



Hand in hand for tomorrow



Product data sheet

Angular parallel gripper GAP 16

GAP

Angular parallel gripper

Flexible. Productive. Slim.

Angular parallel gripper GAP

2-finger angular parallel gripper for parallel O.D. gripping after swiveling in the gripper finger up to 90 degrees per jaw

Field of application

Gripping and moving small to medium workpieces in low contamination environments

Advantages – Your benefits

Positively driven angle and parallel stroke in one functional unit

Absolutely clamping in parallel stroke for highest positioning accuracy

Stable kinematics for high power transmission and synchronized gripping

High gripping force in parallel stroke

Opening angle of jaws up to 180° for maximum flexibility in applications

Integration of a gripping force maintenance is optional for firm grip even in the event of power failure

End-position monitoring with optional standardized monitoring sets

Standardized mounting bores for numerous combinations with other components from the modular system



Sizes
Quantity: 4



Weight
0.16 .. 1.33 kg



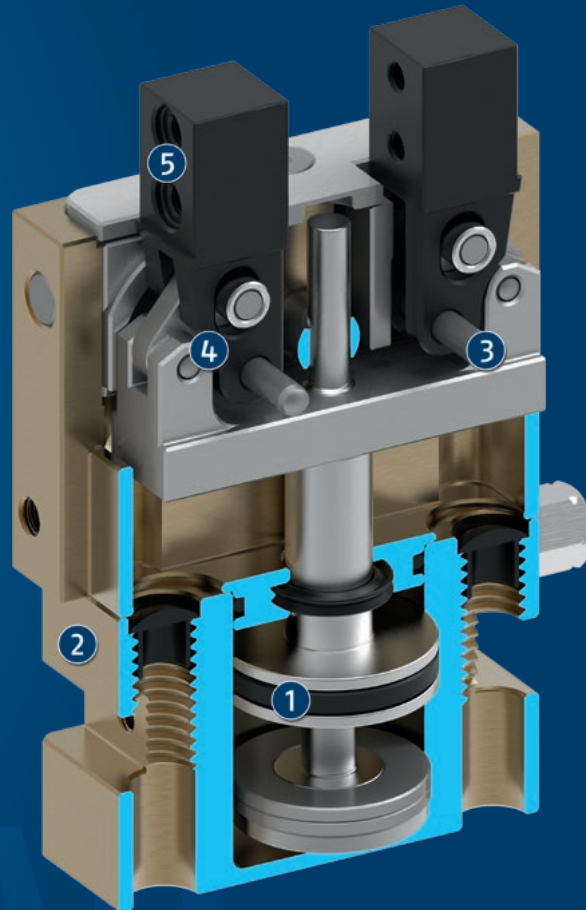
Gripping moment



Angle per jaw
30 .. 90°

Functional description

The piston is moved up or down with compressed air. The base jaws are first put into a rotating and then into a parallel movement via the toggle-lever kinematics.



- ① **Drive**
double-acting piston drive system
- ② **Housing**
is weight-optimized due to the use of high-strength aluminum alloy
- ③ **Base jaw seated**
for rotary movement over hardened cylindrical pivot pins
- ④ **Kinematics**
Positively driven toggle-joint kinematics for rotating and parallel movement
- ⑤ **Base jaws**
for the connection of workpiece-specific gripper fingers

General notes about the series

Operating principle: Positively driven toggle-joint 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

Service life characteristics: on request

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: possible by using the version with mechanical gripping force maintenance or pressure maintenance valve SDV-P

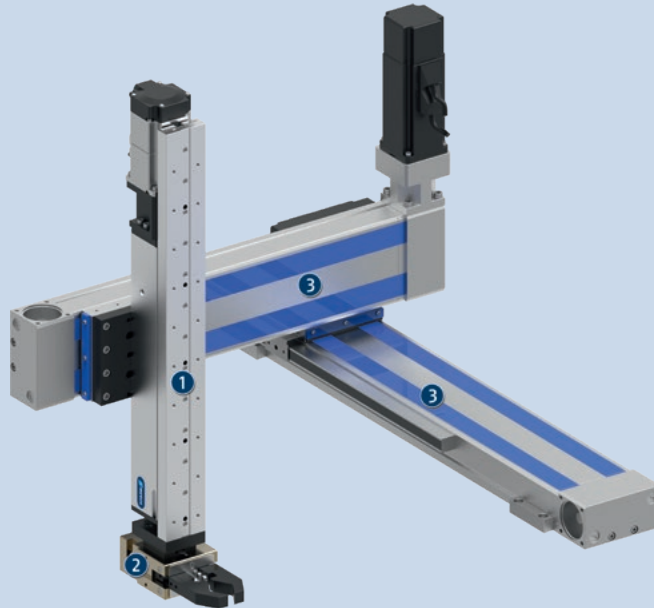
Closing moment: is the arithmetic sum of the individual moment applied to each jaw.

