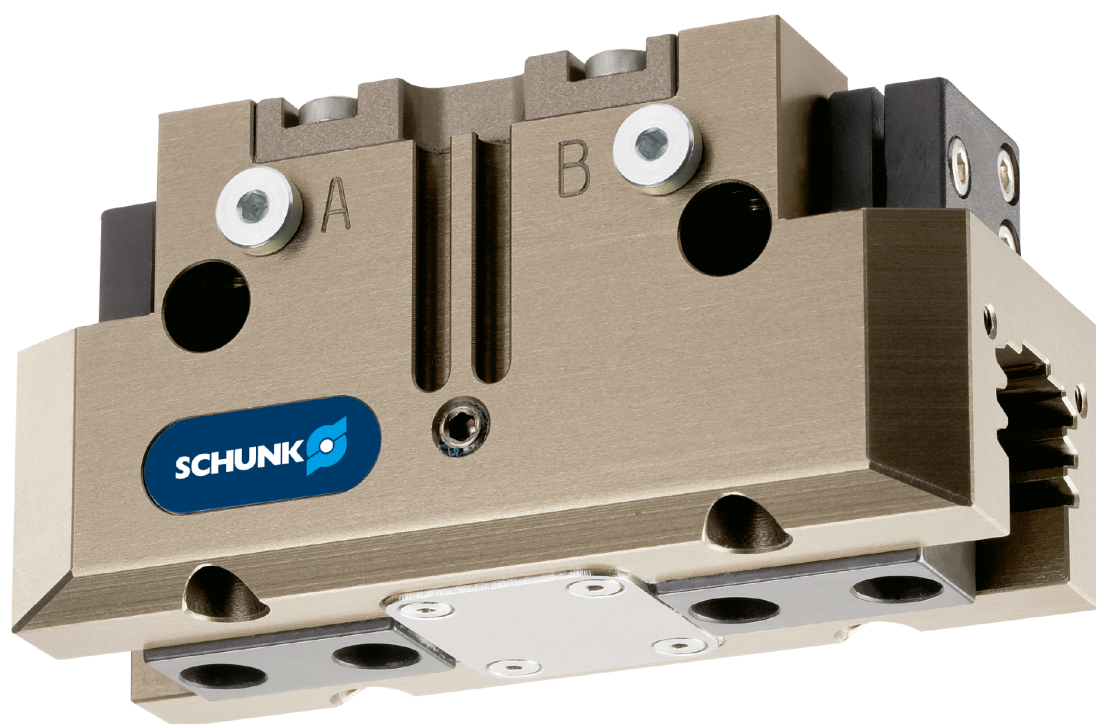


Assembly and Operating Manual

PGN-plus

2-Finger Parallel Gripper



Imprint

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Dear Customer,

thank you for trusting our products and our family-owned company, the leading technology supplier of robots and production machines.

Our team is always available to answer any questions on this product and other solutions. Ask us questions and challenge us. We will find a solution!

Best regards,

Your SCHUNK team

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1 General

1.1 About this manual

This manual contains important information for a safe and appropriate use of the product.

This manual is an integral part of the product and must be kept accessible for the personnel at all times.

Before starting work, the personnel must have read and understood this operating manual. Prerequisite for safe working is the observance of all safety instructions in this manual.

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

In addition to these instructions, the documents listed under [Applicable documents](#) [► 7] are applicable.

1.1.1 Presentation of Warning Labels

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



⚠ DANGER

Danger for persons!

Non-observance will inevitably cause irreversible injury or death.



⚠ WARNING

Dangers for persons!

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



⚠ CAUTION

Dangers for persons!

Non-observance can cause minor injuries.

CAUTION

Material damage!

Information about avoiding material damage.

1.1.2 Definition of Terms

The term "product" replaces the product name on the title page in this manual.

1.1.3 Applicable documents

- General terms of business *
- Catalog data sheet of the purchased product *
- Assembly and operating manuals of the accessories *
- For ATEX versions: Supplementary sheet "Installation and operating instructions - EX" *

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

1.1.4 Sizes

This operating manual applies to the following sizes:

- PGN-plus 40
- PGN-plus 50
- PGN-plus 64
- PGN-plus 80
- PGN-plus 100
- PGN-plus 125
- PGN-plus 160
- PGN-plus 200
- PGN-plus 240
- PGN-plus 300
- PGN-plus 380

1.1.5 Variants

This operating manual applies to the following variations:

- PGN-plus stroke 1
- PGN-plus stroke 2
- PGN-plus with gripping force maintenance "O.D. gripping" (AS)
- PGN-plus with gripping force maintenance "I.D. gripping" (IS)
- PGN-plus dust-tight (SD)
- PGN-plus high-temperature (V/HT)
- PGN-plus force intensification (KVZ)
- PGN-plus anti-corrosion (K)
- PGN-plus precision (P)
- PGN-plus ATEX (EX)

1.2 Warranty

If the product is used as intended, the warranty is valid for 36 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

- 2-Finger Parallel Gripper PGN-plus in the version ordered
- Accessory pack

Content of the accessory pack:

- 6 x Centering sleeves for mounting
- 2 x O-ring for hose-free direct connection
- 2 x screw plug for hose connection

ID.-No. of the accessory pack

Size	ID number	
	PGN-plus	PGN-plus V/HT
PGN-plus 40	5518410	395518410
PGN-plus 50	5512043	395512043
PGN-plus 64	5512044	395512044
PGN-plus 80	5512045	395512045
PGN-plus 100	5512046	395512046
PGN-plus 125	5512047	395512047
PGN-plus 160	5512048	395512048
PGN-plus 200	5512049	395512049
PGN-plus 240	5513858	395513858
PGN-plus 300	5512050	395512050
PGN-plus 380	5515137	395515137

1.4 Accessories

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.

ID.-No. of the seal kit

Size	ID number			
	PGN-plus	PGN-plus-V/HT	PGN-plus-SD	PGN-plus-KVZ
PGN-plus 40	5516793	395516793	5518709	-
PGN-plus 50	0370891	0370940	5518710	5515863
PGN-plus 64	0370892	0370908	5518711	5515864
PGN-plus 80	0370893	0370941	5518712	5515865
PGN-plus 100	0370894	0370942	5518713	5515866
PGN-plus 125	0370895	0370926	5518714	5515867
PGN-plus 160	0370896	0370922	5518715	5515868
PGN-plus 200	0370897	0370939	5518716	5520936
PGN-plus 240	0370987	0370988	5518717	-
PGN-plus 300	0370898	0370943	5518718	-
PGN-plus 380	0370989	0370990	5518719	-

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, [Technical data](#) [► 17].
- When implementing and operating components in safety-related parts of the control systems, the basic safety principles in accordance with DIN EN ISO 13849-2 apply. The proven safety principles in accordance with DIN EN ISO 13849-2 also apply to categories 1, 2, 3 and 4.
- The product is intended for installation in a machine/system. The applicable guidelines must be observed and complied with.
- The product is intended for industrial and industry-oriented use.
- Appropriate use of the product includes compliance with all instructions in this manual.

2.2 Not intended use

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

- Any utilization that exceeds or differs from the appropriate use is regarded as misuse.

2.3 Constructional changes

Implementation of structural changes

By conversions, changes, and reworking, e.g. additional threads, holes, or safety devices can impair the functioning or safety of the product or damage it.

- Structural changes should only be made with the written approval of SCHUNK.

2.4 Spare parts

Use of unauthorized spare parts

Using unauthorized spare parts can endanger personnel and damage the product or cause it to malfunction.

- Use only original spare parts or spares authorized by SCHUNK.

2.5 Gripper fingers

Requirements for the gripper fingers

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

- Arrange the gripper fingers in a way that the product reaches either the position "open" or "closed" in a de-energized state.
- Only exchange the gripper fingers when no residual energy remains in the product.
- Make sure that the product and the top jaws are a sufficient size for the application.

2.6 Ambient conditions and operating conditions

Required ambient conditions and operating conditions

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

- Make sure that the product is used only in the context of its defined application parameters, [Technical data](#) [▶ 17].

2.7 Personnel qualification

Inadequate qualifications of the personnel

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

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

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

Trained electrician	Due to their technical training, knowledge and experience, trained electricians are able to work on electrical systems, recognize and avoid possible dangers and know the relevant standards and regulations.
Qualified personnel	Due to its technical training, knowledge and experience, qualified personnel is able to perform the delegated tasks, recognize and avoid possible dangers and knows the relevant standards and regulations.
Instructed person	Instructed persons were instructed by the operator about the delegated tasks and possible dangers due to improper behaviour.
Service personnel of the manufacturer	Due to its technical training, knowledge and experience, service personnel of the manufacturer is able to perform the delegated tasks and to recognize and avoid possible dangers.

2.8 Personal protective equipment

Use of personal protective equipment

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

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

2.9 Notes on safe operation

Incorrect handling of the personnel

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

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

2.10 Transport

Handling during transport

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

- When handling heavy weights, use lifting equipment to lift the product and transport it by appropriate means.
- Secure the product against falling during transportation and handling.
- Stand clear of suspended loads.

2.11 Malfunctions

Behavior in case of malfunctions

- Immediately remove the product from operation and report the malfunction to the responsible departments/persons.
- Order appropriately trained personnel to rectify the malfunction.
- Do not recommission the product until the malfunction has been rectified.
- Test the product after a malfunction to establish whether it still functions properly and no increased risks have arisen.

2.12 Disposal

Handling of disposal

The incorrect handling of disposal may impair the product's safety and cause serious injuries as well as considerable material and environmental harm.

- Follow local regulations on dispatching product components for recycling or proper disposal.

2.13 Fundamental dangers

General

- Observe safety distances.
- Never deactivate safety devices.
- Before commissioning the product, take appropriate protective measures to secure the danger zone.
- Disconnect power sources before installation, modification, maintenance, or calibration. Ensure that no residual energy remains in the system.
- If the energy supply is connected, do not move any parts by hand.
- Do not reach into the open mechanism or movement area of the product during operation.

2.13.1 Protection during handling and assembly

Incorrect handling and assembly

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

- Have all work carried out by appropriately qualified personnel.
- For all work, secure the product against accidental operation.
- Observe the relevant accident prevention rules.
- Use suitable assembly and transport equipment and take precautions to prevent jamming and crushing.

Incorrect lifting of loads

Falling loads may cause serious injuries and even death.

- Stand clear of suspended loads and do not step into their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.

2.13.2 Protection during commissioning and operation

Falling or violently ejected components

Falling and violently ejected components can cause serious injuries and even death.

- Take appropriate protective measures to secure the danger zone.
- Never step into the danger zone during operation.

2.13.3 Protection against dangerous movements

Unexpected movements

Residual energy in the system may cause serious injuries while working with the product.

- Switch off the energy supply, ensure that no residual energy remains and secure against inadvertent reactivation.
- 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.

2.14 Notes on particular risks



⚠ DANGER

Risk of fatal injury from suspended loads!

Falling loads can cause serious injuries and even death.

- Stand clear of suspended loads and do not step within their swiveling range.
- Never move loads without supervision.
- Do not leave suspended loads unattended.
- Wear suitable protective equipment.



⚠ WARNING

Risk of injury from objects falling and being ejected!

Falling and ejected objects during operation can lead to serious injury or death.

- Take appropriate protective measures to secure the danger zone.



⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.



⚠ WARNING

Risk of injury from crushing and impacts!

Serious injury could occur during the base jaw procedure and when breaking or loosening the gripper fingers.

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



⚠ WARNING

Risk of injury from sharp edges and corners!

Sharp edges and corners can cause cuts.

- Use suitable protective equipment.

3 Technical data

Designation	PGN-plus
Pressure medium	Compressed air, compressed air quality according to ISO 8573-1: 7:4:4
Nominal operating pressure [bar]	6
Minimum pressure [bar] without maintenance of gripping force with maintenance of gripping force	2.5 4
Max. pressure [bar] without gripping force maintenance with gripping force maintenance Force intensified version (KVZ)	8 6.5 6
Pressure range for air purge [bar]	0.5 - 1

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

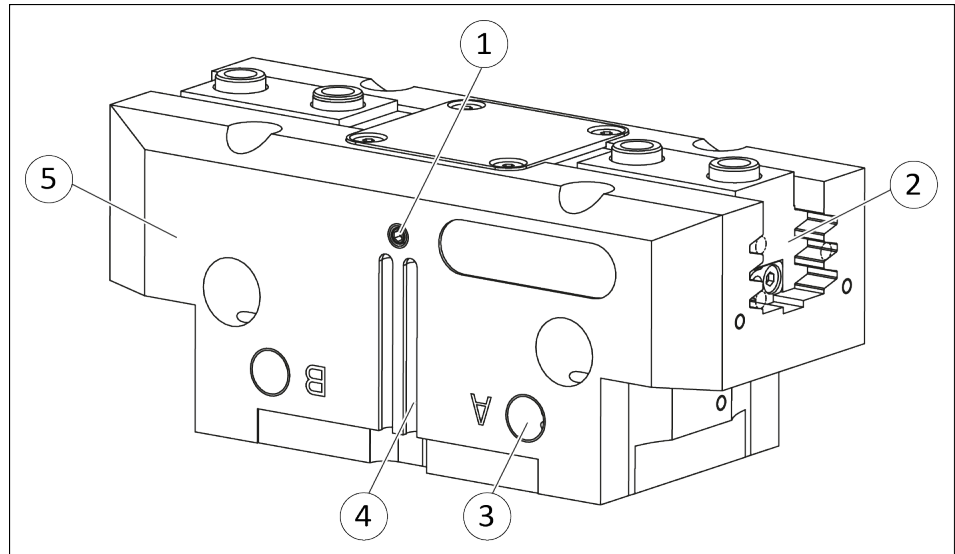
Ambient conditions and operating conditions

Designation	PGN-plus
Ambient temperature [°C] min. max.	+5 +90 / (V/HT: +130)
Protection class IP *	40 / (SD: 64)
Noise emission [dB(A)]	≤ 70

- * 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



2-Finger Parallel Gripper

1	Air purge connection
2	Base jaw
3	Compressed air main connection
4	Groove for magnetic switch
5	Housing

4.2 Description

Universal 2-finger parallel gripper with large gripping force and high maximum moments thanks to multi-tooth guidance.

5 Assembly

5.1 Installing and connecting



⚠ WARNING

Risk of injury due to unexpected movements!

If the power supply is switched on or residual energy remains in the system, components can move unexpectedly and cause serious injuries.

- Before starting any work on the product: Switch off the power supply and secure against restarting.
- Make sure, that no residual energy remains in the system.

CAUTION

Damage to the gripper is possible!

If the maximum permissible finger weight or the permissible mass moment of inertia of the fingers is exceeded, the gripper can be damaged.

- A jaw movement always has to be without jerks and bounce.
 - You must therefore implement sufficient reduction and/or damping.
 - Observe the diagrams and information in the catalog data sheet.
-
- Check the evenness of the mounting surface, [Mechanical connection](#) [▶ 20].
 - Connect product via the hose-free direct connection, [Pneumatic connection](#) [▶ 23].
 - OR: Connect supply lines to the main air connections A and B, [Pneumatic connection](#) [▶ 23].
 - ✓ Unscrew locking screws.
 - ✓ Screw air connections.
 - ✓ OR: Screw throttle valve in order to be able to carry out sufficient throttling and/or dampening.
 - Screw the product to the machine/system, [Mechanical connection](#) [▶ 20].
 - ✓ Use suitable connecting elements (adapter plates) if necessary.
 - ✓ Observe permissible depth of engagement and if required strength class.
 - Connect air purge connection if necessary.
 - Connect the sensor, see sensor assembly and operating manual.
 - Installing the sensor, [Mounting the sensor](#) [▶ 24].

