Superior Clamping and Gripping

SCHUNK®

# Product Information

## Universal gripper PZB-plus 50

# Robust. Flexible. Precise.

# Universal gripper PZB-plus

Universal 3-finger centric gripper with large gripping force and high maximum moments per finger, plus center bore

## Field of application

For universal use in clean and slightly dirty environments. Suitable for applications that require a center bore, e.g. for workpiece feeding, special sensor systems or optical recognition Systems.


## Advantages – Your benefits

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

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

**High gripping forces achievable** for a wide range of applications

**Center through-hole** available with fitting and female thread, which facilitates assembly of customer attachments. Moreover, the center bore is used for feed-through of supply hoses and others.

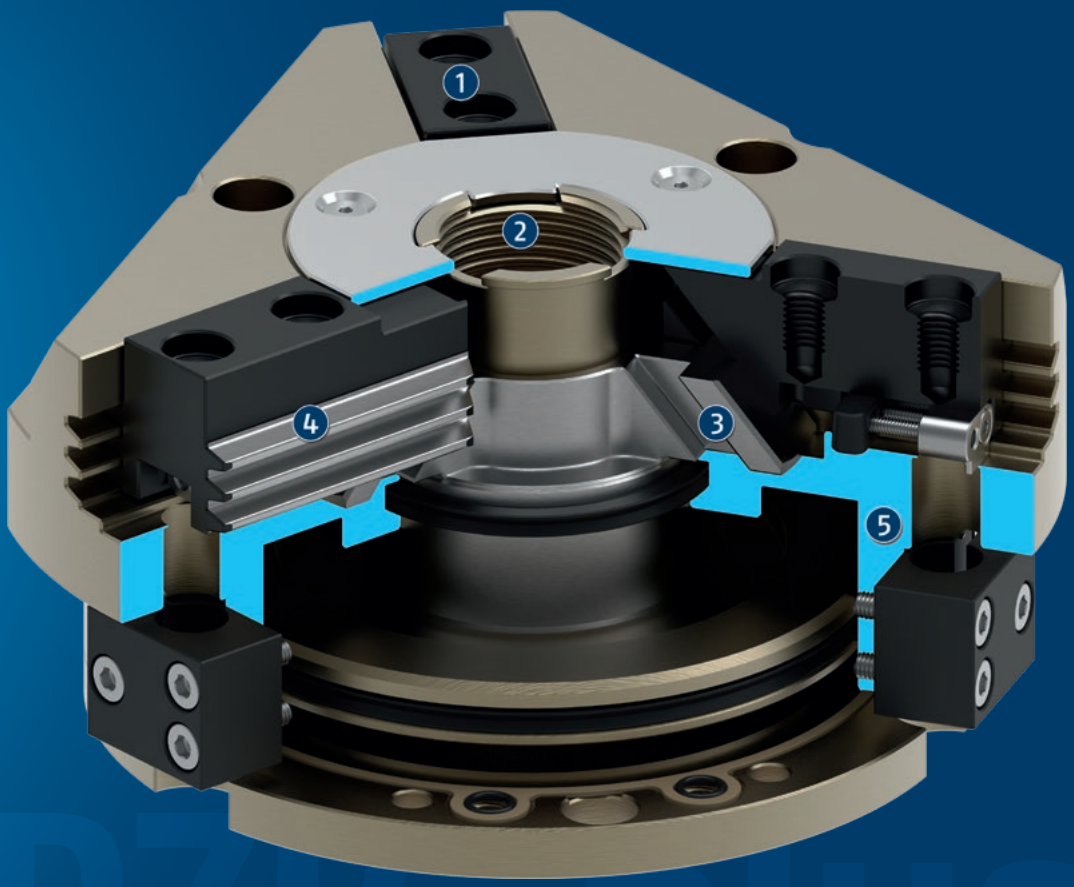
**Air supply via hose-free direct connection or screw connections** for flexible pressure supply in all automated systems

**Manifold options** optional with mechanic gripping force maintenance

| Sizes | Weight | Gripping force | Stroke per jaw | Workpiece weight |
|---|---|---|---|---|
| Quantity: 9 | 0.26 .. 53 kg | 340 .. 27400 N | 2 .. 35 mm | 1.7 .. 100 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 **Base Jaw**
for the connection of workpiece-specific gripper fingers

