



# Assembly and Operating Manual EGP

**Electric Small Components Gripper** 

Translation of the original manual

# **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** 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  $\triangleright$  1.1.4  $\left[ \square \right]$  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.



#### **A** DANGER

#### **Dangers for persons!**

Non-observance will inevitably cause irreversible injury or death.



#### **A WARNING**

#### Dangers for persons!

Non-observance can lead to irreversible injury and even death.



#### **A** 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 Symbol definition

The following symbols are used in this manual:

- Prerequisite for an action
- **1.** Action 1
- 2. Action 2
  - ⇒ Intermediate results
- ⇒ Final results
- ▶ 1.1.3 [☐ 7]: chapter number and [page number] in hyperlinks

#### 1.1.4 Applicable documents

- General terms of business \*
- Catalog data sheet of the purchased product \*
- Assembly and operating manuals of the accessories \*
- IO-Link variant: Software guide "SCHUNK gripper with IO-Link" \*

Die mit Stern (\*) gekennzeichneten Unterlagen können unter schunk.com/downloads heruntergeladen werden.

#### **1.1.5** Sizes

This operating manual applies to the following sizes:

- EGP 25
- EGP 40
- EGP 50
- EGP 64

#### 1.1.6 Variants

This operating manual applies to the following variations:

- EGP
- EGP Speed (S)
- EGP IO-Link

#### **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

- Electric Small Components Gripper EGP in the version ordered
- Assembly and Operating Manual
- Accessory pack

#### 1.4 Accessories

The following accessories, which are to be ordered separately, are available for the product:

- Connection cable 4-pole, socket M8
  - angled, 5 m
  - angled, 10 m
  - straight, 5 m
  - straight, 10 m

#### NOTE

When using customer-supplied cable: at least 4 x 0.25 mm<sup>2</sup>

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.

## 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 [□ 18].
- 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 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.

#### 2.3 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 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 deenergized 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.

#### 2.5 Ambient conditions and operating conditions

#### Required ambient conditions and operating conditions

Incorrect ambient and operating conditions can make the product unsafe, leading to the risk of serious injuries, considerable material damage and/or a significant reduction to the product's life span.

 Make sure that the product is used only in the context of its defined application parameters, ▶ 3 [□ 18].

#### 2.6 Personnel qualification

#### Inadequate qualifications of the personnel

If the personnel working with the product is not sufficiently qualified, the result may be serious injuries and significant property damage.

- All work may only be performed by qualified personnel.
- Before working with the product, the personnel must have read and understood the complete assembly and operating manual.
- Observe the national safety regulations and rules and general safety instructions.

The following personal qualifications are necessary for the various activities related to the product:

**Trained electrician** Due to their technical training, knowledge and experience,

trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant

standards and regulations.

**Qualified personnel** Due to its technical training, knowledge and experience,

qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant

standards and regulations.

**Instructed person** Instructed persons were instructed by the operator about the

delegated tasks and possible dangers due to improper behaviour.

Service personnel of the manufacturer

Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated

tasks and to recognize and avoid possible dangers.

#### 2.7 Personal protective equipment

#### Use of personal protective equipment

Personal protective equipment serves to protect staff against danger which may interfere with their health or safety at work.

- When working on and with the product, observe the occupational health and safety regulations and wear the required personal protective equipment.
- Observe the valid safety and accident prevention regulations.
- Wear protective gloves to guard against sharp edges and corners or rough surfaces.
- Wear heat-resistant protective gloves when handling hot surfaces.
- Wear protective gloves and safety goggles when handling hazardous substances.
- Wear close-fitting protective clothing and also wear long hair in a hairnet when dealing with moving components.

#### 2.8 Notes on safe operation

#### Incorrect handling of the personnel

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

- Avoid any manner of working that may interfere with the function and operational safety of the product.
- Use the product as intended.
- Observe the safety notes and assembly instructions.
- Do not expose the product to any corrosive media. This does not apply to products that are designed for special environments.
- Eliminate any malfunction immediately.
- Observe the care and maintenance instructions.
- Observe the current safety, accident prevention and environmental protection regulations regarding the product's application field.

#### 2.9 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.

#### 2.10 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.

# 2.11 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.

#### 2.12 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.

#### 2.12.1 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.

# 2.12.2 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.

#### 2.12.3 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.

#### 2.12.4 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.

#### 2.13 Notes on particular risks



#### **A** DANGER

#### Danger from electric voltage!

Touching live parts may result in death.

- Switch off the power supply before any assembly, adjustment or maintenance work and secure against being switched on again.
- Only qualified electricians may perform electrical installations.
- Check if de-energized, ground it and hot-wire.
- Cover live parts.



#### **A** 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.



#### **A** 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.



#### **A** 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.



#### **A 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.



#### **A WARNING**

#### Risk of injury from sharp edges and corners!

Sharp edges and corners can cause cuts.

Use suitable protective equipment.



#### **A 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.



#### **A WARNING**

# Risk of injury from objects falling in the event of an energy supply failure

In case of an energy supply failure, the gripping force decreases and a secure hold on the gripped workpiece cannot be guaranteed.

Take suitable protective measures to secure the danger zone.

### 3 Technical data

#### 3.1 Connection data

#### 3.1.1 EGP 25

Designation		EGP	
	2	25	25-S
Supply voltage [VDC] Min. [VDC] Max. [VDC]		24 21.6 26. <sup>1</sup>	
Min. Supply current power supply unit [A] *		1.0	
Max. Current input [A]**		1.0	
Gripping force [%]	50	100	100
Current input in blocked state [A] ***	0.07	0.14	0.14
Integrated electronic control (	unit		
Communication interface		Digital	1/0
Number of digital inputs/ outputs		2/2	

- \* 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.

