

Precise. Compact. Reliable.

MPG Miniature Parallel Gripper

2-finger parallel gripper with smooth running base jaws guided on roller bearings

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 benefit

Cross roller guidance for precise gripping through base jaw guidance with minimum play

Base jaws guided on double roller bearings ensuring low friction and smooth running actuation

Mounting from two sides in three 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



Sizes
Quantity: 9



Weight
0.01 .. 0.7 kg



Gripping force
7 .. 270 N



Stroke per jaw
1 .. 10 mm



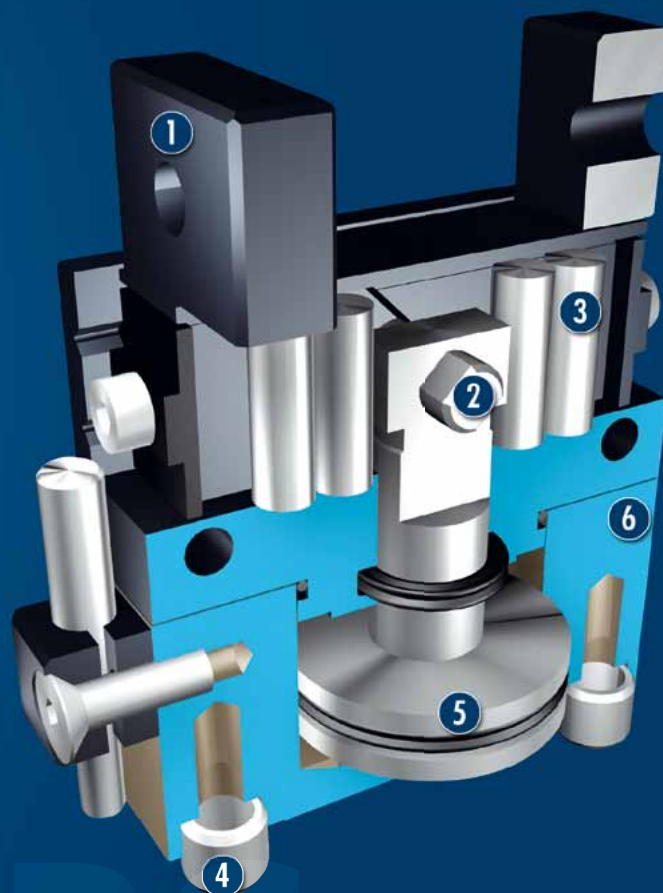
Workpiece weight
0.05 .. 1.0 kg



Functional Description

The piston is moved up or down by compressed air. The side hooks at the upper end of the piston rod guide in the angular slots of both base jaws, and thus transform

this movement into the synchronized opening or closing of the base fingers.



- ① **Base jaw**
for the connection of workpiece-specific gripper fingers
- ② **Wedge-hook design**
for high power transmission and centric gripping
- ③ **Cross roller guidance**
Precise gripping through base jaw guide with minimum play
- ④ **Centering and mounting possibilities**
for assembly of the gripper to a base area and at the long side
- ⑤ **Drive**
Double-acting piston drive system
- ⑥ **Housing**
Weight-optimized through application of high-strength aluminum alloy

CAD data, operating manuals and other current product documents are available at www.schunk.com

General Notes about the Series

Operating principle: Wedge-hook kinematics

Housing material: Aluminum alloy, anodized

Cover material: Steel

Base jaw material: Steel

Actuation: pneumatic, with filtered compressed air as per DIN ISO 8573-1: 7 4 4

Warranty: 24 months (details, general terms and conditions and operating manuals can be downloaded at www.schunk.com)

Scope of delivery: Mount for proximity switch, centering sleeves, O-rings for direct connection, assembly and operating manual with declaration of incorporation.

Gripping force maintenance device: possible with variants with mechanical maintenance of gripping force or SDV-P pressure maintenance valve

Gripping force: is the arithmetic total of the gripping force applied to each gripper jaw at distance P (see illustration).

Finger length: is measured from the upper edge of the gripper housing in the direction of the main axis. The breach of the max. permitted finger length can bring higher abrasion. The maximum permissible finger length applies up to the nominal operating pressure. With higher pressures, the finger length must be reduced proportionally to the nominal operating pressure.

Repeat accuracy: is defined as the spread of the limit position after 100 consecutive strokes.

