



Superior Clamping and Gripping



Product Information

Rotary gripping module with parallel gripper GSM-P 40

GSM-P

Rotary gripping module with parallel gripper

Flexible. Energy-efficient. Compact.

Gripper swivel module GSM-P

Compact gripper swivel combination, consisting of a powerful rotor drive, an end position and damping device as well as a 2-finger parallel gripper.

Field of application

Gripping and swiveling combined in a single compact module, for automated assembly in places with a restricted amount of available space.

Advantages – Your benefits

Space-saving as the rotary drive, end-position damping unit and gripper are merged in one compact module

Cost-saving due to the omission of adapter plates and the costs associated with project planning, and engineering design

Powerful for even greater masses and inertias due to the variant with hydraulic shock absorbers

Flexible through several mounting options, infinitely adjustable swiveling angle and numerous product versions

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

Process reliable as moving cables and hoses are replaced by integrated feed-throughs

Mounting on three gripper sides in five screwing directions for universal and flexible assembly of the gripper swivel module

Air supply via hose-free direct connection or screw connections for the specific adaption of the gripper swivel module in all automation solutions

Comprehensive accessories due to the use of existing gripper components



Sizes
Quantity: 4

m

Weight
0.37 .. 1.51 kg



Gripping force
39 .. 162 N



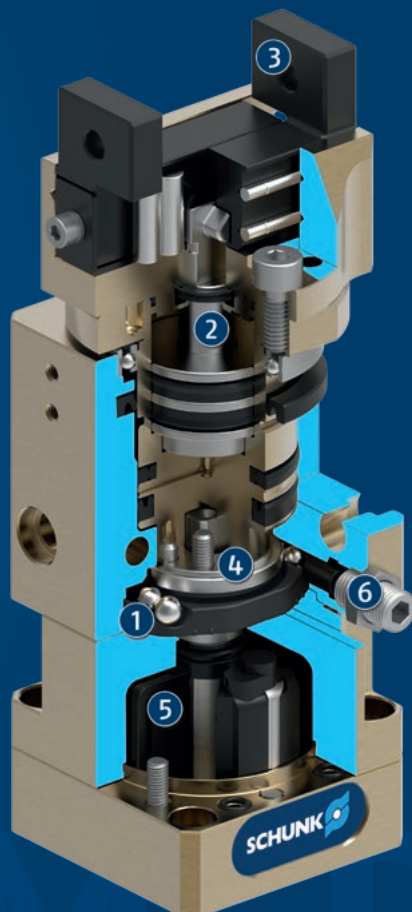
Stroke per jaw
4 .. 10 mm



Torque
0.3 .. 2.9 Nm

Functional description

The swivel drive rotates the integrated gripper by applying pressure from a rotor. It is driven by its own piston. The piston motion is subsequently transformed into a synchronized gripping motion.



- ① **Pre-adjustment of rotating angle**
using steel balls for any desired angle of rotation
- ② **Gripper drive**
double-acting piston drive system with diagonal pull
- ③ **Base Jaw**
for the connection of workpiece-specific gripper fingers
- ④ **Stop damping assembly**
for end-position adjustment and damping
- ⑤ **Vane swivel unit**
as a compact, powerful drive
- ⑥ **Hydraulic shock absorber**
to increase the damping performance

GSM-P

Rotary gripping module with parallel gripper

General notes about the series

Operating principle: Combined rotor and piston drive

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, O-rings for direct connection, screws for lateral fastening, steel balls for adjustment of the swiveling angle, assembly and operation manual with declaration of incorporation

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).

