



Superior Clamping and Gripping



## Product Information

Gripper for small components MPG-plus 20

# MPG-plus

Gripper for small components

## Powerful. Fast. Long fingers.

# Gripper for small components MPG-plus

2-finger parallel gripper with smooth roller guides of the base jaws

## Field of application

Gripping and moving of small to medium-sized workpieces in low contaminated environments, such as assembly, testing, laboratory and pharmaceutical industry

## Advantages – Your benefits

**Cross roller guidance** for precise gripping through due to a scope-free base jaw guidance

**Base jaws guided on double roller bearings** ensuring low friction and smoothly running

**Optimized basic load rating** suitable for using long gripper fingers

**Drive concept oval piston** for maximum gripping forces

**Monitoring with electronic magnetic switches** for a maximized process reliability

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

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

**Compact dimensions** for minimal interfering contours in handling

**NEW: food-grade lubrication** as a solution for an easy entry into medical technology, lab automation, pharmaceutical and food industry



12520002



Sizes  
Quantity: 9



Weight  
0.01 .. 0.63 kg



Gripping force  
9 .. 370 N



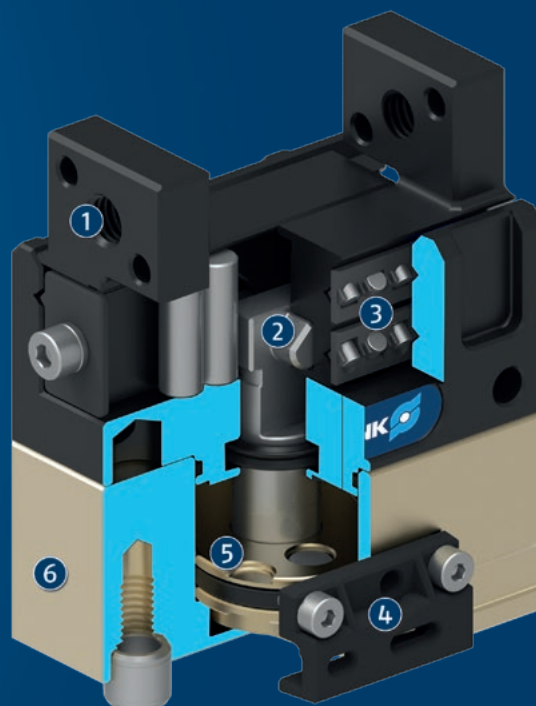
Stroke per jaw  
1 .. 10 mm



Workpiece weight  
0.05 .. 1.25 kg

## Functional description

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



① **Base Jaw**  
for the connection of workpiece-specific gripper fingers

② **Wedge-hook design**  
for high force transmission and centric gripping

③ **Cross roller guidance**  
precise gripping due to backlash-free base jaw guidance

④ **Sensor system**  
for monitoring two switching points

⑤ **Oval piston drive**  
for power generation

⑥ **Housing**  
is weight-optimized due to the use of high-strength aluminum alloy

# MPG-plus

Gripper for small components

## General notes about the series

**Operating principle:** Wedge-hook kinematics

**Housing material:** Aluminum alloy, anodized

**Cover housing material:** Steel

**Base jaw material:** Steel

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

**Warranty:** 24 months

**Service life characteristics:** on request

**Scope of delivery:** 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

Pneumatic pick & place unit for small components.

- 1 Pillar assembly system
- 2 Linear module CLM
- 3 2-finger parallel gripper MPG-plus



## SCHUNK offers more ...

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



Rotation unit



Linear module



Pick & Place Unit



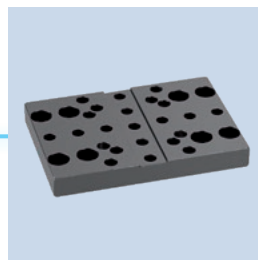
Manual change system



Attachment valve



Pressure maintenance valve



Adapter plate



Finger blank



Flexible position sensor



Magnetic switches



Inductive proximity switches

① For more information on these products can be found on the following product pages or at [schunk.com](http://schunk.com).

## 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.

**Optional adapter plates:** allows frontal mounting of the gripper

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

**Version FPS for flexible position sensor:** This version is prepared for the use with the flexible position sensor FPS, and allows monitoring of several gripping positions.