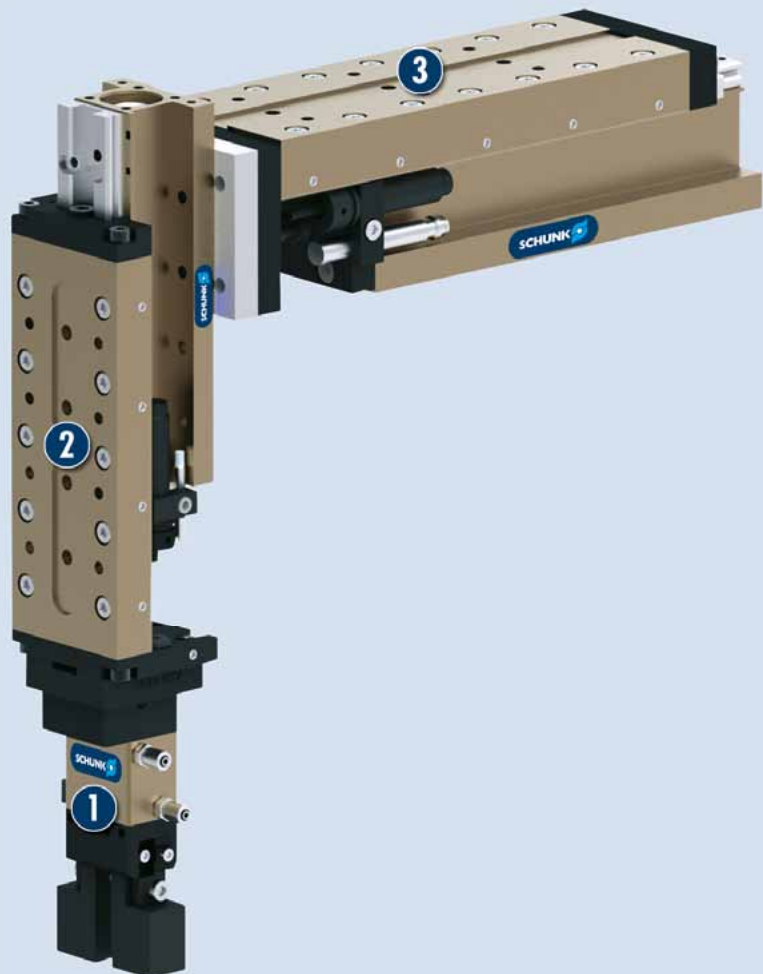
Workpiece weight: is calculated for a force-fit connection with a coefficient of friction of 0.1 and a safety factor of 2 against slippage of the workpiece on acceleration due to gravity g. Considerably heavier workpiece weights are permitted with form-fit gripping.

Closing and opening times: are purely the times that the base jaws or fingers are in motion. Valve switching times, hose filling times or PLC reaction times are not included in the above times and must be taken into consideration when determining cycle times.

Application example

Pneumatically driven, two axis assembly machine for small components

- ① MPG 2-Finger Parallel Gripper with standard finger blanks
- ② CLM Mini-slide for vertical movement
- ③ CLM Mini-slide for horizontal movement



SCHUNK offers more ...

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



Sensor System



Sensor Cables



Sensor Distributor



Flexible Position Sensor



Fittings



SDV-P Pressure Maintenance Valve



Finger Blanks



Switching Valve



Gripper Pads



Carbide Clamping Inserts



Plastic Inserts



Centering Sleeves

① Further information regarding the products can be found on the following product pages or at www.schunk.com. Please contact us for further information: SCHUNK technical hotline +49-7133-103-2696

Options and special Information

Gripping force maintenance version AS / IS: The mechanical gripping force maintenance version ensures a minimum gripping force also in the case of a drop in pressure. In the AS / S version this has the effect of a closing force, in the IS version of an opening force.

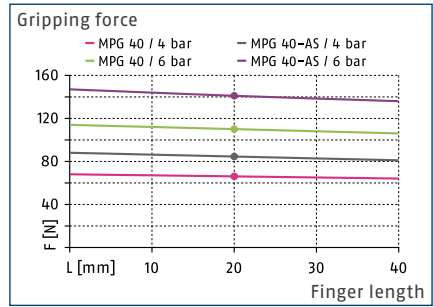
Additional mounting bores: for centering the fingers via sleeves, instead of normal mounting surfaces. Special versions on request.

