



Superior Clamping and Gripping



Product Information

Rotary gripping module with parallel gripper RP 1520

Flexible. Modular. Compact.

Gripper swivel module RP

Rotary gripper combination, consisting of a rotary module and a 2-finger parallel gripper

Field of application

Gripping and rotating combined in one module for small to medium workpieces in low-contamination environments. Also for places with limited space



Advantages – Your benefits

T-slot guidance for precise gripping at high moment loads

Gripping and turning without rotary power lines for a maximized process reliability

Double piston principle in the swivel unit for scope-free end positions and high repeat accuracy

Continuous angle of rotation adjustment over the entire range of rotation

Various shock absorber variants, optional for optimum adaption to various fields of application

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

Available as an option with rotation adapter for the gripping module for infinitely variable twisting of the gripper head relative to the drive unit

“Continuously adjustable intermediate position” option can be done using an intermediate stop which can be integrated

Choice of electronic magnetic sensors or inductive proximity sensors for absolute variability of position monitoring

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



Sizes
Quantity: 5



Weight
0.5 .. 2.02 kg



Gripping force
50 .. 420 N



Stroke per jaw
2.5 .. 8 mm

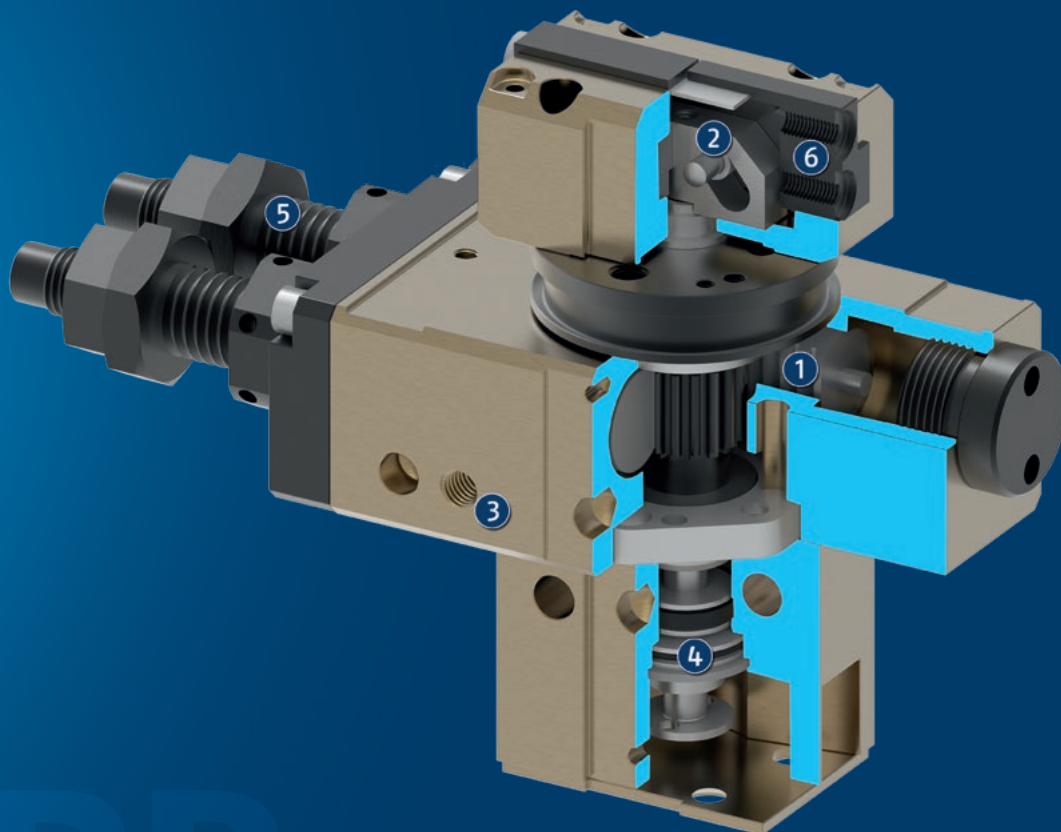


Torque
0.38 .. 1.9 Nm

Functional description

The rotary movement is done by the two pneumatic piston racks when pressure is applied to their end faces, causing them to move in a straight line in their bore holes and turn the pinion by way of the teeth machined on the side of the racks.

