



# Assembly and operating manual

## AGE-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:** 389007

**Version:** 07.00 | 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.**

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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.

In addition to these instructions, the documents listed under ▶ 1.1.3 [ 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 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](https://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-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
Magnetic switch	MMS

*Tab.: Overview of the compatible sensors*

- Exact type designation of the compatible sensors see catalog.
- Information on handling sensors is available at [schunk.com](http://schunk.com) or from SCHUNK contact persons.

### 1.4.2 Sealing kit

Seal kit for	ID number
AGE-XY 50	5516360
AGE-XY 63	0371043
AGE-XY 80	5517030

*Tab.: ID.-No. of the seal kit*

contents of the sealing kit, ► 7 [📄 22].

## 2 Basic safety notes

### 2.1 Intended use

The product was designed to compensate a process-related displacement in XY plane. A mechanical center locking using a positive piston is included as a standard in the product. A position storage via a pneumatic cylinder is optional available.

- The product may only be used within the scope of its technical data, ▶ 3 [13].
- 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 or for attachment to a robot. 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 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 [13].
- 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.

## 2.5 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:

<b>Trained electrician</b>	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.
<b>Qualified personnel</b>	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.
<b>Instructed person</b>	Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.
<b>Service personnel of the manufacturer</b>	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 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.

## 2.7 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.

## 2.8 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.

## 2.9 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.

## 2.10 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.

## **2.10.1 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.

## **2.10.2 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

Size	50	63	80
Locking force at 6 bar [N]	235	370	580
Compensation stroke [mm]	±2.5	±3	±4
Max. distance of displacement force in Z [mm]	120	160	200
Min. pressure [bar]		2	
Max. pressure [bar]		8	
Min. ambient temperature [°C]		+5	
Max. ambient temperature [°C]		+60	
Noise emission [dB(A)]		≤70	
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4]		
Repeatability [mm]		0.1	

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

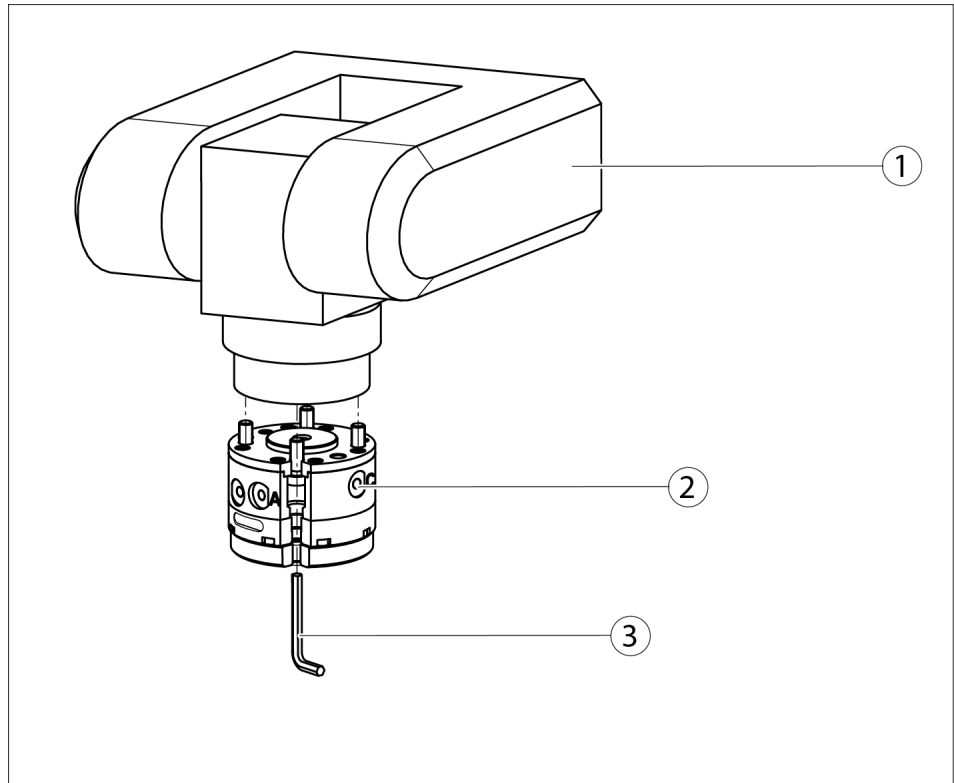
#### NOTE

Owing to the design, the compensation unit may also have a clearance of approx. 0.06 even in locked state. Twisting in locked state is possible up to a dimension of 0.1°.  
Rigid centric locking can therefore not be guaranteed.

