

Swivel Unit SKE 18 - 55

Assembly- and Operating 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,

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.

Kindest Regards

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1 About this manual

This instruction is an integral part of the product and contains important information for a safe and proper assembly, commissioning, operation, maintenance and help for easier trouble shooting.

Before using the product, read and note the instructions, especially the chapter "Basic safety notes".

1.1 Warnings

The following key words and symbols are used to highlight dangers.

1.1.1 Key words

DANGER	Dangers for persons. Non-compliance will inevitably cause irreversible injury or death.
WARNING	Dangers for persons. Non-compliance may cause irreversible injury or death.
CAUTION	Dangers for persons. Non-observance may cause minor injuries.
NOTICE	Information about avoiding material damage

1.1.2 Symbols



Warning about a danger point



Warning about hand injuries



General mandatory sign to prevent material damage

1.2 Applicable documents

- General terms of business
- Catalog data sheet of the purchased product
- Assembly and Operating Manuals of the accessories

The documents listed up here, can be download on our homepage www.schunk.com

2 Basic safety notes

2.1 Intended use

The module was designed to swivel permissible attachments or workpieces.

The module is intended for installation in a machine/system. The requirements of the applicable guidelines must be observed and complied with.

The module may be used only in the context of its defined application parameters ([👉 6, Page 10](#)).

The module is intended for industrial use.

To use this unit as intended, it is also essential to observe the technical data and installation and operation notes in this manual and to comply with the maintenance intervals.

2.2 Not intended use

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

2.3 Environmental and operating conditions

- Make sure that the module has a sufficient size for the application.
- Observe Maintenance and lubrication intervals.
- Make sure that the environment is free from splash water and vapors as well as from abrasion or processing dust. Exceptions are modules that are designed especially for contaminated environments.

2.4 Product safety

Dangers arise from the module, if:

- the module is not used in accordance with its intended purpose.
- the module is not installed or maintained properly.
- the safety and installation notes are not observed.

Avoid any manner of working that may interfere with the function and operational safety of the module.

Wear protective equipment.

NOTE

More information are contained in the relevant chapters.

2.4.1 Protective equipment

Provide protective equipment per EC Machinery Directive.

2.4.2 Constructional changes, attachments, or modifications

Additional drill holes, threads, or attachments that are not offered as accessories by SCHUNK may be attached only with permission of SCHUNK.

2.5 Personnel qualification

The assembly, initial commissioning, maintenance, and repair of the module may be performed only by trained specialist personnel. Every person called upon by the operator to work on the module must have read and understood the complete assembly and operating manual, especially the chapter "Basic safety notes" ([👉 2, Page 6](#)). This applies particularly to personnel only used occasionally, such as maintenance personnel.

2.6 Using personal protective equipment



When using this product, observe the relevant industrial safety regulations and use the personal protective equipment (PPE) required!



- Use protective gloves, safety shoes and safety goggles.
- Observe safe distances.
- Minimal safety requirements for the use of equipment.

2.7 Notes on particular risks

Generally valid:

- Remove the energy supplies before installation, modification, maintenance, or adjustment work.
- Make sure that no residual energy remains in the system.
- Do not move parts by hand when the energy supply is connected.
- Do not reach into the open mechanism or the movement area of the module.
- Perform maintenance, modifications, and additions outside of the danger zone.
- For all work, secure the unit against accidental operation.
- Take a precautionary approach by maintenance and disassembly.
- Only specially trained staff should disassemble the module.

	 WARNING
	<p>Risk of injury from objects falling and being ejected</p> <ul style="list-style-type: none"> • The danger zone must be surrounded by a safety fence during operation.

	 WARNING
	<p>Risk of injury when the machine/system moves unexpectedly due to failure of the energy supply or malfunction of the controller.</p>

3 Warranty

The warranty is valid for 24 months from the delivery date to the production facility under the following conditions:

- Intended use in 1-shift operation
- Observe the mandatory maintenance and lubrication intervals
- Observe the environmental and operating conditions

Parts touching the work piece and wear parts are not part of the warranty.


