



Assembly and Operating Manual

AGE-F-XY

Compensation unit

Original Operating Manual

Hand in hand for tomorrow

Imprint

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Technical changes:

We reserve the right to make alterations for the purpose of technical improvement.

Document number: 389002

Version: 07.00 | 29/07/2024 | en

Dear Customer,

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

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

Best regards,

Your SCHUNK team

Customer Management

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

Table of Contents

1 General	5
1.1 About this manual.....	5
1.1.1 Presentation of Warning Labels	5
1.1.2 Applicable documents	6
1.2 Warranty	6
1.3 Scope of delivery.....	6
1.4 Accessories	6
1.4.1 Sensors	6
2 Basic safety notes	7
2.1 Intended use.....	7
2.2 Not intended use	7
2.3 Constructional changes.....	7
2.4 Spare parts	7
2.5 Ambient conditions and operating conditions	7
2.6 Personnel qualification	8
2.7 Personal protective equipment	9
2.8 Notes on safe operation.....	9
2.9 Transport.....	9
2.10 Malfunctions.....	10
2.11 Disposal	10
2.12 Fundamental dangers	10
2.12.1 Protection during commissioning and operation	11
2.12.2 Protection during handling and assembly	11
3 Technical data	12
4 Assembly and settings	13
4.1 Assembly example.....	13
4.2 Mechanical connection.....	14
4.3 Setting the stop in order to limit stroke.....	15
4.4 Adjusting, removing and replacing the return spring for units built before June 2016	16
4.5 Adjusting, removing and replacing the return spring for units built in or after June 2016	17
4.6 Programmable magnetic switch (MMS-P).....	18
5 Troubleshooting.....	21
5.1 Module does not move?.....	21
5.2 Magnetic switch (MMS) does not work / cannot be adjusted.....	21

6 Maintenance	22
6.1 Maintenance interval	22
6.2 Lubricants/Lubrication points (basic lubrication)	22
6.3 Disassembling the product	22
6.4 Servicing and assembling the product	23
6.5 Assembly drawing	24

1 General

1.1 About this manual

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

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

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

In addition to these instructions, the documents listed under ► 1.1.2 [6] are applicable.

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

1.1.1 Presentation of Warning Labels

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



⚠ DANGER

Dangers for persons!

Non-observance will inevitably cause irreversible injury or death.



⚠ WARNING

Dangers for persons!

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



⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

CAUTION

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 labeled with an asterisk (*) can be downloaded from schunk.com/downloads.

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

- Compensation unit AGE-F-XY in the version ordered
- Mechanical connection
- Safety information (product-specific instructions available online)

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 Sensors


Designation	Type
Programmable magnetic switch	MMS-P

- Exact type designation of the compatible sensors see catalog.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.

2 Basic safety notes

2.1 Intended use

The product is designed for the mechanical setting and saving of a positioning point for workpieces and other devices .

- The product may only be used within the scope of its technical data, ▶ 3  12].
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/ automated system. The applicable guidelines for the machine/ automated system must be observed and complied with.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

2.2 Not intended use

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

2.3 Constructional changes

Implementation of structural changes

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

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

2.4 Spare parts

Use of unauthorized spare parts

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

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

2.5 Ambient conditions and operating conditions

Required ambient conditions and operating conditions

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

- Make sure that the product is used only in the context of its defined application parameters, ▶ 3 [12].
- Make sure that the product is a sufficient size for the application.
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are products that are designed especially for contaminated environments.

2.6 Personnel qualification

Inadequate qualifications of the personnel

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

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

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

Trained electrician

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

Qualified personnel

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

Instructed person

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

Service personnel of the manufacturer

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

2.7 Personal protective equipment

Use of personal protective equipment

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

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

2.8 Notes on safe operation

Incorrect handling of the personnel

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

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

2.9 Transport

Handling during transport

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

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.

- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.10 Malfunctions

Behavior in case of malfunctions

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

2.11 Disposal

Handling of disposal

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

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

2.12 Fundamental dangers

General

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

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.



⚠ WARNING

Risk of injury due to uncontrolled movements!

Due to faulty control the product can move uncontrolled and cause serious injuries.

- Do not reach into the movement range of the product during commissioning, conversion and adjustment work.
- Observe the direction of rotation of the product when designing the control.