Finger length: is measured from the reference surface as the distance P in direction to the main axis.

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

Electric linear gantry to center or reposition small components.

- ① Compact linear module ELS
- ② 2-finger angular parallel gripper GAP

- ③ Flat linear module Delta with toothed-belt drive

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



Line gantry



Magnetic switches



Pressure maintenance valve



Pillar assembly system

① 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: The mechanical gripping force maintenance ensures that a minimum clamping force will be applied even in case of pressure drop. This acts as closing force in the AS version. Besides this, the gripping force maintenance can be used to increase gripping force or for single actuated gripping.

Shock absorber version: A shock absorber version is available for particularly damping-intensive movements. Please ask for details.

As standard, this module can be combined with numerous components from the modular system. We would be happy to assist you.

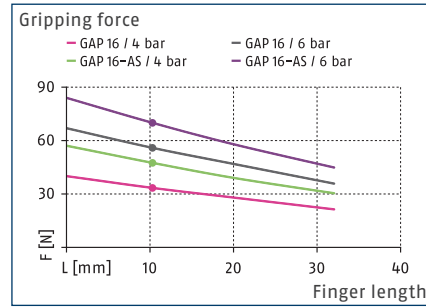
Food-grade lubrication: The product contains food-compliant lubricants as standard. The requirements of EN 1672-2:2020 are not fully met. The relevant NSF certificates are available at <https://info.nsf.org/USDA/Listings.asp> using the lubricant information in the operating manual.