Dust-tight (SD)

NOTE

In order to achieve perfect functioning of the gripper, the set-screw of the air purge connection must be removed and replaced with a pneumatic connection when using the dust-tight variant (SD). SCHUNK recommends using the air purge connection within the scope of the technical data, [Technical data](#) [► 17].

5.2 Connections

5.2.1 Mechanical connection



⚠ DANGER

Danger of explosion in potentially explosive areas!

- Observe supplementary sheet for products with explosion-resistant versions "PGN-plus -...-EX".

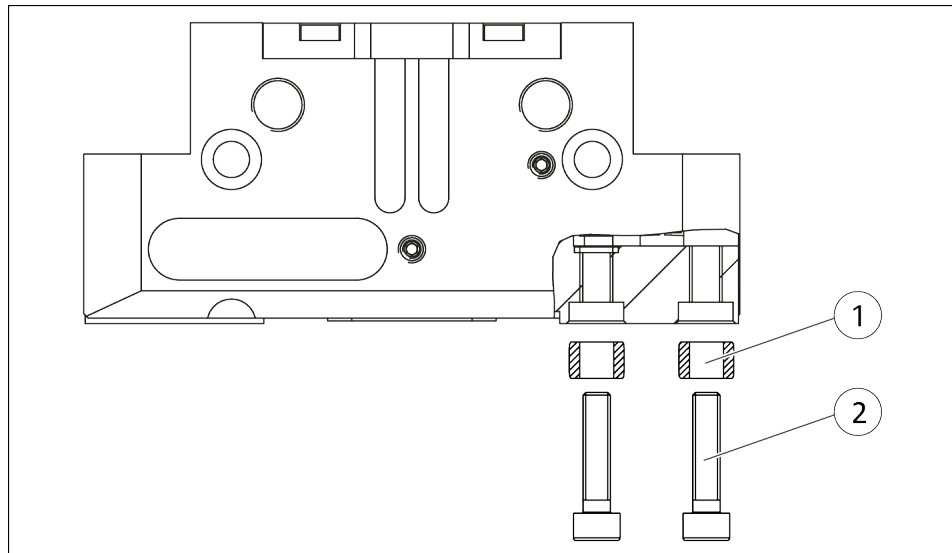
Evenness of the mounting surface

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

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

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

Connections at the base jaws



Connections at the base jaws

Item	Mounting	PGN-plus					
		40	50	64	80	100	125
1	Centering sleeve	∅4	∅5	∅6	∅8	∅10	∅10
2	Thread in base jaws	M2.5	M3	M4	M5	M6	M6
	Mounting screw strength class	12.9					
	Max. depth of engagement from locating surface [mm]	6.1	8.5	10	10	14	13

Item	Mounting	PGN-plus				
		160	200	240	300	380
1	Centering sleeve	∅14	∅16	∅16	∅22	∅28
2	Thread in base jaws	M10	M12	M12	M16	M20
	Mounting screw strength class	12.9				
	Max. depth of engagement from locating surface [mm]	17	17	21	28	40

Dust-tight (SD)

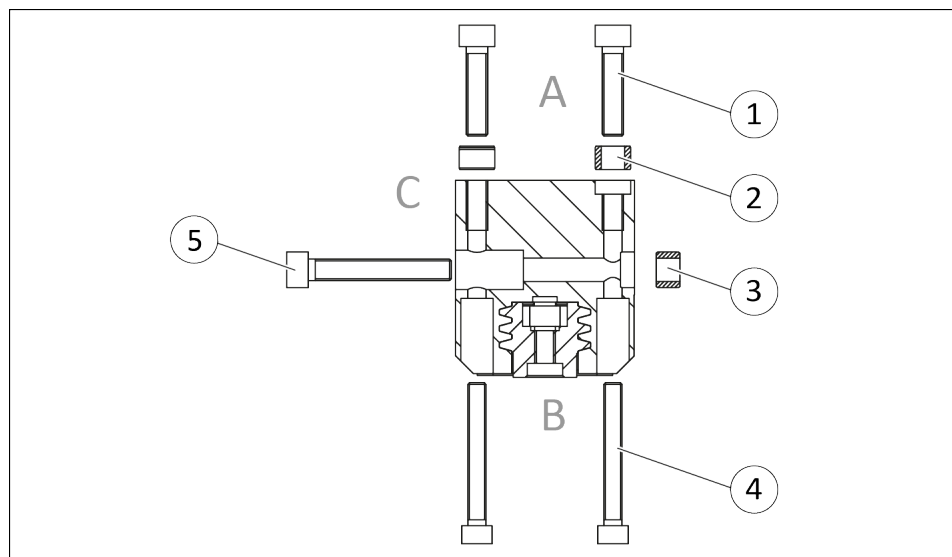
NOTE

On delivery of the dust-tight version (SD) the intermediate jaws are screwed onto the base jaws. The intermediate jaws can become off while removing the screws.

Observe during assembly, that the intermediate jaws are between the base jaws und the gripper finger.

Connections at the housing

The product can be mounted from three sides.



Connections at the housing

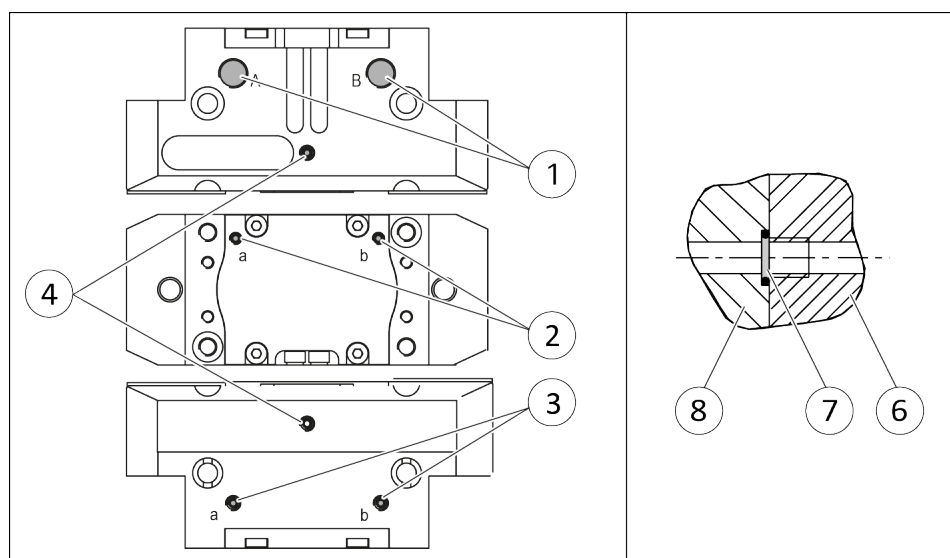
Item	Mounting	PGN-plus					
		40	50	64	80	100	125
Side A							
1	Mounting screw	M3	M4	M5	M5	M6	M8
	Max. depth of engagement from locating surface [mm]	6	11	12	15	14	20
	for Variants IS/AS	9	16	18	18	16	20
2	Centering sleeve	∅5	∅6	∅8	∅8	∅10	∅12
Side B							
4	Mounting screw	M2.5	M3	M4	M4	M5	M6
	Mounting screw according to standard	DIN EN ISO 4762					
2	Centering sleeve	∅5	∅6	∅8	∅8	∅10	∅12
Side C							
5	Mounting screw	M2.5	M3	M4	M5	M6	M8
	Mounting screw according to standard	DIN EN ISO 4762 Max. strength class 8.8					
3	Centering sleeve	∅5	∅6	∅8	∅8	∅10	∅12

Item	Mounting	PGN-plus				
		160	200	240	300	380
Side A						
1	Mounting screw	M8	M10	M12	M16	M20
	Max. depth of engagement from locating surface [mm]	20	20	25.5	31	38
	for Variants IS/AS	20	20	23	31	31
2	Centering sleeve	∅12	∅14	∅16	∅22	∅28
Side B						
4	Mounting screw	M6	M8	M10	M12	M16
	Mounting screw according to standard	DIN EN ISO 4762				
2	Centering sleeve	∅12	∅14	∅16	∅22	∅28
Side C						
5	Mounting screw	M8	M10	M12	M16	M20
	Mounting screw according to standard	DIN EN ISO 4762 Max. strength class 8.8				
3	Centering sleeve	∅12	∅14	∅16	∅22	∅28

5.2.2 Pneumatic connection

NOTE

- Observe the requirements for the compressed air supply, [Technical data](#) [► 17].
- In case of compressed air loss (cutting off the energy line), the components lose their dynamic effects and do not remain in a secure position. However, the use of a SDV-P pressure maintenance valve is recommended in this case in order to maintain the dynamic effect for some time. Product variants are also offered with mechanical gripping force via springs, which also ensure a minimum clamping force in the event of a pressure drop.



Air connections

1	Main connections (Hose connection) (A = open, B = close)
2	Hose-free direct connection at the base (a = open, b = close)
3	Hose-free direct connection
4	Air purge connection
Hose-free direct connection	
6	Product
7	O-ring
8	Attachment

- Open only the air connections that are needed.
- Close unused main air connections using the screw plugs from the enclosed pack.
- For a hose-free direction connection, use the O-rings from the enclosed pack.

Item	Mounting	PGN-plus					
		40	50	64	80	100	125
1	Thread in the main air connections	M3	M5	M5	M5	G1/8	G1/8
	Max. depth of engagement from locating surface [mm]	4	6	6	6	7	7
2	Thread in the air purge connection	M3	M5	M5	M5	M5	M5
	Max. depth of engagement from locating surface [mm]	4	5	6	6	6	6

Item	Mounting	PGN-plus				
		160	200	240	300	380
1	Thread in the main air connections	G1/8	G1/8	G1/8	G1/4	G1/4
	Max. depth of engagement from locating surface [mm]	7	7	8	12	12
2	Thread in the air purge connection	M5	M5	M5	M5	M5
	Max. depth of engagement from locating surface [mm]	6	6	6	6	8

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.

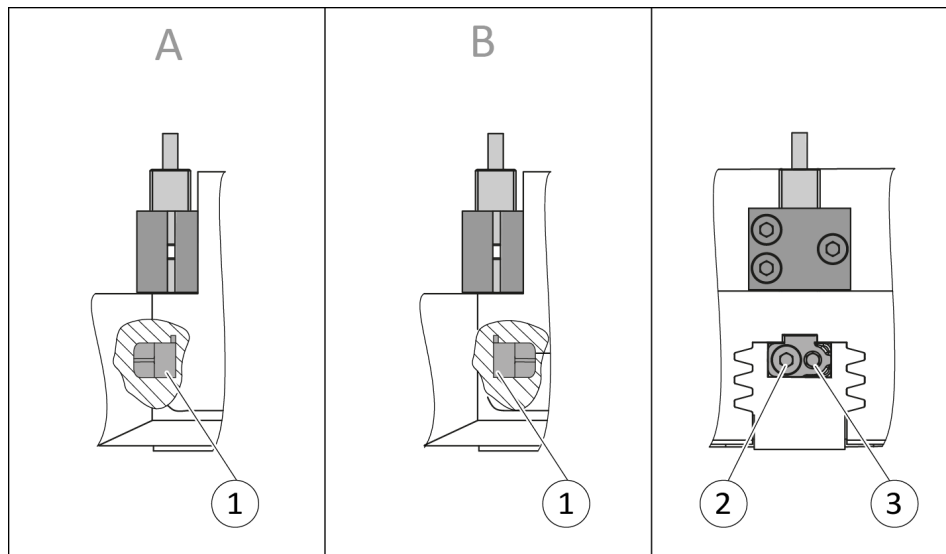
- For the exact type designations of suitable sensors, please see catalog datasheet and [Overview of sensors](#) [► 25].
- For technical data for the suitable sensors, see assembly and operating manual and catalog datasheet.
 - The assembly and operating manual and catalog datasheet are included in the 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	PGN-plus											
	40	50	64	80	100	125	160	200	240	300	380	
Inductive proximity switch IN 80			X	X	X	X	X	X	X	X	X	X
Magnetic switch MMS 22	X	X	X	X	X	X	X	X	X	X	X	X
Programmable magnetic switch MMS 22-PI2	X		X	X	X	X	X					
Programmable magnetic switch MMS-P 22	X	X	X	X	X	X	X					
Programmable magnetic switch MMS 22-PI1	X	X	X	X	X	X	X	X	X	X	X	X
Magnetic switch MMS 22-IOL	X	X	X	X	X	X	X					
Analog magnetic switch MMS 22-A	X		X	X	X	X	X					
Analog position sensor APS-Z80			X	X	X	X	X	X	X	X	X	X
Reed switch RMS 22					X	X	X	X	X	X	X	X
Reed switch RMS 80			X	X	X	X	X	X	X	X	X	X
Flexible position sensor FPS-F5 with FPS-S M8			X	X	X	X	X	X	X	X	X	X *
Flexible position sensor FPS-F5 with MMS 22-A	X		X	X	X	X	X					
Analog position sensor APS-M1			X	X	X	X	X	X	X	X	X	X
Force-measuring jaw FMS		X	X	X	X	X	X	X		X		
Optical distance sensor OAS	X	X	X	X	X	X						
Radio system RSS R1/T2 with Reed switch RMS 22					X	X	X	X	X	X	X	X
Radio system RSS R1/T2 with Reed switch RMS 80			X	X	X	X	X	X	X	X	X	X

* Only for the "stroke 2" variant.

5.3.2 Turn control cam



Turn control cam, example control cam for inductive monitoring

Depending on the jaw stroke, it may be necessary to change the alignment of the control cam for the sensors IN 80 and RMS 80.

In the image, the installation situation (A) shows the control cam in the delivery state of the product and the installation situation (B) shows the turned control cam.

In order to change the alignment of the control cam, proceed as follows:

- Undo the screw (2).
- Remove control cam (1) from the product, turn and re-insert it into the product.
- Turn the screw (3) to push the position of the control cam (1).

