



Superior Clamping and Gripping



## Product Information

Universal gripper PGN-plus-P 300

## Reliable. Robust. Flexible.

### Universal gripper PGN-plus-P

Universal electric 2-finger parallel gripper with permanent lubrication, high gripping force, and high maximum moments due to the use of a multi-tooth guidance.

#### Field of application

Pneumatic universal gripper for handling of workpieces in universal applications. For universal use in clean to slightly dirty environments. Special versions available for dirty environments.

#### Advantages – Your benefits

**Robust multi-tooth guidance** for precise handling

**High maximum moments possible** suitable for using long gripper fingers

**Lubricant pockets in the multi-tooth guidance** ensure process reliability and extended maintenance intervals

**Maximum piston surface area** for maximum gripping forces

**Mounting from two sides in three screw directions** for universal and flexible gripper assembly

**Air supply via hose-free direct connection or screw connections** for universal and flexible gripper assembly

**Comprehensive sensor accessory program** for versatile querying possibilities and stroke position monitoring

**Manifold options** for special optimization for your specific case of application (dustproof, high-temperature, corrosion-protected, etc.)



Sizes  
Quantity: 11



Weight  
0.08 .. 39.8 kg



Gripping force  
180 .. 26100 N



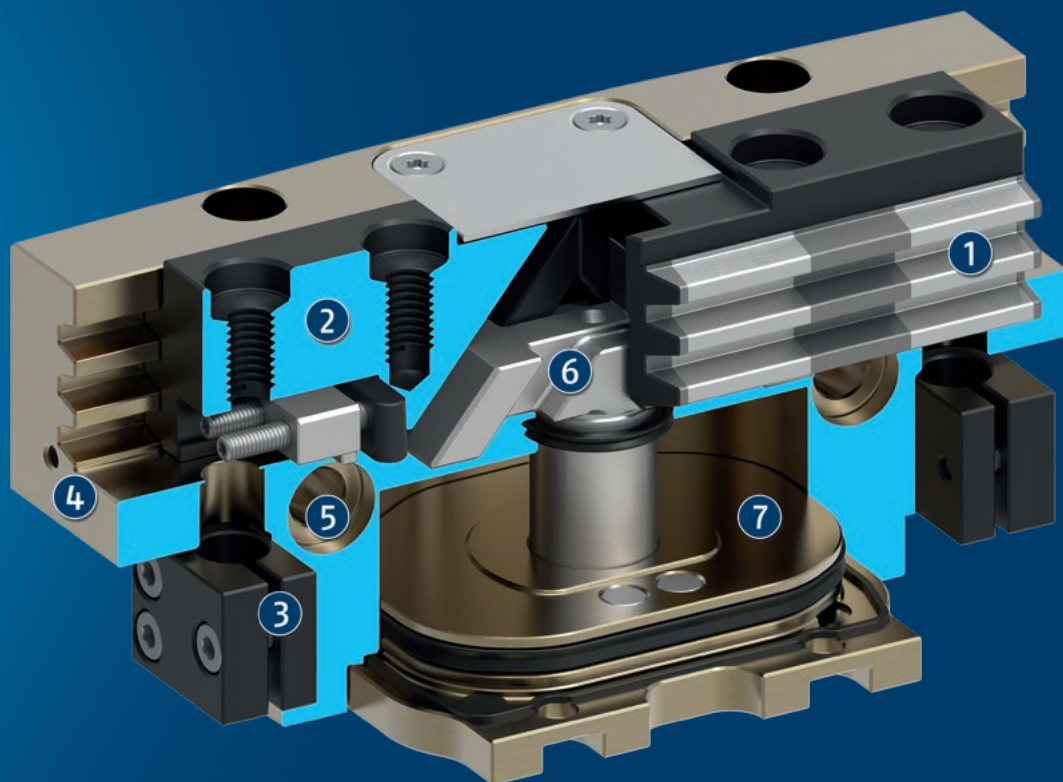
Stroke per jaw  
2 .. 45 mm



Workpiece weight  
0.9 .. 97.5 kg

## Functional description

The piston is moved up and down by compressed air.  
The angled active surfaces of the wedge-hook produce a synchronized, parallel jaw motion.



### ① Multi-tooth guidance

Maximum service life due to lubricant pockets in the robust multi-tooth guidance, and absorption of high forces and torques by means of the large guidance support

### ② Base Jaw

with standardized screw connection diagram for the connection of the workpiece-specific gripper fingers

### ③ Bracket for sensors

Brackets for proximity switches and adjustable control cams in the housing

### ④ Housing

is weight-optimized due to the use of high-strength aluminum alloy

### ⑤ Centering and mounting possibilities

for universal assembly of the gripper

### ⑥ Wedge-hook design

for high power transmission and minimal wear as a result of larger diagonal pull surfaces

### ⑦ Piston

Maximum force through maximum surface of drive piston

## Detailed functional description

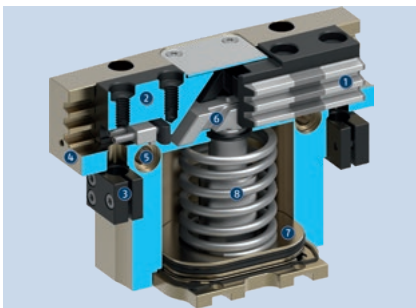
### Dustproof version SD



The "dustproof" option increases the degree of protection against penetrating substances.

This can either be ordered in a ready-mounted gripper version or else retrofitted to the gripper using the "SAD PGN-plus-P" retrofit kit.

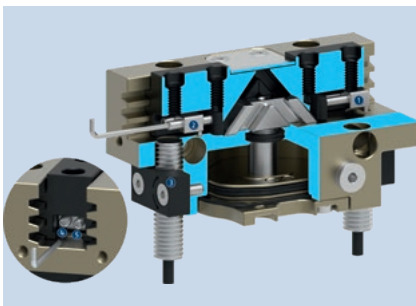
### Gripping force maintenance version AS/IS



The mechanical gripping force maintenance device ensures that a minimum clamping force will be applied even if there is a drop in pressure. In the AS version this acts as a closing force, and in the IS version as an opening force. The image shows the AS version. The gripping force maintenance can also be used to increase the gripping force or for one-way gripping.

