Toggle-grippers

Types: PKG 50
PKG 65
PKG 80

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 below mentioned addresses.

Kindest Regards,

Your SCHUNK GmbH & Co. KG
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1. Unpacking and checking

1. Carefully remove the foam packaging without using sharp or pointed objects.

2. Please check the gripper for transport damage and inform us immediately of any damage.

Scope of delivery:

- PKG (without top jaws and proximity switches)
- 2 holders for proximity switches
- 1 parallel pin dia. 5 m6 x 12 DIN 6325 (PKG 50 and PKG 65)
- 1 parallel pin dia. 6 m6 x 16 DIN 6325 (PKG 80)

NOTE:

Please observe the following instructions when storing for extended periods:

- Store in a dry place
- Protect against aggressive media
- Avoid great temperature fluctuations
- Lubrify bright surfaces
- Close supply holes

Before putting into operation, please spray oil into the oil supply holes and actuate the gripper several times with a compressed air gun.

2. Short description and technical data

Toggle-gripper type PKG:

Actuation:	Pneumatic, compressed air filtered (10 µm) and lubrified
Operating pressure range:	8 bar
Operating temperature:	5 °C...60 °C
Repeatability:	0.1 mm
Compressed air connections:	M5 at the side
Gripping force safety:	Self-locking by toggle lever
Housing centering:	Via centering bore and parallel pin
Maintenance:	Relubrication recommended after 2 million cycles
Principle of action:	Toggle-lever principle, centric gripping. Only O.D. gripping possible, not suitable for I.D. gripping
Material:	Functional parts made of steel, partially hardened, housing made of special coated aluminium
Stroke monitoring:	Proximity switch holders and switching cams are included in the scope of delivery, 2 proximity switches Refer to catalog page 30.4 for proximity switches
Finger opening angle:	The opening angle can be restricted to 45° if desired.

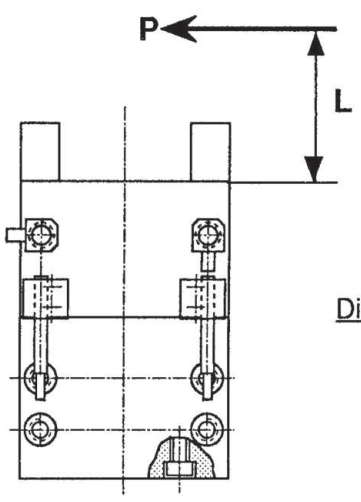
Technical data:

Type	Ident. No.	Max. gripping force P for dimension L*** in N*	Max. perm. workpiece weight in kg**	Air consumption per double stroke in cm	Mass in kg	Closing time in sec.	Opening time in sec.	Mass moment of inertia in kg cm²
PKG 50	307 102	460	1,8	28,5	0,38	0,5	0,5	2,7
PKG 65	307 103	600	2,4	51,5	0,65	0,55	0,55	8
PKG 80	307 104	950	3,8	92	1,2	0,4	0,4	18

* The gripping force value is valid when both gripping fingers are closed in parallel.
** Values for µ 0.1 and µ 2.5
*** See figure below for dimension L.

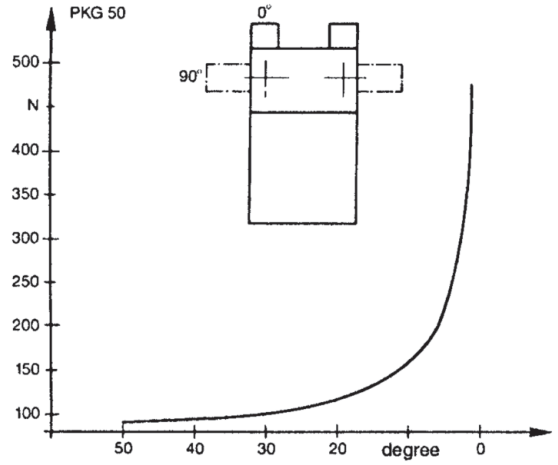
Accessories:

