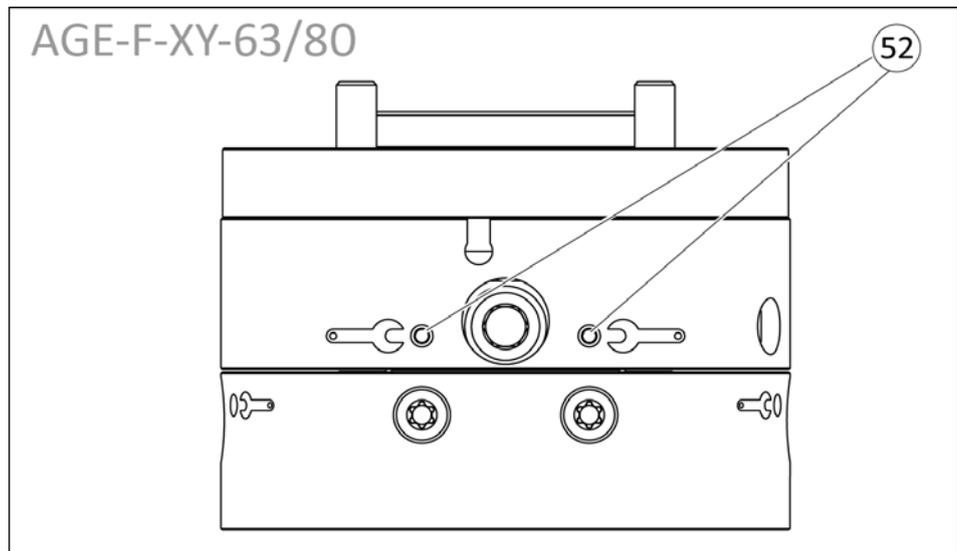
Item	Mounting	AGE-F-XY			
		31	40	63	80
Y	Thread diameter and max. screw-in depth Y tool-side [mm]	M2,5x7	M3x8	M4x8	M5/M6x10
X	Thread diameter and max. screw-in depth X tool-side [mm]	M3x5	M3x5	M5/M6x9	M8x12/20
Z	Max. screw-in depth Z, robot-side [mm]	6	6	9	13
31	DIN 4762 cylindrical screw Tightening torque [Nm]	M2,5 0,75	M3 1,27	M5 5,9	M8 24,6
	Diameter of the cylindrical pins for mounting the module [mm]	∅2	∅3	∅4	∅6

- 1 Use two cylindrical pins to fasten the module via the provided fixing holes.
- 2 Tighten the mounting screws (31) using an Allen key.

7.3 Setting the stop in order to limit stroke



Setscrew (52) to limit stroke for AGE-F-XY-40



Setscrew (52) to limit stroke for AGE-F-XY-63/80

Dimensions of setscrew (52)

Item	Designation	AGE-F-XY		
		40	63	80
52	Thread diameter	M3	M4	M4
	Minimum length [mm]	12	12	18

**Insert setscrew or
screw.****NOTICE**

The setscrew can fall into the housing if it is screwed in too far.
The compensation unit may jam.

- Observe the minimum length of the setscrew.

- 1 Remove the setscrew (52) using a hexagon socket wrench.

NOTE

Limiting the stroke is not provided in the AGE-F-XY 31.

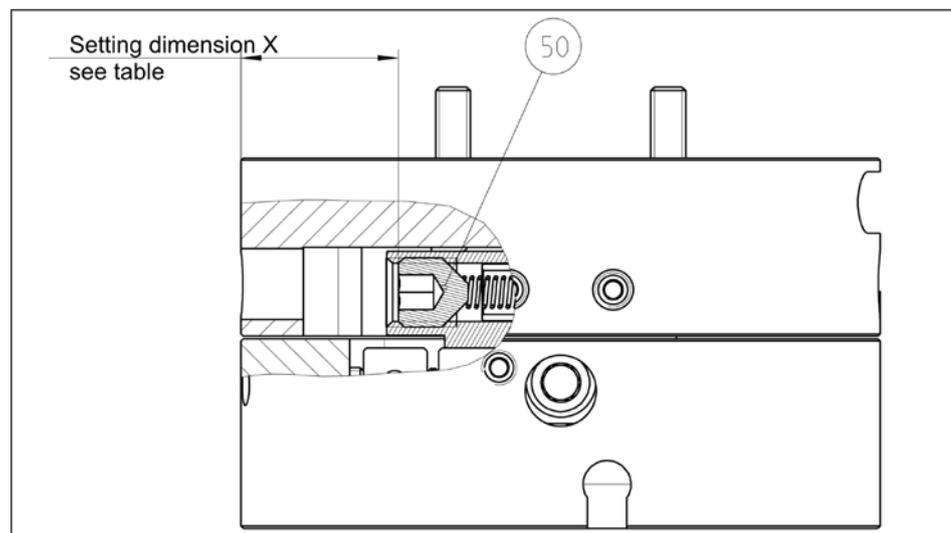
7.4 Adjusting, removing and replacing the return spring for units built before June 2016