- ❶ Multi-tooth guidance
- ❷ Base Jaw
- ❸ Bracket for sensors
- ❹ Housing
- ❺ Centering and mounting possibilities
- ❻ Wedge-hook design
- ❼ Piston
- ❽ Gripping force maintenance device

### Settings of the control cams during monitoring with inductive proximity switches

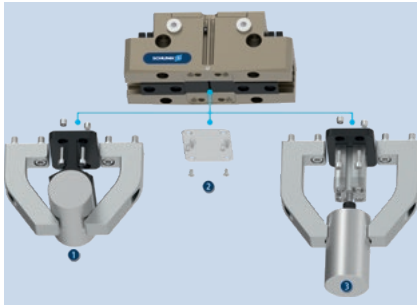


Monitoring with inductive proximity switch can be performed as standard from size 64. In delivery state, the positions "gripper open" and "gripper closed" are preset with the control cams. The inductive sensors must be ordered separately and are slid into the housing up to the stop and clamped.

In order to monitor any other position, such as "workpiece gripped" for example, both control cams can be individually set in the respective base jaws.

- ❶ Control cam preset for "gripper closed" position
- ❷ Control cam preset for "gripper open" position
- ❸ Holder with clamping screw for fixing the sensor
- ❹ Clamping screw for process-reliable fixing of the adjusted switching point
- ❺ Adjusting screw for setting any switching point

### Optional mounting possibility under the cover sheet for customer-specific additional structure



In delivery state, a cover sheet is mounted to the gripper. This can be removed if necessary. Under the cover sheet are threads and fittings for mounting customer-specific designs for implementing additional functions.

- ❶ Additional centering or support of the workpiece
- ❷ The cover plate (can be removed)
- ❸ Ejector with external cylinder attached to the gripper

## General notes about the series

**Operating principle:** Wedge gear with surface power transmission

**Housing material:** Aluminum

**Base jaw material:** Steel

**Actuation:** pneumatic, with filtered compressed air as per ISO 8573-1:2010 [7:4:4].

**Warranty:** 36 months

**Longlife:** 30 years functional warranty (details can be found online)

**Scope of delivery:** Brackets for proximity switches, centering sleeves, O-rings for direct connection, assembly instructions (operating manual with declaration of incorporation is available online)

**Gripping force maintenance device:** possible by using the version with mechanical gripping force maintenance or pressure maintenance valve SDV-P

**Gripping force:** is the arithmetic sum of the individual force applied to each jaw at distance P (see illustration).

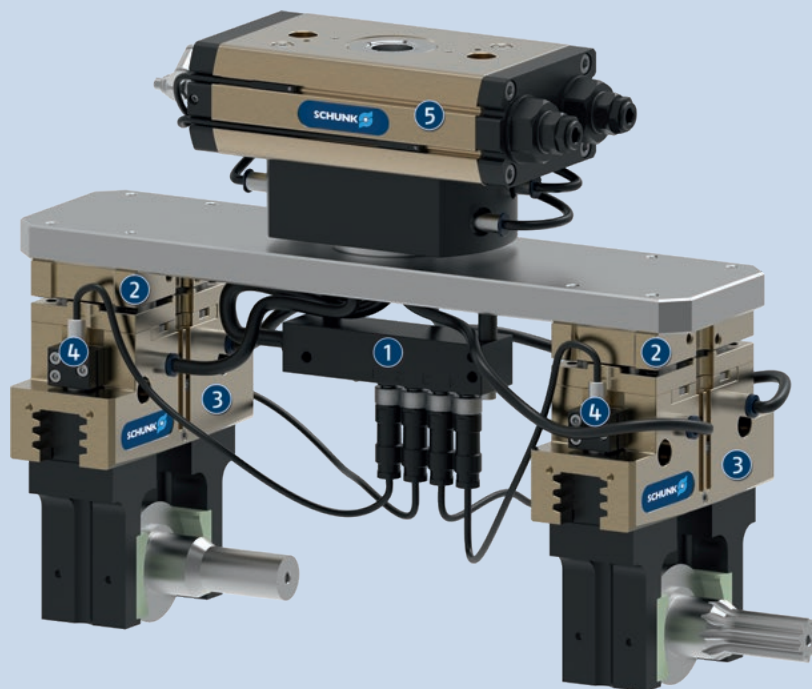
**Finger length:** is measured from the reference surface as the distance P in direction to the main axis.

The maximum permissible finger length applies until the nominal operating pressure is achieved. With higher pressures, the finger length must be reduced proportionally to the nominal operating pressure.

**Repeat accuracy:** is defined as a distribution of the end Position for 100 consecutive strokes.

**Workpiece weight:** is calculated for force-fit gripping with a coefficient of static friction of 0.1 and a safety factor of 2 against workpiece slippage at acceleration due to gravity g. For form-fit or capture gripping, there are significantly higher permissible workpiece weights.

**Closing and opening times:** are purely the times that the base jaws or fingers are in motion. Valve switching times, hose fill times, or PLC reaction times are not included, and are to be considered when cycle times are calculated.



## Application example

Handling tool for loading and unloading raw and finished parts and compensation of inaccurate position. A sensor distributor is used for routing signals through a cable.

① Sensor distributor V4

② Tolerance compensation unit TCU-Z

③ Universal gripper PGN-plus-P

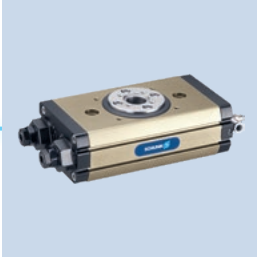
④ IN sensors

⑤ Universal rotary actuator SRM



## SCHUNK offers more ...

The following components make the product PGN-plus-P even more productive – the suitable addition for the highest functionality, flexibility, reliability, and controlled production.



