



SCHUNK MPZ 16 Gripper for Small Components Installation Guide

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SCHUNK MPZ 16 Gripper for Small Components



Product Information

Gripper for small components MPZ 16 MPZ

- Gripper for small components
- Precise. Compact. Reliable. Gripper for small components MPZ
- Small 3-finger centric gripper with base jaws guided on T-slots

Field of application:

- For universal use in clean to slightly dirty working environments, especially suitable for gripping small workpieces
- T-slot guidance for precise gripping at high-moment loads
- Finger position monitoring also possible via FPS
- 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
- **Sizes Quantity:** 6
- **Weight:** 0.01 .. 0.29 kg
- **Gripping force:** 20 .. 310 N
- **Stroke per jaw:** 1 .. 5 mm
- **Workpiece weight:** 0.05 .. 1.15 kg

Product Usage Instructions

- The gripper is pneumatically driven and moves the piston up and down using compressed air.

- The angled active surfaces of the wedge hook produce a synchronized, centric jaw movement.

General Notes:

- Finger length is measured from the reference surface as the distance P in the direction of 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 the 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 should be considered when calculating cycle times.

Application Example:

Pneumatically driven 2-axis line gantry with centric gripper for gripping and repositioning small round workpieces.

Options and Special Information:

- MPZ 16 Gripper for small components
- Gripping force O.D. gripping
- Gripping force
- Dimensions and maximum loads
- Point P – Finger length
- Gripping force I.D. gripping
- Gripping force
- Mx max. 0.5 Nm My max. 0.8 Nm
- Mz max. 0.9 Nm Fz max. 50 N

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.

SCHUNK offers more ...

- Miniature swivel unit
- Linear module
- Pick & Place Unit
- Quick change system
- Flexible position sensor
- Micro valve
- Pressure maintenance valve
- Finger blank
- Magnetic switches

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

Precise. Compact. Reliable.

Gripper for small components MPZ

- Small 3-finger centric gripper with base jaws guided on T-slots

Field of application

- for universal use in clean to slightly dirty working environments, especially suitable for gripping small workpieces

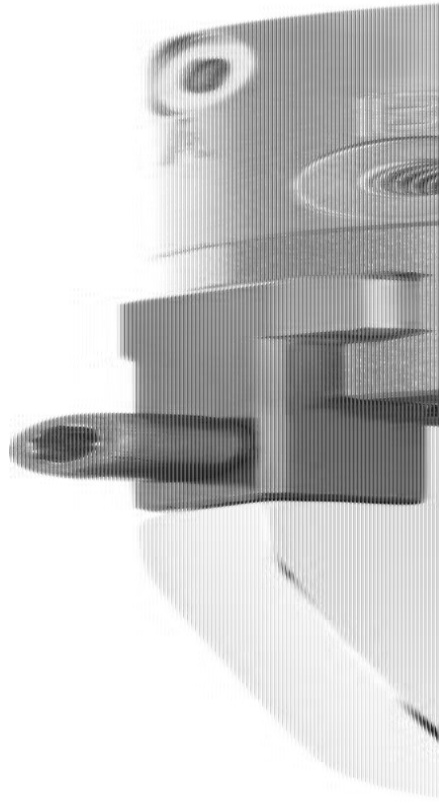
Advantages – Your benefits

- T-slot guidance for precise gripping at high-moment loads
- Finger position monitoring also possible via FPS
- 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

 Sizes Quantity: 6	 Weight 0.01 .. 0.29 kg	 Gripping force 20 .. 310 N	 Stroke per jaw 1 .. 5 mm	 Workpiece weight 0.05 .. 1.15 kg
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Functional description

The piston is moved up and down by compressed air. The angled active surfaces of the wedge-hook produce a synchronized, centric jaw movement.



