SCHUNK

Assembly and Operating Manual AGE-S-XYZ

Compensation Unit in X-, Y-, and Z-Direction

Translation of the original manual

Hand in hand for tomorrow

Imprint

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

Document number: 389004

Version: 06.00 | 15/10/2024 | 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
Tel. +49-7133-103-2503
Fax +49-7133-103-2189
cmg@de.schunk.com

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

Table of Contents

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 ▸ 1.1.3 [🗋 5] 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 Definition of Terms

The term "product" replaces the product name on the title page in this manual.

1.1.3 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-S-XYZ in the version ordered
- Accessory pack (mechanical connection)
- Safety information (product-specific instructions available online)

Accessory pack

Size	ID number	Content
100	5516106	2 x O-ring Ø5 x 1 1 x Cylindrical pin Ø8 m6 x 16
125	5516107	2 x O-ring Ø5 x 1 1 x Cylindrical pin Ø10 m6 x 24 1x Hexagon socket wrench SW 7mm
160	5516108	2 x O-ring Ø5 x 1 1 x Cylindrical pin PIN Ø10 m6 x 28 1x Hexagon socket wrench SW 7mm
200	5516109	2 x O-ring Ø5 x 1 1 x Cylindrical pin PIN Ø12 m6 x 36

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 [🗋 11].
- 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 [🗋 11].

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 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.

2.10 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.

2.11 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.

2.11.1 Protection during handling and assembly

Incorrect handling and assembly

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

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

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

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

2.11.2 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.

3 Technical Data

Designation	Value
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4] filtered (10 µm): dry, oiled or unolied
Min. pressure [bar]	2,5
Nominal operating pressure [bar]	6
Max. pressure [bar]	8

Ambient conditions and operating conditions

Designation	Value
Ambient temperature [°C] min. max.	 +5 +60
Noise emission [dB(A)]	≤ 70

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

4 Design and description

Position of the item numbers ▸ 7.2 [🗋 21]

Function: Increased pneumatic power in Z-axis

- Actuation of air connection D
- Piston (14) pushes housing (1) away from the lifting plate (9) into extended state.

  (initial position via spring force)
- Actuation of piston (14) with rated operating pressure locks the product when extended.

Technical data for min. spring force and rated operating pressure can be found in the catalog data sheet. The latest relevant version is valid.

Function: Pneumatic position memory for X-Y compensation

- Actuation of air connection C
- Piston ring (13) moves to flange (6) tool side
- The position in X-Y direction is fixed via a friction locking fit

Technical data for max. radial force of position memory can be found in the catalog datasheet. The latest relevant version is valid.

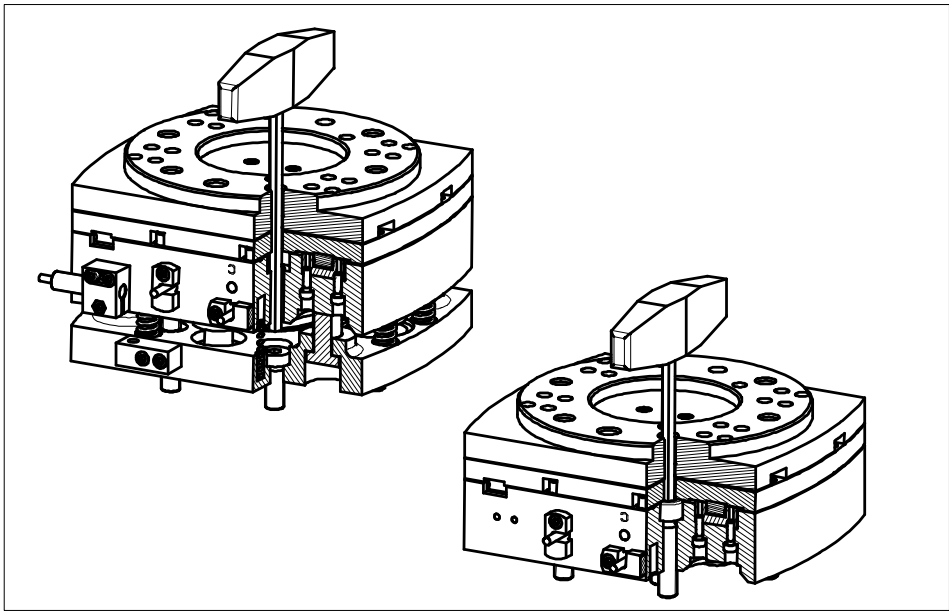
5 Assembly

5.1 Mechanical connection

The connection dimensions can be found in the corresponding drawings in the current catalog or in the SCHUNK CAD data service on the Internet (**www.schunk.com**).