Rotary unit



Quick change system



Compensation unit



Linear module



Jaw quick-change system



Finger blank



Pressure maintenance valve



Universal intermediate jaw



Flexible position sensor



Analog position sensor



Magnetic switches



Inductive proximity switches

① For more information on these products can be found on the following product pages or at [schunk.com](http://schunk.com). Please contact us: SCHUNK technical hotline +49-7133-103-2696

## Options and special information

**Gripping force maintenance version AS/IS:** The mechanical gripping force maintenance version ensures minimum gripping force even in the event of a pressure drop. In the AS/S version this acts as a closing force, in the IS version as an opening force.

**High-temperature version V/H/T:** for use in hot environments

**Precision version P:** for the highest accuracy

**Anti-corrosion version K:** for use in corrosion-inducing atmospheres

**ATEX version EX:** for explosive environments

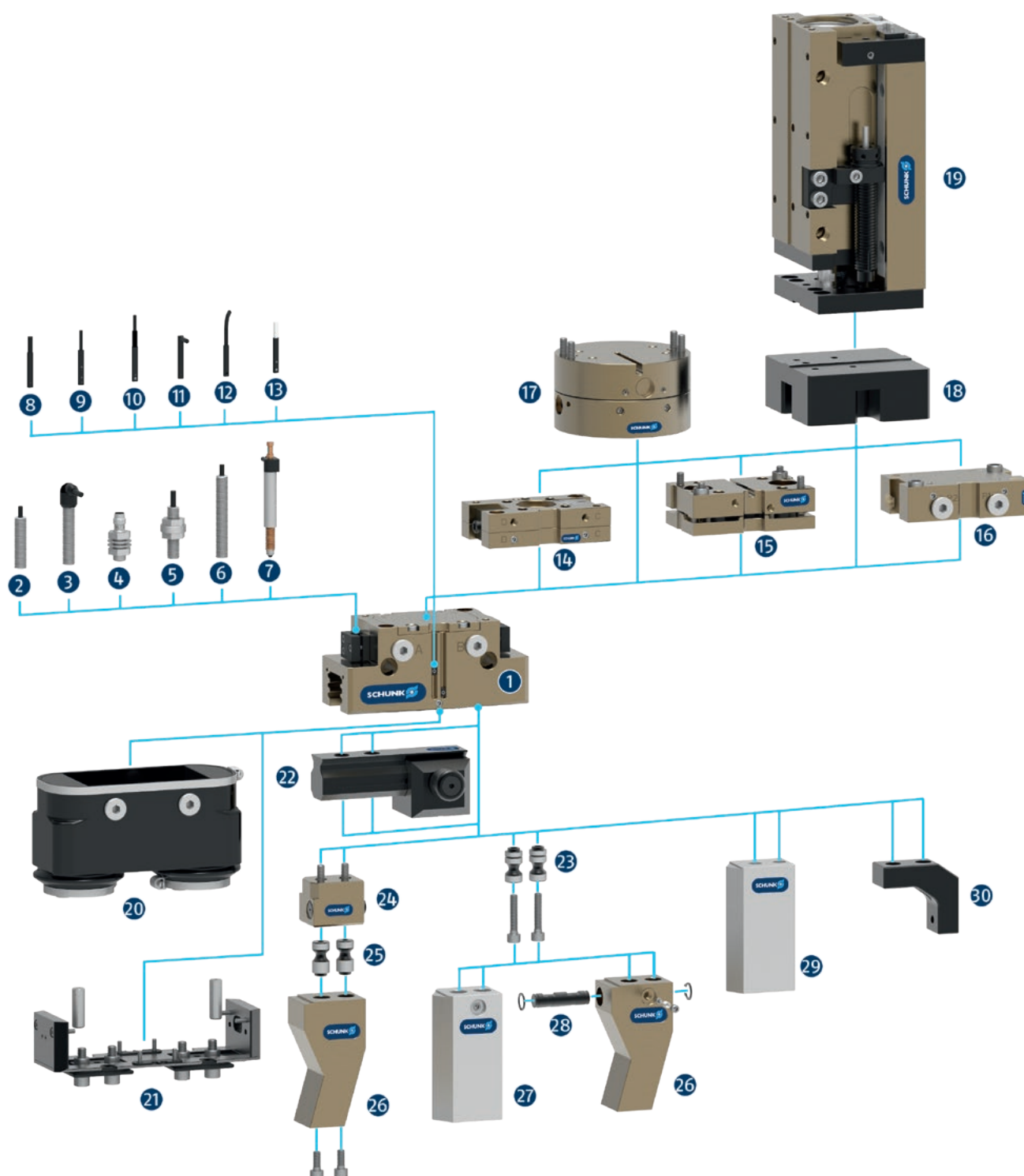
**Dustproof version SD:** absolutely dustproof, increased degree of protection against ingress of materials.

**Additional versions:** Various options can be combined with each other.

**Integrated air purge connection:** impedes the ingress of dirt into the inside of the gripper

## SCHUNK gripper PGN-plus-P

### Overview Accessories





## 1 PGN-plus-P

Universal 2-finger parallel gripper with a high gripping force and high maximum moments due to the use of a multi-tooth guidance

## Sensor system

### 2 IN ...

Inductive proximity switch with molded cable and straight cable outlet

### 3 IN ...-SA

Inductive proximity switch with molded cable and lateral cable outlet

### 4 IN-C 80

Inductive proximity switch, directly pluggable

### 5 FPS

Flexible position sensor for monitoring up to five different, freely selectable positions

### 6 APS-Z80

Inductive position sensor for precise position detection of the gripper jaws with analog output

### 7 APS-M15

Mechanical measuring system for precise position detection of the gripper jaw with analog output

### 8 MMS 22

Magnetic switch with straight cable outlet for monitoring a position

#### MMS 22-PI1

Magnetic switch with straight cable outlet for monitoring a freely programmable position

### 9 MMS 22-PI2

Magnetic switch with straight cable outlet for monitoring two freely programmable positions

### 10 MMS 22-PI1-HD

MMS 22-PI1 in robust design

#### MMS 22-PI2-HD

MMS 22-PI2 in robust design

### 11 MMS 22-SA

Magnetic switch with lateral cable outlet for monitoring a position

#### MMS 22-PI1-SA

Magnetic switch with side cable outlet for monitoring a freely programmable position