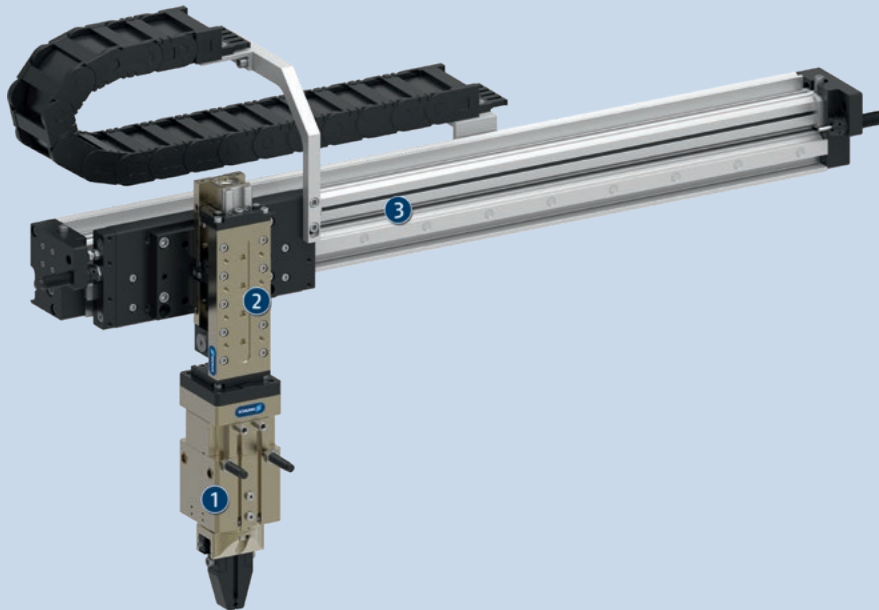
Finger length: is measured from the reference surface as the distance P in direction to the main axis.

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.

Repeat accuracy: is defined as a distribution of the end Position for 100 consecutive strokes.

Closing, opening and swiveling times: Closing and opening times are movement times of the base jaws or fingers only. Swivel times are the pure movement times of the rotating part. Valve switching times, hose fill times, or PLC reaction times are not included, and are to be considered when cycle times are calculated.

Middle attached load: intended to represent a typical load. It is defined as the half of the max. possible mass moment of inertia that can be swiveled without restriction, bouncing or hitting, with a centric load and a vertical rotating axis.



Application example

The three-axis boom (X-Y-Z) with rotary gripping combination is employed to insert various products individually in outer packaging whilst rotating them if necessary.

- ① Gripper swivel module GSM-P
- ② Linear module CLM

- ③ Gantry module PMP

SCHUNK offers more ...

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



Linear module



Gripper for small components



Miniature swivel unit



Pick & Place Unit



Inductive proximity switches



Programmable magnetic switch



Pressure maintenance valve



Finger blank

① 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.

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

GSM-P

Rotary gripping module with parallel gripper

Ordering example

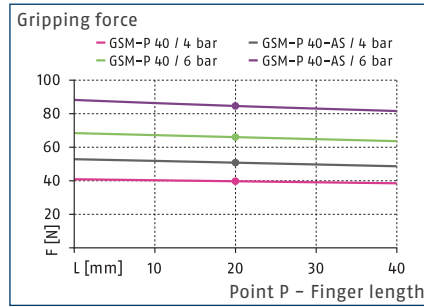
	GSM-P	32	-	AS	-	E	-	090
Description	GSM-P							
Size	32/40/50/64							
Gripping force maintenance device	- = without maintenance of gripping force AS = Effect as closing force IS = Effect as opening force							
Type of damping method	E = Elastomer S = shock absorber							
Swivel angle	90°/180°							

GSM-P 40

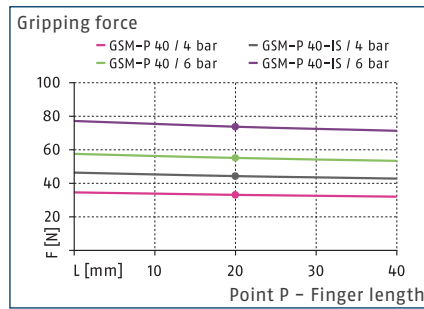
Rotary gripping module with parallel gripper