The unit comprises 4 compression springs for the return position function. The units are set ex-works in accordance with the catalog values.

Adjusting These force values can still be modified slightly on the unit by adjusting the setscrews (50).

NOTE

If the setscrews are screwed-in too far, this will cause the unit to jam (springs on block). This can be recognized if the unit is no longer performing the complete stroke or is no longer moving.



Setting dimension for the setscrew

The units are delivered ex-works with the following setting dimensions for the setscrews:

Size	31	40	63	80
Setting dimension for Version 1 [mm]	10+0.2	13.5+0.2	17.7+0.2	18.5+0.2
Setting dimension for Version 2 [mm]	10+0.2	12.5+0.2	17.2+0.2	18.5+0.2
Setting dimension for Version 3 [mm]	9.3+0.2	12.5+0.2	15.2+0.2	18.5+0.2

The catalog values have been ascertained in this basic setting.

Removing / Replacing Position of the position numbers ([↗ 10, Page 24](#)):

- 1 Remove the setscrews (50).
- 2 Remove the spring sleeve (4) and take out the springs (15).

As standard, three springs are available for each size. Special springs on request.

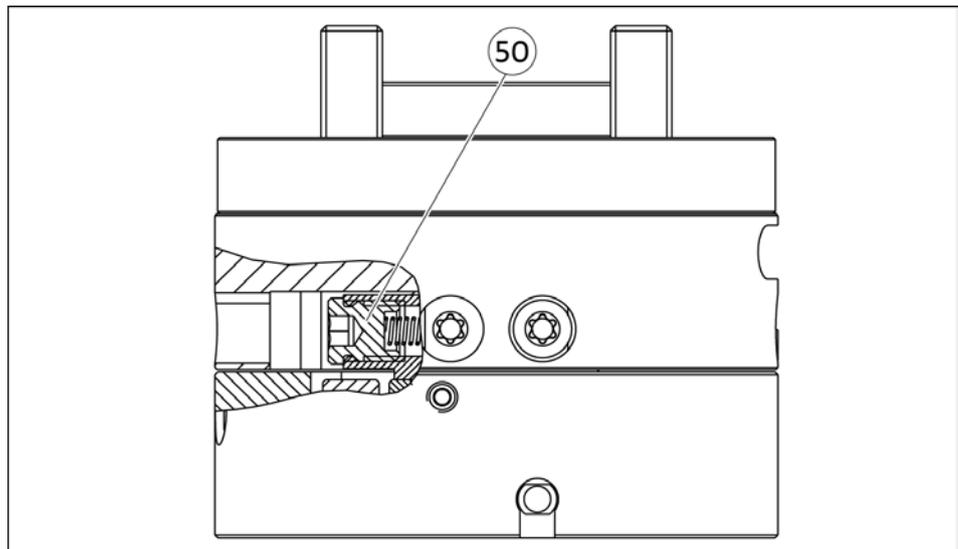
The new springs are assembled in the reverse order.

Pay attention to correct lubricating. ([↗ 9.2, Page 21](#))

7.5 Removing and replacing return springs for units built beginning in June 2016

The unit comprises 4 compression springs for the return position function.

As of June 2016, the unit's spring force values can no longer be adjusted.