CAUTION

Before starting assembly of the unit, the power supply must be switched off. ▶ 2 [🗋 6].



Mounting of the unit

The compensation units can be mounted using the pre-mounted screws. For reliable transmission of lateral forces and positioning of the unit, use a cylindrical pin from the accessories kit ▶ 1.3 [🗋 5].

Size	Screw	Schlüsselweite
100	M8 – DIN 7984	5
125	M10 – DIN 7984	7
160	M10 – DIN 7984	7
200	M12 – DIN 7984	8

Tab.: hexagon socket of the screw

Special Connection Dimensions

The compensation unit is equipped with a interface in accordance with ISO/DIN 9409-1

Size	Interface
100	ISO 9409-1-100-6-M8
125	ISO 9409-1-125-6-M10
160	ISO 9409-1-160-6-M10
200	ISO 9409-1-200-6-M12

5.2 air connection / media connection

The connection dimensions can be found in the corresponding drawings in the current catalog or in our CAD data service on the Internet (www.schunk.com).

⚠ WARNING

Risk of injury due to unexpected movements of the machine / system

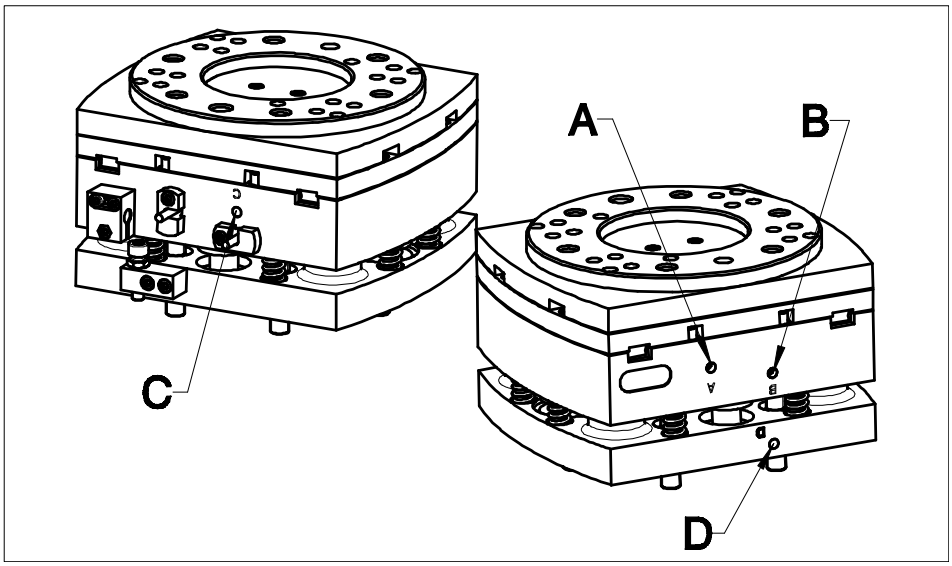
- The power supply must be switched off when connecting. "Basic safety notes"▸ 2 [🗋 6]

NOTE

- Observe the requirements for the compressed air supply, ▸ 3 [🗋 11].
- In case of compressed air loss (cutting off the energy line), the product loses its dynamic effects and does 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.

NOTE

- Only open the required connections.
- For hose-free direct connection, use the O-ring from the accessory kit.
- Close air connections that are not required with suitable locking screws.



A	Unlock AGE
B	Lock AGE
C	Activate position memory
D	Pneumatic force amplification in Z-direction

5.3 Mounting of the sensors

The magnetic switches are accessories and need to be ordered separately. The product is prepared by SCHUNK for use with type MMS-K 65 and INK/INW 80 magnetic switches.

NOTE

Observe the assembly and operating manual of the sensor for mounting and connecting.

The product is prepared for the use of sensors.