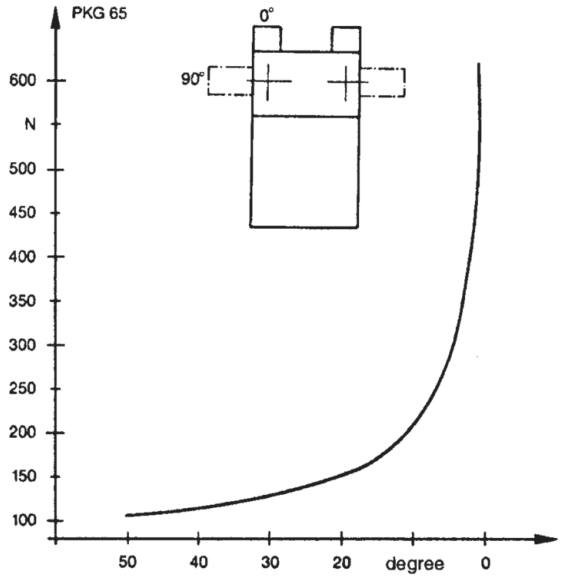
- Proximity switches
- Top jaws (available from Schunk as workpiece-specific parts)

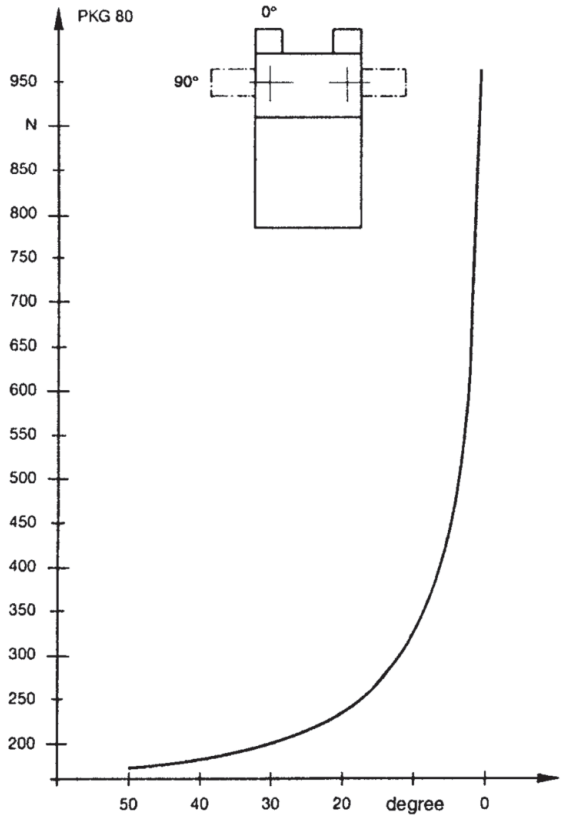


Dimension L PKG 50 30 mm
PKG 65 40 mm
PKG 80 50 mm

Gripping force diagrams



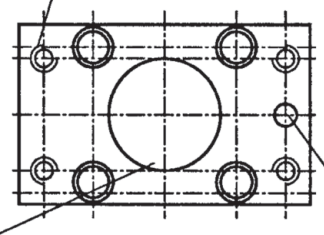




3. Assembly and connection

3.1 Securing the gripper

a Bottom

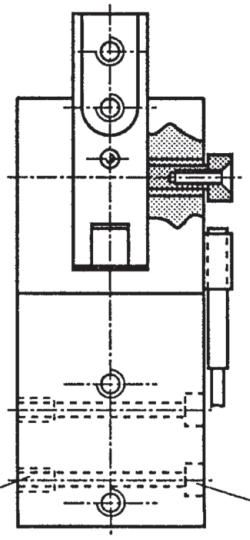


4 securing threads
PKG 50 M5x8
PKG 65 M6x12
PKG 80 M6x11

1 centering bore
PKG 50 Ø20^{H7} 2 mm deep
PKG 65 Ø25^{H7} 2.5 mm deep
PKG 80 Ø30^{H7} 2.5 mm deep