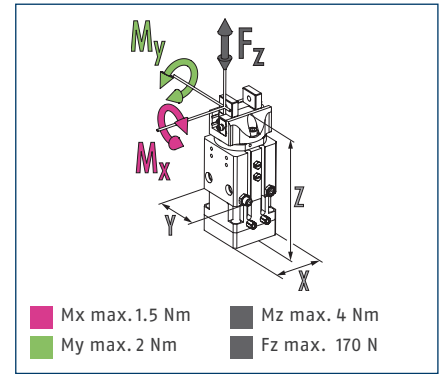
Gripping force O.D. gripping



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		GSM-P 40-E-090	GSM-P 40-E-180	GSM-P 40-AS-E-090	GSM-P 40-AS-E-180	GSM-P 40-IS-E-090	GSM-P 40-IS-E-180
ID		0304640	0303840	0304641	0303841	0304642	0303842
Stroke per jaw	[mm]	6	6	6	6	6	6
Closing/opening force	[N]	66/54	66/54	87/-	87/-	-/69	-/69
Min. spring force	[N]			21	21	15	15
Torque	[Nm]	0.3	0.3	0.3	0.3	0.3	0.3
Angle of rotation	[°]	90	180	90	180	90	180
End position adjustability	[°]	90	180	90	180	90	180
Damping for swiveling		Elastomer	Elastomer	Elastomer	Elastomer	Elastomer	Elastomer
Recommended workpiece weight	[kg]	0.33	0.33	0.33	0.33	0.33	0.33
Air consumption for gripping	[cm³]	5.97	5.97	5.97	5.97	5.97	5.97
Air consumption for swiveling	[cm³]	9	15	9	15	9	15
Weight	[kg]	0.43	0.43	0.5	0.5	0.5	0.5
Nominal operating pressure	[bar]	6	6	6	6	6	6
Max. operating pressure	[bar]	6.5	6.5	6.5	6.5	6.5	6.5
Min. operating pressure for gripping	[bar]	2	2	4	4	4	4
Min. operating pressure for swiveling	[bar]	4	4	4	4	4	4
Closing/opening time	[s]	0.05/0.05	0.05/0.05	0.03/0.05	0.03/0.05	0.05/0.03	0.05/0.03
Swiveling time with medium-sized attached load**	[s]	0.14	0.22	0.14	0.22	0.14	0.22
Max. permissible finger length	[mm]	40	40	40	40	40	40
Max. permissible weight per finger	[kg]	0.08	0.08	0.08	0.08	0.08	0.08
Max. permissible inertia of the set-up	[kgmm²]	52	52	50	50	50	50
IP protection class		30	30	30	30	30	30
Min./max. ambient temperature	[°C]	5/90	5/90	5/90	5/90	5/90	5/90
Repeat accuracy for gripping	[mm]	0.02	0.02	0.02	0.02	0.02	0.02
Repeat accuracy for swiveling	[°]	0.1	0.1	0.1	0.1	0.1	0.1
Dimensions X x Y x Z	[mm]	40 x 47 x 104	40 x 47 x 104	40 x 47 x 123.4	40 x 47 x 123.4	40 x 47 x 123.4	40 x 47 x 123.4

* Swiveling time at an average attachment load, which is equivalent to half of the max. perm. mass moment of inertia of the design. It can be run without throttling for the rotary movement.