### 12 MMS-P

Magnetic switch with straight cable outlet for monitoring two freely programmable positions

### 13 MMS-A

Analog magnetic switch with straight cable outlet for measuring the gripper jaw position with analog output and teach function

## Complementary products

### 14 CWS

Manual change system with integrated air feed-through for simple exchange of the handling components

### 15 TCU

Tolerance compensation unit for compensating small tolerances in the plane

### 16 SDV-P-E-P

Pressure maintenance valve for temporary force and position maintenance

### 17 AGE

Compensation unit for compensation of large tolerances along the X and Y axes

### 18 ASG

Adapter plate for combining various automation components in the modular system

### 19 CLM

Linear module with pneumatic drive and scope-free pre-loaded junction rollers

### 20 HUE

Sleeve for protection against dirt

### 21 SAD

Dustproof version, retrofit kit

## Fingerzubehör

### 22 UZB

The universal intermediate jaw allows fast tool-free and reliable plugging and shifting of top jaws at the gripper.

### 23 BSWS-AR

Adapter coupling of jaw quick-change system for fast, manual change of top jaws

### 24 BSWS-B

Locking mechanism of the jaw quick-change system for fast, manual exchange of top jaws

### 25 BSWS-A

Adapter coupling of the jaw quick-change system for adaptation to the customized finger

### 26 Customized fingers

### 27 BSWS-ABR

Finger blank made of aluminum with interface to the jaw quick-change system

#### BSWS-SBR

Finger blank made of steel with interface to the jaw quick-change system

### 28 BSWS-UR

Locking mechanism for the integration of the jaw quick-change system into customized fingers

### 29 ABR/SBR

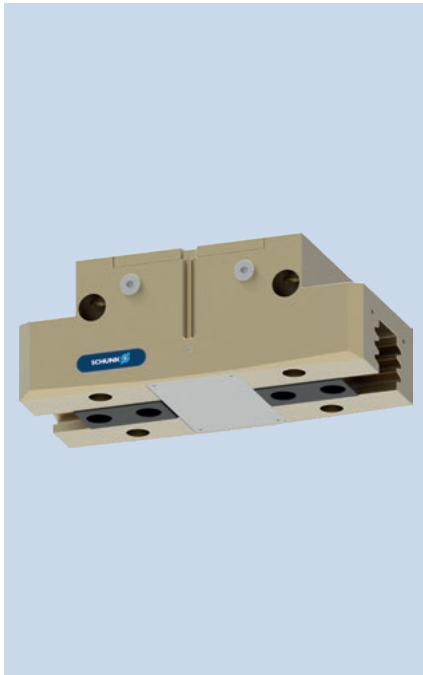
Finger blanks made of steel or aluminum with standardized screw connection diagram

### 30 ZBA

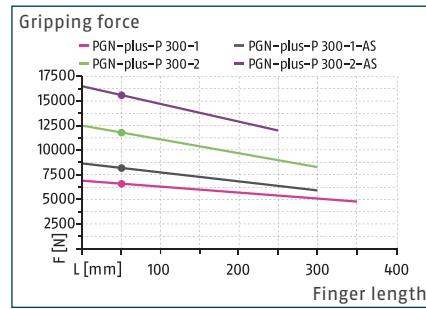
Intermediate jaws for reorientation of the mounting surface