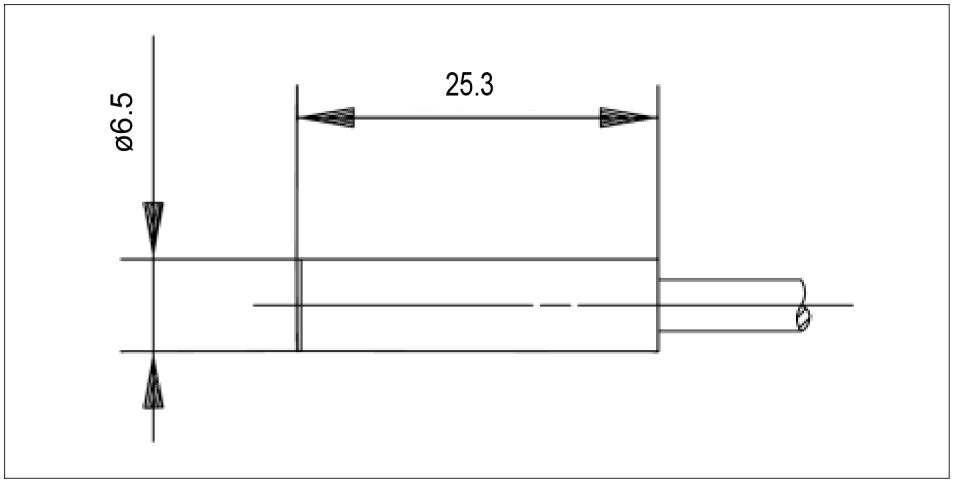
- For the exact type designations of suitable sensors, please see catalog datasheet and ▸ 5.3 [🗋 16].
- For technical data for the suitable sensors, see assembly and operating manual and catalog datasheet.
  - The assembly and operating manual and catalog datasheet are included in the scope of delivery for the sensors and are available at schunk.com.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.

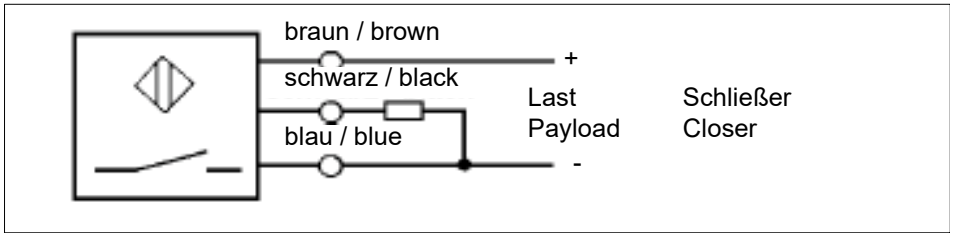
MMS-K 65

Electronic magnetic switches (MMS-K 65) for piston stroke control in XY direction

NOTE

Locking sensor reports whether central locking of the product is locked or unlocked.





Type	Switching function	ID
MMS-K 65/S PNP	Closer	301423

The switching function is illustrated in deenergized state.

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.

NOTE

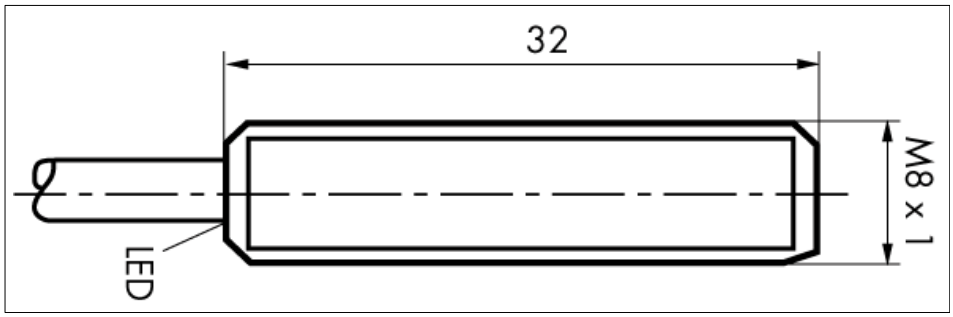
Ferromagnetic material changes the switching positions of the sensor. For example: Adapter plate made of ordinary steel.