1. T-slot guidance for precise gripping with high-moment loads
2. Wedge-hook design for high-force transmission and centric gripping
3. Housing is weight-optimized due to the use of high-strength aluminum alloy
4. Drive pneumatic, efficient, and easy to handle

General notes about the series

- Operating principle: Wedge-hook kinematics
- Housing material: Aluminum alloy, anodized
- Base jaw material: Steel
- Actuation: pneumatic, with filtered compressed air as per ISO 8573-1:2010 [7:4:4].
- Warranty: 24 months
- Scope of delivery: Centering sleeves, centering pins,
- 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

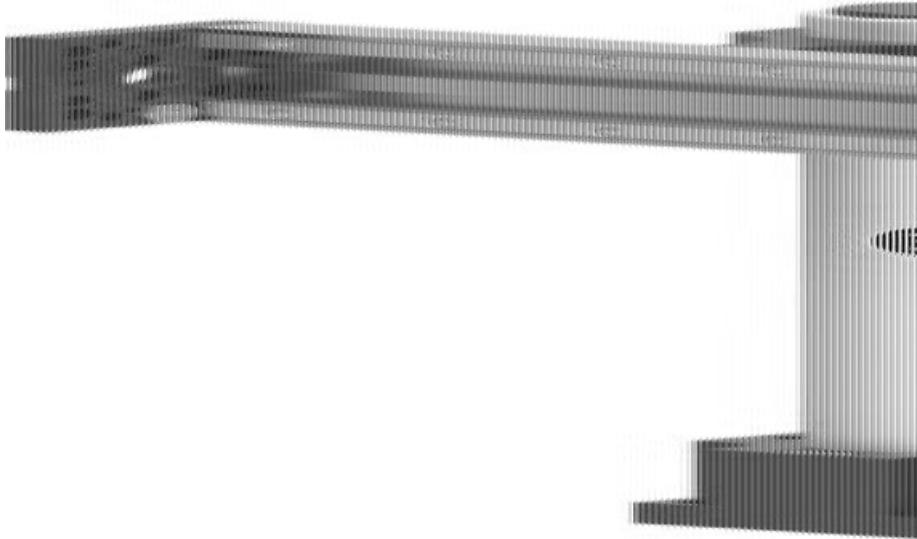
Gripping force: is the arithmetic sum of the individual force applied to each jaw at distance P (see illustration).

- 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

Pneumatically driven 2-axis line gantry with centric gripper for gripping and repositioning small round workpieces



1. 3-finger centric gripper MPZ
2. Linear module LM
3. Pillar assembly system SAS

SCHUNK offers more ...

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





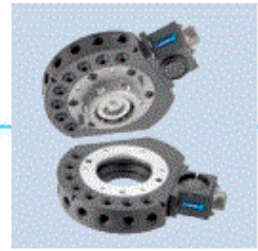
Miniature swivel unit



Linear module



Pick & Place Unit



Quick change system



Flexible position sensor



Micro valve



Pressure maintenance valve



Finger blank



Magnetic switches

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

Options and special information

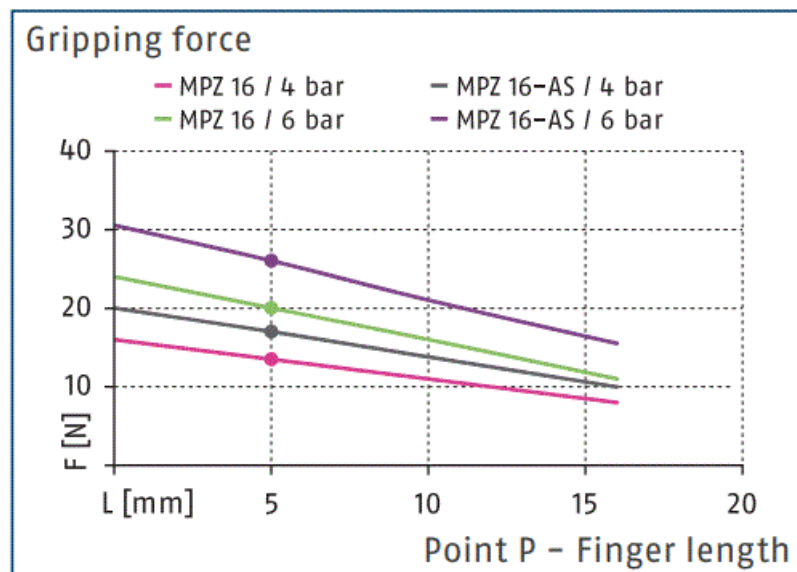
Gripping force maintenance version AS/IS: The mechanical gripping force maintenance version ensures minimum gripping force even in the event of a pressure drop. In the AS/S version this acts as a closing force, in the IS version as an opening force.

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.