#### 3.1.2 EGP 40

Designation	EGP				
		4	0		40-S
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]**				2.0	
Gripping force [%]	25	50	75	100	100
Current input in blocked state [A] ***	0.05	0.10	0.15	0.20	0.20

Designation		EG	iP	
		40		40-S
Integrated electronic control	unit			
Communication interface		Digita	al I/0	
Number of digital inputs/ outputs		2/	2	
Designation		EGP 40	IO-Link	
Supply voltage [VDC]		2	4	
Min. [VDC]		21.		
Max. [VDC]		26	.4	
Min. Supply current power supply unit [A] *	1.0			
Max. Current input [A]**		2.	0	
Gripping modes		FastGrip/	SoftGrip	)
Gripping force [%]	25	50	75	100
Current input in blocked state [A] ***	0.05	0.10	0.15	0.2
End position detection tolerances [mm] (in delivery status/after stroke measurement)		±0	.5	
Integrated electronic control	unit			
Communication interface		I0-L	.ink	
Specification:	V1.1			
Transmission rate		COI	M2	
Port		Clas	s 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.

#### 3.1.3 EGP 50

Designation	EGP 50
Supply voltage [VDC] Min. [VDC]	24 21.6
Max. [VDC]	26.4
Min. Supply current power supply unit [A] *	2.0

Designation	EGP 50			
Max. Current input [A]**		2.	.0	
Gripping force [%]	25	50	75	100
Current input in blocked state [A] ***	0.07	0.15	0.22	0.3
Integrated electronic control	unit			
Communication interface		Digit	al I/0	
Number of digital inputs/ outputs		2	/2	
Designation		EGP 50	IO-Link	
Supply voltage [VDC] Min. [VDC] Max. [VDC]		21	4 .6 .4	
Min. Supply current power supply unit [A] *		2.	.0	
Max. Current input [A]**		2.	.0	
Gripping modes		FastGrip	/SoftGrip	
Gripping force [%]	25	50	75	100
Current input in blocked state [A] ***	0.07	0.15	0.22	0.3
End position detection tolerances [mm] (in delivery status/after stroke measurement)		±(	).5	
Integrated electronic control	unit			
Communication interface		10-	Link	
Specification:		V	.1	
Transmission rate	COM2			
Port		Cla	ss 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.

#### 3.1.4 EGP 64

Designation		EGP	64		
Supply voltage [VDC]		21	•		
Min. [VDC] Max. [VDC]		21. 26	-		
Min. Supply current power		2.	-		
supply unit [A] *					
Max. Current input [A]**		2.	0		
Gripping force [%]	25	50	75	100	
Current input in blocked state [A] ***	0.04	0.08	0.1	0.15	
Designation	EGP 64 IO-Link				
Supply voltage [VDC]	24				
Min. [VDC]	21.6				
Max. [VDC]		26			
Min. Supply current power supply unit [A] *		2.	0		
Max. Current input [A]**		2.	0		
Gripping modes	FastGrip/SoftGrip				
Gripping force [%]	25	50	75	100	
Current input in blocked state [A] ***	0.04	0.08	0.1	0.15	
End position detection tolerances [mm] (in delivery status/after stroke measurement)		±0	.5		

#### Integrated electronic control unit

Communication interface	I0-Link
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

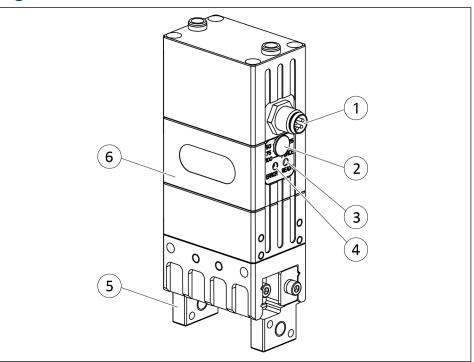
Designation	EGP 25 – 64
IP protection class (mechanical) *	30
IP protection class (electrical) * (only with center plug)	40
Noise emission [dB(A)]	≤ 70
Ambient temperature [°C]	
Min.	5
Max.	55

<sup>\*</sup> For use in dirty ambient conditions (e.g. sprayed water, vapors, abrasion or processing dust) SCHUNK offers corresponding product options as standard. SCHUNK also offers customized solutions for special applications in dirty ambient conditions.

# 4 Design and description

# 4.1 Design

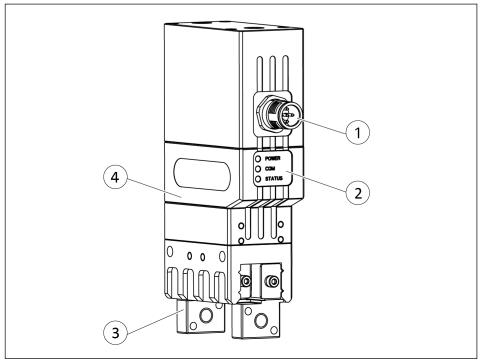
# 4.1.1 Digital I/O variant



Design EGP, Digital I/O

- 1 "Power supply and control" connection plug
- 2 "Gripping force" rotary switch
- 3 LED READY
- 4 LED ERROR
- 5 Base jaw
- 6 Housing

#### 4.1.2 IO-Link variant



Design EGP, 10-Link

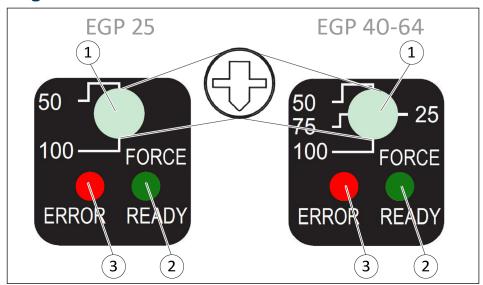
- 1 "IO-Link" connection plug
- 2 LED POWER, COM and STATUS
- 3 Base jaw
- 4 Housing

# 4.2 Description

The product is a servo-electric 2-finger parallel gripper featuring high power density and integrated electronics.