2.12.1 Protection during commissioning and operation

Falling or violently ejected components

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

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

2.12.2 Protection during handling and assembly

Incorrect handling and assembly

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

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

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

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

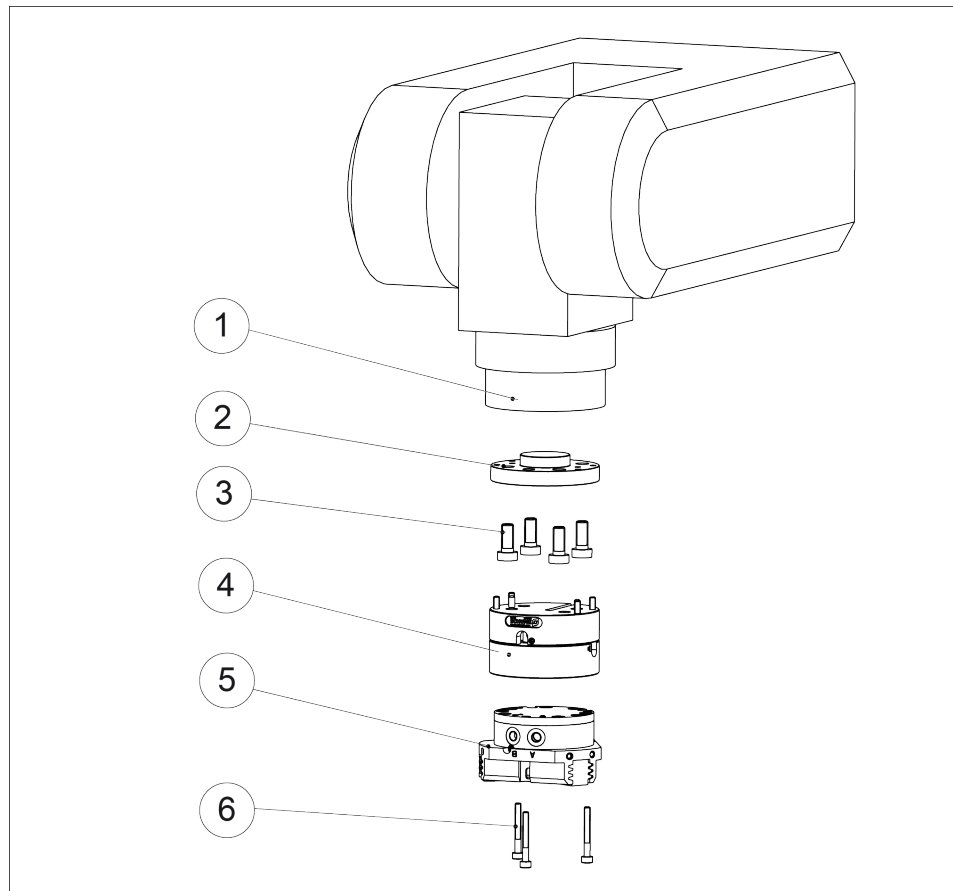
3 Technical data

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. reset force [N]				
Version - 1	3.5	5.0	25.0	70.0
Version - 2	5.5	7.0	38.0	130.0
Version - 3	7.0	9.0	55.0	150.0
Ambient temperature [°C]				
Min.			5	
Max.			80	

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

4 Assembly and settings

4.1 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.

4.2 Mechanical connection



⚠ WARNING

Breakage due to faulty assembly possible!

Observe max. screw-in depth on robot-side and on tool-side.

