



Assembly and Operating Manual

UFG 66

3-jaw insertion gripper

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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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
1.3.1	Accessories kit	6
1.3.2	Spare parts	6
1.4	Accessories	7
1.4.1	Seal kit	7
2	Basic safety notes	8
2.1	Intended use.....	8
2.2	Not intended use	8
2.3	Constructional changes.....	8
2.4	Spare parts	8
2.5	Gripper fingers	9
2.6	Ambient conditions and operating conditions	9
2.7	Personnel qualification	9
2.8	Personal protective equipment	10
2.9	Notes on safe operation.....	10
2.10	Transport.....	11
2.11	Malfunctions	11
2.12	Disposal	11
2.13	Fundamental dangers	11
2.13.1	Protection during handling and assembly	12
2.13.2	Protection during commissioning and operation	12
2.13.3	Protection against dangerous movements	12
2.14	Notes on particular risks	14
3	Technical data	15
4	Assembly	16
4.1	Connections	16
4.1.1	Mechanical connection	16
4.1.2	Hydraulic connection	19
4.2	Adjusting the sensor	20
4.2.1	Inductive proximity switch IN 80	20
4.2.2	Sensorposition.....	21

5 Troubleshooting	22
5.1 Is the product not moving?	22
5.2 The gripping force drops?.....	22
6 Maintenance	23
6.1 Notes.....	23
6.2 Maintenance and lubrication intervals.....	23
6.3 Lubricants/Lubrication points (basic lubrication)	23
6.4 Assembly drawing	24
7 Translation of the original declaration of incorporation	25
8 Information on the RoHS Directive, REACH Regulation and Substances of Very High Concern (SVHC)	26

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

- 3-jaw insertion gripper UFG in the version ordered
- Assembly and Operating Manual
- Accessory pack

1.3.1 Accessories kit

Content of the accessory pack:

- 6 screws ISO 4762/12.9 M8 x 50 mm
- 2 cylindrical pins DIN 7979 Form D 8.0 m6 x 20 mm

Accessory pack for	ID number
UFG 66	30030165

1.3.2 Spare parts

Position of item number ▶ 6.4 [24]

Item	ID number	Quant- ity	Designation
56	9936505	2	IN 80-S proximity switch

1.4 Accessories

A wide range of accessories are available for this product

- Pressure piece (optional)
- Top jaws
- Sensors

1.4.1 Seal kit

Seal kit for	ID number
UFG 66	0370868

contents of the sealing kit, ► [6.4](#) [24].

2 Basic safety notes

2.1 Intended use

The product is designed exclusively for gripping and temporarily holding workpieces or objects.

- The product may only be used within the scope of its technical data, ▶ 3 [15].
- 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.
- 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 Not intended use

It is not intended use if the product is used, for example, as a pressing tool, stamping tool, lifting gear, guide for tools, cutting tool, clamping device or a drilling tool.

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

2.3 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 Gripper fingers

Requirements of gripper fingers

Accumulated energy can make the product unsafe and risk the danger of serious injuries and considerable material damage.

- Execute the gripper fingers in such a way that the product reaches either the "open" or "closed" position in a de-energized state.
- Only change gripper fingers if no residual energy can be released.
- Make sure that the product and the top jaws are a sufficient size for the application.

2.6 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 [15].
- 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.

2.7 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.

2.8 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.

2.9 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.

2.10 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.

2.11 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.

2.12 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.

2.13 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.

2.13.1 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.

2.13.2 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.

2.13.3 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.

2.14 Notes on particular risks



⚠ DANGER

Risk of fatal injury from suspended loads!

Falling loads can cause serious injuries and even death.

- Stand clear of suspended loads and do not step within their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.
- Wear suitable protective equipment.



⚠ WARNING

Risk of injury from objects falling and being ejected!

Falling and ejected objects during operation can lead to serious injury or death.

- Take appropriate protective measures to secure the danger zone.



⚠ 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.



⚠ WARNING

Risk of injury from crushing and impacts!

Serious injury could occur during movement of the base jaw, due to breakage or loosening of the gripper fingers or if the workpiece is lost.

- Wear suitable protective equipment.
- Do not reach into the open mechanism or the movement area of the product.



