Product Information
Universal gripper PZN-plus 40
PZN–plus

Universal gripper

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 (dust-tight, high-temperature, corrosion–protected, and much more)
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°) during the assembly process. Slip ring contacts integrated in the rotary feed-through reliably supply the gripper with power.

- Rotary feed-through DDF 2
- Quick-change system SWS
- 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

For more information on these products can be found on the following product pages or at 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/IS 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 VIHT:** for use in hot environments
- **Force intensified version KVZ:** if higher gripping forces are required
- **Dust-tight version SD:** absolutely dust-tight, 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
PZN–plus
Universal gripper

Sensor system

1. **PZN–plus**
   Universal 3-finger centric gripper with high gripping force and maximum moments due to multi-tooth guidance

2. **IN ...**
   Inductive proximity switch with molded cable and straight cable outlet

3. **IN ...-SA**
   Inductive proximity switch with molded cable and laberal 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-MIS**
   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-P11**
   Magnetic switch with straight cable outlet for monitoring a freely programmable position

10. **MMS 22-P12**
    Magnetic switch with straight cable outlet for monitoring two freely programmable position

11. **MMS 22-P11-HD**
    MMS 22-P11 in robust design

12. **MMS 22-P12-HD**
    MMS 22-P12 in robust design

13. **MMS 22-SA**
    Magnetic switch with lateral cable outlet for monitoring a position

14. **MMS 22-P11-SA**
    Magnetic switch with side cable outlet for monitoring a freely programmable position

15. **MMS-P**
    Magnetic switch with straight cable outlet for monitoring two freely programmable position

16. **MMS 22-A**
    Analog magnetic switch with straight cable outlet for measuring the gripper jaw position with analog output and teach function

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

Complementary products

18. **TCU**
    Tolerance compensation unit for compensating small tolerances in the plane

19. **AGE**
    Compensation unit for compensation of large tolerances along the X and Y axes

20. **ASG**
    Adapter plate for combining various automation components in the modular system

21. **CLM**
    Linear module with pneumatic drive and scope-free pre-loaded junction rollers

22. **HUE**
    Sleeve for protection against dirt

Fingerzubehör

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

24. **BSWS-AR**
    Adapter coupling of jaw quick-change system for fast, manual change of top jaws

25. **BSWS-B**
    Locking mechanism of the jaw quick-change system for fast, manual exchange of top jaws

26. **BSWS-A**
    Adapter coupling of the jaw quick-change system for adaptation to the customized finger

27. **BSWS-ABR**
    Finger blank made of aluminum with interface to the jaw quick-change system

28. **BSWS-SBR**
    Finger blank made of steel with interface to the jaw quick-change system

29. **BSWS-UR**
    Locking mechanism for the integration of the jaw quick-change system into customized fingers

30. **ABR/SBR**
    Finger blanks made of steel or aluminum with standardized screw connection diagram

31. **ZBA**
    Intermediate jaws for reorientation of the mounting surface
PZN–plus 40
Universal gripper

**Dimensions and maximum loads**

*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**

<table>
<thead>
<tr>
<th>Characterization</th>
<th>PZN–plus 40</th>
<th>PZN–plus 40–AS</th>
<th>PZN–plus 40–IS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ID</td>
<td>0303308</td>
<td>0303508</td>
<td>0303538</td>
</tr>
<tr>
<td>Stroke per jaw</td>
<td>2.5</td>
<td>2.5</td>
<td>2.5</td>
</tr>
<tr>
<td>Closing/opening force</td>
<td>255/270</td>
<td>355/-</td>
<td>+/-370</td>
</tr>
<tr>
<td>Min. spring force</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Weight</td>
<td>0.13</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Recommended workpiece weight</td>
<td>1.3</td>
<td>1.3</td>
<td>1.3</td>
</tr>
<tr>
<td>Fluid consumption double stroke</td>
<td>5</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Min./nom./max. operating pressure [bar]</td>
<td>2/6/8</td>
<td>4/6/6.5</td>
<td>4/6/6.5</td>
</tr>
<tr>
<td>Min./max. air purge pressure</td>
<td>0.5/1</td>
<td>0.5/1</td>
<td>0.5/1</td>
</tr>
<tr>
<td>Closing/opening time [s]</td>
<td>0.030/0.03</td>
<td>0.02/0.04</td>
<td>0.04/0.02</td>
</tr>
<tr>
<td>Closing/opening time with spring [s]</td>
<td>0.08</td>
<td>0.08</td>
<td>0.08</td>
</tr>
<tr>
<td>Max. permissible finger length [mm]</td>
<td>58</td>
<td>54</td>
<td>54</td>
</tr>
<tr>
<td>Max. permissible mass per finger [kg]</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Protection class IP</td>
<td>40</td>
<td>40</td>
<td>40</td>
</tr>
<tr>
<td>Min./max. ambient temperature [°C]</td>
<td>5/90</td>
<td>5/90</td>
<td>5/90</td>
</tr>
<tr>
<td>Repeat accuracy [mm]</td>
<td>0.01</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>Dimensions Ø D x Z [mm]</td>
<td>52 x 27.2</td>
<td>52 x 35.2</td>
<td>52 x 35.2</td>
</tr>
</tbody>
</table>