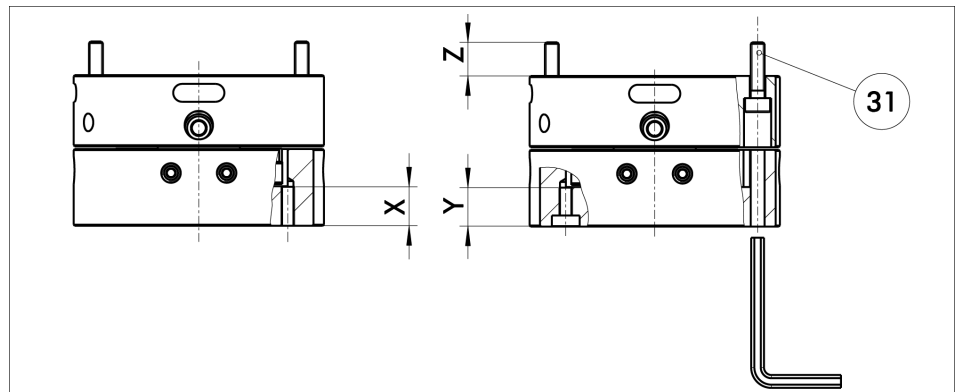
Evenness of the mounting surface

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

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

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

Mounting



Possibilities of assembly

Tab.: Mounting material

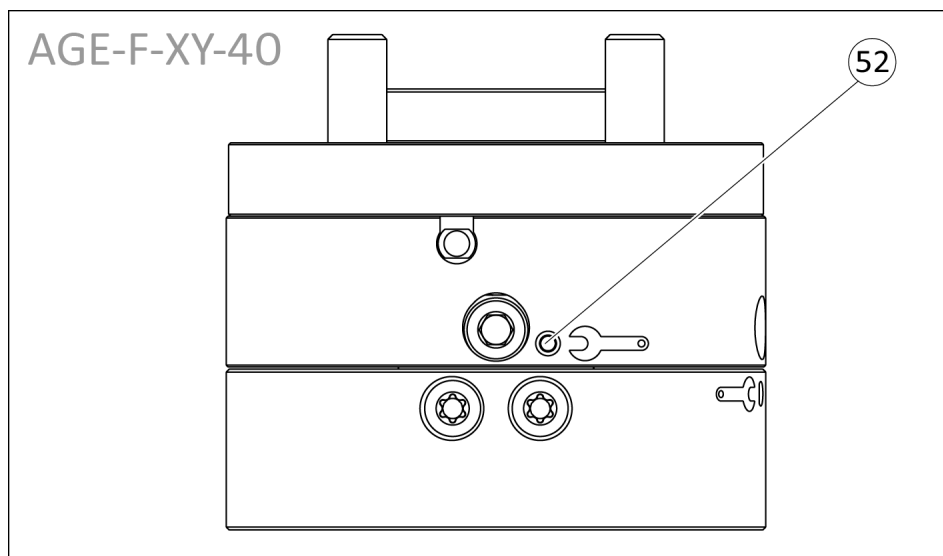
Item	Mounting	AGE-F-XY			
		31	40	63	80
Y	Thread diameter and max. screw-in depth Y tool-side [mm]	M2,5x7	M3x8	M4x8	M5/ M6x10
X	Thread diameter and max. screw-in depth X tool-side [mm]	M3x5	M3x5	M5/M6x9	M8x12/20
Z	Max. screw-in depth Z, robot-side [mm]	6	6	9	13
31	DIN 4762 cylindrical screw	M2,5	M3	M5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

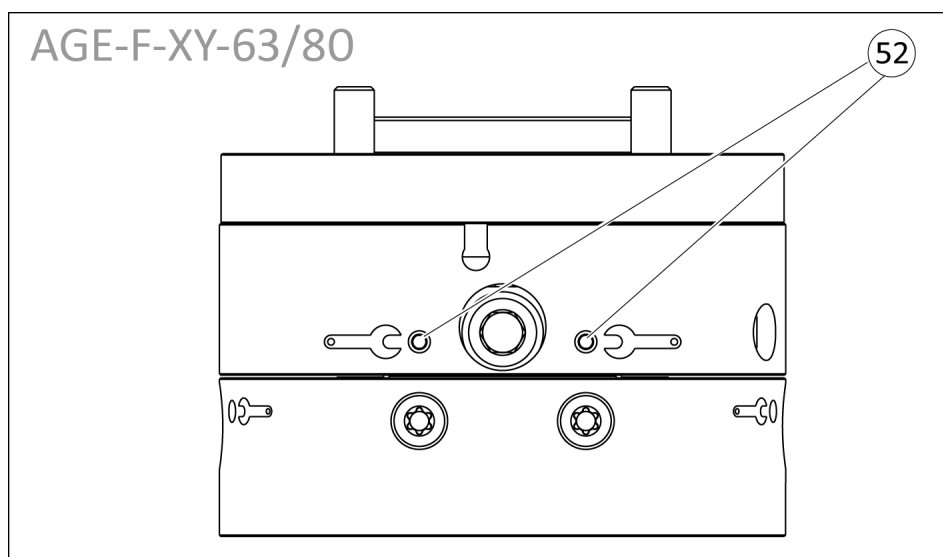
4.3 Setting the stop in order to limit stroke

NOTE

If the stroke is limited, the installed grub screw (52) must be replaced.



Set-screw (52) to limit stroke for type AGE-F-XY-40



Set-screw (52) to limit stroke for types AGE-F-XY-63/80

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

Tab.: Set-screw (52) DIN EN ISO 4026

Inserting the set-screw

CAUTION

The set-screw may fall into the housing on installation if it is inserted too far.

The compensation unit can jam.

- Observe the minimum length of the set-screw!

1. Remove the installed set-screw (52) using a hexagon socket wrench.
2. Screw in a grub screw (52) according to the table and secure with low-strength adhesive.

NOTE

There is no stroke limitation with AGE-F-XY 31.