For the gripping movement, the piston is moved up or down using compressed air. Together with the guidance of the base jaws, the diagonal pull turns the piston movement into a synchronized opening and closing.



① **Drive, turning**
Pneumatic, rack and pinion principle

② **Kinematics**
internal, power transmission via line contact

③ **Mounting pattern**
Completely integrated in the module system

④ **Drive, gripping**
double-acting piston drive system

⑤ **Swivel angle adjustment**
For a flexible end position, with hydraulic shock absorber

⑥ **Base Jaws**
for the connection of workpiece-specific gripper fingers

General notes about the series

Operating principle: Combination of rack and pinion with double 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: Completely ready for operation without bracket for proximity switch and without proximity switch

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

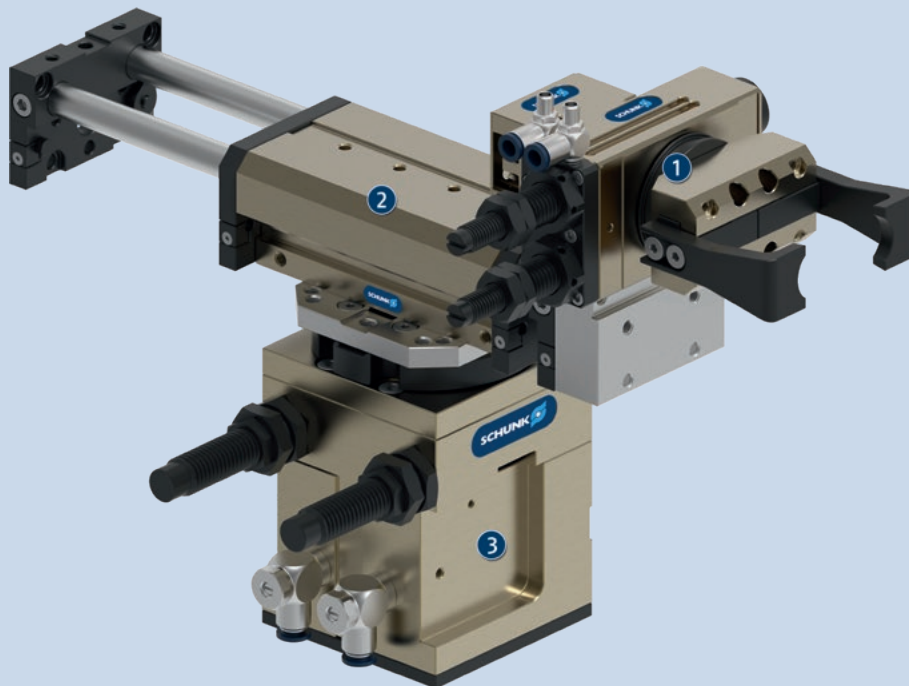
Gripping force: is the arithmetic sum of the individual force applied to each jaw.

Pinion position: is always shown in the left end position. The pinion rotates from here to the right in clockwise direction. The arrow makes the direction of rotation clear.

Pinion screw connection diagram: When setting a swivel angle smaller than 90°, the left end stop must be completely turned in. This means that the left end position has a screw connection diagram on the pinion which is clockwise turned by 90° compared to the main view, which shows a swivel angle of 180°.

Finger length: measured from the screw surface of the base jaw in the direction of the main axis. Failure to comply with the max. permissible finger length will result in increased wear.

Layout or control calculation: For configuration or control calculation of the units, we recommend to use our Toolbox software, which is available online. Verifying the sizing of the selected unit is absolutely necessary, as otherwise overloading may occur.



Application example

Modularly designed complete unit for relocating and turning small components

- ① Gripper swivel module RP
- ② Linear module KLM

- ③ Swivel vane RM-W

SCHUNK offers more ...

The following components make the product RP 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



Magnetic switches



Inductive proximity switches



Intermediate stop



Pressure maintenance valve

① For more information on these products can be found on the following product pages or at schunk.com. Please contact us: SCHUNK technical hotline +49-7133-103-2696

Options and special information

Gripping force maintenance version K/S: The mechanical gripping force maintenance version ensures a minimum gripping force also in the case of a pressure drop. This acts as closing force for the K version and as opening force for the S version.

Rotation adapter version: The gripper head can be continuously adjusted and indexed in relation to the drive.