**Options and their characteristics**

- Dust-tight version 37303308 37303508 37303538
- Protection class IP 64 64 64
- Weight [kg] 0.16 0.18 0.18
- Corrosion-protected version 38303308 38303508 38303538
- High-temperature version 39303308 39303508 39303538
- Min./max. ambient temperature [°C] 5/130 5/130 5/130
- Force intensified version 0372199 0372219 0372239
- Closing/opening force [N] 363/381 446/- +/-463
- Weight [kg] 0.19 0.21 0.21
- Maximum pressure [bar] 6 6 6
- Max. permissible finger length [mm] 50 40 40
- Precision version 0303338 0303488

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

Dust-tight version

1. Gripper connection
20. For AS / IS version

The dust cover option increases the protection against external particles. 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.

Force intensified version

20. 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

- For AS / IS version
- Fit for centering sleeves
- 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

- Guide pin

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

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Stroke</th>
<th>Min. force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring-loaded pressure piece</td>
<td>A-PZN-plus 40</td>
<td>0303718</td>
<td>2.5</td>
</tr>
</tbody>
</table>

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

SDV-P pressure maintenance valve

- Grippers
- 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.

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Recommended hose diameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure maintenance valve</td>
<td>SDV-P 04</td>
<td>0403130</td>
</tr>
<tr>
<td>Pressure maintenance valve with air bleed screw</td>
<td>SDV-P 04-E</td>
<td>03000120</td>
</tr>
</tbody>
</table>

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 40

- 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.

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Protection class IP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection cover</td>
<td>HUE PZN-plus 40</td>
<td>0301478</td>
</tr>
</tbody>
</table>
UZB 40 universal intermediate jaw

The drawing shows the UZB universal intermediate jaw.

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Grid dimension [mm]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal intermediate jaw</td>
<td>UZB 40</td>
<td>0300040 1</td>
</tr>
<tr>
<td>Finger blank</td>
<td>ABR-PGZN-plus 40</td>
<td>0300008</td>
</tr>
<tr>
<td></td>
<td>SBR-PGZN-plus 40</td>
<td>0300018</td>
</tr>
</tbody>
</table>

Fields of application

<table>
<thead>
<tr>
<th>Series</th>
<th>Size</th>
<th>Variant</th>
<th>Suitability</th>
</tr>
</thead>
<tbody>
<tr>
<td>PZN-plus</td>
<td>40</td>
<td>-1 (6 bar)</td>
<td>■■■■■</td>
</tr>
<tr>
<td>PZN-plus</td>
<td>40</td>
<td>-1-45 / -1-15 (6 bar)</td>
<td>■■□□</td>
</tr>
<tr>
<td>PZN-plus</td>
<td>40</td>
<td>...,KVZ (6 bar)</td>
<td>□□□□</td>
</tr>
</tbody>
</table>

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 40

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

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Material</th>
<th>Scope of delivery</th>
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</thead>
<tbody>
<tr>
<td>Finger blank</td>
<td>ABR-PGZN-plus 40</td>
<td>0300008 Aluminum</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>SBR-PGZN-plus 40</td>
<td>0300018 Steel</td>
<td>1</td>
</tr>
</tbody>
</table>
Compensation unit AGE-F

Monitoring

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

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Compensation XY [mm]</th>
<th>Reset force [N]</th>
<th>Often combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation unit AGE-F-XY-031-1</td>
<td>0324900</td>
<td>± 1.5</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td>AGE-F-XY-031-2</td>
<td>0324901</td>
<td>± 1.5</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>AGE-F-XY-031-3</td>
<td>0324902</td>
<td>± 1.5</td>
<td>5.5</td>
<td>●</td>
</tr>
</tbody>
</table>

Electronic magnetic switch MMS

Cable outlet

Sensor MMS 22...-SA

End position monitoring for mounting in the C-slot.