# 4.3 Display

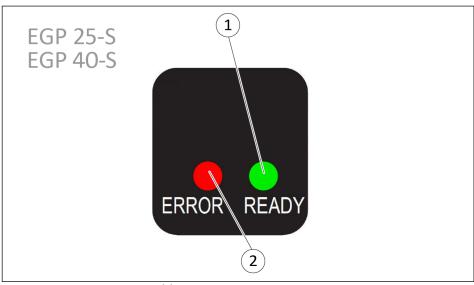
# 4.3.1 "Digital I/O" variant



Function label EGP 25 and EGP 40-64

- 1 "Gripping force" rotary switch
- 3 LED "ERROR"
- 2 LED "READY"

# 4.3.2 "Speed (S)" variant



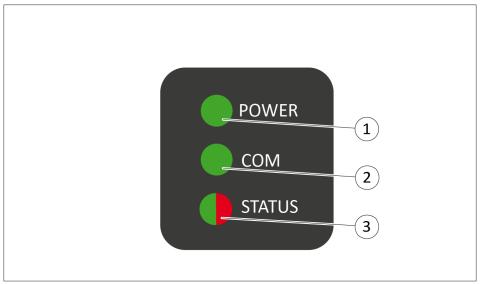
Function label EGP-Speed (S)

- 1 LED "READY"
- 2 LED "ERROR"

# 4.3.3 LED "READY" and "ERROR"

Designation	Color	Function
READY	Green	Indicates whether the voltage is connected.
	0.00	Lights up as long as voltage is present in the product.
		Does not light up if there is no voltage in the product.
ERROR	Red	Indicates whether there is a warning or an error.
		<ul> <li>Does not light up when there is no warning or error and the product is ready to operate.</li> </ul>
		• <b>Lights up</b> when there is an "excessive temperature" warning.
		<ul> <li>The phase current of the motor is limited to I<sub>duration</sub>.</li> </ul>
		<ul> <li>The closing and opening times can increase.</li> </ul>
		<ul> <li>Is automatically extinguished when the warning no longer exists.</li> </ul>
		• Blinks slowly (at approx. 1.2 s intervals) when there is an "excessive temperature" error.
		<ul> <li>The product enters an idle phase until it has cooled down. The commands Open gripper and Close gripper are not processed.</li> </ul>
		<ul> <li>The error must be acknowledged.</li> </ul>
		<ul> <li>Blinks rapidly (at approx. 0.6 s intervals), when the Gripping force rotary switch is between two switching positions.</li> </ul>
Acknowledge e	rror	1. Wait until the product has cooled down.
		2. Actuate both digital inlets, PIN 2 and PIN 4, with high.
	:	3. OR:
		Disconnect voltage supply and reconnect.
		⇒ LED "error" is extinguished and the error is acknowledged.

### 4.3.4 "IO-Link" variant



#### Function label

1	LED POWER
2	LED COM
3	LED STATUS

# 4.3.5 LED "POWER", "COM" and "STATUS"

Designation	Color	Function																	
POWER	Green	Lights up if ready for operation																	
		<ul> <li>Does not light up if logic or actuator voltage is reversed or not in the valid range.</li> </ul>																	
СОМ	Green	Does not light up if IO-Link communication is not active																	
		<ul> <li>Flashes if I0-Link communication is active</li> </ul>																	
STATUS	Green	Does not light up if electronics are not active or defective																	
	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	/ Red	<ul> <li>Lights up green if ready for operation</li> </ul>
		<ul> <li>Lights up red in case of a fault. Error message is communicated via IO-Link</li> </ul>																	

## 5 Assembly

### 5.1 Installing and connecting



#### **A 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.

#### "Digital I/O" variant

- 1. Check the evenness of the mounting surface, ▶ 5.2.1 [□ 30].
- 2. Screw the product to the machine/system, ▶ 5.2.1 [□ 30].
  - ⇒ If necessary, use appropriate connection elements (adapter plates).
  - ⇒ Use centering sleeves from the enclosed accessory pack.
  - ⇒ Observe the permissible depth of engagement.
  - ⇒ Observe the tightening torque for the mounting screws.
- 3. Secure the gripper fingers to the base jaws, ▶ 5.2.1 [□ 30].
- 4. Place the voltage supply and control cable on the M8 connector and screw the threaded ring tightly by hand, ▶ 4.1.1 [ 23].
- **5.** Adjust gripping force if necessary, ▶ 6.1.1 [□ 40].
- **6.** Mount the sensor, ▶ 5.3 [ 35].

#### NOTE

For further information on controlling the product, see section  $\triangleright$  6  $[\square$  40].

#### **10-Link variant**

- 1. Check the evenness of the mounting surface, ▶ 5.2.1 [□ 30].
- 2. Screw the product to the machine/system, ▶ 5.2.1 [☐ 30].
  - ⇒ If necessary, use appropriate connection elements (adapter plates).
  - ⇒ Use centering sleeves from the enclosed accessory pack.
  - ⇒ Observe the permissible depth of engagement.
  - ⇒ Observe the tightening torque for the mounting screws.
- **3.** Secure the gripper fingers to the base jaws, ▶ 5.2.1 [□ 30].
- **4.** Place cable for IO-Link on the M12 connector and tighten the threaded ring by hand, ▶ 4.1.2 [□ 24].

#### NOTE

For further information on parameterization and control of the product, see the section Commissioning  $\rightarrow$  6.2 [ $\square$  42].

#### **5.2** Connections

#### **5.2.1** Mechanical connection

# **Evenness of the mounting surface**

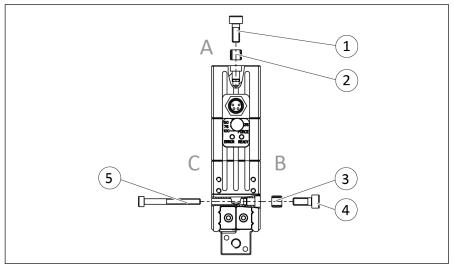
The values apply to the whole mounting surface to which the product is mounted.

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

Tab.: Requirements for evenness of the mounting surface (Dimensions in mm)
The product can be mounted from three sides.