## 4 Assembly

### 4.1 Mounting the AGE on the robot

Position of the item numbers ► 7 [📄 22]



*Mounting the AGE on the robot*

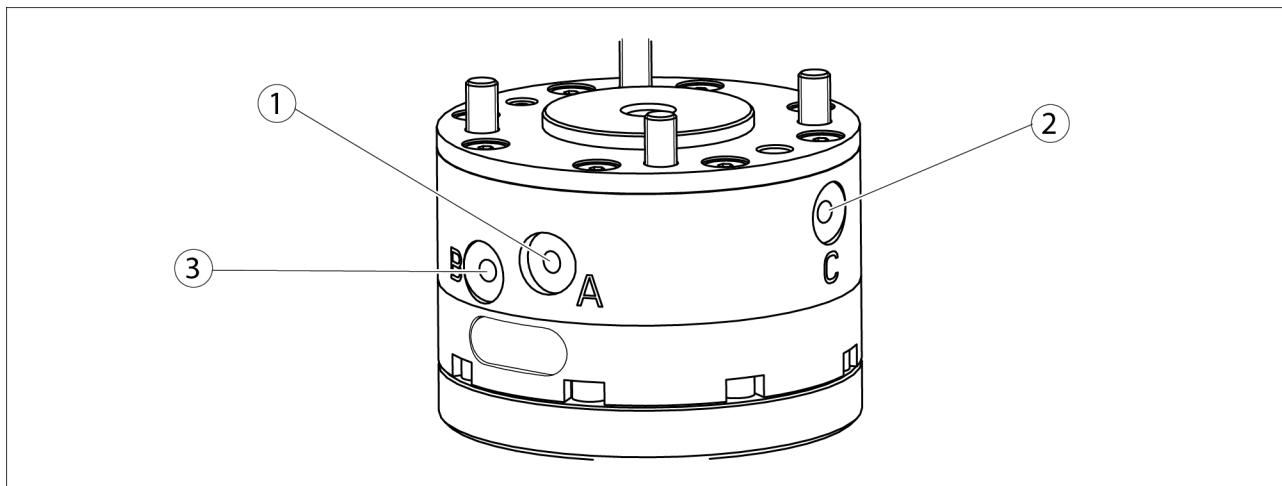
- |   |  |   |                          |
|---|--|---|--------------------------|
| 1 | Robot with interface according to DIN ISO 9409 | 2 | Compensation unit AGE-XY |
| 3 | Allen key for assembly                         |   |                          |

1. Fasten the AGE to the robot interface with four mounting screws (The screws are pre-mounted.)
2. The cylindrical pin (included in the accessory kit) can be used to center the AGE.

## 4.2 Air connection

### CAUTION

Observe the requirements for the air supply, ▶ 3 [13].



air connection

1	connection A "unlock"	2	connection C "save position"
3	connection B "lock"		

- Only open the air connections required.
- Seal the air connections not required using with a suitable blind plug.

