Hand in hand for tomorrow

# Product data sheet

Universal gripper PGL-plus-P 20

# Flexible. Robust. Safe.

# Universal Gripper PGL-plus-P

Universal 2-finger parallel gripper with a large jaw stroke, integrated sensor system and high payload due to use of a multi-tooth guidance

## Field of application

Pneumatic universal gripper for handling a wide variety of workpieces in different applications. The encapsulated and sealed design makes the gripper suitable for both clean and dirty environments.


## Advantages – Your benefits

**Secure, certified gripping force maintenance, GripGuard** Holds the gripped workpiece safely and also ensures a permanent gripping force of min. 80% in case of pressure drop. It also ensures that no dangerous, spontaneous jaw movements can occur in the event of a pressure drop.

**Integrated sensor system** for precise and process-reliable monitoring of the complete gripper stroke via IO-Link

**Large jaw stroke** enables flexible handling of a wide range of parts

**Dirt protected** due to IP 64 as standard and the metal-encapsulated, additionally sealed design at the base jaws

**Robust interior multi-tooth guidance** for high moments and use of long gripper fingers

**With food-compliant lubrication as standard** as a solution for an easy entry into medical technology, lab automation, pharmaceutical and food industry. The requirements of EN 1672-2:2020 are not fully met.

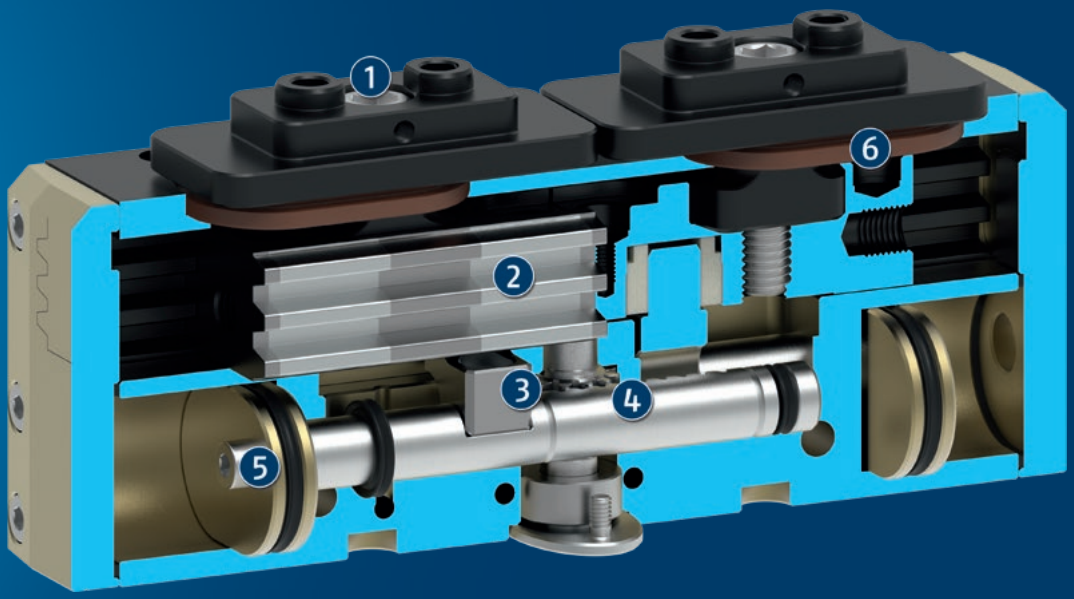
**Fastening on two gripper sides in four screw directions** for universal and flexible gripper assembly

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

| Sizes | Weight | Gripping force | Stroke per jaw | Workpiece weight |
|---|---|---|---|---|
| Quantity: 5 | 0.46 .. 7.9 kg | 145 .. 1900 N | 10 .. 25 mm | 0.72 .. 7 kg |

## Functional description

By applying pressure to the opposing drive pistons, the multi-tooth guided base jaws are directly driven via a drive type fastening. The jaw stroke is synchronized by means of rack-and-pinion kinematics. This ensures powerful and centric opening and closing of the gripper.




① **Base jaw**
with standardized screw connection diagram for the connection of the workpiece-specific gripper fingers The centering sleeves are attached so that they cannot be lost when exchanging fingers

② **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

③ **driver**
Direct power transmission of the drive pistons to the gripper fingers via a robust drive type fastening

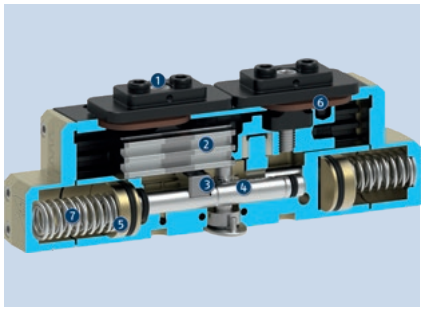
④ **Kinematics**
The gear rack-and-pinion kinematics ensure synchronization of the base jaws and centric clamping

⑤ **Pneumatic drive piston**
Maximum power generation through two oval pneumatic pistons

⑥ **Dust cover**
The entire circumference of the gripper is encapsulated with metal and additionally sealed with a lip seal at the base jaws so that it is suitable for universal use, even in dirty environments.

# Detailed functional description

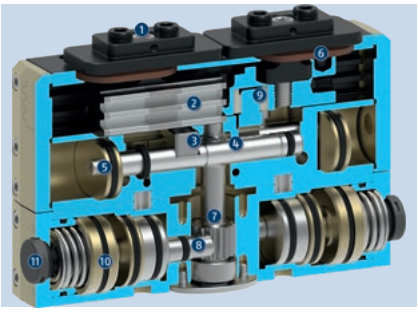
## Gripping force maintenance version AS/IS



Conventional gripping force maintenance via springs also ensures a minimum gripping force in case of a pressure drop. In the AS variant this acts as a closing force, and in the IS variant as an opening force. The image shows the AS variant. The gripping force maintenance can also be used to increase the gripping force or for single actuated gripping.

1. Base jaw
   with standardized screw connection diagram for the connection of the workpiece-specific gripper fingers The centering sleeves are attached so that they cannot be lost when exchanging fingers
2. 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
3. driver
   Direct power transmission of the drive pistons to the gripper fingers via a robust drive type fastening
4. Kinematics
   The gear rack-and-pinion kinematics ensure synchronization of the base jaws and centric clamping
5. Pneumatic drive piston
   Maximum power generation through two oval pneumatic pistons
6. Dust cover
   The entire circumference of the gripper is encapsulated with metal and additionally sealed with a lip seal at the base jaws so that it is suitable for universal use, even in dirty environments.
7. Gripping force maintenance by means of a pressure spring
   Conventional gripping force maintenance via springs also ensures a minimum gripping force in case of a pressure drop. In the AS variant this acts as a closing force, and in the IS variant as an opening force. The image shows the AS variant. The gripping force maintenance can also be used to increase the gripping force or for single actuated gripping.

## GripGuard: secure, certified gripping force maintenance version ASC/ISC



Secure GripGuard gripping force maintenance also ensures a permanent min. gripping force of 80%, even in case of a pressure drop. In the ASC variant this acts as a closing force, in the ISC variant as an opening force. Compared to conventional gripping force maintenance via springs, this GripGuard variant thereby ensures a significantly higher gripping force. In addition, the gripping force maintenance is constant over the entire jaw stroke. There is also no risk of injury with this gripper, as the base jaws do not move uncontrollably in the event of pressure drop. This simplifies the risk assessment, since gripping force maintenance is already certified as a safety function (PLd Cat. 3).

1. Base jaw
2. Multi-tooth guidance
3. driver
4. Kinematics
5. Pneumatic drive piston
6. Dust cover
7. Pinion shaft
   The one-piece pinion shaft connects the pinion of the jaw synchronization with the mechanics of safe gripping force maintenance.
8. Clamping element
   In the event of a pressure drop where a workpiece is not gripped, the clamping element will prevent the pinion from rotating. This prevents any potentially dangerous movements of the gripper fingers.
9. Elastomer
   In the event of a pressure drop while gripping the workpiece, the gripping force accumulated in the elastomer (energy storage) will retain the workpiece securely. The clamping element prevents the gripper fingers from opening in such cases.
10. Spring-loaded pneumatic piston
    In normal gripper operation, the pneumatic piston is always actuated with compressed air. This does not require a separate air supply. In the event of a malfunction, i.e. a sudden pressure drop, the piston is pushed back via the spring assembly and the clamping element blocks the pinion shaft so that movement of the gripper fingers is no longer possible
11. Pressure compensating valve
    The pressure compensation valve ensures any excess pressure that has accumulated inside can escape to the outside. At the same time, it prevents dirt or liquids from entering the inside from the outside.

## Certified gripping force maintenance

DGUV Test
HM 220107
Sicherheit geprüft
tested safety
dguv.de/pruefzeichen

The certificate was issued by the German Social Accident Insurance (DGUV). The DGUV test certificate confirms the secure GripGuard gripping force maintenance in case of a power failure for the gripper series PGL-plus-P in the versions ASC and ISC. The gripping systems comply with the relevant provisions of Directive 2006/42/EC (Machinery Directive). The safety function is implemented with category 3 and PLd according to EN ISO 13849-1:2015.

## Integrated sensor system IOL

The gripper variant "IOL" with integrated sensor system enables precise and process-reliable monitoring of the complete gripper stroke via IO-Link. There is no longer any need for separate procurement, installation and adjustment of additional, externally mounted sensors. In addition to IO-Link standards such as temperature display and process parameters, this integrated sensor system offers two additional modes as standard that are perfectly tailored to gripping applications: Gripping Point Mode and Gripping Range Mode. Up to eight workpieces (positions or ranges) can be stored directly in the sensor profile. Tolerance and hysteresis values are already stored in the sensor profile, but can be set individually if required. However, due to the default values, this is not necessary in most cases.
In SIO mode, this gripper variant can also be used without an IO-Link master to interrogate two freely adjustable switching points. The positions "gripper open" and "gripper closed" are preset and can be individually adjusted by the customer.

## External sensor system with magnetic switches


For monitoring with magnetic switches, the gripper is equipped with two sensor slots. There is a choice of different sensors: 1-point switches, 2-point switches or else compact analog sensors for mounting in the C-slot. The image shows the "gripper open" and "gripper closed" position query with two MMS 22 sensors.