Version with a combination of gripping force maintenance and rotation adapter Z/X: This variant combines the functions of the gripping force maintenance with the one of the rotation adapter. The gripping force maintenance acts as a closing force for the Z-variant and as an opening force for the X-variant.

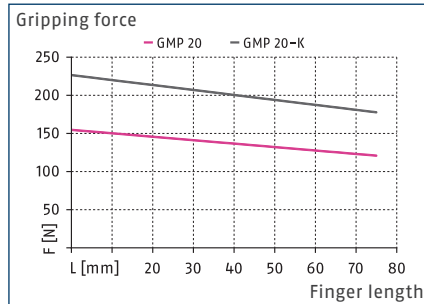
Version with intermediate position RZ: By mounting two pneumatically actuated cylinders, an intermediate position can be implemented, which can be flexibly adjusted over the entire swivel range.

RP 1520

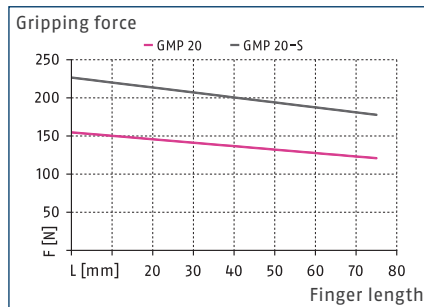
Rotary gripping module with parallel gripper