# PGN-plus-P 300

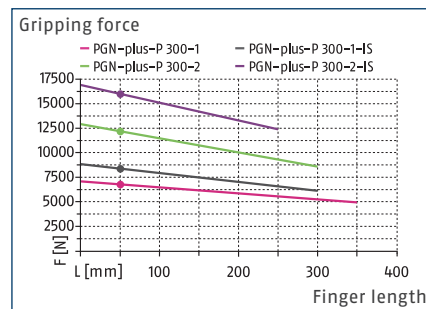
Universal gripper



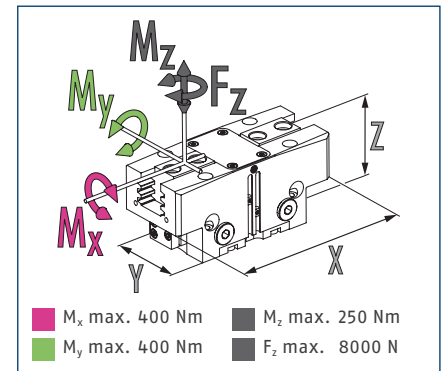
## Gripping force O.D. gripping



## Gripping force I.D. gripping



## Dimensions and maximum loads



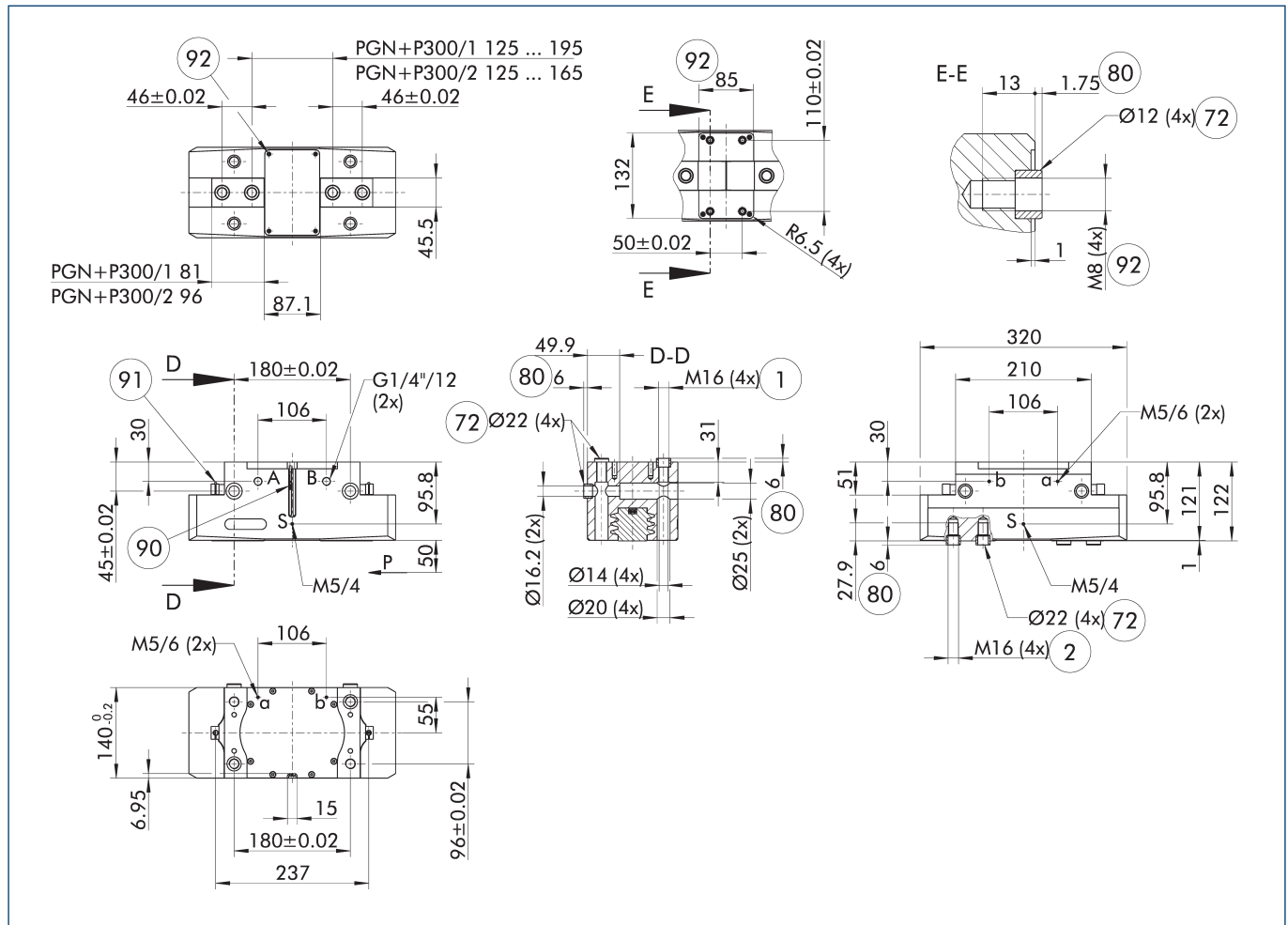
① The indicated moments and forces are static values, apply for each base jaw and should not appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

## Technical data

Characterization		PGN-plus-P 300-1	PGN-plus-P 300-2	PGN-plus-P 300-1-AS	PGN-plus-P 300-2-AS	PGN-plus-P 300-1-IS	PGN-plus-P 300-2-IS
ID		1377846	1377878	1377881	1377887	1377888	1377889
Stroke per jaw	[mm]	35	20	35	20	35	20
Closing/opening force	[N]	6600/6800	11800/12200	8200/-	15600/-	-/8400	-/16000
Min. spring force	[N]			1600	3800	1600	3800
Weight	[kg]	13.7	13.7	17.2	17.2	17.2	17.2
Recommended workpiece weight	[kg]	33	59	33	59	33	59
Fluid consumption double stroke	[cm³]	1040	1040	1295	1295	1560	1560
Min./nom./max. operating pressure	[bar]	2.5/6/8	2.5/6/8	4/6/6.5	4/6/6.5	4/6/6.5	4/6/6.5
Min./max. air purge pressure	[bar]	0.5/1	0.5/1	0.5/1	0.5/1	0.5/1	0.5/1
Closing/opening time	[s]	0.5/0.5	0.5/0.5	0.4/0.7	0.4/0.7	0.7/0.4	0.7/0.4
Closing/opening time with spring	[s]			0.60	0.60	0.60	0.60
Max. permissible finger length	[mm]	350	300	300	250	300	250
Max. permissible mass per finger	[kg]	11.5	11.5	11.5	11.5	11.5	11.5
IP protection class		40	40	40	40	40	40
Min./max. ambient temperature	[°C]	5/90	5/90	5/90	5/90	5/90	5/90
Repeat accuracy	[mm]	0.05	0.05	0.05	0.05	0.05	0.05
Dimensions X x Y x Z	[mm]	320 x 140 x 122	320 x 140 x 122	320 x 140 x 172	320 x 140 x 172	320 x 140 x 172	320 x 140 x 172
<b>Options and their characteristics</b>							
Dustproof version		1377936	1377942	1377947	1377950	1377951	1377958
IP protection class		64	64	64	64	64	64
Weight	[kg]	15.2	15.2	18.7	18.7	18.7	18.7
Corrosion-protected version		1377922	1377923	1377927	1377928	1377930	1377933
High-temperature version		1377892	1377896	1377903	1377912	1377919	1377920
Min./max. ambient temperature	[°C]	5/130	5/130	5/130	5/130	5/130	5/130
Precision version		1377966	1377973	1377980	1377986		

① It may take a few 100 gripping cycles until the full gripping force (as indicated in the data table) will be available.

## Main view



The drawing shows the gripper in the basic version with closed jaws, without dimensional consideration of the options described below.

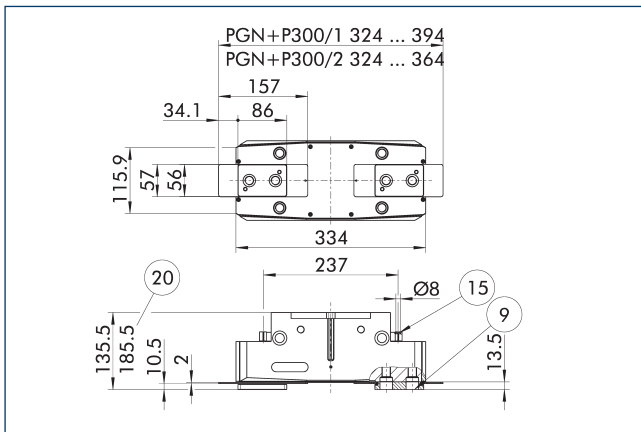
① The SDV-P pressure maintenance valve can also be used for I.D. or O.D. gripping alternatively or in addition to the spring-loaded, mechanical gripping force maintenance device (see catalog section on accessories).