**protective cover version HUE:** Fully protects the gripper against external influences

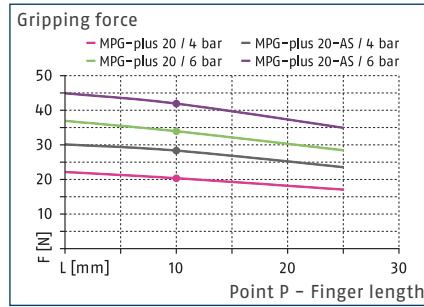
**Food-grade lubrication:** The requirements of EN 1672-2:2020 are not fully met.

# MPG-plus 20

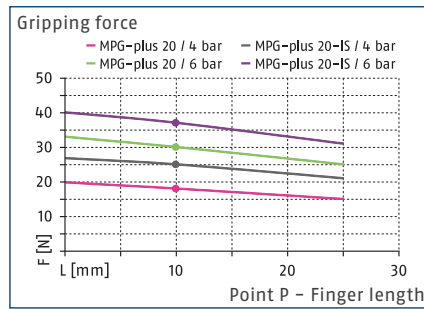
Gripper for small components



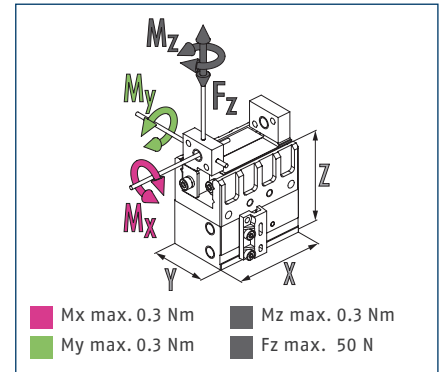
## Gripping force O.D. gripping



## Gripping force I.D. gripping



## Dimensions and maximum loads

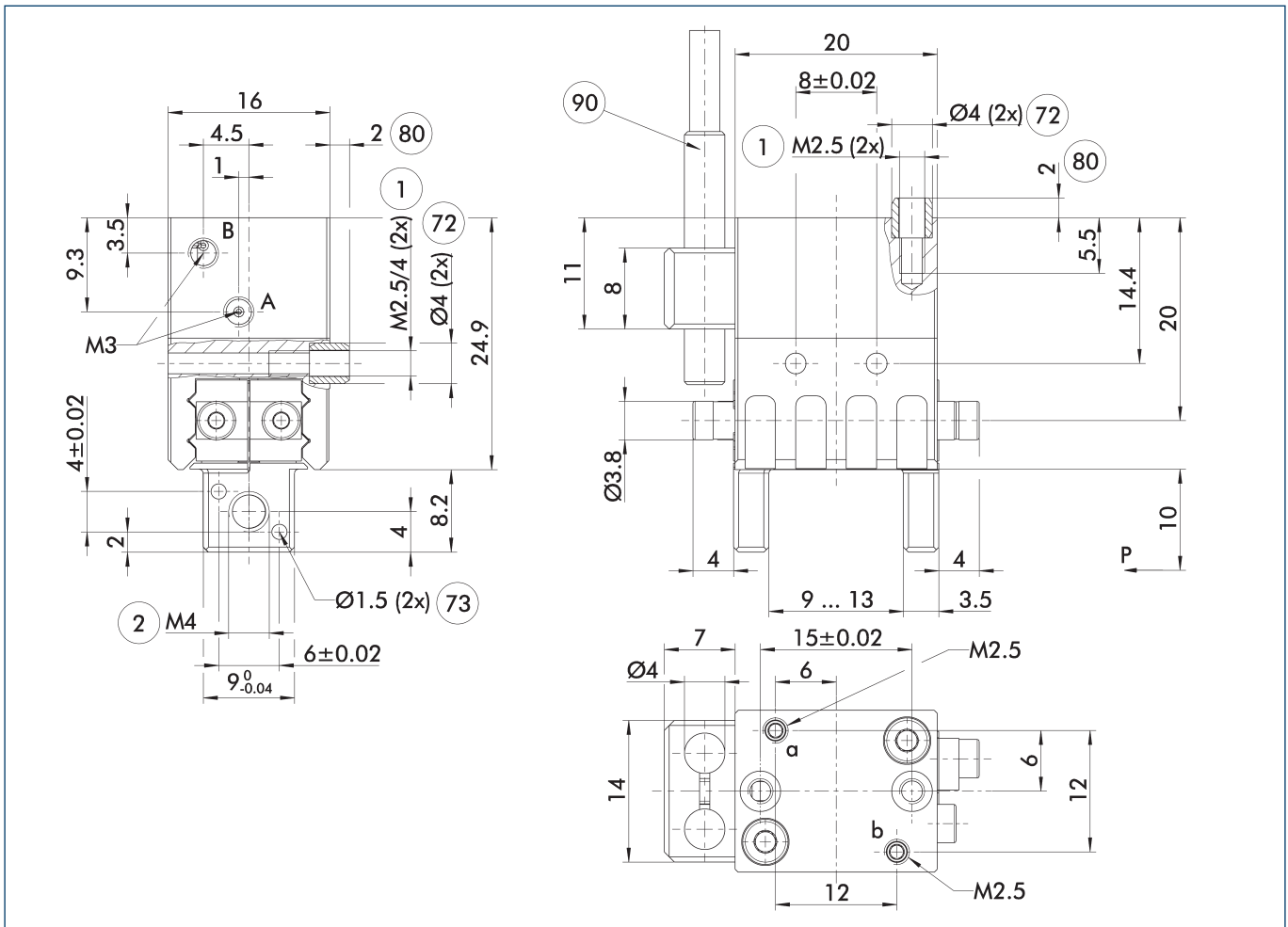


① The indicated moments and forces are static values, apply for each base jaw and may appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

## Technical data

Description		MPG-plus 20	MPG-plus 20-AS	MPG-plus 20-IS	MPG-plus 20-FPS
ID		0305491	0305492	0305493	0305494
Stroke per jaw	[mm]	2	2	2	2
Closing/opening force	[N]	34/30	42/-	-/37	34/30
Min. spring force	[N]		8	7	
Weight	[kg]	0.035	0.042	0.042	0.04
Recommended workpiece weight	[kg]	0.17	0.17	0.17	0.17
Fluid consumption double stroke	[cm <sup>3</sup> ]	0.41	1.38	0.84	0.41