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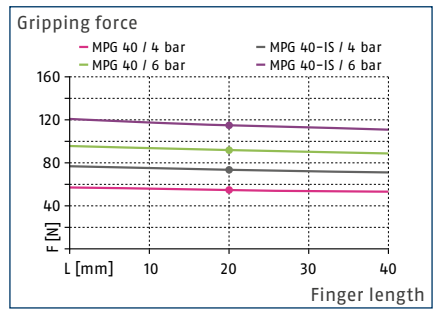
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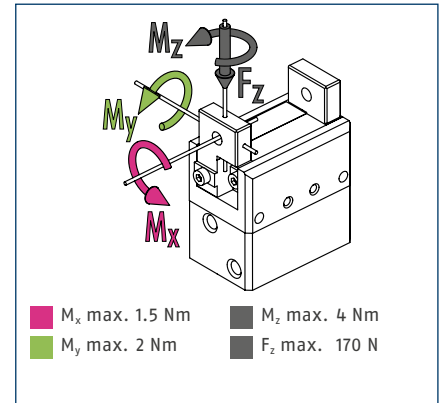
Gripping force, O.D. gripping



Gripping force, I.D. gripping



Finger load

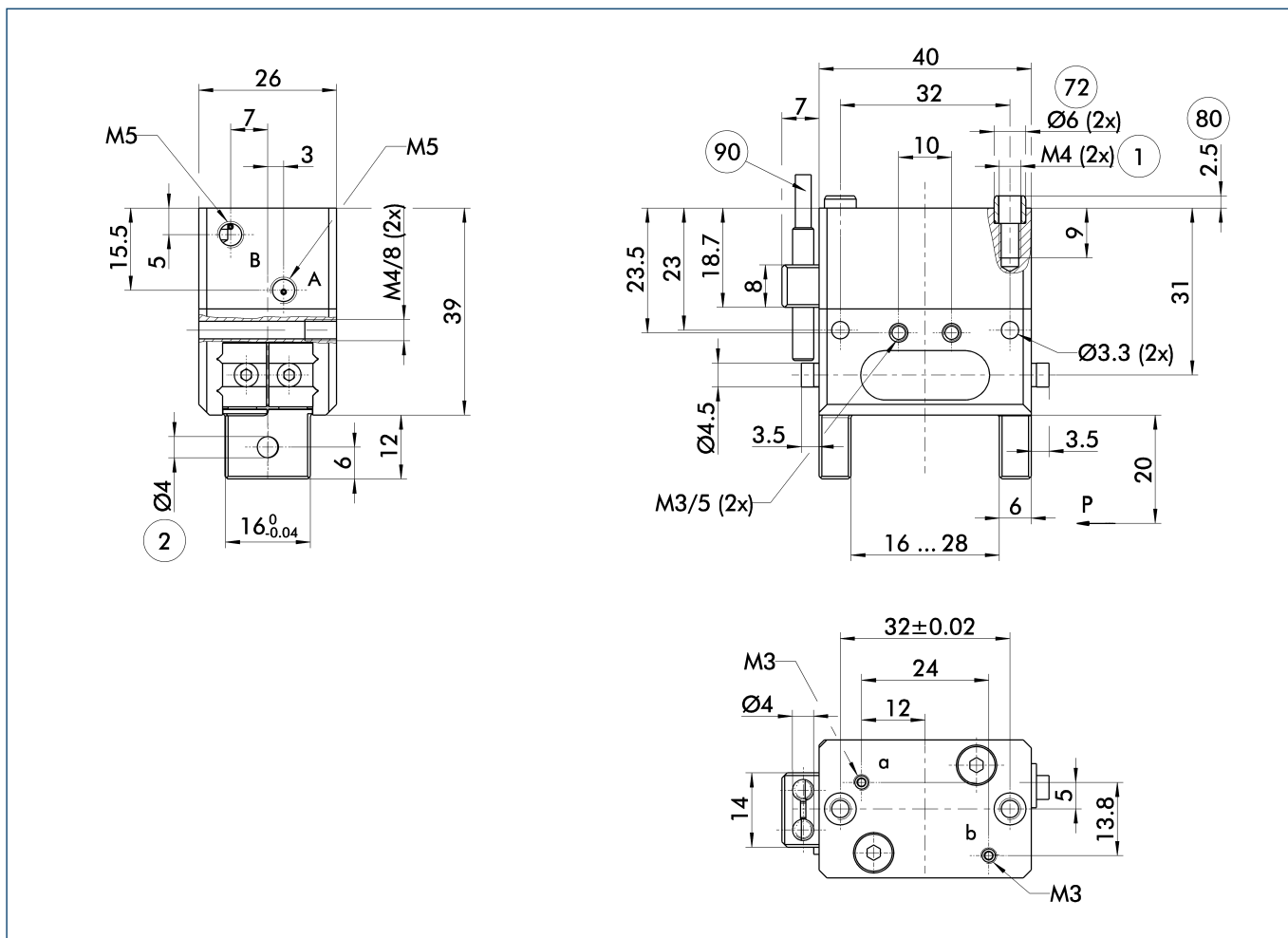


① The indicated moments and forces are static values, apply per base jaw and may occur simultaneously. M_y may arise in addition to the moment generated by the gripping force itself. If the max. permitted finger weight is exceeded, it is impreative to throttle the air supply so that the jaw movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description		MPG 40	MPG 40-AS	MPG 40-IS
ID		0340012	0340042	0340062
Stroke per jaw	[mm]	6	6	6
Closing- / opening force	[N]	110/90	145/-	-/115
min. spring force	[N]		35	25
Weight	[kg]	0.2	0.26	0.26
Recommended workpiece weight	[kg]	0.55	0.55	0.55
Fluid consumption per double stroke	[cm ³]	3.6	10.4	8.5
min. / max. operating pressure	[bar]	2/8	4/6.5	4/6.5