⚠ WARNING

Risk of injury from sharp edges and corners!

Sharp edges and corners can cause cuts.

- Use suitable protective equipment.

3 Technical data

Size	66
Operation	hydraulic
Min. pressure [bar]	10
Max. pressure [bar]	30
Opening stroke [mm/Backe]	40
Gripping force at 30 bar [N]	8700
Ambient temperature [°C]	
Min.	+5
Max.	+60
Oil volume "open" [cm ³]	122
Oil volume "closed" [cm ³]	114
Opening time [s]	0.6
Closing time [s]	0.7
Repeat clamping [mm]	0.05
Weight [kg] Single gripper	11.3
Weight [kg] Double gripper	31.0

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

4 Assembly

4.1 Connections

4.1.1 Mechanical connection

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)

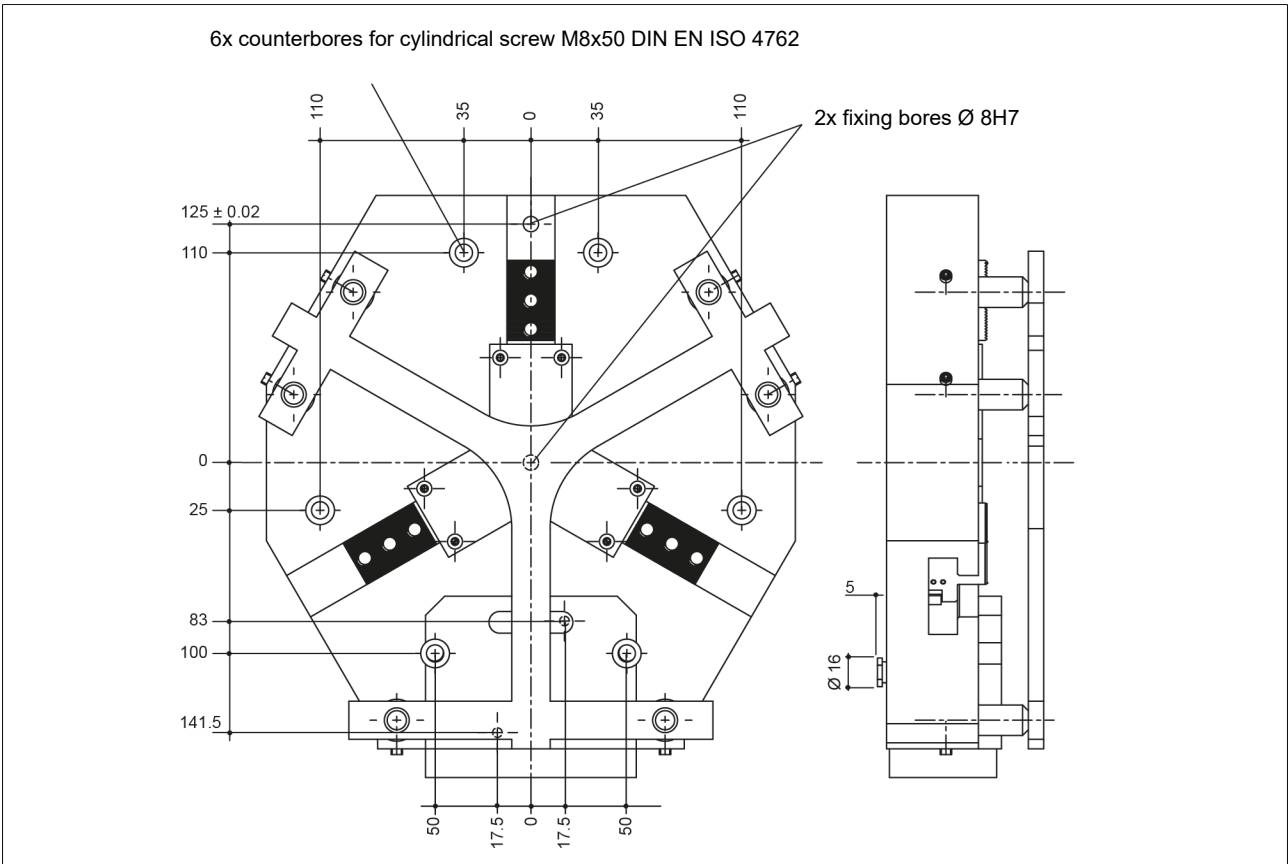
NOTE

- When mounting the module from below, use the fixing bores provided.
- Fasten the module using the mounting holes provided.

