



Assembly and Operating Manual

GSW-M

Magnetic gripper with shank interface

Translation of the original 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.

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Dear Customer,

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

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

Best regards,

Your SCHUNK team

Customer Management

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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 *

The documents labeled with an asterisk (*) can be downloaded from schunk.com.

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

- Magnetic gripper with shank interface GSW-M in the version ordered

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 Seal kit

Seal kit for	ID number
GSW-M 20	5522169

contents of the sealing kit, ► 7.5 [📄 23].

2 Basic safety notes

2.1 Intended use

The product is used exclusively for the attracting and temporarily holding of ferromagnetic workpieces or objects.

- The product may only be used within the scope of its technical data, ▶ 3 [13].
- 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. Its use outside enclosed spaces is only permitted if suitable protective measures are taken against outdoor exposure. The product is not suitable for use in salty air.
- The product can be used within the permissible load limits and technical data for holding workpieces during simple machining operations, but is not a clamping device according to EN 1550:1997+A1:2008.
- 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.
- Appropriate use of the product includes compliance with all instructions in this manual.
- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.2 Constructional changes

Implementation of structural changes

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

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

2.3 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.

2.4 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:

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.

2.6 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 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.

2.9 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 installations.
- Install the provided protective product in the danger zone before switching on the product.

- Remove the energy supplies before installation, modification, maintenance, or adjustment work. Ensure there is no residual energy in the system.
- Do not move parts by hand while the energy supply is connected.
- Do not reach into the 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.

2.11.3 Protection against dangerous movements

Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- Never rely solely on the response of the monitoring function to avert danger. Until the installed monitors become effective, it must be assumed that the drive movement is faulty, with its

action being dependent on the control unit and the current operating condition of the drive. Perform maintenance work, modifications, and attachments outside the danger zone defined by the movement range.

- To avoid accidents and/or material damage, human access to the movement range of the machine must be restricted. Limit/prevent accidental access for people in this area due through technical safety measures. The protective cover and protective fence must be rigid enough to withstand the maximum possible movement energy. EMERGENCY STOP switches must be easily and quickly accessible. Before starting up the machine or automated system, check that the EMERGENCY STOP system is working. Prevent operation of the machine if this protective equipment does not function correctly.

3 Technical data

Connection data

Designation	GSW-M
Weight [kg]	1,0
Holding force [N]	70
Ejector stroke [mm]	20
Max. rotation speed [min ⁻¹]	0
Recommended workpiece weight [kg]	3.5
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1:2010 [7:4:4] machine coolant, filtered, max. particle size of 30 µm
Nominal working pressure [bar] (compressed air)	6
Min. pressure [bar] (compressed air)	2
Max. pressure [bar] (compressed air)	8
Nominal working pressure [bar] (machine coolant)	40
Min. pressure [bar] (machine coolant)	10
Max. pressure [bar] (machine coolant)	50

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

Ambient conditions and operating conditions

Designation	GSW-M
Ambient temperature [°C]	
min.	+5
max.	+90
Protection class IP	44
Noise emission [dB(A)]	≤ 70

4 Assembly

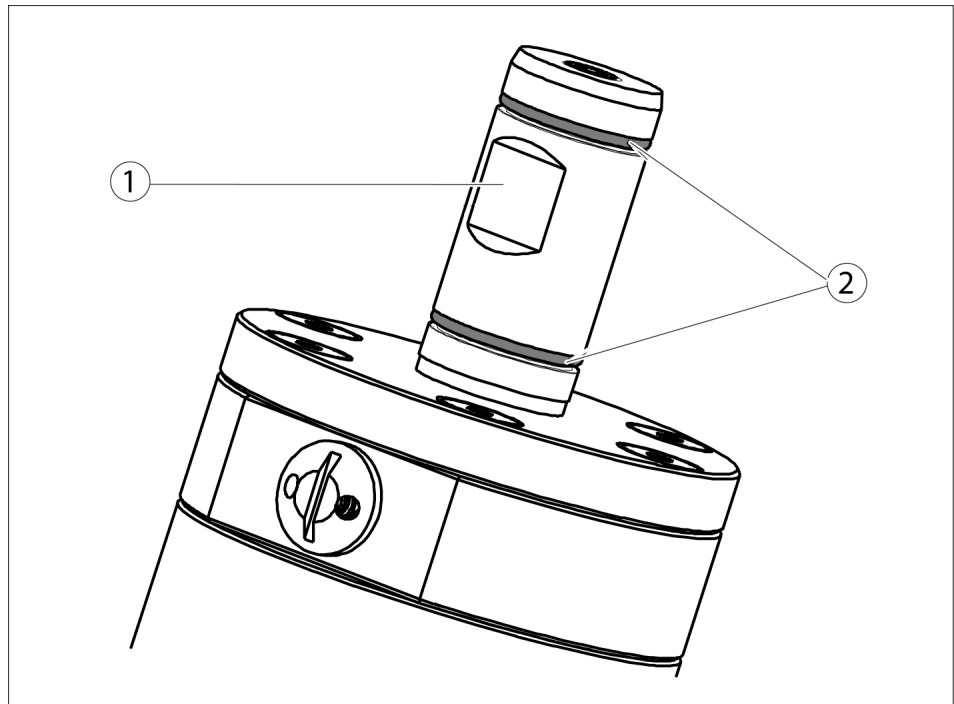
4.1 Mechanical connection at the toolholder