Nominal operating pressure	[bar]	6	6	6
Closing- / opening time	[s]	0.05/0.05	0.055/0.08	0.08/0.055
Closing- / opening time only with spring	[s]		0.20	0.20
max. permitted finger length	[mm]	40	40	40
max. permitted weight per finger	[kg]	0.08	0.08	0.08
IP class		30	30	30
min. / max. ambient temperature	[°C]	5/90	5/90	5/90
Repeat accuracy	[mm]	0.02	0.02	0.02
Cleanroom class ISO 14644-1		5	5	5

Main view



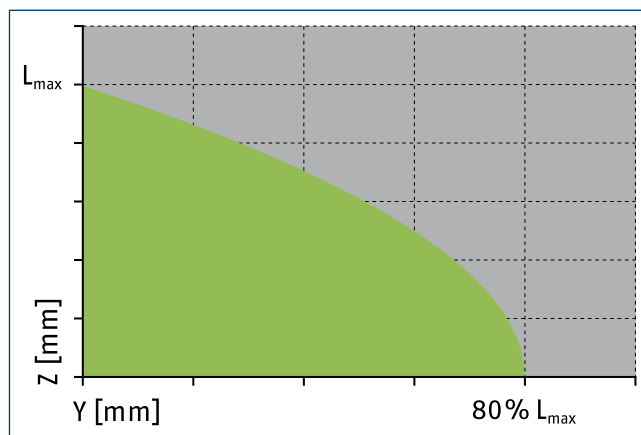
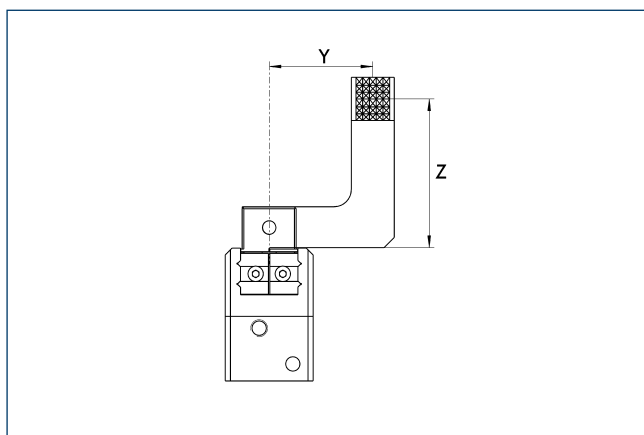
The drawing shows the basic version of the gripper with open jaws, without dimensional consideration of the options described below.

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
 ⑧① Depth of the centering sleeve hole in the mating part
 ⑨① IN ... sensor

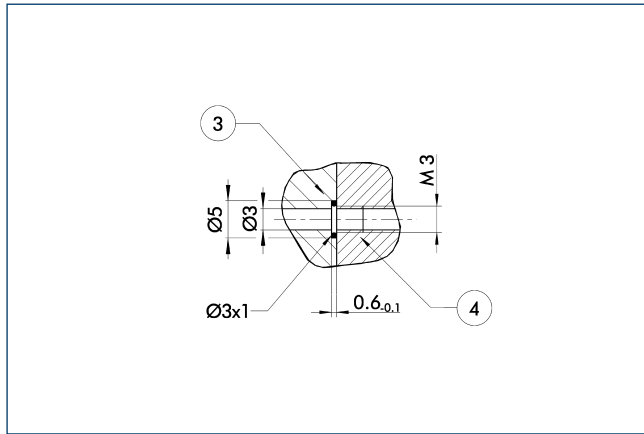
Maximum permitted finger projection



■ Permitted range ■ Inadmissible range

L_{max} is equivalent to the maximum permitted finger length, see the chart of technical specifications.