4.1.1.1 Single gripper

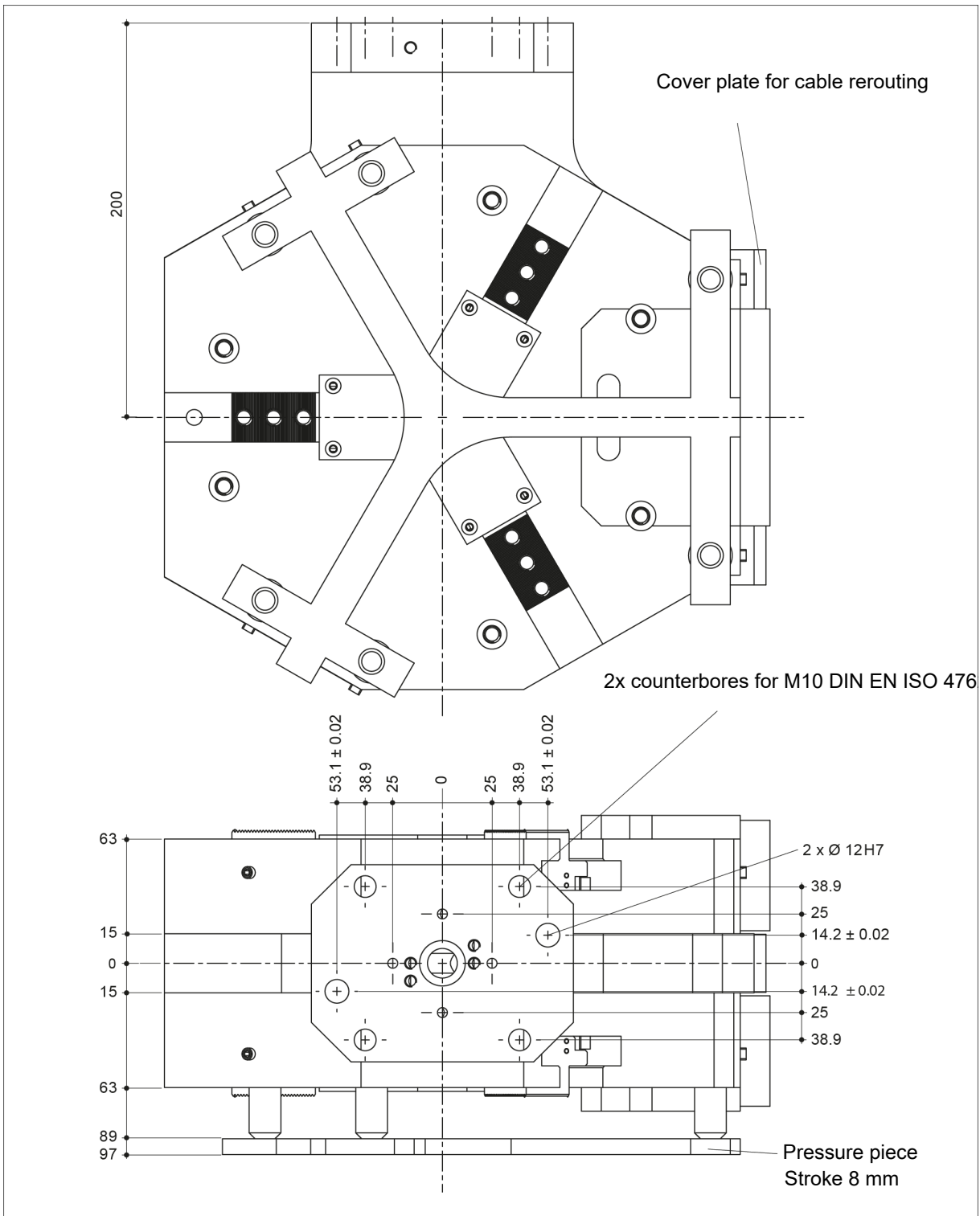
NOTE

- Only direct bottom-sided connection is possible. (Hydraulic connection seals are integrated in the housing)
- Connection dimensions of base jaws are identical to UFG 32 (see catalog).