CAUTION

Severe damage at the shank of the GSW-M if it is used together with a shrink holder.

- Do not use a shrink holder.

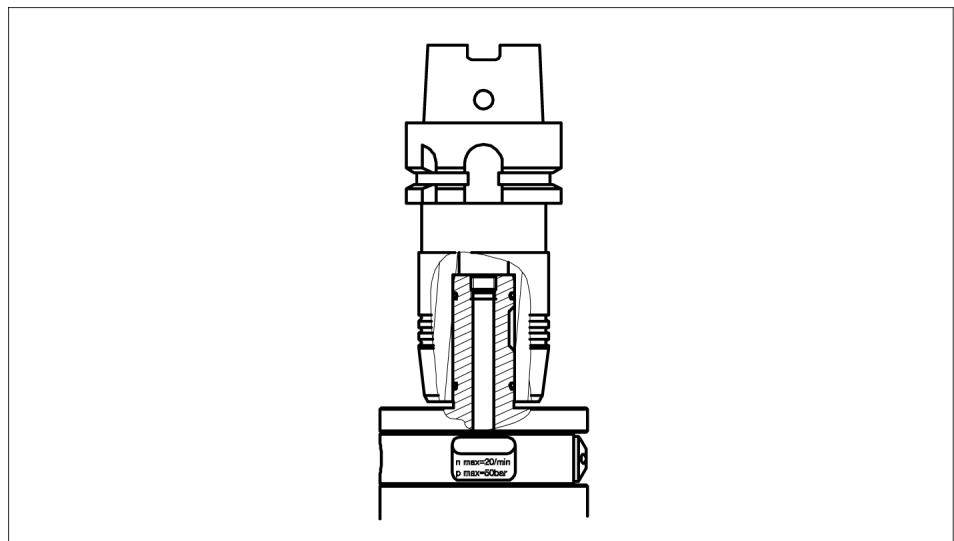
Mounting



Assembly options

1. Check whether the O-rings (2) are inserted at the shank. If required, insert the O-rings (2).
2. Clamp the GSW-M with the shank or via the clamping face (1) in the toolholder.

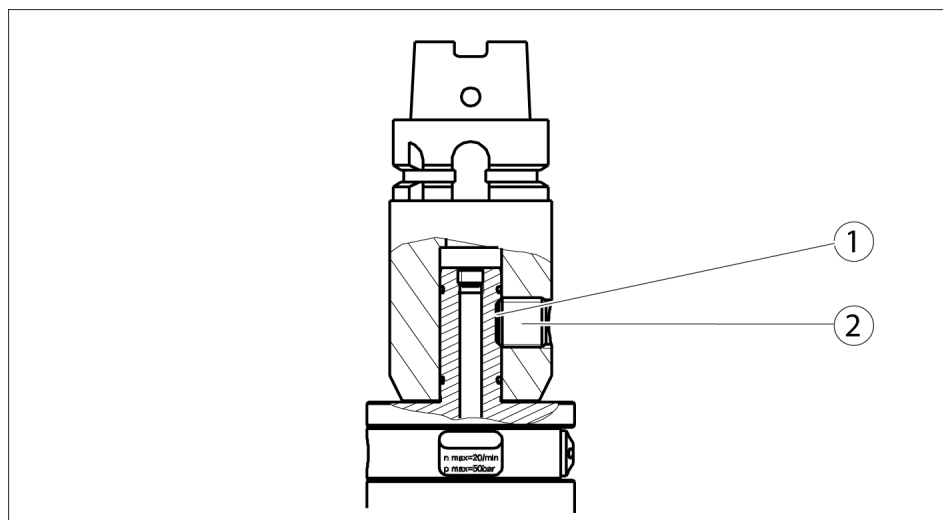
SCHUNK TENDO toolholder



Sectional view of the GSW-M clamped in the SCHUNK TENDO

Toolholder with WELDON mount

The TENDO toolholder uses distributed clamping on the GSW-M shank (clamping principle: hydraulic expansion toolholder).



