Assembly and operating manual

EGH

Flexible gripper for cobot

Superior Clamping and Gripping

SCHUNK®

Imprint

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

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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.

Illustrations in this manual are provided for basic understanding and may differ from the actual product design.

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

1.1.1 Presentation of Warning Labels

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

⚠ DANGER

Danger 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 *
- Software guide "SCHUNK gripper with IO-Link" *
- Software manual "SCHUNK software component for URCap EGH" *
- Assembly and operating manuals of the accessories *
- Assembly and Operating Manual of IO-Link-Master "FEN20-4IOL" **

The documents marked with an asterisk (*) can be downloaded on our homepage **schunk.com**

The documents labeled with two asterisks (*) can be downloaded from **turck.com**.

1.1.3 Sizes

This operating manual applies to the following sizes:

- EGH 80

1.1.4 Variants

This operating manual applies to the following variations:

- EGH 80-IOL-N-UREK

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 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

- Flexible gripper for cobot EGH in the ordered model
- Assembly instructions
- USB stick
- Accessory kit with ISO flange and tool

The starter package also includes:

- Attachment finger in rigid and flexible design
- IO-Link master incl. accessories

2 Basic safety notes

2.1 Appropriate use

The product is used solely for gripping and time-restricted, safe holding of dimensionally stable workpieces or objects with low elasticity.

- The product may only be used within the scope of its technical data, Technical data [▶ 16].
- The product is intended for installation in a machine. The applicable guidelines must be observed and complied with.
- The product is intended for industrial use.
- Appropriate use of the product includes compliance with all instructions in this manual.

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.
- Operation without separating protective equipment. For applications without separating protective equipment, additional suitable measures must be taken to protect the danger zone.

2.3 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.

2.4 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 for the gripper fingers

Stored energy within the product creates the risk of serious injuries and significant property damage.

- Arrange the gripper fingers in a way that the product reaches either the position "open" or "closed" in a de-energized state.
- Only exchange the gripper fingers when no residual energy remains in the product.
- 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, Technical data [▶ 16].

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.
- The faulty actuation of conected drives may cause dangerous movements.
- Operating mistakes, faulty parameterization during commissioning or software errors may trigger dangerous movements.
- 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.

2.13.4 Protection against electric shock

Work on electrical equipment

Touching live parts may result in death.

- Work on the electrical equipment may only be carried out by qualified electricians in accordance with the electrical engineering regulations.
- Lay electrical cables properly, e. g. in a cable duct or a cable bridge. Observe standards.
- Before connecting or disconnecting electrical cables, switch off the power supply and check that the cables are free of voltage. Secure the power supply against being switched on again.
- Before switching on the product, check that the protective earth conductor is correctly attached to all electrical components according to the wiring diagram.
- Check whether covers and protective devices are fitted to prevent contact with live components.
- Do not touch the product's terminals when the power supply is switched on.

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.

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 the base jaw procedure and when breaking or loosening the gripper fingers.

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

⚠ WARNING

Risk of injury from objects falling during energy supply failure!

Electronic devices are not fail-safe. In case of an energy supply failure, the gripping force decreases. As a consequence, it cannot be guaranteed that the workpiece is held safely.

- In case of an energy supply failure, it is the user's responsibility to revert the drive into a safe state.

⚠ WARNING

Risk of burns through contact with hot surfaces!

Surfaces of components can heat up severely during operation. Skin contact with hot surfaces causes severe burns to the skin.

- For all work in the vicinity of hot surfaces, wear safety gloves.
- Before carrying out any work, make sure that all surfaces have cooled down to the ambient temperature.

3 Technical data

3.1 Connection data

Designation	EGH 80-IOL-N-UREK
Supply voltage [VDC] Min. [VDC] Max. [VDC]	24 21.6 26.4
Min. Supply current power supply unit [A] *	1.0
Max. Current input [A]**	0.5
Gripping force [%]	100
Current input in blocked state [A] ***	0.2
Integrated electronic control unit	
Communication interface	IO-Link
Number of digital inputs/ outputs	2 / -
Specification:	V1.1
Transmission rate	COM2
Port	Class B

* minimum supply current for reliable operation of product

** maximum current input in the acceleration phase (max. t = 50 ms)

*** Current input in blocked state (in gripper end position or while gripping a workpiece) with active command "Open Gripper" or "Close Gripper"