As a single part gripper, the module is mounted bottom-sided using 6 screws M8 x 50 and 2 dowel pins $\varnothing 8$.

4.1.1.2 Double gripper



The module as a double gripper has to be mounted on the adapter plate using 4 screws M10 and 2 cylindrical pins Ø12.

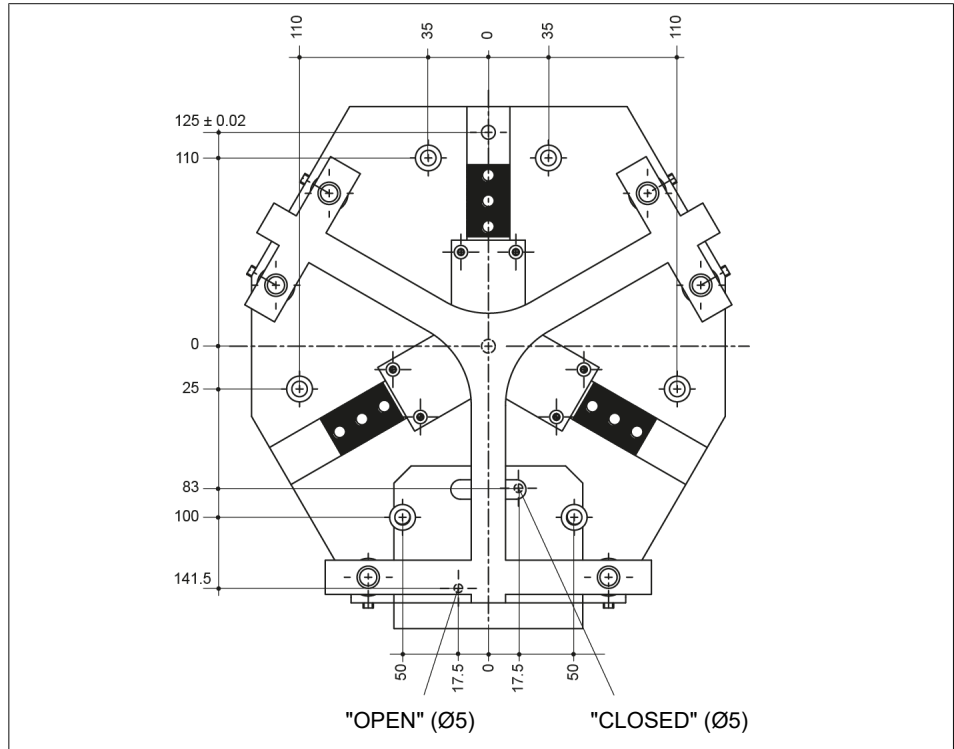
4.1.2 Hydraulic connection

CAUTION

Observe the requirements for the hydraulic supply

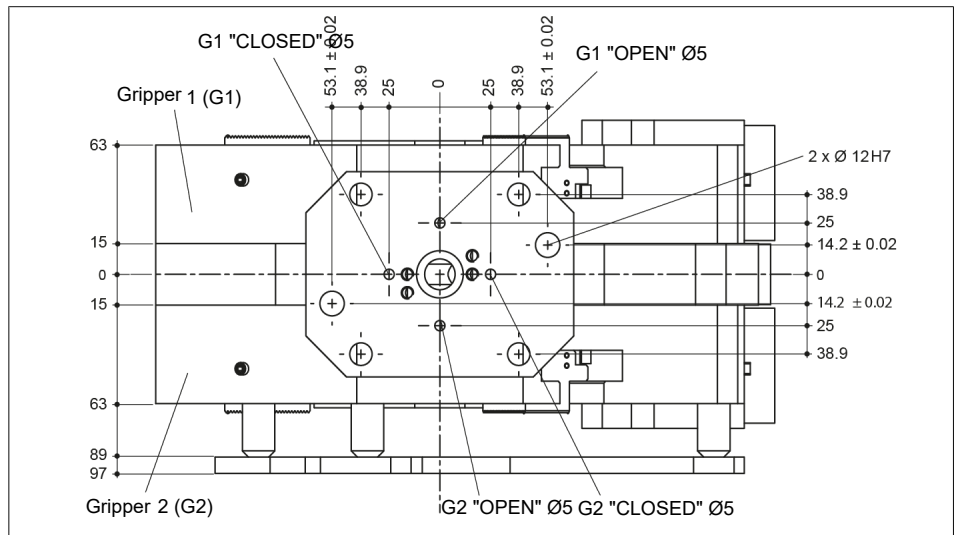
► 3 [15]