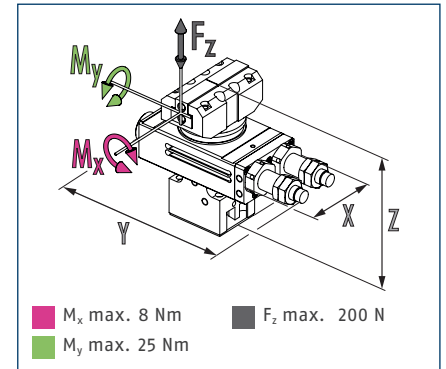
Gripping force O.D. gripping



Gripping force I.D. gripping



Dimensions and maximum loads

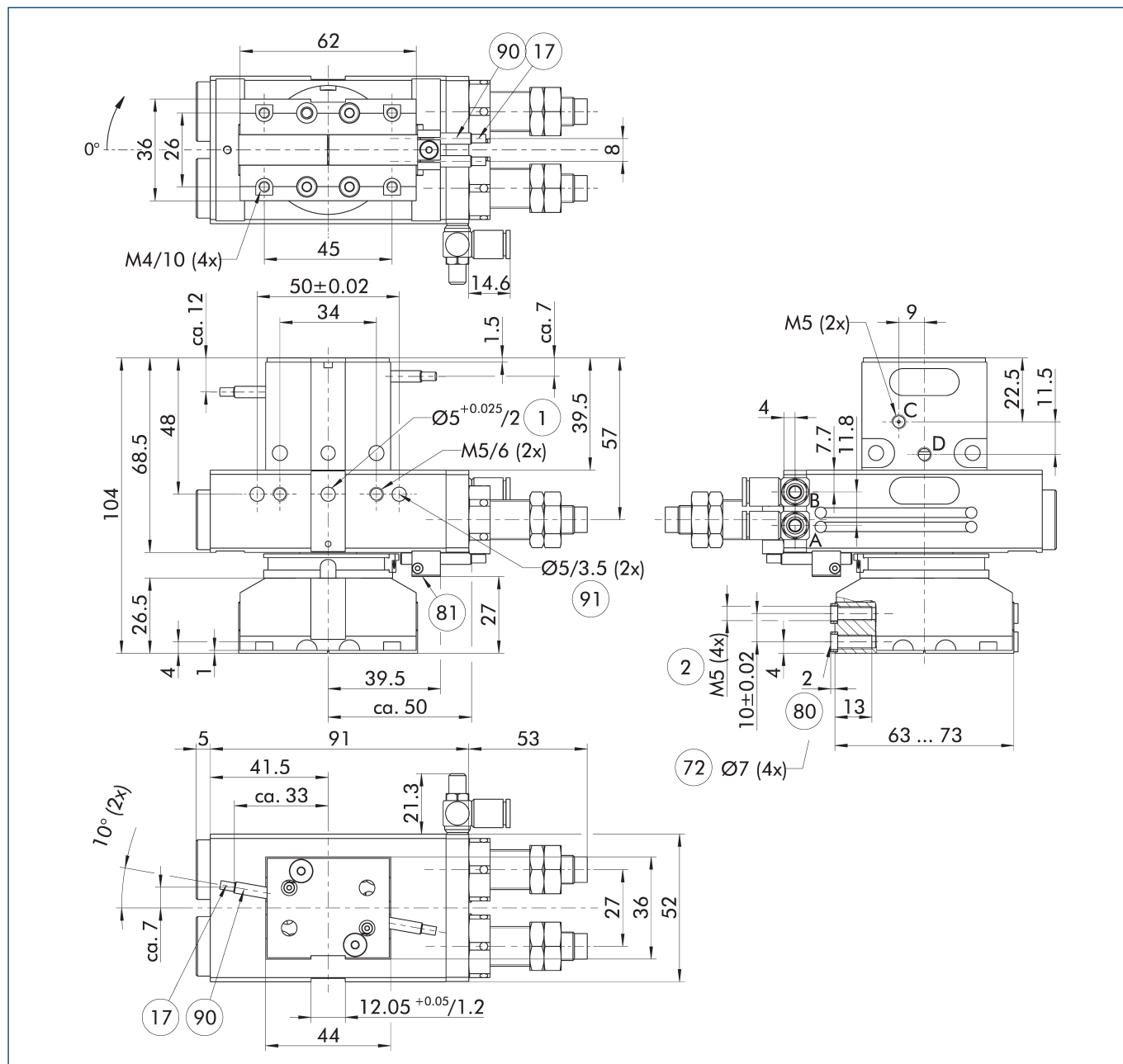


① The indicated moments and forces are static values, apply for each base jaw and should not appear simultaneously. Loads may additionally occur to the moment produced by the gripping force itself.

Technical data

Description		RP 1520-W	RP 1520-H	RP 1520-K-W	RP 1520-K-H	RP 1520-S-W	RP 1520-S-H
ID		0314978	0313264	0314980	0313266	0314979	0313265
Stroke per jaw	[mm]	5	5	5	5	5	5
Closing/opening force	[N]	150/150	150/150	220/-	220/-	-/220	-/220
Min. spring force	[N]			70	70	70	70
Torque	[Nm]	0.76	0.76	0.76	0.76	0.76	0.76
Angle of rotation	[°]	190	190	190	190	190	190
Recommended workpiece weight	[kg]	0.75	0.75	0.75	0.75	0.75	0.75
Air consumption for gripping	[cm³]	2.86	2.86	2.86	2.86	2.86	2.86
Air consumption for swiveling	[cm³]	9.6	9.6	9.6	9.6	9.6	9.6
Weight	[kg]	0.92	0.92	1	1	1	1
Nominal operating pressure	[bar]	6	6	6	6	6	6
Max. operating pressure	[bar]	8	8	8	8	8	8
Min. operating pressure for gripping	[bar]	3	3	5	5	5	5
Min. operating pressure for swiveling	[bar]	3	3	3	3	3	3
Closing/opening time	[s]	0.03/0.03	0.03/0.03	0.025/0.04	0.025/0.04	0.04/0.025	0.04/0.025
Max. permissible finger length	[mm]	75	75	75	75	75	75
Max. permissible mass per finger	[kg]	0.18	0.18	0.18	0.18	0.18	0.18
IP protection class		40	40	40	40	40	40
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	[°]	0.05	0.05	0.05	0.05	0.05	0.05
Dimensions X x Y x Z	[mm]	144 x 52 x 104	144 x 52 x 104	144 x 52 x 126.5	144 x 52 x 126.5	144 x 52 x 126.5	144 x 52 x 126.5
Options and their characteristics							
Rotation adapter version		RP 1520-D-W	RP 1520-D-H	RP 1520-Z-W	RP 1520-Z-H	RP 1520-X-W	RP 1520-X-H
ID		0314981	0313267	0314983	0313269	0314982	0313268
Weight	[kg]	0.98	0.98	1.06	1.06	1.06	1.06

