

# 3-FINGER PLASTIC ANGULAR GRIPPER TYPE SGW



Dear Customer,

Congratulations on choosing a SCHUNK product. By choosing SCHUNK, you have opted for the highest precision, top quality and best service.

**You are going to increase the process reliability of your production and achieve best machining results – to the customer's complete satisfaction.**

**SCHUNK products are inspiring.**

Our detailed assembly and operation manual will support you.

Do you have further questions? You may contact us at any time – even after purchase. You can reach us directly at the mentioned addresses in the last chapter of these instructions.

Kindest Regards,

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## 1. Safety

### 1.1. Explanation of symbols



This symbol is displayed wherever there is a possibility of **danger to life and limb**.



This symbol is displayed wherever the possibility of **damage to the product** exists.



This symbol denotes **important information** about the product and its handling.

### 1.2. Intended use

The gripper module was designed for gripping and temporary secure holding of workpieces or other objects.

The product is intended for installation / mounting in machines and equipment. The requirements of the applicable directives must be observed and complied with.









The product may be used only within the range of its technical data.

Any other use is deemed improper and unintended use. The manufacturer will not be liable for any damages resulting from improper use.


### 1.3. Environmental and operating conditions

- Use the unit only within the application parameters defined in the Technical Catalog. The most recent version applies (according to Chapter 2.3 of the General Terms and Conditions).  
Please make sure that your application has been checked based on the current calculation program. If this is not the case, we can provide no warranty.
- Required compressed air quality according to ISO 8573-1: **6 4 4**.
- Clean ambient conditions at room temperature are required. If these conditions are not ensured, the maintenance interval will be shorter, depending on the actual utilization.
- The environment must be free of splashing water and vapors, and also of abrasive dust and process dust. This does not apply to units designed especially for unclean environments.

## 1.4. Safety information

1. There are potential risks associated with the unit, for example if:
  - the gripper is improperly used, installed or serviced.
  - the gripper is used other than for the intended purpose.
  - the EC Machine Directive, the accident prevention regulations, the VDE guidelines or the safety and installation instructions are not observed.
2. All personnel who are responsible for installation, commissioning and servicing must have read and understood the entire operating manual, in particular the chapter on »Safety«. It is recommended to have this confirmed in writing.
3. Installation and dismantling, mounting of the proximity switches, connections and commissioning may be carried out only by authorized personnel.
4. Work procedures that impair the correct functioning and operational safety of the product are prohibited.
5.  Do not move any parts by hand when the unit is connected to the power supply.
6. Do not reach into the open mechanical parts and the area between the gripper fingers.
7.  The power supply cables must be removed for assembly, modification, maintenance and adjustment of the unit.
8.  Carry out all maintenance, modifications or attachments outside of the danger zone.
9.  During installation, connection, adjusting, commissioning and testing, measures must be taken to prevent the risk of inadvertent activation of the unit by the fitter or other persons.
10. Protective covers must be provided for the use of all handling modules in accordance with EC Machine Directive, Section 1.4.
11.  There is a danger due to falling or ejected objects. Preventive measures must be taken to prevent the falling or ejection of potentially dangerous objects (machined workpieces, tools, chips, debris, waste, etc.).
12.  Additional bore holes, threads or attachments not offered by SCHUNK as accessories may be mounted only after obtaining the approval of SCHUNK.
13.  Grippers that clamp with spring force or use springs for maintenance of gripping force are under spring tension. Therefore, special care is necessary when dismantling such a unit.
14.  Grippers with mechanical maintenance of gripping force can continue to move automatically in the direction defined by the mechanical maintenance of gripping force even in the event of an »Emergency Stop«. The end positions of the grip-

per can be secured with SCHUNK SDV-P in the event of »Emergency Stop«.

15.  The top jaws, especially for grippers with mechanical gripper support, must be designed so that the gripper, when depressurized, reaches one of the end positions – open or closed – so that no residual energy can be released during changing of the top jaws.
16. In addition, the applicable safety regulations and accident prevention regulations must be observed.

## 2. Warranty

The warranty period is 24 months ←from the date of delivery when utilized as intended in single-shift operations and in compliance with the specified maintenance and lubrication intervals. Parts that come into contact with the workpiece and wearing parts are not covered by the warranty.

See also our General Terms and Conditions in this regard. Our terms and conditions are available at [www.de.schunk.com](http://www.de.schunk.com) under "Service".

The unit is considered defective when the basic gripping function is inoperable.