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

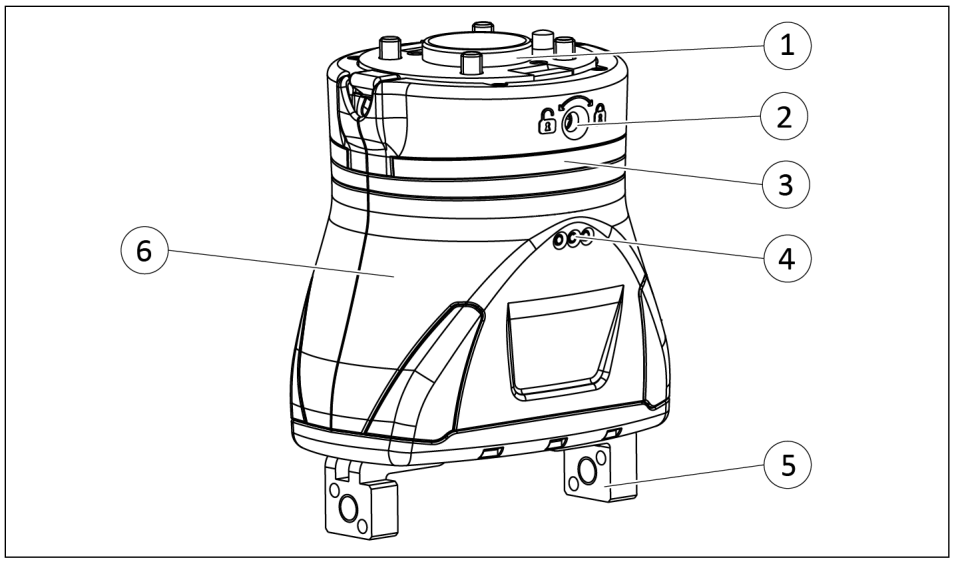
3.2 Ambient conditions and operating conditions

Designation	EGH 80-IOL-N-UREK
IP protection class (mechanical) *	20
IP protection class (electrical) *	20
Ambient temperature [°C] Min. Max.	 5 55
Note on EMC conformity (in accordance with EN 61000-6-4:2007 + A1:2011)	The product may only be used in DC distribution networks with an expansion of <30 m.

* The product is not suitable for use in dirty environments (e.g. splash water, vapors, abrasion or process dusts). For special applications in dirty environments, SCHUNK is also happy to provide customized solutions.

4 Design and description

4.1 Design



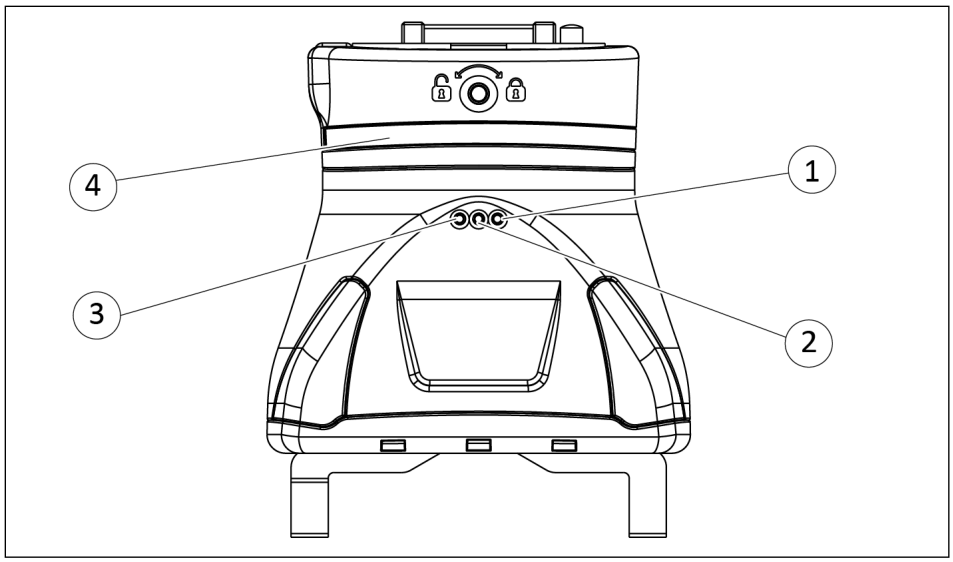
Structure EGH

1	ISO flange for connection to the robot
2	Opening/closing the ISO flange
3	LED light strip
4	LED "POWER", "COM" and "STATUS"
5	Base jaw
6	Housing

4.2 Description

Electrical 2-finger parallel gripper with large stroke for direct use with lightweight robots.

4.3 Display



LED

1	LED "STATUS"	Status display of the product
2	LED "COM"	
3	LED "POWER"	
4	LED light strip	freely-configurable, application-specific display

Designation	Color	Function
POWER	Green	• **Lights up** if ready for operation • **Does not light up** if logic or actuator voltage is reversed or not in the valid range.
COM	Green	• **Does not light up** if IO-Link communication is not active • **Flashes** if IO-Link communication is active
STATUS	Green / Red	• **Does not light up** if electronics are not active or defective • **Lights up green** if ready for operation • **Lights up red** in case of a fault. Error message is communicated via IO-Link

5 Assembly and settings

5.1 Installing and connecting

⚠ 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.