Technical data

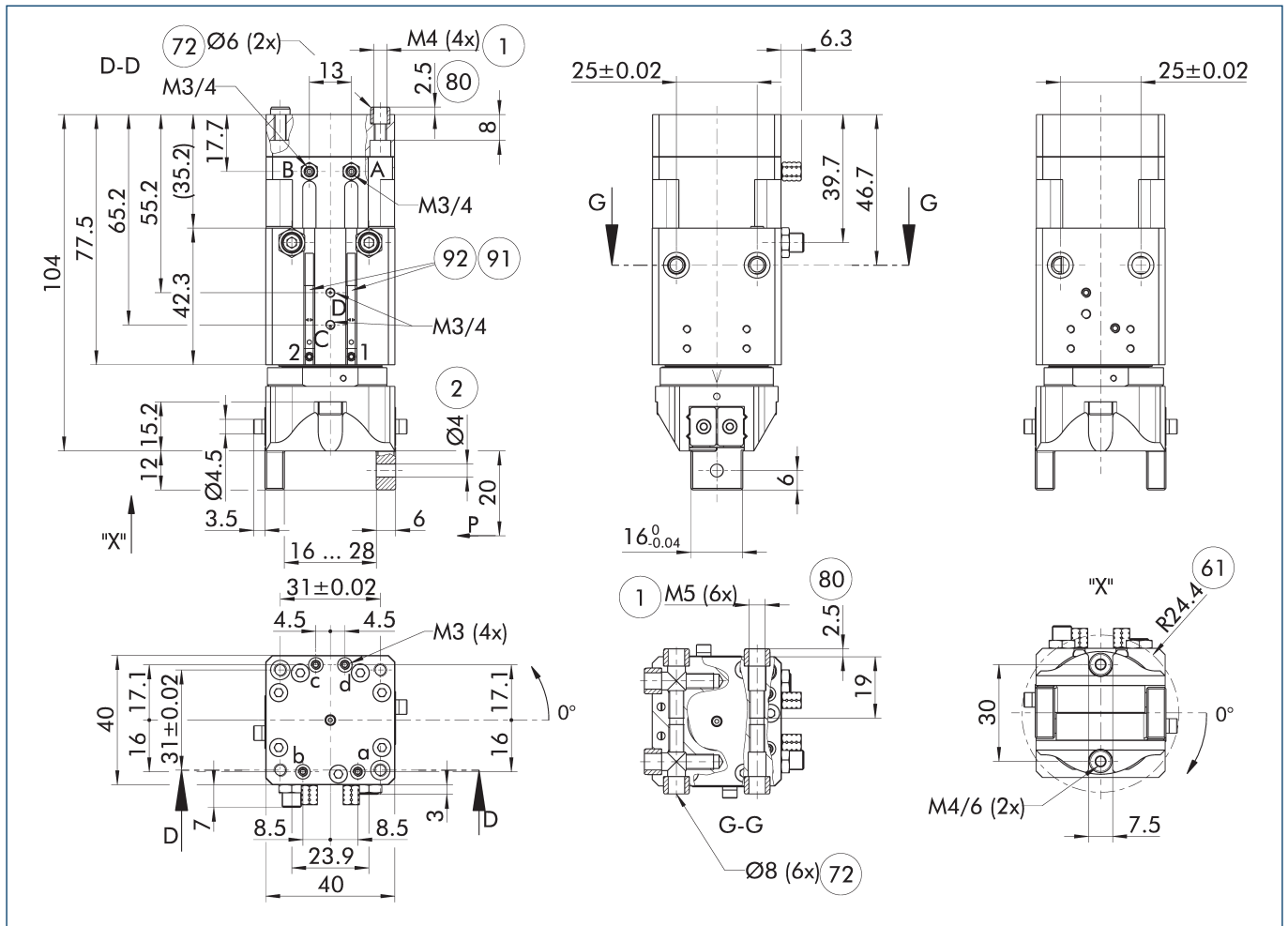
Description		GSM-P 40-S-090	GSM-P 40-S-180	GSM-P 40-AS-S-090	GSM-P 40-AS-S-180	GSM-P 40-IS-S-090	GSM-P 40-IS-S-180
ID		0304740	0303940	0304741	0303941	0304742	0303942
Stroke per jaw	[mm]	6	6	6	6	6	6
Closing/opening force	[N]	66/54	66/54	87/-	87/-	-/69	-/69
Min. spring force	[N]			21	21	15	15
Torque	[Nm]	0.3	0.3	0.3	0.3	0.3	0.3
Angle of rotation	[°]	90	180	90	180	90	180
End position adjustability	[°]	90	180	90	180	90	180
Damping for swiveling		hydr. damper	hydr. damper	hydr. damper	hydr. damper	hydr. damper	hydr. damper
Recommended workpiece weight	[kg]	0.33	0.33	0.33	0.33	0.33	0.33
Air consumption for gripping	[cm ³]	5.97	5.97	5.97	5.97	5.97	5.97
Air consumption for swiveling	[cm ³]	9	15	9	15	9	15
Weight	[kg]	0.43	0.43	0.5	0.5	0.5	0.5
Nominal operating pressure	[bar]	6	6	6	6	6	6
Max. operating pressure	[bar]	6.5	6.5	6.5	6.5	6.5	6.5
Min. operating pressure for gripping	[bar]	2	2	4	4	4	4
Min. operating pressure for swiveling	[bar]	4	4	4	4	4	4
Closing/opening time	[s]	0.05/0.05	0.05/0.05	0.03/0.05	0.03/0.05	0.05/0.03	0.05/0.03
Swiveling time with medium-sized attached load**	[s]	0.14	0.22	0.14	0.22	0.14	0.22
Max. permissible finger length	[mm]	40	40	40	40	40	40
Max. permissible weight per finger	[kg]	0.08	0.08	0.08	0.08	0.08	0.08
Max. permissible inertia of the set-up	[kgmm ²]	127	127	125	125	125	125
IP protection class		30	30	30	30	30	30
Min./max. ambient temperature	[°C]	5/60	5/60	5/60	5/60	5/60	5/60
Repeat accuracy for gripping	[mm]	0.02	0.02	0.02	0.02	0.02	0.02
Repeat accuracy for swiveling	[°]	0.1	0.1	0.1	0.1	0.1	0.1
Dimensions X x Y x Z	[mm]	40 x 63.5 x 104	40 x 63.5 x 104	40 x 63.5 x 123.4	40 x 63.5 x 123.4	40 x 63.5 x 123.4	40 x 63.5 x 123.4