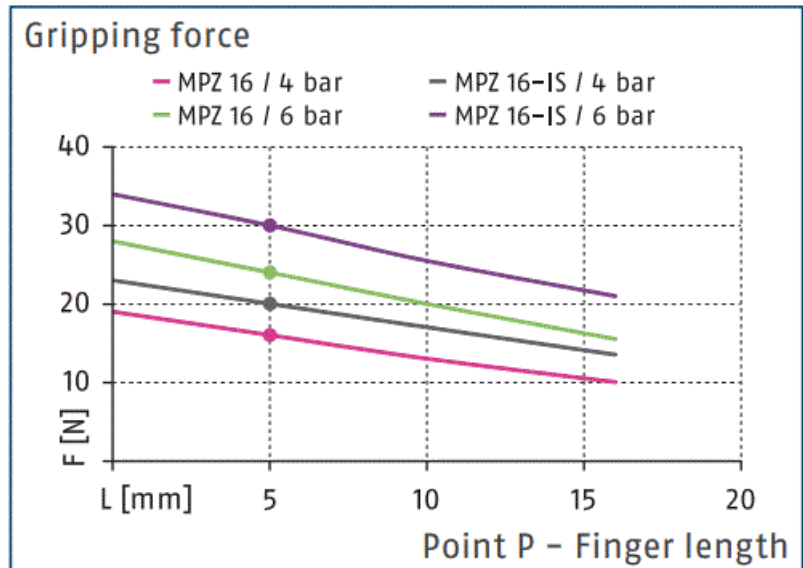
NEW: Version with food -compliant lubrication (H1G): as a solution for an easy entry into medical technology, lab automa-tion, pharmaceutical and food industry. The requirements of EN 1672-2:2020 are not fully met.