Single gripper



The hydraulic connection is a cable free direct connection mounted on the bottom.

Double gripper

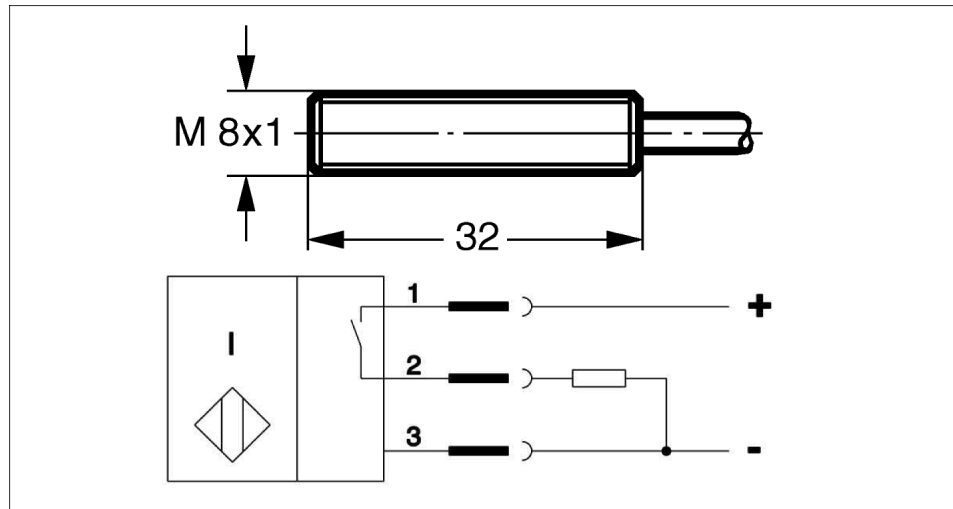


The hydraulic connection is a cable free direct connection mounted on the bottom.

- Only open the hydraulic connections needed.