② **Center bore**
for workpiece feeding, for sensor systems, actuators (ejectors) or optical workpiece recognition

③ **Wedge-hook design**
for high force transmission and centric gripping

④ **Multi-tooth guidance**
precise gripping through base jaw guidance with a high load capacity and a minimum Play

⑤ **Housing**
is weight-optimized due to the use of high-strength aluminum alloy

## 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

**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

Assembly aid for long shafts. Feeding is done space-saving via the center bores of gripper and rotary feed-through.

1. 3-finger centric gripper PZB-plus
2. Modified Rotary feed-through DDF with center bore

## SCHUNK offers more ...

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

Compensation unit

Pressure maintenance valve

Universal intermediate jaw

Jaw quick-change system

Magnetic switches

Flexible position sensor

Analog position sensor

Finger blank

Inductive proximity switches

ⓘ For more information on these products can be found on the following product pages or at schunk.com.

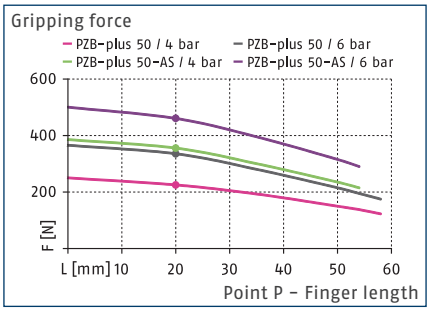
## Options and special information

**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.
Due to the center bore, the PZB-plus series is the optimal standard solution for many fields of application.