NOTE

Ensure sufficient heat dissipation using the customer's mounting surface.

Mount the product so that sufficient cooling is guaranteed. The size of the cooling surface depends on the application. Avoid exposure to additional heat e.g. caused by attachments or by the attached axle.

A temperature malfunction may occur if the product reaches excessively high temperatures.

- ➢ Check the evenness of the mounting surface, Mechanical connection [▶ 21].
- ➢ Attach the product to the robot, Mechanical connection [▶ 21].
  - ✓ Observe the tightening torque for the mounting screws.
- ➢ Secure the gripper fingers to the base jaws, Install gripper fingers [▶ 24].
- ➢ Guide the cable along the robot and fasten it with the supplied Velcro straps, Electrical connection [▶ 26].
- ➢ Connect cable for power supply and actuation, Electrical connection [▶ 26]

NOTE

The gripping force is set to 100% in the factory and cannot be changed.

5.2 Connections

5.2.1 Mechanical connection

Evenness of the mounting surface

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

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

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

Connections at the product

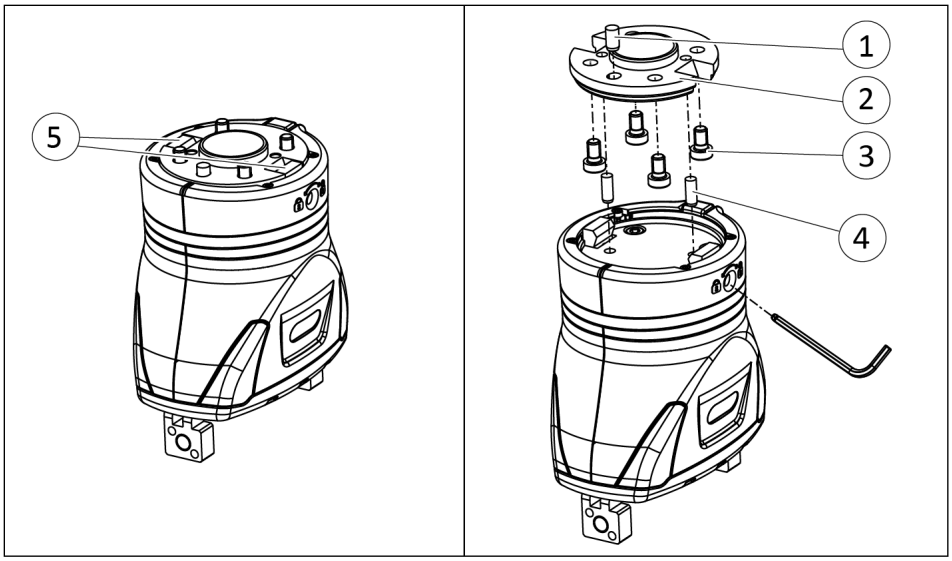
CAUTION

Material damage due to incorrect disassembly!

If the screw is unscrewed too far at the fastening jaws during disassembly, the gripper housing may be damaged.

- Open fastening jaws with max. 2 turns.

The product has an ISO adapter plate that enables it to be fastened to the robot.

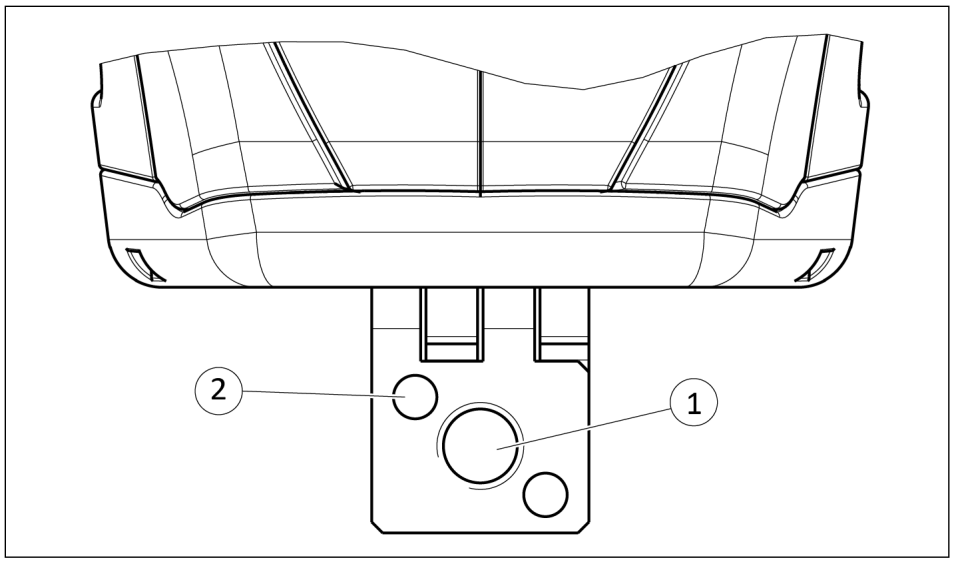


Installation of the product on the robot with ISO adapter plate

Item	Mounting	EGH 80-IOL-N-UREK
1	Centering pin	6m6 x 12
2	ISO adapter plate	ISO 50
3	Fastening screw	M6 x 10
	Tightening torque [Nm]	10
4	Centering pin	5m6 x 12
5	Mounting jaws	
	Tightening torque [Nm]	2