Main view



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

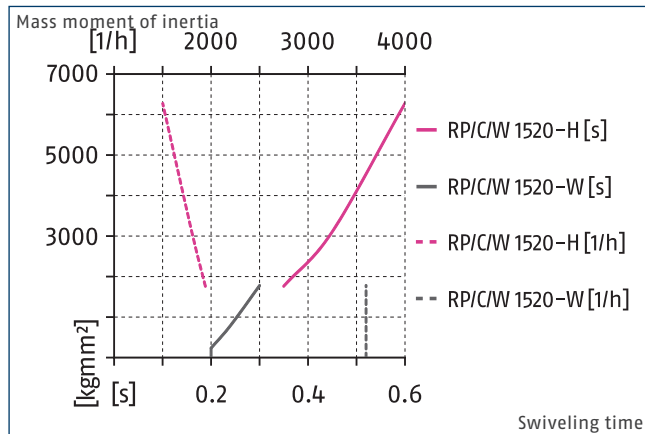
- A, a Main / direct connection, rotary actuator rotates clockwise
- B, b Main / direct connection, rotary actuator rotates counterclockwise
- C, c Main / direct connection, gripper opening
- D, d Main / direct connection, gripper closing

- ① Connection gripper swivel module
- ② Finger connection
- ①⑦ Cable outlet
- ⑦② Fit for centering sleeves
- ⑧② Depth of the centering sleeve hole in the counter part
- ⑧① Not included in the scope of delivery
- ⑨② Inductive proximity switches
- ⑨① Fit for centering pins

RP 1520

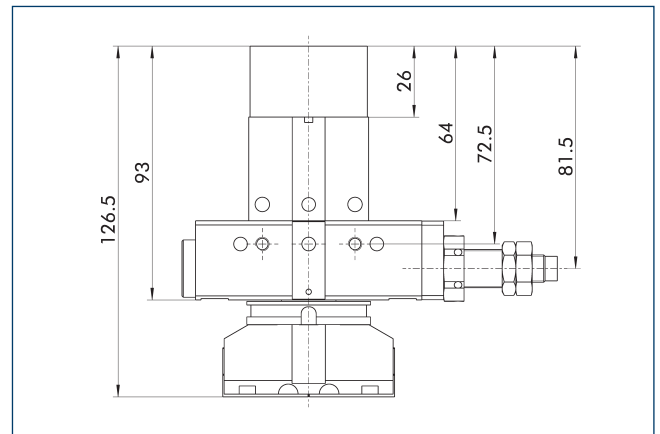
Rotary gripping module with parallel gripper

Max. permissible inertia J*



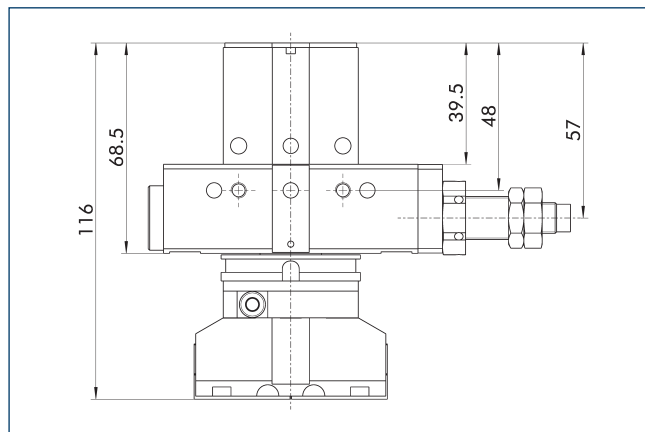
* The diagrams are valid for swivel angles of 90° and 180°, units without center position and for applications with a vertical swivel axis as well as for absolutely centric loads with a horizontal rotary axis and with a pneumatic operating pressure of 6 bar. The swiveling times per throttling have to be observed, otherwise the life time could reduce. We will be happy to help you to design other cases of application.

Gripping force maintenance K/S



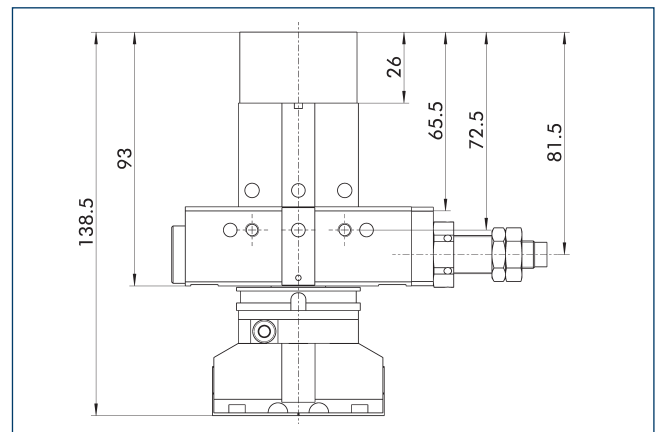
The mechanical gripping force maintenance ensures that a minimum gripping force will be applied even if there is a drop in pressure. This acts as closing force for the K variant and as opening force for the S variant. The gripping force safety can be installed without other components from the K variant into the S variant and vice versa. Besides this, the gripping force maintenance can be used to increase gripping force or for single actuated gripping.