Min./nom./max. operating pressure	[bar]	2/6/8	4/6/6.5	4/6/6.5	2/6/8
Closing/opening time	[s]	0.012/0.012	0.012/0.018	0.018/0.012	0.012/0.012
Closing/opening time with spring	[s]		0.06	0.06	
Max. permissible finger length	[mm]	25	25	25	25
Max. permissible weight per finger	[kg]	0.01	0.01	0.01	0.01
IP protection class		30	30	30	30
Min./max. ambient temperature	[°C]	5/90	5/90	5/90	5/90
Repeat accuracy	[mm]	0.02	0.02	0.02	0.02
Cleanroom class ISO 14644-1:2015		6	6	6	6
Dimensions X x Y x Z	[mm]	20 x 16 x 24.9	20 x 16 x 33.9	20 x 16 x 33.9	20 x 16 x 34.9
<b>Options and their characteristics</b>					
High-temperature version		39305491	39305492	39305493	39305494
Min./max. ambient temperature	[°C]	5/100	5/100	5/100	5/100
Precision version		0305496	0305498	0305499	

## Main view



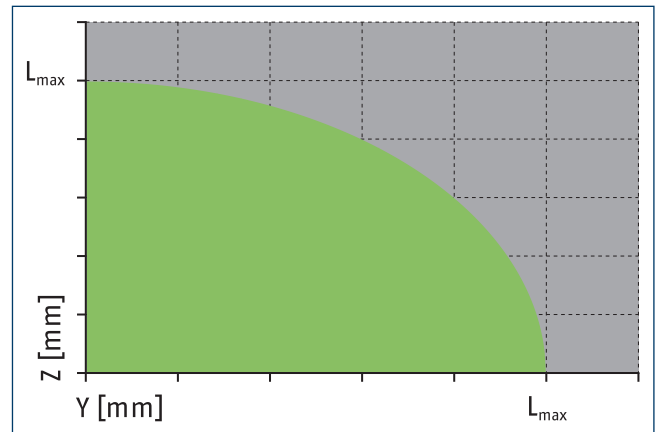
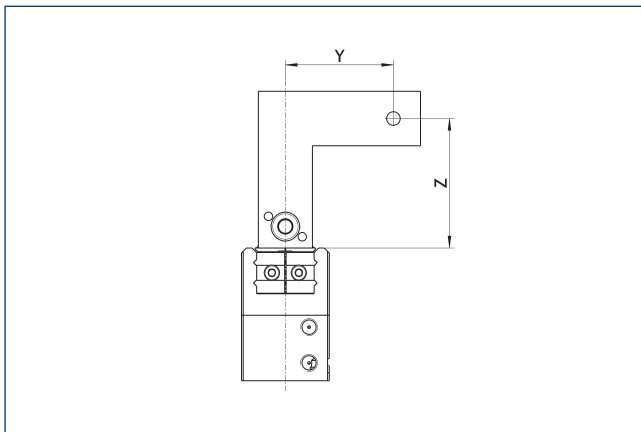
The drawing shows the basic version of the gripper with open jaws, without dimensional consideration of the options described below.