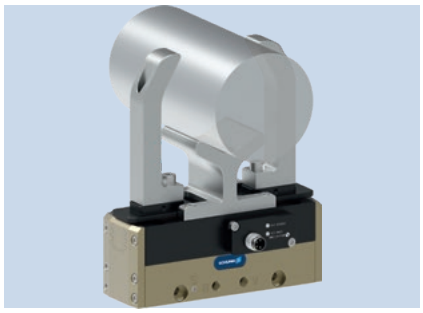
## External sensor system with inductive proximity switches


The "IN" gripper variant is supplied with the pre-assembled attachment kit for two inductive proximity switches. The positions "gripper open" and "gripper closed" are preset. Proximity switches must be ordered separately and are slid into the housing as far as the stop and clamped. Both sensors can be set individually to monitor any other position such as "workpiece gripped" for example. Optionally, another attachment kit for two additional inductive proximity switches can be inserted at the back of the gripper, so that a total of four sensors can be mounted.

## Precision version P

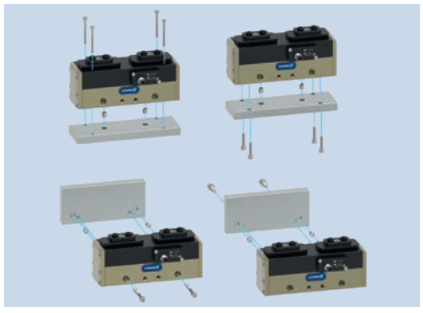
With the "P" precision version of the gripper, the base jaws are reworked on the fully assembled gripper. As a result, tolerance-related deviations can be compensated and the most precise position, form and location tolerances can be achieved. This enables highly precise gripping applications or positionally accurate change of grippers without any re-alignment.

## Optional mounting options for customized add-ons



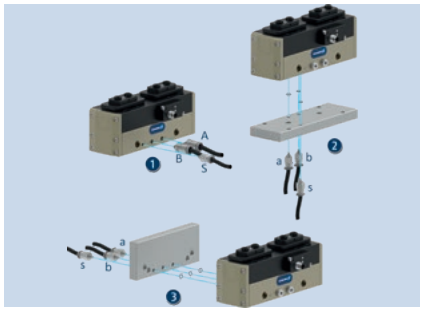
On the top of the gripper, four threads and fits are available. If required, these can be used to fasten customized designs or implement additional functions. The image shows an example of a design with additional centering or support of a workpiece.

## Centering and mounting options for gripper assembly



The gripper can be installed on two sides and in four screw directions. This allows universal and flexible mounting of the gripper in all conceivable arrangements.

## Pneumatic connections for the power supply




The gripper can be flexibly supplied with compressed air on three sides.

1. At the front via the main air connections A and B by means of air connections and pneumatic hoses. Air purge can be optionally created via S.
2. At the bottom via direct connections a and b, by means of tubeless direct connection and using the O-rings supplied. The pneumatic supply is then via the adapter plate. Air purge can be optionally created via s.
3. At the rear side via direct connections a and b, by means of tubeless direct connection and using the O-rings supplied. The pneumatic supply is then via the adapter plate. Air purge can be optionally created via s.

## General notes about the series

**Operating principle:** Dual piston drive with gear rack and pinion synchronization

**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

**Scope of delivery:** Gripper in the ordered variant, accessory kit (centering sleeves, O-rings for direct connection/detailed contents see operating manual) and safety information. Product-specific instructions can be downloaded at schunk.com/downloads-manuals.

**Gripping force maintenance:** via certified, safe gripping force maintenance version or conventionally via the variant with springs or via SDV-P pressure maintenance valve

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

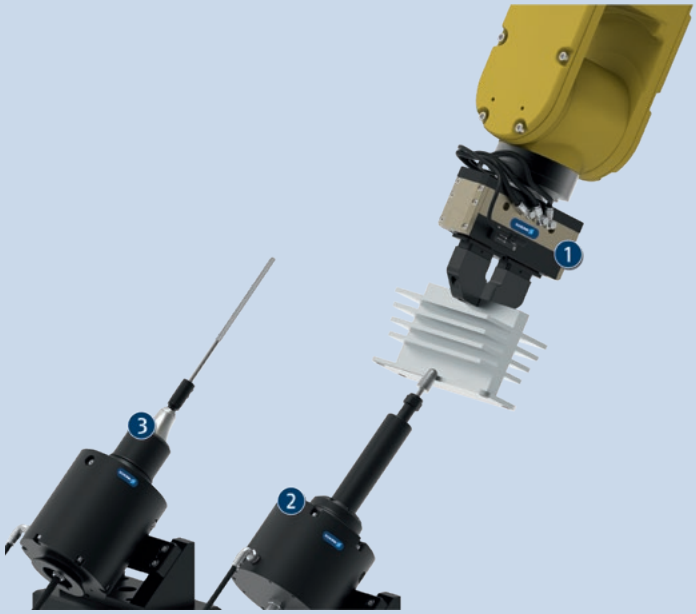
**Finger length:** is measured from the reference surface as the distance P in direction to the main axis.
The maximum permissible finger length applies until the nominal operating pressure is achieved. With higher pressures, the finger length must be reduced proportionally to the nominal operating pressure.

**Detectable workpiece difference:** specifies the smallest distinguishable difference between two gripped workpieces. The value applies at 6 bar, 23 °C, finger length at distance P and operation without air purge. Deviating parameters can influence the accuracy.

**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 movement times of the base jaws only, without application-specific gripper fingers. Valve switching times, hose fill times, or PLC reaction times are not included, and are to be considered when cycle times are calculated.



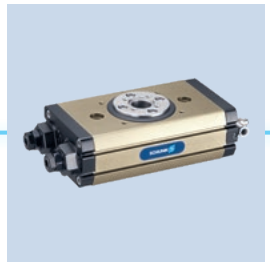

## Application example

In addition to ordinary handling processes, the robust and dirt-protected universal gripper PGL-plus-P can also be used to hold workpieces during simple machining operations. In the example shown, a workpiece is being held between the gripper fingers. A robot moves the workpiece along a stationary deburring spindle for deburring. The connected air purge prevents dirt from entering the gripper.

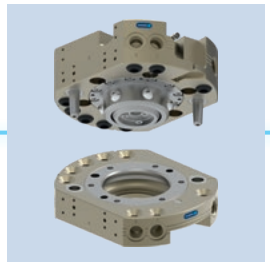
1. Universal Gripper PGL-plus-P
2. Deburring spindle RCV
3. Pneumatic file tool CRT

## SCHUNK offers more ...

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



Rotary unit



Tool changer

Compensation unit

Pressure maintenance valve

Inductive proximity switch

Magnetic switches

Jaw quick-change system

Finger blank

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

## Options and special information

**Secure gripping force maintenance ASC/ISC:** The secure, certified GripGuard gripping force maintenance also ensures a min. gripping force of 80% even in case of a pressure drop. In the ASC variant this acts as a closing force, in the ISC variant as an opening force.
**Gripping force maintenance version AS/IS:** The conventional version for gripping force maintenance via springs also ensures a minimum gripping force in case of a pressure drop. In the AS variant this acts as a closing force, and in the IS variant as an opening force.
**High-temperature version V:** for use in hot environments
**Precision version P:** for the highest accuracy
**Integrated sensor system IOL:** The integrated sensor system enables precise and process-reliable monitoring of the complete gripper stroke via IO-Link.
**External sensor system:** Instead of the gripper version with integrated sensor system, conventional external sensors can also be used. Various magnetic switches and inductive proximity switches are available.
**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 In combination with air purge, this increases the protection class from IP 64 to IP 67
**Food-grade lubrication:** The product contains food-compliant lubricants as standard. The requirements of EN 1672-2:2020 are not fully met. The relevant NSF certificates are available at https://info.nsf.org/USDA/Listings.asp using the lubricant information in the operating manual.

# Order example PGL-plus-P

PGL-plus-P 13 - AS - V - P - IOL

**Description**
PGL-plus-P

**Size**
10 = 10 mm stroke per jaw
13 = 13 mm stroke per jaw
16 = 16 mm stroke per jaw
20 = 20 mm stroke per jaw
25 = 25 mm stroke per jaw

**Gripping force maintenance**
without gripping force maintenance
AS = outside diameter gripping with spring
IS = inner diameter gripping with spring
ASC4 = GripGuard: certified secure O.D. gripping (4 bar operating pressure)
ASC6 = GripGuard: certified secure O.D. gripping (6 bar operating pressure)
ISC4 = GripGuard: certified secure I.D. gripping (4 bar operating pressure)
ISC6 = GripGuard: certified secure I.D. gripping (6 bar operating pressure)