### 4.3 Installing the sensors

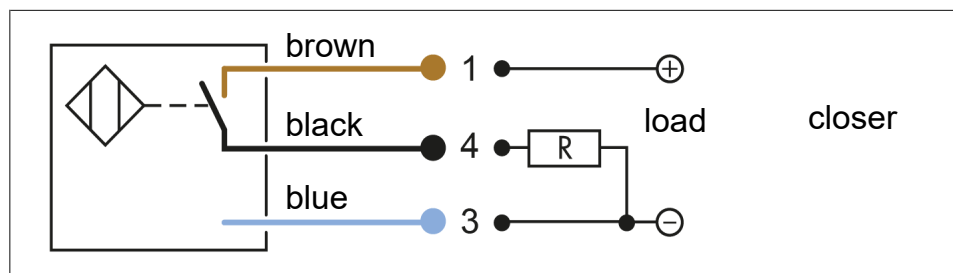
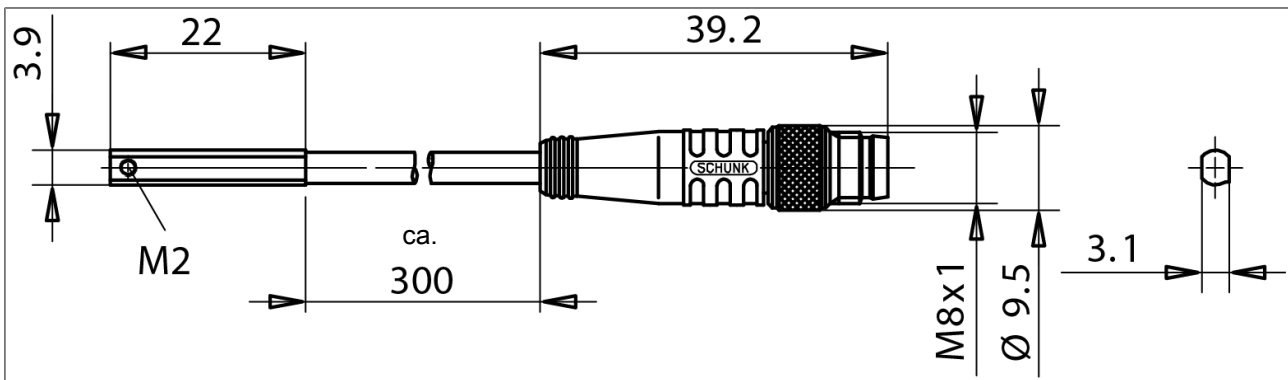
#### NOTE

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

The product is equipped for the use of sensors.

- For the exact type designations of suitable sensors, please see the catalog datasheet.
- 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](http://schunk.com).
- Information on handling sensors is available at [schunk.com](http://schunk.com) or from SCHUNK contact persons.

#### 4.3.1 MMS 22 magnetic switch



#### 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.**

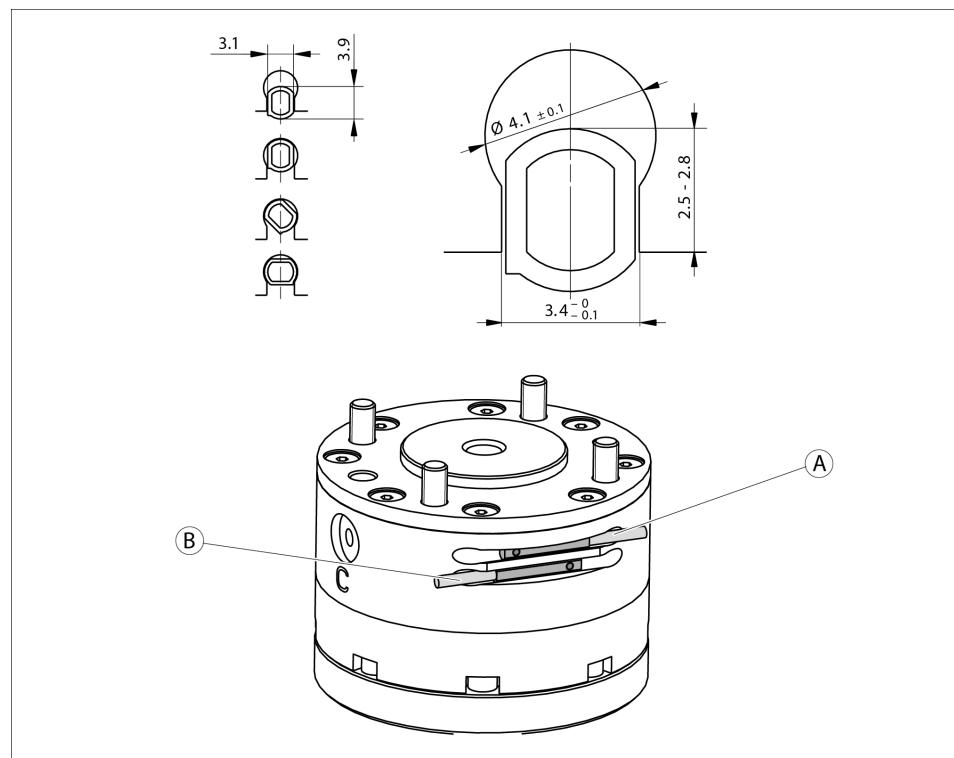
At ferromagnetic adapter plates:

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

**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).

**Assembly and adjustment of the magnetic switches**



Assembly steps for mounting the magnetic switches

- |   |                                       |   |                                     |
|---|---------------------------------------|---|-------------------------------------|
| A | Magnetic switch 2<br>"unlocked state" | B | Magnetic switch 1 "locked<br>state" |
|---|---------------------------------------|---|-------------------------------------|

**"Locked"  
compensation unit**

1. Apply pressure to connection B to lock the AGE.
2. Push magnetic switch 1 into the profile groove until it switches.
3. Mount magnetic switch 1 in this position with the screw in the magnetic switch.
4. Unlock and lock the AGE to test its function.

**"Unlock"  
compensation unit**

1. Apply pressure to connection A to unlock the AGE.
2. Push magnetic switch 2 into the profile groove until it switches.
3. Mount magnetic switch 2 in this position with the screw in the magnetic switch.
4. Unlock and lock the AGE to test its function.

## 5 Troubleshooting

Malfunction/fault occurring	Possible cause/Corrective action
The AGE-XY is leaking air at standstill	Air connection not installed correctly. Unused air connections open.
The AGE-XY is leaking air during operation	The AGE-XY will have to be sent back to the production facility for inspection

## 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]	13
------------------------	----

---

### 6.2 Lubricants/Lubrication points (basic lubrication)

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

SCHUNK recommends the lubricants listed.

Lubricant point	Lubricant
Seals and sealing surfaces	SCHUNK grease 1
Centering piston	SCHUNK grease 1
Metallic sliding surfaces	SCHUNK grease 1

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

#### CAUTION

**Do not grease the sliding surface between the accumulator piston (3) and compensation body (8)! The O-ring (28) must be free from grease!**

(Position of the item numbers ▶ 7 [ 22])

### 6.3 Disassembling the AGE

Position of the item numbers ▶ 7 [📄 22]

1. Remove the pressure lines and disconnect the cable connections.
2. Unscrew the screws (41) and remove the tool flange (7).
  - ⇒ The tool flange (7) and compensation body (8) are aligned to each other by means of pins (51).
3. Unscrew the screws (40) and remove the cover (6).
  - ⇒ The cover (6) and housing (2) are aligned to each other by means of pins (52).
4. Pull the accumulator piston (3) out of the housing (2).
5. Unscrew the screws (43) and remove the robot flange (1).
  - ⇒ The robot flange (1) and housing (2) are aligned to each other by means of pins (53).
6. Push the centering piston (4) with the cylinder piston (5) out of the housing (2).
7. Unscrew the screws (44) and pull the centering pistons (4) and cylinder pistons (5) apart.