- Insert centering pin (1) in ISO adapter plate (2).
- Place ISO adapter plate (2) on robot.
- Fasten ISO adapter plate (2) to robot using screws (3) and hexagon socket wrench (A/F 5, light green).
  - ✓ Observe the tightening torque for the mounting screws.
- Attach product to ISO adapter plate.
- Insert the hexagon socket wrench (A/F 4, green) in the opening for closing and opening the mounting jaws (5).
- Turn the hexagon socket wrench anti-clockwise to fasten the gripper to the robot.
  - ✓ Observe the tightening torque.

Connections at the base jaws



Assembly of gripper fingers

Depth of engagement and tightening torque

Item	Designation	EGH 80
1	Thread in base jaws	M8
	Max. depth of engagement from locating surface [mm]	10
	Max. tightening torque of the mounting screws [Nm]	10
2	Bore holes for cylindrical pin [mm]	Ø 4

Further information on installation, Install gripper fingers [▶ 24].

NOTE

The IO-Link master can be mounted with the included accessories. Further information can be found in the manufacturer's installation and operating manual, Applicable documents [▶ 6].

5.2.1.1 Install gripper fingers

CAUTION

Possible damage of the guide!

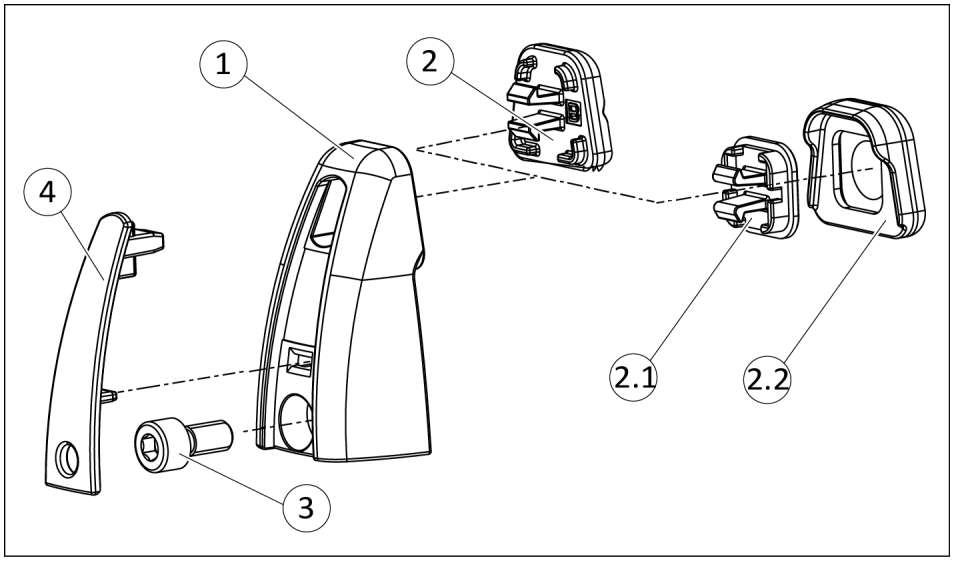
If the tightening torque is too high, the guide can be damaged when mounting the gripper fingers.

- When tightening the fixing screw, hold the gripper fingers against it.

NOTE

The gripper fingers are already included in the starter package. If required, gripper fingers are available as accessories from SCHUNK, see the catalog data sheet for further information.

