



Superior Clamping and Gripping



## Product Information

Universal gripper PZN-plus 160

## Reliable. Robust. Flexible.

### Universal gripper PZN-plus

Universal 3-finger centric gripper with high gripping force and maximum moments due to multi-tooth guidance

#### Field of application

multi- purpose thanks to a diverse range of accessories.  
Can also be used in fields of application with special requirements to the gripper (temperature, chemical resistance, dirt, and many more).

#### Advantages – Your benefits

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

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

**Wedge-hook design** for high power transmission and synchronized gripping

**Air supply via hose-free direct connection or screw connections** for flexible pressure supply in all automated systems

**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.)

**Fastening at one gripper side in two screw directions** for universal and flexible gripper assembly



Sizes  
Quantity: 11



Weight  
0.13 .. 80 kg



Gripping force  
255 .. 57300 N



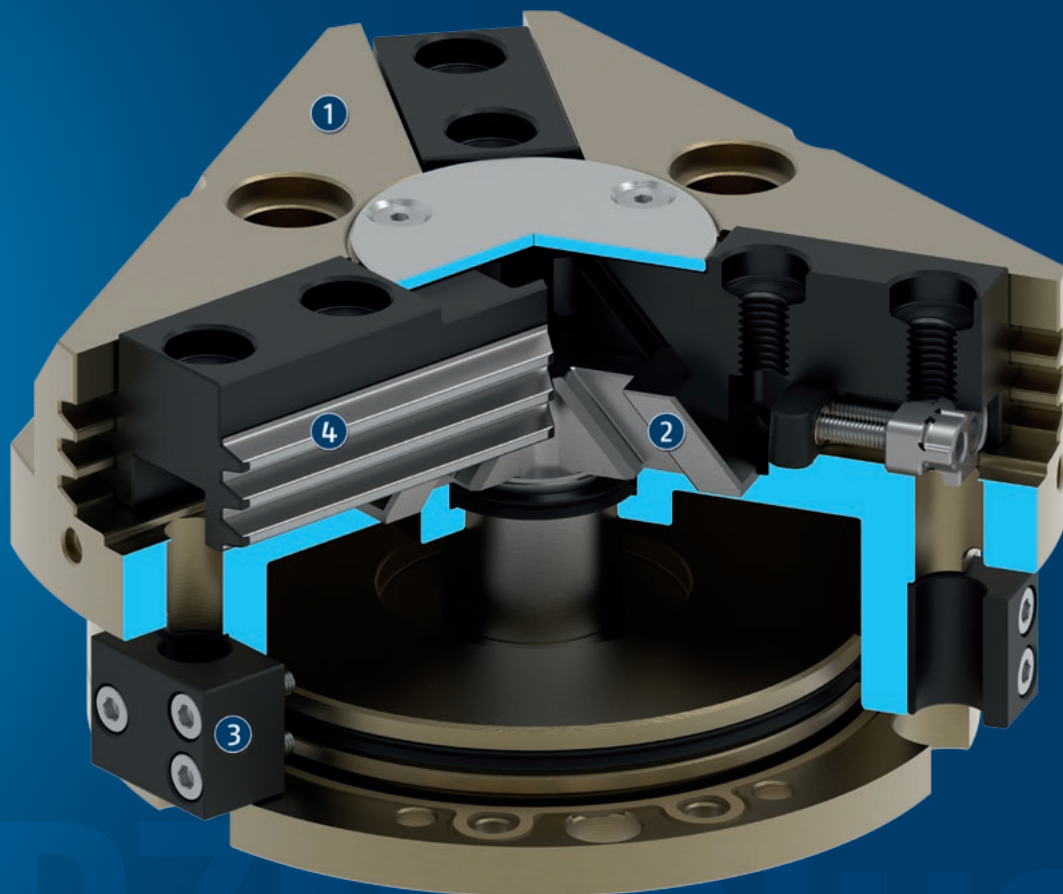
Stroke per jaw  
2 .. 45 mm



Workpiece weight  
1.3 .. 227 kg

## Functional description

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



- ① **Housing**  
is weight-optimized due to the use of high-strength aluminum alloy
- ② **Wedge-hook design**  
for high force transmission and centric gripping

- ③ **Sensor system**  
Brackets for proximity switches and adjustable control cams in the housing
- ④ **Multi-tooth guidance**  
precise gripping through base jaw guidance with a high load capacity and a minimum play

## General notes about the series

**Operating principle:** Wedge-hook kinematics

**Housing material:** Aluminum alloy, anodized

**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.

**Cleanroom class ISO 14644-1:** 5

## Application example

Insertion tool for assembly of small to medium-sized axes. Due to the rotary feed-through, the axes can be rotated several times infinitely ( $> 360^\circ$ ) during the assembly process. Slip ring contacts integrated in the rotary feed-through reliably supply the gripper with power.

- ❶ Rotary feed-through DDF 2
- ❷ Quick-change system SWS
- ❸ 3-finger centric gripper PZN-plus



## SCHUNK offers more ...

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



Compensation unit



Universal intermediate jaw



Jaw quick-change system



Pressure maintenance valve



Inductive proximity switches



Magnetic switches



Finger blank

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.