1 fixing bore (7 mm deep)
PKG 50 Ø5^{H7}
PKG 65 Ø5^{H7}
PKG 80 Ø6^{H7}

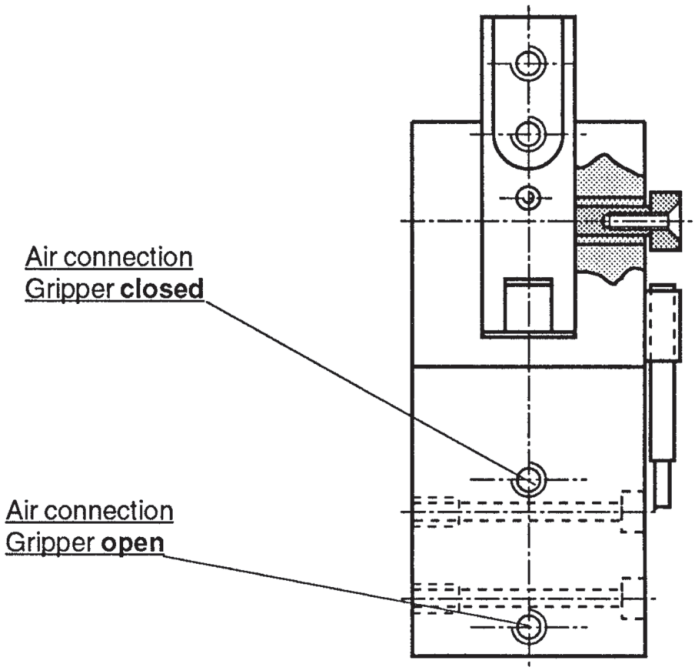
b Side



4 securing threads
PKG 50 M5x8
PKG 65 M6x12
PKG 80 M8x16

4 securing bores
PKG 65 M5 DIN 912
PKG 80 M6 DIN 912

3.2 Air supply



3.3 Restricting the opening angle to 45°

It is possible to restrict the opening angle to 45° per finger only if this is ordered or after gripper conversion at the works.

4. Proximity switches

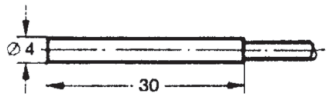
4.1 Notes on Proximity switches

Technical data:

- Voltage: 10 - 30 V DC
- Residual ripple: max. 15%
- Switching current, max.: 200 mA
- Differential travel: 15% of nominal operating distance
- Temperature range: -25°C to +70°C
- Switching frequency, max.: 1000 Hz
- Voltage drop: 1.5 V
- Degree of protection to IEC 34: IP 67*

* For circular connectors, this degree of protection applies only when the connector halves are screwed together.

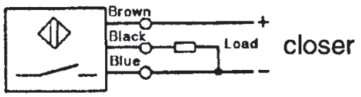
2 each



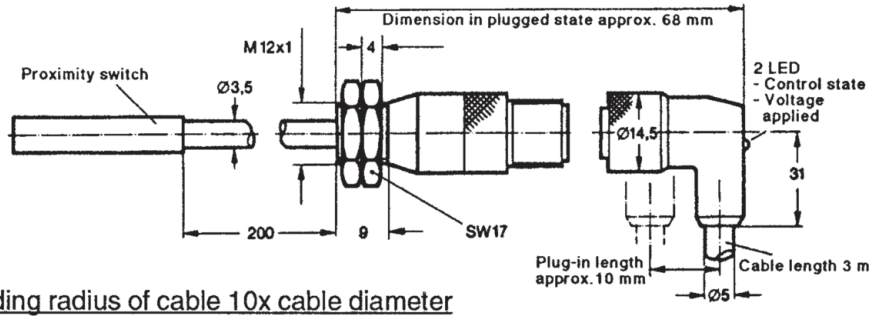
Type	Output	Id.-No.
INW 40/S	closer	301 504

Sensing distance 0,8 mm

Switching function:
drawn in non-damped condition



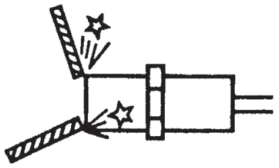
Schematic diagramm and dimensions



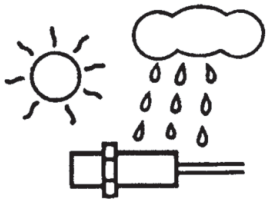
Bending radius of cable 10x cable diameter

Examples of improper treatment of proximity switches.

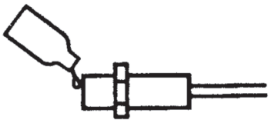
Do not swing the proximity switch by its cable.



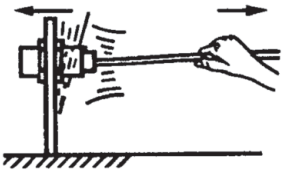
Do not allow the sensor to make contact with a detectable object of a hard substance or do not apply shock to the sensor.



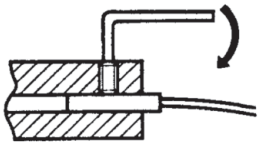
Avoid using the proximity switch in outdoor locations (subject to direct sunlight, rainwater, etc.)



Avoid using the proximity switch in an atmosphere of chemicals, especially strong alkali acid (such as nitric acid, chromic acid, hot concentrated sulfune acid, etc.)



Do not pull the wire of the proximity switch with excessively large force.



Mounting
Do not tighten the proximity switch excessively.

4.2 Fitting and adjusting the proximity switches

NOTE:
The proximity switches are accessories which must be ordered separately.