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

- A, a Main / direct connection, gripper opening
- B, b Main / direct connection, gripper closing
- ① Gripper connection
- ② Finger connection

- 72 Fit for centering sleeves
- 73 Fit for centering pins
- 80 Depth of the centering sleeve hole in the counter part
- 90 Sensor IN ...

## Maximum permitted finger projection



■ Permitted range

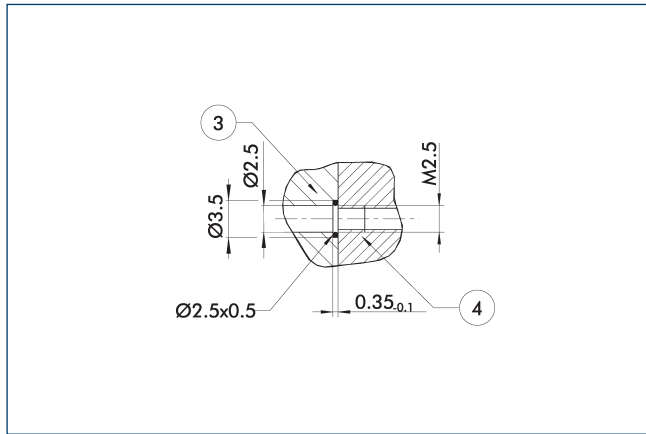
■ Inadmissible range

L<sup>max</sup> is equivalent to the maximum permitted finger length, see the technical data table.

# MPG-plus 20

Gripper for small components

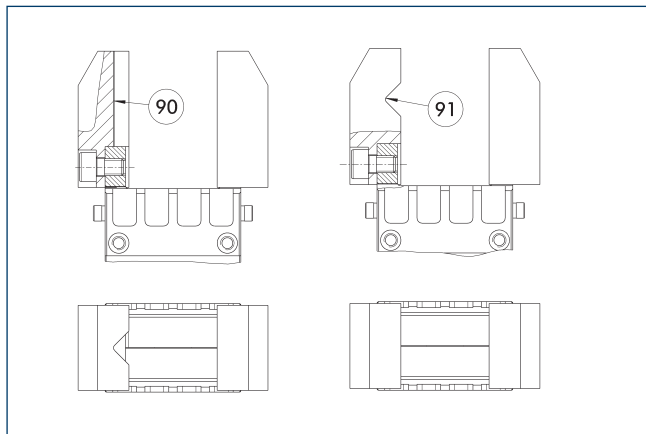
## Hose-free direct connection M2.5



- 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.