GSW-M sectional view of GSW-M clamped in WELDON mount

The shank of the GSW-M is clamped in the clamping face (1) using the set screw (2) of the toolholder with WELDON mount.



⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

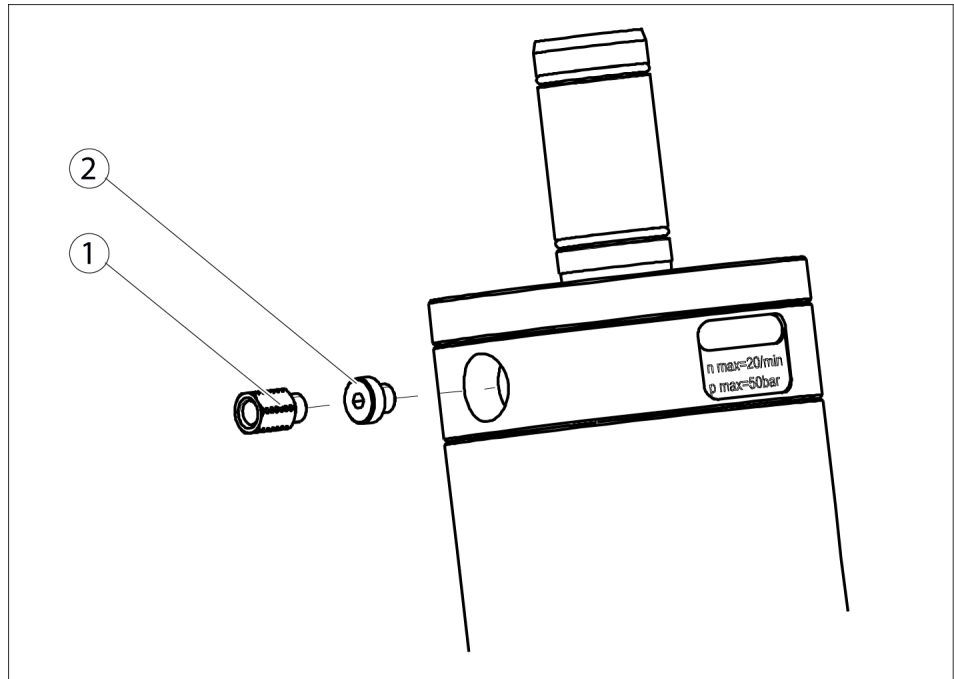
- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

4.2 Energy supply

CAUTION

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

The pressure supply with compressed air or cooling lubricant is provided by the machine spindle.



Air connections

1. When using compressed air, the locking screw (2) has to be mounted.
2. When using the machine cooling fluid, the throttle (1) has to be mounted.



⚠ WARNING

Risk of injury due to unexpected movements!

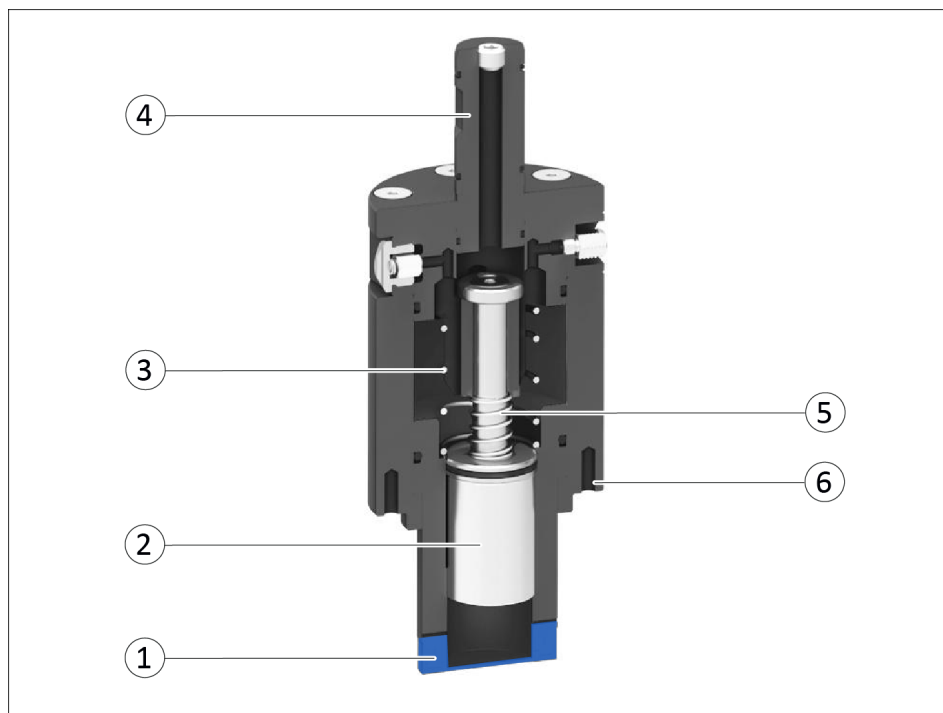
If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