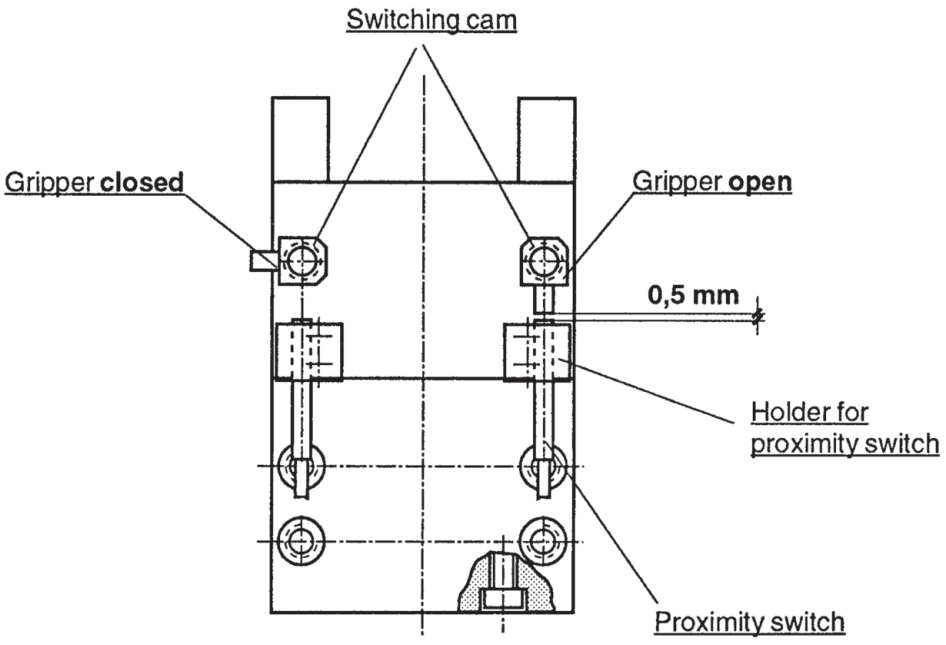
Gripper open:

1. Set the gripper to **open** position.
2. Carefully push the proximity switch into the holder until it touches the switching cam.
3. Pull the proximity switch back approx. 0.5 mm.
4. Fix the proximity switch with the clamping screws (max. tightening torque f 100 Ncm)
5. Connect the proximity switch.
6. Make sure that the switch functions by closing and opening the gripping fingers.

Gripper closed

1. Set the gripper to **closed** position.

Now fit the other proximity switch as described in Points 2 to 6.



5. Maintenance and care

Please follow the instructions below in order to guarantee perfect gripper functioning:

1. Make sure that the compressed air is lubrified.

2. Make sure that the bright steel parts are lubrified or greased.

3. Service the gripper after every 2 million cycles and lubricate:
   All sliding surfaces outside the cylinder using Metaflux-Gleitmetall, Molykote BR plus or a similar lubricant.
   All other sliding surfaces and all seals using Renolit HLT 2 or an equivalent grease.

4. Replace all seals each time maintenance is performed (see seal set list). You can order the complete set of seals from SCHUNK (see annex for order data).

5. If not otherwise prescribed, all screws and nuts must be tightened with a tightening torque in accordance with DIN or as specified by the manufacturer.

6. If not otherwise prescribed, all screws and nuts must be secured with Loctite No. 242 E.

Disassembling the gripper

NOTE:
Refer to Page 12 for item numbers.

1. Gripper in position **open**.

2. Remove the countersunk screw, Item 24.

NOTE:
Allow the operating pressure of 6 bar to act at the piston and thus prevent the piston from returning as well.

3. When the countersunk screw has been removed, switch off the operating pressure and unscrew the air connections.

4. Undo the set screws, Item 13, on both gripping fingers, Item 6.

5. Press out both parallel pins, Item 14.

6. Lift out the gripping finger, Item 6, with the toggle-lever mechanism (Items 4, 5 and 17). Do not dismantle the toggle-lever mechanism.

7. Remove the 4 fillister-head screws, Item 15, and take off the cover housing, Item 2.

8. Pull out the piston, Item 3.

9. Remove all seals in accordance with the seal set list.

10. Clean all parts.

11. Check all parts for faults and wear.

12. Replace all seals.

Assemble in reverse order. When doing this, pay attention to the Notes 3, 5 and 6 at the start of this section.

6. Problem analysis

The gripper does not move:

- Check air supply.
- Air or control lines mixed up.
- Proximity switch faulty or incorrectly set.
- Rotary axis clamping device released.
- Proximity switch connections reversed.
- Air connections which are not required are not closed.
- Connecting screw between piston rod and toggle lever broken.