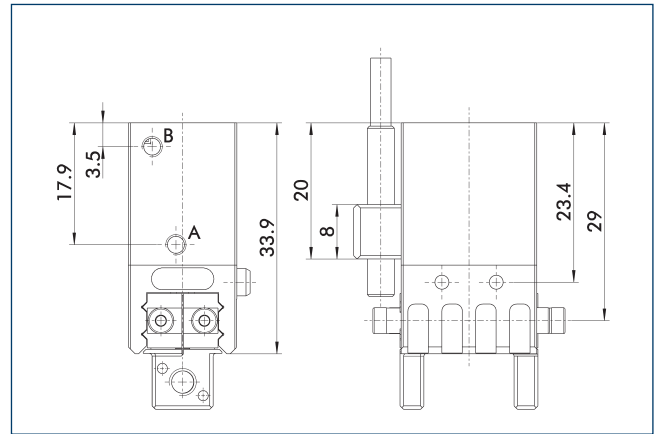
## Jaw design



- ⑨⑩ Vertically positioned prism
- ⑨① Horizontally positioned prism

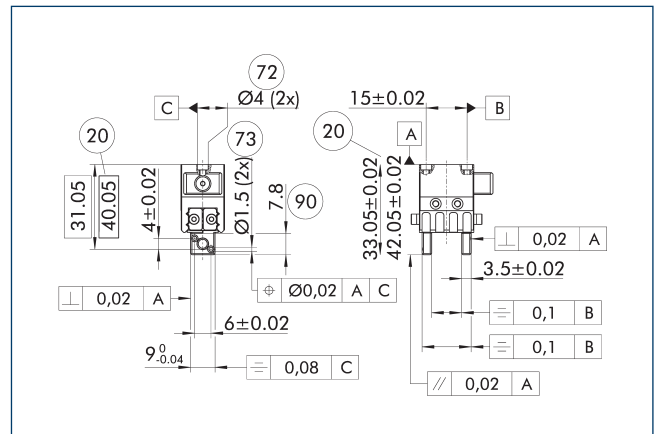
A workpiece, which is gripped using three points of contact, can be reliably gripped with high repeatability. A system with more than three points of contact is overdetermined. The drawing shows two alternative gripper finger designs for coaxial and radial gripping of a cylindrical part.

## 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.

## Precision version

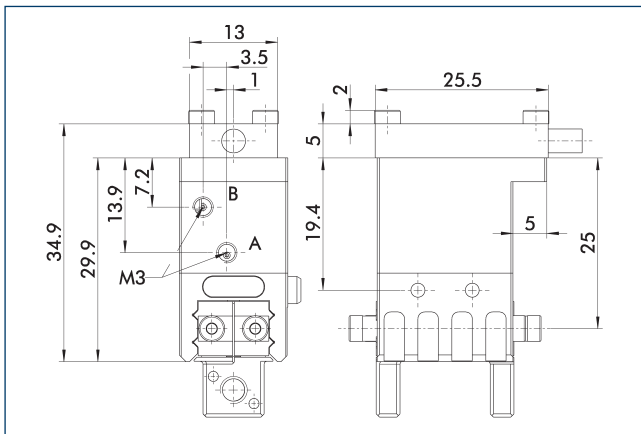


- ②① For AS / IS version
- ②② Fit for centering sleeves
- ②③ Fit for centering pins
- ②⑨⑩ Length of the usable finger surface

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.

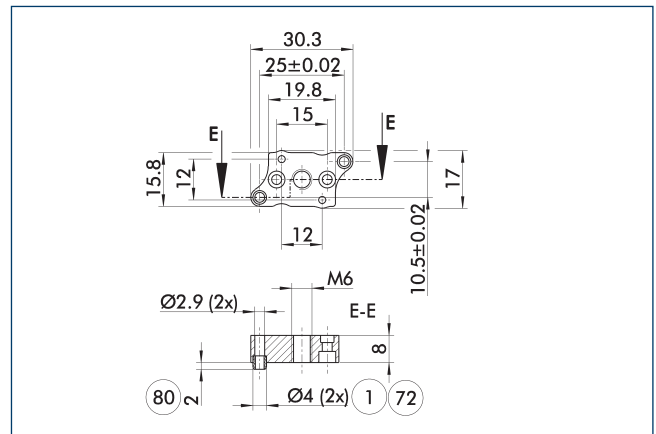


## Flexible position sensor



The following FPS position sensor can differentiate between five programmable areas or switching points for the stroke of a gripper, and can be used in connection with a PC as a measuring system.

## Adapter plate



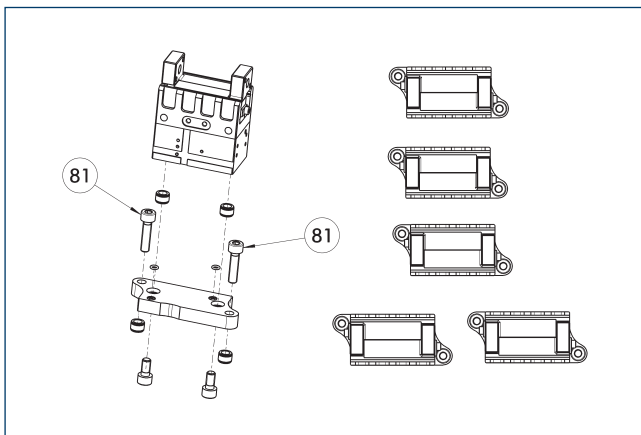
- ① Gripper connection
- ⑦② Fit for centering sleeves
- ⑧① Depth of the centering sleeve hole in the counter part

The adapter plate includes an O-ring\* for a direct air connection, additional centering sleeves, and screws for mounting the gripper.  
\*Optional only with pneumatic actuators

Description	ID
Adapter plate	
APL-MPG-plus 20	0305497

① The adapter plate is a separately ordered, optional accessory.