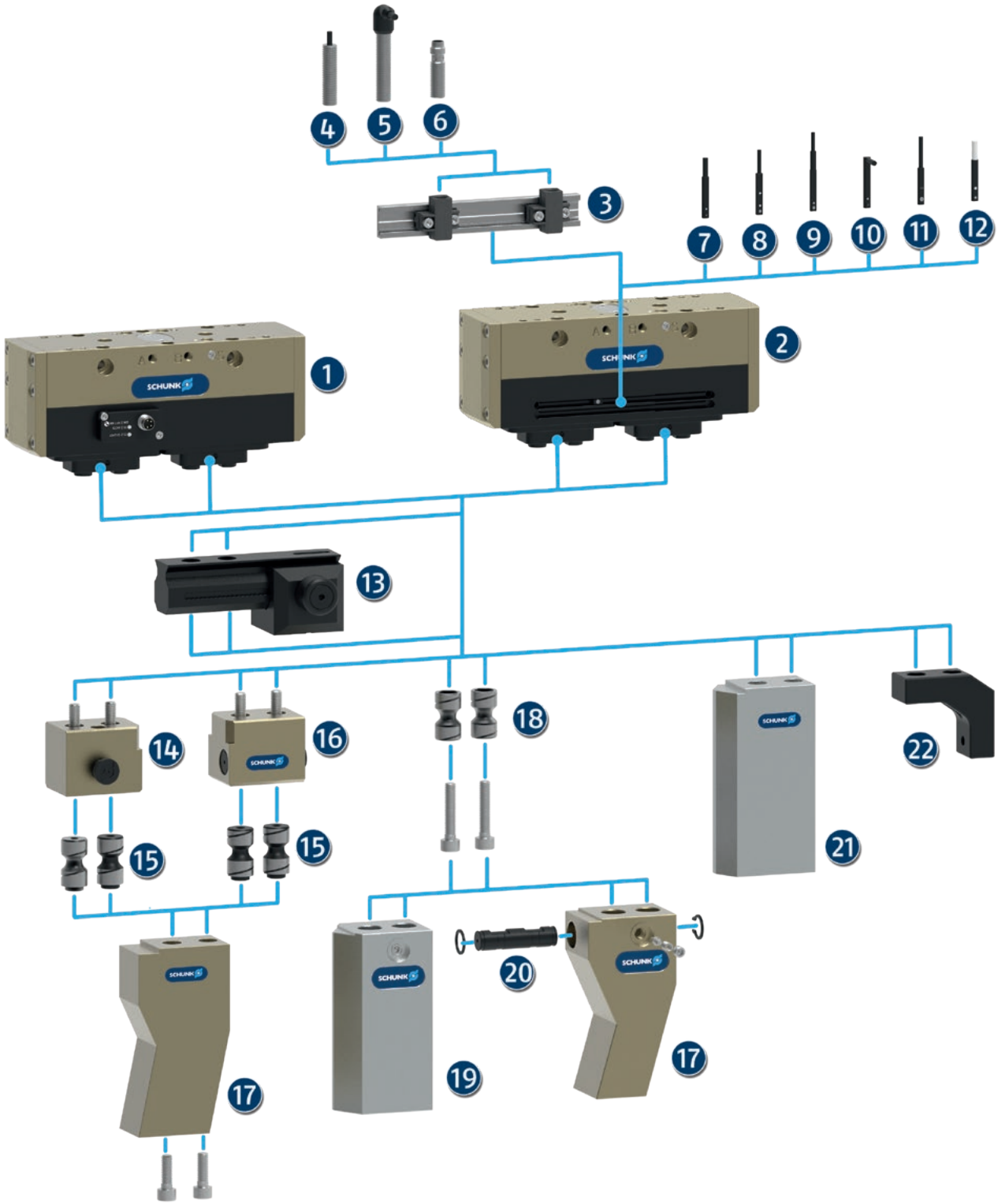
**Temperature range**
5 - 90 °C (IOL max. 70 °C)
V = High-temperature version 5 - 130 °C

**Precision**
Standard
P = Precision version

**Communication interface/sensor monitoring**
without sensors (prepared for MMS)
IN = without sensors (mounted attachment kit for IN 80)
IOL = IO-Link communication (with integrated sensors)

# SCHUNK gripper PGL-plus-P

## Overview Accessories



1 **PGL-plus-P-IOL**
Universal 2-finger parallel gripper with a large jaw stroke, integrated sensor system and high payload due to use of a multi-tooth guidance

2 **PGL-plus-P**
Universal 2-finger parallel gripper with a large jaw stroke and high payload due to use of multi-tooth guidance

## Sensor system

3 **AS-IN 80**
Mounting kit for inductive proximity switch

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

5 **IN ...-SA**
Inductive proximity switch with molded cable and laberal cable outlet

6 **IN-C 80**
Inductive proximity switch, directly pluggable

7 **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

8 **MMS 22-PI2**
Magnetic switch with straight cable outlet for monitoring two freely programmable position

9 **MMS 22-PI1-HD**
MMS 22-PI1 in robust design

**MMS 22-PI2-HD**
MMS 22-PI2 in robust design

10 **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

11 **MMS 22-IOL**
Magnetic switch for detecting the gripper jaw position with IO-Link communication

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

## Finger Accessories

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

14 **BSWS-BM**
Quick-change base with integrated locking mechanism for fast change of top jaws using a hexagon socket wrench

15 **BSWS-A**
Adapter pin of the jaw quick-change system for adaptation to the customized finger

16 **BSWS-B**
Quick-change base with integrated locking mechanism for fast change of top jaws using a hexagon socket wrench

17 **Customized fingers**

18 **BSWS-AR**
Adapter pin of the jaw quick-change system for fast, manual change of top jaws

19 **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

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

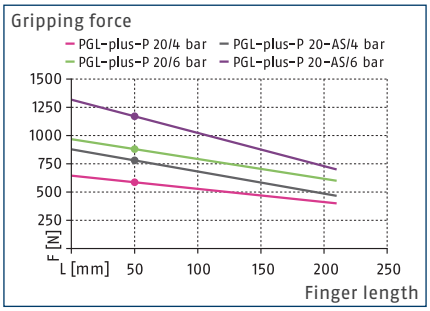
21 **ABR/SBR**
Finger blanks made of steel or aluminum with standardized screw connection diagram

22 **ZBA**
Intermediate jaws for reorientation of the mounting surface

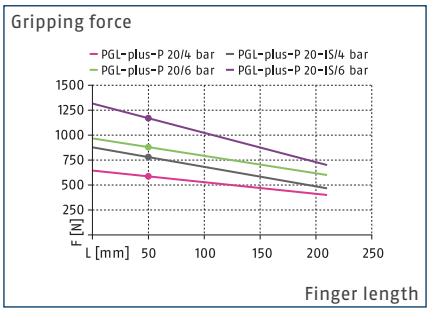
# PGL-plus-P 20

Universal gripper

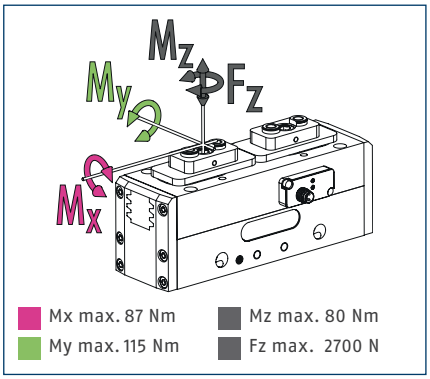

## Gripping force O.D. gripping




## Gripping force I.D. gripping




## Max. 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 PGL-plus-P

| Description | | PGL-plus-P 20-IOL | PGL-plus-P 20-AS-IOL | PGL-plus-P 20-IS-IOL | PGL-plus-P 20 | PGL-plus-P 20-AS | PGL-plus-P 20-IS |
|---|---|---|---|---|---|---|---|
| ID | | 1476640 | 1476641 | 1476642 | 1476522 | 1476563 | 1476565 |
| Stroke per jaw | [mm] | 20 | 20 | 20 | 20 | 20 | 20 |
| Closing/opening force | [N] | 880/880 | 1170/- | -/1170 | 880/880 | 1170/- | -/1170 |
| Min./max. spring force | [N] | | 290/470 | 290/470 | | 290/470 | 290/470 |
| Weight | [kg] | 2.7 | 3 | 3 | 2.7 | 3 | 3 |
| Recommended workpiece weight | [kg] | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 | 4.4 |
| Cylinder volume per double stroke | [cm³] | 50 | 82 | 76 | 50 | 82 | 76 |
| Min./nom./max. operating pressure | [bar] | 2.5/6/8 | 4/6/6.5 | 4/6/6.5 | 2.5/6/8 | 4/6/6.5 | 4/6/6.5 |
| Min./max. air purge pressure | [bar] | 0.5/1 | 0.5/1 | 0.5/1 | 0.5/1 | 0.5/1 | 0.5/1 |
| Closing/opening time | [s] | 0.17/0.17 | 0.15/0.3 | 0.3/0.15 | 0.17/0.17 | 0.15/0.3 | 0.3/0.15 |
| Closing/opening time with spring | [s] | | 0.25 | 0.25 | | 0.25 | 0.25 |
| Max. permissible finger length | [mm] | 210 | 210 | 210 | 210 | 210 | 210 |
| Max. permissible weight per finger | [kg] | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 | 1.3 |
| Protection class IP (without/with air purge) | | 64/67 | 64/67 | 64/67 | 64/67 | 64/67 | 64/67 |
| Min./max. ambient temperature | [°C] | 5/70 | 5/70 | 5/70 | 5/90 | 5/90 | 5/90 |
| Repeat accuracy | [mm] | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 | 0.03 |
| Min./nominal/max. operating voltage | [V DC] | 18/24/30 | 18/24/30 | 18/24/30 | | | |
| Nominal current | [A] | 0.2 | 0.2 | 0.2 | | | |
| Cable connector | | M8 connector, A-coded, 4-pin | M8 connector, A-coded, 4-pin | M8 connector, A-coded, 4-pin | | | |
| Communication interface/ specification | | IO-Link/V1.1 | IO-Link/V1.1 | IO-Link/V1.1 | | | |
| Transmission rate | | COM2 | COM2 | COM2 | | | |
| Port | | Class A | Class A | Class A | | | |
| Detectable workpiece difference | | Up to 0.1 mm | Up to 0.1 mm | Up to 0.1 mm | | | |
| **Options and their characteristics** | | | | | | | |
| High-temperature version | | | | | 1512491 | 1512492 | 1512493 |
| Min./max. ambient temperature | [°C] | | | | 5/130 | 5/130 | 5/130 |
| Precision version | | 1476870 | 1476871 | 1476872 | 1476685 | 1476686 | 1476687 |
| with pre-assembled attachment kit for IN | | | | | 1476596 | 1476597 | 1476598 |
| Precision version/inductive sensor version | | | | | 1476835 | 1476836 | 1476837 |