4.2 Adjusting the sensor

4.2.1 Inductive proximity switch IN 80



Connection example for IN 80

1	brown	2	black	3	blue
---	-------	---	-------	---	------

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

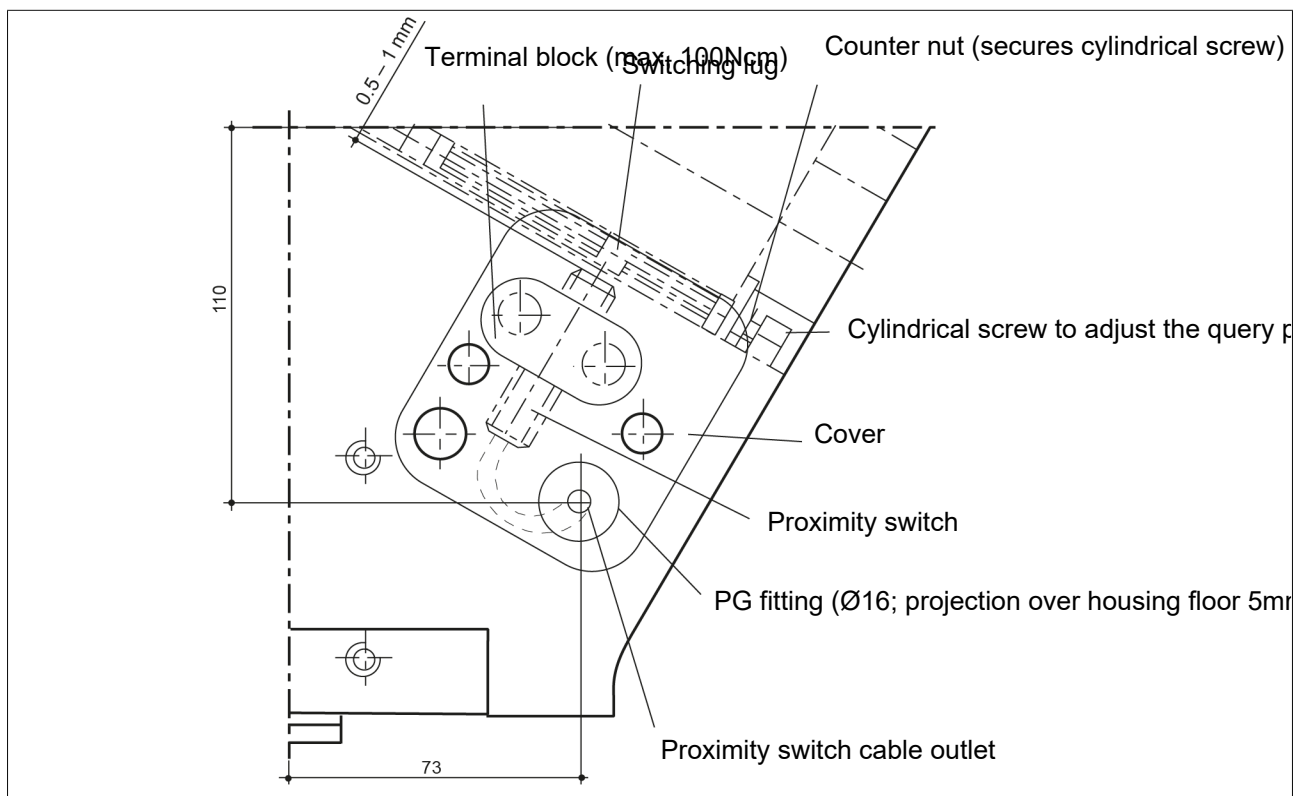
Make sure that you handle the proximity switches properly:

- 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 (nnp, 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.

4.2.2 Sensorposition



The IN 80-S inductive proximity switch is installed.

Setting the query position:

- Turn the cylinder screw clockwise: the switching lug moves in the direction of the screw head
- Turn the cylinder screw anticlockwise: the switching lug moves away from the screw head

5 Troubleshooting

5.1 Is the product not moving?

Possible cause	Corrective action
Hydraulic supply is interrupted	preserve hydraulic supply
Component part defective.	Send product with a SCHUNK repair order or dismantle product. ▶ 6.4 [24]
hydraulic wirings are interchanged	check hydraulic wirings
minimum pressure fell below	check hydraulic supply ▶ 3 [15]
unused hydraulic connections are open	Close unused hydraulic connections
Proximity switch defective or set incorrect.	Readjust or change sensor.
Base jaws jam in housing, e.g. mounting surface is not sufficiently even.	Check the evenness of the mounting surface. ▶ 4.1.1 [16] Loosen the mounting screws of the product and actuate the product again.

5.2 The gripping force drops?

Possible cause	Corrective action
Dirt deposits between basic jaws and guidance.	Remove the cover, clean the product and regrease it ▶ 6.4 [24]
Pressure drops below minimum.	Check the hydraulic supply ▶ 3 [15]
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface. ▶ 4.1.1 [16]
Component part defective.	Send product with a SCHUNK repair order or dismantle product. ▶ 6.4 [24]
Internal leak oil loss	Send product with a SCHUNK repair order or dismantle product. ▶ 6.4 [24]

6 Maintenance

6.1 Notes

Original spare parts

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

6.2 Maintenance and lubrication 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 [Mio. cycles]	0.1
------------------------	-----

6.3 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.