## 3. Scope of delivery

The scope of delivery includes:

- SGW (without top jaws and proximity switch)
- Enclosed pack (for contents, see Chapter 7.3 page 12)

## 4. Technical data

The airborne sound emitted by the unit is  $\leq 70\text{dB(A)}$

	<b>SGW 40</b>	<b>SGW 50</b>	<b>SGW 64</b>
ID number	0305204	0305205	0305206
Opening angle per jaw	8°	8°	8°
Overtension angle per jaw up to	2°	2°	2°
Weight	0.05 kg	0.09 kg	0.17 kg
Recommended workpiece weight	0.3 kg	0.6 kg	1.3 kg
Minimum pressure	4 bar	4 bar	4 bar
Minimum pressure Nominal pressure	6 bar	6 bar	6 bar
Maximum pressure	7 bar	7 bar	7 bar
Max. permissible finger length	32 mm	40 mm	50 mm
Max. permissible mass per finger	0.03 kg	0.045 kg	0.07 kg

**Table 1: Technical data**

Please make sure that your application has been checked based on the calculation program for grippers (SSG). Otherwise we can provide no warranty. (Calculation programs are available free of charge at: [www.schunk.com](http://www.schunk.com) > Service > Downloads)

Additional technical data can be found in our catalog. The most recent version applies (according to General Terms and Conditions, Chapter 2.3).

## 5. Assembly and installation

### 5.1. Mounting the gripper



**Important!**

During assembly of the gripper the power supply must be switched off.  
Also observe the safety instructions starting on page 4.

**Requirements for levelness of the bolting surface**  
(in relation to the entire bolting surface for the gripper)

< 0.02 mm for a diameter up to 40/50/64 mm

The cylindrical pins (item 32) required for mounting the gripper are included in the enclosed pack. The illustrated mounting screws (Item /1/ , /2/) and the finger mount (item /3/) are not included. (The contents of the enclosed pack are listed in Chapter 7.3 page 12.)

### Mounting the gripper

- Mount the gripper using the two mounting holes provided. Two cylindrical pins (item 32) are included in the enclosed pack.
- Mount the gripper using the three mounting holes provided.

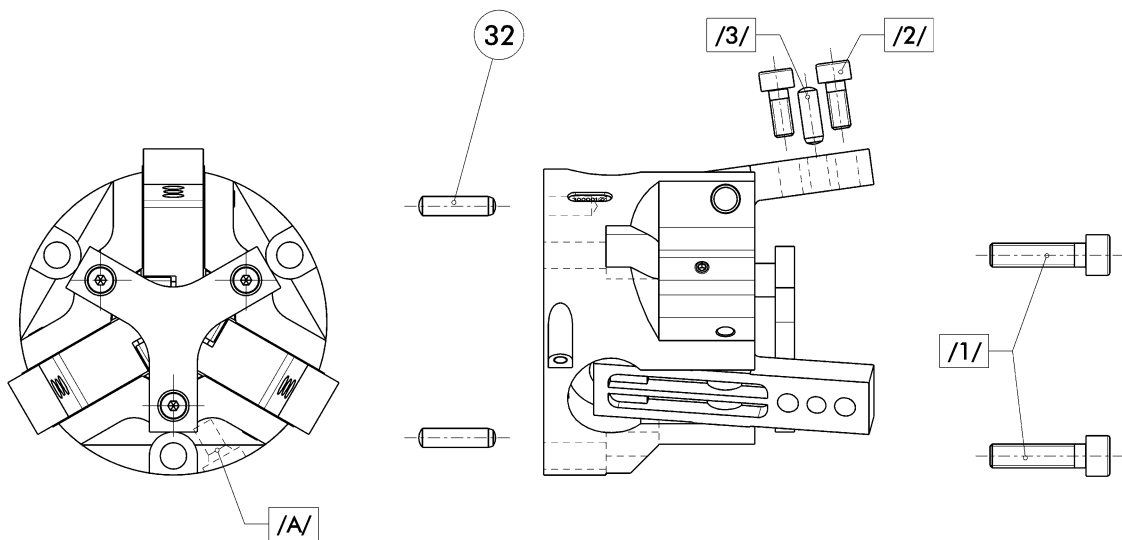


Figure 1: Gripper mounting and finger mounting

	Size SGW	40	50	64
/1/	Thread diameter for gripper mounting (max. torque for mounting screws)	3x M3 (0.5 Nm)	3x M3 (1.0 Nm)	3x M5 (2.0 Nm)
/2/	Thread diameter for finger mounting	M3	M3	M4
	Ø of the mounting hole for cylindrical pins	2H7	3H7	4H7
/A/	Hose connection for gripper "Closed"	See Chapter 5.2 page 9		

Table 2: Gripper mounting and finger mounting

## 5.2. Air connection



### Important!

During assembly of the gripper the power supply must be switched off.  
Also observe the safety instructions starting on page 4.