Hose-free direct connection M3

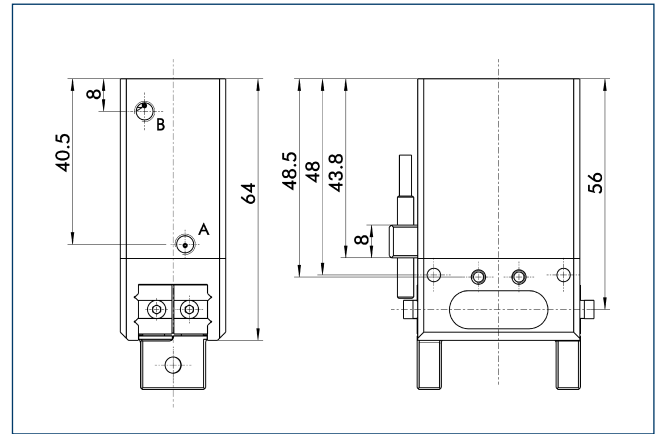


③ Adapter

④ Gripper

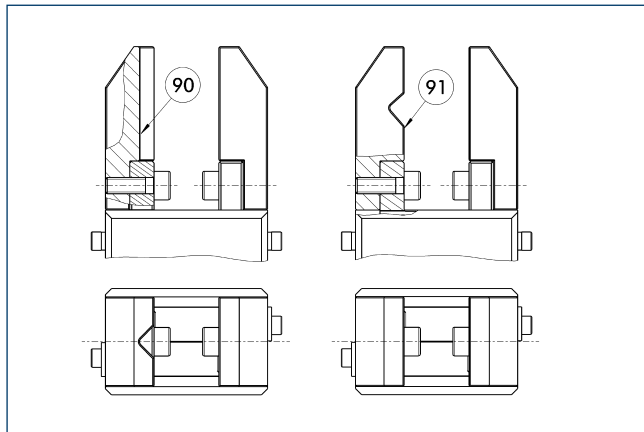
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

Gripping force maintenance device AS / IS



The mechanical maintenance of gripping force also assures a minimum gripping force in the case of a loss of pressure. With the AS / S variant, this acts as a closing force, and as an opening force for the IS variant. The maintenance of gripping force element can also be used as a means for increasing gripping force or for single actuated gripping.

Jaw design

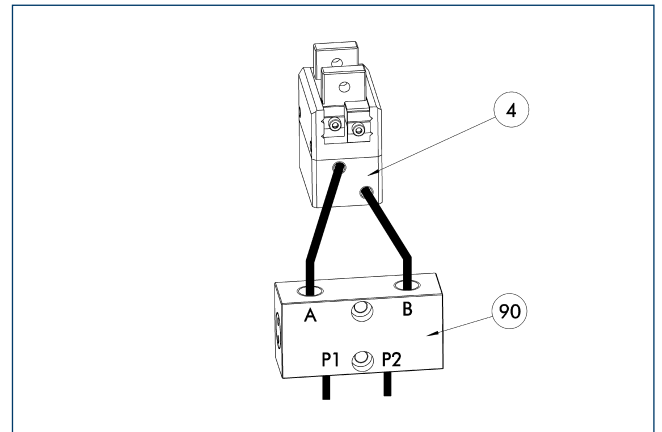


⑨ Vertical prism

⑨ Horizontal prism

A three-point support of the gripped workpiece is beneficial for gripping the workpiece with repeat accuracy and process reliability. More than three support points lead to a redundancy of the system. The drawing shows two alternative recommendations for the jaw design for coaxial and radial gripping of a cylindrical part.

SDV-P pressure maintenance valve



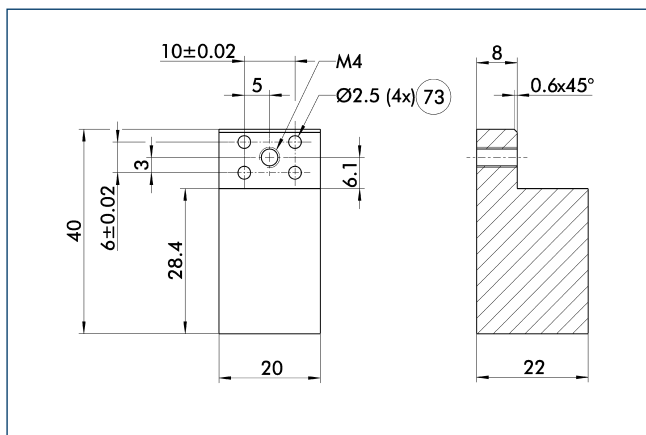
④ Gripper

⑨ SDV-P pressure maintenance valve

The SDV-P pressure maintenance valves ensure that the pressure in the piston chamber of pneumatic gripping, rotary, linear, and quick-change modules is maintained temporarily during an emergency stop.