4 Scope of delivery

The scope of delivery includes:

- Swivel Unit SKE in the ordered model.
- 2 One-way restrictors
- Brackets for proximity switches

5 Accessories


A wide range of accessories are available for this module.

For information about which accessories can be used with the appropriate product version  catalog.

5.1 Sensors

Overview of the compatible sensors

Designation	Type
Inductive proximity switches	IN

- Exact type designation of the compatible sensors see  catalog.
- If you require further information on sensor operation, contact your SCHUNK contact person or download information from our homepage.

6 Technical Data

	SKE 18	SKE 22	SKE 40	SKE 55
Torque [Nm]	0.4	0.75	5.0	9.0
Angle of rotation [°]	90.0			
End position adjustability [°]	5.0			
IP rating	30			
Weight [kg]	0.13	0.2	0.92	1.95
Cycle time (1 x nominal angle of rotation) without attached load [s]	0.5	0.8	1.0	1.5
Air consumption per cycle (2 x nominal angle) [cm ³]	10.0	20.0	100.0	160.0
Nominal working pressure [bar]	4.0			
Min. pressure [bar]	1.0			
Max. pressure [bar]	6.0			
Diameter hose connection [mm]	4.0			
Min. ambient temperature [°C]	5.0			
Max. ambient temperature [°C]	50.0			
Repeatability [mm]	0.03			
Noise emission [dB(A)]	≤ 70			

Further technical data can be found in the catalog data sheet.
The most recent version applies.

7 Assembly

7.1 Fastening of the swivelling unit onto the handling tool

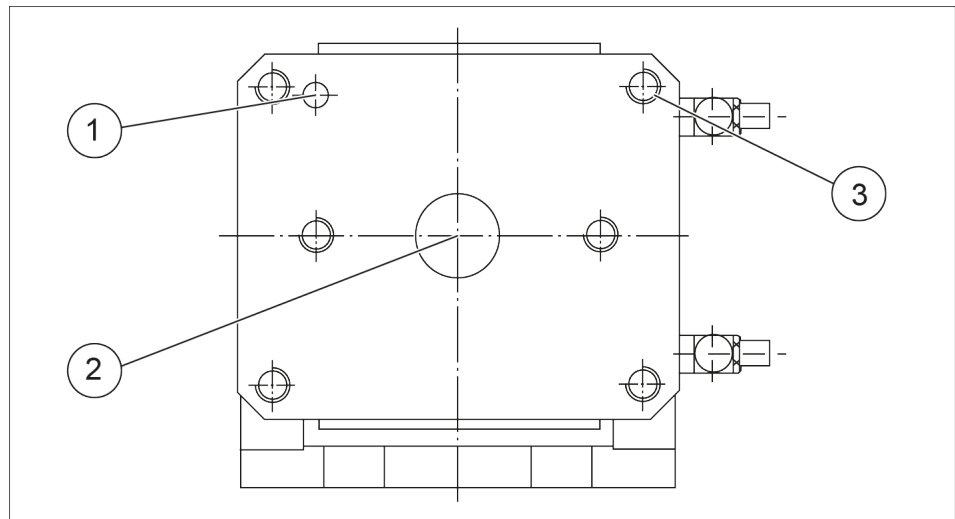


Fig. 1 Assembly options

Mounting material (provided by customer)


Item	Mounting	SKE 18	SKE 22	SKE 40	SKE 55
1	Positioning	$\varnothing 5^{+0.03}$ 5 deep	$\varnothing 5^{+0.03}$ 6 deep	$\varnothing 5^{+0.03}$ 8 deep	$\varnothing 6^{+0.03}$ 6 deep
2	Centering bore	$\varnothing 7$ 1.8 deep	$\varnothing 20$ 3.0 deep	$\varnothing 20$ 3.0 deep	$\varnothing 20$ 3.0 deep
3	Fastening thread	M3 / 4 deep (6x) M4 / 7 deep (4x)	M5 / 6 deep (4x) M8 / 8 deep (2x)	M6 / 20 deep (4x) M8 / 15 deep (2x)	M8 / 15 deep (6x)

NOTE

- Fasten the swivelling unit by means of the thread at the bottom.
- Center the unit at the centric fitting bore.
- For positioning the eccentric fitting bore can be used.