### Note



- Pressure medium: Compressed air  
Required compressed air quality according to ISO 8573-1: **6 4 4**.
- Open only the connections that you need and close the unused air inlets with suitable plugs.



- For hose-free assembly, use the O-ring (item 30) from the enclosed pack.

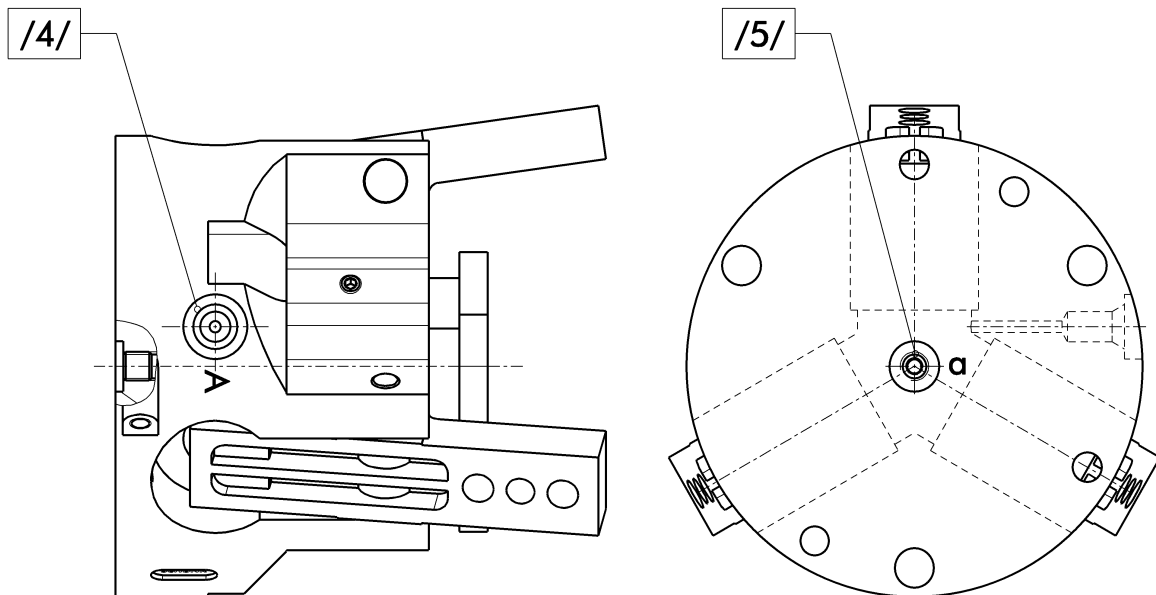


Figure 2: Air connections

	Size SGW	40	50	64
/4/	Thread diameter for hose connection (A = "Closed")	M3	M3	M3
/5/	Thread diameter for hose-free direct connection (a = "Closed")	M3	M4	M4

Table 3: Air connections



### Checking the opening and closing times

If the gripper does not achieve the opening and closing times according to our current catalog, please check the following:

- Are the flow control couplings used on the gripper opened to the maximum?  
**(The movement has to be without jerks and bounce!)**
- Do the compressed air lines to the gripper have a sufficient inner diameter in relation to the compressed air consumption?
- Are the compressed air lines between the gripper and the valve as short as possible?
- Is the flow rate of the directional valve sufficient for the compressed air consumption of the gripper?

If your application does not achieve the calculated movement times despite optimum air connections, we recommend the use of quick-action ventilation valves directly on the gripper.

## 6. Troubleshooting

Fault / error	Possible cause	Corrective action
Gripper does not move	(a) Pressure drops below minimum. (b) Unused air connections not closed.	(a) Check the air supply (see Chapter 5.2 p. 9). (b) Close the unused air connections (see Chapter 5.2 p. 9).
The gripping force drops	(a) Compressed air can escape (b) Pressure drops below minimum	(a) Check the seals. (b) Check the air supply (see Chapter 5.2 p. 9)
The gripper opens or closes abruptly	(a) Compressed air hoses are blocked.	(a) Check the compressed air hoses for pinching or defects.
The gripper does not execute the full stroke	(a) Pressure drops below minimum.	(a) Check the air supply (see Chapter Technical data p. 7)

## 7. Maintenance and care

### 7.1. Maintenance intervals

SGW series	40	50	64
Maintenance intervals (million cycles)	2	2	2

Environmental temperatures of more than 60 °C/ 140 °F can harden the used lubricants faster. Therefore, lubrication and maintenance works have to be carried out more often.