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

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

**Power booster version KVZ:** if higher gripping forces are required

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

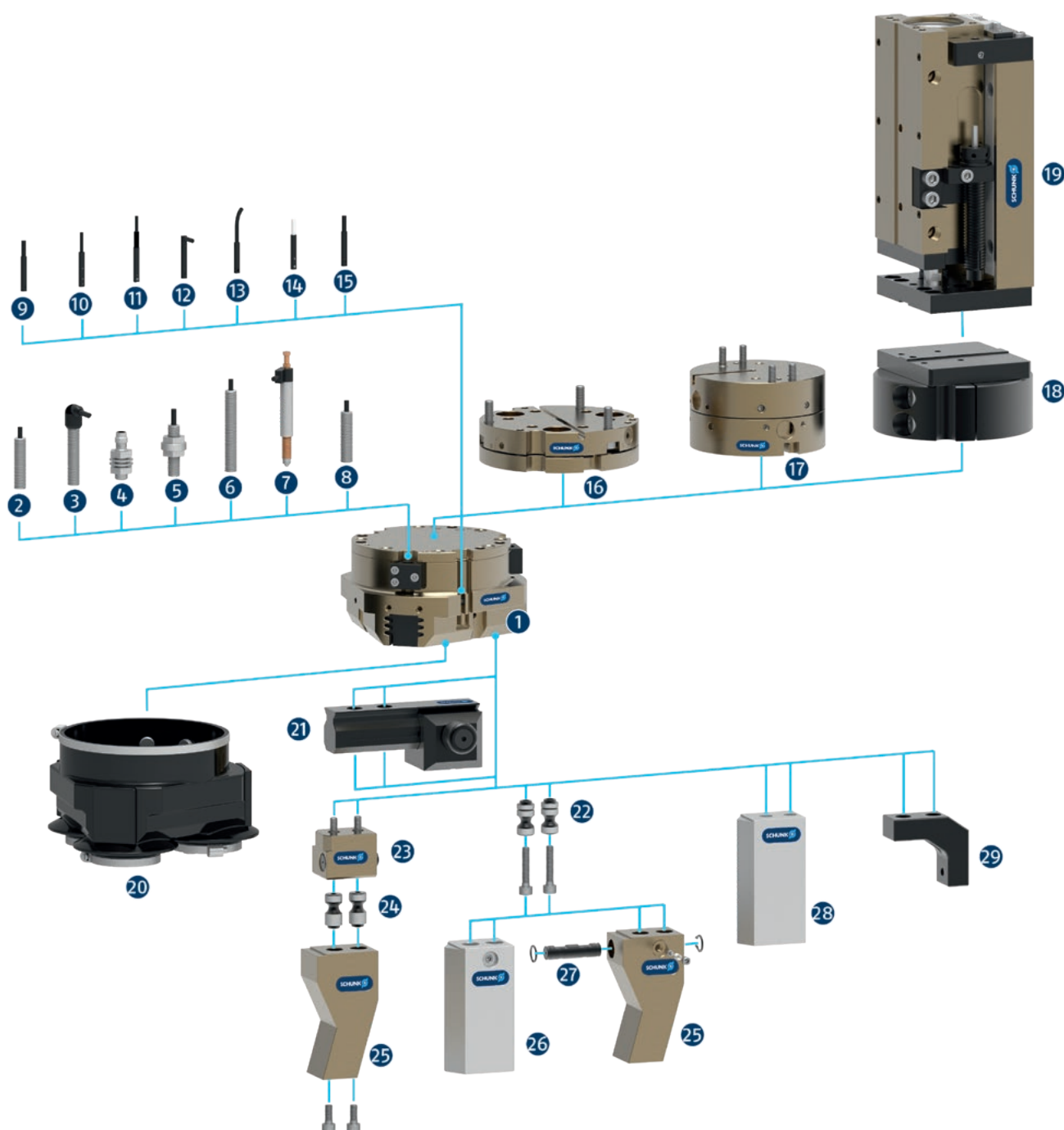
**Precision version P:** for the highest accuracy

**ATEX version EX:** for explosive environments

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

## SCHUNK gripper PZN-plus

### Overview Accessories





- 1 **PZN-plus**  
Universal 3-finger centric gripper with high gripping force and maximum moments due to 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-M1S**  
Mechanical measuring system for precise position detection of the gripper jaw with analog output
- 8 **RMS**  
Reed switch in round version
- 9 **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
- 10 **MMS 22-PI2**  
Magnetic switch with straight cable outlet for monitoring two freely programmable positions
- 11 **MMS 22-PI1-HD**  
MMS 22-PI1 in robust design  
  
**MMS 22-PI2-HD**  
MMS 22-PI2 in robust design
- 12 **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
- 13 **MMS-P**  
Magnetic switch with straight cable outlet for monitoring two freely programmable positions
- 14 **MMS 22-A**  
Analog magnetic switch with straight cable outlet for measuring the gripper jaw position with analog output and teach function

- 15 **RMS 22**  
Reed switch for direct assembly in the C-slot

## Complementary products

- 16 **TCU**  
Tolerance compensation unit for compensating small tolerances in the plane
- 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

## Fingerzubehör

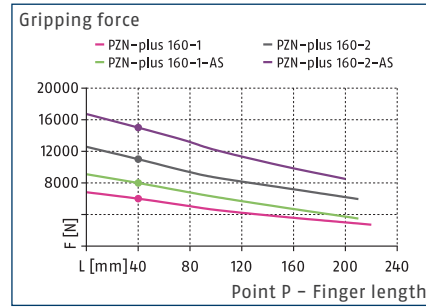
- 21 **UZB**  
The universal intermediate jaw allows fast tool-free and reliable plugging and shifting of top jaws at the gripper.
- 22 **BSWS-AR**  
Adapter coupling of jaw quick-change system for fast, manual change of top jaws
- 23 **BSWS-B**  
Locking mechanism of the jaw quick-change system for fast, manual exchange of top jaws
- 24 **BSWS-A**  
Adapter coupling of the jaw quick-change system for adaptation to the customized finger
- 25 **Customized fingers**
- 26 **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
- 27 **BSWS-UR**  
Locking mechanism for the integration of the jaw quick-change system into customized fingers
- 28 **ABR/SBR**  
Finger blanks made of steel or aluminum with standardized screw connection diagram
- 29 **ZBA**  
Intermediate jaws for reorientation of the mounting surface