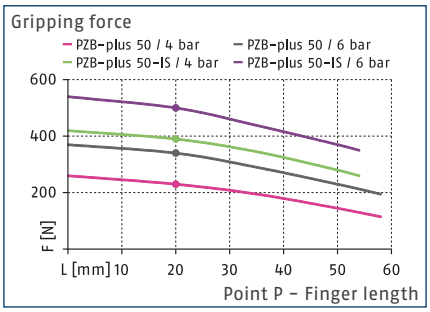
# PZB-plus 50

Universal gripper

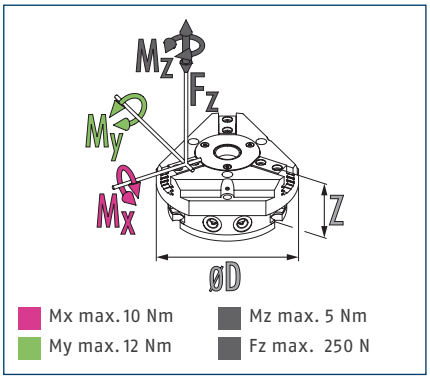
## Gripping force O.D. gripping




## Gripping force I.D. gripping




## Dimensions and maximum loads



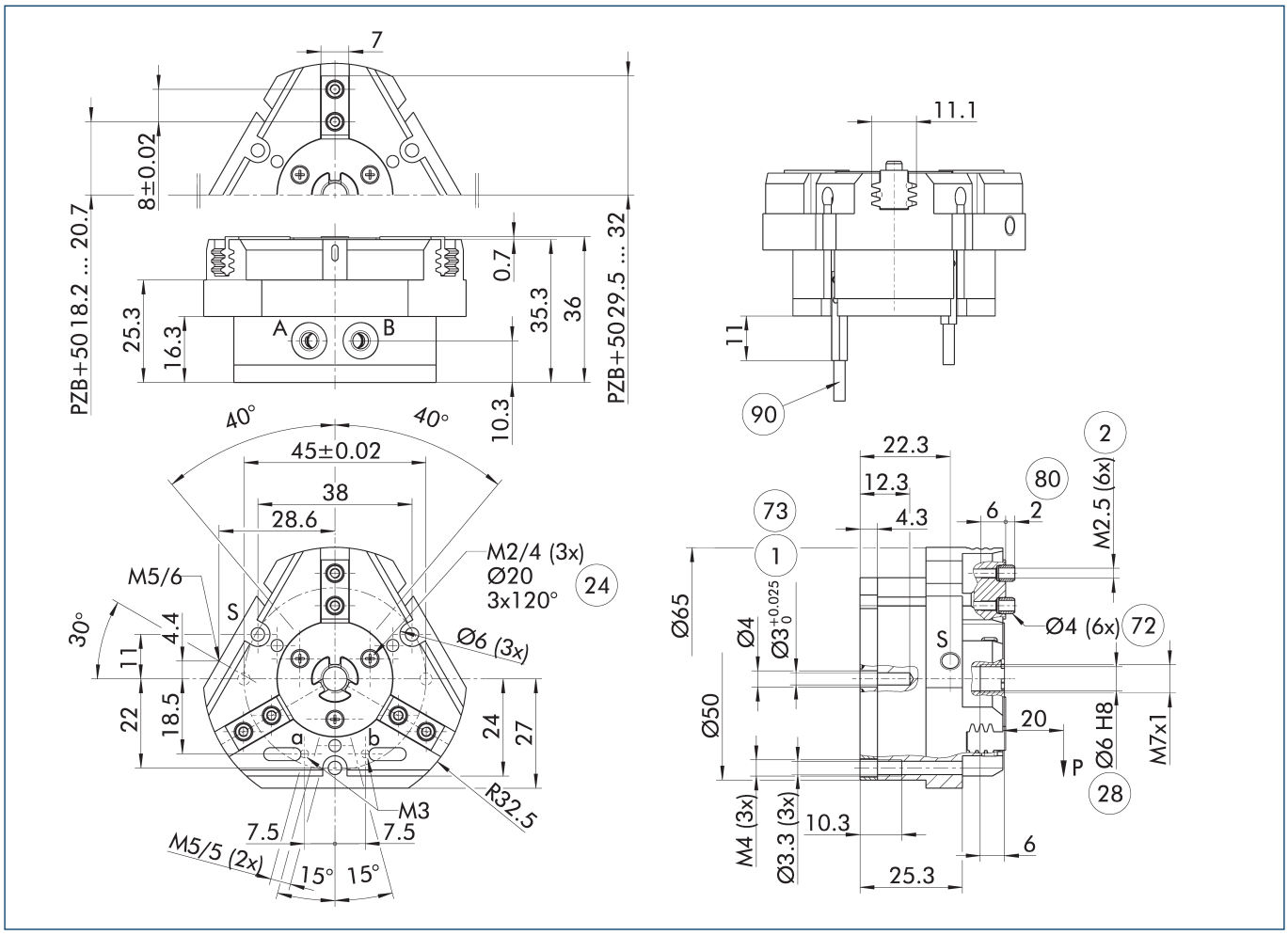

ⓘ The indicated moments and forces are statical values, apply for each base jaw and may appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

## Technical data

| Description | | PZB-plus 50-1 | PZB-plus 50-1-AS | PZB-plus 50-1-IS |
|---|---|---|---|---|
| ID | | 0305140 | 0305142 | 0305144 |
| Stroke per jaw | [mm] | 2.5 | 2.5 | 2.5 |
| Closing/opening force | [N] | 340/360 | 460/- | -/500 |
| Min. spring force | [N] | | 120 | 140 |
| Weight | [kg] | 0.26 | 0.36 | 0.36 |
| Recommended workpiece weight | [kg] | 1.7 | 1.7 | 1.7 |
| Fluid consumption double stroke | [cm³] | 10.5 | 15 | 15 |
| Min./nom./max. operating pressure | [bar] | 2/6/8 | 4/6/6.5 | 4/6/6.5 |
| Min./max. air purge pressure | [bar] | 0.5/1 | 0.5/1 | 0.5/1 |
| Closing/opening time | [s] | 0.03/0.03 | 0.02/0.04 | 0.04/0.02 |
| Closing/opening time with spring | [s] | | 0.08 | 0.08 |
| Max. permissible finger length | [mm] | 58 | 54 | 54 |
| Max. permissible mass per finger | [kg] | 0.1 | 0.1 | 0.1 |
| IP protection class | | 40 | 40 | 40 |
| Min./max. ambient temperature | [°C] | 5/90 | 5/90 | 5/90 |
| Repeat accuracy | [mm] | 0.01 | 0.01 | 0.01 |
| Diameter of center bore | [mm] | 6 | 6 | 6 |
| Dimensions Ø D x Z | [mm] | 36 x 65 | 45.7 x 65 | 45.7 x 65 |

ⓘ 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.

