Superior Clamping and Gripping

SCHUNK®

Product Information

Gripper for small components MPZ 16

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

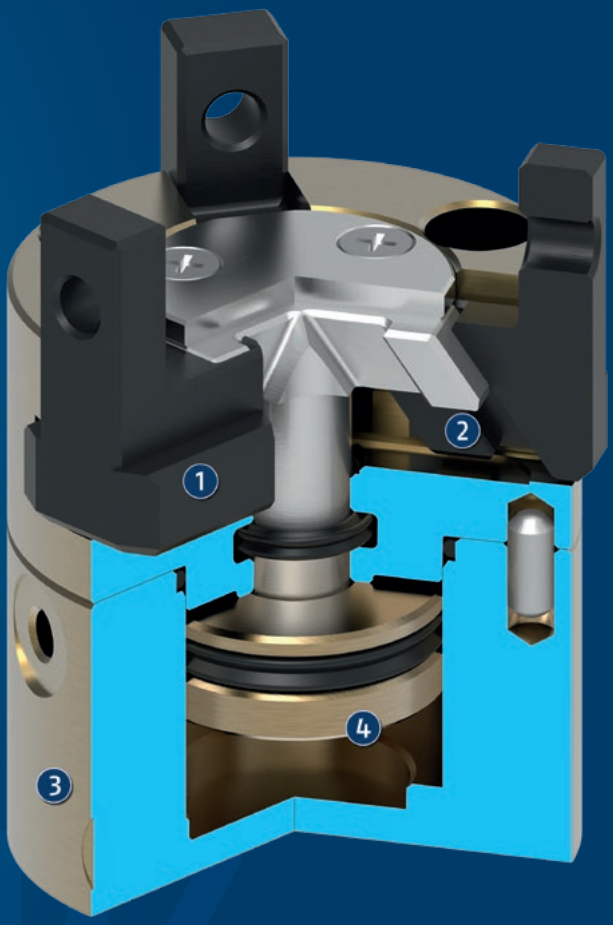
Air supply via hose-free direct connection or screw connections for flexible pressure supply in all automated systems

Compact dimensions for minimal interfering contours in handling

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

Functional description

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



① **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

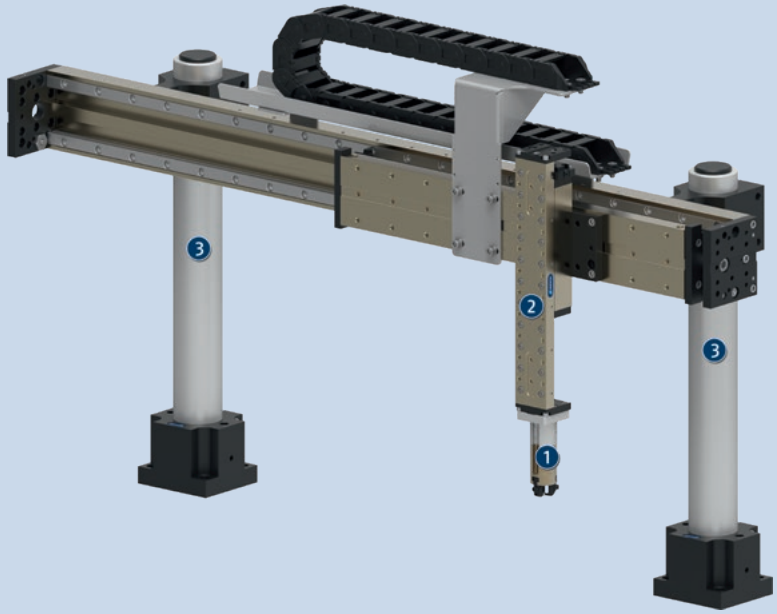
Gripping force: is the arithmetic sum of the individual force applied to each jaw at distance P (see illustration).

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.