# PZN-plus 160

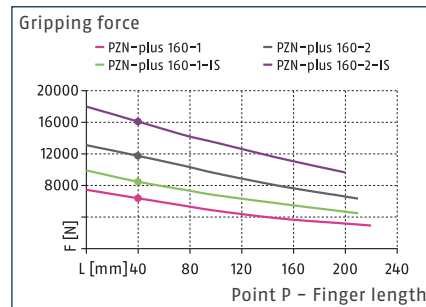
Universal gripper



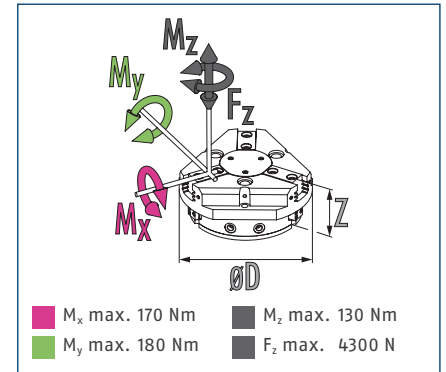
## Gripping force O.D. gripping



## 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.

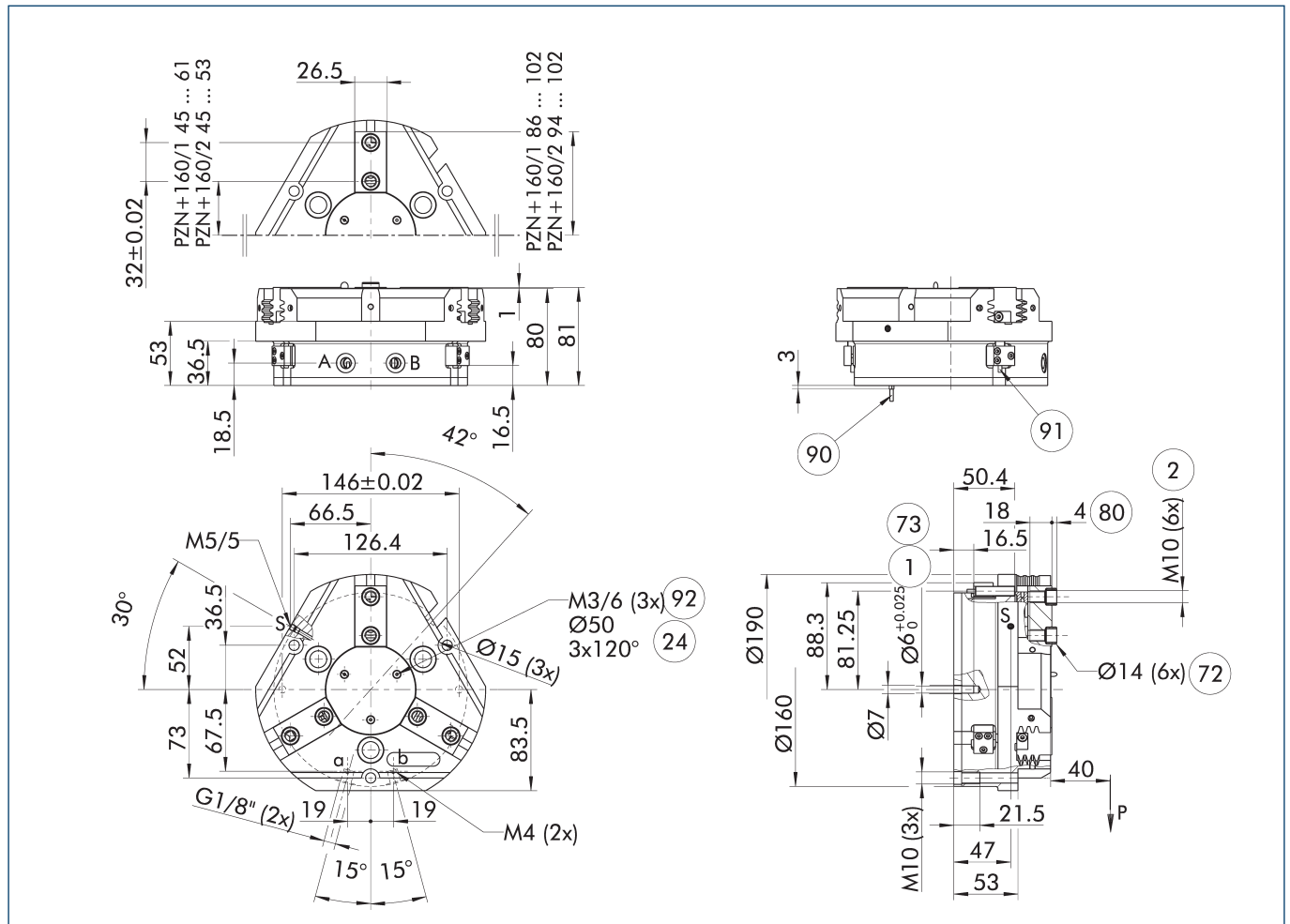
## Technical data

Characterization		PZN-plus 160-1	PZN-plus 160-2	PZN-plus 160-1-AS	PZN-plus 160-2-AS	PZN-plus 160-1-IS	PZN-plus 160-2-IS
ID		0303314	0303414	0303514	0303614	0303544	0303644
Stroke per jaw	[mm]	16	8	16	8	16	8
Closing/opening force	[N]	6000/6390	11000/11750	7990/-	15010/-	-/8480	-/16090
Min. spring force	[N]			1990	4010	2090	4340
Weight	[kg]	5.6	5.6	8	8	8	8
Recommended workpiece weight	[kg]	30	55	30	55	30	55
Fluid consumption double stroke	[cm³]	520	520	875	875	875	875
Min./nom./max. operating pressure	[bar]	2/6/8	2/6/8	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	0.4/0.8	0.4/0.8	0.8/0.4	0.8/0.4
Closing/opening time with spring	[s]			0.80	0.80	0.80	0.80
Max. permissible finger length	[mm]	220	210	210	200	210	200
Max. permissible mass per finger	[kg]	3.5	3.5	3.5	3.5	3.5	3.5
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]	0.02	0.02	0.02	0.02	0.02	0.02
Dimensions Ø D x Z	[mm]	190 x 81	190 x 81	190 x 111	190 x 111	190 x 111	190 x 111
<b>Options and their characteristics</b>							
Dustproof version		37303314	37303414	37303514	37303614	37303544	37303644
IP protection class		64	64	64	64	64	64
Weight	[kg]	6.5	6.5	8.9	8.9	8.9	8.9
Corrosion-protected version		38303314	38303414	38303514	38303614	38303544	38303644
High-temperature version		39303314	39303414	39303514	39303614	39303544	39303644
Min./max. ambient temperature	[°C]	5/130	5/130	5/130	5/130	5/130	5/130
Power booster version		0372205	0372215	0372225		0372245	
Closing/opening force	[N]	9980/10431	18229/19796	11620/-		-/12160	
Weight	[kg]	7.8	7.8	9.6		9.6	
Maximum pressure	[bar]	6	6	6		6	
Max. permissible finger length	[mm]	125	100	100		100	
Precision version		0303344	0303444	0303494	0303594		

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

②④ Bolt circle

⑦② Fit for centering sleeves

⑦③ Fit for centering pins

⑧① Depth of the centering sleeve hole in the counter part

⑨① Sensor MMS 22..

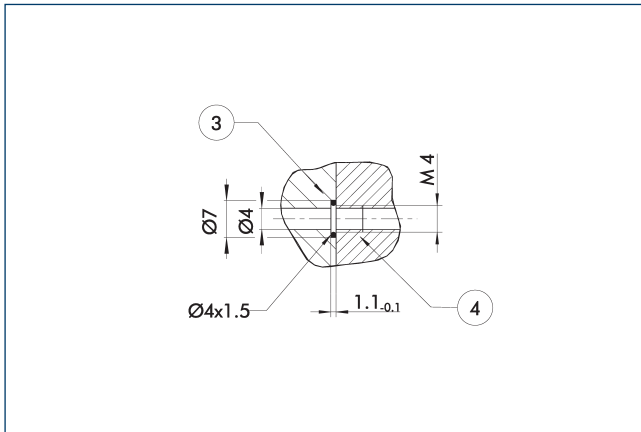
⑨① Sensor IN ...