## Adapter plate



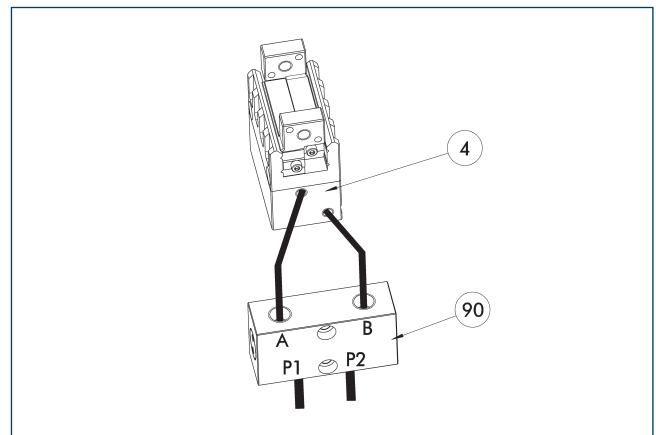
⑧① Not included in the scope of delivery

The adapter plate includes an O-ring\* for a direct air connection, additional centering sleeves, and screws for mounting the gripper.\*Optional only with pneumatic actuators

Description	ID
Adapter plate	
APL-MPG-plus 20	0305497

① The adapter plate is a separately ordered, optional accessory.

## SDV-P pressure maintenance valve



- ④ Grippers
- ⑨① SDV-P pressure maintenance valve

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

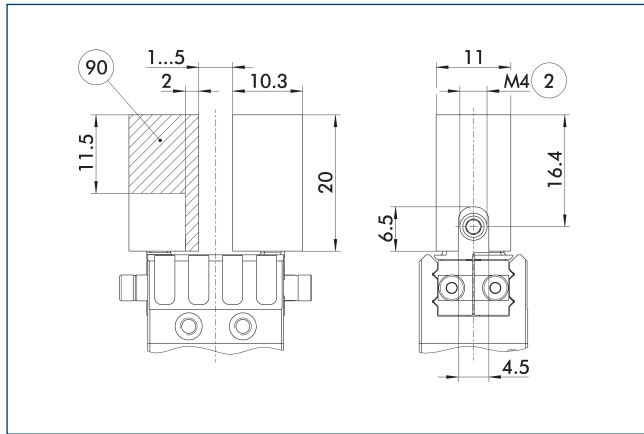
Description	ID	Recommended hose diameter [mm]
Pressure maintenance valve		
SDV-P 04	0403130	6
Pressure maintenance valve with air bleed screw		
SDV-P 04-E	0300120	6

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.

# MPG-plus 20

Gripper for small components

## Finger blanks with BSWS ABR-BSWS-MPG-plus 20

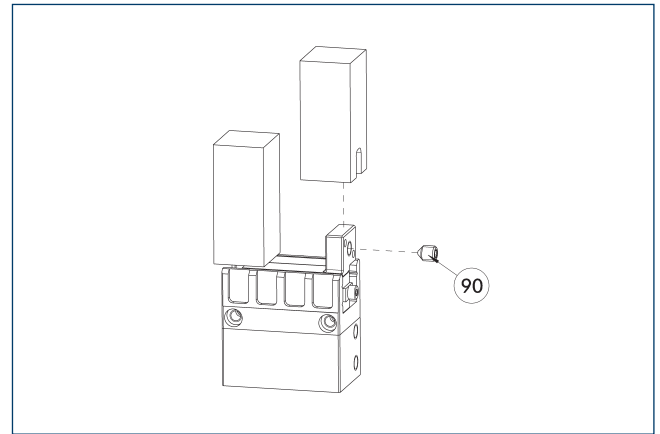


- ② Finger connection
- ⑨⑩ Machining volume

Finger blanks for customized subsequent machining with integrated jaw quick-change system for precise and fast finger changes.