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

The unit contains

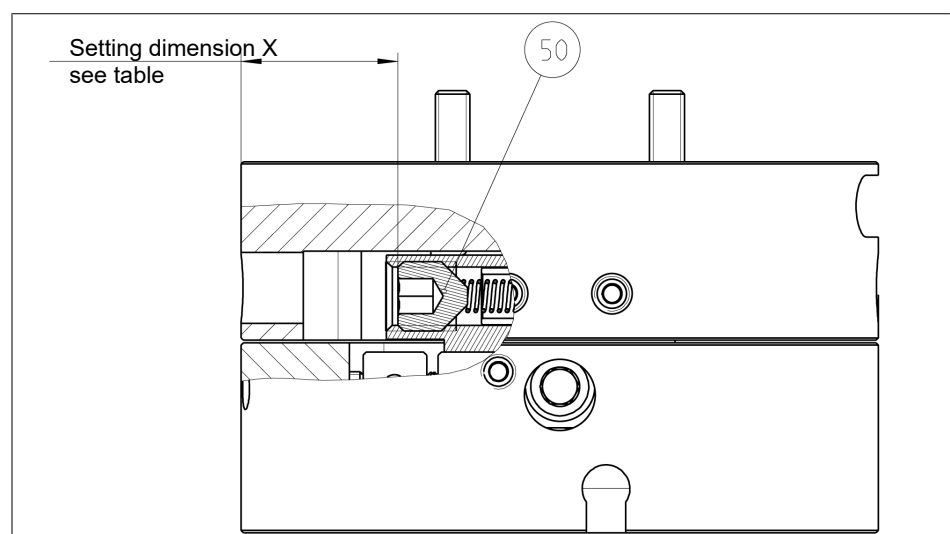
4 compression springs for the return position function. The units are set ex-works in accordance with the catalog values.

These force values can be slightly changed on the unit by adjusting the set-screws (50).

Adjustment

NOTE

If the set-screws are screwed in too far, this will cause the unit to jam (springs on block). This can be determined if the unit can no longer perform the complete stroke or no longer moves



Setting dimension for the set-screw

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

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 item numbers ▶ 6.5 [24]:

1. Remove the set-screws (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.

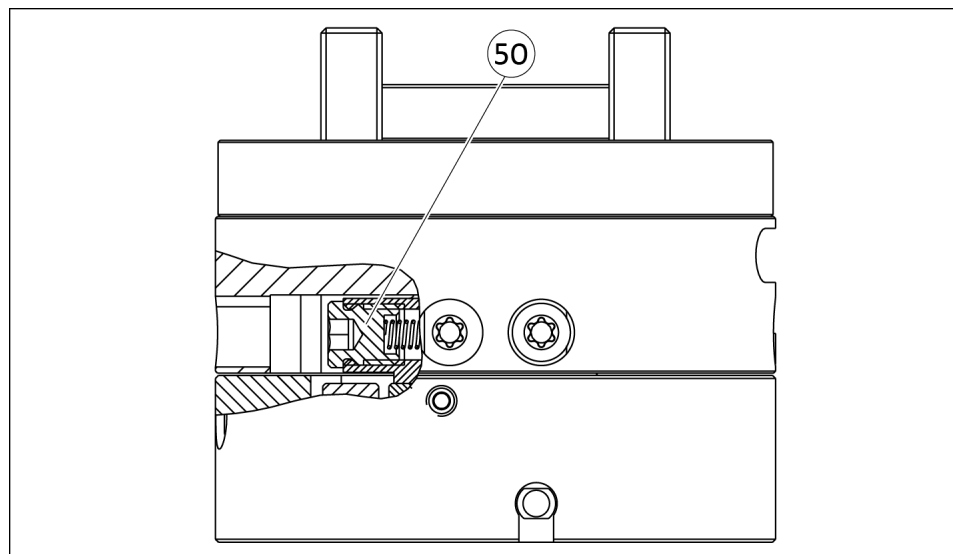
The new springs are assembled in the reverse order.

Ensure lubrication is correct ▶ 6.2 [22].

4.5 Adjusting, removing and replacing the return spring for units built in or after June 2016

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

The force values on the unit can not be changed anymore (applies to units delivered since June 2016).



Replacing springs

Removing / Replacing Position of the item numbers ▶ 6.5 [24]:

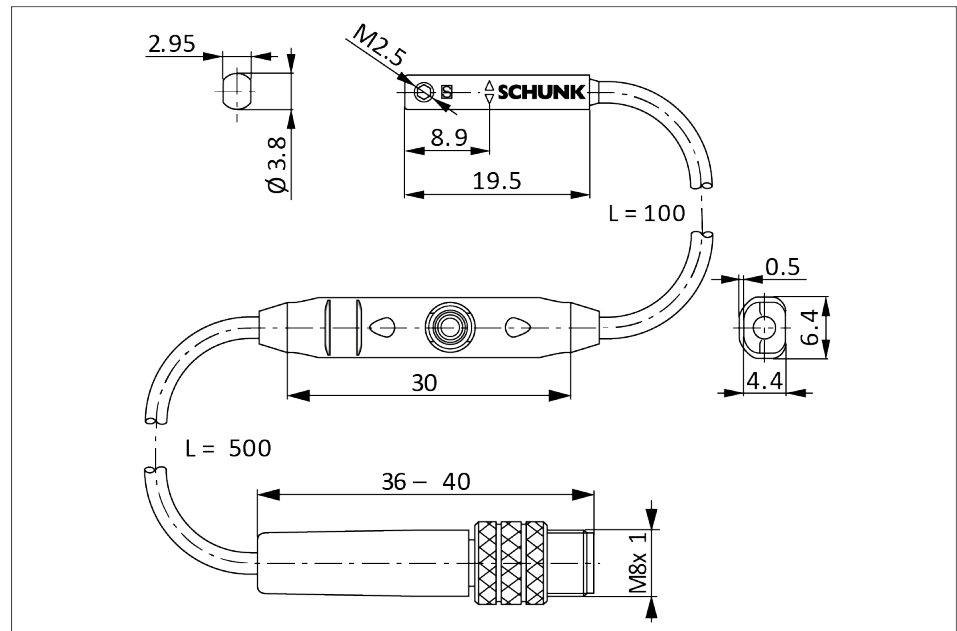
1. Remove the set-screws (50).
2. Remove the spring sleeve (4) and take out the springs (15).

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

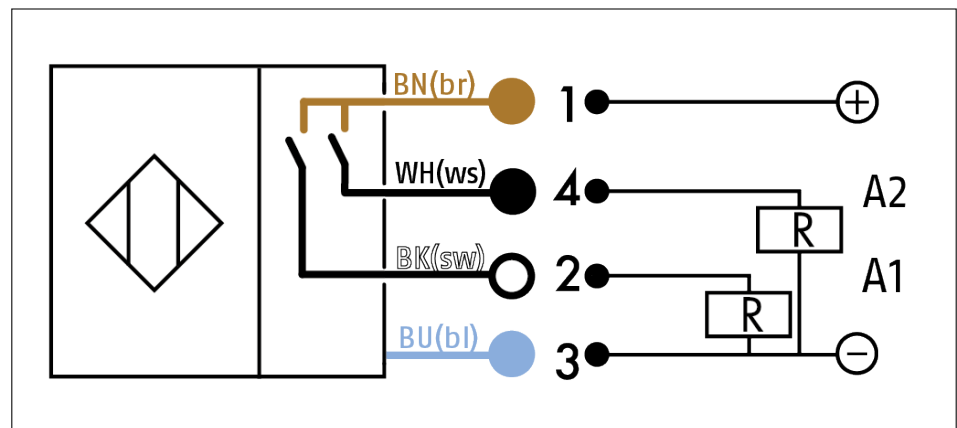
The new springs are assembled in the reverse order.

Ensure lubrication is correct. ▶ 6.2 [22]

4.6 Programmable magnetic switch (MMS-P)



Magnetic switch MMS-P



Connection diagram

CAUTION

Risk of damage to the sensor during assembly.

- Observe a maximum tightening torque of 10 Ncm for the set-screws.

NOTE

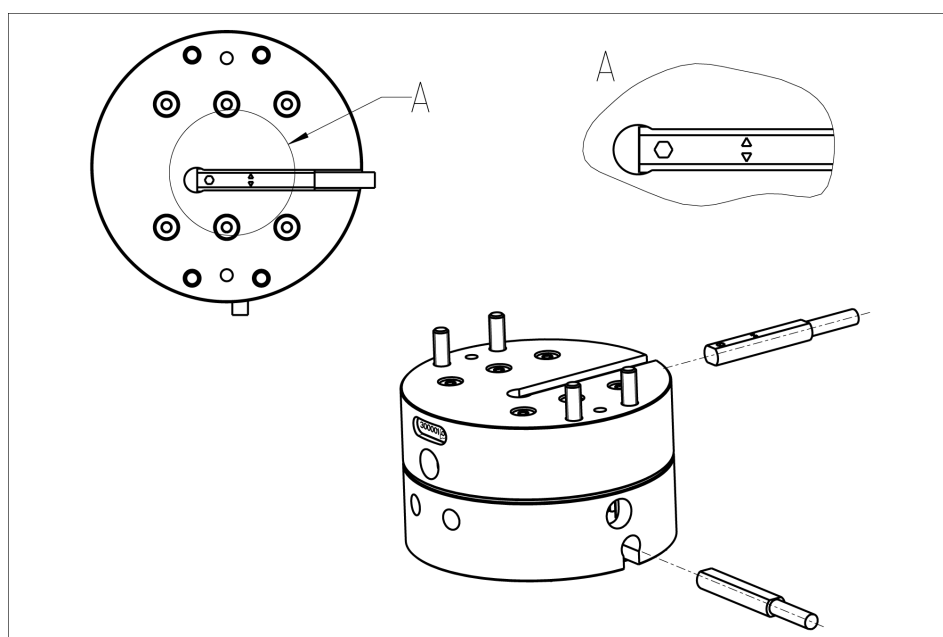
Ferromagnetic material changes the switching positions of the sensor. For example: Adapter plate made of ordinary steel.