⑨② Thread below the cover for fastening external attachments

# PZN-plus 160

Universal gripper

## Hose-free direct connection M4

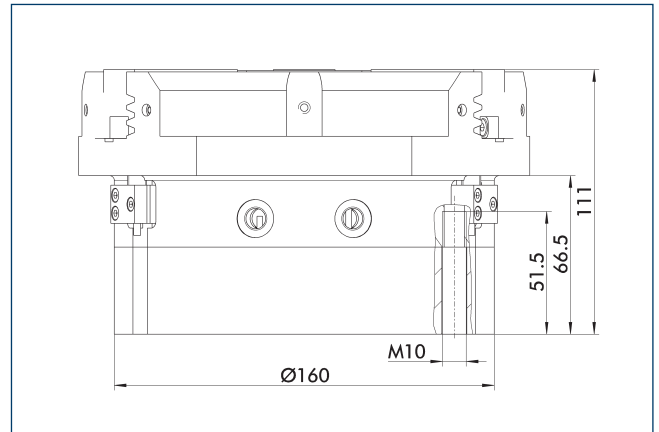


③ Adapter

④ Grippers

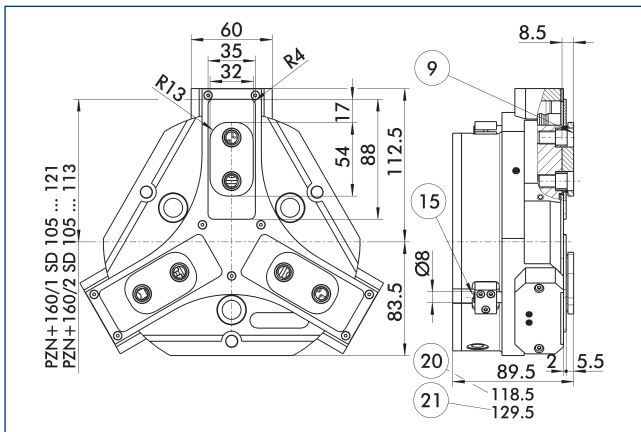
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

## Gripping force maintenance device 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. This acts as closing force in the AS / S version, and as opening force in the IS version. Besides this, the gripping force maintenance device can be used to increase the gripping force or for single actuated gripping.

## Dustproof version



⑨ For mounting screw connection diagram, see basic version

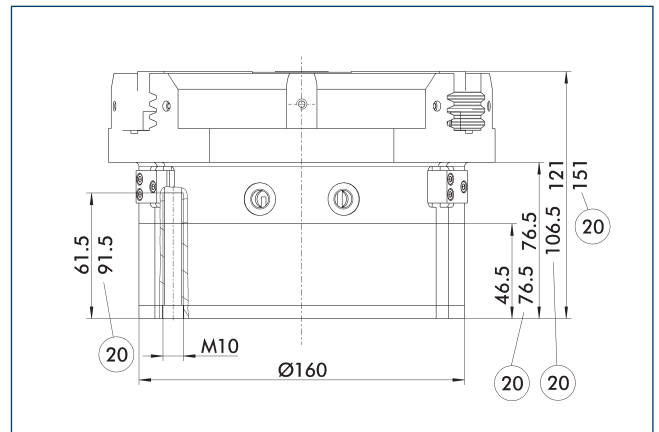
②① For AS / IS version

②① Applies for KVZ version

⑮ Sealing bolt

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.

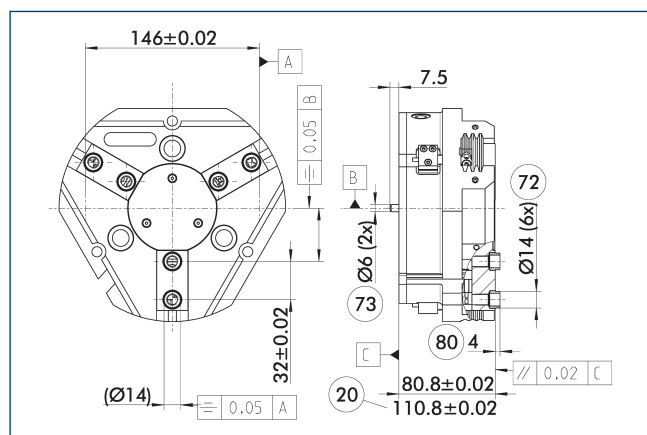
## Power booster version



②① For AS / IS version

The KVZ cylinder increases the gripping forces during opening and closing. A second, in series-connected piston also increases the force on the wedge hook. Please consider that grippers which are equipped with a gripping force maintenance device are higher.

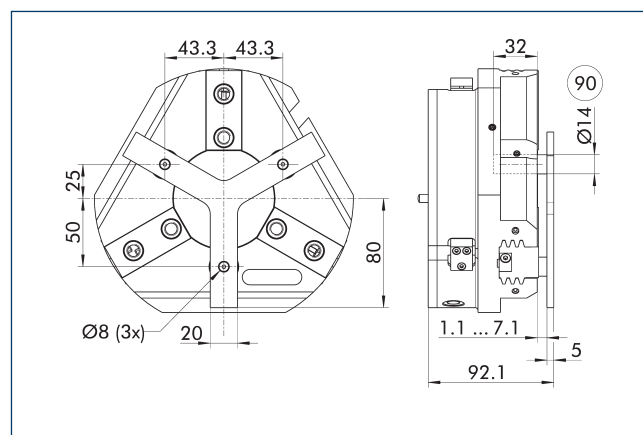
### Precision version



- ②0 For AS / IS version
- ⑦2 Fit for centering sleeves
- ⑦3 Fit for centering pins
- ⑧0 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.