Description	ID	Scope of delivery
Finger blank with jaw quick-change system		
ABR-BSWS-MPG-plus 20	0302893	2

## Finger blanks with BSWS

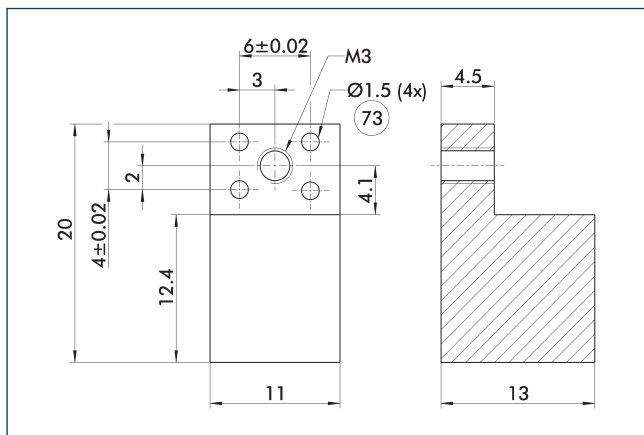


- ⑨⑩ Included in the jaw quick-change system's scope of delivery

The finger blanks with jaw quick-change system allow fast and manual gripper finger changes. The mechanical interface to the gripper is already integrated. Only the specific workpiece geometry needs to be machined into the finger blank.

Description	ID	Scope of delivery
Finger blank with jaw quick-change system		
ABR-BSWS-MPG-plus 20	0302893	2

## Finger blanks ABR-MPG-plus 20

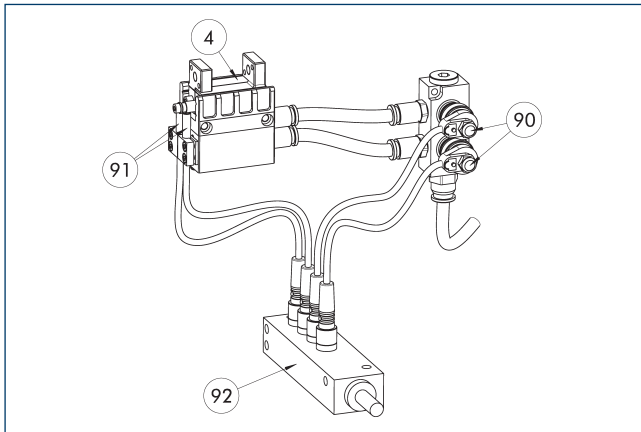


- ⑦③ Fit for centering pins

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

Description	ID	Material	Scope of delivery
Finger blank			
ABR-MPG-plus 20	0340210	Aluminum (3.4365)	2

## Attachment valves



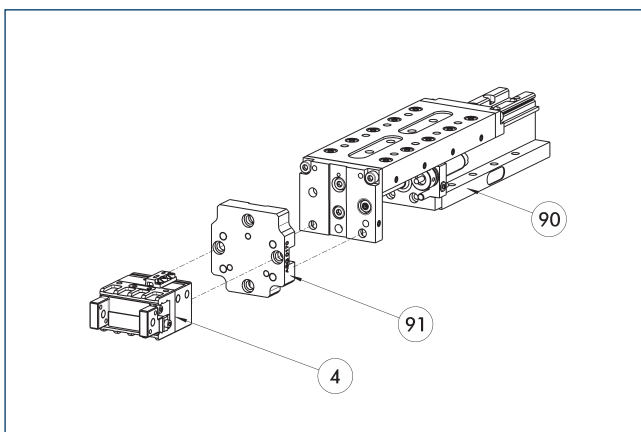
- ④ Grippers
- ⑨② Sensor distributor
- ⑨① Micro valves
- ⑨③ Y distributor
- ⑨① Sensor

The set of attachment valves reduces the compressed air consumption as there is no need to ventilate or bleed the supply lines. This can also reduce cycle time. The hose-free direct assembly of the micro valves reduces the hosing effort for the gripper. To further simplify electrical connection of the valves and sensors, their signals can be bundled via an optional distributor.

Description	ID	Often combined
Add-on valve set		
ABV-MV15-S2-M5	0303375	
ABV-MV15-S2-M5-V2-M8	0303376	
ABV-MV15-S2-M5-V4-M8	0303377	●
ABV-MV15-S2-M5-V8-M8	0303378	

① A set of add-on valves ABV is required per actuator. The ABV set contains two 3/2 micro valves, a valve base, pneumatic screw connections, and optionally a sensor distributor with two, four or eight inputs and outputs. Sensors for monitoring the gripper need to be ordered separately. Pneumatic hoses are not included in the scope of delivery.