* Swiveling time at an average attachment load, which is equivalent to half of the max. perm. mass moment of inertia of the design. It can be run without throttling for the rotary movement.

GSM-P 40

Rotary gripping module with parallel gripper

Main view

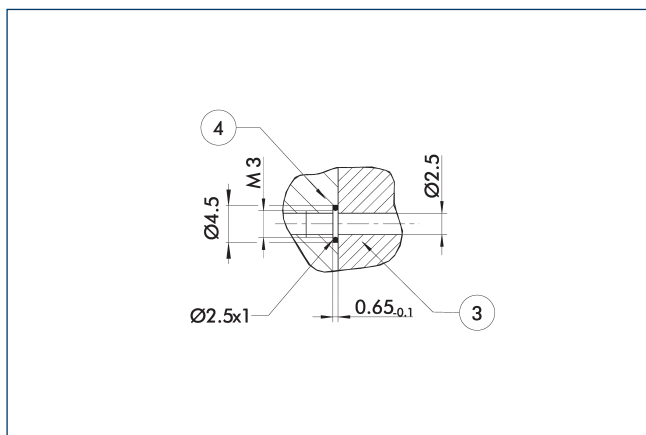


The drawing shows the basic version of the gripper with open jaws, without dimensional consideration of the options described below.

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).

- | | |
|--|---|
| <p>A, a Main / direct connection, rotary actuator rotates clockwise</p> <p>B, b Main / direct connection, rotary actuator rotates counterclockwise</p> <p>C, c Main / direct connection, gripper opening</p> <p>D, d Main / direct connection, gripper closing</p> | <p>① Connection gripper swivel module</p> <p>② Finger connection</p> <p>⑥1 Interfering contour during swiveling</p> <p>⑦2 Fit for centering sleeves</p> <p>⑧0 Depth of the centering sleeve hole in the counter part</p> <p>⑨1 Monitoring of gripping and swiveling</p> <p>⑨2 MMS-P22</p> |
|--|---|

Hose-free direct connection M3

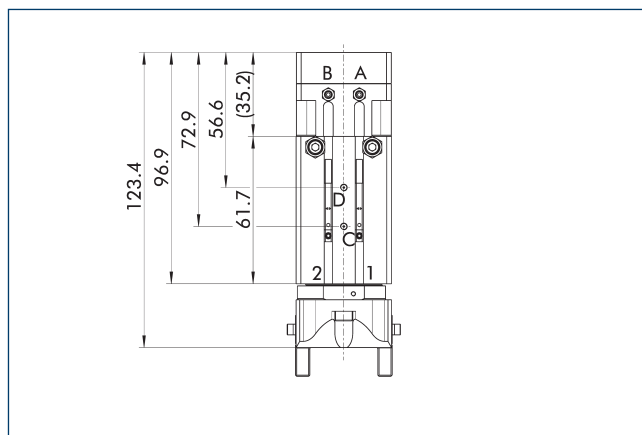


③ Adapter

④ Rotary unit

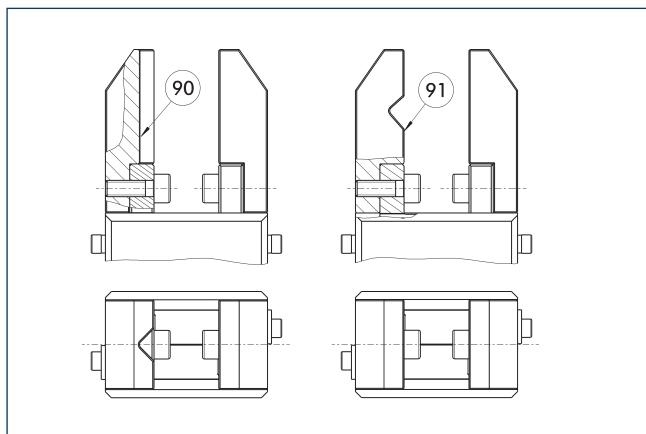
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

Gripping force maintenance device AS / IS



The mechanical 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.