ⓘ 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

(28) Through-hole

(72) Fit for centering sleeves

(73) Fit for centering pins

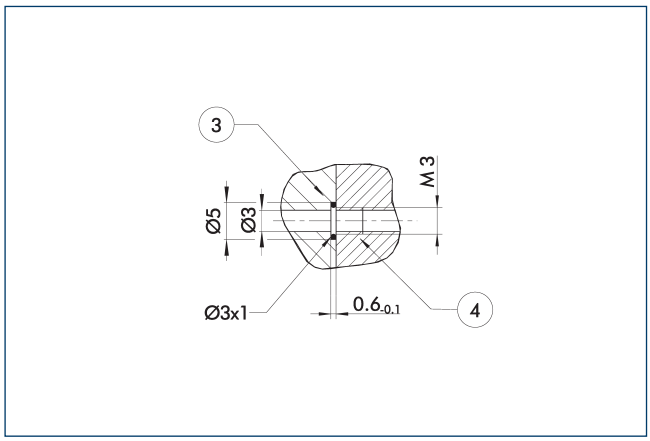
(80) Depth of the centering sleeve hole in the counter part

(90) Sensor MMS 22..

# PZB-plus 50

Universal gripper

## Hose-free direct connection M3

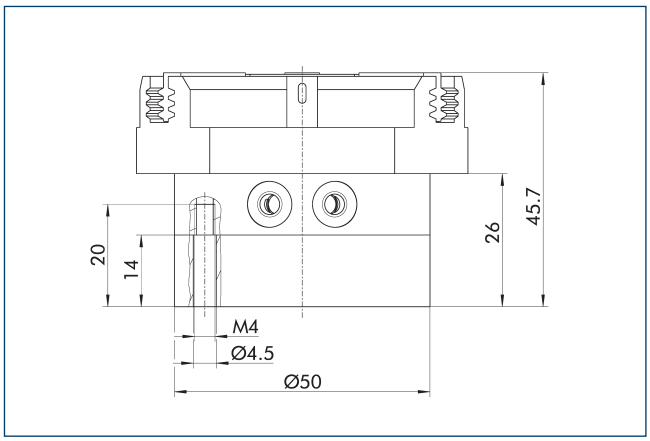



(3) Adapter

(4) Grippers

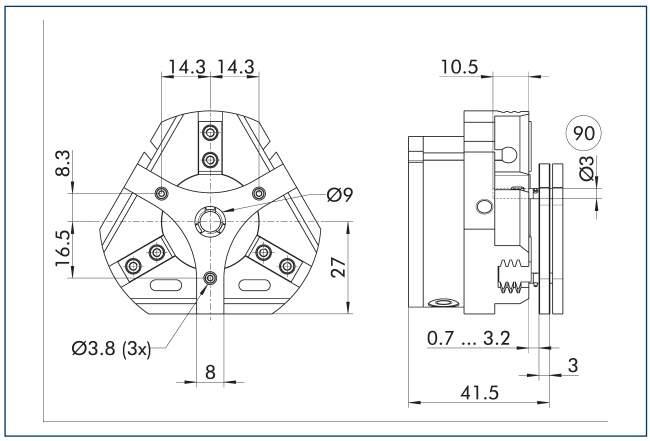
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