7.2 Gripper assembly

One or two grippers can be assembled onto the swivelling unit.
In order to facilitate assembly, the adapter plates can be removed.

	NOTICE
	Make sure that the screw heads do not survive.

Grippers which can be used with standard adapter plates and size of the fastening screws (DIN EN ISO 4762):

SKE 18	RHL-0 / M3	RH 901 / M3	RH 901 ST 10 / M3
SKE 22	RH 801 / M3	RH 905 / M4	RH 907 / M4
SKE 40	RH 806 KP / M4	RH 925 / M5	-
SKE 50	RH 940 / M6	-	-

The grippers can be assembled centrally onto the adapter plate;
option: parallelly or vertically to the swivelling axis.

7.3 Other grippers

When using special adapter plates, further grippers can be used. For fastening of the gripper, please use 4 screws as per DIN EN ISO 4762. 2 fitting bores and a lateral groove guarantee the positioning.

Main dimensions of the adapter plates:

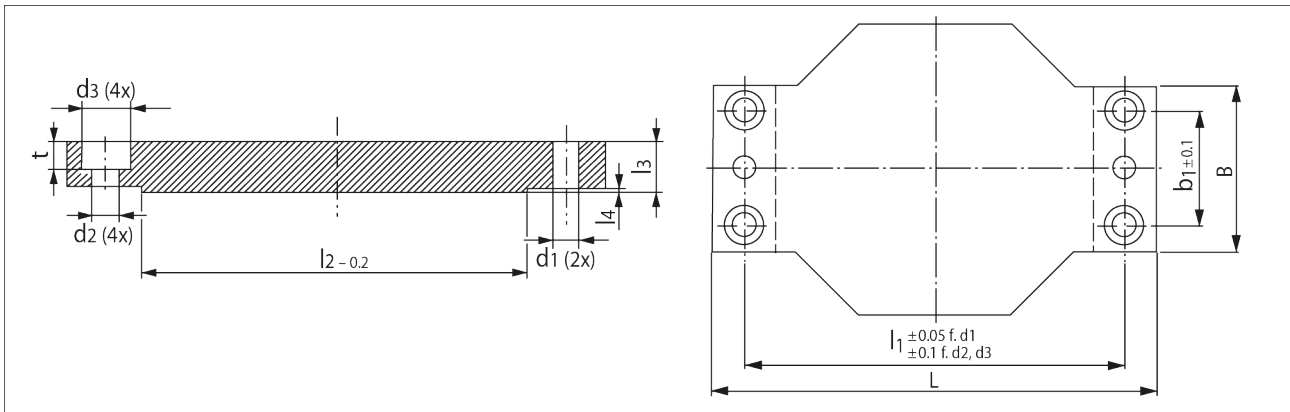



Fig. 2

Type	L	B	l_1	l_2	l_3	l_4	b_1	d_1	d_2	d_3	t
SKE 18	42	16	8	30	4	0.5	10	3 F7	2.8	5.0	2.8
SKE 22	54	20	46	38	6	1.0	13	5 F7	3.3	6.0	3.4
SKE 40	74	30	64	54	8	1.0	20	5 F7	4.4	7.6	4.6
SKE 50	106	40	91	76	10	1.0	28	5 F7	5.4	9.0	5.5

7.4 Air connection

	NOTICE
	<p>Observe the requirements for the air supply. (→ 6, Page 10) "Technical Data"</p>

	NOTICE
	<p>During testing the mounted unit never touch in the open mechanics of the swivel range. Risk of injury!</p>

Turn the adjustment screw of the double check valve into the intermediate position. Connect the hoses of dimension $\varnothing 4 / 6$ mm.