- A, a Main / direct connection, gripper opening
- B, b Main / direct connection, gripper closing
- S Air purge connection
- ① Gripper connection
- ② Finger connection
- 72 Fit for centering sleeves

- 80 Depth of the centering sleeve hole in the counter part
- 90 MMS 22 sensor
- 91 Sensor IN ...
- 92 Screw connection with centering for customized mounting (these centering sleeves are not included in the scope of delivery)



### Dustproof version

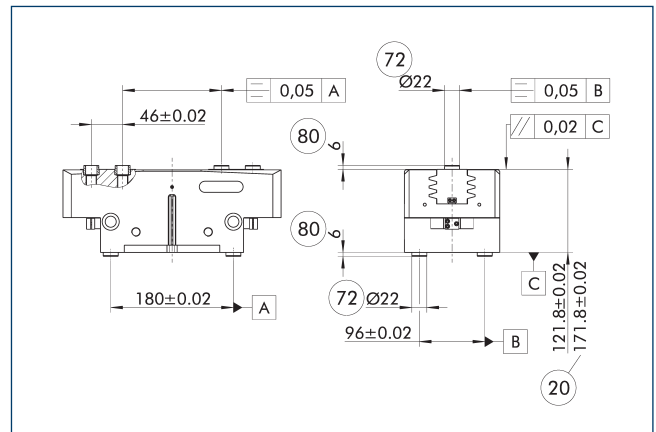


- ⑨ For mounting screw connection diagram, see basic version  
 ⑮ Sealing bolt  
 ⑳ For AS / IS version

The "dustproof" option increases the degree of protection against penetrating substances. The assembly diagram shifts by the height of the intermediate jaw. The finger length is still measured from the upper edge of the gripper housing.

Characterization	ID
Dust cover	
SAD PGN-plus-P 300	1347590

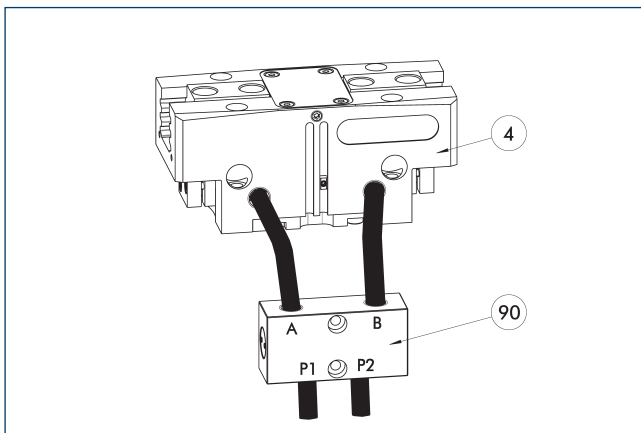
### Precision version



- ⑳ For AS / IS version  
 ㉓ Fit for centering sleeves  
 ⑧① Depth of the centering sleeve hole in the counter part

The indicated tolerances just refer to the variants of precision versions shown in the chart of technical specifications. All other variants of precision versions are available on request.

### SDV-P pressure maintenance valve



- ④ Grippers  
 ⑨① SDV-P pressure maintenance valve

The SDV-P pressure maintenance valve ensures in emergency STOP situations that the pressure in the piston chamber of pneumatic gripper, swivel, linear, and quick-change modules is temporarily maintained.

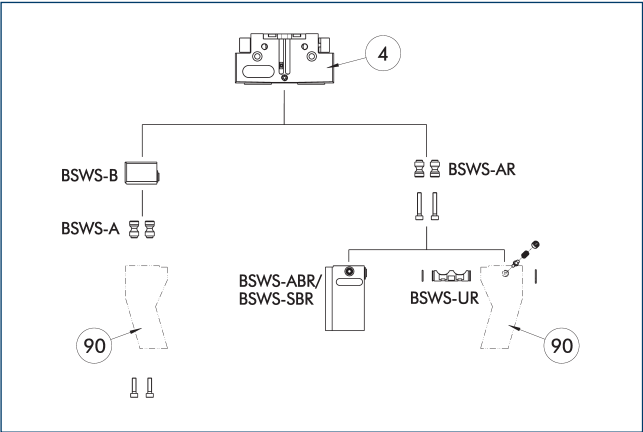
Characterization	ID	Recommended hose diameter
		[mm]
Pressure maintenance valve		
SDV-P 07	0403131	8
Pressure maintenance valve with air bleed screw		
SDV-P 07-E	0300121	8
SDV-P 10-E	0300109	10

- ① In order to achieve the specified closing and opening time for each gripper variant, the recommended hose diameter must be used. The direct allocation of the respective variant of the gripper for the respective SDV-P can be found at [schunk.com](http://schunk.com).

# PGN-plus-P 300

Universal gripper

## BSWS jaw quick-change jaw systems



- ④ Grippers
- ⑨ Customized gripper fingers

There are various jaw quick-change systems available for the gripper. For detailed information, please refer to the corresponding product.

Characterization	ID	Scope of delivery
Quick-change jaw system base		
BSWS-B 300	0303037	1
Jaw quick-change system adapter plate		
BSWS-A 300	0303036	2

ⓘ Only systems that are listed in the table, can be used.

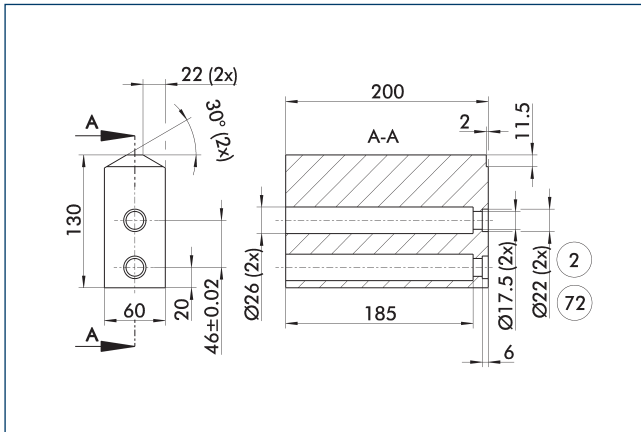
### Fields of application

Series	Size	Variant	Suitability
PGN-plus-P	300	-1 (6 bar)	■■■■
PGN-plus-P	300	-1-AS / -1-IS (6 bar)	■■■□
PGN-plus-P	300	-2 (6 bar)	■■■□
PGN-plus-P	300	-2-AS / -2-IS (6 bar)	□□□□
Legend			
■■■■	Can be combined without restrictions		
■■■□	Use with restrictions (see loading limits)		
□□□□	cannot be combined		

The load limits for describing the application limits can be found in the catalog chapter of the corresponding accessories.  
If the operating pressure is higher than 6 bar, suitability for use above the application limits must be checked.