Replacing the springs

Removing / Replacing Position of the position numbers ([↗ 10, Page 24](#)):

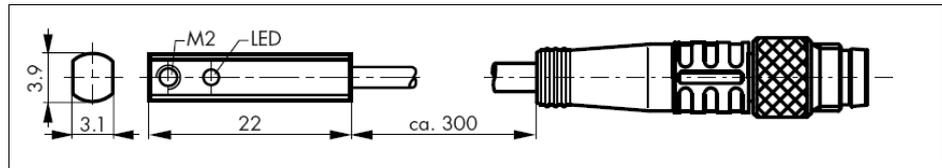
- 1 Remove the setscrews (50).
- 2 Remove the spring sleeve (4) and take out the springs (15).

As standard, three springs are available for each size. Special springs on request.

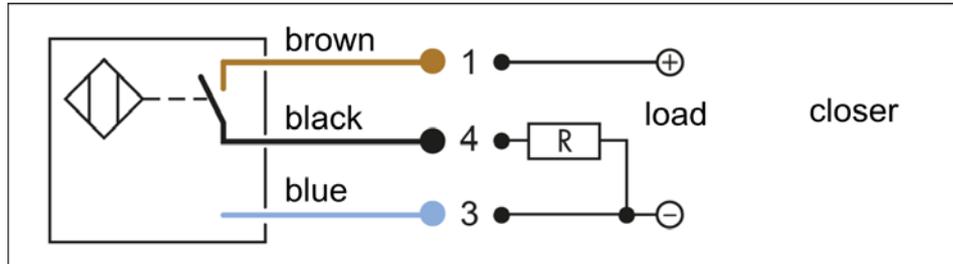
The new springs are assembled in reverse order.

Pay attention to correct lubricating. ([↗ 9.2, Page 21](#))

7.6 Programmable magnetic switch (MMS-P)



Programmable magnetic switch MMS-P 22



Connection diagram



NOTICE

Sensor can be damaged during assembly.

- Do not exceed the maximum tightening torque of 10 Ncm for the setscrews.

NOTE

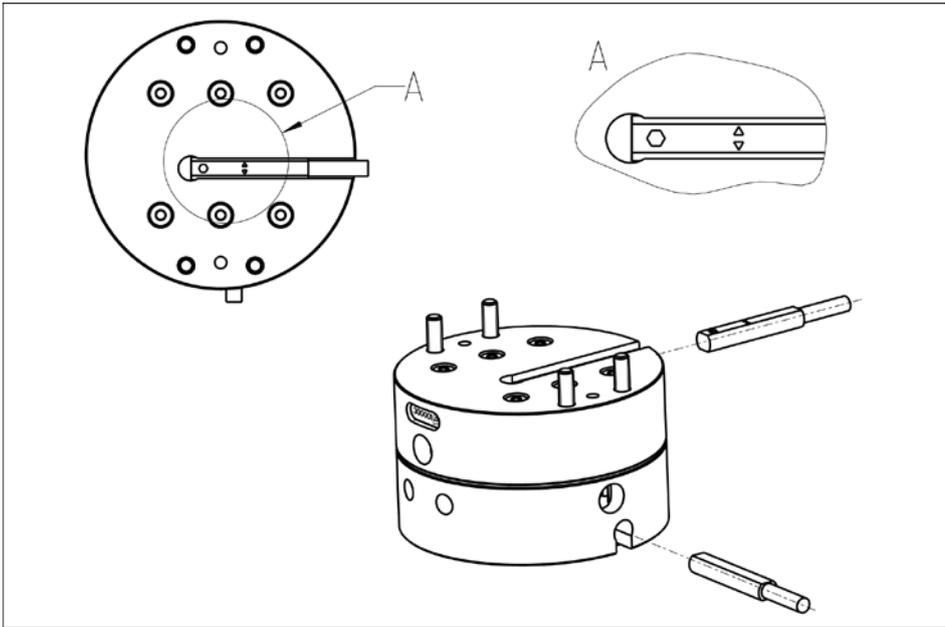
Ferromagnetic material changes the switching positions of the sensor. For example: Adapter plate made of ordinary steel.