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

# PGL-plus-P 20

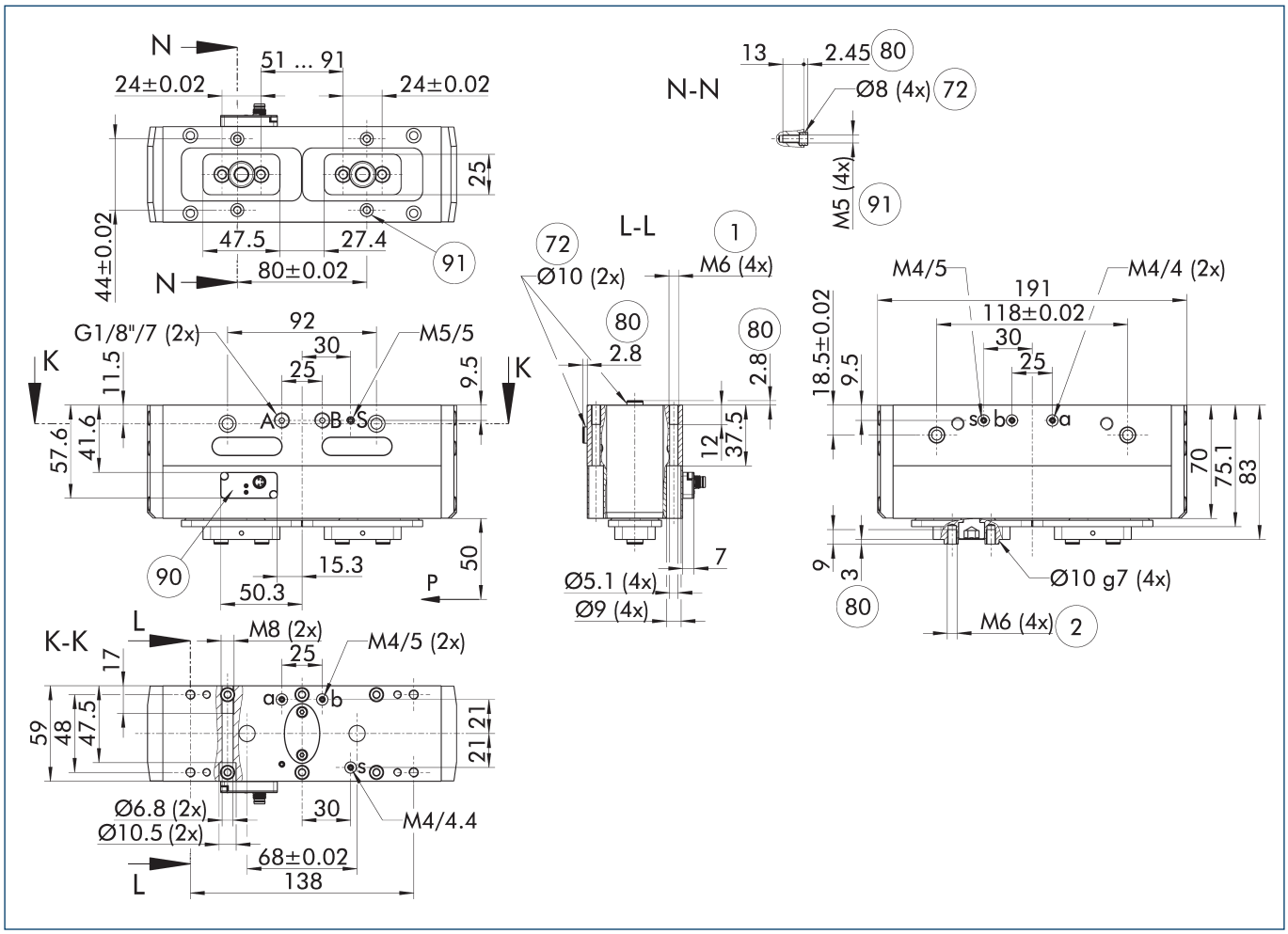
Universal gripper

## Technical data PGL-plus-P with safe gripping force maintenance

| Description | | PGL-plus-P 20-ASC6 | PGL-plus-P 20-ISC6 | PGL-plus-P 20-ASC4 | PGL-plus-P 20-ISC4 |
|---|---|---|---|---|---|
| ID | | 1476541 | 1476568 | 1476566 | 1476567 |
| Stroke per jaw | [mm] | 20 | 20 | 20 | 20 |
| Closing/opening force | [N] | 880/880 | 880/880 | 585/585 | 585/585 |
| Secured opening/closing force in case of pressure loss | [N] | 700/- | -/700 | 465/- | -/465 |
| Weight | [kg] | 4.2 | 4.2 | 4.2 | 4.2 |
| Recommended workpiece weight | [kg] | 4.4 | 4.4 | 2.9 | 2.9 |
| Cylinder volume per double stroke | [cm³] | 52 | 52 | 52 | 52 |
| Min./nom./max. operating pressure | [bar] | 5.5/6/6.5 | 5.5/6/6.5 | 3.5/4/6.5 | 3.5/4/6.5 |
| Min./max. air purge pressure | [bar] | 0.5/1 | 0.5/1 | 0.5/1 | 0.5/1 |
| Closing/opening time | [s] | 0.17/0.17 | 0.17/0.17 | 0.17/0.17 | 0.17/0.17 |
| Max. permissible finger length | [mm] | 210 | 210 | 210 | 210 |
| Max. permissible weight per finger | [kg] | 1.3 | 1.3 | 1.3 | 1.3 |
| Protection class IP (without/with air purge) | | 64/67 | 64/67 | 64/67 | 64/67 |
| Min./max. ambient temperature | [°C] | 5/90 | 5/90 | 5/90 | 5/90 |
| Repeat accuracy | [mm] | 0.03 | 0.03 | 0.03 | 0.03 |
| **Options and their characteristics** | | | | | |
| Precision version | | 1476700 | 1476701 | 1476688 | 1476689 |
| Version with IO-Link | | 1476645 | 1476646 | 1476643 | 1476644 |
| Min./nominal/max. operating voltage | [V DC] | 18/24/30 | 18/24/30 | 18/24/30 | 18/24/30 |
| Nominal current | [A] | 0.2 | 0.2 | 0.2 | 0.2 |
| Min./max. ambient temperature | [°C] | 5/70 | 5/70 | 5/70 | 5/70 |
| Cable connector | | M8 connector, A-coded, 4-pin | M8 connector, A-coded, 4-pin | M8 connector, A-coded, 4-pin | M8 connector, A-coded, 4-pin |
| Communication interface/ specification | | IO-Link/V1.1 | IO-Link/V1.1 | IO-Link/V1.1 | IO-Link/V1.1 |
| Transmission rate | | COM2 | COM2 | COM2 | COM2 |
| Port | | Class A | Class A | Class A | Class A |
| Detectable workpiece difference | | Up to 0.1 mm | Up to 0.1 mm | Up to 0.1 mm | Up to 0.1 mm |
| with pre-assembled attachment kit for IN | | 1476601 | 1476602 | 1476599 | 1476600 |
| Precision version/inductive sensor version | | 1476840 | 1476841 | 1476838 | 1476839 |
| Precision version/version with IO-Link | | 1476875 | 1476876 | 1476873 | 1476874 |
| Min./max. ambient temperature | [°C] | 5/70 | 5/70 | 5/70 | 5/70 |

ⓘ 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.

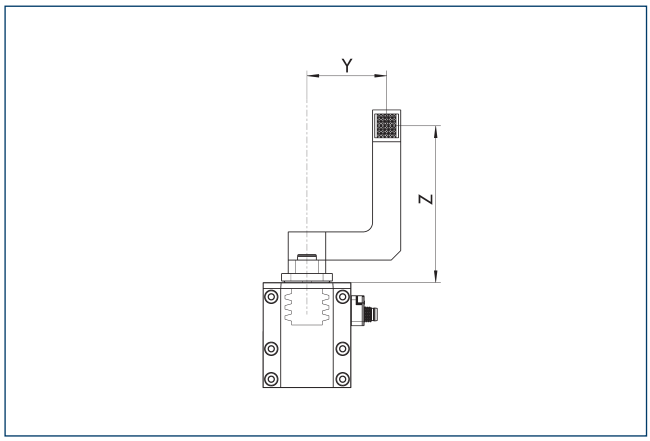
ⓘ As an alternative/in addition to spring-assisted mechanical gripping force maintenance, the SDV-P pressure maintenance valve can be used for I.D. and O.D. gripping (see "Accessories" section of catalog).

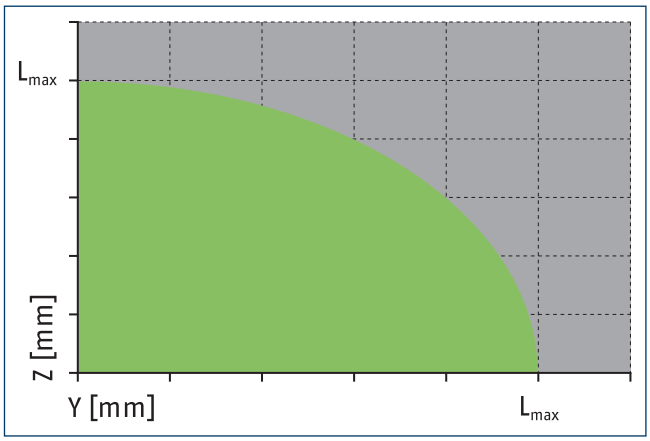
A, a Main / direct connection, gripper opening
B, b Main / direct connection, gripper closing
S Air purge connection
(1) Gripper connection
(2) Finger connection
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part
(90) Integrated sensor system IOL with M8 connector, A-coded, 4-pin
(91) Screw connection with fittings for customized assembly (these centering sleeves are not included in the scope of delivery)

# PGL-plus-P 20

Universal gripper

## Maximum permitted finger projection



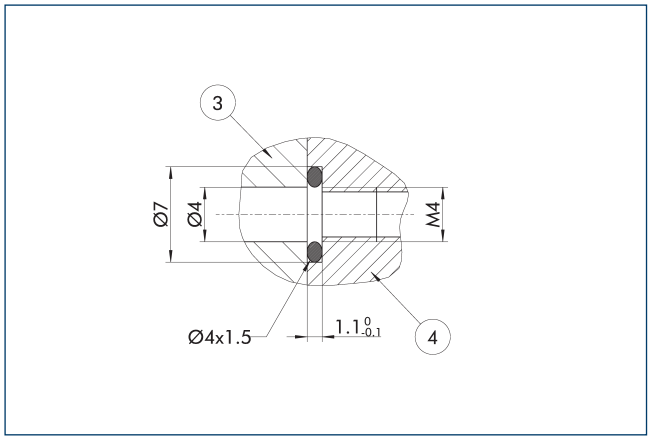




Permitted range

Inadmissible range

$L^{max}$ is equivalent to the maximum permitted finger length, see the technical data table.