GAP 16

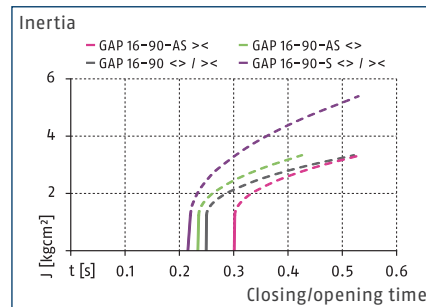
Angular parallel gripper



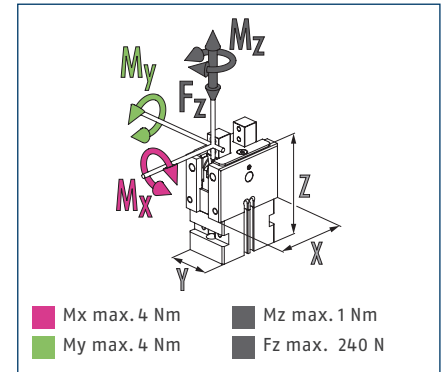
Gripping force O.D. gripping



Max. permissible inertia J*



Dimensions and maximum loads



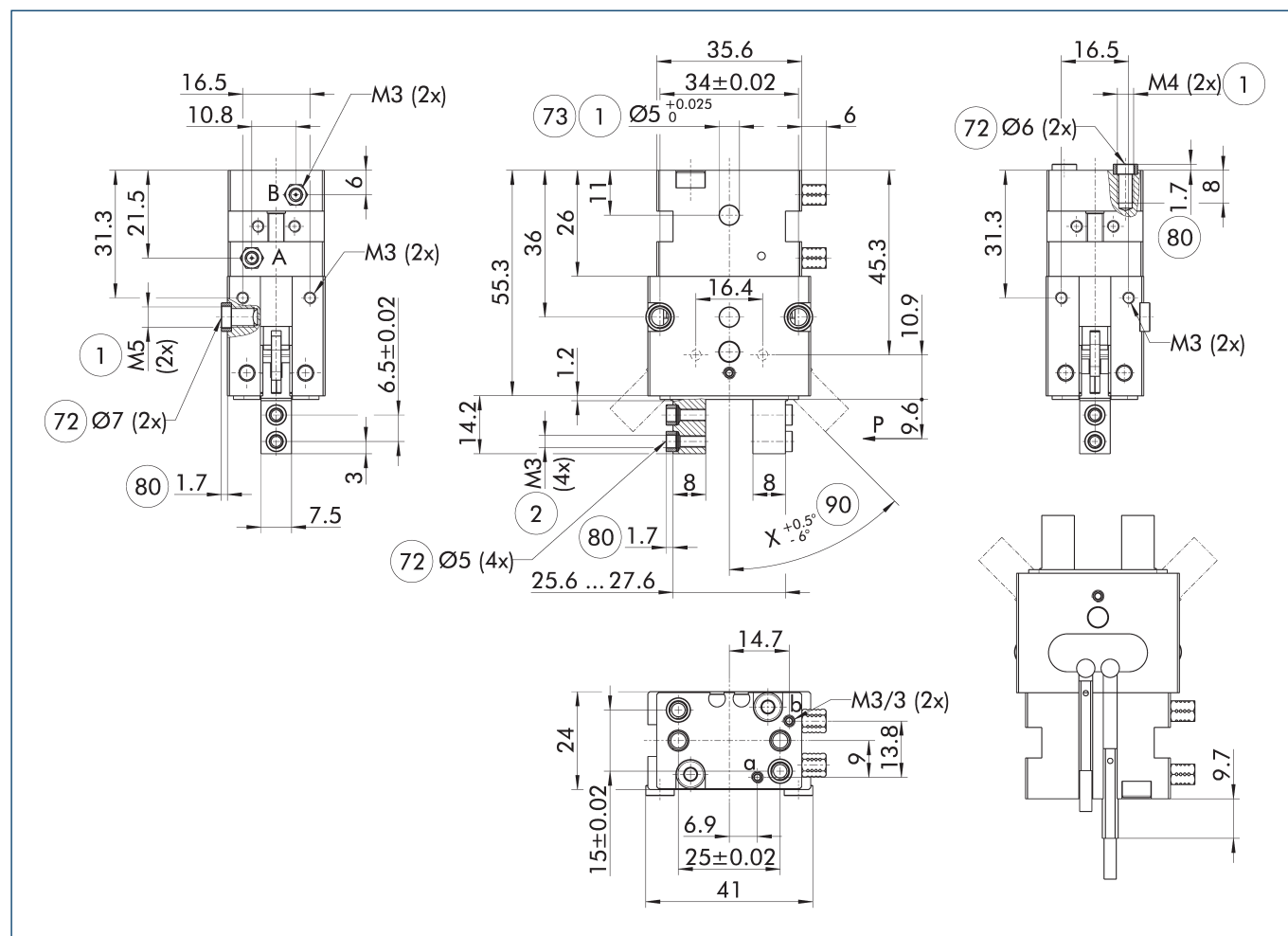
① The indicated moments and forces are static values, apply for each base jaw and may appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

Technical data

Description		GAP 16-030	GAP 16-060	GAP 16-090
ID		0314630	0314631	0314632
Stroke per jaw	[mm]	1	1	1
Closing/opening force	[N]	56/-	56/-	56/-
Opening angle per jaw	[°]	30	60	90
Weight	[kg]	0.16	0.16	0.16
Recommended workpiece weight	[kg]	0.28	0.28	0.28
Cylinder volume per double stroke	[cm³]	1.5	2.5	3.5
Min./nom./max. operating pressure	[bar]	3/6/7	3/6/7	3/6/7
Closing/opening time	[s]	0.16/0.16	0.19/0.19	0.25/0.25
Max. permissible finger length	[mm]	32	32	32
Max. permissible weight per finger	[kg]	0.05	0.05	0.05
Max. permissible inertia per chuck jaw	[kgcm²]	1	1	1
IP protection class		40	40	40
Min./max. ambient temperature	[°C]	5/60	5/60	5/60
Repeat accuracy	[mm]	0.05	0.05	0.05
Options and their characteristics				
Gripping force maintenance version		GAP 16-030-AS	GAP 16-060-AS	GAP 16-090-AS
ID		0314633	0314634	0314635
Closing/opening force	[N]	70/-	70/-	70/-
Min. spring force	[N]	14	14	14
Weight	[kg]	0.22	0.22	0.22
Cylinder volume per double stroke	[cm³]	2.5	4	5.5
Min./max. operating pressure	[bar]	4.5/6.5	4.5/6.5	4.5/6.5
Closing/opening time	[s]	0.18/0.15	0.26/0.18	0.3/0.23
Shock absorber version		GAP 16-030-S	GAP 16-060-S	GAP 16-090-S
ID		0314636	0314637	0314638
Weight	[kg]	0.17	0.17	0.17
Closing/opening time	[s]	0.14/0.14	0.17/0.17	0.22/0.22

* The unit can be actuated without an external customized throttling at the given value of max. mass moment of inertia per jaw. In case of higher mass moments of inertia, an additional throttling is possible.