### Spring-loaded pressure piece



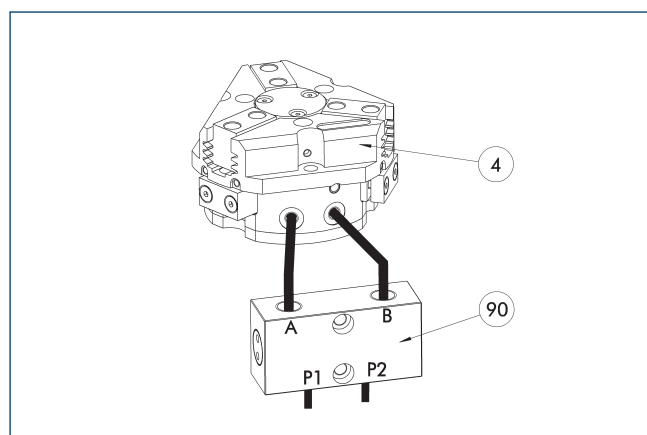
- ⑨0 Guide pin

For spring-supported positioning of the workpiece against a stop after the gripper has opened. Especially developed for loading machines.

Characterization	ID	Stroke	Min. force
		[mm]	[N]
Spring-loaded pressure piece			
A-PZN-plus/DPZ-plus 160	0303724	6	150

- ① The pressure piece cannot be combined with the dustproof option. Please contact us if you require a customized pressure piece.

### SDV-P pressure maintenance valve



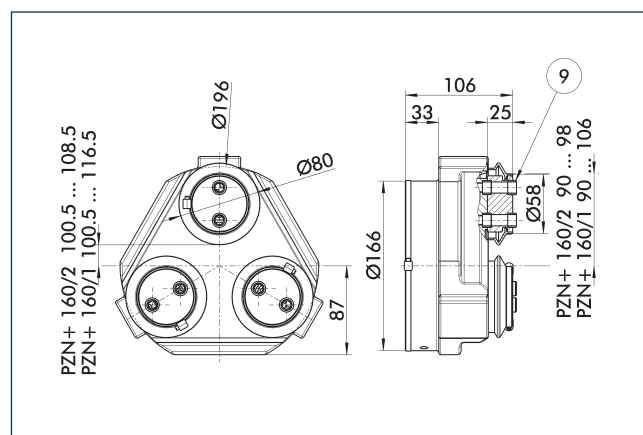
- ④ Grippers
- ⑨0 SDV-P pressure maintenance valve

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

- 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.

### Protective cover HUE PZN-plus 160



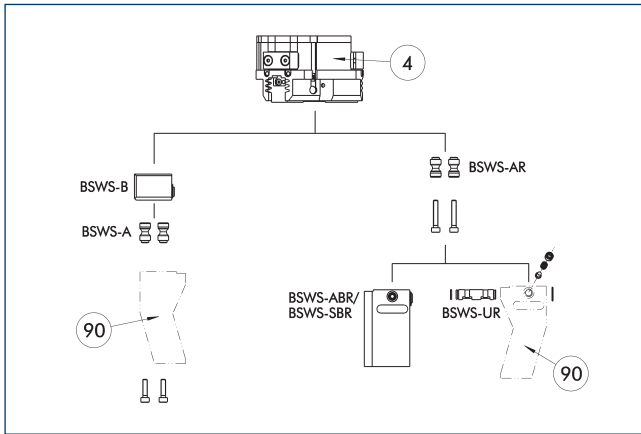
- ⑨ For mounting screw connection diagram, see basic version

The HUE protective cover fully protects the gripper against external influences. The cover is suitable for applications of up to IP65 if an additional sealing of the cover bottom is provided. For detailed information, please see the HUE series. The connection diagram shifts by the height of the intermediate jaw.

Characterization	ID	IP protection class
Protection cover		
HUE PZN-plus 160	0303484	65

- ① An inductive monitoring of the gripper in connection with the protective cover HUE is not possible. SCHUNK recommends the use of magnetic sensors that are approved for the respective gripper version.

### BSWS jaw quick-change jaw systems



④ Grippers

⑨⑩ 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
Jaw quick-change system adapter plate		
BSWS-A 160	0303030	2
BSWS-AR 160	0300096	2
Quick-change jaw system base		
BSWS-B 160	0303031	1
Jaw quick-change system finger blank		
BSWS-ABR-PGZN-plus 160	0300076	1
BSWS-SBR-PGZN-plus 160	0300086	1
Jaw quick-change system locking mechanism		
BSWS-UR 160	0302995	1

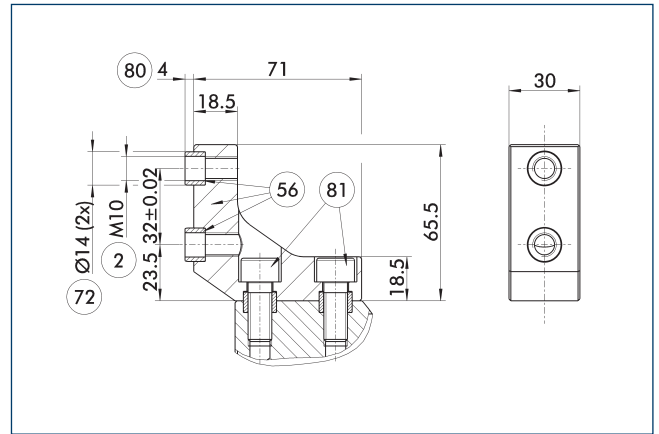
① Only systems that are listed in the table, can be used.

### Fields of application

Series	Size	Variant	Suitability
PZN-plus	160	-1 (6 bar)	■■■■
PZN-plus	160	-1-AS / -1-IS (6 bar)	■■□□
PZN-plus	160	-2 (6 bar)	■■□□
PZN-plus	160	-2-AS / -2-IS (6 bar)	■■□□
PZN-plus	160	---KVZ (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.

### ZBA-L-plus 160 intermediate jaws



② Finger connection

⑤⑥ Included in the scope of delivery

⑦② Fit for centering sleeves

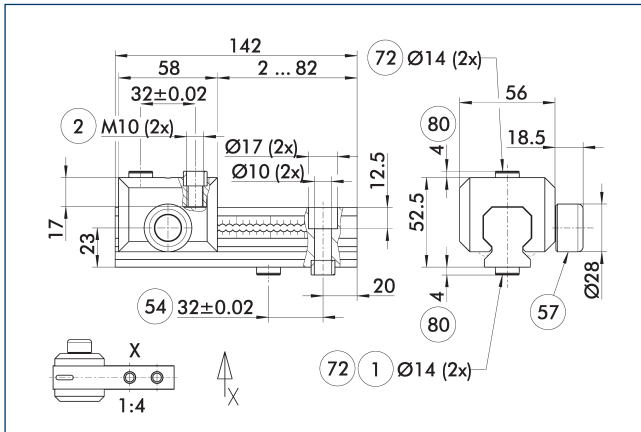
⑧⑩ Depth of the centering sleeve hole in the counter part

⑧① Not included in the scope of delivery

The optional ZBA-L-plus intermediate jaws allow the screw connection diagram of the top jaws to be rotated by 90°. This makes it easier to design and produce top jaws (particularly for long versions) because no deep through-bores are required.