### 7.2. Maintenance instructions



**Important!**

During assembly and disassembly of the gripper the power supply must be switched off.

Also observe the safety instructions starting on page 4.

To keep the gripper functioning correctly, please observe the following instructions:

1. Required compressed air quality according to ISO 8573-1: **6 4 4**
2. Some parts have to be installed with oil or grease during maintenance (basic lubrication).
  - a) All metal sliding surfaces must be treated with MICROGLEIT GP 303-P or an equivalent lubricant.
  - b) The piston bore and all seals must be treated with Renolit HTL 2 or an equivalent lubricant.

### 7.3. Enclosed packs

#### 7.3.1. Enclosed pack for SGW 64

Item	ID No.	Quantity	Designation
30	9611112	1	O-ring 4 x1.5 DIN 3771-NBR70
31	9670003	2	Set screw M3 x 5 DIN 913/45H
32	9682012	2	Cylindrical pin DIN 6325-4.0 m6 x 16
33	9941340	1	Locking screw DIN 908-M3 x 3

**Table 4: Enclosed pack for SGW 64**

#### 7.3.2. Enclosed pack for SGW 50

Item	ID No.	Quantity	Designation
30	9611173	1	O-ring 3 x1.5 DIN 3771-NBR70
31	9938926	2	Set screw M2 x 4 DIN 913/45H
32	9682052	2	Cylindrical pin DIN 6325-3.0 m6 x 12
33	9941340	1	Locking screw DIN 908-M3 x 3

**Table 5: Enclosed pack for SGW 50**

#### 7.3.3. Enclosed pack for SGW 40

Item	ID No.	Quantity	Designation
30	9611054	1	O-ring 3 x1 DIN 3771-NBR70
31	9938926	2	Set screw M x 4 DIN 913/45H
32	9682086	2	Cylindrical pin DIN 6325-2.0 m6 x 10
33	9941340	1	Locking screw DIN 908-M3 x 3

**Table 6: Enclosed pack for SGW 40**

## 8. Accessories

### 8.1. Note

(to be ordered separately)

#### Note

- If you would like more information on the operation of sensors, please contact your SCHUNK representative. (see Chapter 1.4 p. 5. Information is also available for download at [www.schunk.com](http://www.schunk.com) >Products>Automation>Accessories).

### 8.2. Proximity switches

#### 8.2.1. Information on handling of proximity switches



##### Note

- The proximity switches are accessories and have to be ordered separately. The grippers have been prepared by SCHUNK for the use of type IN 40.



##### Note

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

Make sure that you handle the proximity switches properly.



- Do not pull on the cable and do not allow the sensor to dangle from the cable.
- Do not overtighten the mounting screw or mounting clip.
- Please adhere to a permitted bend radius of the cable. (see information in catalog)
- Avoid contact of the proximity switches with hard objects and with chemicals, in particular nitric acid, chromic acid and sulphuric acid.

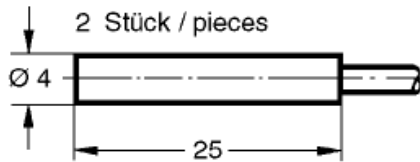


##### Note

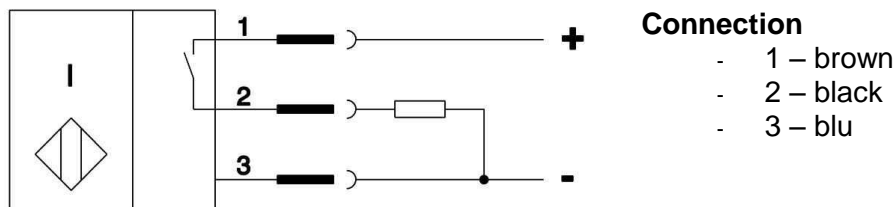
The inductive proximity switches are electronic components, which can react sensitively to high-frequency interference or electromagnetic fields.

- Check to make sure that the cable is fastened and installed correctly. Provide for sufficient clearance to sources of high-frequency interference and their supply cables.
- Parallel switching of several sensor outputs of the same type (npn, pnp) is permissible, but does not increase the permissible load current.
- Note that the leakage current of the individual sensors (ca. 2 mA) is cumulative.

### 8.2.2. Assembly and configuration IN 40/S



**Figure 3: Inductive proximity switch IN**



**Figure 4: Switching function (closer) - in undamped condition**

Type	Switching function
IN 40	closer



**Caution!**

Sensor can be damaged during assembly.