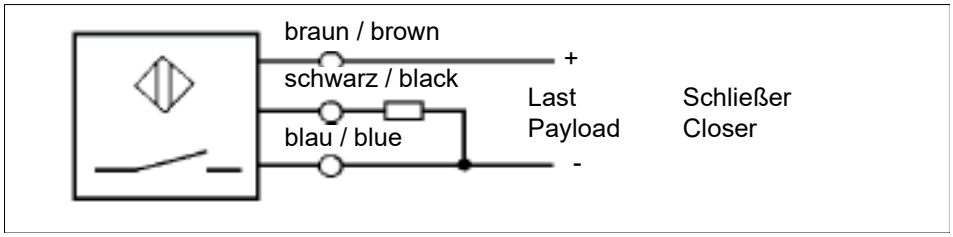
At ferromagnetic adapter plates:

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

INK/INW-80

Electronic proximity switch (INK/INW -80) for piston control in Z-direction





Type	Switching function	ID
INW 80/S-M	Closer	301408
INK 80/S		301550

The switching function is illustrated in deenergized state.

The inductive proximity switches used are equipped with reverse polarity protection and are short-circuit-proof.

Make sure that you handle the proximity switches properly:

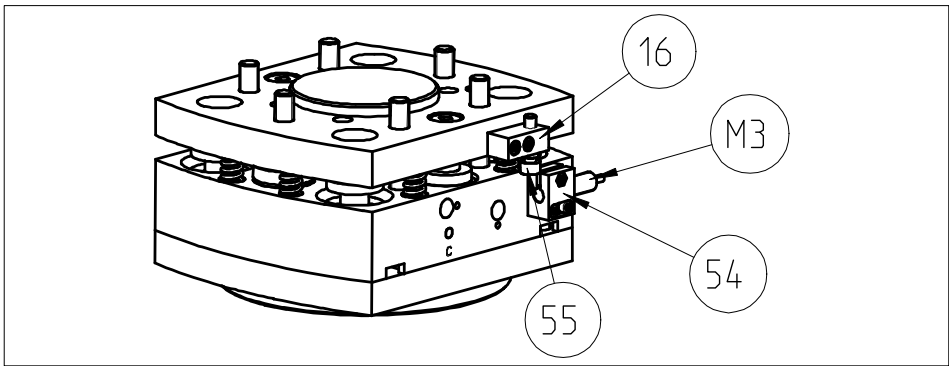
- Do not pull on the cable.
- Do not allow the sensor to dangle from the cable.
- Do not overtighten the mounting screw or mounting clip.
- Please adhere to a permitted bend radius of the cable. (☞ catalog)
- Avoid contact of the proximity switches with hard objects and with chemicals, in particular nitric acid, chromic acid and sulphuric acid.

The inductive proximity switches are electronic components, which can react sensitively to high-frequency interference or electromagnetic fields.

- Check to make sure that the cable is fastened and installed correctly. Provide for sufficient clearance to sources of high-frequency interference and their supply cables.
- Parallel switching of several sensor outputs of the same type (npn, pnp) is permissible, but does not increase the permissible load current.

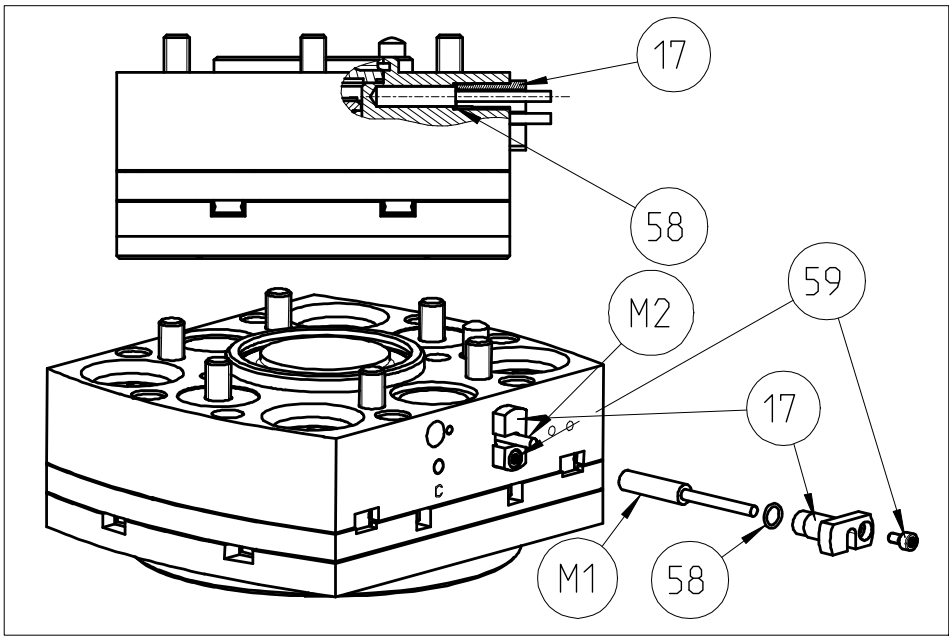
- Note that the leakage current of the individual sensors (ca. 2 mA) is cumulative.