## Finger blanks ABR- / SBR-PGZN-plus 300

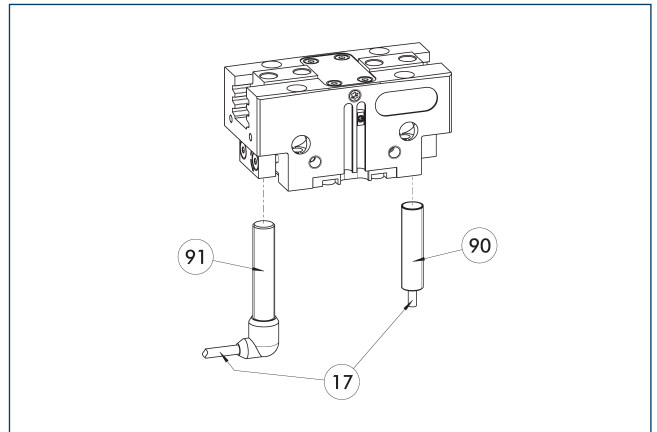


- ② Finger connection      72 Fit for centering sleeves

The drawing shows the finger blank which can be reworked by the customer.

Characterization	ID	Material	Scope of delivery
Finger blank			
ABR-PGZN-plus 300	0300016	Aluminum	1
SBR-PGZN-plus 300	0300026	Steel	1

## Inductive Proximity Switches



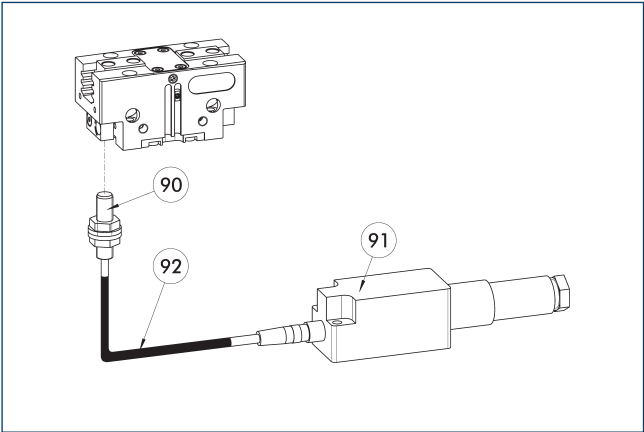
- 17 Cable outlet      91 Sensor IN...-SA  
90 Sensor IN ...

Directly mounted end position monitoring.

Characterization	ID	Often combined
Inductive proximity switches		
IN 80-S-M12	0301578	
IN 80-S-M8	0301478	●
INK 80-S	0301550	
Inductive proximity switch with lateral cable outlet		
IN 80-S-M12-SA	0301587	
IN 80-S-M8-SA	0301483	●
INK 80-S-SA	0301566	
Cable extension		
KV BG12-SG12 3P-0030-PNP	0301999	
KV BG12-SG12 3P-0060-PNP	0301998	
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
KV BW12-SG12 3P-0030-PNP	0301595	
KV BW12-SG12 3P-0100-PNP	0301596	
KV BW12-SG12 3P-0200-PNP	0301597	
clip for plug/socket		
CLI-M12	0301464	
CLI-M8	0301463	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BG12-L 3P-0500-PNP	30016369	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
KA BW12-L 3P-0300-PNP	0301503	
KA BW12-L 3P-0500-PNP	0301507	
Sensor distributor		
V2-M12	0301776	●
V2-M8	0301775	●
V4-M12	0301747	
V4-M8	0301746	
V8-M12	0301752	
V8-M8	0301751	

- ① Two sensors are required per unit for monitoring two positions. On option, extension cables and sensor distributors are available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor system.

Flexible position sensor



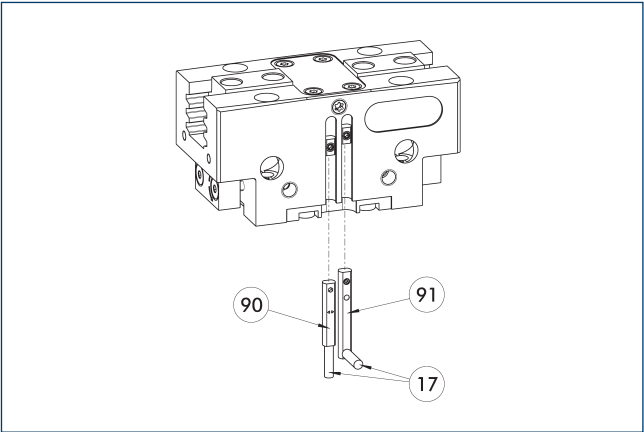
- 90 FPS-S sensor
- 91 FPS-F5 evaluation electronic
- 92 Cable extension

Flexible position monitoring of up to five positions.

Characterization	ID	
Attachment kit for FPS		
AS-FPS-PGN-plus-P 300-2	1395867	
Sensor		
FPS-S M8	0301704	
Cable extension		
KV BG08-SG08 3P-0050	0301598	
KV BG08-SG08 3P-0100	0301599	
Evaluation electronics		
FPS-F5	0301805	

- ⓘ When using an FPS system, an FPS sensor (FPS-S) as well as an electronic processor (FPS-F5 / F5 T) are required for each gripper as well as a mounting kit (AS), if listed. Cable extensions (KV) are optionally available – see catalog chapter “Accessories.”