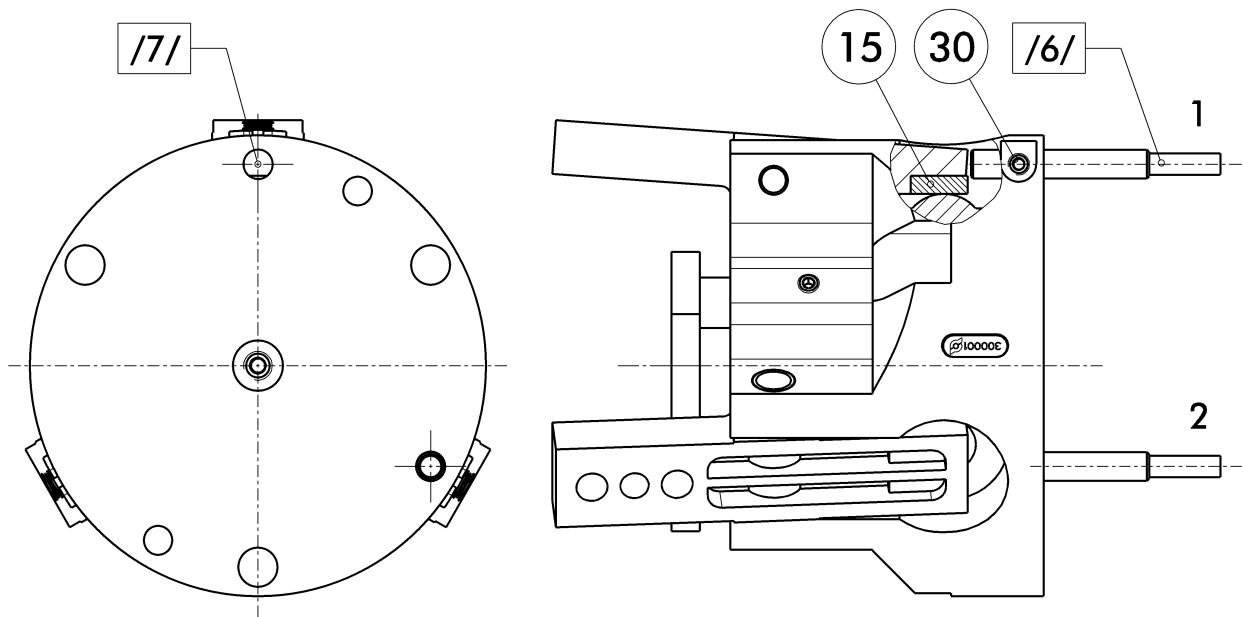
- Do not exceed the maximum tightening torque of 15 Ncm for the set screws.

#### Configuration of the switching point Gripper opened

1. Push the proximity switch 1 (item /6/) carefully to the stop position of the switch cam (item 15) in the clamping bore hole (item /7/) and pull the proximity switch 0.5 mm back and then fasten it by tightening the set screw (item 30).
2. Set the gripper to the "Open" position and test the function.

#### Gripper closed

1. Push the proximity switch 2 (item /6/) carefully to the stop position of the switch cam (item 15) in the clamping bore hole (item /7/) and pull the proximity switch 0.5 mm back and then fasten it by tightening the set screw (item 30).
2. Set the gripper to the "Closed" position and test the function.



**Figure 5: Configuration of inductive proximity switch**

## 9. EC declaration of incorporation

In terms of the EC Machinery Directive 2006/42/EC, annex II B

Manufacturer/  
distributor                      SCHUNK GmbH & Co. KG.  
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   Bahnhofstr. 106 – 134  
   74348 Lauffen/Neckar, Germany

We hereby declare that the following product:

**Product designation:**            3-Finger Plastic Angular Gripper  
**Type designation:**                SGW 40...SGW 64  
**ID number:**                         0305204/ 0305205/ 0305206

meets the applicable basic requirements of the Directive **Machinery (2006/42/EC)**.

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

Applied harmonized standards, especially:

EN ISO 12100-1                      Safety of machines - Basic concepts, general principles for design -- Part 1:  
   Basic terminology, methodology  
EN ISO 12100-2                      Safety of machines - Basic concepts, general principles for design -- Part 2:  
   Technical principles

The manufacturer agrees to forward on demand the special technical documents for the incomplete machine to state offices.

The special technical documents according to Annex VII, Part B, belonging to the incomplete machine have been created.

Person responsible for documentation: Mr. Michael Eckert, Tel.: +49(0)7133/103-2204

Location, date/signature:                      Lauffen, Germany,  
   January 2010  
Title of the signatory                              Director for Development

p.p. 

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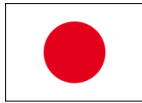
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