Characterization	ID	Material	Finger interface	Scope of delivery
Intermediate jaw				
ZBA-L-plus 160	0311762	Aluminum	PGN-plus 160	1

## UZH 160 universal intermediate jaw



- ① Gripper connection
- ② Finger connection
- ⑤④ Optional right or left connection
- ⑤⑦ Locking
- ⑦② Fit for centering sleeves
- ⑧① Depth of the centering sleeve hole in the counter part

The drawing shows the UZH universal intermediate jaw. The fully removable UZH-S slide (can also be ordered separately) allows for a quick jaw change.

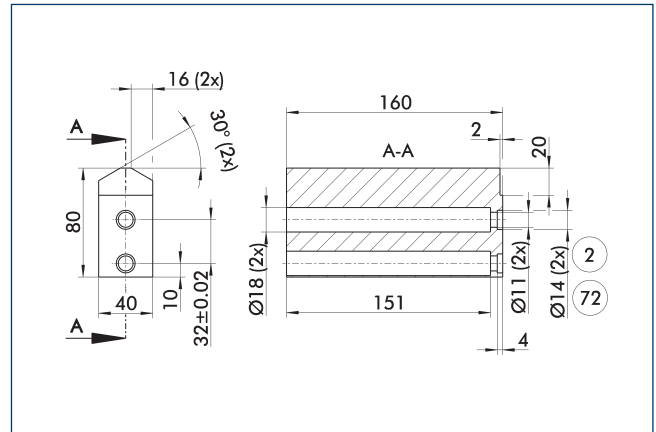
Characterization	ID	Grid dimension
		[mm]
Universal intermediate jaw		
UZH 160	0300046	4
Finger blank		
ABR-PGZN-plus 160	0300014	
SBR-PGZN-plus 160	0300024	
Slide for universal intermediate jaw		
UZH-S 160	5518274	4

## Fields of application

Series	Size	Variant	Suitability
PZN-plus	160	-1 (6 bar)	■■■■
PZN-plus	160	-1-AS / -1-IS (6 bar)	■■■□
PZN-plus	160	-2 (6 bar)	□□□□
PZN-plus	160	-2-AS / -2-IS (6 bar)	□□□□
PZN-plus	160	---KVZ (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 160

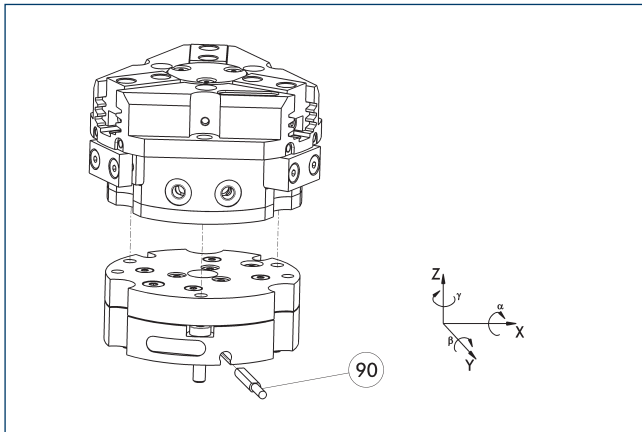


- ② Finger connection
- ⑦② Fit for centering sleeves

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

Characterization	ID	Material	Scope of delivery
Finger blank			
ABR-PGZN-plus 160	0300014	Aluminum	1
SBR-PGZN-plus 160	0300024	Steel	1

### Tolerance compensation unit TCU

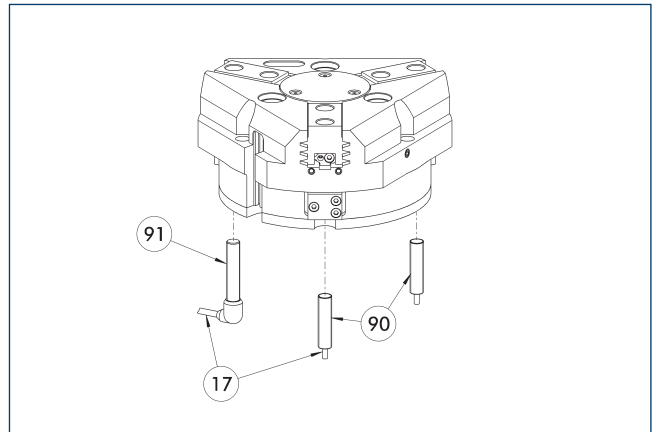


#### 90 Monitoring of locking

Grippers can be directly mounted without an adapter plate. Tolerance compensation unit and gripper have an identical screw connection diagram. Therefore the tolerance compensation units can be assembled later. Please consider the additional assembly height of the tolerance compensation unit. For details please refer to our catalog robot accessories.

Characterization	ID	Locking	Deflection	Often combined
Compensation unit				
TCU-Z-160-3-MV	0324838	yes	$\pm 1^\circ/\pm 1^\circ/\pm 1^\circ$	●
TCU-Z-160-3-OV	0324839	no	$\pm 1^\circ/\pm 1^\circ/\pm 1^\circ$	

### Inductive Proximity Switches



#### 17 Cable outlet

#### 90 Sensor IN ...

#### 91 Sensor IN...-SA

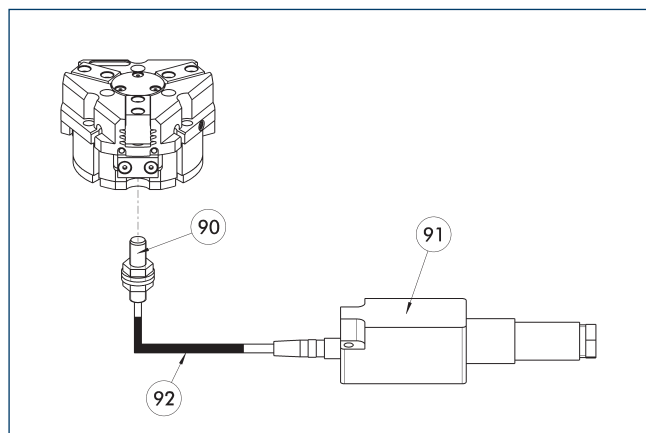
Directly mounted end position monitoring.