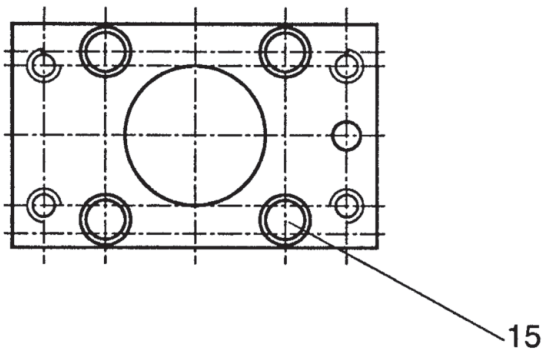
Piston jams:

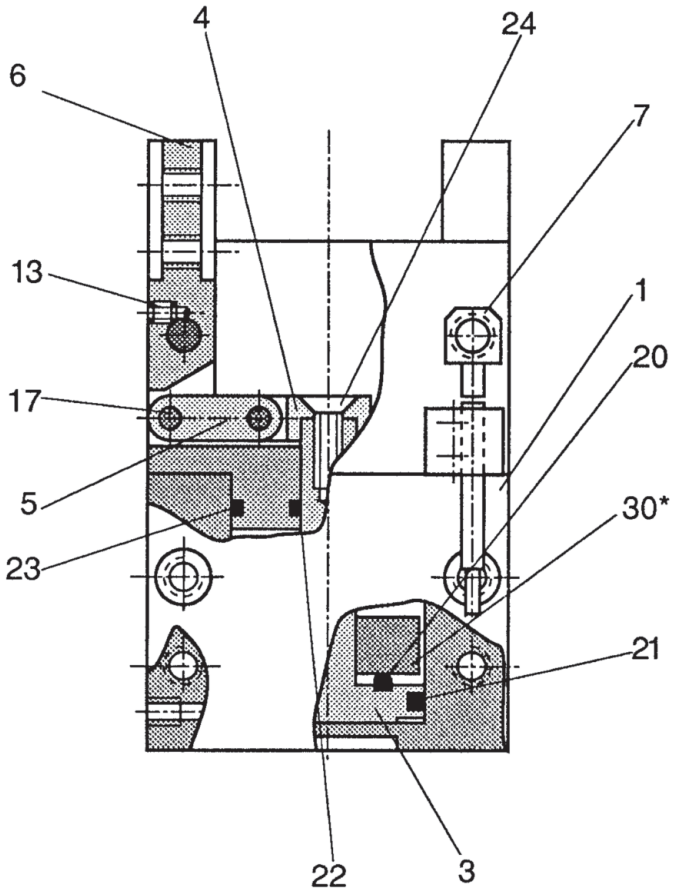
- Gripping fingers too long.
- Overloading by workpiece.
- Acceleration forces too high.

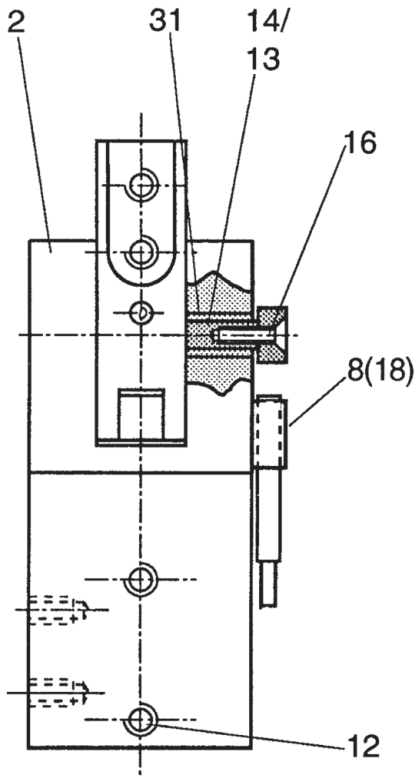
Gripping force decreases:

- Check seals.
- Incorrect clamping position of the gripping fingers.
- Check pressure.

7. Assembly drawing







* Only on version with 45° opening angle.

EC declaration of incorporation

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

Manufacturer/
distributor

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Spann- und Greiftechnik
Bahnhofstr. 106 – 134
74348 Lauffen/Neckar, Germany

We hereby declare that the following product:

Product designation	2-Finger Toggle Lever Gripper, pneumatic
Type designation:	PKG 30...PKG 80
ID number:	0307100…0307124

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 p.p.

Title of the signatory: Director for Development