AGE-S-Z with INW/INK 80



1. Push the proximity switch (M3) into the bracket (54) and clamp this by tightening the screw.
2. Push the compensation unit together to the desired Z-stroke and turn the screw (55) far enough out of the bracket (16) until the proximity switch (M3) switches.
3. Turn the screw (55) approx. another 1 turn further.
4. Check the function by relieving the pressure and pushing the compensation unit together in Z-direction.

AGE-S-XY with MMS-K 65/S



NOTE

For assembly of the magnetic switches, bore holes have been integrated into the housing.

To set a switching position (piston stroke control), proceed as follows:

Compensation unit unlocked:

1. Unlock compensation unit.
2. Push O-ring (58) onto the magnetic switch (M1).
3. Lay the cable of the magnetic switch into the groove of the clamping element (17). (O-ring (58) should be located between magnetic switch and clamping element (17))
4. Push the magnetic switch 1 (M1) with the clamping element (17) into the bore hole on the housing until the magnetic switch touches the base of the borehole.
5. Turn the magnetic switch on the cable about its own axis until it switches.
6. Fix the magnetic switch (M1) in this position and clamp it by tightening the screw (59).
7. Test the function by locking and unlocking the compensation unit.

Compensation unit locked:

1. Lock compensation unit.
2. Push O-ring (58) onto the magnetic switch (M2).
3. Lay the cable of the magnetic switch into the groove of the clamping element (17).
   ⇨ The O-ring (58) should be located between the magnetic switch and clamping element (17).
4. Push the magnetic switch 2 (M2) with the clamping element (17) into the bore hole on the housing until the magnetic switch touches the base of the borehole.
5. Turn the magnetic switch on the cable about its own axis until it switches.
6. Fix the magnetic switch (M2) in this position and clamp it by tightening the screw (59).
7. Test the function by unlocking and locking the compensation unit.

6 Troubleshooting

6.1 Problem analysis

Possible cause	Corrective action
The AGE lets off air when stopped	• Check air supply • Check seals
The AGE lets off air during operation	• The AGE has to be sent to the factory for inspection
Z-stroke is insufficient	• Dirt between the housing and lifting plate