# Connections at the housing

30



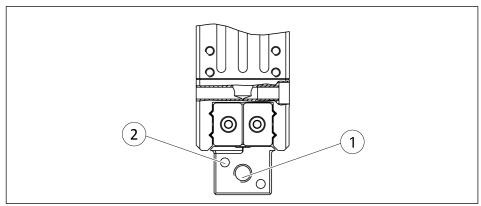
Assembly options

Item	Mounting	EGP			
		25	40	50	64
Side	A				
1	Mounting screw	М3	M4	M5	M5
	Max. depth of engagement [mm]	7.4	8.9	10.9	10.9
	Minimum screw-in depth [mm]	6.9	8.4	10.4	10.4
	Tightening torque [Nm]	1.2	3.1	6.1	6.1
2	Centering sleeve	Ø 5	Ø6	Ø 8	Ø 8
Side I	В				
4	Mounting screw	М3	M4	M5	M5
	Max. depth of engagement [mm]	6.9	8.9	10.4	10.4
	Minimum screw-in depth [mm]	6.4	8.4	9.9	9.9
	Tightening torque [Nm]	1.2	3.1	6.1	6.1
3	Centering sleeve	Ø 5	Ø6	Ø 8	Ø 8
Side					

Item	Mounting		EGP			
		25	40	50	64	
5	Mounting screw	M2.5	М3	M4	M4	

Tab.: Screw-in depth and tightening torque

# Connections at the base jaws



Mounting of the gripper finger

Item	Mounting	EGP			
		25	40	50	64
1	Thread in base jaws	M4	M5	M6	M8
	Max. depth of engagement from locating surface [mm]	4	6	8	10
	Max. tightening torque of the mounting screws [Nm]	3.1	6.1	10	25
2	Bore holes for cylindrical pin [mm]	Ø 1.5	Ø 2.5	Ø3	Ø 4

Tab.: Screw-in depth and tightening torque

#### 5.2.2 Electrical connection – Digital I/O variant

#### **CAUTION**

#### Material damage due to incorrect assembly!

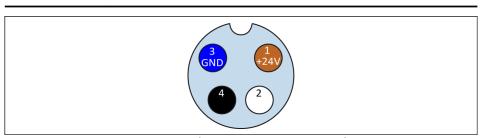
- When connecting the cable, do not exceed the maximum tightening torque of 0.8 Nm for the cable.
- Make sure that the connections are not stressed due to pulling or pressure forces or due to vibrations. Apply the corresponding strain relief devices if required.

#### NOTE

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.</li>

# Voltage supply and control



M8 connection plug for gripper (view of connection plug)

Pin	Wire strand	Signal
1	Brown	+ 24 V
2	White	Open gripper
3	Blue	GND
4	Black	Close gripper

Tab.: Connection assignment

Connection	Plug connector EGP	Plug connector provided by the customer
Gripper	Connection plug 4- pin, M8	Connection cable 4-pin, M8 socket

Tab.: Components of the electrical connection

Tightening torque of M8 plug connection: 50 cNm

#### 5.2.3 Electrical connection - "IO-Link" variant

#### **CAUTION**

#### Material damage due to incorrect assembly!

- When connecting the cable, do not exceed the maximum tightening torque of 0.8 Nm for the cable.
- Make sure that the connections are not stressed due to pulling or pressure forces or due to vibrations. Apply the corresponding strain relief devices if required.

#### **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.

#### NOTE

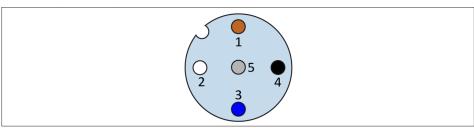
Note on EMC conformity (in accordance with EN 61000-6-4:2007 + A1:2011):

 The product may only be used in DC distribution networks with an expansion of < 30 m.</li>

Plug connector gripper	Plug connector provided by the customer		
Connector 5-pin, M12, A-coded	Connection cable 5-pin, M12 socket. A-coded		

Tab.: Components of the electrical connection

# Voltage supply and control



10-Link cable assignment, 5-pin M12 port class B

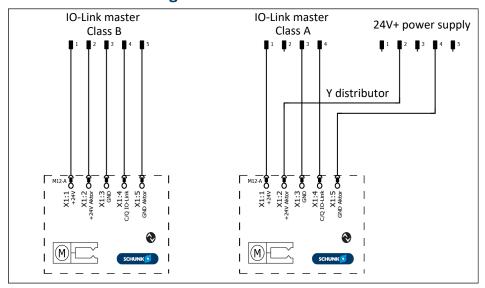
Pin	Wire strand	Signal
1	Brown	+ 24 V
2	White	+ 24 V (actuator)
3	Blue	GND
4	Black	C/Q IO-Link

Pin	Wire strand	Signal
5	Grey	GND (actuator)

#### **NOTE**

For information on actuation, see Software guide "SCHUNK gripper with IO-Link".

### 5.2.3.1 IO-Link connection diagram



### 5.3 Mounting the sensor

#### NOTE

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

The product is prepared for the use of sensors.

- For the exact type designations of suitable sensors, please see catalog datasheet and ▶ 5.3.1 [□ 35].
- For technical data for the suitable sensors, see assembly and operating manual and catalog datasheet.
  - The assembly and operating manual and catalog datasheet are included in the scope of delivery for the sensors and are available at schunk.com.
- Information on handling sensors is available at schunk.com or from SCHUNK contact persons.

#### 5.3.1 Overview of sensors

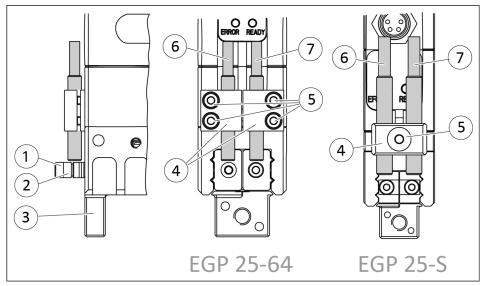
Designation	EGP			
	25	40	50	64
Inductive proximity switch IN 40	Χ	Χ	Χ	Χ
Flexible position sensor FPS-S 13		Χ	Х	Х

#### 5.3.2 Mount inductive proximity switch IN 40

The inductive proximity switches are mounted on the plug connectors side of the product. If the cable routing on this side is unfavorable for the customer-specific application, the inductive proximity switches can be mounted on the opposite side.