## Modular Assembly Automation



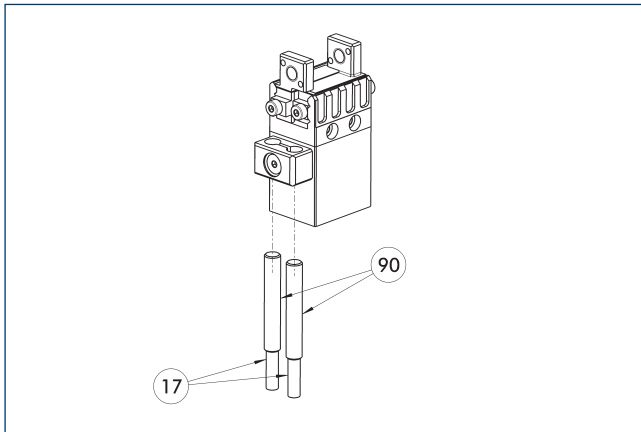
- ④ Grippers
- ⑨① ASG adapter plate
- ⑨① CLM/KLM/LM/ELP/ELM/ELS/HLM linear modules

Grippers and linear modules can be combined with standard adapter plates from the modular assembly system. For more information see our main catalog "Modular Assembly Automation".

# MPG-plus 20

Gripper for small components

## Inductive proximity switches



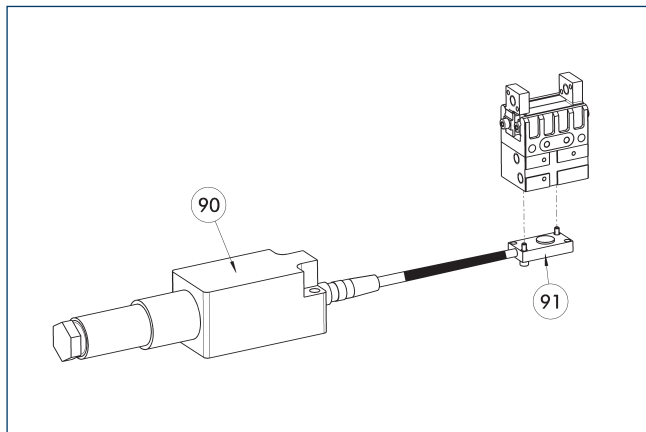
17 Cable outlet

90 Sensor IN ...

Description	ID	Often combined
<b>Inductive proximity switches</b>		
IN 40-S-M12	0301574	
IN 40-S-M8	0301474	●
INK 40-S	0301555	
<b>Connection cables</b>		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BG12-L 3P-0500-PNP	30016369	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
KA BW12-L 3P-0300-PNP	0301503	
KA BW12-L 3P-0500-PNP	0301507	
<b>clip for plug/socket</b>		
CLI-M12	0301464	
CLI-M8	0301463	
<b>Cable extension</b>		
KV BG12-SG12 3P-0030-PNP	0301999	
KV BG12-SG12 3P-0060-PNP	0301998	
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
KV BW12-SG12 3P-0030-PNP	0301595	
KV BW12-SG12 3P-0100-PNP	0301596	
KV BW12-SG12 3P-0200-PNP	0301597	
<b>Sensor distributor</b>		
V2-M12	0301776	●
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.

## Flexible position sensor



90 FPS-F5 evaluation electronic      91 FPS-S sensor

The FPS monitoring is only possible for this size in combination with the appropriate FPS variant of the gripper.

Description	ID	Often combined
<b>Sensor</b>		
FPS-S 13	0301705	
<b>Evaluation electronics</b>		
FPS-F5	0301805	●
<b>Cable extension</b>		
KV BG08-SG08 3P-0050	0301598	
KV BG08-SG08 3P-0100	0301599	
<b>Connection cables</b>		
KA BG16-L 12P-1000	0301801	
<b>clip for plug/socket</b>		
CLI-M8	0301463	

① When using an FPS system, an FPS sensor (FPS-S) as well as an electronic processor (FPS-F5 / F5 T) are required for each gripper as well as a mounting kit (AS), if listed. Cable extensions (KV) are optionally available – see catalog chapter "Accessories."



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**Spann- und Greiftechnik**

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