NOTE

The one-way restrictors are used for adjustment of the swivelling speed.

The fine adjustment has to be done at the completely assembled system. Never actuate the swivelling unit without having assembled the one-way restrictors onto it. The indicated swivelling time should never be exceeded.

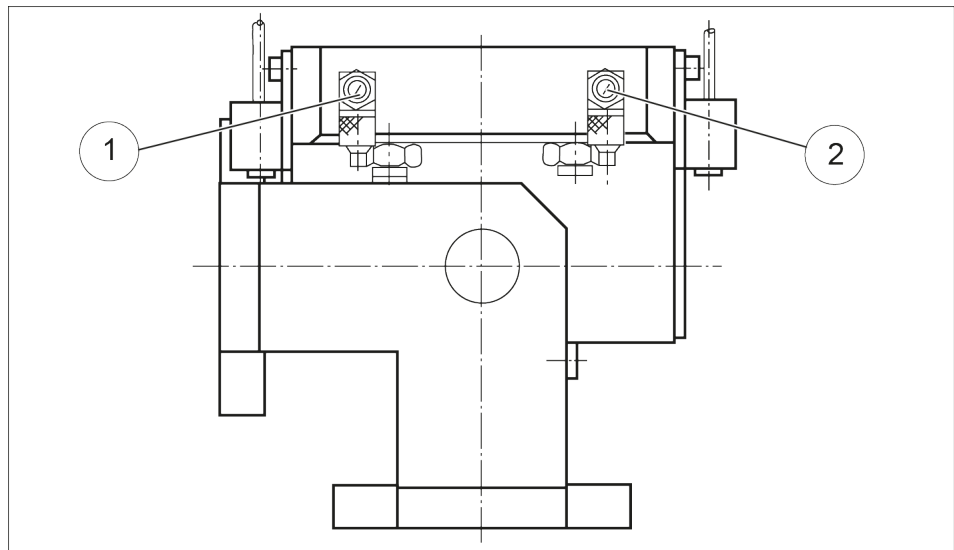


Fig. 3 Air connection

1	One-way restrictor A
2	One-way restrictor B

-
- Only open the air connections required.
 - Seal air connections not required using the locking screws from the enclosed pack.
 - For hose-free direct connections use the O-rings from the enclosed pack.
 - If the maximum permissible finger weight is exceeded a throttle has to be carried out imperatively. The movement has to be without jerks and bounce.

7.5 Sensors

The module is prepared for a number of sensors. Other sensors can be used with a mounting kit.

- If you require further information on sensor operation, contact your SCHUNK contact person or download information from our homepage.
- Technical data for the sensors can be found in the data sheets (included in the scope of delivery).