Description	ID	
Pressure maintenance valve		
SDV-P 04	0403130	

ABR-MPG-plus 40 finger blanks

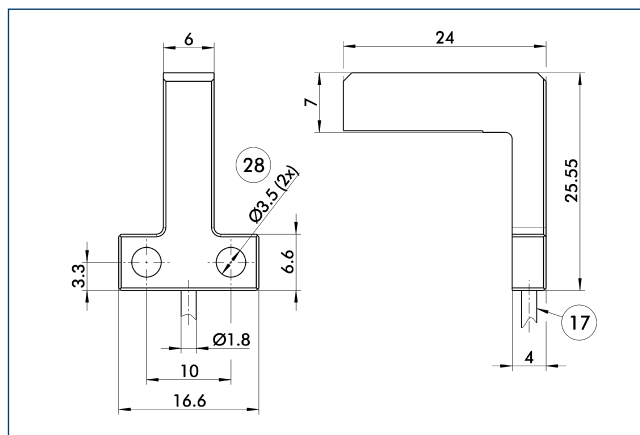


73 Fit for centering pins

Finger blanks for customized subsequent machining.

Description	ID	Material	Scope of delivery
Finger blanks			
ABR-MPG-plus 40	0340213	Aluminum	2

OAS-MPG-plus 40 object distance sensor

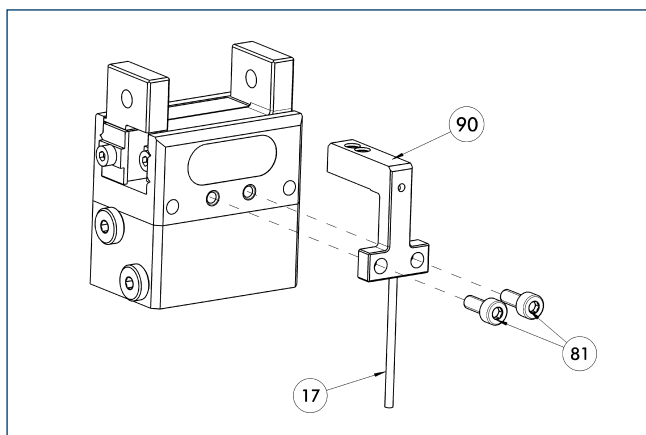


17 Cable outlet

28 Through-bore

Description	ID
Object distance sensor	
OAS-MPG-plus 40	0308893

Object distance sensor



17 Cable outlet

90 OAS

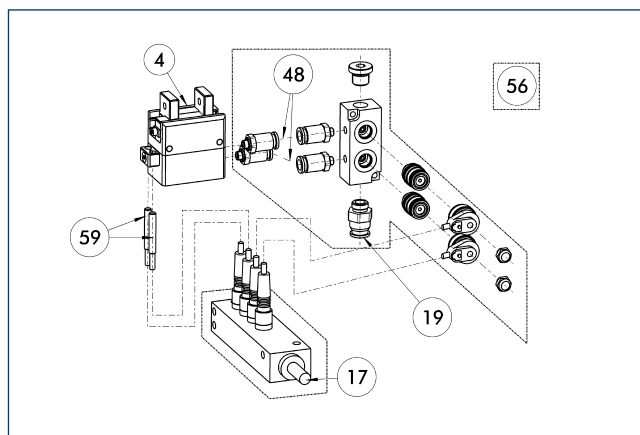
81 Not included in the scope of delivery

Optical distance and presence sensor for direct mounting on the gripper. One OAS sensor per gripper can be assembled.

Description	ID
Object distance sensor	
OAS-MPG-plus 40	0308893
Electronic processor	
OAS-V09-D	0308865
OAS-V10-A	0308867
OAS-V10-D	0308866

The evaluation of the OAS can be done with either an analog or digital evaluation unit and with or without a display. The states which should be detected can be simply taught.