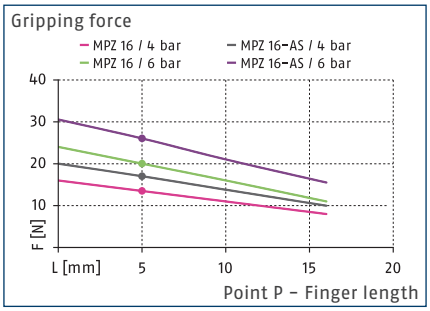
Options and special information

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: H1 grease version H1G: with H1 compliant lubrication as a solution for easy entry into medical technology, lab automation, the pharmaceutical industry and food industry

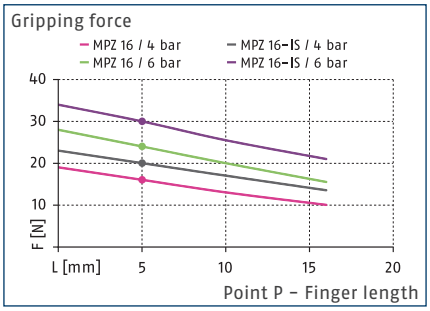
MPZ 16

Gripper for small components

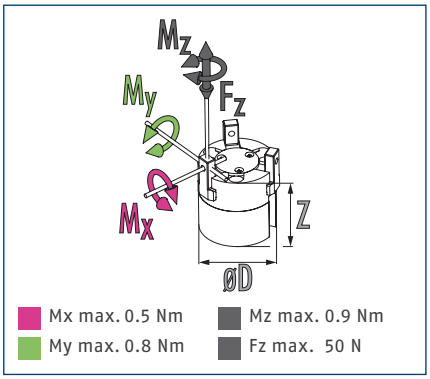
Gripping force O.D. gripping



Gripping force I.D. gripping



Dimensions and maximum loads



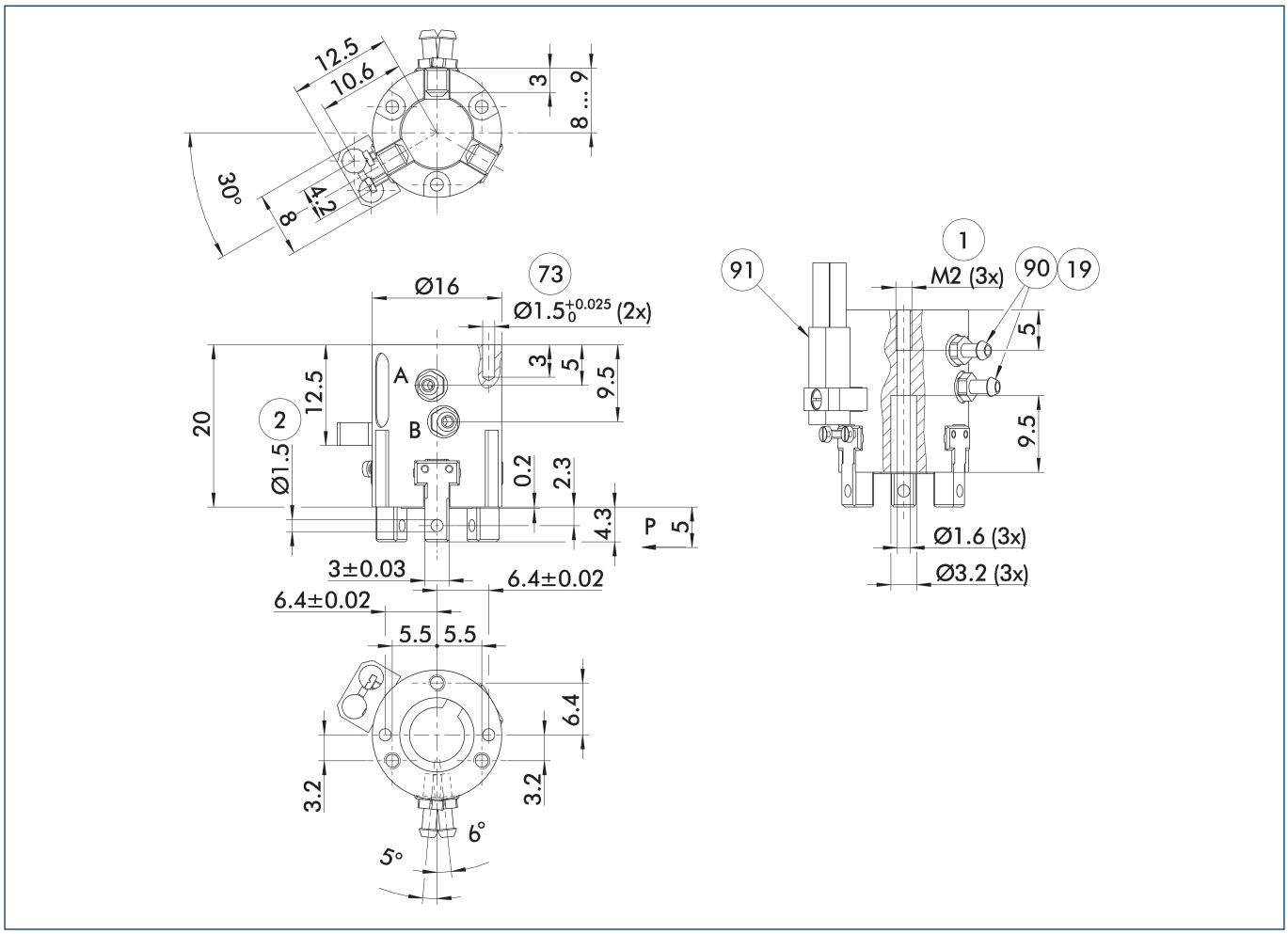
ⓘ The indicated moments and forces are statical values, apply for each base jaw and may appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