Variant: Rigid gripper finger

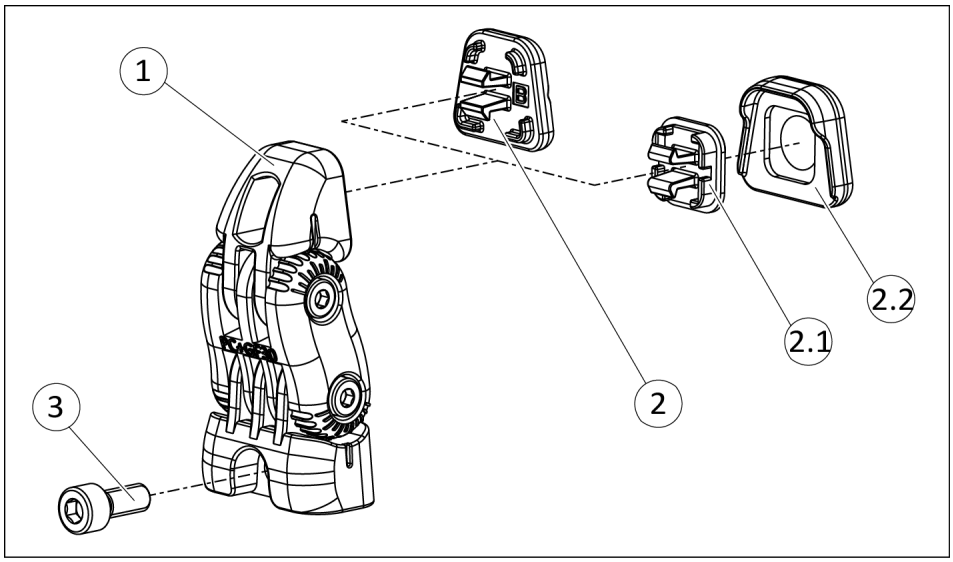


- Fasten the gripper finger (1) to the base jaw using a hexagon socket wrench (A/F 5, light green) and a screw (3).
  - ✓ Observe the permissible depth of engagement.
  - ✓ Observe the tightening torque for the mounting screws.
  - ✓ Information on tightening torque and depth of engagement, Mechanical connection [▶ 23].
- Clip the inlay (2) to the gripper finger (1).
  OR: clip inlay (2.1) to the gripper finger (1) and attach silicone cover (2.2).
- Clip the cover (4) to the gripper finger (1).

Variant: flexible gripper finger

NOTE

The flexible gripper finger is only suitable for test purposes. Do not use in continuous operation.



- Loosen both adjusting screws with hexagon socket wrench (A/F 3, light blue) and move gripper finger (1) once completely.
- Tighten the adjusting screws.
- Fasten the gripper finger (1) to the base jaw using a hexagon socket wrench (A/F5, light green) and a screw (3).
  - ✓ Observe the permissible depth of engagement.
  - ✓ Observe the tightening torque for the mounting screws.
  - ✓ Information on tightening torque and depth of engagement, Mechanical connection [▶ 23].
- Clip the inlay (2) to the gripper finger (1).
  OR: clip inlay (2.1) to the gripper finger (1) and attach silicone cover (2.2).
- Using a hexagon socket wrench (A/F 3, light blue) turn the two adjusting screws to adapt the gripper finger (1) to the workpiece.
  Tightening torque: 1 Nm.

5.2.2 Electrical connection

CAUTION

Risk of damage to the electronics!

A faulty connection can cause damage to the internal electronics.

- The supply network must be a network of type "PELV" for power and logic.
- Observe the PIN assignment of the connecting terminals.
- Make sure that all components are grounded correctly.

CAUTION

Damage to cables possible!

Fastening the cables to the robot incorrectly using the enclosed Velcro strips can cause damage to the cables.

- Observe min. bending radii (moved: 100.5 mm, fix installed: 26.8 mm)
- Avoid crushing and shearing points.
- Avoid the tensile forces arising.

Connection version: Cable with wire strands

IO-Link master connection assignment

Gripper EGH			Turck FEN20-4IOL
No.	**Wire strand**	**Signal**	**Port 1**
1	White	+24 V_IOL	$V1_1$+
3	Green	GND_IOL	V1-
4	Yellow	C/Q	C/Q_1

Connection assignment for voltage supply

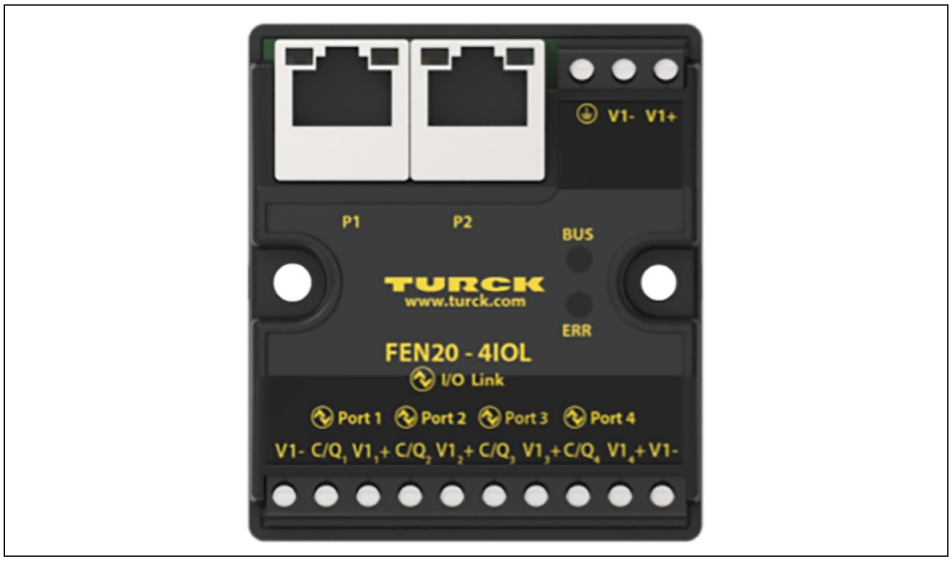
Gripper EGH			UR control
No.	**Wire strand**	**Signal**	**Digital inputs / Digital outputs terminal**
2	Brown	+24 V_Power	24 V
5	Grey	GND	0 V