Main view



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

① 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

① Gripper connection

② Finger connection

⑦② Fit for centering sleeves

⑦③ Fit for centering pins

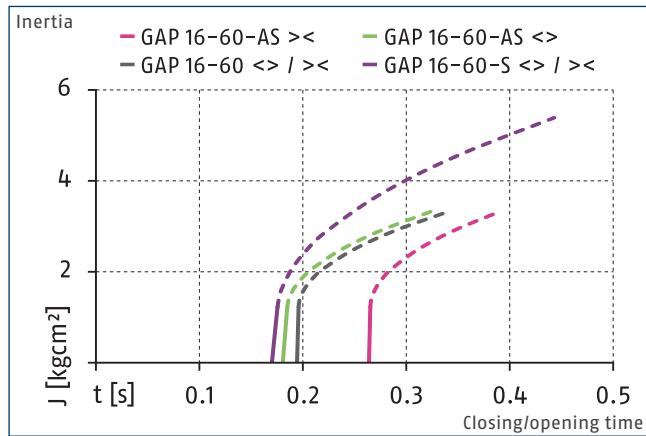
⑧① Depth of the centering sleeve hole in the counter part

⑨① See technical data "Opening angle per jaw", tolerances valid for end position open

GAP 16

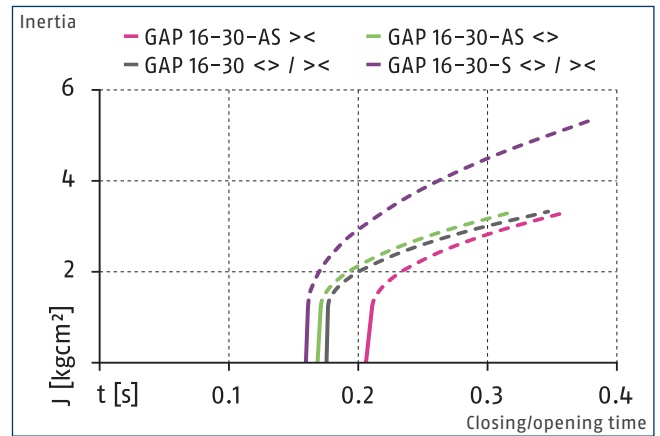
Angular parallel gripper

Max. permissible inertia J*



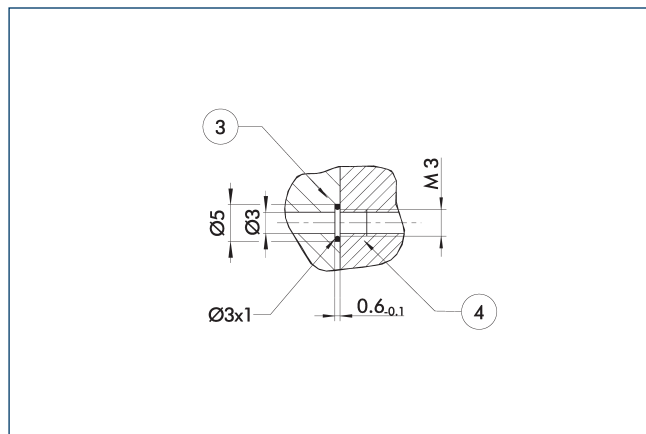
* The unit can be actuated without an external customized throttling at the given value of max. mass moment of inertia per jaw. In case of higher mass moments of inertia, an additional throttling is possible.

Max. permissible inertia J*



* The unit can be actuated without an external customized throttling at the given value of max. mass moment of inertia per jaw. In case of higher mass moments of inertia, an additional throttling is possible.