### 6.4 Servicing and assembling the product

#### Maintenance

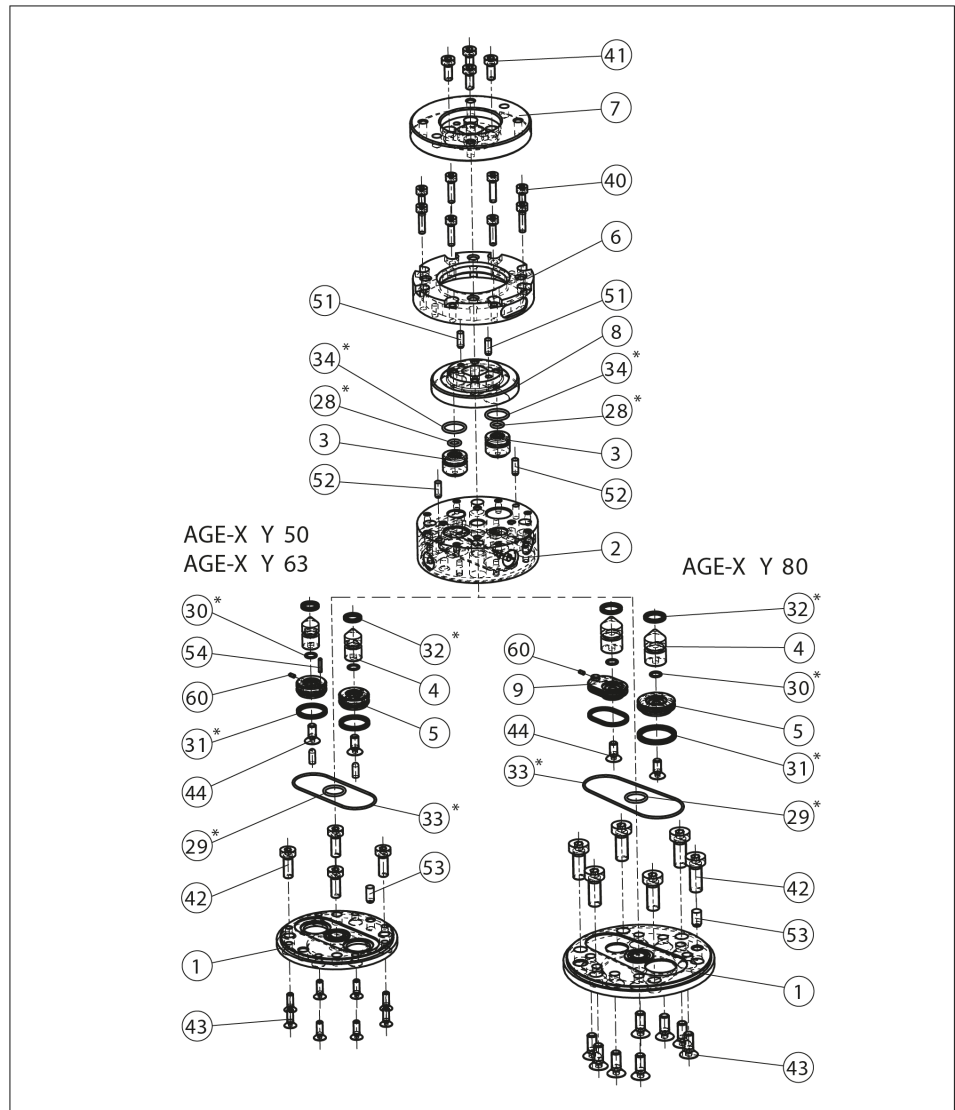
- Clean all parts thoroughly and check for damage and wear.
- Treat all greased areas with lubricant.
  - ▶ 6.2 [📄 20]
- Oil or grease bare external steel parts.
- Replace all wear parts / seals.

#### Assembly

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

- Unless otherwise specified, secure all screws and nuts with Weicon no. 30243 and tighten with the appropriate tightening torque.

## 7 Assembly drawing



Assembly drawing

- \* Wearing part, replace during maintenance.  
Included in the seal kit. Seal kit can only be ordered completely.

## 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 / AGE-XY /pneumatic  
ID number                            0324450 ... 0324481

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



## 10 Information on the RoHS Directive, REACH Regulation and Substances of Very High Concern (SVHC)

### RoHS Directive

SCHUNK products are classified as "large-scale stationary installations" or as "large-scale stationary industrial tools" within the meaning of Directive 2011/65/EU and its extension 2015/863/EU "on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)", or fulfill their intended function only as part of one. Therefore products from SCHUNK do not fall within the scope of the directive at this time.