Connection assignment for light strip

Gripper EGH			UR control
No.	**Wire strand**	**Signal**	**Digital outputs terminal**
7	Blue	Dig1_In	DO 0 *
8	Red	Dig2_In	DO 1 *

* adjustable via URCap plugin

5.2.2.1 TURCK IO-Link-Master FEN20-4IOL



TURCK IO-Link master FEN20-4IOL

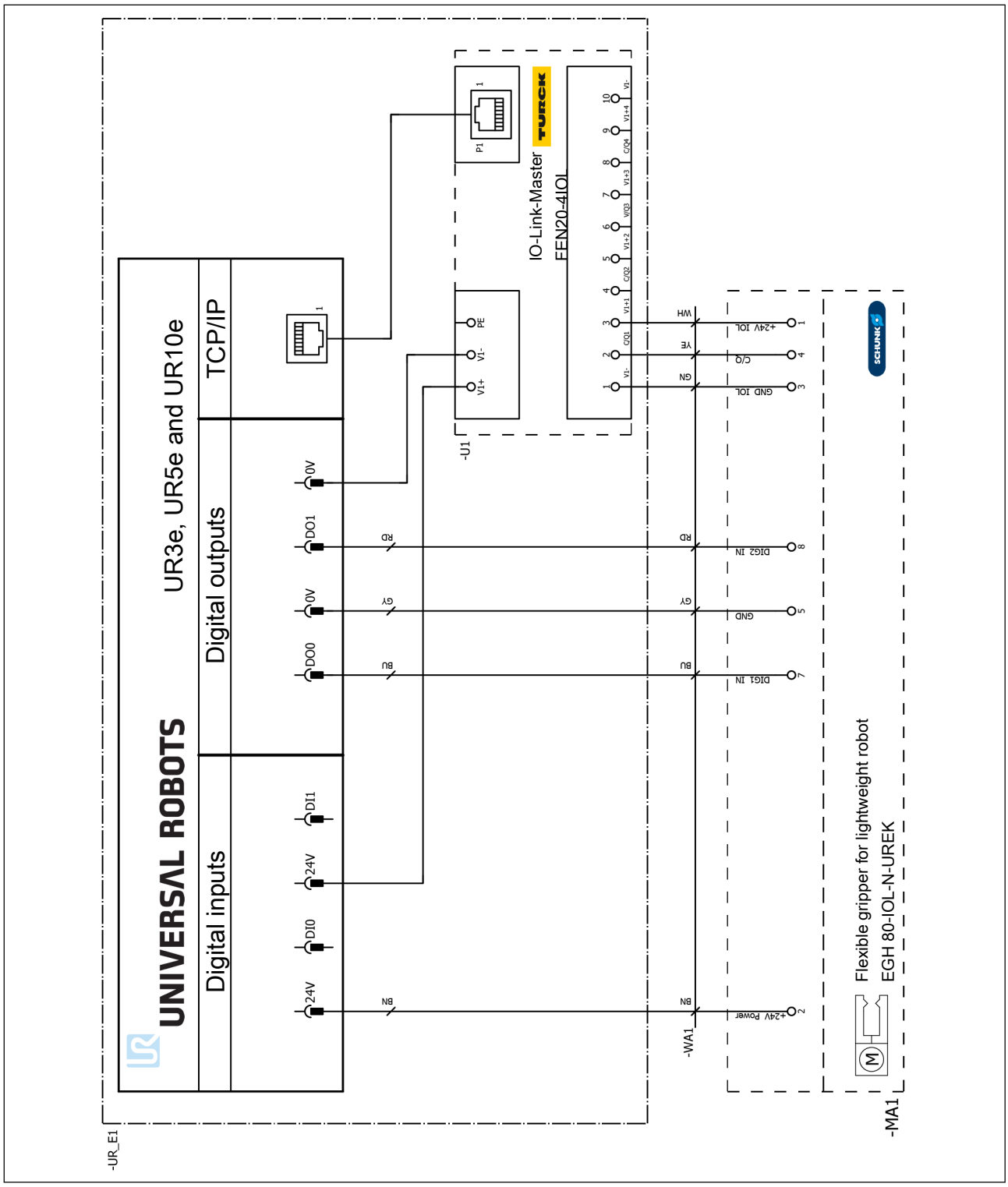
TURCK	UR control
Power supply terminal	**Digital inputs / Digital outputs terminal**
GND	n.c.
V1+	24 V
V1-	0 V

TURCK terminal	UR control
P1	Ethernet

NOTE

Notes on actuation, Software guide "SCHUNK gripper with IO-Link" see software manual "SCHUNK software component for UR Cap EGH".