5.3.3 Switch-off hysteresis for magnetic switches

Sensors MMS 22, MMS-P 22, MMS 22-PI1 and MMS 22-PI2

The smallest detectable difference in stroke is defined in the following table:

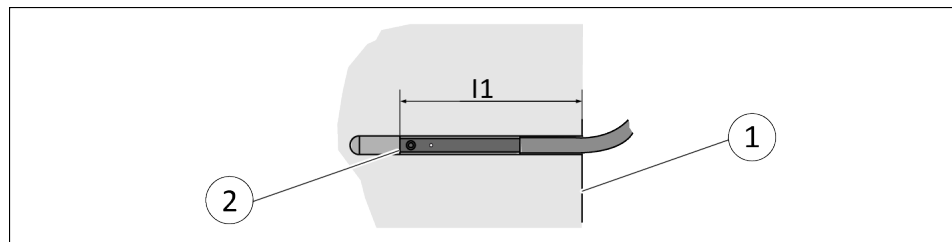
The smallest detectable difference in stroke based on the nominal stroke

For grippers with X mm nominal stroke per jaw	Min. query range per jaw/ min. queried stroke difference per jaw
$X \leq 5 \text{ mm}$	30% of the nominal stroke per jaw
$X > 5 \text{ mm to } X \leq 10 \text{ mm}$	20% of the nominal stroke per jaw
$X > 10 \text{ mm}$	10% of the nominal stroke per jaw

Example: Product with 7 mm nominal stroke per jaw

$$7 \text{ mm} * 20\% = 1.4 \text{ mm}$$

5.3.4 Setting dimensions for magnetic switches



* Setting dimension l_1 , from product bottom edge (1) to front sensor (2)

The setting dimension applies for the following sensors:

- Programmable magnetic switch MMS 22-PI1, not for sizes 50, 200, 240, 300 and 380
- Programmable magnetic switch MMS 22-PI2, not for sizes 50, 200, 240, 300 and 380
- Programmable magnetic switch MMS-P 22

Size	l_1^* [mm]	Size	l_1^* [mm]
40	14.9	80-KVZ	48.5
40 AS	18.9	80 AS-KVZ / IS-KVZ	66.5
40 IS	23.9	100	27.7
40-KVZ	27.6	100 AS	19.9
40 AS-KVZ / IS-KVZ	36.6	100 IS	53.7
50	15.4	100-KVZ	54.2
50 AS	20.8	100 AS-KVZ / IS-KVZ	80.2
50 IS	31.4	125	23.0
50-KVZ	30.7	125 AS	59.6
50 AS-KVZ / IS-KVZ	46.7	125 IS	52.9
64	22.4	125-KVZ	55.5
64 AS	19.2	125 AS-KVZ / IS-KVZ	85.4
64 IS	40.4	160	31.4
64-KVZ	41.4	160 AS	71.9
64 AS-KVZ / IS-KVZ	59.4	160 IS	71.4
80	26.0	160-KVZ	68.9
80 AS	22.4	160 AS-KVZ / IS-KVZ	108.9
80 IS	44.0		

* Dimension l_1 Bottom edge of the product to front edge of the sensor

NOTE

The magnetic switch MMS 22-PI1 can be adjusted and taught in two ways.

- "Standard mode" allows for quick installation on the T-nut preset by SCHUNK in the groove or the defined setting dimension "l1."
- In "Optimal Mode", the sensor identifies the optimal position in the groove itself.
SCHUNK recommends "Optimal Mode" for setting the sensors.

5.3.5 Mount the inductive proximity switch IN 80

CAUTION

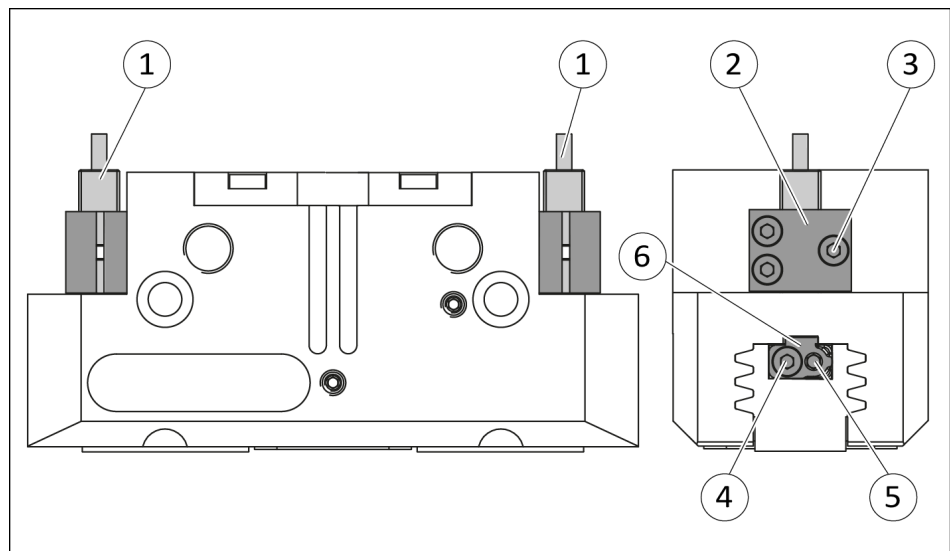
Blockade of the gripper after setting or replacing of the switching cam!

The switching cam can be tilt in the guide, if it was not fixed exactly in the base jaw.

- Apply the switching cam in the direction of the base jaw, so that the cam does not contact the housing of the gripper.

Variant Dust-tight:

Before attaching the sensor, remove the sealing bolts from the bracket. Before adjusting the control cam, unscrew the set-screw from the side cover.



The switching point of the position "Gripper open" and "Gripper closed" have already been set by SCHUNK. If these positions are to be used, carry out the following:

- Slide the sensor 1 (1) into the bracket (2) until it stops.
- Tighten the screw (3) on the bracket (2).
Tightening torque: 0.2 Nm
- Slide the sensor 2 (1) to the stop into the bracket (2).

- Tighten the screw (3) on the bracket (2).
Tightening torque: 0.2 Nm
- Bring product into the "gripper open" or "gripper closed" position and test the function.

If other switching points are to be used, do the following:

Position "Gripper open" or "Part gripped (I.D. gripping)"

- Slide the sensor 1 (1) into the bracket (2) until it stops.
- Tighten the screw (3) on the bracket (2).
Tightening torque: 0.2 Nm
- Open gripper or grip part.
- Unfasten the screw (4).
- Turn the screw (5) to adjust the position of the control cam (6).
 - ✓ Slide control cam (6) inwards until the sensor 1 (1) no longer responds.
Move the control cam (6) back towards the outside until the sensor 1 (1) begins to switch.
- Tighten screw (4) while pressing the control cam in the direction of the gripper fingers. **IMPORTANT! The control cam may tilt in the guide if it has not been tightened properly.**
 - ✓ Switching point is set.
- Bring product into the "Gripper open" or "Part gripped" position and test the function.

Position "Gripper closed" or "Part gripped (O.D. gripping)"

- Slide the sensor 2 (1) into the bracket (2) until it stops.
- Tighten the screw (3) on the bracket (2).
Tightening torque: 0.2 Nm
- Close gripper or grip part.
- Unfasten the screw (4).
- Turn the screw (5) to adjust the position of the control cam (6).
 - ✓ Slide control cam (6) outwards until the sensor 2 (1) no longer responds.
Move the control cam (6) back towards the inside until the sensor 2 (1) begins to switch.
- Tighten screw (4) while pressing the control cam in the direction of the gripper fingers. **IMPORTANT! The control cam may tilt in the guide if it has not been tightened properly.**
 - ✓ Switching point is set.
- Bring product into the "Gripper closed" or "Part gripped" position and test the function.

Variant Dust-tight:

Screw in set-screw into the side cover.

NOTE

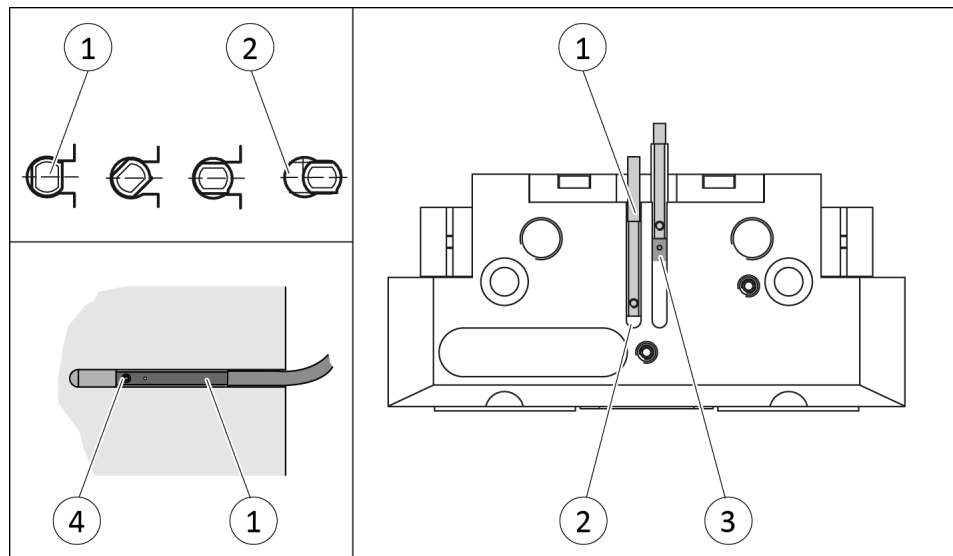
If the switching position cannot be queried, it may be that the alignment of the control cam has to be changed, [Turn control cam](#) [▶ 26].

5.3.6 Mount the magnetic switch MMS 22

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.



Position "Gripper open" or "Part gripped (I.D. gripping)"

- Bring product in the position to be set.
- If necessary remove T-nut (3).
- Turn the sensor 1 (1) into the groove (2).
OR: Slide the sensor 1 (1) into the groove (2) until the sensor 1 (1) stops at the end of the groove.
- Pull the sensor 1 (1) back again slowly until it switches.
- Secure the sensor 1 (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Bring product into the "Gripper open" or "Part gripped" position and test the function.

Position "Gripper closed" or "Part gripped (O.D. gripping)"

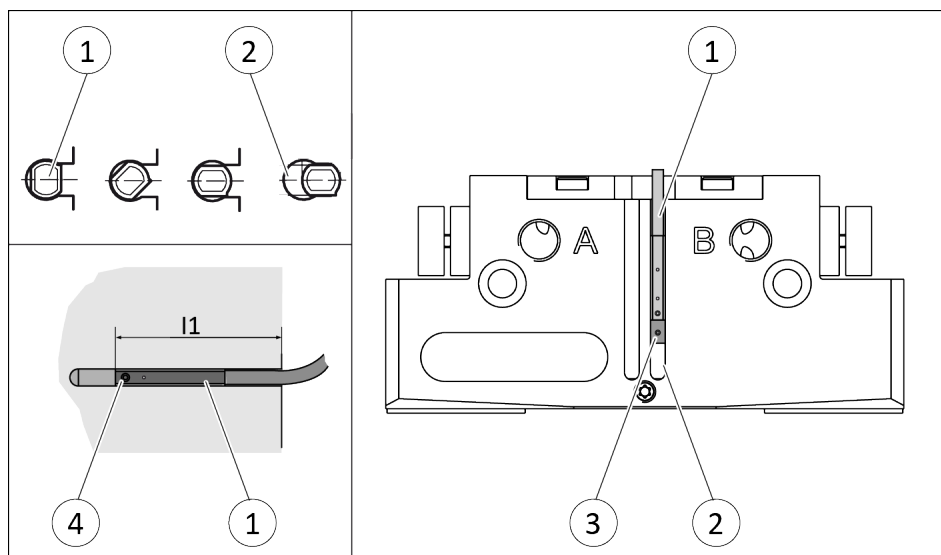
- Bring product in the position in which it is to be set.
- If necessary remove T-nut (3).
- Turn the sensor 2 (1) into the groove (2).
OR: Slide sensor 2 (1) into the groove (2) in the direction of the housing middle (3), until the sensor 2 (1) switches.
- Secure the sensor 2 (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Bring product into the "Gripper closed" or "Part gripped" position and test the function.

5.3.7 Mount the programmable magnetic switch MMS 22-PI2

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.



NOTE

If there is no T-nut available, slide the sensor according to dimension l_1 into the groove (2),

[Setting dimensions for magnetic switches](#) [▶ 27].

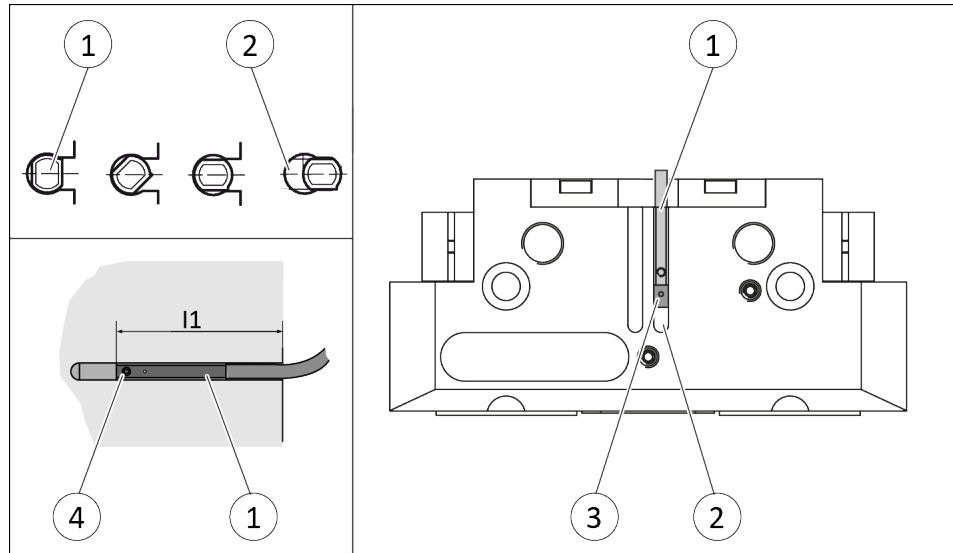
- Turn the sensor (1) into the groove (2).
OR: Slide the sensor (1) into the groove (2) until the sensor (1) stops at the T-nut (3).
- Secure the sensor (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Adjust sensor (1), see sensor assembly and operating manual.

5.3.8 Mount the programmable magnetic switch MMS 22-P 22

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.



NOTE

If there is no T-nut available, slide the sensor according to dimension l1 into the groove (2),

[Setting dimensions for magnetic switches](#) [▶ 27].

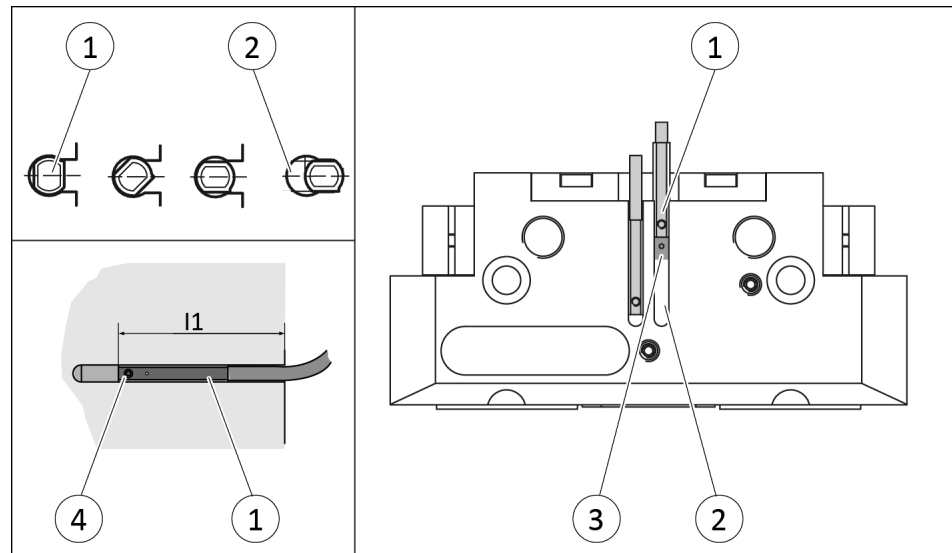
- Turn the sensor (1) into the groove (2).
OR: Slide the sensor (1) into the groove (2) until the sensor (1) stops at the T-nut (3).
- Secure the sensor (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Adjust sensor (1), see sensor assembly and operating manual.