Technical data

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 workpiece 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.

ⓘ 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 ...

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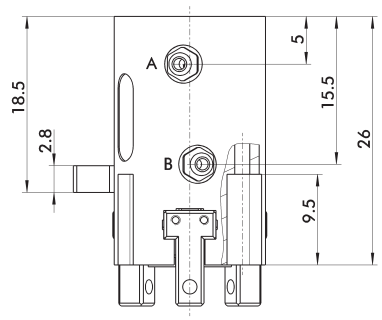
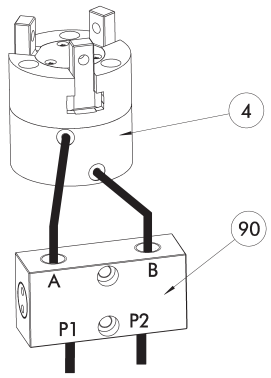
Gripper for small components

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.

SDV-P pressure maintenance valve



(4) Grippers

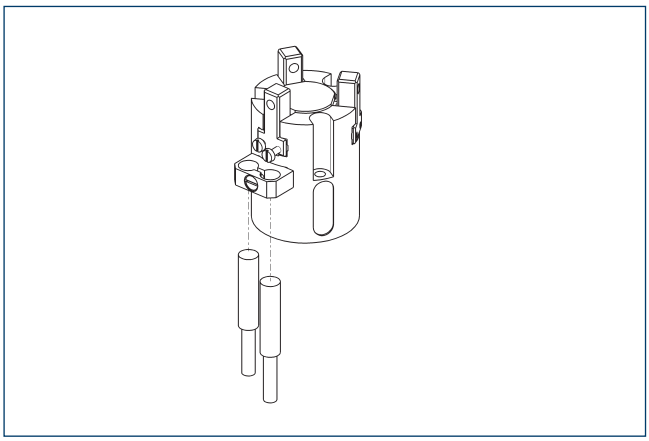
(90) SDV-P pressure maintenance valve

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

ⓘ 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	

ⓘ 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.

SCHUNK GmbH & Co. KG
Spann- und Greiftechnik

Bahnhofstr. 106 - 134
D-74348 Lauffen/Neckar
Tel. +49-7133-103-0
Fax +49-7133-103-2399
info@de.schunk.com
schunk.com

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