5.2.2.2 Wiring diagram



Electrical circuit diagram of complete unit

6 Troubleshooting

6.1 Product does not move

Possible cause	Corrective action
Base jaws jam in housing, e.g. mounting surface is not sufficiently even.	Check the evenness of the mounting surface. Mechanical connection [▶ 21]
	Loosen the mounting screws of the product and actuate the product again.
Power supply connected incorrectly.	Check the power supply. Electrical connection [▶ 26]

6.2 Product does not execute a complete stroke

Possible cause	Corrective action
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface. Mechanical connection [▶ 21]
Breakage of components, e.g. by overloading.	Send the product to SCHUNK with a repair order.

6.3 Product opens or closes jerkily

Possible cause	Corrective action
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface. Mechanical connection [▶ 21]
Loading too large.	Check permissible weight and length of the gripper fingers. Technical data [▶ 16]

6.4 Opening and closing times are not achieved

Possible cause	Corrective action
Loading too large.	Check permissible weight and length of the gripper fingers.

6.5 Electrical signals are not transmitted

Possible cause	Corrective action
Cable connected incorrectly.	Check round connector for correct fit.
Strands swapped.	Check pin allocation.

6.6 Faults that are displayed via the LED "STATUS"

Possible cause	LED "STATUS"	Corrective action
Error state	LED glows continuously red	Read error code, rectify and acknowledge error code, Acknowledge error [▶ 30]

6.7 Acknowledge error

- ➢ Acknowledge the error using the software manual, Applicable documents [▶ 6].
- ➢ Wait until LED "STATUS" turns green.
- ✓ The error is rectified and acknowledged.

7 Maintenance

Maintenance intervals

Interval (million cycles)	Maintenance work
1000 cycles or once per day	Travel an entire stroke
	Check the gripper fingers for correct positioning or damage.
2 million cycles	Inspect the product for damage Send damaged products to SCHUNK for repair.

This product must not be disassembled for maintenance.

CAUTION

Material damage due to improper disassembly!

Incorrect works can cause damage to the mechanics and internal electronics.

- Disassembly or opening of the product is not permitted.
- Only allow SCHUNK to repair the product.

8 EU-Declaration of Conformity

Manufacturer/ Distributor	SCHUNK GmbH & Co. KG Spann- und Greiftechnik Bahnhofstr. 106 – 134 D-74348 Lauffen/Neckar
Product designation:	Flexible gripper for cobot EGH
ID number	1406087

We hereby declare on our sole authority that the product meets the requirements of the following directive at the time of declaration.
The declaration is rendered invalid if modifications are made to the product.

- **EMC Directive 2014/30/EU**
  Directive of the European Parliament and the Council of February 26, 2014 on the harmonization of the laws of the Member States relating to electromagnetic compatibility

Applied harmonized standards, especially:

EN 61000-6-2 (2005)	Electromagnetic compatibility (EMC) - Partl 6-2: Generic standards -Immunity for industrial environments IEC 61000-6-2: 2005
EN 61000-6-4:2007 + A1:2011	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments (IEC 61000-6-4:2006 + A1:2010);

Signed for and on behalf of: SCHUNK GmbH & Co. KG

Signature: see original declaration

Dr.-Ing. Manuel Baumeister,
Technology & Innovation,
Mechatronics & Sensors

Lauffen/Neckar, November 2019

9 Translation of original declaration of incorporation

in terms of the Directive 2006/42/EG, Annex II, Part 1.B of the European Parliament and of the Council on machinery.

Manufacturer/ Distributor	SCHUNK GmbH & Co. KG Spann- und Greiftechnik Bahnhofstr. 106 – 134 D-74348 Lauffen/Neckar

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 directive 2006/42/EC of the European Parliament and of the Council on machinery. The declaration is rendered invalid if modifications are made to the product.

Product designation:	Flexible gripper for cobot / EGH / electric
ID number	1406087

The partly completed machine may not be put into operation until conformity of the machine into which the partly completed machine is to be installed with the provisions of the Machinery Directive (2006/42/EC) is confirmed.