Electronic magnetic switch MMS



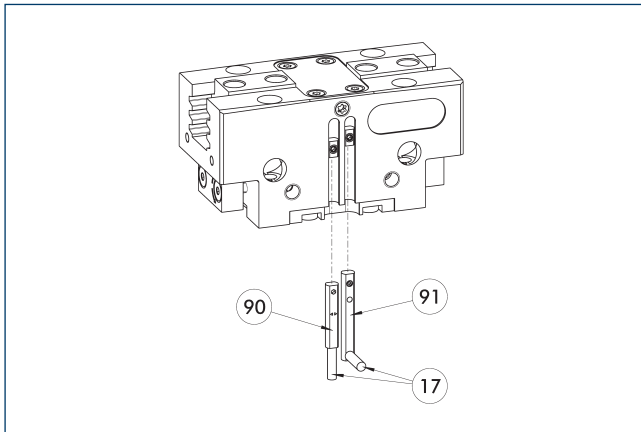
- 17 Cable outlet
- 90 Sensor MMS 22 PI1-...
- 91 Sensor MMS 22 ...-PI1-...-SA

End position monitoring for mounting in the C-slot.

Characterization	ID	Often combined
Electronic magnetic switch		
MMS 22-S-M8-PNP	0301032	●
MMSK 22-S-PNP	0301034	
Electronic magnetic switches with lateral cable outlet		
MMS 22-S-M8-PNP-SA	0301042	●
MMSK 22-S-PNP-SA	0301044	
Cable extension		
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
clip for plug/socket		
CLI-M8	0301463	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
Sensor distributor		
V2-M8	0301775	●
V4-M8	0301746	
V8-M8	0301751	

- ⓘ Two sensors are required per unit for monitoring two positions. On option, extension cables and sensor distributors are available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor system.

## Programmable magnetic switch MMS 22-PI1



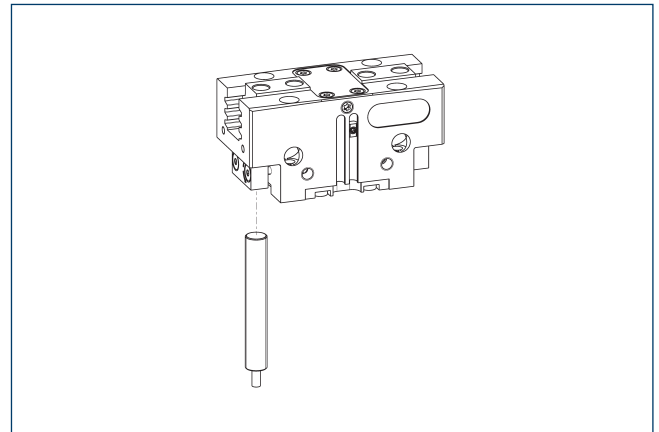
- ①⑦ Cable outlet  
⑨① Sensor MMS 22 ..-PI1-...-SA  
⑨① Sensor MMS 22 PI1-...

Position monitoring with one programmable position per sensor and integrated electronic system in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

Characterization	ID	Often combined
<b>Programmable magnetic switch</b>		
MMS 22-PI1-S-M8-PNP	0301160	●
MMSK 22-PI1-S-PNP	0301162	
<b>Programmable magnetic switch with lateral cable outlet</b>		
MMS 22-PI1-S-M8-PNP-SA	0301166	●
MMSK 22-PI1-S-PNP-SA	0301168	
<b>Programmable magnetic switch with stainless steel housing</b>		
MMS 22-PI1-S-M8-PNP-HD	0301110	●
MMSK 22-PI1-S-PNP-HD	0301112	

- ① Two sensors are required per unit for monitoring two positions. On option, extension cables and sensor distributors are available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor system.

## APS-Z80 analog position sensor



No-contact measuring, analog multi-position monitoring for any number of positions.

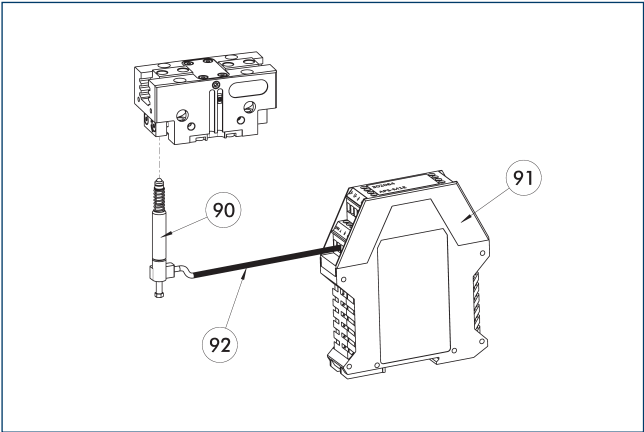
Characterization	ID	Often combined
<b>Mounting kit for APS-Z80</b>		
AS-APS-Z80-PGN-plus-P 300-1	1395892	
AS-APS-Z80-PGN-plus-P 300-2	1395894	
<b>Analog position sensor</b>		
APS-Z80-K	0302072	
APS-Z80-M8	0302070	●

- ① When using an APS system, one mounting kit (AS-APS-Z80) and one APS-Z80 sensor is required per gripper. The resolution of the sensor can be lower in the peripheral areas of the gripper. You can find further information on the product in the operating manual.

# PGN-plus-P 300

Universal gripper

## APS-M1 analog position sensor



- 90 APS-M1S sensor
- 91 APS-M1E electronic processor
- 92 APS-K extension cable

Analog multi position monitoring for any desired positions

Characterization	ID	
Mounting kit for APS-M1		
AS-APS-M1-PGN-plus-P 300-1	1395905	
AS-APS-M1-PGN-plus-P 300-2	1395907	
Analog position sensor		
APS-M1S	0302062	

- ① When using an APS system, for each gripper an attachment kit (AS-APS-M1), an APS-M1S sensor (incl. 3 m cable) as well as an electronics (APS-M1e) are required. An extension cable (APS-K) can be connected between the sensor and the electronics as an option. The max. cable length between the sensor and the electronics is 10 m, between the electronics and their control unit (PLC) it is max. 1 m.



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