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



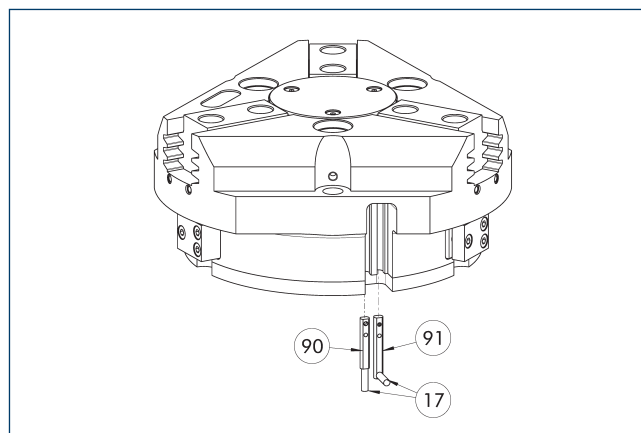
- 90 FPS-S sensor  
 91 FPS-F5 evaluation electronic  
 92 Cable extension

Flexible position monitoring of up to five positions.

Characterization	ID	
Attachment kit for FPS		
AS-FPS-PGZN-plus 160-1	0301638	
AS-FPS-PGZN-plus 160-2	0301639	
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



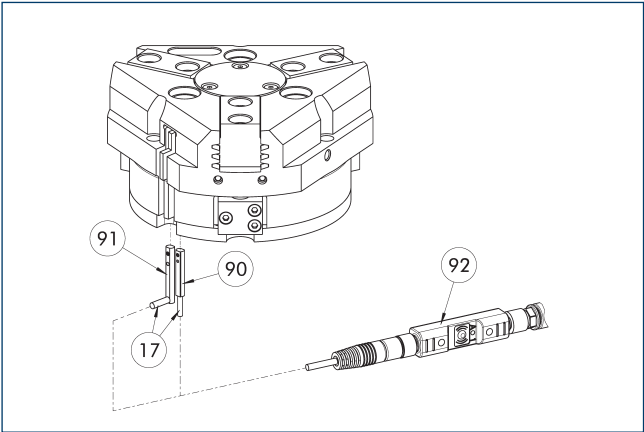
- 17 Cable outlet  
 90 Sensor MMS 22..  
 91 Sensor MMS 22...-SA

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	
Reed Switches		
RMS 22-S-M8	0377720	●
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	
Wireless sensor system		
RSS-T2	0377715	
RSS-T2-US/CA	0377717	

- ⓘ 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



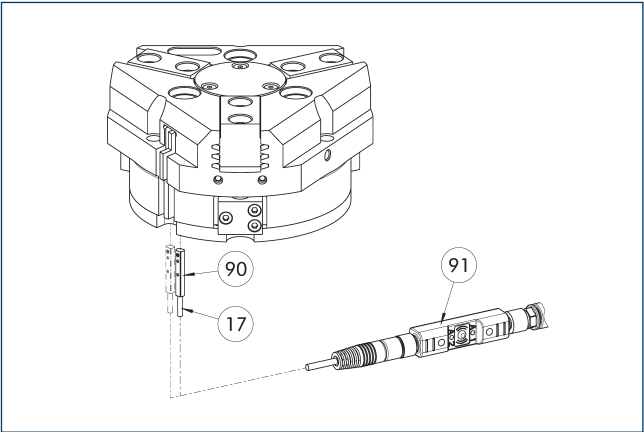
- 17 Cable outlet
- 90 Sensor MMS 22 PI1-...
- 91 Sensor MMS 22 ...-PI1-...-SA
- 92 Connector teaching tool ST

Position monitoring with one programmable switching point per sensor, directly mountable in the C-slot. The electronics are built into the sensor. The cable outlet can be located either axially or laterally (MMS 22...-SA). Programmed using the plug teaching tool ST (to be ordered separately).

Characterization	ID	Often combined
Programmable magnetic switch		
MMS 22-PI1-S-M8-PNP	0301160	●
MMSK 22-PI1-S-PNP	0301162	
Programmable magnetic switch with lateral cable outlet		
MMS 22-PI1-S-M8-PNP-SA	0301166	●
MMSK 22-PI1-S-PNP-SA	0301168	
Programmable magnetic switch with stainless steel housing		
MMS 22-PI1-S-M8-PNP-HD	0301110	●
MMSK 22-PI1-S-PNP-HD	0301112	
Plug teaching tool		
ST-MMS 22-PI1-PNP	0301025	

- ① Two sensors (closer/S) are required for each unit and extension cables are available as an option.

Programmable magnetic switch MMS 22-PI2



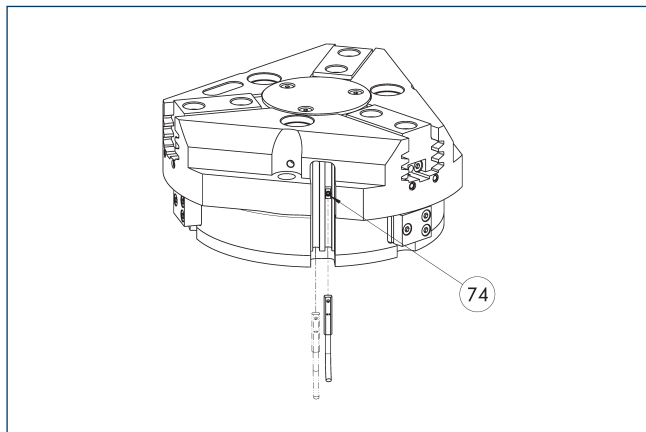
- 17 Cable outlet
- 90 MMS 22...-PI2-... sensor
- 91 Connector teaching tool ST

Position monitoring with two programmable switching points per sensor, mountable directly in the C-slot. The electronics are built into the sensor. Programmed using the plug teaching tool ST (to be ordered separately).

Characterization	ID	Often combined
Programmable magnetic switch		
MMS 22-PI2-S-M8-PNP	0301180	●
MMSK 22-PI2-S-PNP	0301182	
Programmable magnetic switch with lateral cable outlet		
MMS 22-PI2-S-M8-PNP-SA	0301186	●
MMSK 22-PI2-S-PNP-SA	0301188	
Programmable magnetic switch with stainless steel housing		
MMS 22-PI2-S-M8-PNP-HD	0301130	●
MMSK 22-PI2-S-PNP-HD	0301132	
Plug teaching tool		
ST-MMS 22-PI2-PNP	0301026	

- ① Per unit, at least one sensor (closer/S) and an optional cable extension are required. A maximum of one sensor per C-slot or sensor bracket can be mounted.