5.3.9 Mount the programmable magnetic switch MMS 22-PI1

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.



NOTE

The magnetic switch MMS 22-PI1 can be adjusted and taught in two ways.

- "Standard mode" allows for quick installation on the T-nut preset by SCHUNK in the groove or the defined setting dimension "l1."
- In "Optimal Mode", the sensor identifies the optimal position in the groove itself.
SCHUNK recommends "Optimal Mode" for setting the sensors.

Setting the sensor in "Optimum mode"

- Put product in the position in which it is to be set.
- Hold teaching tool to the sensor 1 (1) until the sensor flashes.
- Slide sensor 1 (1) into the groove (2), until the sensor 1 flashes rapidly.
 - ✓ The optimum position is displayed.
- Secure the sensor 1 (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Hold teaching tool to the sensor 1 (1) to confirm the position.
 - ✓ The sensor 1 (1) has been taught in.
- Repeat steps for sensor 2.

Alternatively for size 40 - 160, except 50:

Setting the sensor in "Standard mode"

- Turn the sensor 1 (1) into the groove (2).
OR: Slide the sensor 1 (1) into the groove (2) until the sensor 1 (1) stops at the T-nut (3).
 - Secure the sensor 1 (1) using the set-screw (4).
Tightening torque: 10 Ncm
 - Adjust sensor 1 (1), see sensor assembly and operating manual.
 - Repeat steps for sensor 2.
-

NOTE

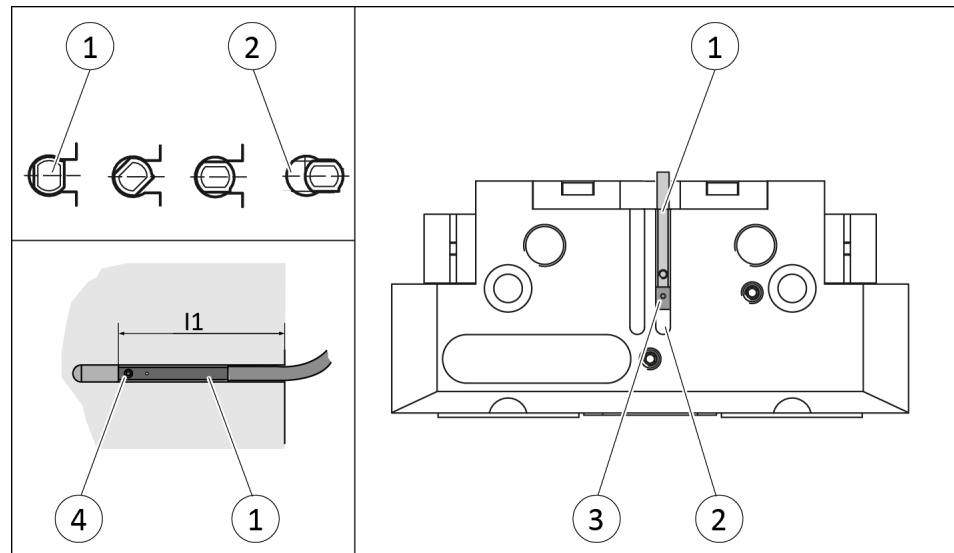
If there is no T-nut available, slide the sensor according to dimension l1 into the groove (2),
[Setting dimensions for magnetic switches](#) [▶ 27].

5.3.10 Mounting the magnetic switch MMS 22-IOL

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.



NOTE

If there is no T-nut available, slide the sensor according to dimension l_1 into the groove (2), see following table.

- Turn the sensor (1) into the groove (2).
OR: Slide the sensor (1) into the groove (2) until the sensor (1) stops at the T-nut (3).
- Secure the sensor (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Adjust sensor (1), see sensor assembly and operating manual.

Dimensions I1

Size	I1* [mm]	Size	I1* [mm]
40	15.4	100	28.7
40 AS	20.0	100 AS	22
40 IS	20.0	100 IS	55.6
40-KVZ	28.2	100-KVZ	55.2
40 AS-KVZ / IS-KVZ	37.2	100 AS-KVZ / IS-KVZ	81.2
50	At stop	125	23.0
50 AS	23.0	125 AS	59.6
50 IS	At stop	125 IS	56.9
50-KVZ	At stop	125-KVZ	55.5
50 AS-KVZ / IS-KVZ	At stop	125 AS-KVZ / IS-KVZ	85.5
64	22.4	160	35.5
64 AS	19.2	160 AS	76.0
64 IS	39.5	160 IS	75.5
64-KVZ	41.4	160-KVZ	71.9
64 AS-KVZ / IS-KVZ	59.4	160 AS-KVZ / IS-KVZ	111.9
80	26.5		
80 AS	22.0		
80 IS	44.5		
80-KVZ	49.0		
80 AS-KVZ / IS-KVZ	67.0		

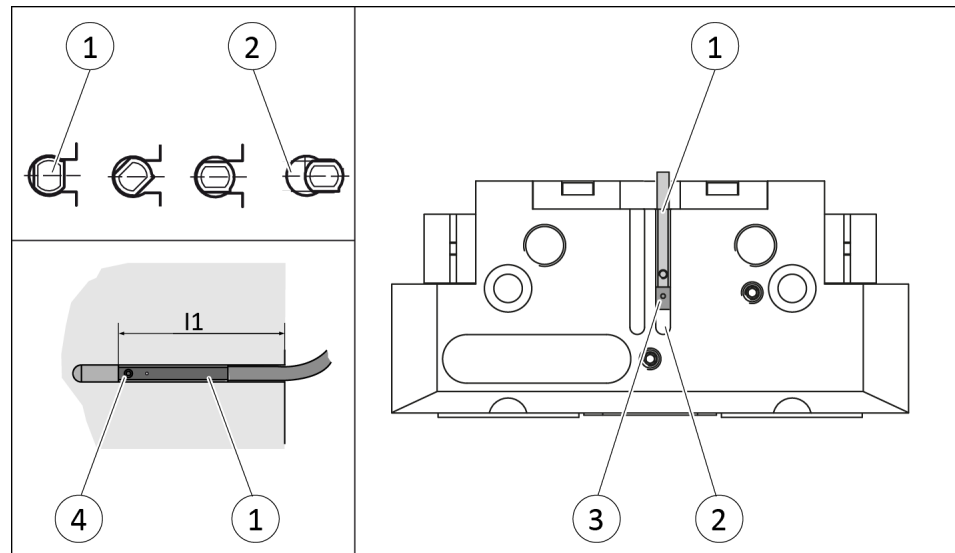
* Dimension I1 Bottom edge of the product to front edge of the sensor

5.3.11 Mount the analog magnetic switch MMS 22-A

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.



NOTE

If there is no T-nut available, slide the sensor according to dimension l_1 into the groove (2), see following table.

- Turn the sensor (1) into the groove (2).
OR: Slide the sensor (1) into the groove (2) until the sensor (1) stops at the T-nut (3).
- Secure the sensor (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Adjust sensor (1), see sensor assembly and operating manual.

Dimensions l1

Size	l1* [mm]	Size	l1* [mm]
40	13	100	28.7
40 AS	22.4	100 AS	22
40 IS	21.7	100 IS	55.6
40-KVZ	25.8	100-KVZ	55.2
40 AS-KVZ / IS-KVZ	34.8	100 AS-KVZ / IS-KVZ	81.2
64	22.4	125	23.0
64 AS	19.2	125 AS	59.6
64 IS	39.5	125 IS	56.9
64-KVZ	41.4	125-KVZ	55.5
64 AS-KVZ / IS-KVZ	59.4	125 AS-KVZ / IS-KVZ	85.5
80	26.5	160	34.4
80 AS	22.0	160 AS	71.7
80 IS	44.5	160 IS	71.7
80-KVZ	49.0	160-KVZ	71.9
80 AS-KVZ / IS-KVZ	67.0	160 AS-KVZ / IS-KVZ	111.9

* Dimension l1 Bottom edge of the product to front edge of the sensor

5.3.12 Mount the analog position sensor APS-Z80

To be able to mount the sensor, the gripper has to be retrofitted with a special mounting kit.

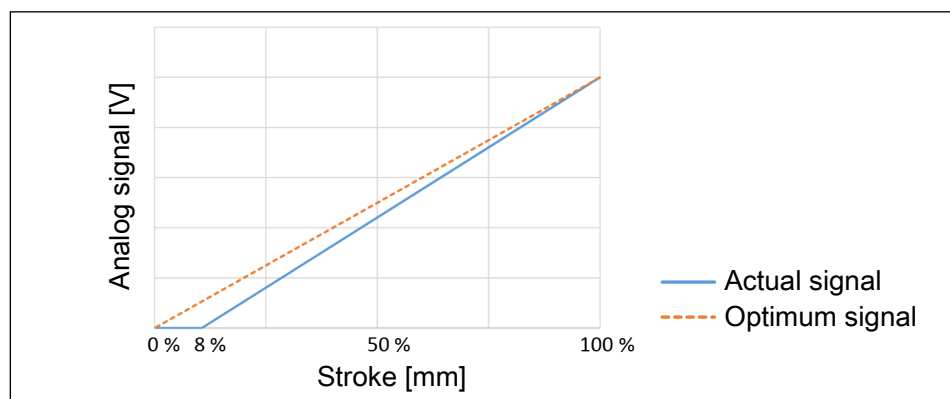
CAUTION

Blockade of the gripper after setting or replacing of the switching cam!

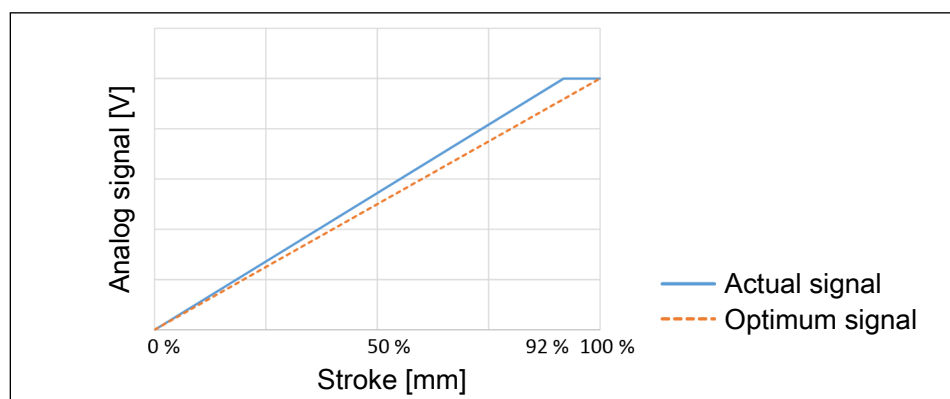
The switching cam can be tilt in the guide, if it was not fixed exactly in the base jaw.

- Apply the switching cam in the direction of the base jaw, so that the cam does not contact the housing of the gripper.

During the monitoring process, the first 8% of the nominal stroke will not produce a change in the analog signal. With O.D. gripping the "Gripper closed" position and with I.D. gripping the "Gripper opened" position cannot be queried. Should you have questions, do not hesitate to contact SCHUNK.



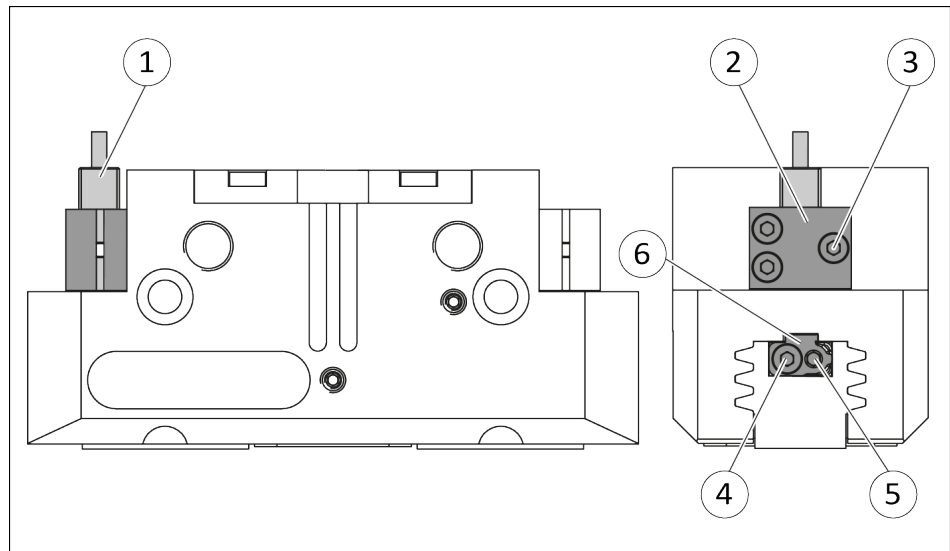
Analog signal on O.D. gripping



Analog signal on I.D. gripping

Variant Dust-tight:

Before attaching the sensor, remove the sealing bolts from the bracket. Before adjusting the control cam, unscrew the set-screw from the side cover.



- Move product to the "grripper open" position.
- Loosen screw (4) and remove control cam (6) for the inductive monitoring from the base jaw.
- Remove screw (5) from the base jaw.
- Apply adhesive to the top and sides of the control cam (6) from the mounting kit.
 - ✓ Make sure that there is no adhesive on the bottom of the control cam (6), which comes into contact with the sensor.
 - ✓ SCHUNK recommends the adhesive Loctite 290 or 638.
- Slide control cam (6) into the base jaw to the stop.
 - ✓ Ensure that the higher front side of the control cam (6) is pointing outwards.
- **IMPORTANT! The control cam (6) must no longer move after it is screwed on.**
 - Screw the control cam (6) to the base jaw using the screw (5).
 - ✓ Secure the screw (5) with medium-strength locking liquid.
- Slide the sensor (1) to the stop into the bracket (2).
- Tighten the screw (3) on the bracket (2).
 - Tightening torque: 0.2 Nm
- Adjust sensor (1), see assembly and operating manual of the sensor.

Variant Dust-tight:

Screw in set-screw into the side cover.