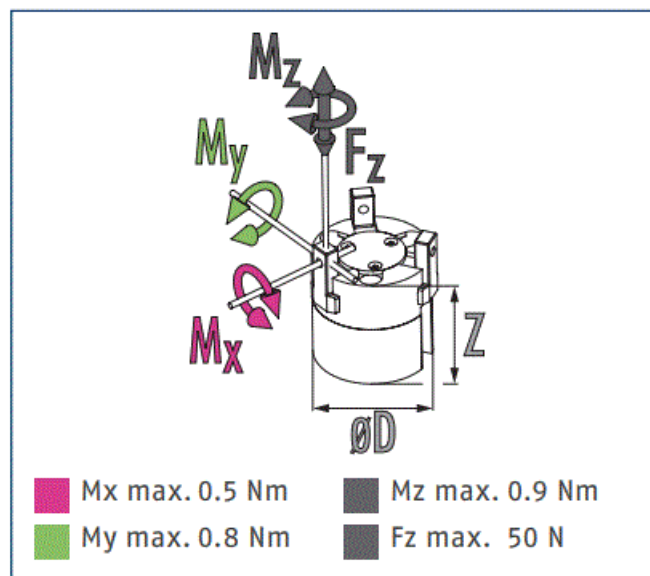
Gripping force O.D. gripping



Gripping force I.D. gripping



Dimensions and maximum loads



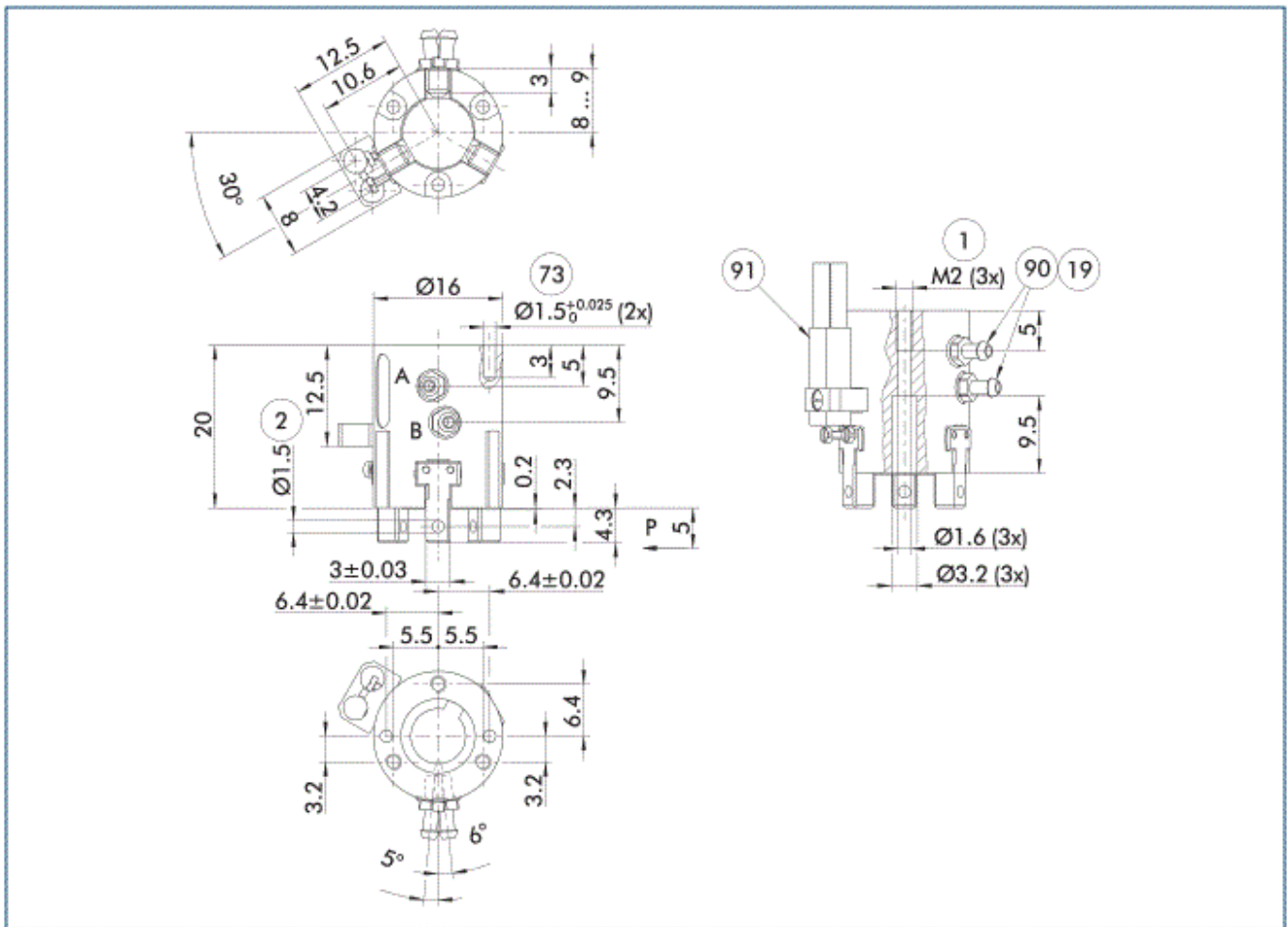
- The indicated moments and forces are static values, apply for each base jaw, and may appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

Technical data

Description		MPZ 16	MPZ 16-AS	MPZ 16-IS
ID		0340480	0340481	0340482
Stroke per jaw	[mm]	1	1	1
Closing/opening force	[N]	20/24	26/-	-/30
Min. spring force	[N]		6	6
Weight	[kg]	0.01	0.02	0.02
Recommended work piece weight	[kg]	0.05	0.05	0.05
Fluid consumption double stroke	[cm³]	0.15	0.4	0.4
Min./nom./max. operating pressure	[bar]	2/6/8	4/6/6.5	4/6/6.5
Closing/opening time	[s]	0.02/0.02	0.02/0.04	0.04/0.02
Closing/opening time with spring	[s]		0.20	0.20
Max. permissible finger length	[mm]	16	16	16
Max. permissible mass per finger	[kg]	0.02	0.02	0.02
IP protection class		40	40	40
Min./max. ambient temperature	[°C]	5/90	5/90	5/90
Repeat accuracy	[mm]	0.01	0.01	0.01
Cleanroom class ISO 14644-1:1999		5	5	5
Dimensions Ø D x Z	[mm]	16 x 20	16 x 26	16 x 26
Options and their characteristics				
H1 grease version		1475795	1475796	1475797