Hose-free direct connection M3

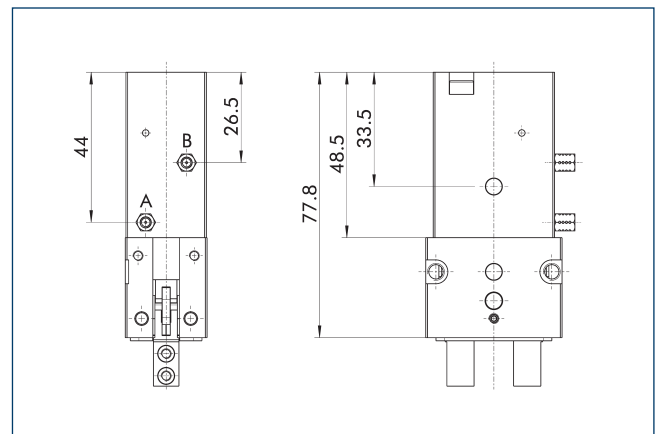


③ Adapter

④ Grippers

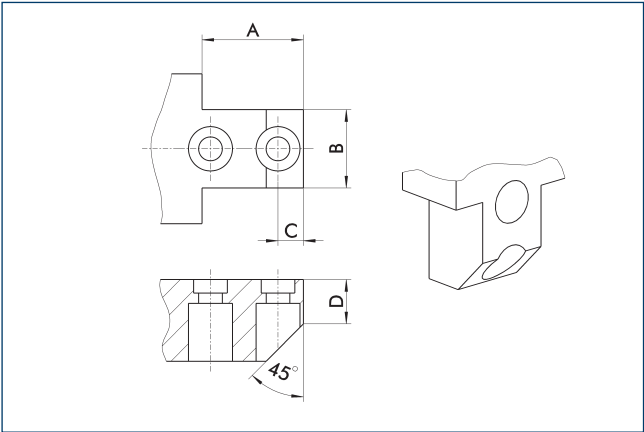
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

Gripping force maintenance AS



The mechanical gripping force maintenance ensures that a minimum gripping force will be applied even if there is a drop in pressure. This acts on the closing force. The gripping force maintenance can also be used to increase the gripping force or for one-way gripping.

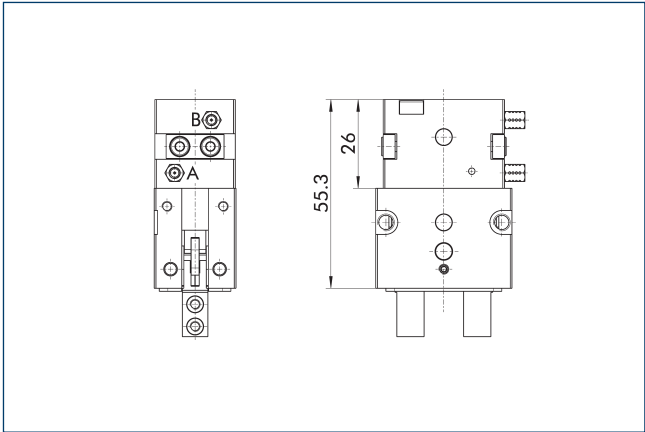
Finger design



The drawing shows a suggestion of how to design the gripper fingers.

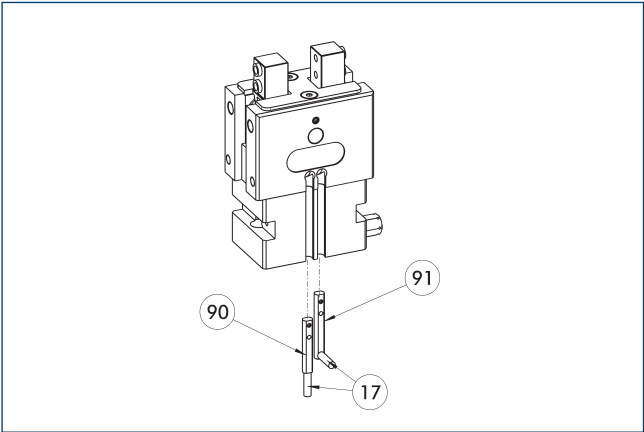
A (min.)	B (max.)	C (max.)	D
[mm]	[mm]	[mm]	[mm]
13	7.4	3.3	10

Version with shock absorbers



In the shock absorber variant, the opening movement of the fingers is braked via hydraulic shock absorbers. Therefore faster opening times are achieved.

Electronic magnetic switch MMS



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

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	

- ① 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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