5 Operation

NOTE

Using the fitting bores and threads (6), auxiliary means (e.g. for positioning of the workpiece) can be fastened.



Hold workpiece

1. Place the GSW-M with the rubber friction ring (1) on the workpiece.
2. Lower the GSW-M further in direction of the workpiece (20 mm) until the magnet (2) is flush with the rubber friction ring (1) on the workpiece. To achieve this, the spring force of the spring (3) must be overcome.
 - ⇒ The workpiece is now held magnetically.
 - Note: The GSW-M has a compensating stroke of 9 mm to protect the machine and the workpiece, thereby the spring (5) is compressed.
3. Lift GSW-M together with the workpiece.
 - ⇒ The spring (5) relaxes again by the compensating stroke.

Release workpiece

1. Set down the GSW-M with the workpiece.
 - ⇒ The compensation stroke of 9 mm can be used here.
2. Apply compressed air or cooling lubricant to the mount (4) to loosen the workpiece.
 - ⇒ While this is happening, the GSW-M continuously discharges compressed air or cooling lubricant through the outlet opening.

3. Lift GSW-M

- ⇒ Due to the excess pressure in the interior of the GSW-M, the workpiece is held in a defined position via the rubber friction ring (1) in its storage position and separated from the magnet (2) when picking up by the GSW-M.

6 Troubleshooting

6.1 Workpiece not put down

Possible cause	Corrective action
Bore hole of the set-screw is clogged or dirty.	Check and, if need be, clean the bore hole. ▶ 7 [📄 20]

6.2 Loss of workpiece

Possible cause	Corrective action
Max. feed rate exceeded.	Reduce the feed rate.
Recommended workpiece weight exceeded.	Notice technical data. ▶ 3 [📄 13]

7 Maintenance

7.1 Notes

Original spare parts

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

7.2 Maintenance intervals

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 (million cycles)	Maintenance work
periodically	visual inspection of the friction ring (11).
when required	clean magnetic surface.
2	Clean all parts thoroughly, check for damage and wear, if necessary replace seals and wearing parts ▶ 7.4 [22]. The seals are in the enclosed sealing kit. ▶ 1.4.1 [6]
2	Treat all grease areas with lubricant ▶ 7.3 [21]. Oil or grease external steel parts.

7.3 Lubricants/Lubrication points

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

SCHUNK recommends the lubricants listed.

Lubricant point	Lubricant
Metallic sliding surfaces	SCHUNK grease 3
Seals and sealing surfaces	SCHUNK grease 1
Bore hole at the piston	SCHUNK grease 1

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.
-

7.4 Disassembly and assembly

7.4.1 Disassembly of the product

Position of the item numbers ▶ 7.5 [📄 23]

1. **CAUTION The housing is under spring tension!** Unscrew the screws (16) carefully. The spring force separates the housing (1) and the cover (2).
2. Pull the mount (6) off the cover (2).
3. Push the piston (3) out of the housing (1).
4. **CAUTION The cylinder piston is under spring tension!** To dismantle the cover (2) and cylinder piston (4), unscrew the screw (15) and remove the washer (5).