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Often combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electronic magnetic switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMS 22-S-MB-PNP</td>
<td>0301032</td>
<td>●</td>
</tr>
<tr>
<td>MMSK 22-S-PNP</td>
<td>0301034</td>
<td></td>
</tr>
<tr>
<td>Electronic magnetic switches with lateral cable outlet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MMS 22-S-MB-PNP-SA</td>
<td>0301042</td>
<td>●</td>
</tr>
<tr>
<td>MMSK 22-S-PNP-SA</td>
<td>0301044</td>
<td></td>
</tr>
<tr>
<td>Cable extension</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KY BW08-SG08 3P-0030-PNP</td>
<td>0301495</td>
<td>●</td>
</tr>
<tr>
<td>KY BW08-SG08 3P-0100-PNP</td>
<td>0301496</td>
<td></td>
</tr>
<tr>
<td>KY BW08-SG08 3P-0200-PNP</td>
<td>0301497</td>
<td>●</td>
</tr>
<tr>
<td>Clip for plug/socket</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLI-M8</td>
<td>0301463</td>
<td></td>
</tr>
<tr>
<td>Connection cables</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KA BG08-L 3P-0300-PNP</td>
<td>0301622</td>
<td>●</td>
</tr>
<tr>
<td>KA BG08-L 3P-0500-PNP</td>
<td>0301623</td>
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<tr>
<td>KA BW08-L 3P-0100-PNP</td>
<td>0301594</td>
<td></td>
</tr>
<tr>
<td>KA BW08-L 3P-0500-PNP</td>
<td>0301502</td>
<td></td>
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<tr>
<td>Sensor distributor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>V2-M8</td>
<td>0301775</td>
<td>●</td>
</tr>
<tr>
<td>V4-M8</td>
<td>0301766</td>
<td></td>
</tr>
<tr>
<td>V8-M8</td>
<td>0301751</td>
<td></td>
</tr>
</tbody>
</table>

* 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

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).

Programmable magnetic switch MMS 22–PI2

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–PI1–S–MB–PNP | 0301160 ▲
Programmable magnetic switch with lateral cable outlet | MMS 22–PI1–S–MB–PNP–SA | 0301166 ▲
Programmable magnetic switch with stainless steel housing | MMS 22–PI1–S–PNP–HD | 0301110 ▲
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.

---

**Characterization** | **ID** | **Often combined**
--- | --- | ---
Programmable magnetic switch | MMS 22–PI2–S–MB–PNP | 0301180 ▲
Programmable magnetic switch with lateral cable outlet | MMS 22–PI2–S–MB–PNP–SA | 0301186 ▲
Programmable magnetic switch with stainless steel housing | MMS 22–PI2–S–PNP–HD | 0301130 ▲
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

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

<table>
<thead>
<tr>
<th>Characterization</th>
<th>ID</th>
<th>Often combined</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programmable magnetic switch</td>
<td>MMSK-P 22-S-PNP 0301371</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MMS-P 22-S-M8-PNP 0301370</td>
<td>●</td>
</tr>
<tr>
<td>Clip for plug/socket</td>
<td>CLI-M8 0301463</td>
<td></td>
</tr>
<tr>
<td>Connection cables</td>
<td>KA BG08-L 4P-0500 0307767</td>
<td>●</td>
</tr>
<tr>
<td></td>
<td>KA BG08-L 4P-1000 0307768</td>
<td></td>
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<tr>
<td></td>
<td>KA BW08-L 4P-0500 0307765</td>
<td></td>
</tr>
<tr>
<td></td>
<td>KA BW08-L 4P-1000 0307766</td>
<td></td>
</tr>
<tr>
<td>Sensor distributor</td>
<td>V2-M8-4P-2XMB-3P 0301380</td>
<td></td>
</tr>
</tbody>
</table>

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.
Jens Lehmann, German goalkeeper legend, SCHUNK brand ambassador since 2012 for safe, precise gripping and holding.
schunk.com/Lehmann