## 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.

## Spring-loaded pressure piece

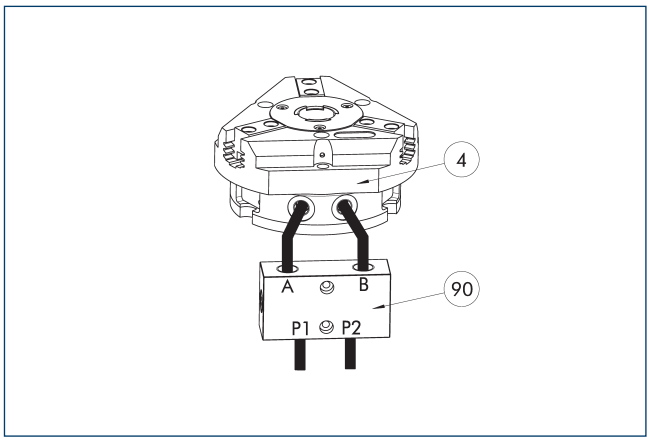



(90) Guide pin

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

| Description | ID | Stroke | Min. force |
|---|---|---|---|
| | | [mm] | [N] |
| Spring-loaded pressure piece | | | |
| A-PZB-plus 50 | 0305146 | 2.5 | 5 |

## SDV-P pressure maintenance valve




(4) Grippers

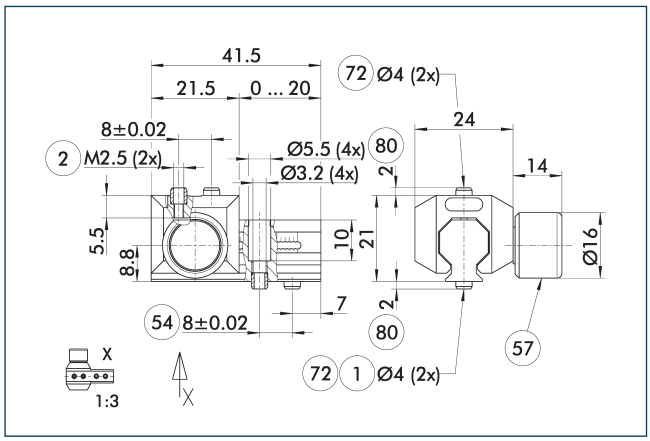
(90) SDV-P pressure maintenance valve

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.

| Description | ID | Recommended hose diameter |
|---|---|---|
| | | [mm] |
| Pressure maintenance valve | | |
| SDV-P 04 | 0403130 | 6 |
| Pressure maintenance valve with air bleed screw | | |
| SDV-P 04-E | 0300120 | 6 |

ⓘ 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.

## UZB 40 universal intermediate jaw

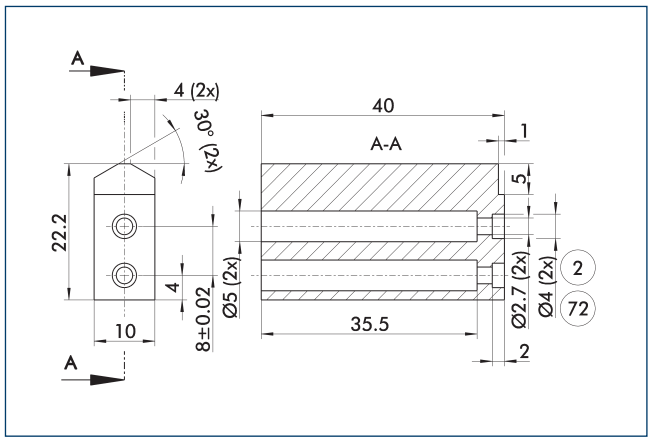



(1) Gripper connection
(2) Finger connection
(54) Optional right or left connection
(57) Locking
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part

The drawing shows the UZB universal intermediate jaw.

| Description | ID | Grid dimension |
|---|---|---|
| | | [mm] |
| Universal intermediate jaw | | |
| UZB 40 | 0300040 | 1 |
| Finger blank | | |
| ABR-PGZN-plus 40 | 0300008 | |
| SBR-PGZN-plus 40 | 0300018 | |