## Hose-free direct connection M4

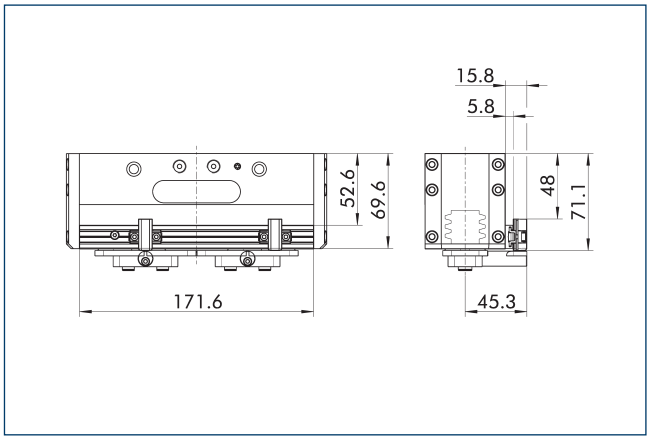



(3) Adapter

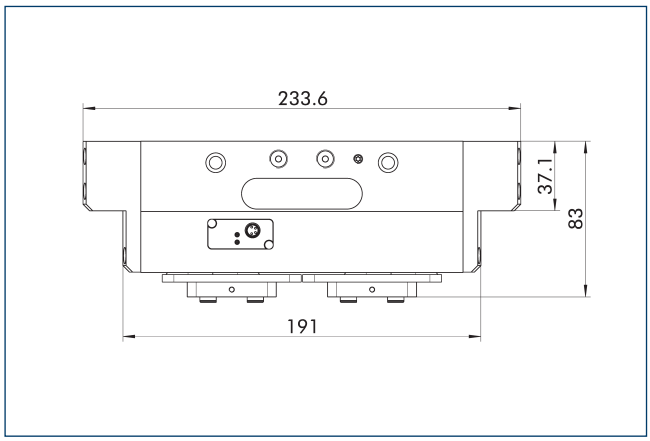
(4) Grippers

The direct connection is used for compressed air supply without error-prone tubing.

## Gripper monitoring with inductive proximity switches IN

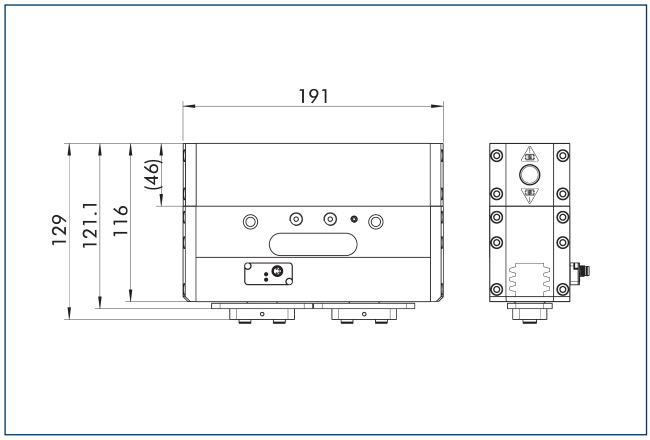


## Gripping force maintenance version AS/IS



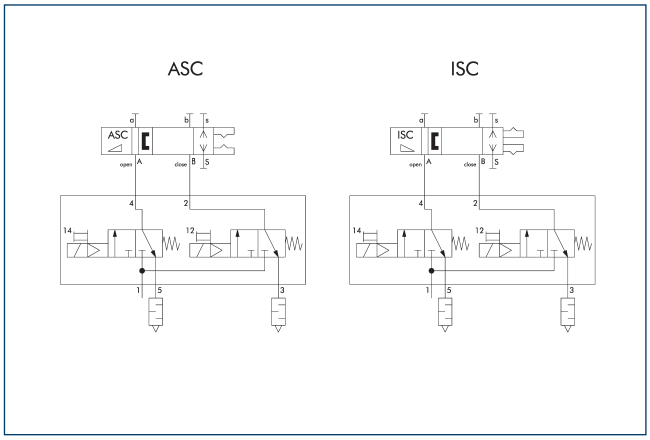

The mechanical gripping force maintenance device ensures that a minimum clamping force will be applied even if there is a drop in pressure. In the AS variant this acts as a closing force, in the IS variant as an opening force Besides this, the gripping force maintenance can be used to increase gripping force or for single actuated gripping.

## GripGuard: secure, certified gripping force maintenance ASC/ISC




Secure gripping force maintenance also ensures a permanent gripping force of min. 80%, even in case of a pressure drop. In the ASC variant this acts as a closing force, in the ISC variant as an opening force.

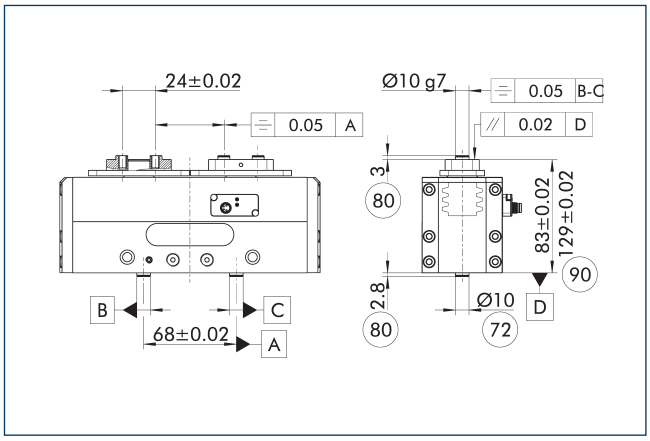
## GripGuard: secure, certified gripping force maintenance ASC/ISC




Grippers with ASC or ISC gripping force maintenance are generally controlled with a 2x3/2-directional control valve.

ⓘ Be sure to observe the control sequence in the operating manual.

## Precision version



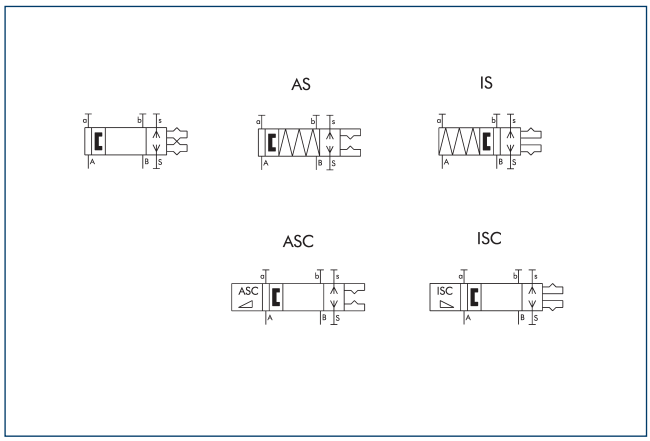

72 Fit for centering sleeves

80 Depth of the centering sleeve hole in the counter part

90 For version ASC/ISC

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.

## Electronic symbol according to DIN ISO 1219




A, a Main / direct connection, gripper opening

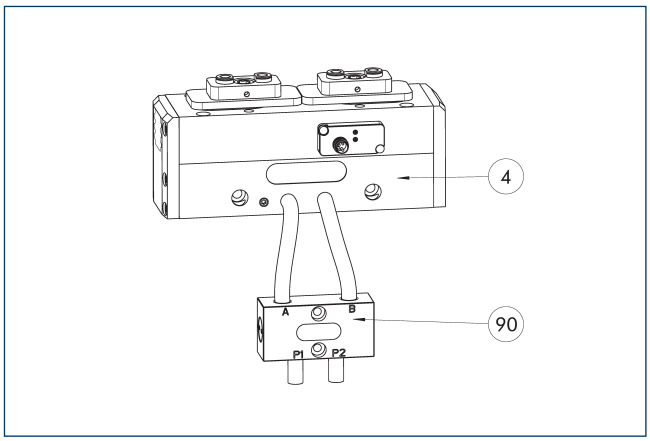
B, b Main / direct connection, gripper closing

S, s Air purge, main, direct connection

The circuit symbol shows the connection options and the function of the pneumatic gripper. "A" and "B" are the main connections of the gripper for opening and closing. "a" and "b" are optional direct connections for opening and closing without interference-prone hosing. "S" and "s" describe the optional air purge connection, which impedes the ingress of dirt into the gripper.

ⓘ SCHUNK also provides ECAD data for your design. You can choose between direct access via your EPLAN-Electric P8 software or download using the EPLAN Data Portal. Further information can be found on the SCHUNK website.

## SDV-P pressure maintenance valve




④ Grippers

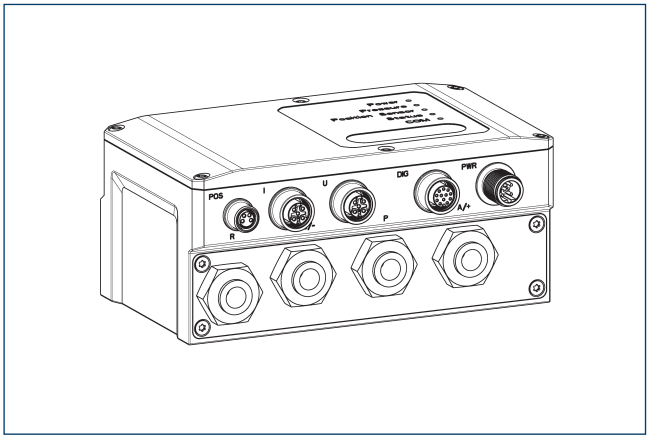
⑨⓪ SDV-P pressure maintenance valve

The SDV-P pressure maintenance valves ensure in emergency STOP situations that the pressure in the piston chamber of pneumatic gripper, swivel, linear, and quick-change modules is temporarily maintained. The pressure maintenance valve must not be used in combination with the ASC and ISC variants.

| Description | ID | Recommended hose diameter |
|---|---|---|
| | | [mm] |
| Pressure maintenance valve | | |
| SDV-P 04 | 0403130 | 6 |
| SDV-P 07 | 0403131 | 8 |
| Pressure maintenance valve with air bleed screw | | |
| SDV-P 04-E | 0300120 | 6 |
| SDV-P 07-E | 0300121 | 8 |

ⓘ 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.