The screw heads and the spacer sleeve serve the purpose of querying by the inductive proximity switches and are mounted on the gripper fingers.

#### 5.3.2.1 Mount inductive proximity switches



#### NOTE

The positions "Gripper opened" and "Gripper closed" are monitored without an additional spacer sleeve (2) via the screws (1).

- 1. To monitor the position "Part gripped": Screw the spacer sleeve (2) and scew (1) from the accessory pack to the gripper finger (3).
  - Tightening torque: 12.5 Ncm
- 2. Screw on sensor holder (4).
  - ⇒ Tighten screws (5) only slightly.
- 3. Move product to the position "Gripper opened".
- **4.** Slide sensor (6) into the sensor holder (4) and adjust the 0.2 mm distance to the screw head.
- **5.** Move product to the position "Gripper closed".
- **6.** Slide sensor (7) into the sensor holder (4) and adjust the 0.2 mm distance to the screw head.
- Tighten the screw (5) on the sensor holder (4).Tightening torque: 10 Ncm

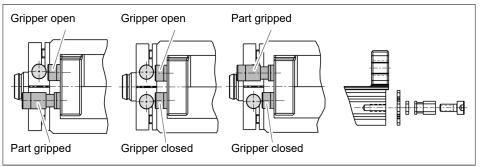
- **8.** Connect both sensors (6)/(7).
- **9.** Bring the product in position and test the function.

## **5.3.2.2** Set the inductive proximity switch (IN)

The sensor is dampened by the screw heads.

If the screws are used without spacer sleeves, the positions "Gripper opened" and "Gripper closed" can be monitored.

If the spacer sleeve is used, the distance between the screw head and the gripper finger is greater. This enables e.g. the position "Gripper closed" to be varied or the position "Part gripped" to be monitored.



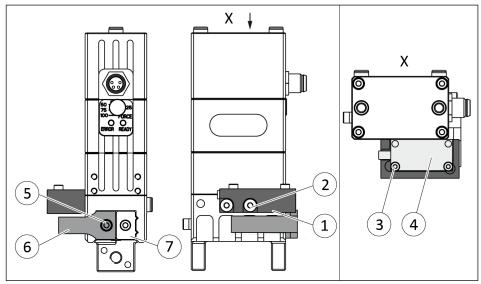
Adjusting the sensor

## 5.3.3 Mount Flexible Position Sensor (FPS)

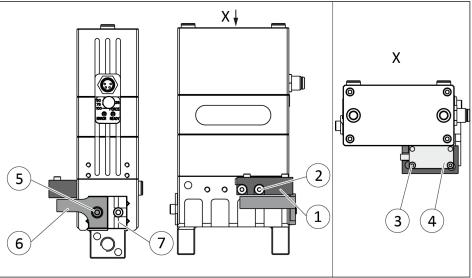
### NOTE

The sensor cannot be used for sizes 25 and 25-S.

The sensor is mounted to the product using a holder. This holder is available from SCHUNK.



Size 40 and 50



Size 64

- 1. Secure holder (1) with screws (2).
- 2. Secure sensor (4) to holder (1) with screws (3). Tightening torque: 1 Ncm
- **3. Up to 12/2015:** Secure control cam (6) onto the cover (7) of the base jaw with screw (5).

- **4. As of 01/2016:** Secure control cam (6) directly to the base jaw with screw (5).
  - ⇒ Ensure that the magnets in the control cam (6) are facing towards the sensor surface.
- **5.** Connect the torque sensor system controller and adjust the sensor (4), see Sensor Assembly and Operating Manual.

## 6 Start-up

## 6.1 "Digital I/O" variant

#### **Overview**

- Cable for voltage supply and control is attached to the product.
- **1.** Adjust gripping force, ▶ 6.1.1 [□ 40].
- 2. Connect the product to PLC and voltage supply.
- 3. Control product via digital inputs, ▶ 6.1.2 [☐ 41]. Maintain a rest period between commands.

#### NOTE

 For a detailed description of incorporating the product into a control, see the documentation of the relevant control manufacturer.

## **6.1.1** Adjust gripping force

#### NOTE

For the "Speed" variant, the gripping force is set to 100% in the factory and cannot be changed.

The gripping force is changed by altering the current limitation via the "Gripping force" rotary switch.

- Digital inputs "Opens gripper" and "Closes gripper" are not powered (low), ▶ 6.1.2 [□ 41].
- 1. Remove seal plug.
- 2. Adjust gripping force with the "Gripping force" rotary switch. Do this using a suitable slit screwdriver with a blade at least 2 mm wide. IMPORTANT! Do not exert axial pressure on the axis of the rotary switch.

Note: The "Gripping force" rotary switch has four set positions.

- **3.** Insert seal plug.
  - ⇒ Protection Class IP 40 (electrical housing) is ensured only when the seal plug is mounted.

	Gripping force [%]		
Item	EGP 25	EGP 40-64	
100 (default)	100	100	
75		75	
50	50	50	
25		25	

## 6.1.2 Actuation of the digital inputs

#### Truth table

The truth table shows the actuation of the digital inputs during possible commands by the superordinated control unit.

Power consumption per digital inputs amounts to max. I=10 mA.

Function	Pin 2 (open)	Pin 4 (close)
De-energized drive (shutdown, motor is short-circuited)	0	0
Open the gripper	1	0
Close the gripper	0	1
Rectify error (shutdown, motor is short-circuited)	1	1

Tab.: Open/close digital inlets

## Rest period between two commands

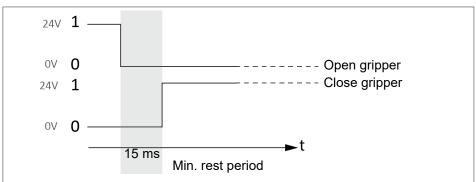
### **CAUTION**

## Material damage due to faulty control!

The internal electronics can be damaged by two commands following too quickly in succession.

Maintain a rest period between commands.

The following graph shows the minimum rest period that must be kept between two commands.