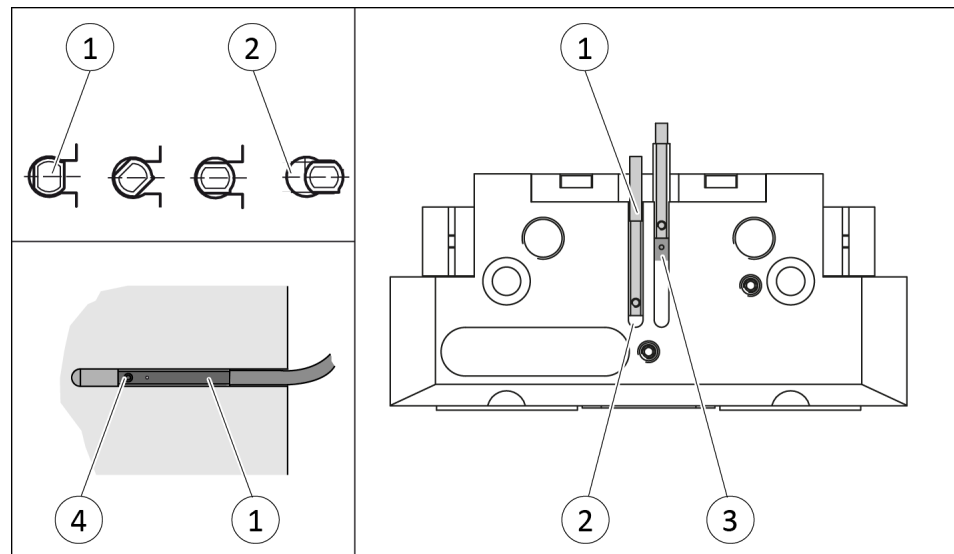
5.3.13 Mount the reed switch RMS 22

CAUTION

Material damage due to an incorrect tightening torque!

If the threaded pin is tightened with an incorrect tightening torque, the product may be damaged.

- Observe a maximum tightening torque of 10 Ncm for the set-screws.



Position "Gripper open" or "Part gripped (I.D. gripping)"

- Bring product in the position to be set.
- If necessary remove T-nut (3).
- Turn the sensor 1 (1) into the groove (2).
OR: Slide the sensor 1 (1) into the groove (2) until the sensor 1 (1) stops at the end of the groove.
- Pull the sensor 1 (1) back again slowly until it switches.
- Secure the sensor 1 (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Bring product into the "Gripper open" or "Part gripped" position and test the function.

Position "Gripper closed" or "Part gripped (O.D. gripping)"

- Bring product in the position in which it is to be set.
- If necessary remove T-nut (3).
- Turn the sensor 2 (1) into the groove (2).
OR: Slide sensor 2 (1) into the groove (2) in the direction of the housing middle (3), until the sensor 2 (1) switches.
- Secure the sensor 2 (1) using the set-screw (4).
Tightening torque: 10 Ncm
- Bring product into the "Gripper closed" or "Part gripped" position and test the function.

5.3.14 Mount the reed switch RMS 80

To be able to mount the sensor, the gripper has to be retrofitted with a special mounting kit.

CAUTION

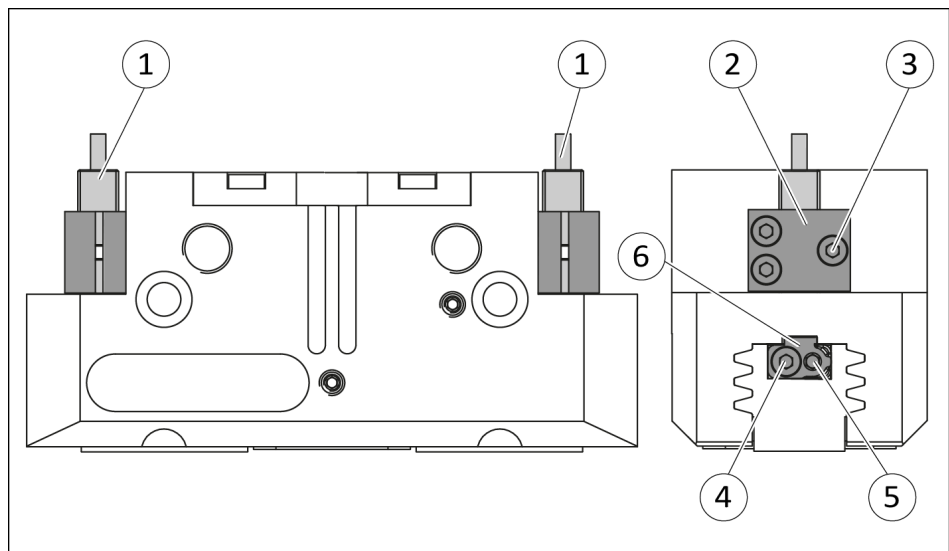
Blockade of the gripper after setting or replacing of the switching cam!

The switching cam can be tilt in the guide, if it was not fixed exactly in the base jaw.

- Apply the switching cam in the direction of the base jaw, so that the cam does not contact the housing of the gripper.

Variant Dust-tight:

Before attaching the sensor, remove the sealing bolts from the bracket. Before adjusting the control cam, unscrew the set-screw from the side cover.



Position "Gripper open" or "Part gripped (I.D. gripping)"

- Loosen screw (4) and remove the control cam (6) for inductive sensing from the base jaw.
- Push the control cam (6) from the mounting kit into the base jaw.
 - ✓ Make sure that the side with the magnet is facing inwards.
- Tighten screw (4) slightly
- Slide the sensor 1 (1) into the bracket (2) until it stops.
- Tighten the screw (3) on the bracket (2).
 - Tightening torque: 0.2 Nm
- Open gripper or grip part.
- Unfasten the screw (4).

- Turn the screw (5) to adjust the position of the control cam (6).
 - ✓ Slide control cam (6) inwards until the sensor 1 (1) no longer responds.
Move the control cam (6) back towards the outside until the sensor 1 (1) begins to switch.
- Tighten screw (4) while pressing the control cam in the direction of the gripper fingers. **IMPORTANT! The control cam may tilt in the guide if it has not been tightened properly.**
 - ✓ Switching point is set.
- Bring product into the "Gripper open" or "Part gripped" position and test the function.

Position "Gripper closed" or "Part gripped (O.D. gripping)"

- Loosen screw (4) and remove the control cam (6) for inductive sensing from the base jaw.
- Push the control cam (6) from the mounting kit into the base jaw.
 - ✓ Make sure that the side with the magnet is facing outwards.
- Tighten screw (4) slightly
- Slide the sensor 1 (1) into the bracket (2) until it stops.
- Tighten the screw (3) on the bracket (2).
Tightening torque: 0.2 Nm
- Close gripper or grip part.
- Unfasten the screw (4).
- Turn the screw (5) to adjust the position of the control cam (6).
 - ✓ Slide control cam (6) outwards until the sensor 2 (1) no longer responds.
Move the control cam (6) back towards the inside until the sensor 1 (1) begins to switch.
- Tighten screw (4) while pressing the control cam in the direction of the gripper fingers. **IMPORTANT! The control cam may tilt in the guide if it has not been tightened properly.**
 - ✓ Switching point is set.
- Bring product into the "Gripper closed" or "Part gripped" position and test the function.

Variant Dust-tight:

Screw in set-screw into the side cover.

NOTE

If the switching position cannot be queried, it may be that the alignment of the control cam has to be changed, [Turn control cam](#) [► 26].

5.3.15 Mount the flexible position sensor FPS

The flexible position sensor FPS consists of an evaluation unit and one of the following sensors:

- MMS 22-A-5V
- FPS-S M8

CAUTION

Risk of damage to the sensor during assembly!

- Observe the maximal tightening torque.

5.3.15.1 Mounting the MMS 22-A-5V

Note: In order to mount the sensor MMS 22-A-5V, no additional attachment kit is required.

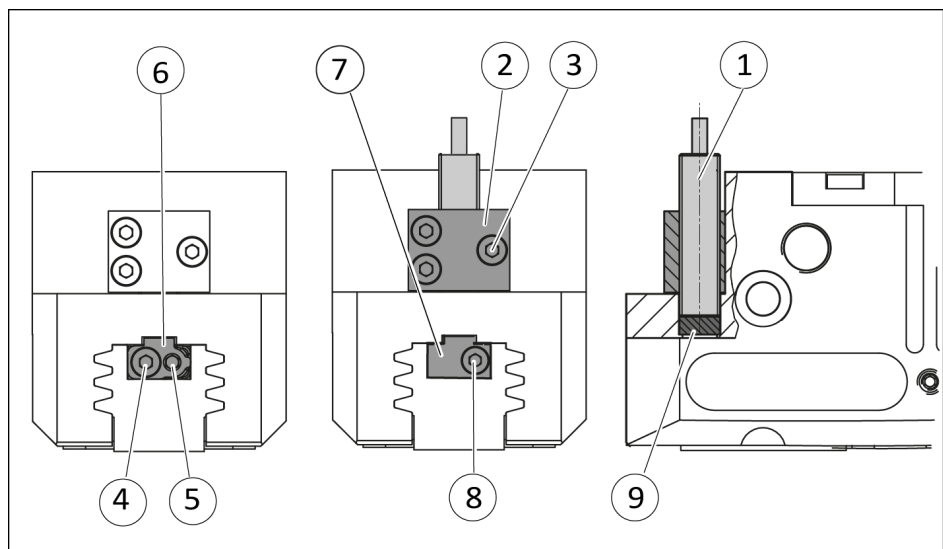
- Assembling the sensor, [Mount the analog magnetic switch MMS 22-A](#) [▶ 37].
- Connect the control unit output and adjust the sensor (see assembly and operating manual of the sensor).

5.3.15.2 Mounting the FPS-M8

To be able to mount the sensor, the gripper has to be retrofitted with a special mounting kit.

Variant Dust-tight:

Before attaching the sensor, remove the sealing bolts from the bracket. Before adjusting the control cam, unscrew the set-screw from the side cover.



- Move product to the "gripper open" position.
- Loosen screw (4) and remove control cam (6) for the inductive monitoring from the base jaw.
- Remove screw (5) from the base jaw.

- Slide control cam (7) from the mounting kit with the recess at the front into the base jaw.
- Screw the control cam (7) to the base jaw using the screw (8).
- Slide spacer shim (9) into the bracket (2) to the stop.
- Slide the sensor (1) to the stop into the bracket (2).
- Tighten the screw (3) on the bracket (2).
Tightening torque: 0.2 Nm
- Adjust sensor (1), see assembly and operating manual of the sensor.

Variant Dust-tight:

Screw in set-screw into the side cover.

5.3.16 Mount the analog position sensor APS-M1

To be able to mount the sensor, the gripper has to be retrofitted with a special mounting kit.

CAUTION

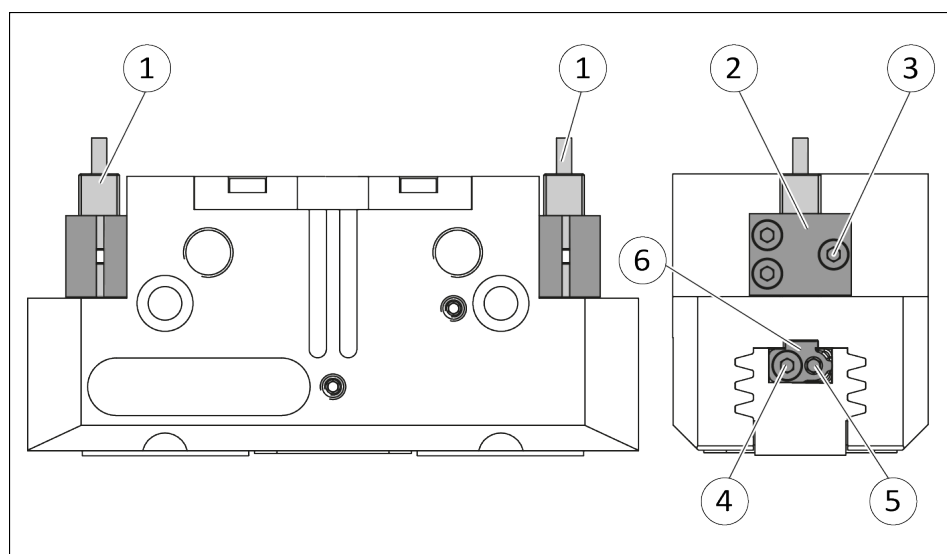
Blockade of the gripper after setting or replacing of the switching cam!

The switching cam can be tilt in the guide, if it was not fixed exactly in the base jaw.

- Apply the switching cam in the direction of the base jaw, so that the cam does not contact the housing of the gripper.

Variant Dust-tight:

Before attaching the sensor, remove the sealing bolts from the bracket. Before adjusting the control cam, unscrew the set-screw from the side cover.



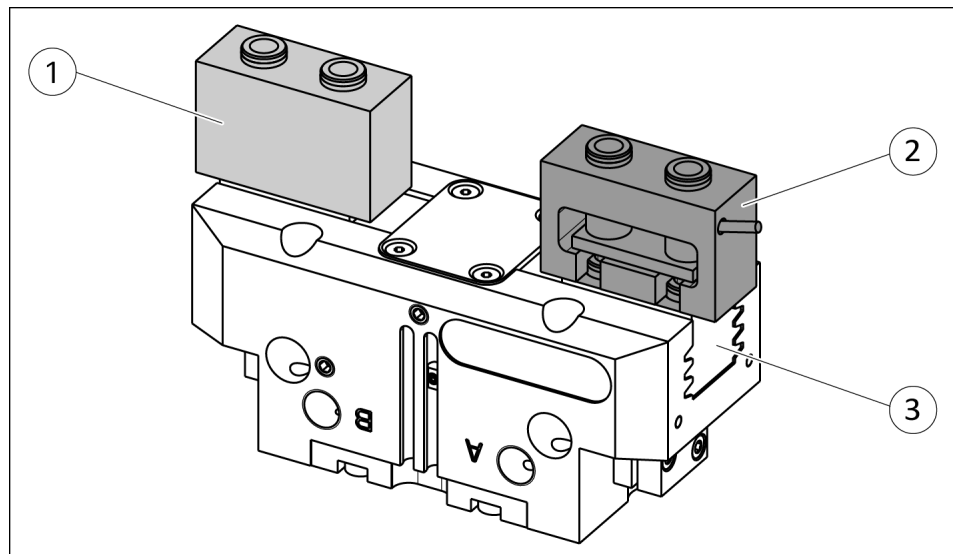
- Move product to the "gripper open" position.

- Loosen screw (4) and remove control cam (6) for the inductive monitoring from the base jaw.
- Apply adhesive to the top and sides of the control cam (6) from the mounting kit.
 - ✓ Make sure that there is no adhesive on the bottom of the control cam (6), which comes into contact with the sensor.
 - ✓ SCHUNK recommends the adhesive Loctite 290 or 638.
- Slide control cam (6) out of the mounting kit front into the base jaw.
 - ✓ Ensure that the higher front side of the control cam (6) is pointing outwards.
- Tighten screw (4) slightly.
- Turn the screw (5) to push the position of the control cam (6).
- Tighten screw (4) and in doing so press the control cam (6) in the direction of the gripper finger.
- Slide the sensor (1) to the stop into the bracket (2).
- Tighten the screw (3) on the bracket (2).
Tightening torque: 0.2 Nm
- Adjust sensor (1), see assembly and operating manual of the sensor.

Variant Dust-tight:

Screw in set-screw into the side cover.