Greasing area	Lubricant
Base jaws	SCHUNK grease 1
Funnel-shaped lubrication nipples	SCHUNK grease 1

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

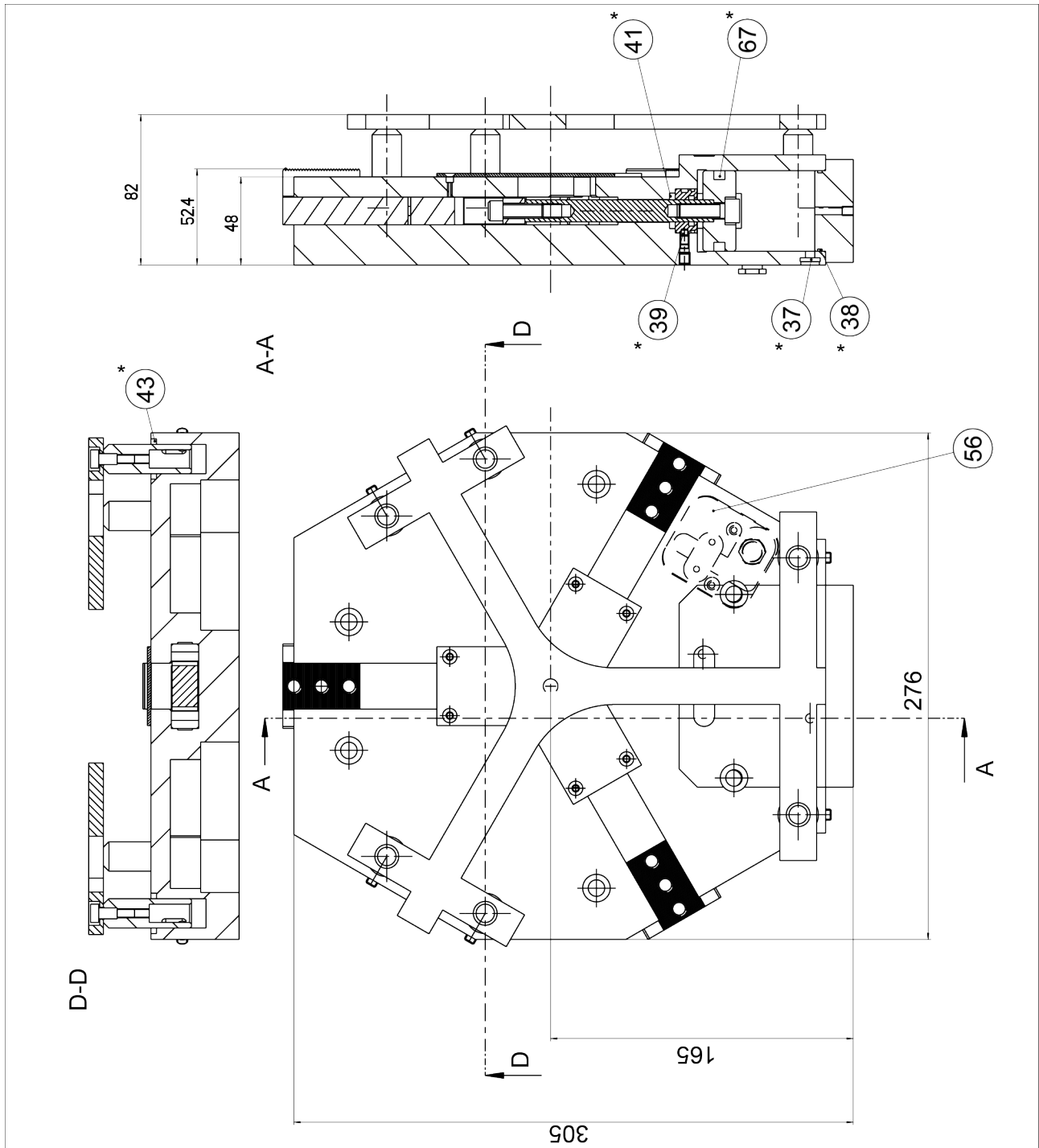
The product contains food-compliant lubricants as standard.

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.

6.4 Assembly drawing



Assembly

* Included in the seal kit. Seal kit can only be ordered completely.

7 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: 3-jaw insertion gripper / UFG 66/hydraulic
ID number 30014939; 30014950

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, July 2024

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

8 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, July 2024

Dr.-Ing. Manuel Baumeister,
Head of Systems Engineering,
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