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

Main view



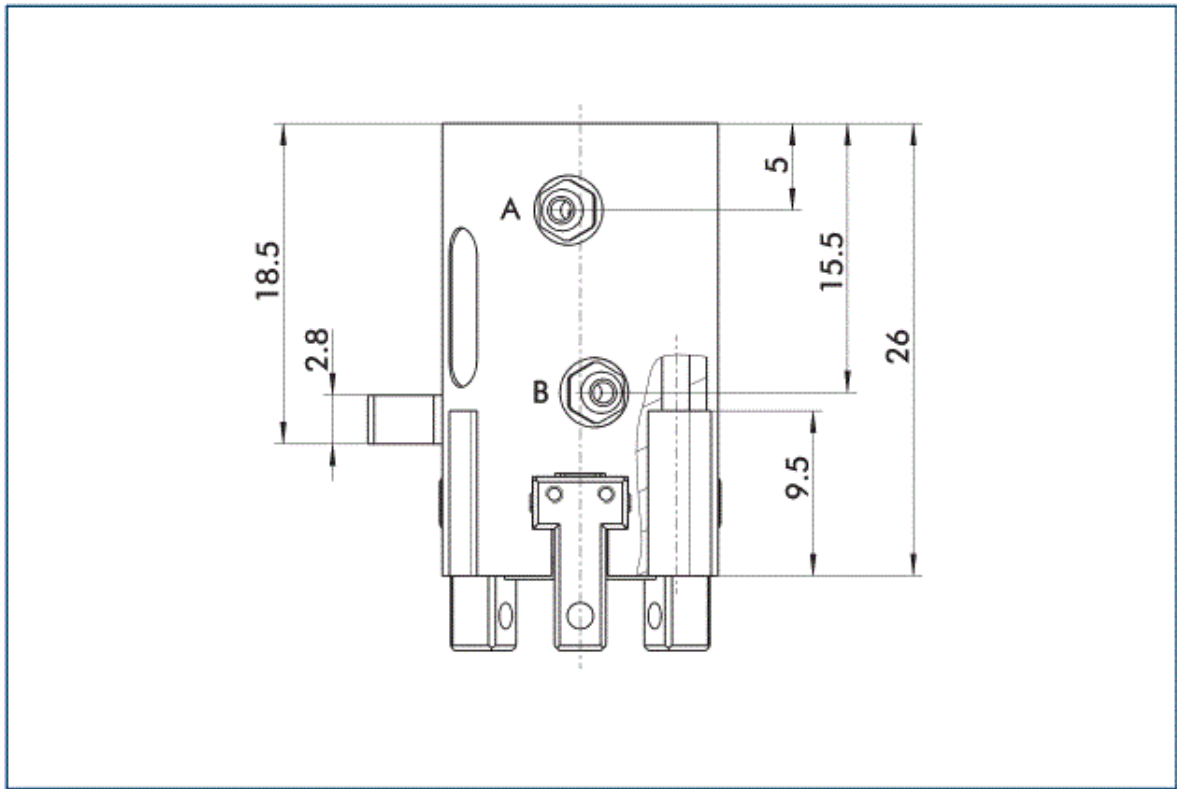
The drawing shows the gripper in the basic version with closed jaws, without dimensional consideration of the options described below.

NOTE

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).

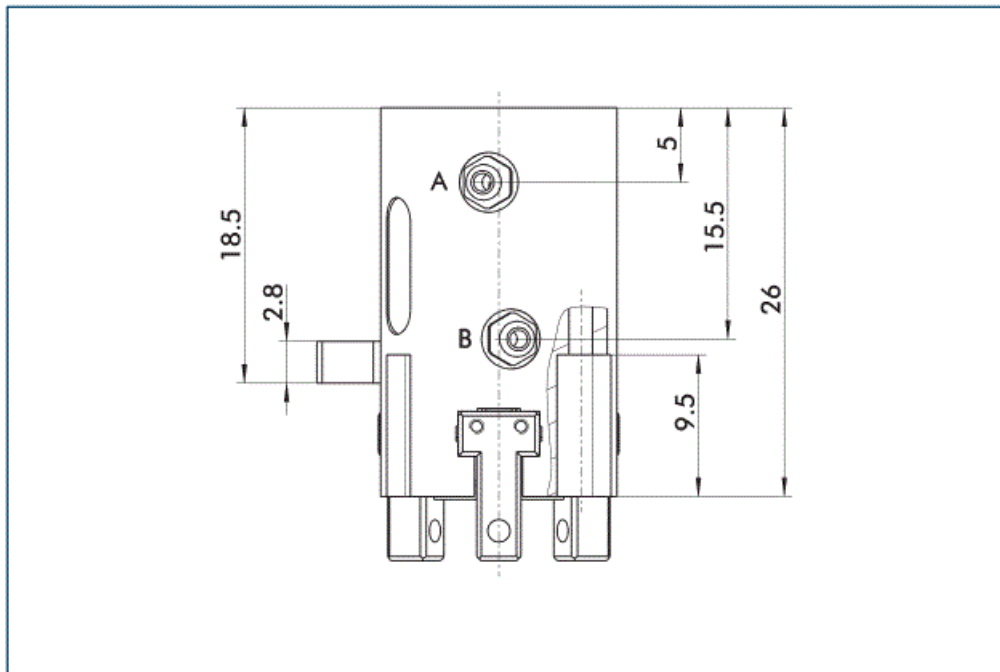
- A, a Main/direct connection, gripper opening
- B, b Main / direct connection, gripper closing
- 1 Gripper connection
- 2 Finger connection
- 19
- Air connection
- 73 Fit for centering pins
- 90 Bosch-Rexroth compressed air hose, TU1-S (Ø 3.0–0.6) series, Order no.: 1820712066 (-67/-68/-69)
- 91 Sensor IN ...