5.3.17 Mount the force-measuring jaw FMS



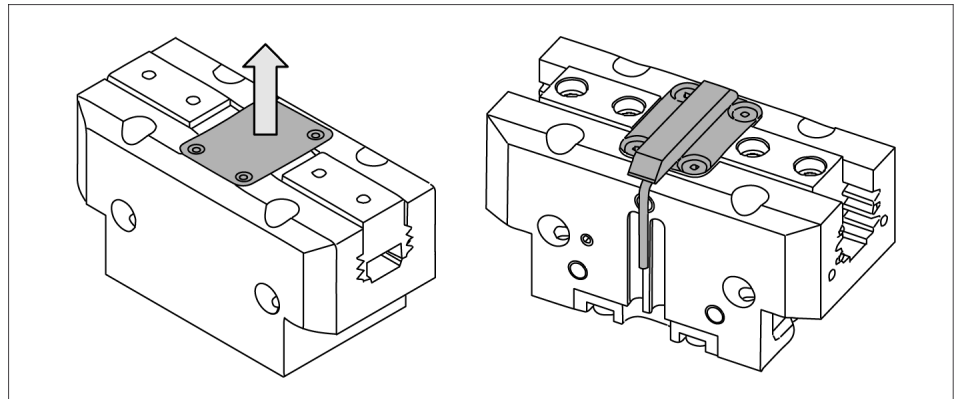
- Screw gripper finger with passive intermediate jaw (1) onto the base jaw (3).
 - ✓ Use centering sleeves between base jaw and intermediate jaw as well as between intermediate jaw and gripper finger.
- Screw active intermediate jaw (2) onto the base jaw (3).
 - ✓ Use centering sleeves between base jaw and intermediate jaw.
- Screw gripper finger onto the active intermediate jaw (2).
 - ✓ Use centering sleeves between intermediate jaw and gripper finger.
- Connect the evaluation unit, see the Assembly and Operating Manual for the sensor.

5.3.18 Mount the optical distance sensor OAS

CAUTION

Risk of damage to the sensor!

- The cable must be aligned to the side of the gripper on which the two grooves for assembly of the sensor are located. The other side can be used for mounting the gripper.



- Remove the gripper's cover plate.
- Assemble the sensor in place of the cover plate. To do this, use the cover plate screws.
- Connect the sensor to the evaluation unit, see Translation of Sensor Assembly and Operating Instructions.

5.3.19 Mount the radio system RSS-R1/T2

The radio system RSS-R1/T2 can be used with the following sensors:

- Reed switch RMS 22
- Reed switch RMS 80

5.3.19.1 Assembly RMS 22

- Installing the sensor , [Mount the reed switch RMS 22](#) [▶ 41].
- Adjust sensor, see Translation of Sensor Assembly and Operating Manual.
- Connect radio system RSS-R1/T2, see Translation of Radio System Assembly and Operating Manual.

5.3.19.2 Assembly RMS 80

- Installing the sensor , [Mount the reed switch RMS 80](#) [▶ 42].
- Adjust sensor, see Translation of Sensor Assembly and Operating Manual.
- Connect radio system RSS-R1/T2, see Translation of Radio System Assembly and Operating Manual.

6 Troubleshooting

6.1 Product does not move

Possible cause	Corrective action
Base jaws jam in housing, e.g. mounting surface is not sufficiently even.	Check the evenness of the mounting surface. Mechanical connection [▶ 20]
Pressure drops below minimum.	Check air supply. Technical data [▶ 17]
Compressed air lines switched.	Check compressed air lines. Pneumatic connection [▶ 23]
Proximity switch defective or set incorrect.	Readjust or change sensor.
Unused air connections open.	Close unused air connections.
Flow control valve closed.	Open the flow control valve.
Component part defective.	Replace component or send it to SCHUNK for repair.

6.2 Product is not executing the complete stroke

Possible cause	Corrective action
Dirt deposits between cover and piston.	Clean and if necessary re-lubricate.
Dirt deposits between basic jaws and guidance.	Disassemble and clean the product.
Pressure drops below minimum.	Check air supply. Pneumatic connection [▶ 23]
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface. Mechanical connection [▶ 20]
Component part defective.	Replace component or send it to SCHUNK for repair.

6.3 Product opens or closes abruptly

Possible cause	Corrective action
Too little grease in the mechanical guiding areas.	Clean and lubricate product. Maintenance [▶ 51]
Compressed air lines blocked.	Check compressed air lines of damage.
Mounting surface is not sufficiently flat.	Check the evenness of the mounting surface.
One-way flow control valve is missing or adjustet incorrectly.	Install and adjust one-way flow control valve.
Loading too large.	Check permissible weight and length of the gripper fingers.

6.4 Product does not achieve the opening and closing times

Possible cause	Corrective action
Compressed air lines are not installed optimally.	If present: Open the flow control couplings on the product to the maximum that the movement of the jaws occurs without bouncing and hitting.
	Check compressed air lines.
	Inner diameters of compressed air lines are of sufficient size in relation to compressed air consumption.
	Flow rate of valve is sufficiently large relative to the compressed air consumption.
	If, despite optimum air connections, the opening and closing times specified in the catalogue are not achieved, SCHUNK recommends the use of quick-air-vent-valves directly at the product.
Compressed air can escape.	Check seals, if necessary, disassemble the product and replace seals.
Component part defective.	Replace component or send it to SCHUNK for repair.
Too much grease in the mechanical movement space.	Clean and lubricate product. Maintenance [▶ 51]
Loading too large.	Check permissible weight and length of the gripper fingers.

6.5 Gripping force is dropping

Possible cause	Corrective action
Compressed air can escape.	Check seals, if necessary, disassemble the product and replace seals.
Too much grease in the mechanical movement space.	Clean and lubricate product.
Pressure drops below minimum.	Check air supply. Pneumatic connection [▶ 23]
Component part defective.	Replace component or send it to SCHUNK for repair.

7 Maintenance

7.1 Notes



⚠ DANGER

Danger of explosion in potentially explosive areas!

- Observe supplementary sheet for products with explosion-resistant versions "PGN-plus -...-EX".



⚠ 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.

Original spare parts

Use only original spare parts of SCHUNK when replacing spare and wear parts.

Exchange of housing and base jaws

The base jaws and the guidance in the housing are matched. To exchange these parts, send the product with a repair order to SCHUNK or order the housing with the base jaws as a set.

Maintenance of version with gripping force maintenance I.D. gripping and O.D. gripping

The pistons have to be aligned using an assembly device. Therefore we recommend to have the module serviced and the seals replaced by SCHUNK.

7.2 Maintenance and lubrication intervals

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.

Size	PGN-plus	
	40 - 160	200 - 380
Interval [Mio. cycles]	10	5

7.3 Lubricants/Lubrication points

SCHUNK recommends the lubricants listed.

Lubricant point	Lubricant
Metallic sliding surfaces	PGN-plus 40–50: microGLEIT GSV 790 PGN-plus 64-380: Toothgood 1
All seals	Sealgood 1
Bore hole at the piston	Sealgood 1

During maintenance, treat all greased areas with lubricant. Thinly apply lubricant with a lint-free cloth.

The guides in the housing can be re-lubricated as needed. Remove the set-screw of the air purge connection and replace it with a lubrication nipple.

7.4 Disassemble the product

7.4.1 Variant without maintenance of gripping force

Position of the item numbers: [Drawings](#) [▶ 61]

- Remove the compressed air hoses.
- Remove the cover (5).
- Mark the installation position of the piston (3/8) and the base jaws (2/7) in the housing (1).
- Unscrew the screws (41) and remove the cover (4).
- Unscrew the screws (40) and remove the cylinder piston (60) from the housing (1).
- Press the piston (3/8) upward out of the housing (1).
- Pull the base jaws (2/7) out of the housing (1).

7.4.2 Variant with maintenance of gripping force (O.D. gripping)

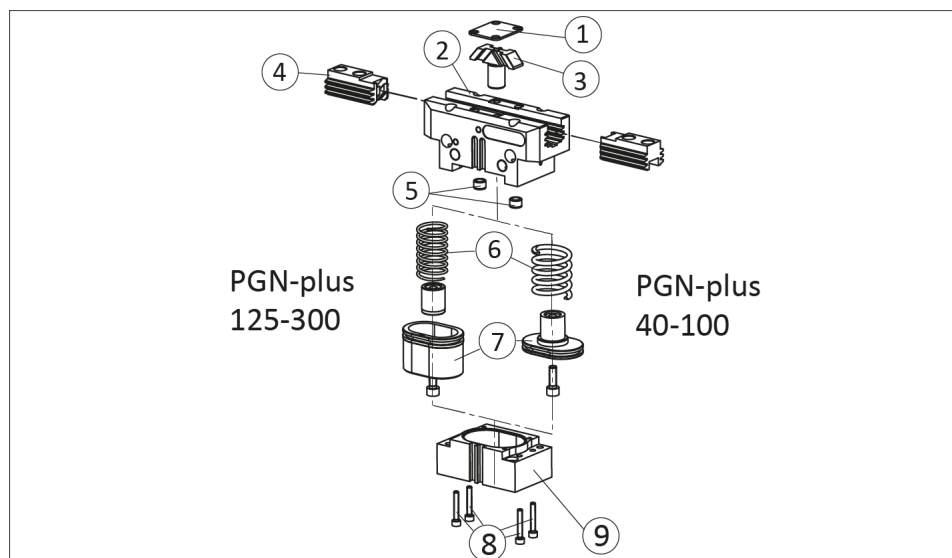
**⚠ WARNING****Risk of injury due to spring forces!**

The cover is under spring tension.

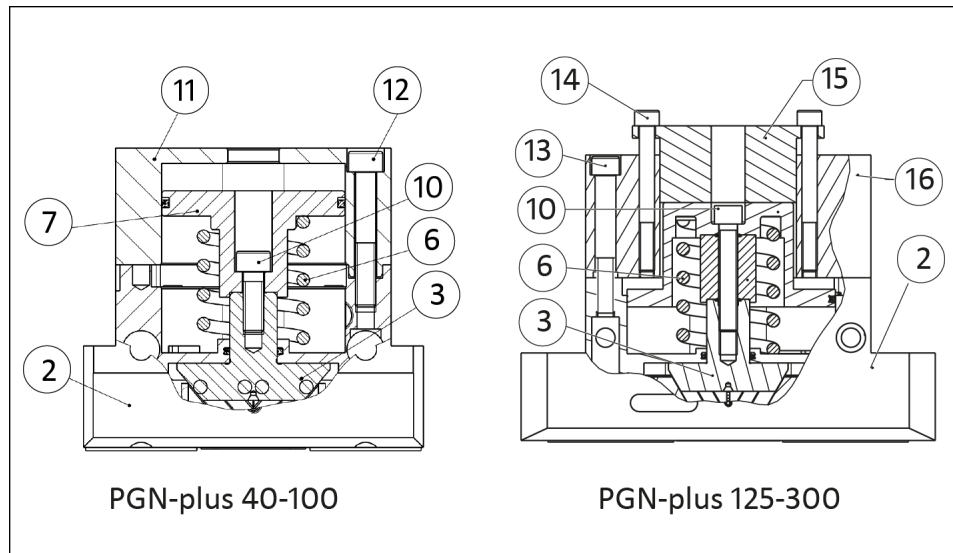
- Carefully disassemble the product.

NOTE

Use a mounting device to remove the cylinder piston, [Assembly device cylinder piston with gripping force maintenance](#) [▶ 59].



- Remove the compressed air hose.
- Remove the cover (1).
- Mark the installation position of the piston (3) and the base jaws (4) in the housing (2).
- **WARNING Risk of injury due to spring forces! The cylinder piston and the cover are under spring tension. Carefully disassemble the gripper.** Clamp the gripper between the base jaws (4) and the cover (9) in the vise such that it is still possible to remove the four screws (8).
- Unscrew the screws (8).
- Open the vise carefully and remove the cover (9).



- **Size 40-100:** Instead of the cover (9) position device (11) with the centering sleeves (5) on the housing (2) then fasten both components with screws (12).
- **Size 125-380:** Sizes 125-380 require a two-part device. Instead of the cover (9) position device 1 (16) with the centering sleeves on the housing (2) then fasten both components with screws (13). Position device 2 (15) in device 1 (16) and fasten them both with 2 screws (14).
- Unscrew the screw (10).
- **Size 40-100:** Loosen the screws (12) evenly and carefully remove device (11).
- **Size 125-380:** Loosen the screws (13) evenly and carefully remove devices (15/16).
- Press the piston (3) upward out of the housing (2).
- Pull the base jaws (4) out of the housing (2).

7.4.3 Variant with maintenance of gripping force (I.D. gripping)

Position of the item numbers: [Drawings](#) [▶ 61]



⚠ WARNING

Risk of injury due to spring forces!

The cover is under spring tension.

- Carefully disassemble the product.
-
- Remove the compressed air hoses.
 - Remove the cover (5).
 - Mark the installation position of the piston (3/8) and the base jaws (2/7) in the housing (1).
 - **WARNING Danger of injury due to spring forces! The cover is under spring tension. Carefully disassemble the module.** Clamp the module between the base jaws (2/7) and the cover (9) in the vise such that it is still possible to remove the four screws (46).
 - Unscrew the screws (46).
 - Carefully unclamp the vise until the spring force (25) is released.
 - Remove the cover (9) and the compression spring (25).
 - Unscrew screw (40) and remove cylinder piston (60) from the housing (1).
 - Press the piston (3/8) upward out of the housing (1).
 - Pull the base jaws (2/7) out of the housing (1).

7.4.4 Variant with dust cover

In variant with dust cover, the dust cover must be removed first.
[Dust cover](#) [▶ 63]

- Completely unscrew the screws (91) and remove the plain washers (92) and centering sleeves (86). Screws (91) and the plain washers (92) only serve the purpose of protection during transport.
- Pull the intermediate jaws (84) upwards and out and remove the o-rings (87) and shims (83).
- Slacken the countersunk screws (89) and remove the cover plate (82).
- Unscrew the screws (90) and detach the covers (81).

7.4.5 Version with power booster cylinder (KVZ) without gripping force

Position of the item numbers:

[Version with power booster cylinder](#) [▶ 64]

- Remove the compressed air hoses.
- Remove the cover (5).
- Mark the installation position of the piston (3/8) and the base jaws (2/7) in the housing (1).
- Unscrew the screws (41) and remove the cover (4).
- Unscrew the screw (51) and remove the cylinder piston (6) and spacer piston (66) from the intermediate housing (65).
- Unscrew the screws (46/54) and remove the intermediate housing (65).
- Remove the second cylinder piston (6) from the housing (1).
- Press the piston (3/8) upwards out of the housing (1).
- Pull the base jaws (2/7) out of the housing (1).