Attachment valves



4 Gripper

48 Hose

17 Cable outlet

56 Included in delivery

19 Air connection

59 Monitoring gripping

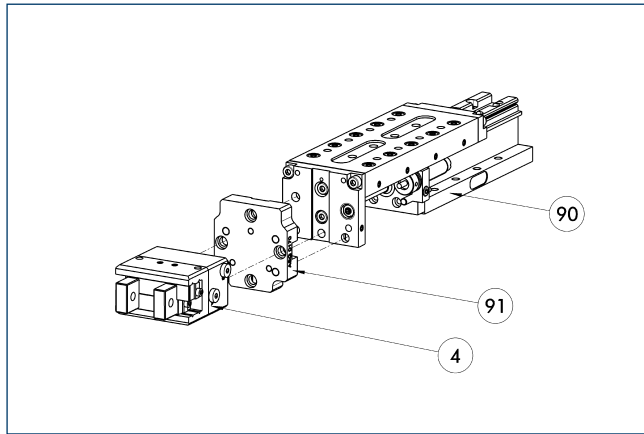
For each unit one attachment valve ABV is required, optional with distributor for sensors and valves. Attachment valves increase the efficiency, reduce the installation work and air consumption and simplify air supply. For details please refer to the "Accessories" catalog section.

Description	ID
Attachment valves	
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

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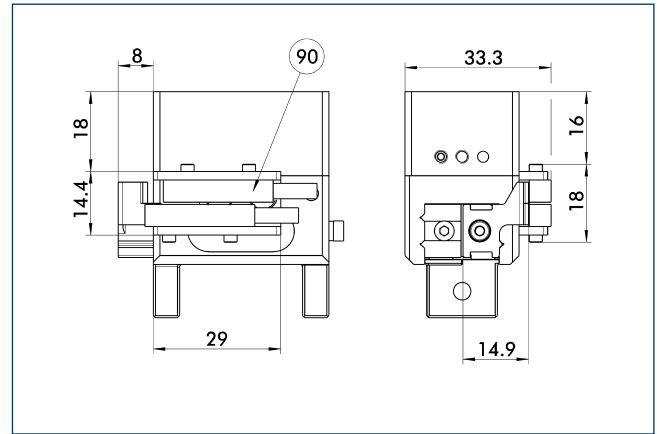
Modular assembly automation



- ④ Gripper
- ⑨① ASG adapter plate
- ⑨① CLM / KLM / LM / ELM / ELS / HLM linear module

Gripper and linear modules can be combined with standard adapters out of the modular assembly system. For more information see our catalog "Modular Assembly Automation".

Mounting kit for proximity switch



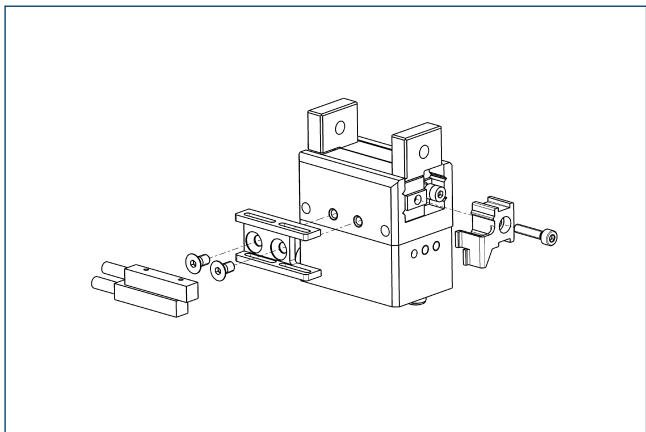
- ⑨① IN ... sensor

The mounting kit comprises mount, switching lug / cam and mounting screws. Proximity switches must be ordered separately.

Description	ID
Mounting kit for proximity switch	
AS-IN5-MPG-plus 40	0340152

- ① This mounting kit needs to be ordered optionally as an accessory.

Inductive proximity switches

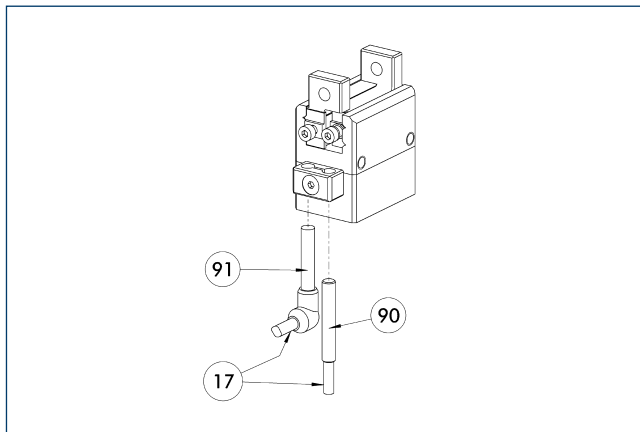


Limit position monitor can be mounted with mounting kit.