### REACH Regulation

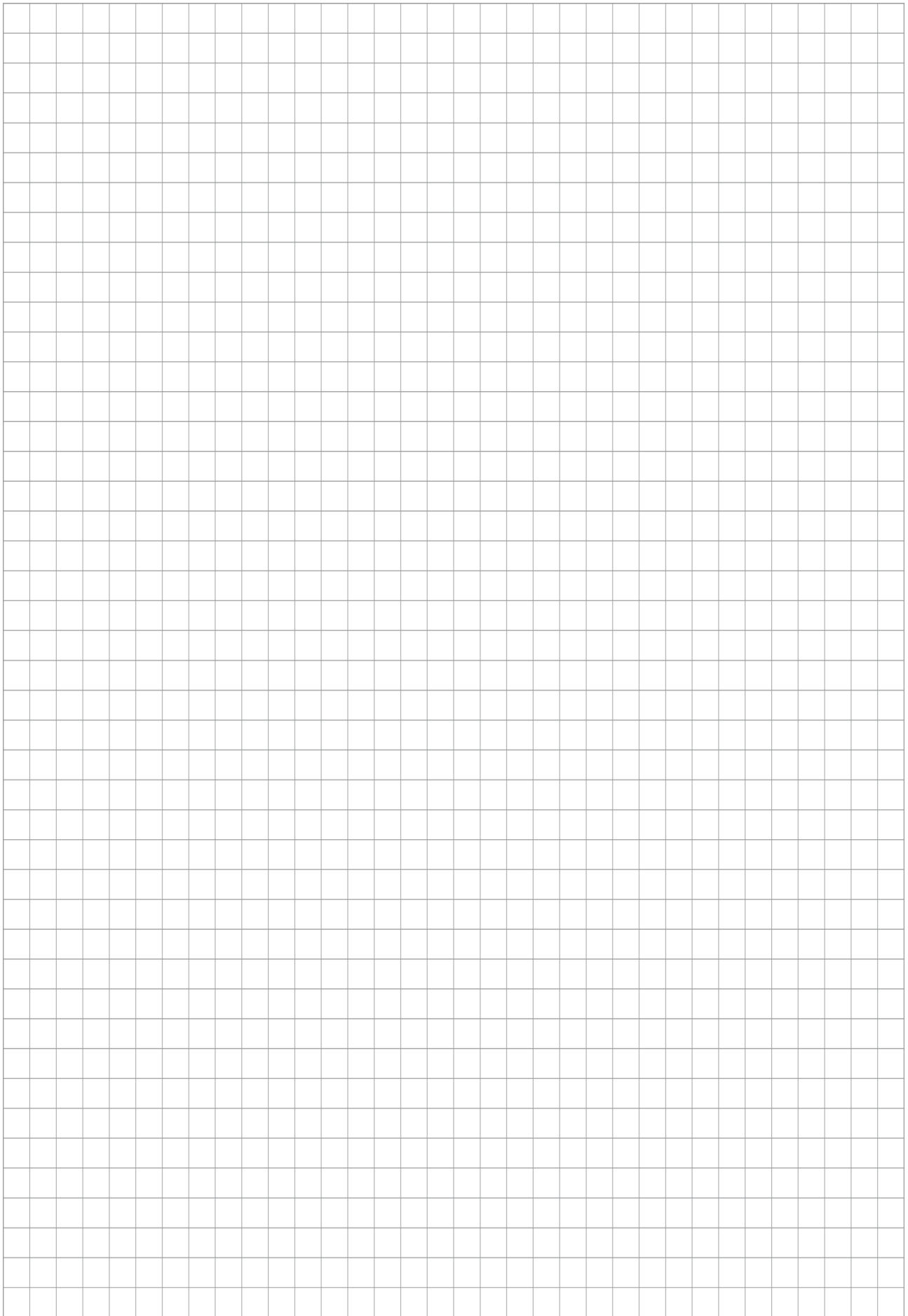
Products from SCHUNK fully comply with the regulations of Regulation (EC) No. 1907/2006 "concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)" and its amendment 2022/477. SCHUNK attaches great importance to completely avoiding chemicals of concern to humans and the environment wherever possible.

Only in rare exceptional cases do SCHUNK products contain SVHC substances on the candidate list with a mass content above 0.1%. In accordance with Article. 33 (1) of Regulation (EC) No. 1907/2006, SCHUNK complies with its duty to "communicate information on substances in articles" and lists the components concerned and the substances used in an overview that can be viewed at [schunk.com/SVHC](https://schunk.com/SVHC).

*Signature: see original declaration*

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

Lauffen/Neckar, October 2024







**SCHUNK SE & Co. KG**  
Spanntechnik | Greiftechnik | Automatisierungstechnik

Bahnhofstr. 106 - 134  
D-74348 Lauffen/Neckar  
Tel. +49-7133-103-0  
info@de.schunk.com  
schunk.com

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