7.5.1 Inductive proximity switch IN 40

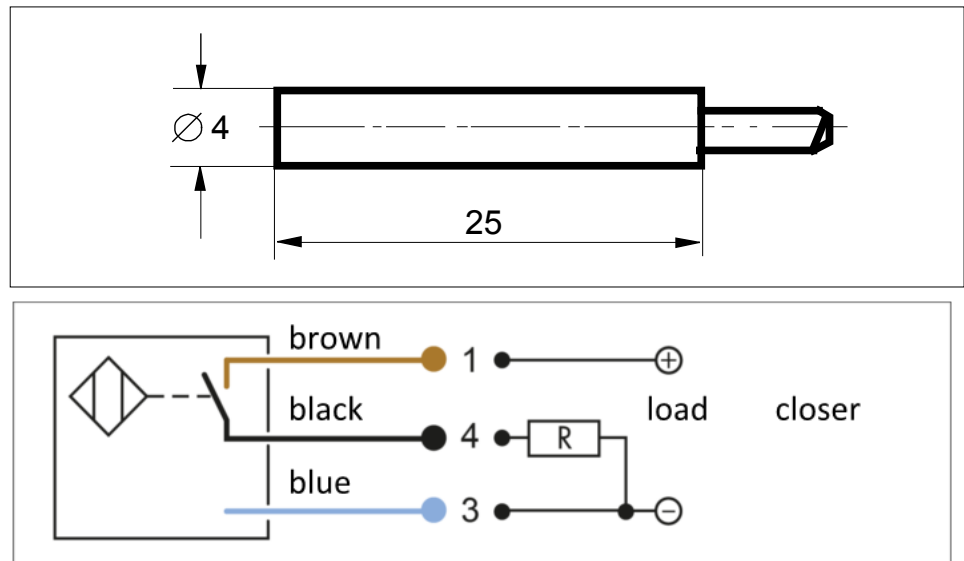


Fig. 4

Types that can be ordered (☞ catalog):

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

Make sure that you handle the proximity switches properly:

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

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

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

Pressurize connection A with compressed air.

Plug in the proximity switch 1 into the bracket of the contact plate until the distance between them is 1.5 mm and fix it with an attachment screw.

Do the same for connection B and proximity switch 2.

**Proximity switch
for SKE 18**

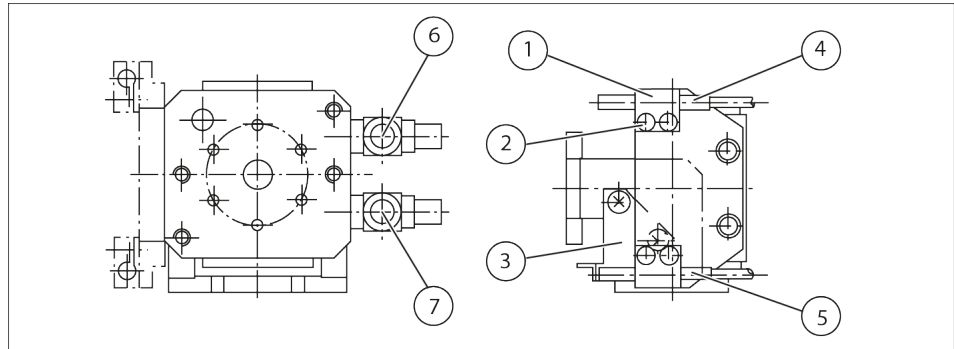


Fig. 5 Proximity switch for SKE 18

1	Bracket
2	Attachment screw (DIN 912 M2.5 x 6)
3	Contact plate
4	Proximity switch 2
5	Proximity switch 1
6	Connection A
7	Connection B

7.5.2 Inductive proximity switch IN 80

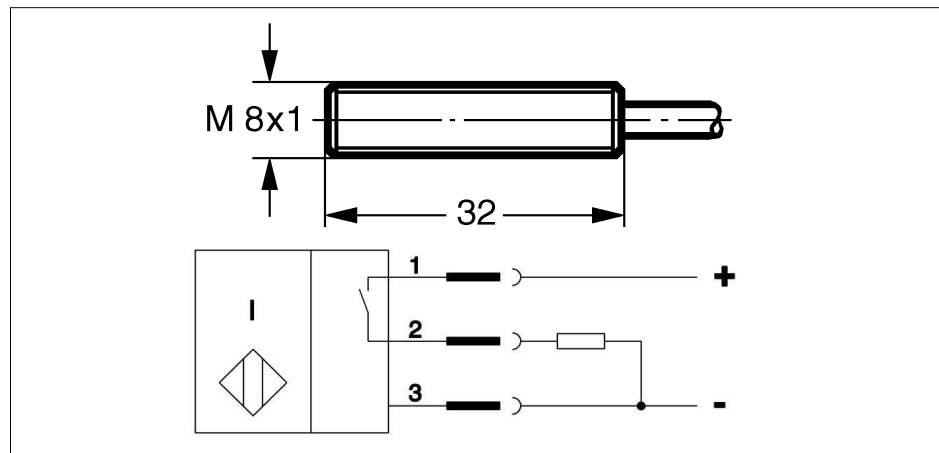


Fig. 6 Connection example for IN 80

1	brown	2	black	3	blue
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The inductive proximity switches used are equipped with reverse polarity protection and are short-circuit-proof.