Description	ID	Often combined
Mounting kit for proximity switch		
AS-IN5-MPG-plus 40	0340152	
Inductive proximity switches		
IN 5-S-M12	0301569	
IN 5-S-M8	0301469	●
Cable extensions		
KV BG12-SG12 3P-0030-PNP	0301999	
KV BG12-SG12 3P-0060-PNP	0301998	
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
KV BW12-SG12 3P-0030-PNP	0301595	
KV BW12-SG12 3P-0100-PNP	0301596	
KV BW12-SG12 3P-0200-PNP	0301597	
Clip for plug / socket		
CLI-M12	0301464	
CLI-M8	0301463	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BG12-L 3P-0500-PNP	30016369	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
KA BW12-L 3P-0300-PNP	0301503	
KA BW12-L 3P-0500-PNP	0301507	
Sensor distributor		
V2-M8	0301775	●
V2-M12	0301776	●
V4-M12	0301747	
V4-M8	0301746	
V8-M12	0301752	
V8-M8	0301751	

① Two sensors (closer/S) are required for each unit, plus extension cables as an option. This mounting kit needs to be ordered optionally as an accessory. Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.

Inductive proximity switches



①7 Cable outlet

①90 IN ... sensor

①91 IN ...-SA sensor

Directly mounted limit position monitor.

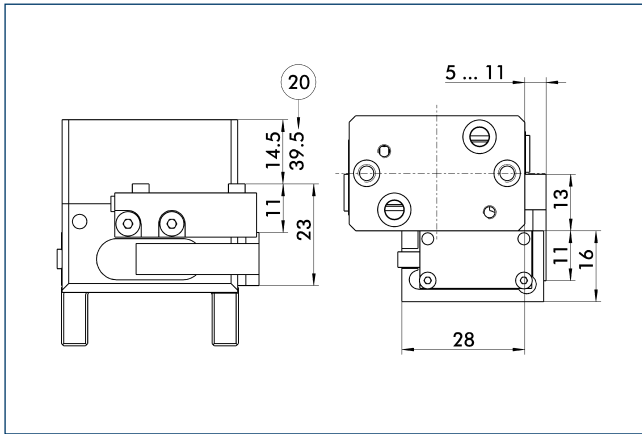
Description	ID	Often combined
Inductive proximity switches		
IN 40-S-M12	0301574	
IN 40-S-M8	0301474	●
INK 40-S	0301555	
Inductive proximity switches with lateral outlet		
IN 40-S-M12-SA	0301577	
IN 40-S-M8-SA	0301473	●
INK 40-S-SA	0301565	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BG12-L 3P-0500-PNP	30016369	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
KA BW12-L 3P-0300-PNP	0301503	
KA BW12-L 3P-0500-PNP	0301507	
Clip for plug / socket		
CLI-M12	0301464	
CLI-M8	0301463	
Cable extensions		
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	
Sensor distributor		
V2-M12	0301776	●
V2-M8	0301775	●
V4-M12	0301747	
V4-M8	0301746	

① Two sensors (closer/S) are required for each unit, plus extension cables as an option. Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.

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Mounting kit for FPS



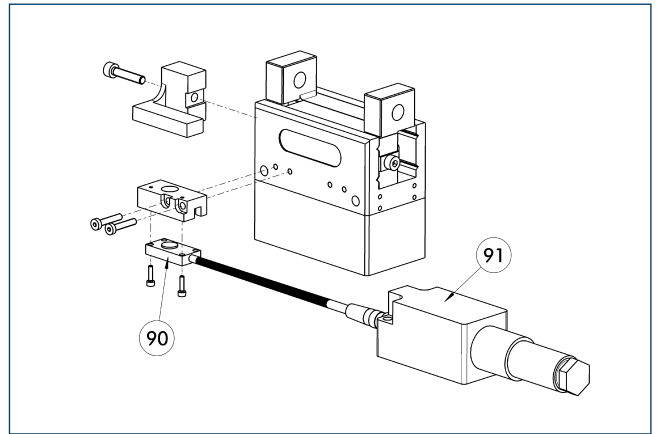
②① For AS / IS version

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

Description	ID
Mounting kit for FPS	
AS-FPS-MPG-plus 40	0301762

① This mounting kit needs to be ordered optionally as an accessory.

Flexible position sensor



⑨① FPS-S sensor

⑨① FPS-F5 / -F5 T electronic processor

Flexible position monitoring of up to five positions.

Description	ID	Often combined
Mounting kit for FPS		
AS-FPS-MPG-plus 40	0301762	
Sensor		
FPS-S 13	0301705	
Electronic processor		
FPS-F5	0301805	●
FPS-F5 T	0301807	

① When using a FPS system, a FPS sensor (FPS-S) and a control unit (FPS-F5 / F5 T) are required for each gripper as well as a mounting kit (AS), if listed. Cable extensions (KV) are available as options in the "Accessories" catalog section.