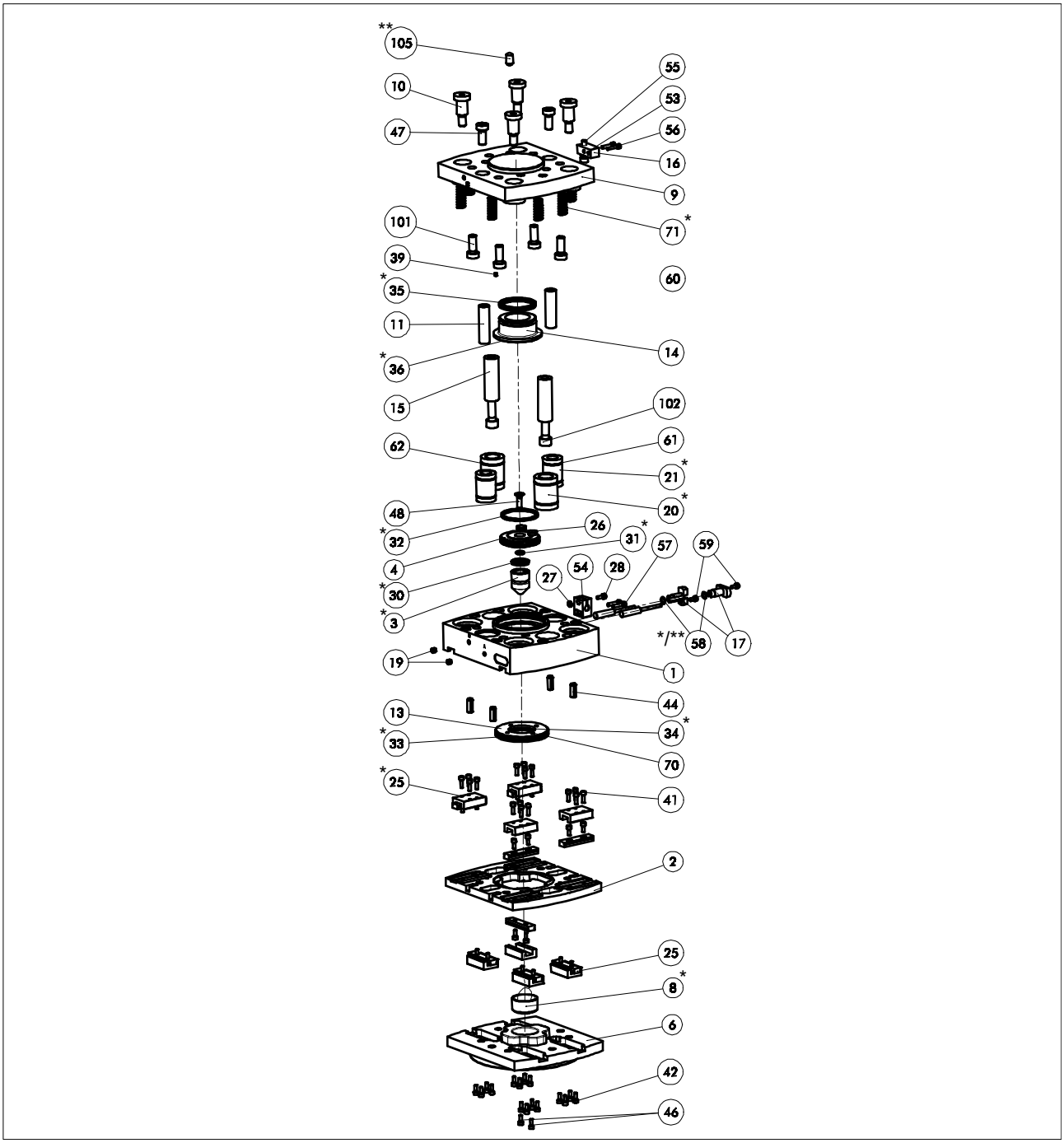
7 Maintenance

7.1 Maintenance intervals

The AGE should be sent back to SCHUNK every 3 million cycles for inspection and replacement of wearing parts.