Jaw design

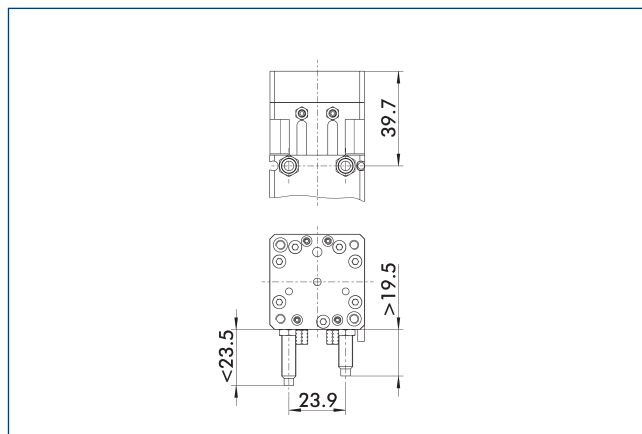


⑨⑩ Vertically positioned prism

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.

Version with shock absorbers

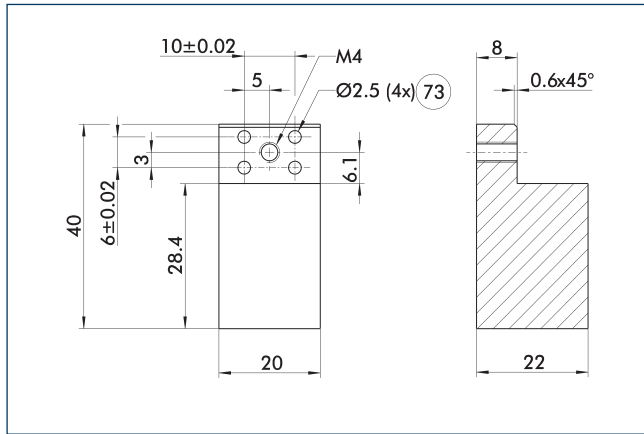


The drawing shows the dimensional changes of the shock absorber versions in comparison to the drawing in the main view which shows the elastomer version.

GSM-P 40

Rotary gripping module with parallel gripper

Finger blanks ABR-MPG-plus 40

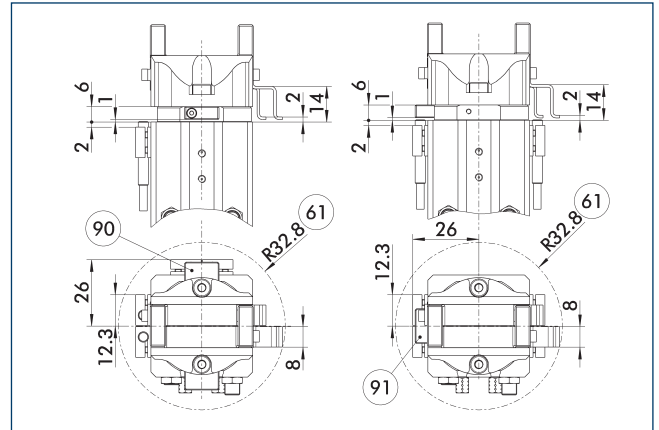


73 Fit for centering pins

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

Description	ID	Material	Scope of delivery
Finger blank			
ABR-MPG-plus 40	0340213	Aluminum (3.4365)	2