7.5 Servicing and assembling the product

Maintenance

- Clean all parts thoroughly and check for damage and wear.
- Treat all grease areas with lubricant, [Lubricants/Lubrication points](#) [▶ 52]
- Oil or grease external steel parts
- Replace all wear parts / seals. [Drawings](#) [▶ 61]
 - Position of the wearing parts, [Drawings](#) [▶ 61]
 - Order no. for the seal kits, [Accessories](#) [▶ 9]

Assembly

Assembly takes place in the opposite order to disassembly. Observe the following:

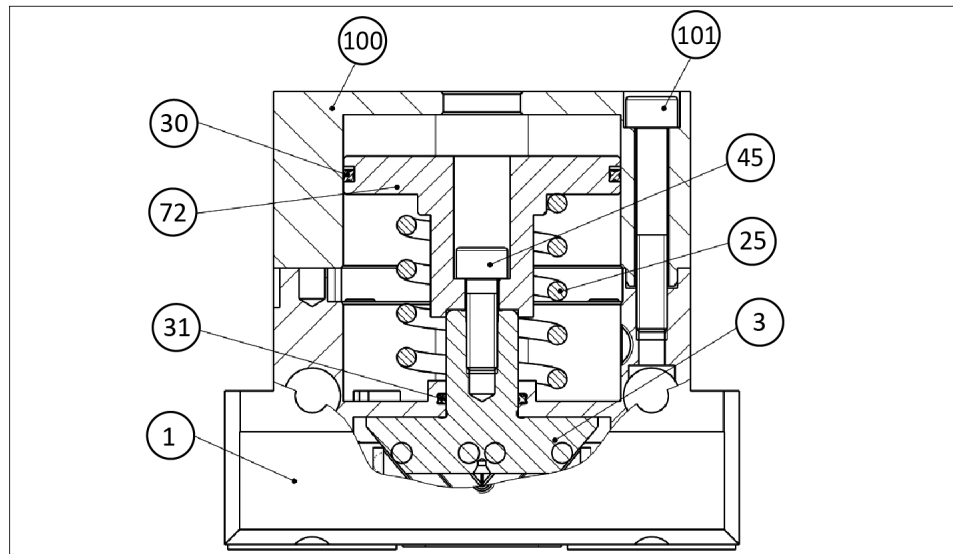
- Unless otherwise specified, secure all screws and nuts with Loctite no. 243 and tighten with the appropriate tightening torque. [Screw tightening torques](#) [▶ 58]
- For the variant with maintenance of gripping force "O.D. gripping ", sizes 40-100, mount the cylinder piston with the help of an assembly device [Sizes 40 - 100](#) [▶ 59], for sizes 125-380, mount the cylinder piston with the help of a second assembly device [Sizes 125 - 380](#) [▶ 60].

7.5.1 Variant without maintenance of gripping force

Reassemble in reverse order of disassembly.

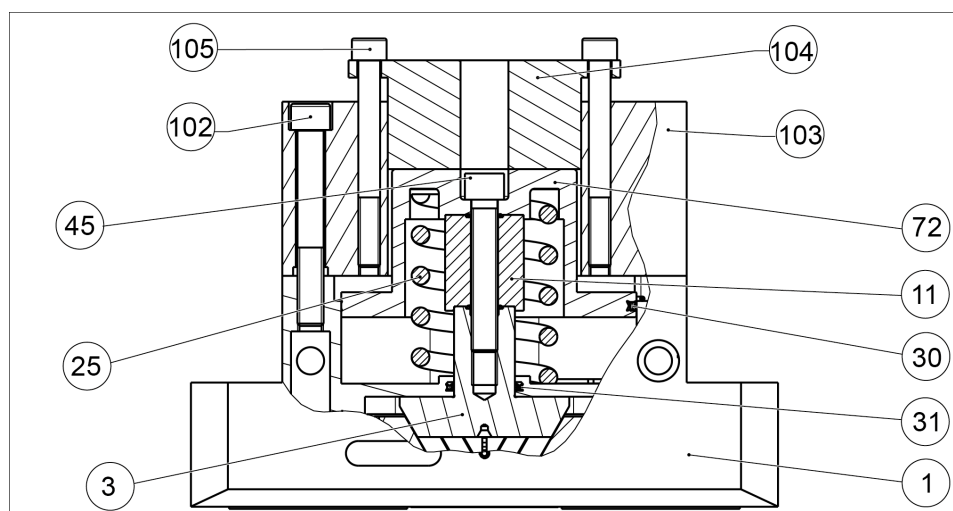
7.5.2 Variant with maintenance of gripping force (O.D. gripping)

Sizes 40-100



- Dimensions of the assembly devices: [Sizes 40 - 100](#) [▶ 59]
- Further Item numbers, which are not illustrated in this figure: [Standard](#) [▶ 62]
- Fit the base jaws (2/7) and the piston (3/8) in the housing (1).
- Fit the cylinder piston (10) with seals (30/33) and the compression spring (25) into the housing (1).
- Carefully put the device (100) over the cylinder piston (10) and attach to the housing using the screws (101).
- Insert the screw (45) and tighten to the required torque [Screw tightening torques](#) [▶ 58].
- Remove the device (100) and continue to assemble the gripper in the reverse order to the order for disassembling [Drawings](#) [▶ 61].

Sizes 125 - 380 with two assembly devices



- Dimensions of the assembly devices: [Sizes 125 - 380](#) [▶ 60]
- Further Item numbers, which are not illustrated in this figure: [Standard](#) [▶ 62]

- Assemble the base jaws (2/7) and piston (3/8) with sealing (31) in the housing.
- Insert the pressure spring (25), the distance pin (11) and the cylinder piston (10) with the sealings (30/33) into the housing (1).
- Carefully put the device (101) over the cylinder piston and mount onto the housing (1) with the screws (102).
- Attach device 2 (104) and fasten it evenly onto device 1 (103) with screws 2 (105).
- Insert screw (45) into the cylinder piston and fasten them with the required torque [Screw tightening torques](#) [▶ 58].
- Remove the devices (103/104).
- Insert the sealings (32/34) and assemble the cover (9) with the aid of screws (46) [Drawings](#) [▶ 61].

7.5.3 Variant with maintenance of gripping force (I.D. gripping)

Reassemble in reverse order of disassembly [Variant with maintenance of gripping force \(I.D. gripping\)](#) [▶ 55].

7.5.4 Variant with dust cover

Reassemble in reverse order of disassembly [Variant with dust cover](#) [▶ 55].

7.5.5 Version with power booster cylinder (KVZ) without gripping force

Reassemble in reverse order of disassembly [Version with power booster cylinder \(KVZ\) without gripping force](#) [▶ 56].

7.5.6 Screw tightening torques

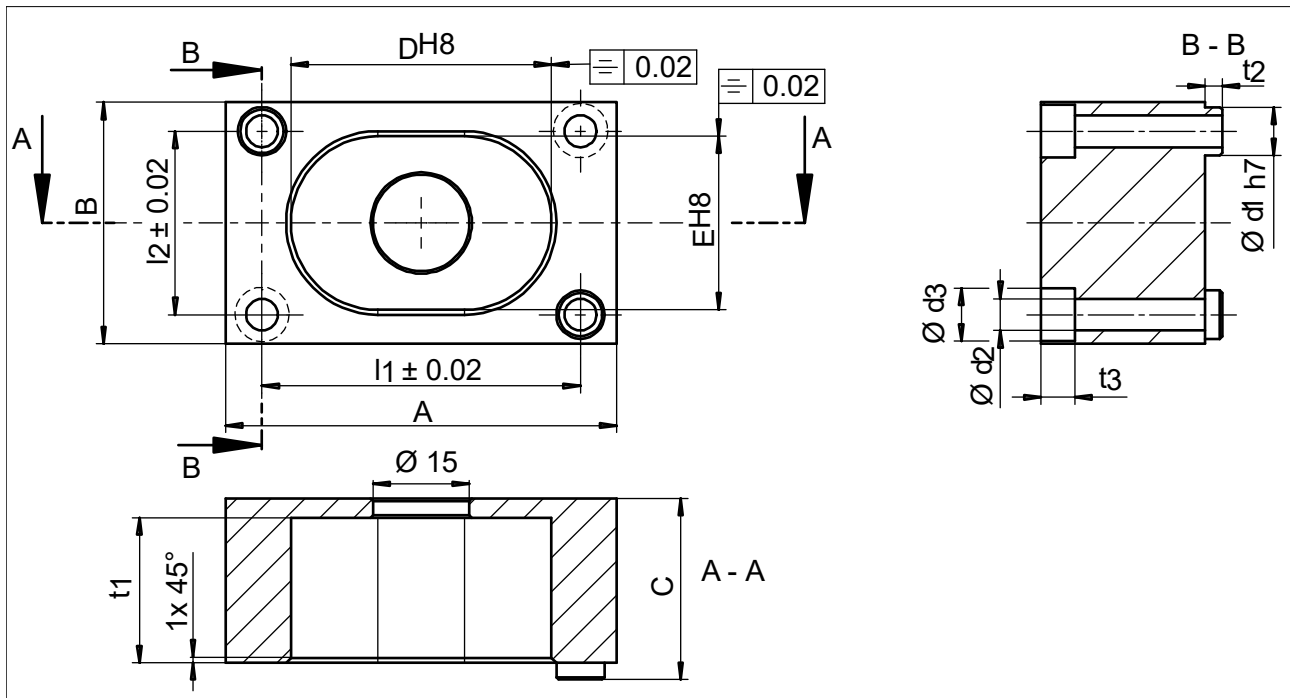
Position of the item numbers [Drawings](#) [▶ 61]

Screw tightening torque - dimensions in Nm

Size	Item 40	Item 41	Item 45	Item 46	Item 51
PGN-plus 40	0.8	0.73	2.2	0.73	0.8
PGN-plus 50	0.8	1.3	2.2	1.3	0.8
PGN-plus 64	6	1.3	10	1.3	6
PGN-plus 80	10	3	17	3	10
PGN-plus 100	17	3	17	3	17
PGN-plus 125	24	6	41	6	24
PGN-plus 160	48	6	83	6	48
PGN-plus 200	75	6	116	25	-
PGN-plus 240	75	6	116	25	-
PGN-plus 300	120	6	150	25	-
PGN-plus 380	200	6	200	50	-

7.6 Assembly device cylinder piston with gripping force maintenance

7.6.1 Sizes 40 - 100



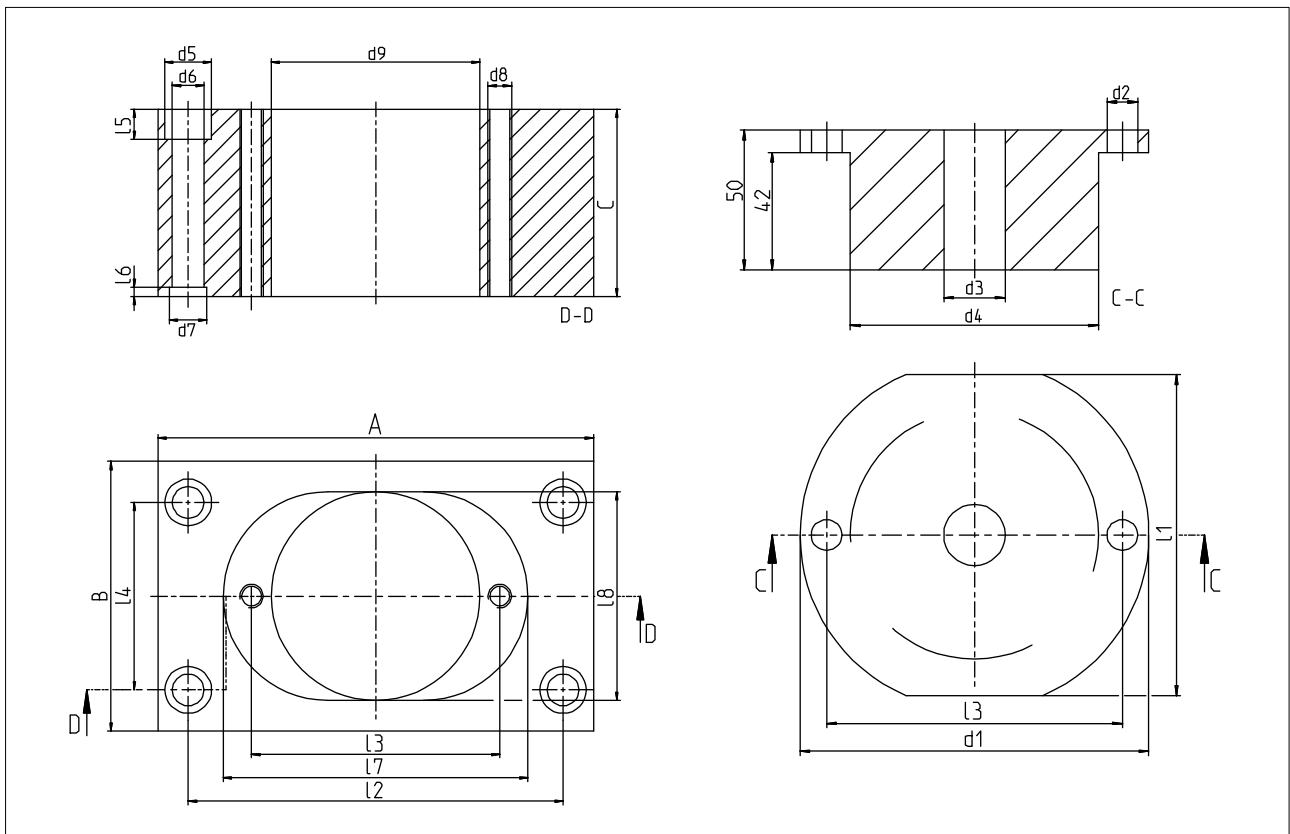
Cylinder piston assembly device - dimensions in mm

	a	b	c	d	e	l1	l2	d1	d2	d3	t1	t2	t3
PGN-plus 40	38	24	20	22.5	14.5	32	18	5	3.5	6.5	14	2	4
PGN-plus 50	42	30	25	25	19	35	22	6	3.5	8	18	2.5	6
PGN-plus 64	52	36	27	31	24	42	27	8	5.5	10	23	2.5	7
PGN-plus 80	63	42	32	42	30	52	32	8	5.5	10	25	2.5	6
PGN-plus 100	81	50	38	54	36	66	38	10	6.6	11	30	3.5	7

Screw for assembly device

Item	Designation	PGN-plus				
		40	50	64	80	100
101	Screw (DIN EN ISO 4762)	M3 x 20	M3 x 25	M5 x 30	M5 x 35	M6 x 40

7.6.2 Sizes 125 - 380



Cylinder piston assembly device - dimensions in mm

	A	B	C	d1	d2	d3	d4	d5	d6	d7
PGN-plus 125	100	60	50	96	9	15	45	14	9	12
PGN-plus 160	125	72	50	90.5	9	18	57.5	15	9	12
PGN-plus 200	154	100	65	110	9	20	78	18	11	14
PGN-plus 240	186	115	80	125	11	22	88	20	13.5	16
PGN-plus 300	210	140	95	149	11	30	114.3	26	17.5	22
PGN-plus 380	285	170	110	180	13.5	32	129	33	22	28

	d8	d9	l1	l2	l3	l4	l5	l6	l7	l8
PGN-plus 125	M8	-	60	82	80	45	9	3	67	46
PGN-plus 160	M8	58.5	72	100	74.5	56	9	3	-	-
PGN-plus 200	M8	79	100	130	95	70	11	4	-	-
PGN-plus 240	M10	89	115	160	106	80	13	4	-	-
PGN-plus 300	M10	115.3	139	180	130	96	17	6	-	-
PGN-plus 380	M12	130	170	250	150	116	21	8	-	-

Screws for cylinder piston assembly device

Item	PGN-plus					
	125	160	200	240	300	380
102	M8 x 55	M8 x 60	M10 x 80	M12 x 90	M16 x 110	M20 x 120
105	M8 x 60	M8 x 65	M8 x 80	M10 x 95	M10 x 110	M12 x 125