Make sure that you handle the proximity switches properly:

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

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

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

Pressurize connection A with compressed air.

Plug in the proximity switch 1 into the bracket of the contact plate until the distance between them is 1.5 mm and fix it with an attachment screw.

In case of SKE 55, the adapter plates have the function of a contact plate.

Do the same for connection B and proximity switch 2.

**Proximity switch
for SKE 22**

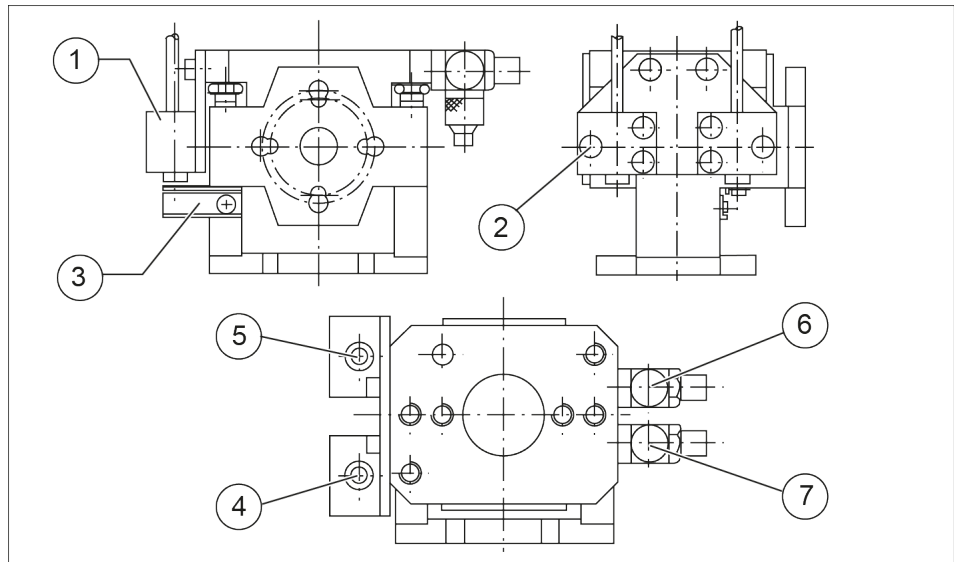


Fig. 7 Proximity switch for SKE 22

1	Bracket
2	Attachment screw (DIN 912 M3 x 8)
3	Control cam
4	Proximity switch 2
5	Proximity switch 1
6	Connection A
7	Connection B