Rotation adapter D



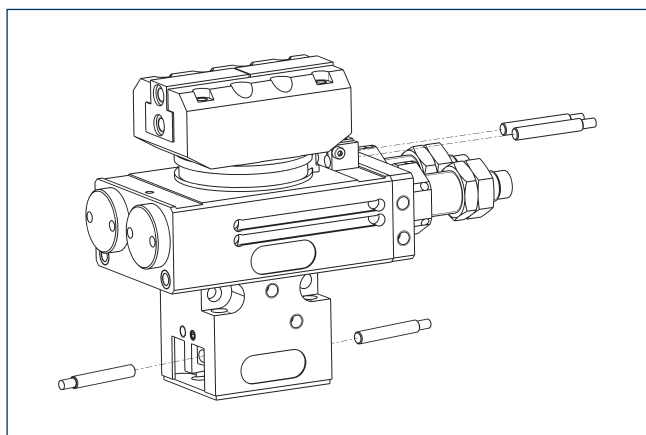
The two-part rotation adapter enables the gripping head to be continuously rotated in order to flexibly adjust the position of the gripper fingers on the workpiece. The only thing to do is to release the clamping screw. After the adjustment has been made, a hole can be drilled out to place a cylindrical pin or a fixing thread for clamping.

Gripping force safety & rotation adapter Z/X



This variant combines the functions of the gripping force maintenance with the one of the rotation adapter. The gripping force maintenance acts as a closing force for the Z-variant and as an opening force for the X-variant.

Inductive Proximity Switches

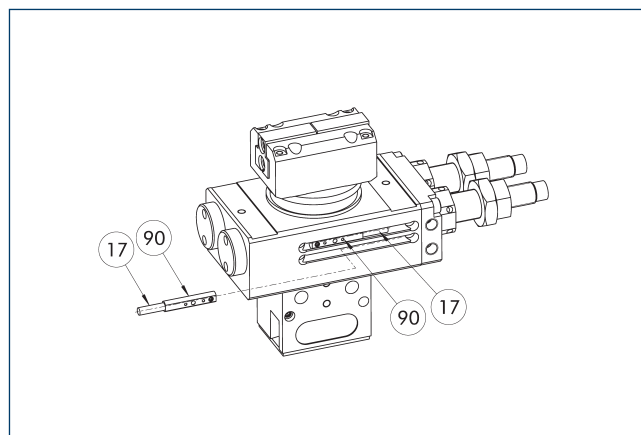


The end-position monitoring for swiveling movement (RMNS) and gripping movement (GMNS) can be directly mounted on the unit using inductive proximity switches.

Description	ID	Often combined
Inductive Proximity Switches		
GMNS 16-G	0313334	●
GMNS 16-W	0313335	
GMNS 16-X	0313333	
RMNS 12-G	0313042	●
RMNS 12-W	0313043	
RMNS 12-X	0313041	
clip for plug/socket		
CLI-M8	0301463	

- ① The RMNS set includes two sensors with 30 cm cable length to M8 connector, two switching cams, and a sensor bracket. The scope of delivery of the set GMNS includes a sensor and a sensor bracket. For complete monitoring, two sets GMNS are required. The versions -G/-W comprise a 5 m long connection cable with straight (-G) or angular (-W) plug connector to open cable end.

Electronic magnetic switch MMS



17 Cable outlet

90 Sensor MMS 22..

The end position monitoring of the swivel motion can be directly mounted on the unit in two C-slots using magnetic switches.

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	
Cable extension		
KV BW08-SG08 3P-0030-PNP	0301495	
KV BW08-SG08 3P-0100-PNP	0301496	
KV BW08-SG08 3P-0200-PNP	0301497	●
clip for plug/socket		
CLI-M8	0301463	
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	
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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