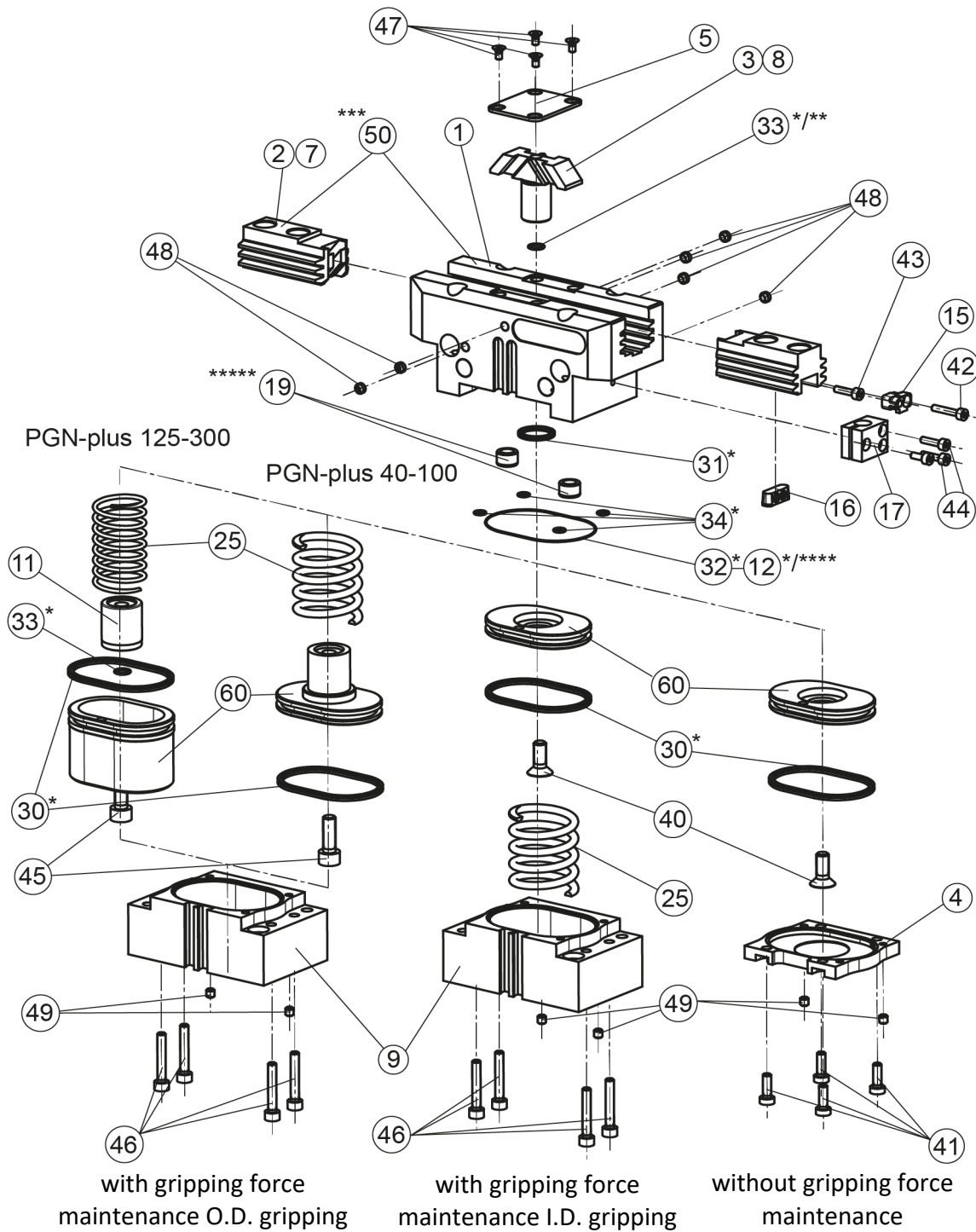
7.7 Drawings

The following figures are example images.

They serve for illustration and assignment of the spare parts.

Variations are possible depending on size and variant.

7.7.1 Standard



* Wearing part, replace during maintenance.

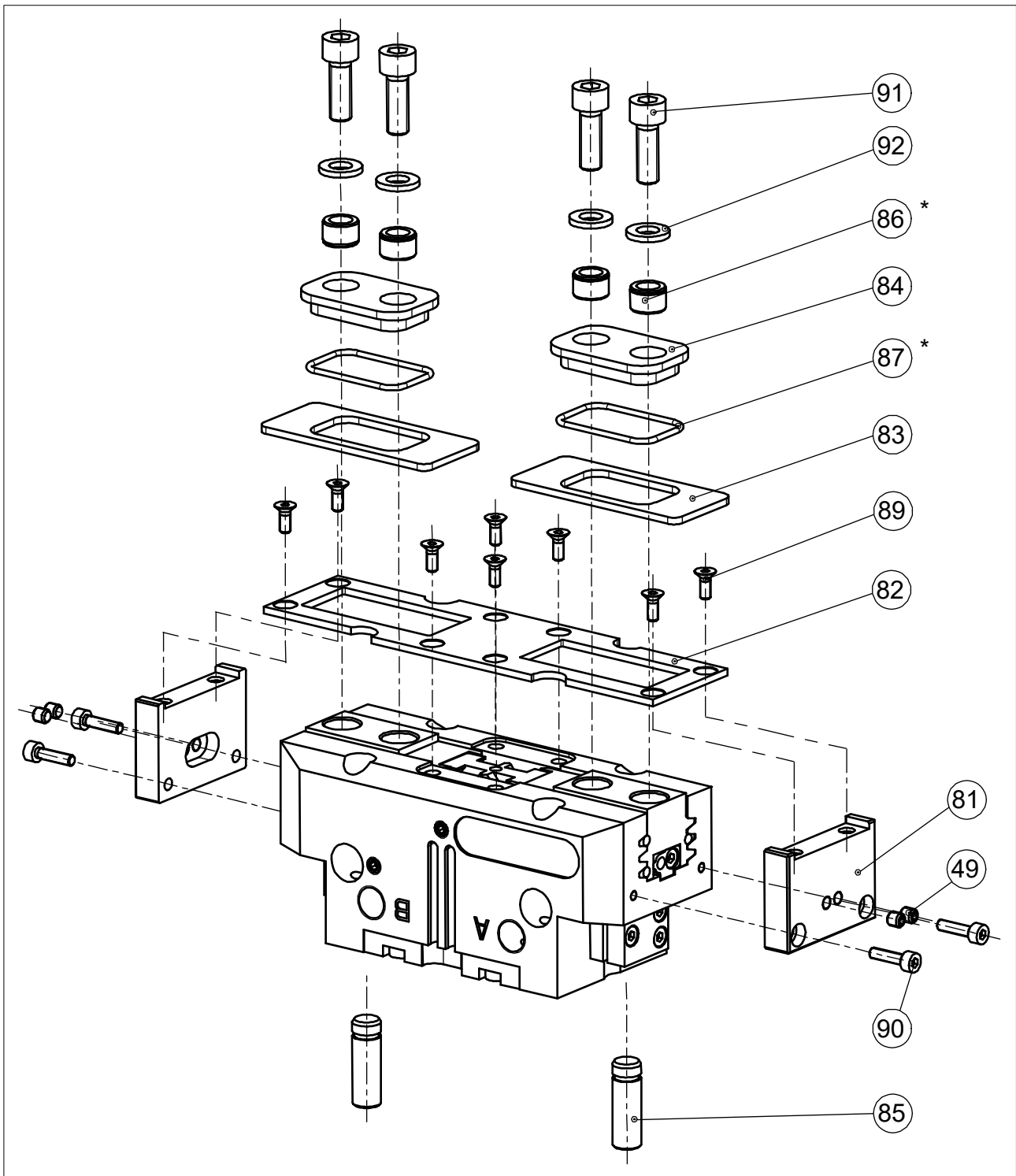
** Included in the seal kit. Seal kit can only be ordered completely.

*** Positions are adapted to each other and can not be replaced by the customer.

**** not with PGN-plus 40 - 125

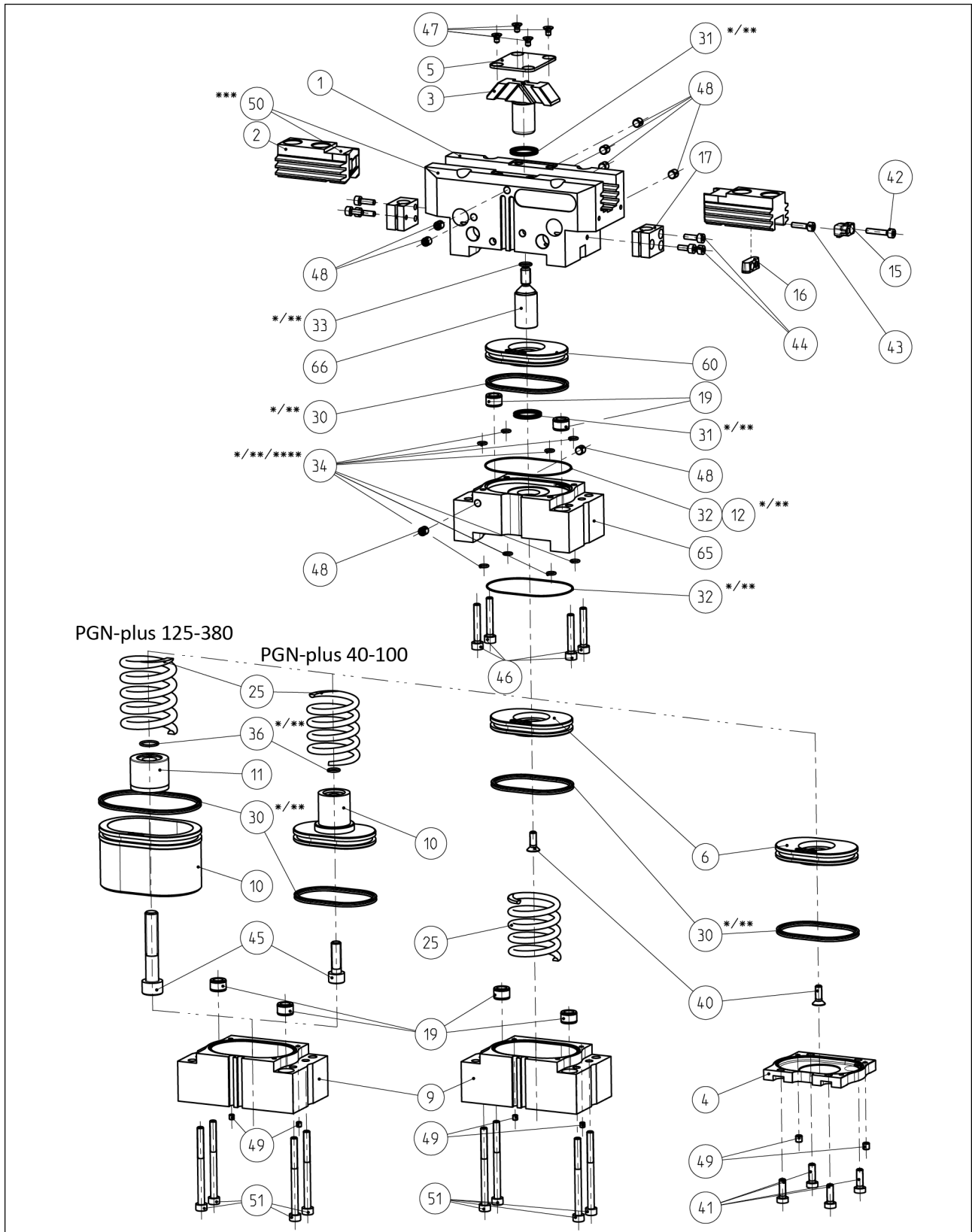
***** not with PGN-plus 40 - 80

7.7.2 Dust cover



* Wearing part, replace during maintenance.

7.7.3 Version with power booster cylinder



- * Wearing part, replace during maintenance.
- ** Included in the seal kit. Seal kit can only be ordered completely.

- *** Positions are adapted to each other and can not be replaced by the customer.
- **** not with PGN-plus 40 - 80

9 Annex to Declaration of Incorporation

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

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

Product designation	2-Finger Parallel Gripper
Type designation	PGN-plus
ID number	0371080 ... 0371477, 37371080 ... 37371477, 38371080 ... 38371477, 39371080 ... 39371477

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

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

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

1.3	Protection against mechanical hazards			
1.3.1	Risk of loss of stability			X
1.3.2	Risk of break-up during operation			X
1.3.3	Risks due to falling or ejected objects			X
1.3.4	Risks due to surfaces, edges or angles		X	
1.3.5	Risks related to combined machinery			X
1.3.6	Risks related to variations in operating conditions			X
1.3.7	Risks related to moving parts		X	
1.3.8	Choice of protection against risks arising from moving parts			X
1.3.8.1	Moving transmission parts		X	
1.3.8.2	Moving parts involved in the process			X
1.3.9	Risks of uncontrolled movements			X
1.4	Required characteristics of guards and protective devices			
1.4.1	General requirements			X
1.4.2	Special requirements for guards			X
1.4.2.1	Fixed guards			X
1.4.2.2	Interlocking movable guards			X
1.4.2.3	Adjustable guards restricting access			X
1.4.3	Special requirements for protective devices			X
1.5	Risks due to other hazards			
1.5.1	Electricity supply		X	
1.5.2	Static electricity		X	
1.5.3	Energy supply other than electricity		X	
1.5.4	Errors of fitting		X	
1.5.5	Extreme temperatures			X
1.5.6	Fire			X
1.5.7	Explosion			X
1.5.8	Noise			X
1.5.9	Vibrations			X
1.5.10	Radiation	X		
1.5.11	External radiation	X		
1.5.12	Laser radiation	X		
1.5.13	Emissions of hazardous materials and substances			X
1.5.14	Risk of being trapped in a machine	X		
1.5.15	Risk of slipping, tripping or falling	X		
1.5.16	Lightning			X

1.6	Maintenance			
1.6.1	Machinery maintenance		X	
1.6.2	Access to operating positions and servicing points		X	
1.6.3	Isolation of energy sources		X	
1.6.4	Operator intervention		X	
1.6.5	Cleaning of internal parts		X	
1.7	Information			
1.7.1	Information and warnings on the machinery		X	
1.7.1.1	Information and information devices		X	
1.7.1.2	Warning devices		X	
1.7.2	Warning of residual risks		X	
1.7.3	Marking of machinery	X		
1.7.4	Instructions	X		
1.7.4.1	General principles for the drafting of instructions	X		
1.7.4.2	Contents of the instructions	X		
1.7.4.3	Sales literature	X		
	The classification from Annex 1 is to be supplemented from here forward.			
2	Supplementary essential health and safety requirements for certain categories of machinery			X
2.1	Foodstuffs machinery and machinery for cosmetics or pharmaceutical products			X
2.2	Portable hand-held and/or guided machinery			X
2.2.1	Portable fixing and other impact machinery			X
2.3	Machinery for working wood and material with similar physical characteristics			X
3	Supplementary essential health and safety requirements to offset hazards due to the mobility of machinery		X	
4	Supplementary essential health and safety requirements to offset hazards due to lifting operations		X	
5	Supplementary essential health and safety requirements for machinery intended for underground work			X
6	Supplementary essential health and safety requirements for machinery presenting particular hazards due to the lifting of persons		X	