**Proximity switch
for SKE 40**

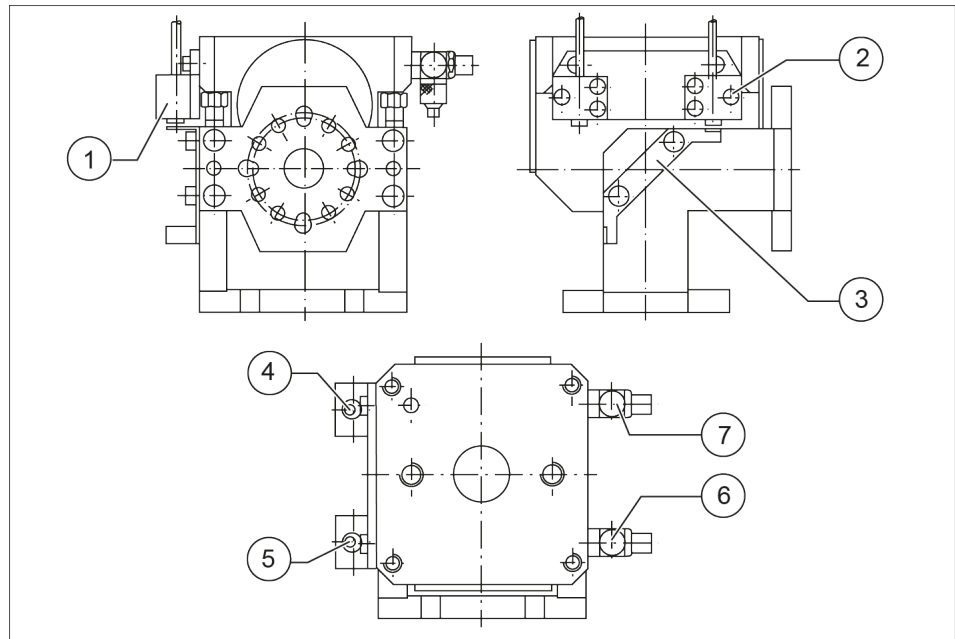


Fig. 8 Proximity switch for SKE 40

1	Bracket
2	Attachment screw (DIN 912 M3 x 8)
3	Contace plate
4	Proximity switch 2
5	Proximity switch 1
6	Connection A
7	Connection B

**Proximity switch
for SKE 55**

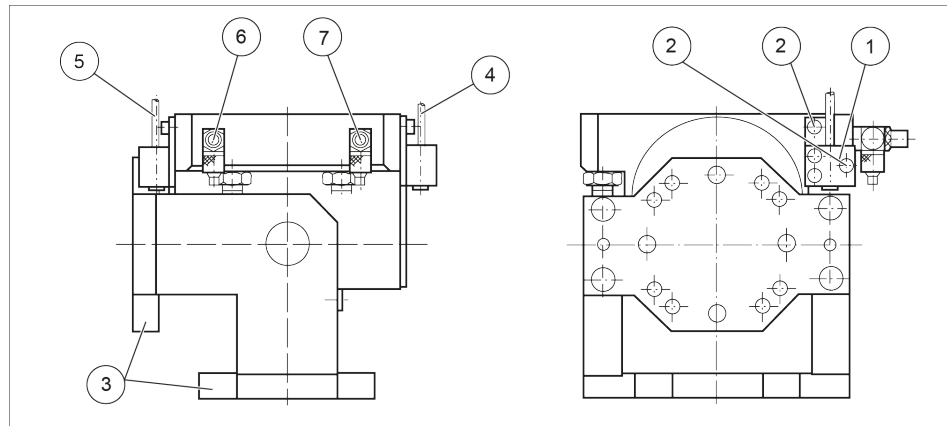


Fig. 9 Proximity switch for SKE 55

1	Bracket
2	Attachment screw (DIN 912 M3 x 8)
3	Adapter plate
4	Proximity switch 2
5	Proximity switch 1
6	Connection A
7	Connection B

8 Maintenance and care

The swivel unit is maintenance free.

Clean the unit with a soft cloth when dirty. Not use solvents.

9 Translation of original declaration of incorporation

In terms of the EC Machinery Directive 2006/42/EG, Annex II, Part B

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

We hereby declare that the following product:

Product designation: Swivel Unit / SKE 18 - 55 / pneumatic
ID number 0351100 ... 0351106

meets the applicable basic requirements of the **Machinery Directive (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 Safety of machinery - General principles for design - Risk assessment
12100:2011-03 and risk reduction

EN 62079:2001 Preparation of instructions - Structuring, content and presentation

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. Robert Leuthner, Address:
see address of the manufacturer

Lauffen/Neckar, October 2013



Ralf Winkler; Business Unit Manager
R & D Mechanical Gripping Systems