Example Open Gripper/Close Gripper

## Restart protection for electronics as of FW 1.3

#### NOTE

The product is equipped with restart protection.

After restarting clamping, make sure both digital inputs are set to 0.

If you fail to do this, new commands will not be accepted.

### 6.2 10-Link variant

#### NOTE

- The commissioning depends on the design of the IO-Link master. For further information on handling the IO-Link master, see the documentation of the relevant IO-Link master manufacturer.
- The gripping force is set via the "IO-Link" communication interface.
- The gripping modes FastGrip and SoftGrip are available, ▶ 6.2.1 [□ 43].
- The IO-Link Master is integrated in the PLC.
- The product is connected to the IO-Link master and voltage supply, ▶ 5.2.3.1 [□ 34].
- Make sure that the product is ready-to-operate and not reporting any errors. If necessary, rectify the error reported, ▶ 7 [□ 44].
  - ⇒ LED POWER lights up green.
  - ⇒ LED COM flashes green.
  - ⇒ LED STATUS lights up green for approx. 3 seconds, then red.
- 2. Import IODD to the IO-Link master.

  Note: The IODD is available at schunk.com or via "IODDfinder" from the IO-Link Community.
- 3. Configure product via IO-Link master device tool.

  Note: If the IO-Link master does not support IODD, the product can be parameterized via acyclic data exchange.
  - ⇒ Parameterization was transferred to the product.
- 4. Control product via PLC.

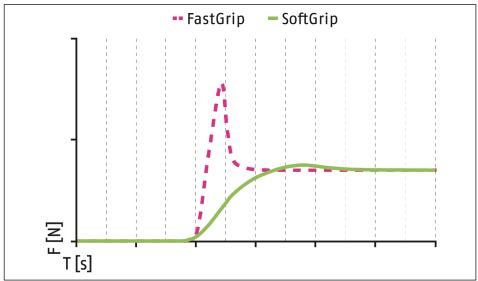
#### NOTE

- For a detailed description of incorporating the product into a control, see the documentation of the relevant control manufacturer.
- For further information on parameterization, control and start-up behavior of the product, see Software guide "SCHUNK gripper with IO-Link".

## **6.2.1 Gripping modes**

The gripping modes FastGrip and SoftGrip can be set in the IO-Link process data. For further information, see Software guide "SCHUNK gripper with IO-Link".

- **FastGrip**: Robust gripping mode for industrial applications with optimized cycle times (e.g. Pick&Place applications)
- **SoftGrip**: Gripping mode with pulse reduction of the gripping force for gripping sensitive, fragile or highly breakable workpieces (e.g. electronics, glasses, ceramics).



Force progression with FastGrip and SoftGrip

F [N] Gripping force T [s] Time

The gripping modes FastGrip and SoftGrip differ in terms of their force progression when gripping a workpiece. The force progression is achieved through different speeds when the gripper fingers come into contact with the workpiece.

While FastGrip is characterized by a very fast gripping speed and a resulting high gripping force pulse, SoftGrip has a heavily reduced gripping force pulse with a simultaneously somewhat reduced gripping speed. This protects fragile gripping objects.

The resulting gripping force is identical for both gripping modes. In the SoftGrip mode, the gripping force pulse is significantly reduced when coming into contact with the workpiece.

## 7 Troubleshooting

## 7.1 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. ▶ 5.2.1 [ 30]
	Loosen the mounting screws of the product and actuate the product again.
Sensor incorrectly set. / Sensor is misaligned.	Adjust sensor so that it does not obstruct the traverse path of the product.
	Distance to the querying mechanics: approx. 0.2 mm
Power supply connected incorrectly.	Check the power supply. ▶ 5.2.2 [☐ 32]

## 7.2 Product does not execute a complete stroke

Possible cause	Corrective action
Dirt deposits between basic jaws and guidance.	Clean and lubricate product. ▶ 8 [□ 46]
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface. ▶ 5.2.1 [ 30]
Breakage of components, e.g. by overloading.	Send the product to SCHUNK with a repair order.

## 7.3 Product opens or closes jerkily

Possible cause	Corrective action
Too little grease in the mechanical guiding areas.	Clean and lubricate product. ▶ 8 [□ 46]
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface. ▶ 5.2.1 [ 30]
Loading too large.	Check permissible weight and length of the gripper fingers. ▶ 3 [ 18]

## 7.4 Gripping force too low

Possible cause	Corrective action
Too much grease in the mechanical movement space.	Clean and lubricate product. ▶ 8 [□ 46]
Wrong gripping pre-selection.	Check adjustment of the gripping force.  ▶ 6.1.1 [□ 40]

Possible cause	Corrective action
	Check layout of the product. Meanwhile observe the maximum workpiece weight, see Catalog Data Sheet.  3 [18]

## 7.5 Opening and closing times are not achieved

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

## 7.6 Electrical signals are not transmitted

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

## 7.7 Faults indicated by LED Error (only with "Digital I/O" variant)

Possible cause	LED "Error"	Corrective action
Rotary switch is in an intermediate position	LED blinks at 0.6 s intervals	Turn rotary switch to a marked position.
Error overheating	LED flashes at 1.2 s intervals	<ul> <li>Wait until the product has cooled down.</li> <li>Actuate both digital inlets, "Opens gripper" and "Closes gripper" to high. OR:         Disconnect voltage supply and reconnect.     </li> <li>The "ERROR" LED goes out. The error is acknowledged.</li> </ul>
Warning overheating	LED lights up continuously	The warning disappears automatically when the product has cooled down.

## 7.8 Faults indicated by LED STATUS (only with "I/O-Link" variant)

Possible cause	LED "STATUS"	Corrective action
Fault requiring Li acknowledgment	LED lights up red	• Check device status via IO-Link.
		• Take measures according to error message.
		<ul> <li>Acknowledge error.</li> </ul>
		See Software guide "SCHUNK gripper with IO- Link"

## 8 Maintenance

## 8.1 Maintenance intervals

Interval (million cycles) for EGP 25 – 64	Maintenance work
1000 cycles or once per day	Travel an entire stroke.
2	Treat all grease areas with lubricant, ▶ 8.2 [□ 47]
2	Clean all parts thoroughly, check for damage and wear.