Attachment kit for proximity switch – 90° / 180° angle of rotation



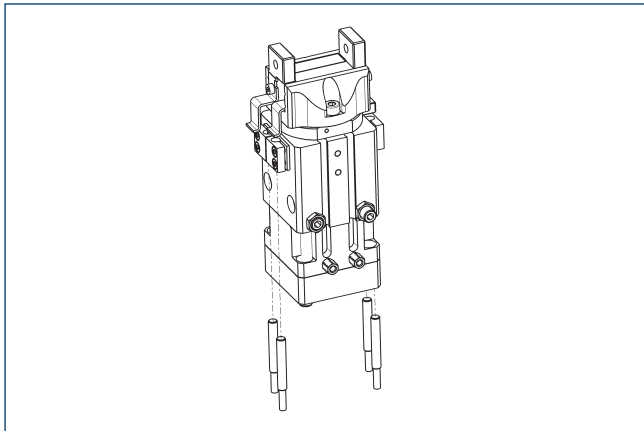
61 Interfering contour during swiveling

90 Variant for 90° version
91 Variant for 180° version

The attachment kits for the 90° and 180° GSM versions are identical, only assembly is different. The attachment kit consists of two switch cams, two operating cams, four sensor brackets and small components. The proximity switches must be ordered separately.

Description	ID
Attachment kit for proximity switch	
AS-GSM-P 40	0304935

Inductive proximity switches

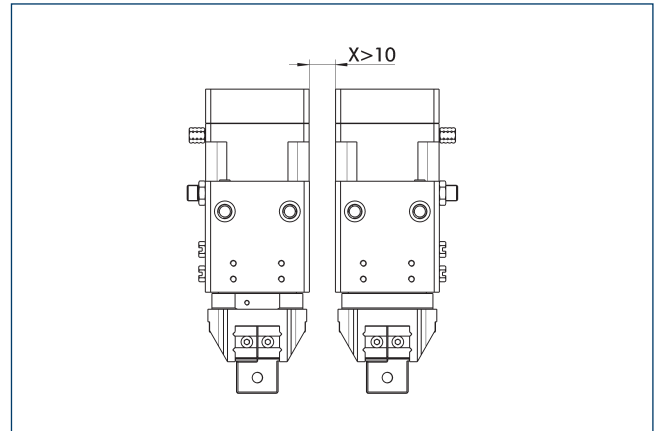


End position monitoring can be mounted with an attachment kit.

Description	ID	Often combined
Attachment kit for proximity switch		
AS-GSM-P 40	0304935	
Inductive proximity switches		
IN 40-S-M12	0301574	
IN 40-S-M8	0301474	●
INK 40-S	0301555	

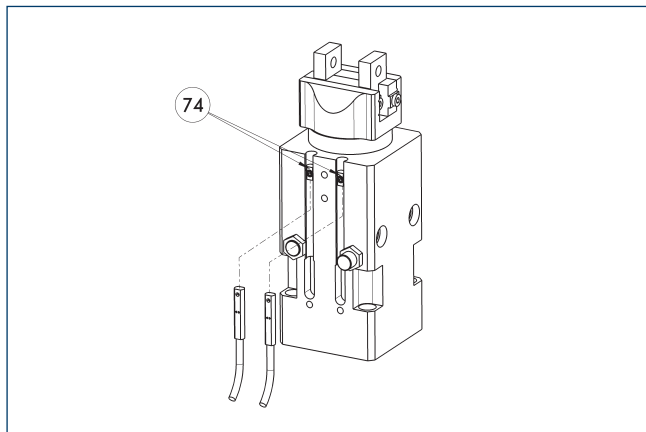
① Per unit four sensors (closer/S) are required for each unit, plus extension cables as an option. This attachment kit needs to be ordered optionally as an accessory. For sensor cables, note the minimum permissible bending radii. These are generally 35 mm.

Monitoring for stacked arrangements



CAUTION: Monitoring is carried out by magnetic switches, and in case of side-by-side assembly of several units, a minimum distance of X mm between the units must be maintained.

MMS-P programmable magnetic switch



74 Limit stop for sensor

Position monitoring with two programmable positions per sensor. End position monitoring for mounting in the C-slot.

Description	ID	Often combined
Programmable magnetic switch		
MMSK-P 22-S-PNP	0301371	
MMS-P 22-S-M8-PNP	0301370	●
Connection cables		
KA GLN0804-LK-00500-A	0307767	●
KA GLN0804-LK-01000-A	0307768	
KA WLN0804-LK-00500-A	0307765	
KA WLN0804-LK-01000-A	0307766	
clip for plug/socket		
CLI-M8	0301463	
Sensor distributor		
V2-M8-4P-2XM8-3P	0301380	

① Per each GSM two MMS-P sensors are required. If standard extension cables (M8-3P) are used, the sensor distributor can be applied.



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