7.4.2 Assembling the product

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

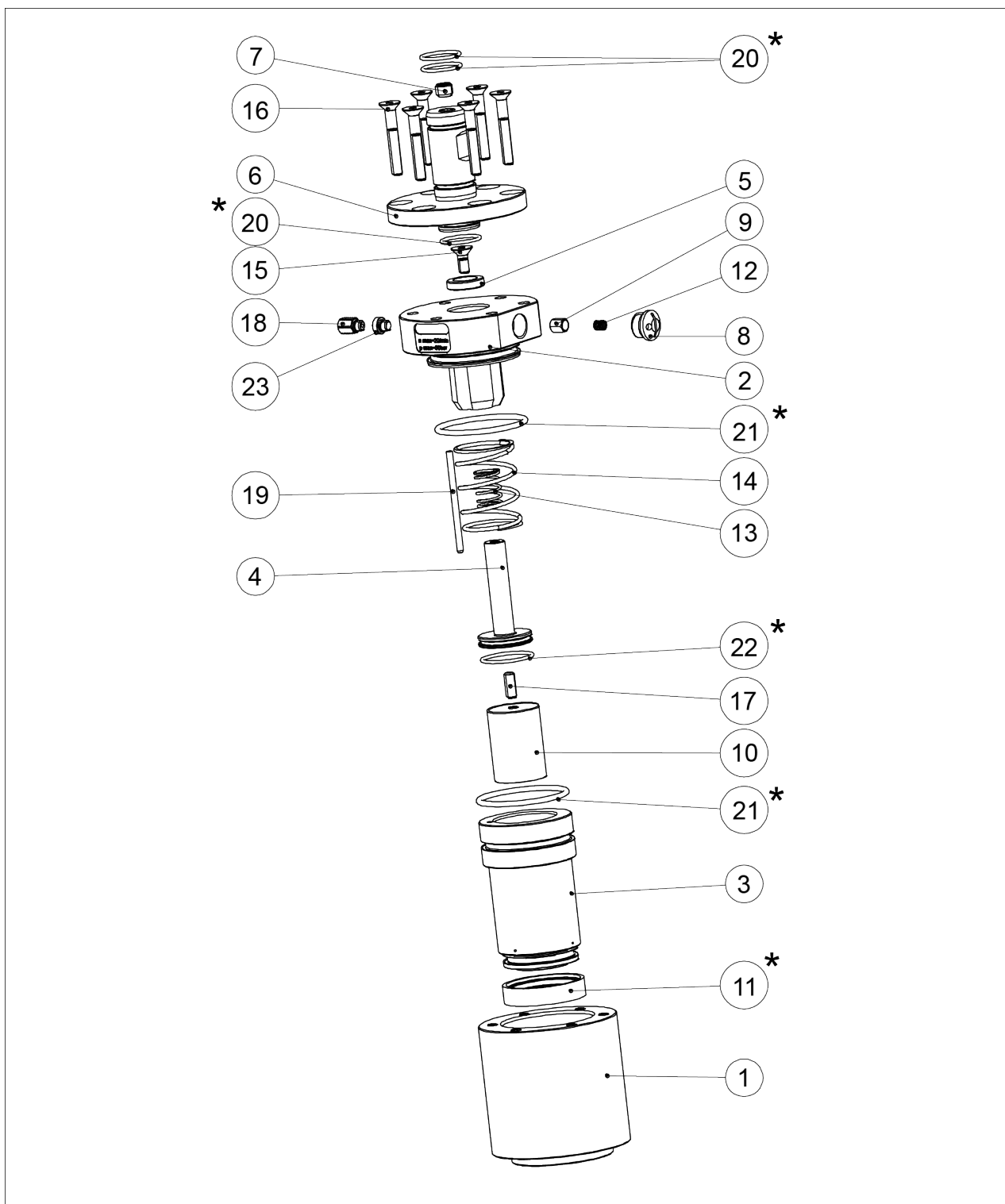
- Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque.▶ 7.4.2.1 [📄 22]

7.4.2.1 Screw tightening torques

Position of the item numbers ▶ 7.5 [📄 23]

Item	Tightening torque [Nm]
15	6
16	6

7.5 Assembly drawing



Exploded view GSW-M

* 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
Toolholding and Workholding | Gripping Technology | Automation
Technology
Bahnhofstr. 106 - 134
D-74348 Lauffen/Neckar

We hereby declare that the partly completed machine described below

Product designation: Magnetic gripper with shank interface / GSW-M /pneumatic
ID number 308355

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

Lauffen/Neckar, March 2024

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

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:	Magnetic gripper with shank interface / GSW-M / pneumatic
ID number	308355

The partly completed machine may not be put into operation until it has been confirmed that the machine into which the partly completed machine is to be installed complies with the provisions of the "Supply of Machinery (Safety) Regulations 2008".

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:
Marcel Machado, address: refer to manufacturer's address



Lauffen/Neckar, March 2024

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

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://www.schunk.com/SVHC).

Signature: see original declaration

Lauffen/Neckar, March 2024

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





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Automation Technology

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