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 a closing force in the AS / S version and as an 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.

SDV-P pressure maintenance valve



- 4 Grippers
- 90 IT SDV-P pressure maintenance valve

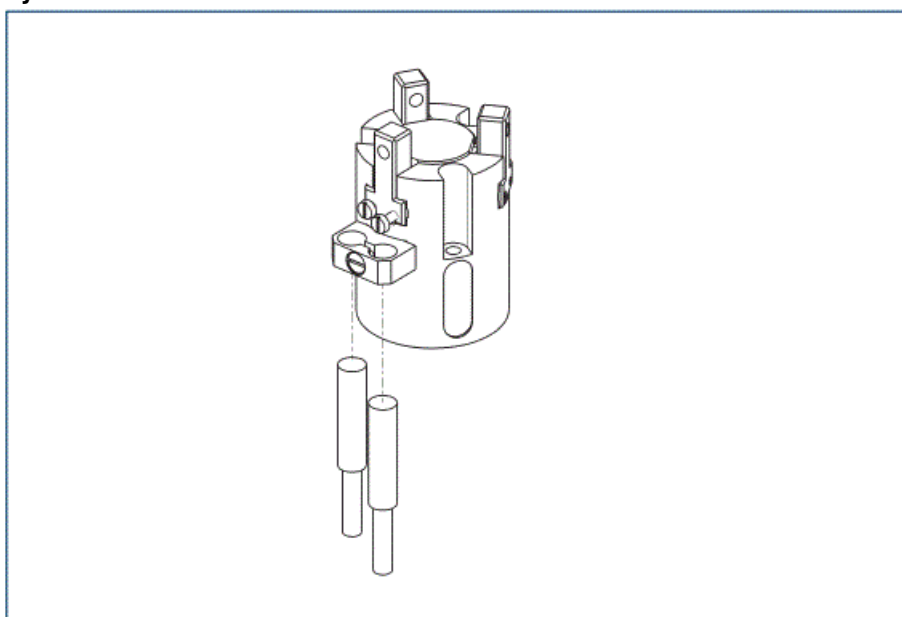
The SDV-P pressure maintenance valve ensures in emergency STOP situations that the pressure in the piston chamber of the pneumatic gripper, swivel, linear, and quick-change modules is temporarily maintained.

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

NOTE

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.

Inductive proximity switches



Directly mounted end position monitoring.

Description	ID	Often combined
Inductive proximity switches		
IN 30K-S-M8-PNP	1001272	
Connection cables		
KA BG08-L 3P-0300-PNP	0301622	●
KA BG08-L 3P-0500-PNP	0301623	
KA BW08-L 3P-0300-PNP	0301594	
KA BW08-L 3P-0500-PNP	0301502	
clip for plug/socket		
CLI-M8	0301463	
Cable extension		
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
Sensor distributor		
V2-M8	0301775	●
V4-M8	0301746	
V8-M8	0301751	

NOTE

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.


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Documents / Resources

	<p>SCHUNK MPZ 16 Gripper for Small Components [pdf] Installation Guide MPZ 16 Gripper for Small Components, MPZ 16, Gripper for Small Components, Small Components, Components</p>
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References

-  **SCHUNK** – Competence leader for toolholding and workholding, gripping technology and automation technology