## Pneumatic positioning device PPD

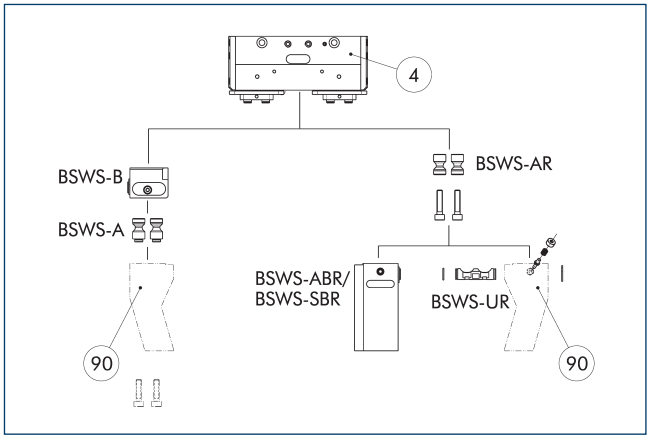



The PPD allows flexibility in all applications with pneumatic grippers through free positioning, gripping force and speed adjustment.

| Description | ID | |
|---|---|---|
| Pneumatic positioning device | | |
| PPD 20-IOL | 1540700 | |
| Adapter | | |
| A GGN0804-1204-A | 1540691 | |
| IO-Link connection cable | | |
| KA GGN1205-1212-IOL-00100-A | 1540697 | |
| Voltage supply connection cable - cable track compatible | | |
| KA GLN12B05-LK-01000-A | 1540660 | |
| Cable extension | | |
| KV GGN0804-IO-00150-A | 1540662 | |
| KV GGN0804-IO-00300-A | 1540663 | |
| Assembly set | | |
| Assembly set PPD | 1540705 | |

ⓘ In addition to the PPD, a position sensor (SCHUNK IO-Link sensor or analog sensor (4...20 mA)) is required.

## BSWS jaw quick-change jaw systems




(4) Grippers (90) Customized gripper fingers

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

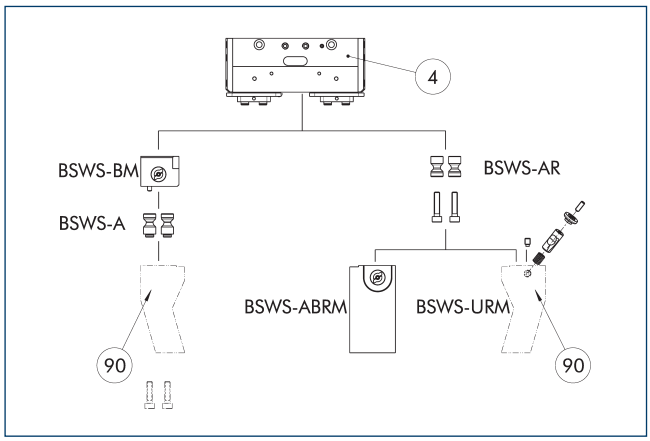
| Description | ID | Scope of delivery |
|---|---|---|
| Jaw quick-change system adapter pin | | |
| BSWS-A 125 | 0303028 | 2 |
| BSWS-AR 20 | 1515474 | 2 |
| Quick-change jaw system base | | |
| BSWS-B 125 | 0303029 | 1 |
| Jaw quick-change system finger blank | | |
| BSWS-ABR-PGZN-plus 125 | 0300075 | 1 |
| BSWS-SBR-PGZN-plus 125 | 0300085 | 1 |
| Jaw quick-change system locking mechanism | | |
| BSWS-UR 125 | 0302994 | 1 |

ⓘ If the operating pressure is higher than 6 bar, suitability for use beyond the application limits must be checked. Only systems that are listed in the table, can be used. In the PGL-plus-P gripper series, the use of finger blanks with jaw quick-change system results in a limitation of the closing stroke. Please check this in detail in advance using the CAD data and adjust the reworking of the fingers accordingly.

# PGL-plus-P 20

Universal gripper

## Jaw quick-change system BSWS-M



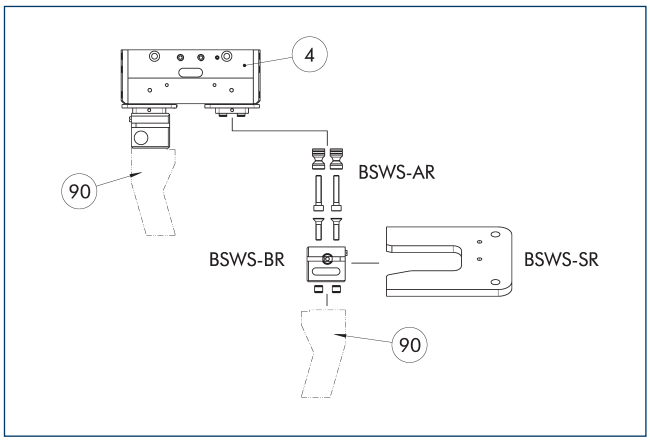

(4) Grippers (90) Customized gripper fingers

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

| Description | ID | Scope of delivery |
|---|---|---|
| Jaw quick-change system adapter pin | | |
| BSWS-A 125 | 0303028 | 2 |
| BSWS-AR 20 | 1515474 | 2 |
| Quick-change jaw system base | | |
| BSWS-BM 125 | 1302006 | 1 |
| Jaw quick-change system finger blank | | |
| BSWS-ABRM-PGZN-plus 125 | 1420854 | 1 |
| Jaw quick-change system locking mechanism | | |
| BSWS-URM 125 | 1398404 | 1 |

ⓘ If the operating pressure is higher than 6 bar, suitability for use beyond the application limits must be checked. Only systems that are listed in the table, can be used. In the PGL-plus-P gripper series, the use of finger blanks with jaw quick-change system results in a limitation of the closing stroke. Please check this in detail in advance using the CAD data and adjust the reworking of the fingers accordingly.

## Jaw quick-change system BSWS-R



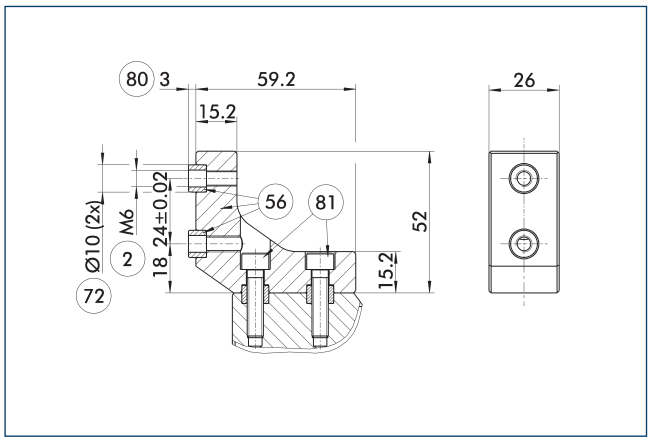

(4) Grippers (90) Customized gripper fingers

If the operating pressure is higher than 6 bar, suitability for use beyond the application limits must be checked. Only systems that are listed in the table, can be used. In the PGL-plus-P gripper series, the use of finger blanks with jaw quick-change system results in a limitation of the closing stroke. Please check this in detail in advance using the CAD data and adjust the reworking of the fingers accordingly.

| Description | ID | Scope of delivery |
|---|---|---|
| Jaw quick-change system | | |
| BSWS-AR 20 | 1515474 | 2 |
| Quick-change jaw system base | | |
| BSWS-BR 125 | 1555937 | 1 |
| Storage system | | |
| BSWS-SR 125 | 1555972 | 1 |
| Attachment kit for proximity switch | | |
| AS-IN80-BSWS-SR 125/160 | 1561467 | 1 |
| Inductive proximity switch | | |
| IN 80-S-M12 | 0301578 | |
| IN 80-S-M8 | 0301478 | |
| INK 80-S | 0301550 | |

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

## ZBA-L-plus 125 intermediate jaws

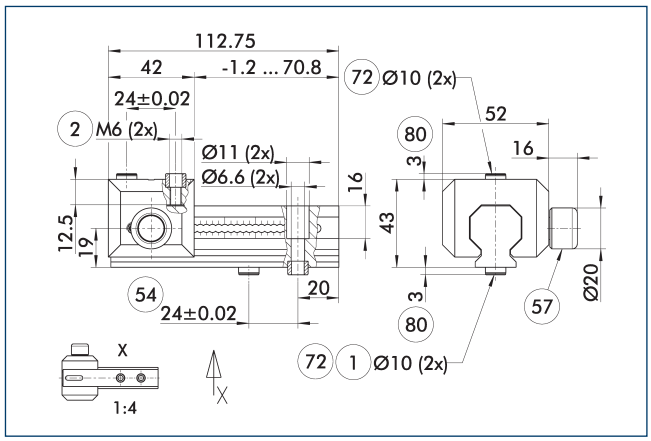



(2) Finger connection
(56) Included in the scope of delivery
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part
(81) Not included in the scope of delivery

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.

| Description | ID | Material | Finger interface | Scope of delivery |
|---|---|---|---|---|
| Intermediate jaw | | | | |
| ZBA-L-plus 125 | 0311752 | Aluminum | PGN-plus 125 | 1 |

## UZB 125 universal intermediate jaw



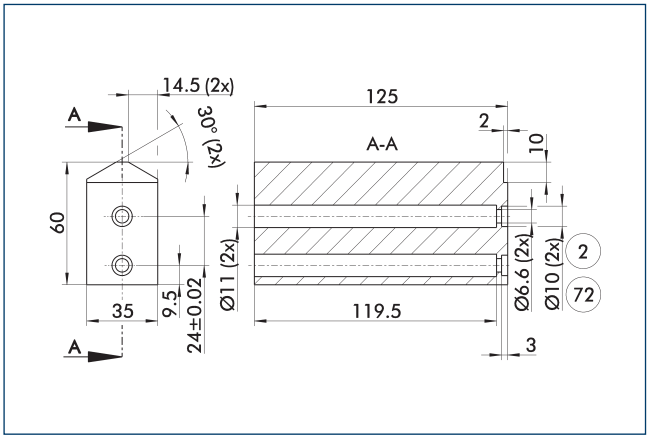

(1) Gripper connection
(2) Finger connection
(54) Optional right or left connection
(57) Locking
(72) Fit for centering sleeves
(80) Depth of the centering sleeve hole in the counter part

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

| Description | ID | Grid dimension |
|---|---|---|
| | | [mm] |
| Universal intermediate jaw | | |
| UZB 125 | 0300045 | 3 |
| Finger blank | | |
| ABR-PGZN-plus 125 | 0300013 | |
| SBR-PGZN-plus 125 | 0300023 | |
| Slide for universal intermediate jaw | | |
| UZB-S 125 | 5518273 | 3 |

ⓘ If the operating pressure is higher than 6 bar, suitability for use beyond the application limits must be checked.