7.2 Assembly drawing

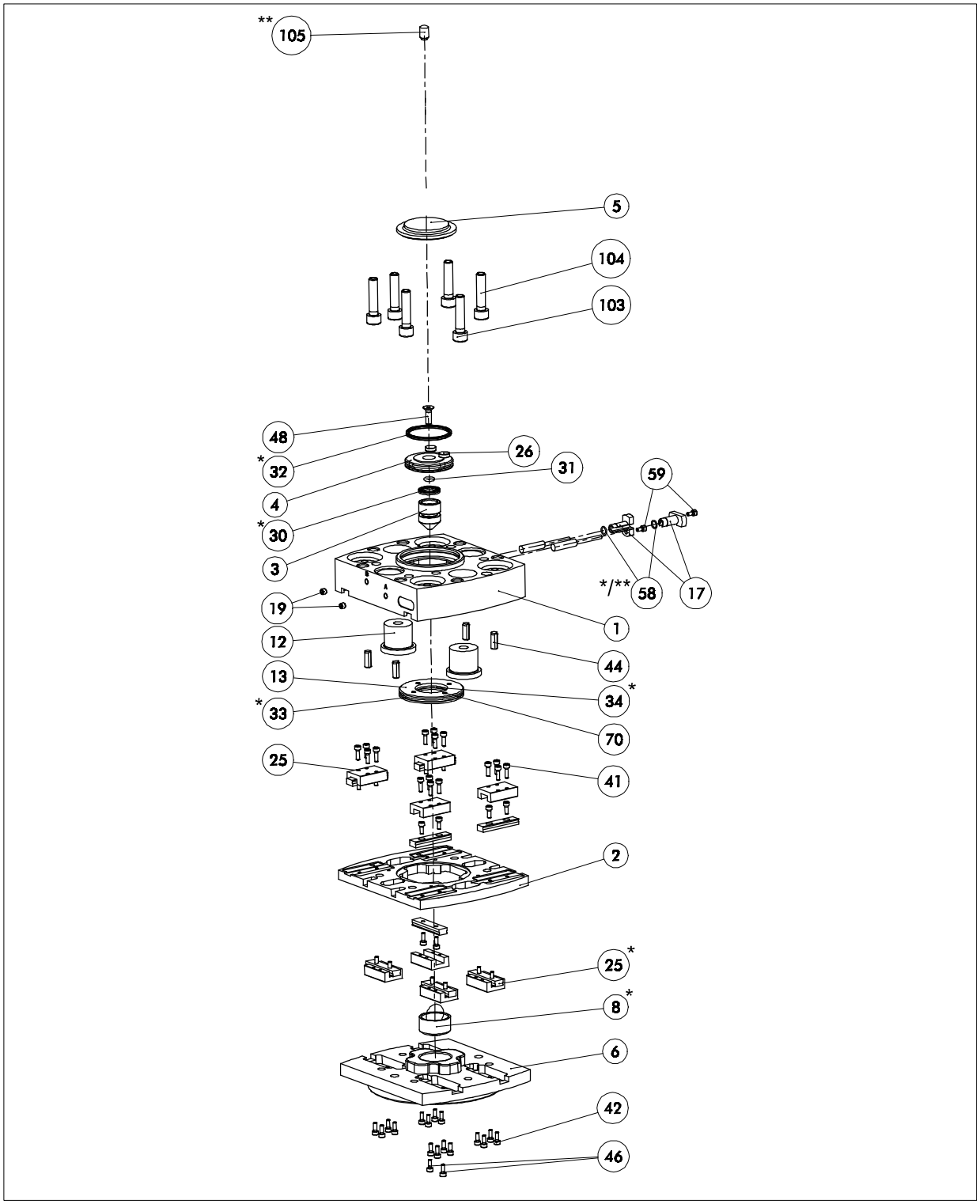
7.2.1 AGE-S-XYZ



* Wearing part, replace during maintenance.