For extreme ambient and application conditions, shortened maintenance cycles can ensure the lifespan is maintained.

## **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.

## **CAUTION**

## Damage to property caused by insufficient lubrication!

Continuously traveling short strokes when the product is inadequately lubricated risks damaging it by causing it to run dry.

• Travel the full stroke every 1000 cycles or at least once daily.

## 8.2 Lubricants and lubricating points

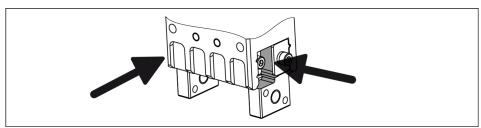
During maintenance, treat all greasing areas with lubricant. Apply a thin film of lubricant using a lint-free cloth or brush. SCHUNK recommends the lubricants listed.

Lubricant point	Lubricant
Metallic sliding surfaces	SCHUNK grease 10
Motor mount	SCHUNK grease 10
Pinion bearing EGP 40 variants	SCHUNK grease 10

Details regarding SCHUNK lubricant designations are available at **schunk.com/lubricants**.

The product contains food-compliant lubricants as standard. Components such as rolling bearings, linear guides, or shock absorbers are not provided with food-compliant lubricants.

The requirements of standard EN 1672-2:2020 are not fully met.



Position of the greasing areas

#### NOTE

- Change contaminated food-compliant lubricant.
- Observe information in the safety data sheet from the lubricant manufacturer.

## 8.3 Disassembly and assembling

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.

## 9 Translation of the original declaration of incorporation

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

Manufacturer/ SCHUNK SE & Co. KG

Distributor Spanntechnik | Greiftechnik | Automatisierungstechnik

Bahnhofstr. 106 – 134 D-74348 Lauffen/Neckar

We hereby declare that the partly completed machine described below

Product designation: Electric Small Components Gripper / EGP /electric

ID number 0310900, 0310902, 0310940, 0310942, 0310960, 0310980, 1372735,

1383538, 1383545

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. 1.5.1, No. 1.5.2; 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

## 10 EU-Declaration of Conformity

Manufacturer/ SCHUNK SE & Co. KG

Distributor Spanntechnik | Greiftechnik | Automatisierungstechnik

Bahnhofstr. 106 – 134 D-74348 Lauffen/Neckar

Product designation: Electric Small Components Gripper / EGP /electric

ID number 0310900, 0310902, 0310940, 0310942, 0310960, 0310980, 1372735,

1383538, 1383545

We hereby declare on our sole authority that the product meets the requirements of the following directives at the time of the 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 IEC 61000-6-2:2019 Electromagnetic compatibility (EMC) - Part 6-2:

Generic standards - Immunity standard for industrial environments

EN IEC 61000-6-4:2019 Electromagnetic compatibility (EMC) - Part 6-4:

Generic standards – Emission standard for industrial environments

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

Signature: see original declaration

Lauffen/Neckar, March 2024

## 11 UKCA declaration of incorporation

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

Manufacturer/ SCHUNK Intec Limited

Distributor Clamping and gripping technology

3 Drakes Mews, Crownhill MK8 OER 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: Electric Small Components Gripper / EGP / electric

ID number 0310900, 0310902, 0310940, 0310942, 0310960, 0310980, 1372735,

1383538, 1383545

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

## 12 UKCA declaration of Conformity

Manufacturer/ SCHUNK Intec Limited

Distributor Clamping and gripping technology

3 Drakes Mews, Crownhill MK8 0ER Milton Keynes

We hereby declare on our sole authority that the product meets the requirements of the following directives at the time of the declaration.

The declaration is rendered invalid if modifications are made to the product.

Product designation: Electric Small Components Gripper EGP

ID number 0310900, 0310902, 0310940, 0310942, 0310960, 0310980, 1372735,

1383538, 1383545

## Electromagnetic Compatibility Regulations 2016

Applied harmonized standards, especially:

EN IEC 61000-6-2:2019 Electromagnetic compatibility (EMC) - Part 6-2:

Generic standards - Immunity standard for industrial environments

EN IEC 61000-6-4:2019 Electromagnetic compatibility (EMC) - Part 6-4:

Generic standards - Emission standard for industrial environments

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

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

Lauffen/Neckar, March 2024

# 13 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.

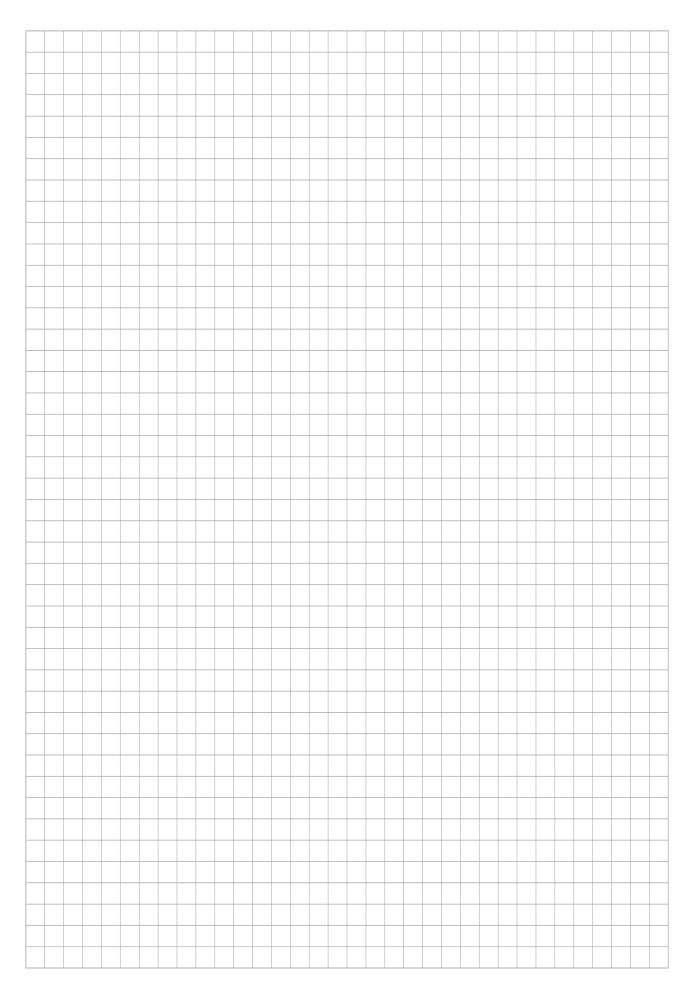
#### **REACH Regulation**

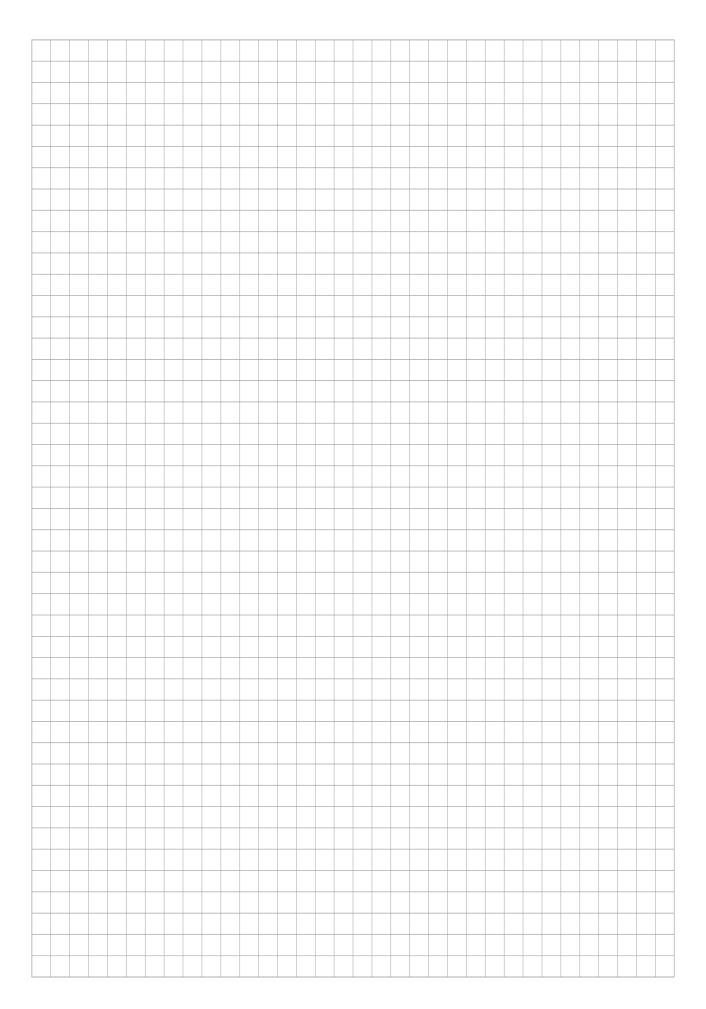
Products from SCHUNK fully comply with the regulations of Regulation (EC) No. 1907/2006 "concerning the Registration, Evaluation, Authorization and Restriction of Chemicals (REACH)" and its amendment 2022/477. SCHUNK attaches great importance to completely avoiding chemicals of concern to humans and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

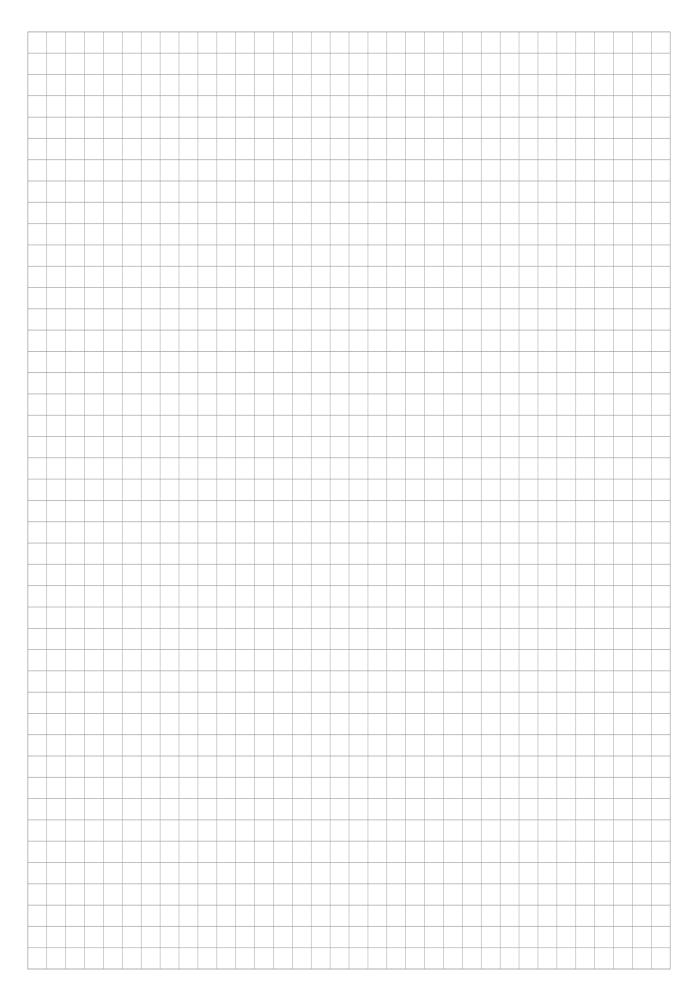
Only in rare exceptional cases do SCHUNK products contain SVHC substances on the candidate list with a mass content above 0.1%. In accordance with Article. 33 (1) of Regulation (EC) No. 1907/2006, SCHUNK complies with its duty to "communicate information on substances in articles" and lists the components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

Signature: see original declaration

Lauffen/Neckar, March 2024









SCHUNK SE & Co. KG Spanntechnik | Greiftechnik | Automatisierungstechnik

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