## Finger blanks ABR/SBR-PGZN-plus 125




(2) Finger connection

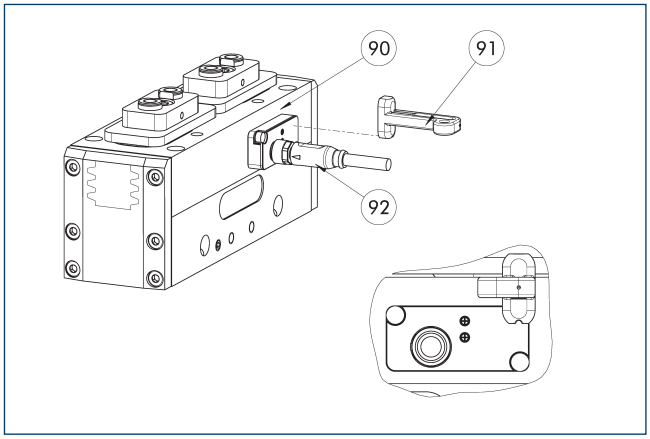
(72) Fit for centering sleeves

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

| Description | ID | Material | Scope of delivery |
|---|---|---|---|
| Finger blank | | | |
| ABR-PGZN-plus 125 | 0300013 | Aluminum (3.4365) | 1 |
| SBR-PGZN-plus 125 | 0300023 | Steel (1.7131) | 1 |

ⓘ When finger blanks are used, the closing stroke of individual gripper series may be limited. Please check this in detail in advance using the CAD data and adjust the reworking of the fingers accordingly.

## Sensor Teaching Tool




(90) Gripper with integrated sensor system IOL

(91) Sensor Teaching Tool

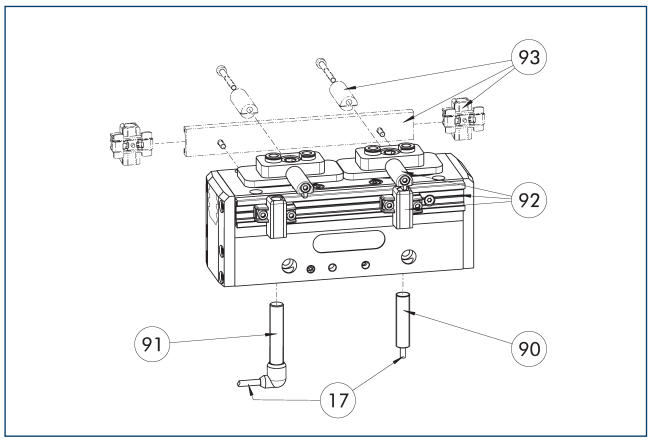
(92) Connection cables

If the gripper with integrated sensors (PGL-plus-P...-IOL) is operated in SIO mode without an IO-Link master, a separate magnetic teaching tool will be required.

| Description | ID | |
|---|---|---|
| Sensor Teaching Tool | | |
| MT-MMS 22-PI | 0301030 | |

ⓘ The magnetic teaching tool and the connection cable must be ordered as optional accessories.

## IN 80 inductive proximity switches



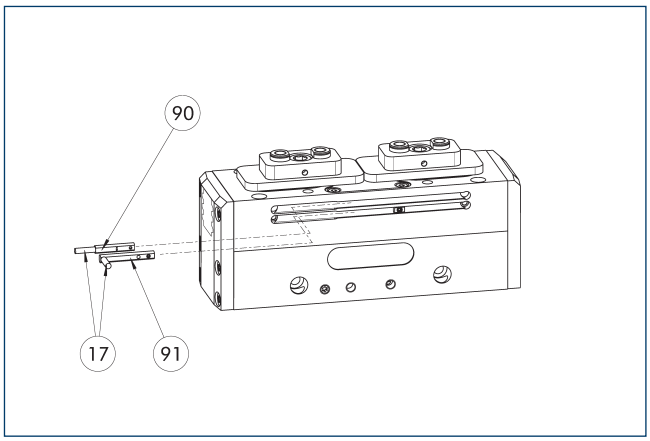

(17) Cable outlet
(90) Sensor IN ...
(91) Sensor IN..-SA
(92) Attachment kit for monitoring with two inductive proximity switches
(93) Optional rear mounting of another attachment kit for two additional proximity switches

End position monitoring can be mounted with an attachment kit. Alternatively, the sensors can be directly mounted on the IN gripper variant.

| Description | ID | Often combined |
|---|---|---|
| Attachment kit for proximity switch | | |
| AS-IN80-PGL-plus-P 20 | 1499629 | |
| Inductive proximity switch | | |
| IN 80-0-M12 | 0301588 | |
| IN 80-0-M8 | 0301488 | |
| IN 80-SL-M12 | 0301529 | |
| IN 80-S-M12 | 0301578 | |
| IN 80-S-M8 | 0301478 | ● |
| IN-B 80-S-M12 | 0301479 | |
| IN-C 80-S-M8-PNP | 0301475 | |
| INK 80-0 | 0301551 | |
| INK 80-S | 0301550 | |
| INK 80-SL | 0301579 | |
| Inductive proximity switch with lateral cable outlet | | |
| IN 80-S-M12-SA | 0301587 | |
| IN 80-S-M8-SA | 0301483 | ● |
| INK 80-S-SA | 0301566 | |

ⓘ 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. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm.

## Electronic magnetic switch MMS



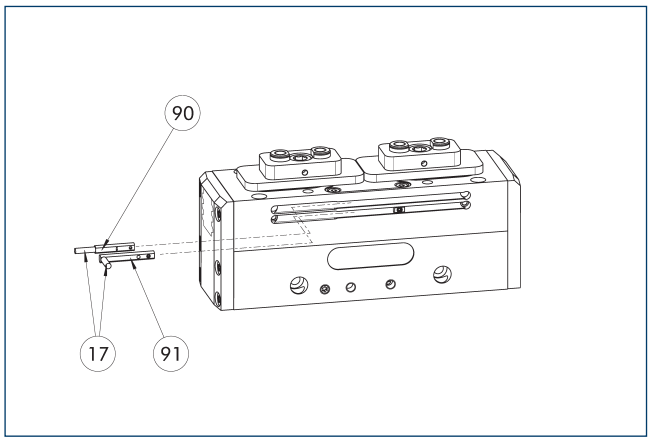

(17) Cable outlet
(90) Sensor MMS 22..
(91) Sensor MMS 22...-SA

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 connector/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



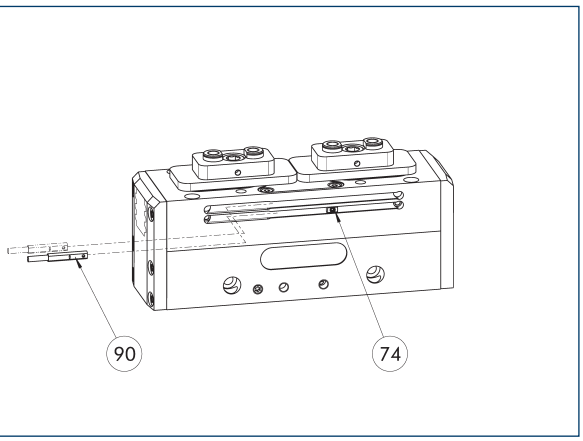

(17) Cable outlet
(91) Sensor MMS 22 ..-PI1-...-SA
(90) Sensor MMS 22 PI1-...

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, ID 0301030) 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.

| 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 | |

ⓘ 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-PI2



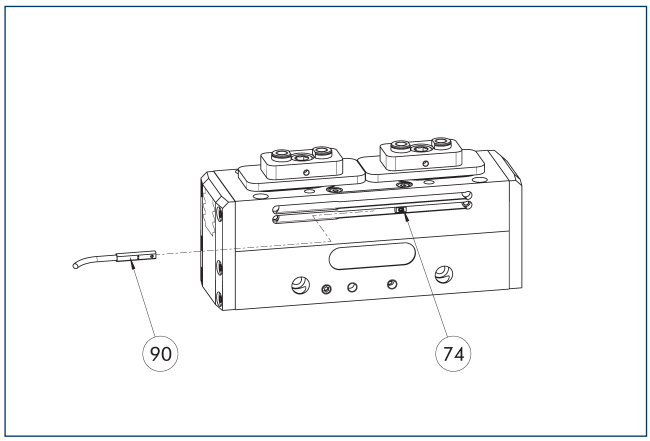

(74) Limit stop for sensor
(90) MMS 22...-PI2-... sensor

Position monitoring with two programmable positions per sensor and electronics integrated in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) 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.

| 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 | |

ⓘ 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.

## Analog position sensor MMS-A



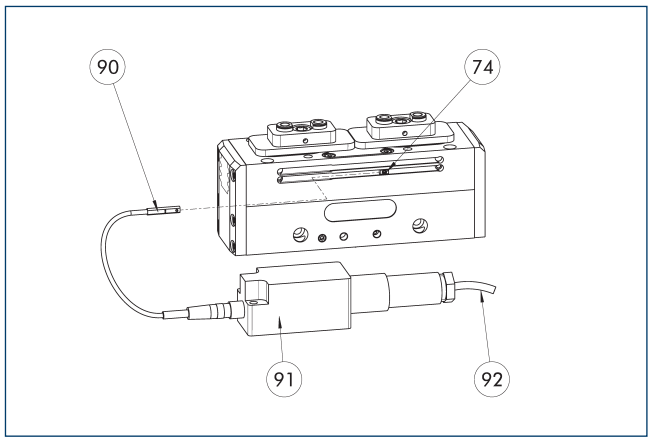

(74) Limit stop for sensor
(90) MMS 22-A-... sensor

Non-contact measuring, analog multi-position monitoring for any number of positions, easy to assemble in the C-slot. Can be programmed using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) 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 chart provided, teaching is only possible with the ST teaching tools.

| Description | ID | |
|---|---|---|
| Analog position sensor | | |
| MMS 22-A-10V-M08 | 0315825 | |
| MMS 22-A-10V-M12 | 0315828 | |

ⓘ 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.