At ferromagnetic adapter plates:

- The module must firstly be mounted on the adapter plate
- Then, the positions of the magnetic switch have to be set

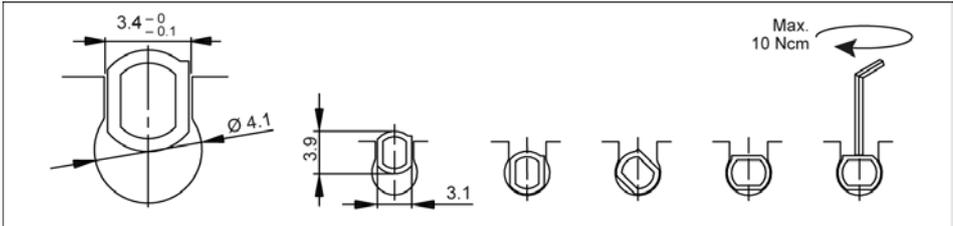
NOTE

- Do not use the sensor as a safety component.
- Do not pull on the cable of the sensor.
- Secure the cable and connection plug so that they are not taugt and cannot move during operation.
- Do not exceed the permitted bending radius of the cable.
- Do not allow the sensor to come into contact with hard objects and chemicals (e. g., nitric acid, chromic acid and sulfuric acid).



Position of the MMS magnetic switch - stop position (A)

The MMS magnetic switches are mounted and adjusted equally for each axis movement:



Assembly instructions

- 1 Screw in the sensor
OR
Insert sensor axially into the groove until the required signal is present.
- 2 Fix the sensor with an Allen wrench.

8 Troubleshooting

8.1 Module does not move?

Possible cause	Corrective action
Setscrew/stop screw screwed in too deep	Use a shorter stop screw (↩ 7.3, Page 14)
Setscrew for spring adjustment screwed in too far	Turn back the setscrew (50) (↩ 7.4, Page 16)

8.2 Magnetic switch (MMS) does not work / cannot be adjusted

Possible cause	Corrective action
Steel screws used for fastening the compensation unit	Replace steel screws with high-alloyed screws
Mounting plates, angle brackets etc. from magnetizable materials	Check, replace with nonmagnetizable parts – perhaps use aluminum or plastic

9 Maintenance

9.1 Maintenance interval



NOTICE

Damage caused by insufficient lubricant!

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

- Reduce the lubricant intervals accordingly.

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

9.2 Lubricants/Lubrication points (basic lubrication)

SCHUNK recommends the lubricants listed.

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

Lubricant point	Lubricant
Metallic sliding surfaces Linear guide	Rexroth Dynalub 510

9.3 Disassemble the module

Position of the position numbers ([👉 10, Page 24](#))

- 1 Detach the module from the handling device.
- 2 Disconnect the cable connection.
- 3 Undo setscrews (51/52) on the bottom of the housing (1).
- 4 Remove screws (30) on the bottom of the housing (1).

NOTE

When lifting the bottom of the housing (1), the outer guide rails and the respective roller cages for the linear guide could fall off.

- 5 Lift the bottom of the housing (1) off the module.
- 6 Undo setscrews (51/52) on the housing top (2).
- 7 Remove screws (30) from the housing top (2).
- 8 Lift the top of the housing (2) off the guide cross (3).
- 9 Remove screws (5) to separate the linear guide (20) from the guide cross (3).

	<p>⚠ WARNING</p>
	<p>Risk of injury due to spring forces! The return springs (15) are installed under bias.</p> <ul style="list-style-type: none"> • Disassemble the module carefully.

- 10 Remove the setscrews (50) from the guide cross (3) in order to be able to access the return springs (15).
- 11 Take the guide sleeves (4) out of the guide cross (3).

	<p>NOTICE</p>
	<p>Loss of precise repeat accuracy The setscrews (40) are glued in firmly and carefully aligned.</p> <ul style="list-style-type: none"> • Do not remove the setscrews.

9.4 Maintaining and assembling the module

- Maintenance**
- Clean all parts thoroughly and check for damage and wear.
 - Treat all greased areas with lubricant.
[\(👉 9.2, Page 21\)](#)
 - Oil or grease bare external steel parts.

- Assembly** Der Zusammenbau erfolgt in umgekehrter Reihenfolge zum Zerlegen. Dabei Folgendes beachten:
- Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.



NOTICE

The unit may jam

- Do not tighten the setscrews (51/52) too tight while assembling!

10 Assembly drawing

The following figure is an example image.
 It serves for illustration and assignment of the spare parts.
 Variations are possible depending on size and variant.