At ferromagnetic adapter plates:

- First mount the product on the adapter plate.
- Then set the position of the magnetic switch.

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).

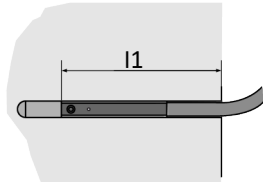
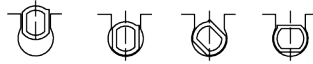


Position of the magnetic switch MMS – stop position (A)

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

Assembly	Sensor type	Dimension l1 [mm]
	AGE-F 031	27.4
	AGE-F 040	30.4
	AGE-F 063	41.4
	AGE-F 080	56.4

Assembly	Sensor type	Dimension l1 [mm]
----------	-------------	----------------------



1. Screw in the sensor and slide it to dimension l1.
OR
Insert the sensor axially into the groove to dimension l1.
2. Lock sensor into place using an Allen key.
⇒ Observe the maximum tightening torque of 10 Ncm.

5 Troubleshooting

5.1 Module does not move?

Possible cause	Corrective action
Setscrew/stop screw screwed in too deep	Use a shorter stop screw ▶ 4.3 [15]

5.2 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

6 Maintenance

6.1 Maintenance interval

CAUTION

Material damage due to hardening lubricants!

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

- Reduce the lubricant intervals accordingly.

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

6.2 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 guides	SCHUNK grease 10

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

The product contains food-compliant lubricants as standard. **The requirements of standard EN 1672-2:2020 are not fully met.**

NOTE

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

6.3 Disassembling the product

Position of the item numbers ▶ 6.5 [24]

1. Disconnect the product from the handling device.
2. Disconnect the cable connection.
3. Undo set-screws (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 product.

6. Undo set-screws (51/52) on the housing top (2).
7. Remove screws (30) on 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).



⚠ WARNING

Risk of injury due to spring forces!

The return springs (15) are installed under bias.

- Carefully disassemble the product.

10. Remove the set-screws (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).

CAUTION

Loss of precise repeat accuracy

The cylindrical pins (40) are glued in firmly and carefully aligned.

- Do not remove the cylindrical pins!

6.4 Servicing and assembling the product

Maintenance

- Clean all parts thoroughly and check for damage and wear.
- Treat all greased areas with lubricant.
 - ▶ 6.2 [📄 22]
- Oil or grease bare external steel parts.

Assembly

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

- Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.