** Contained in accessory pack.

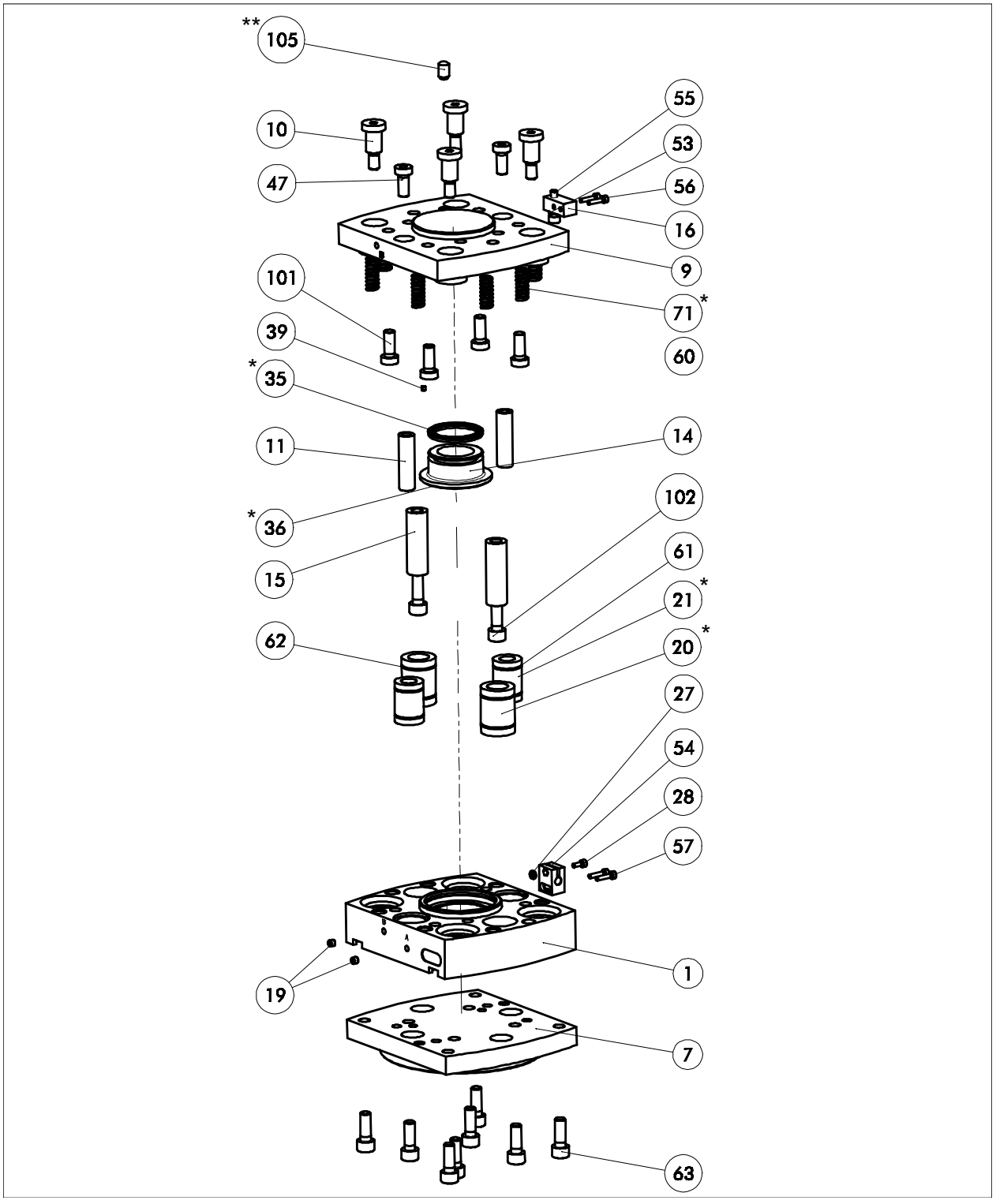
7.2.2 AGE-S-XY



* Wearing part, replace during maintenance.

** Contained in accessory pack.

7.2.3 AGE-S-Z



* Wearing part, replace during maintenance.

** Contained in accessory pack.

8 Translation of the original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1 Section B.

Manufacturer/ Distributor	SCHUNK SE & Co. KG Spanntechnik | Greiftechnik | Automatisierungstechnik Bahnhofstr. 106 – 134 D–74348 Lauffen/Neckar

We hereby declare that the partly completed machine described below

Product designation:	Compensation Unit in X–, Y–, and Z–Direction / AGE–S–XYZ / pneumatic
ID number	0324500,0324502,0324503,0324504,0324525,0324527,0324528,0324529,0324560,0324562,0324563,0324564,0324600,0324602,0324603,0324604

meets the following basic occupational health and safety of the Machinery Directive 2006/42/EC:

No. 1.1.1, No. 1.1.2, No. 1.1.3, No. 1.1.5, No. 1.3.2, No. 1.5.3, No. 1.5.4, No. 1.5.6, No. 1.5.8, No. 1.5.10, No. 1.5.11, No. 1.5.13

The partly completed machinery may not be put into operation until it has been confirmed that the machine into which the partly completed machinery is to be installed complies with the provisions of the Machinery Directive (2006/42/EC). The declaration shall be rendered invalid if modifications are made to the product.

Applied harmonized standards, especially:

EN ISO 12100:2010	Safety of machinery – General principles for design – Risk assessment and risk reduction

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

Person authorized to compile the technical documentation:
Stefanie Walter, Address: see manufacturer's address

Signature: see original declaration

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

Lauffen/Neckar, October 2024

9 UKCA declaration of incorporation

in accordance with the Supply of Machinery (Safety) Regulations 2008.

Manufacturer/ Distributor	SCHUNK Intec Limited Clamping and gripping technology 3 Drakes Mews, Crownhill MK8 0ER Milton Keynes

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
"Supply of Machinery (Safety) Regulations 2008".
The declaration shall be rendered invalid if modifications are made to the product.

Product designation:	Compensation Unit in X-, Y-, and Z-Direction / AGE-S-XYZ / pneumatic
ID number	0324500,0324502,0324503,0324504,0324525,0324527,0324528,0324529,0324560,0324562,0324563,0324564,0324600,0324602,0324603,0324604

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Person authorized to compile the technical documentation:
Marcel Machado, address: refer to manufacturer's address

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

Lauffen/Neckar, October 2024

SCHUNK SE & Co. KG
Spanntechnik | Greiftechnik | Automatisierungstechnik

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10-2024

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