Applied harmonized standards, especially:

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

The manufacturer agrees to forward on demand the relevant technical documentation for the partly completed machinery in electronic form to national authorities.

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

Person authorized to compile the technical documentation:
Robert Leuthner, Address: see manufacturer's address

Signature: see original declaration

Lauffen/Neckar, November 2019

Dr.-Ing. Manuel Baumeister,
Technology & Innovation,
Mechatronics & Sensors

10 Annex to Declaration of Incorporation

according 2006/42/EG, Annex II, No. 1 B

1.Description of the essential health and safety requirements pursuant to 2006/42/EC, Annex I that are applicable and that have been fulfilled with:

Product designation	Flexible gripper for cobot
Type designation	EGH
ID number	1406087

To be provided by the System Integrator for the overall machine		⇓
Fulfilled for the scope of the partly completed machine	⇓	
Not relevant	⇓	

1.1	**Essential Requirements**			
1.1.1	Definitions		X	
1.1.2	Principles of safety integration		X	
1.1.3	Materials and products		X	
1.1.4	Lighting		X	
1.1.5	Design of machinery to facilitate its handling		X	
1.1.6	Ergonomics		X	
1.1.7	Operating positions			X
1.1.8	Seating			X

1.2	**Control Systems**			
1.2.1	Safety and reliability of control systems		X	
1.2.2	Control devices		X	
1.2.3	Starting		X	
1.2.4	Stopping		X	
1.2.4.1	Normal stop		X	
1.2.4.2	Operational stop		X	
1.2.4.3	Emergency stop		X	
1.2.4.4	Assembly of machinery		X	
1.2.5	Selection of control or operating modes		X	
1.2.6	Failure of the power supply			X

1.3	**Protection against mechanical hazards**			
1.3.1	Risk of loss of stability			X
1.3.2	Risk of break-up during operation			X
1.3.3	Risks due to falling or ejected objects			X
1.3.4	Risks due to surfaces, edges or angles		X	

1.3	Protection against mechanical hazards			
1.3.5	Risks related to combined machinery			X
1.3.6	Risks related to variations in operating conditions			X
1.3.7	Risks related to moving parts		X	
1.3.8	Choice of protection against risks arising from moving parts			X
1.3.8.1	Moving transmission parts		X	
1.3.8.2	Moving parts involved in the process			X
1.3.9	Risks of uncontrolled movements			X

1.4	Required characteristics of guards and protective devices			
1.4.1	General requirements			X
1.4.2	Special requirements for guards			X
1.4.2.1	Fixed guards			X
1.4.2.2	Interlocking movable guards			X
1.4.2.3	Adjustable guards restricting access			X
1.4.3	Special requirements for protective devices			X

1.5	Risks due to other hazards			
1.5.1	Electricity supply		X	
1.5.2	Static electricity		X	
1.5.3	Energy supply other than electricity		X	
1.5.4	Errors of fitting		X	
1.5.5	Extreme temperatures			X
1.5.6	Fire			X
1.5.7	Explosion			X
1.5.8	Noise			X
1.5.9	Vibrations			X
1.5.10	Radiation	X		
1.5.11	External radiation	X		
1.5.12	Laser radiation	X		
1.5.13	Emissions of hazardous materials and substances			X
1.5.14	Risk of being trapped in a machine	X		
1.5.15	Risk of slipping, tripping or falling	X		
1.5.16	Lightning			X

1.6	Maintenance			
1.6.1	Machinery maintenance		X	
1.6.2	Access to operating positions and servicing points		X	
1.6.3	Isolation of energy sources		X	
1.6.4	Operator intervention		X	
1.6.5	Cleaning of internal parts		X	

1.7	**Information**			
1.7.1	Information and warnings on the machinery		X	
1.7.1.1	Information and information devices		X	
1.7.1.2	Warning devices		X	
1.7.2	Warning of residual risks		X	
1.7.3	Marking of machinery	X		
1.7.4	Instructions	X		
1.7.4.1	General principles for the drafting of instructions	X		
1.7.4.2	Contents of the instructions	X		
1.7.4.3	Sales literature	X		

	The classification from Annex 1 is to be supplemented from here forward.			
2	Supplementary essential health and safety requirements for certain categories of machinery			X
2.1	Foodstuffs machinery and machinery for cosmetics or pharmaceutical products			X
2.2	Portable hand-held and/or guided machinery			X
2.2.1	Portable fixing and other impact machinery			X
2.3	Machinery for working wood and material with similar physical characteristics			X
3	Supplementary essential health and safety requirements to offset hazards due to the mobility of machinery		X	
4	Supplementary essential health and safety requirements to offset hazards due to lifting operations		X	
5	Supplementary essential health and safety requirements for machinery intended for underground work			X
6	Supplementary essential health and safety requirements for machinery presenting particular hazards due to the lifting of persons		X	