## Finger blanks ABR- / SBR-PGZN-plus 40

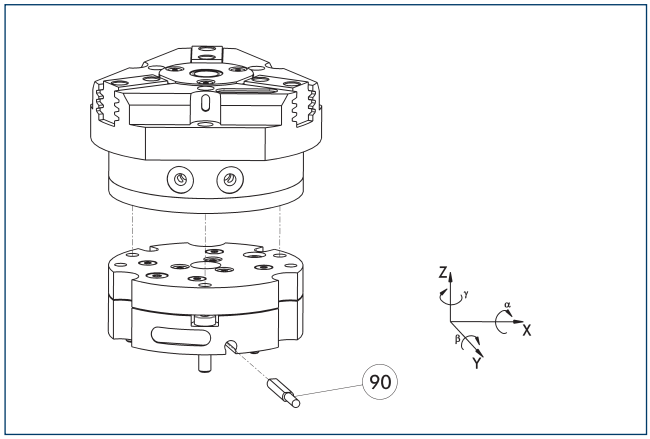



(2) Finger connection
(72) Fit for centering sleeves

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

| Description | ID | Material | Scope of delivery |
|---|---|---|---|
| Finger blank | | | |
| ABR-PGZN-plus 40 | 0300008 | Aluminum | 1 |
| SBR-PGZN-plus 40 | 0300018 | Steel | 1 |

## Tolerance compensation unit TCU

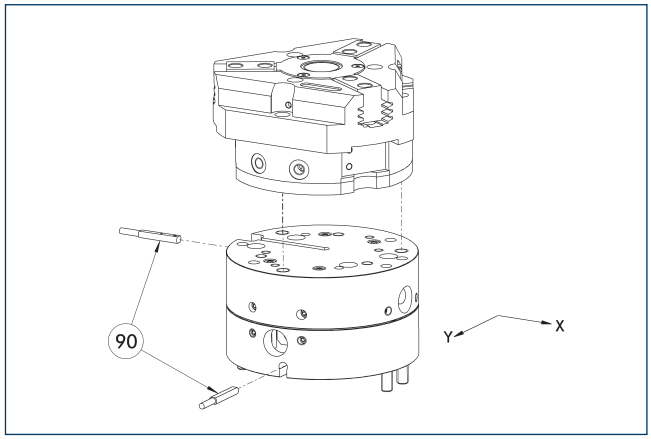



(90) Monitoring of locking

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.

| Description | ID | Locking | Deflection |
|---|---|---|---|
| Compensation unit | | | |
| TCU-Z-050-3-OV | 0324749 | no | ±1°/±1°/±1,5° |

## Compensation unit AGE-F

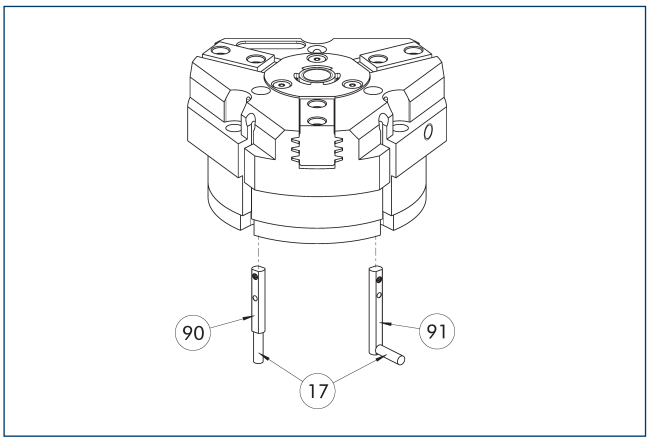



(90) Monitoring

Grippers can be directly mounted without an adapter plate. For details see our catalog Gripping or Robot Accessories.

| Description | ID | Compensation XY | Reset force | Often combined |
|---|---|---|---|---|
| | | [mm] | [N] | |
| Compensation unit | | | | |
| AGE-F-XY-040-1 | 0324920 | ± 2 | 3 | |
| AGE-F-XY-040-2 | 0324921 | ± 2 | 4 | |
| AGE-F-XY-040-3 | 0324922 | ± 2 | 4.5 | ● |