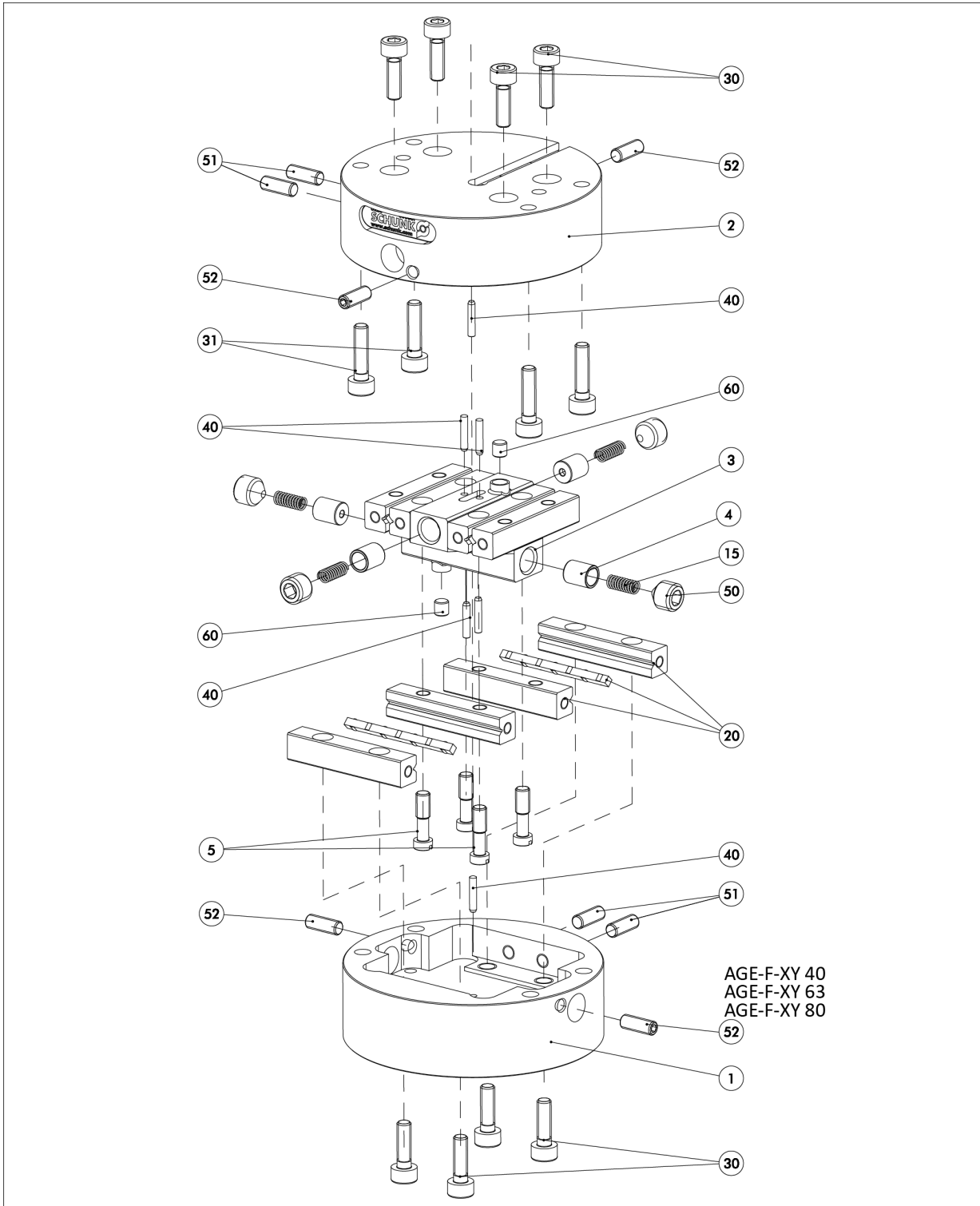
CAUTION

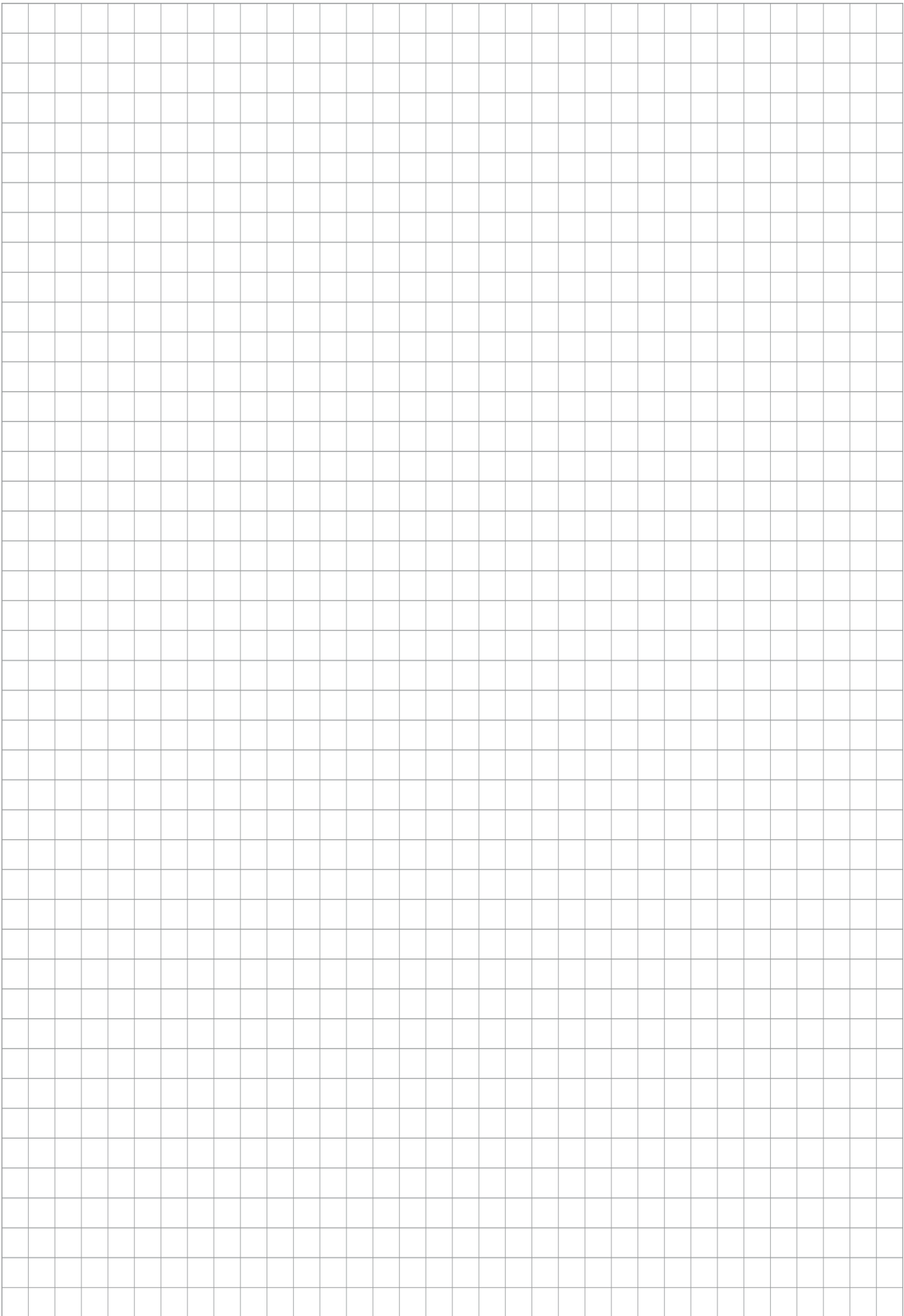
The unit can jam

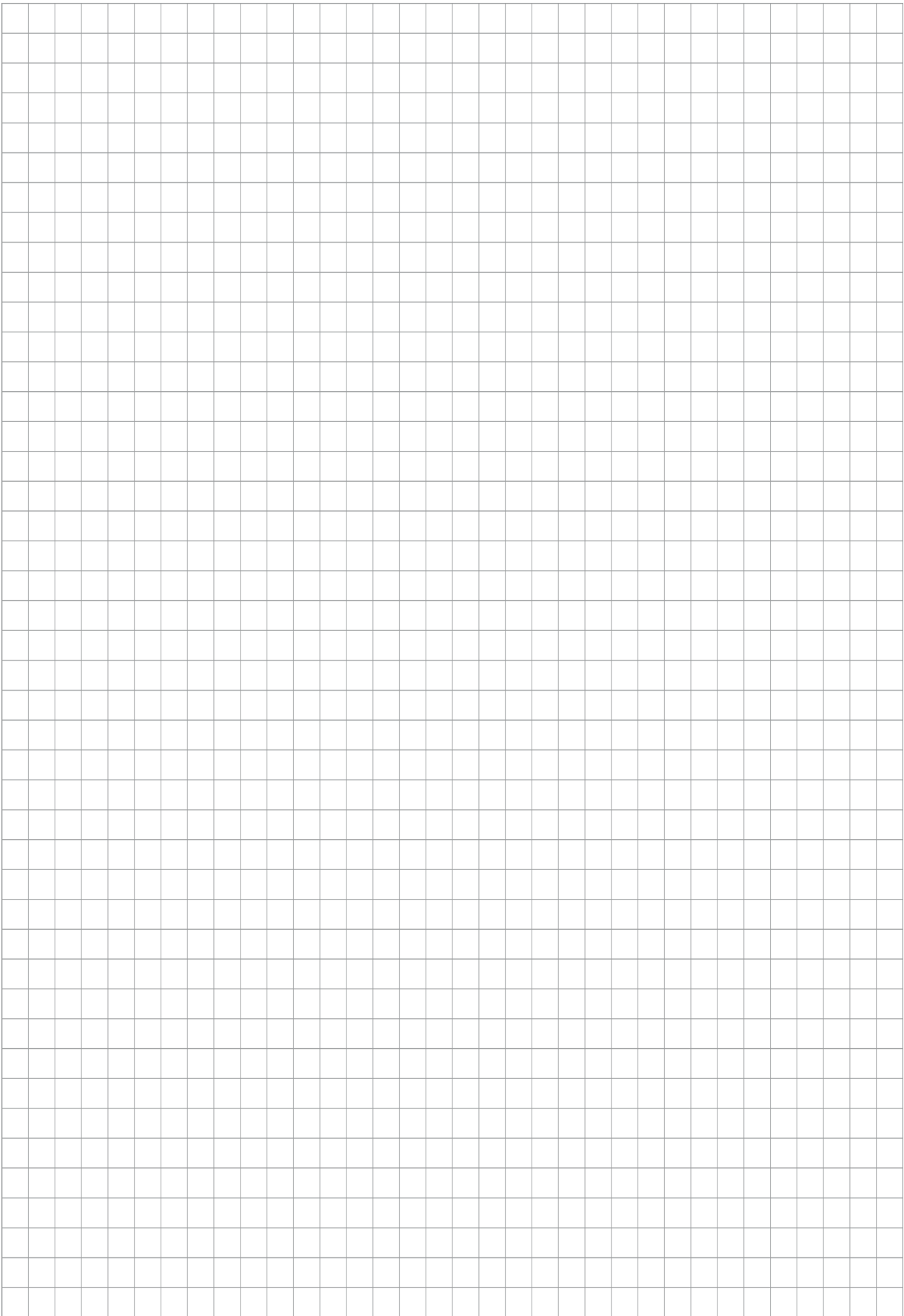
- Do not tighten the set-screws (51/52) too tight while assembling!

6.5 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.











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