## Flexible position sensor with MMS-A



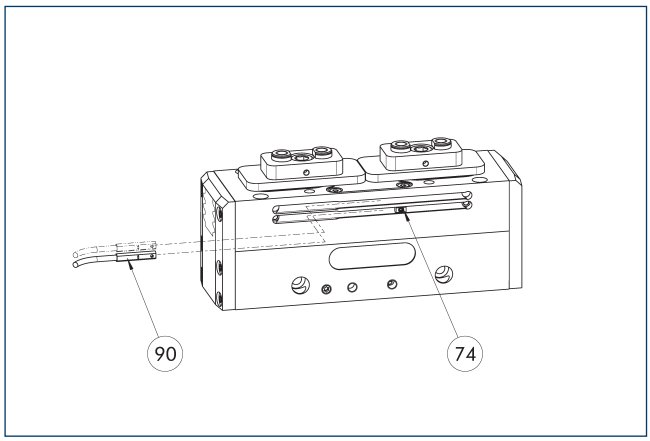

(74) Limit stop for sensor
(90) MMS 22-A-... sensor
(91) FPS-F5 evaluation electronic
(92) Connection cables

Flexible position monitoring of up to five positions. Sensor can be taught using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) or ST plug teaching tool (optional). If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

| Description | ID | |
|---|---|---|
| Analog position sensor | | |
| MMS 22-A-05V-M08 | 0315805 | |
| Evaluation electronics | | |
| FPS-F5 | 0301805 | |
| Sensor Teaching Tool | | |
| MT-MMS 22-PI | 0301030 | |
| Connection cables | | |
| KA BG16-L 12P-1000 | 0301801 | |

ⓘ When using an FPS system, one MMS 22-A-05V and one evaluation electronics (FPS-F5) are required per each gripper, as well as an attachment kit (AS), if listed. On option, cable extensions (KV) are available – see catalog chapter "Accessories."

## Programmable magnetic switch MMS-IO-Link




74 Limit stop for sensor

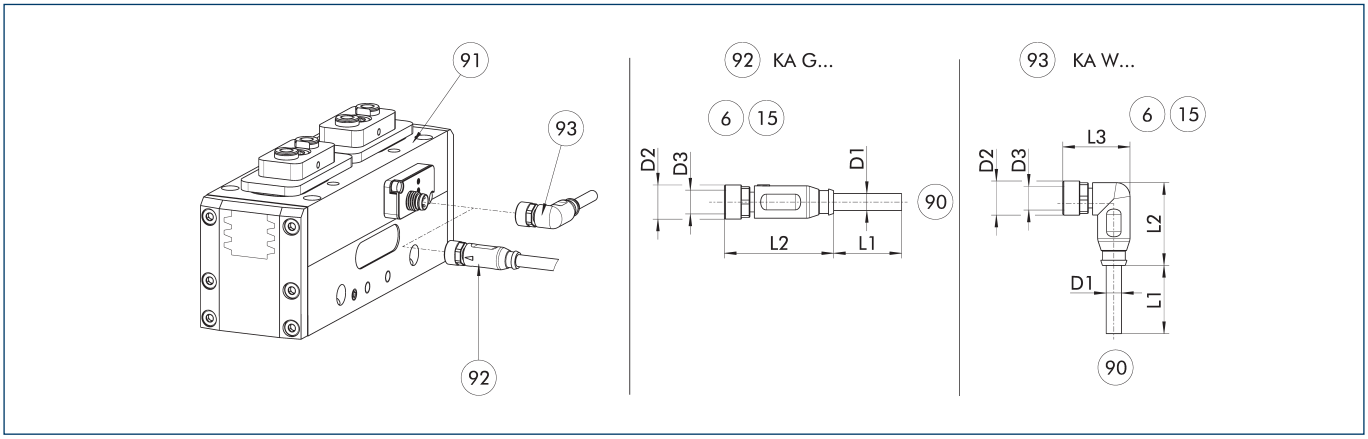
90 Sensor MMS 22-IOL-...

Sensor for multi-position monitoring through detection of the complete gripper stroke. The sensor is mounted directly in the C-slot of the gripper. The sensor is programmed for the gripper via the IO-Link interface, Magnet teaching tool MT (included in scope of delivery; ID 0301030) or the ST plug teaching tool (not included in scope of delivery; ID 0301026). An IO-Link master is required for operation.

| Description | ID | |
|---|---|---|
| Programmable magnetic switch | | |
| MMS 22-IOL-M08 | 0315830 | |
| MMS 22-IOL-M12 | 0315835 | |

ⓘ 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.

## Connection cables




KA G... Connection cable with straight socket
KA W... Connection cable with angular socket

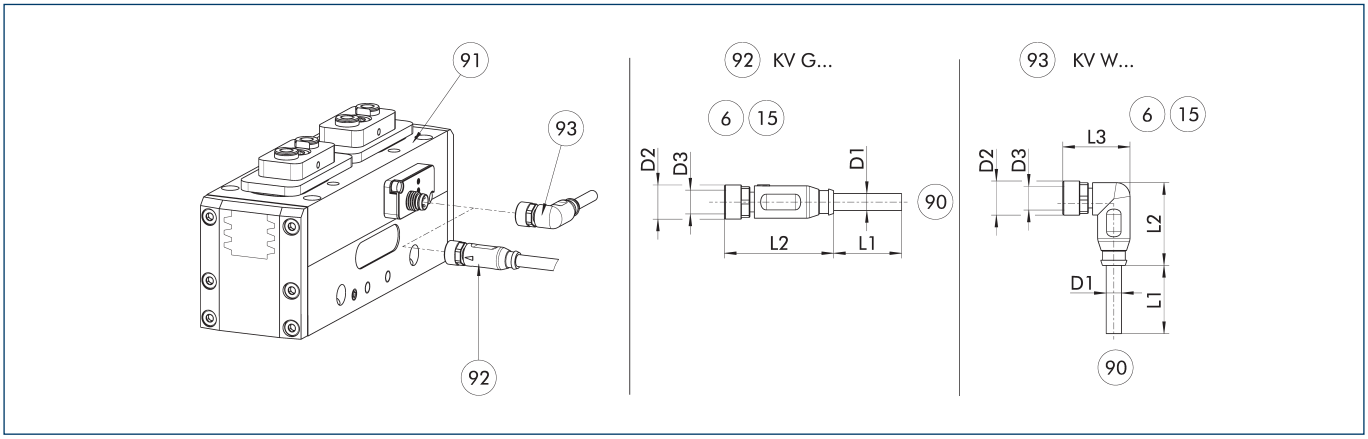
6 Lubricating nipple connection
15 Sealing bolt
90 Cable end with straight connector
91 Gripper with integrated sensor system IOL
92 Cable with straight female connector
93 Cable with angled female connector

The connection cable is ideal for connecting the corresponding components to the controller or the power supply unit. The connection cable has a 4-pin M8 socket on one side and an open wire strand on the other side for individual connections. The connection cables are suitable for use both in the cable track as well as in torsion applications.

| Description | ID | L1 | D1 | L2 | D2 | L3 | D3 | Often combined |
|---|---|---|---|---|---|---|---|---|
| | | [m] | [mm] | [mm] | [mm] | [mm] | | |
| Voltage supply/signals connection cable - drag chain and torsion resistant, M8 socket, straight | | | | | | | | |
| KA GLN0804-I0-00200-A | 1310371 | 2 | 4.8 | 33.7 | 10 | | M8 | |
| KA GLN0804-I0-00500-A | 1310375 | 5 | 4.8 | 33.7 | 10 | | M8 | ● |
| KA GLN0804-I0-01000-A | 1310379 | 10 | 4.8 | 33.7 | 10 | | M8 | |
| KA GLN0804-I0-02000-A | 1442994 | 20 | 4.5 | 32 | 10 | | M8 | |
| Voltage supply/signals connection cable - drag chain and torsion resistant, M8 socket, angled | | | | | | | | |
| KA WLN0804-I0-00200-A | 1310372 | 2 | 4.8 | 27.9 | 10 | 18.9 | M8 | |
| KA WLN0804-I0-00500-A | 1310376 | 5 | 4.8 | 27.9 | 10 | 18.9 | M8 | |
| KA WLN0804-I0-01000-A | 1310381 | 10 | 4.8 | 27.9 | 10 | 18.9 | M8 | |
| KA WLN0804-I0-02000-A | 1442996 | 20 | 4.5 | 25 | 10 | 20 | M8 | |

ⓘ Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

## Cable extension




KV G... Cable extension with straight socket

KV W... Cable extension with angled socket

6 Lubricating nipple connection

15 Sealing bolt

90 Cable end with straight connector

91 Gripper with integrated sensor system IOL

92 Cable with straight female connector

93 Cable with angled female connector

The cable extensions are ideal for connecting the relevant components to the control system, or for use as extension cables. The cable extensions have a 4-pin M8 socket with a straight or angled design on the module side and a 4-pin M12 connector with a straight design on the other side. The cable extensions are suitable for use in the drag chain and in torsion applications.

| Description | ID | L1 | D1 | L2 | D2 | L3 | D3 |
|---|---|---|---|---|---|---|---|
| | | [m] | [mm] | [mm] | [mm] | [mm] | |
| Cable extension | | | | | | | |
| KV GGN0804-1204-I0-00500-A | 1505830 | 5 | 4.5 | 32 | 10 | | M8 |
| KV GGN0804-1204-I0-01000-A | 1505832 | 10 | 4.5 | 32 | 10 | | M8 |
| KV WGN0804-1204-I0-00500-A | 1505803 | 5 | 4.5 | 25 | 10 | 20 | M8 |
| KV WGN0804-1204-I0-01000-A | 1505806 | 10 | 4.5 | 25 | 10 | 20 | M8 |

ⓘ Please observe the min. bending radius for cable track-compatible cables or the max. torsion angle for torsion-compatible cables. These are generally 10 times the cable diameter or +/- 180°/m.

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