## MMS-P programmable magnetic switch



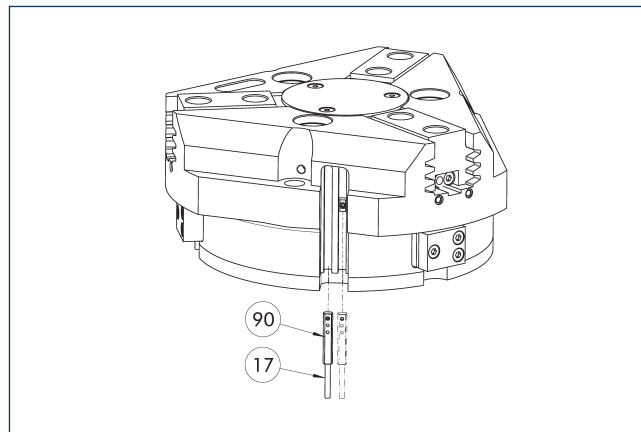
74 Limit stop for sensor

Position monitoring with two programmable positions per sensor. End position monitoring for mounting in the C-slot.

Characterization	ID	Often combined
Programmable magnetic switch		
MMSK-P 22-S-PNP	0301371	
MMS-P 22-S-M8-PNP	0301370	●
clip for plug/socket		
CLI-M8	0301463	
Connection cables		
KA BG08-L 4P-0500	0307767	●
KA BG08-L 4P-1000	0307768	
KA BW08-L 4P-0500	0307765	
KA BW08-L 4P-1000	0307766	
Sensor distributor		
V2-M8-4P-2XM8-3P	0301380	

- ① One sensor is required per unit for monitoring two positions. Extension cables and sensor distributors are optionally available. Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor systems.

## Programmable magnetic switch MMS-IO-Link



17 Cable outlet

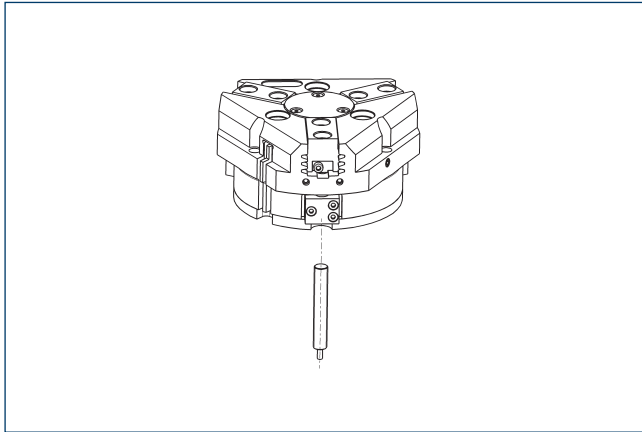
90 Sensor MMS 22-IO-Link...

Sensor for multi-position monitoring through detection of the complete gripper stroke. The sensor is mounted directly in the C-slot of the gripper. Sensor programming on the gripper takes place via the IO-Link interface or the MT magnetic teach tool (included in scope of delivery). An IO-Link master is required for operation.

Characterization	ID	
Programmable magnetic switch		
MMS 22-IO-Link-M08	0315830	
MMS 22-IO-Link-M12	0315835	

- ① One sensor is required for each gripper. No additional mounting kit is required – the gripper is equipped for use of the sensor by default. Further information and technical data can be found in the catalog chapter sensor systems.

### APS-Z80 analog position sensor

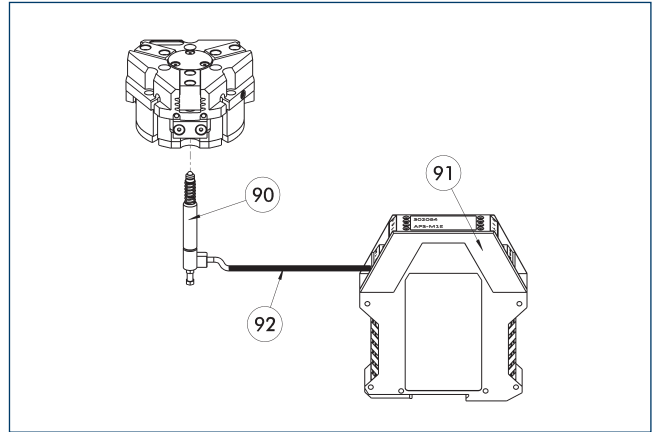


No-contact measuring, analog multi-position monitoring for any number of positions.

Characterization	ID	Often combined
Mounting kit for APS-Z80		
AS-APS-Z80-PGZN-plus 160-1/200-2/240-2	0302113	
AS-APS-Z80-PGZN-plus 160-2	0302114	
Analog position sensor		
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.

### APS-M1 analog position sensor



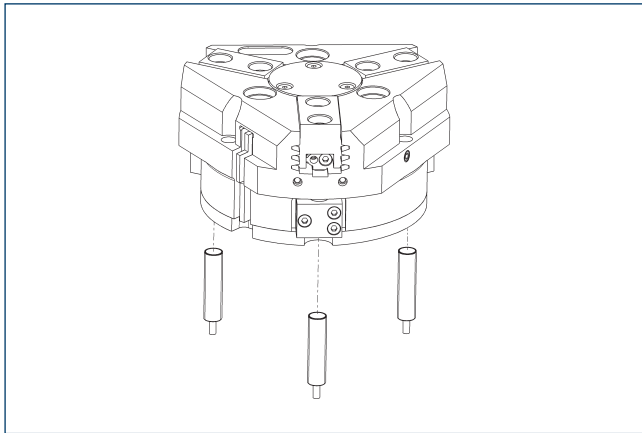
- ⑨① APS-M1S sensor  
⑨② APS-K extension cable  
⑨① APS-M1E electronic processor

Analog multi position monitoring for any desired positions

Characterization	ID	
Mounting kit for APS-M1		
AS-APS-M1-PGZN-plus 160-1/240-2	0302083	
AS-APS-M1-PGZN-plus 160-2	0302084	
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.

### Cylindrical reed switches



End position monitoring can be mounted with an attachment kit.

Characterization	ID	
Attachment kit for proximity switch		
AS-RMS 80 PGN/PZN-plus 160-380	0377727	
Reed Switches		
RMS 80-S-M8	0377721	

- ① Two sensors (closer/S) are required for each unit and extension cables are available as an option. This attachment kit needs to be ordered optionally as an accessory. Two mounting kits are required for each gripper. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm.



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