## Electronic magnetic switch MMS



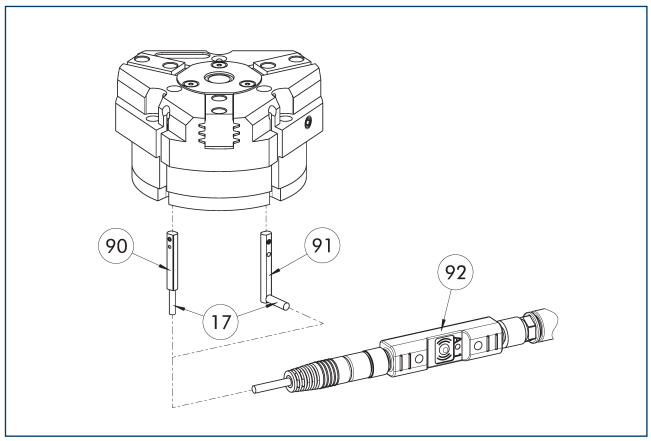

(17) Cable outlet
(90) Sensor MMS 22..
(91) Sensor MMS 22...-SA

End position monitoring for mounting in the C-slot.

| Description | 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 | |
| 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 | |
| clip for plug/socket | | |
| CLI-M8 | 0301463 | |
| Cable extension | | |
| KV BW08-SG08 3P-0030-PNP | 0301495 | |
| KV BW08-SG08 3P-0100-PNP | 0301496 | |
| KV BW08-SG08 3P-0200-PNP | 0301497 | ● |
| 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



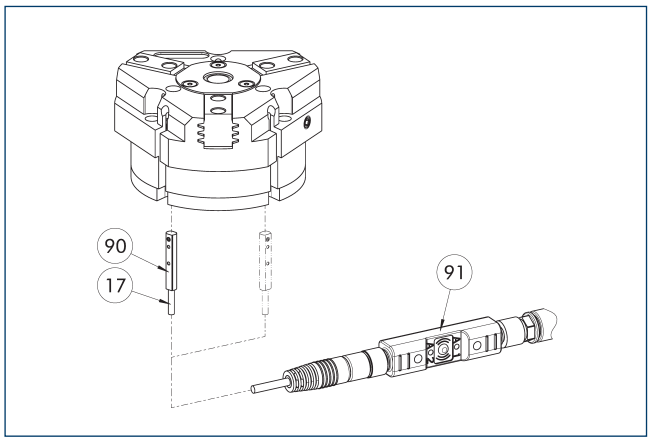

(17) Cable outlet
(90) Sensor MMS 22 PI1-...
(91) Sensor MMS 22 ..-PI1-...-SA
(92) Connector teaching tool ST

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).

| Description | 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 | |

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

## Programmable magnetic switch MMS 22-PI2



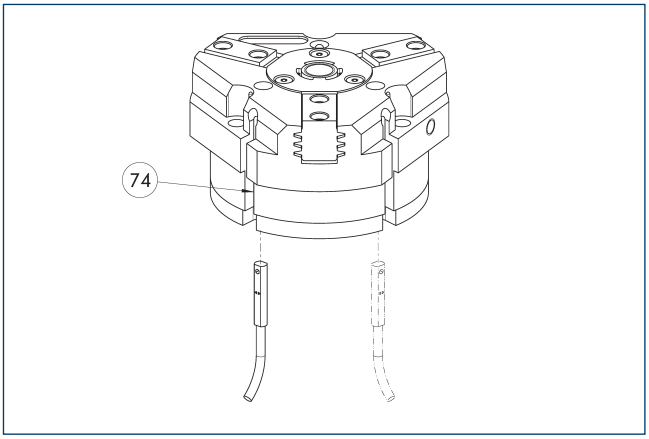

(17) Cable outlet
(91) Connector teaching tool ST
(90) MMS 22...-PI2-... sensor

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).

| Description | 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 | |

ⓘ 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.

| Description | ID | Often combined |
|---|---|---|
| Programmable magnetic switch | | |
| MMSK-P 22-S-PNP | 0301371 | |
| MMS-P 22-S-M8-PNP | 0301370 | ● |
| Connection cables | | |
| KA GLN0804-LK-00500-A | 0307767 | ● |
| KA GLN0804-LK-01000-A | 0307768 | |
| KA WLN0804-LK-00500-A | 0307765 | |
| KA WLN0804-LK-01000-A | 0307766 | |
| clip for plug/socket | | |
| CLI-M8 | 0301463 | |
| Sensor distributor | | |
| V2-M8-4P-2XM8-3P | 0301380 | |

ⓘ 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.

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