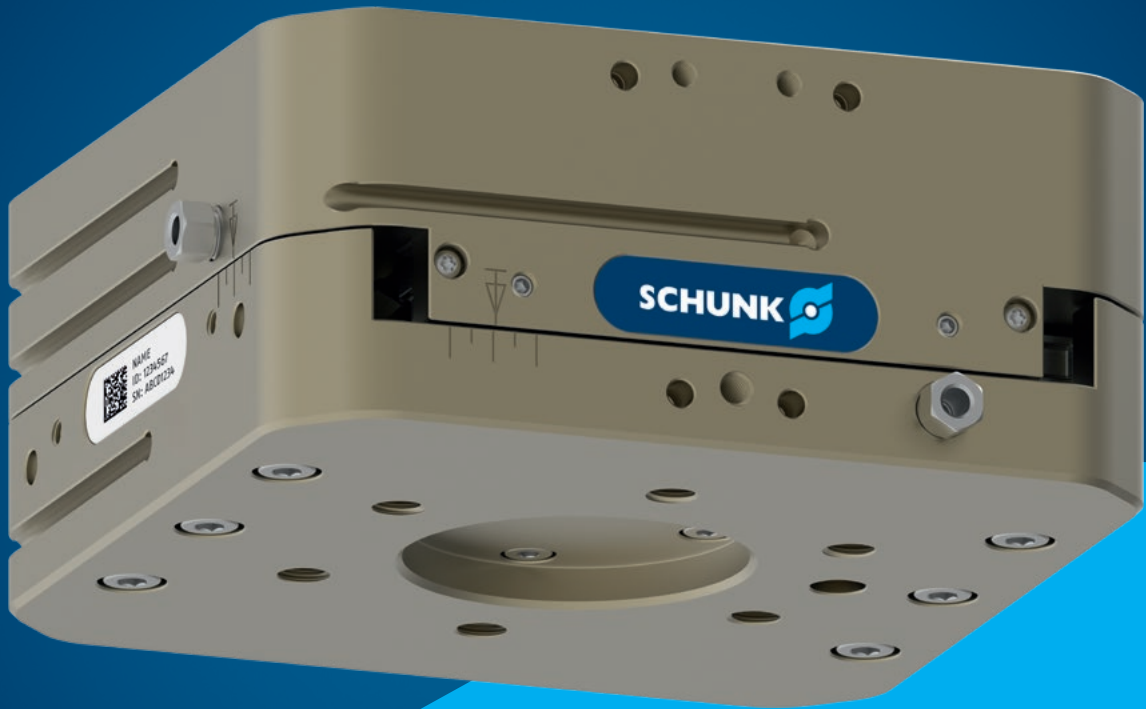




Product data sheet
AGM-XY 031
Compensation unit

Precise. Reliable. Modular. Compensation unit AGM-XY

Modular compensation unit with XY-compensation for the compensation of inaccuracies and tolerances. As part of the AGM product family, the AGM-XY can be flexibly combined with the AGM-Z and therefore always offers the right compensation behavior for a wide range of applications.

Field of application

For assembly processes such as joining or screwing components together, as well as handling tasks such as automated machine loading. Designed for use with pneumatic, electric, or magnetic grippers, where reliable compensation is required. Compensation units can be used both on robots and in stationary applications.



Advantages – Your benefits

- + Maximum force absorption with minimum overall height**
thanks to the patented uniplanar guide arrangement with high-load linear roller guides.
- + Highest flexibility**
due to the modularity of the AGM product family, combinations with Z are possible.
- + Effective compensation in horizontal and inclined positions**
due to the optional, patented spring and air cart-ridges for weight compensation in the x- and y directions – ideal for demanding applications.
- + Individually adjustable equalizing stroke**
for infinitely variable adaptation of the compensation travel or blocking of individual compensation directions.
- + Central locking**
for centering the unit in a defined position
- + Pneumatic position storage**
for eccentric locking in a deflected position
- + Increased process stability**
thanks to various query options via magnetic switches.



Sizes
Quantity: 9



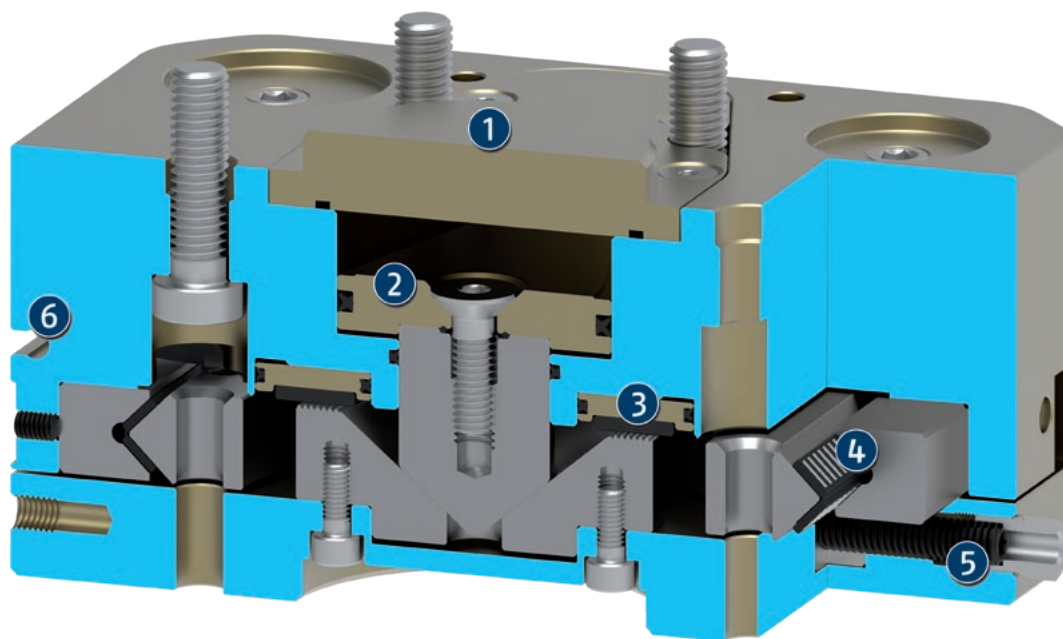
Handling weight
2 .. 400 kg



Compensation XY
 $\pm 2 \dots 15$ mm

Functional description

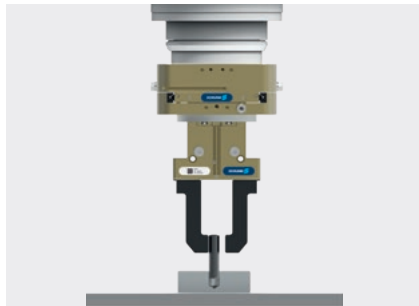
The AGM-XY compensation unit offers compensation in the x- and y-axis. The patented uniplanar guide arrangement with heavy-duty and smooth-running linear roller guides enables the handling of high loads and torques with minimum overall height. For example, the unit can be locked both centrally and eccentrically for the targeted alignment of components using the integrated pneumatic locking mechanism and position memory. With the integrated stroke adjustment, the compensation travel in the x- and y-axis can be individually adjusted and, if necessary, completely locked.



- ❶ **ISO mounting pattern**
on the robot and tool side, for easy mounting on most types of robots without needing an additional adapter plate
- ❷ **Locking piston**
made of hardened steel for pneumatically actuated locking in centric position
- ❸ **Position memory**
Optional, for pneumatically actuated locking in any eccentric position
- ❹ **Linear roller guides**
enable maximum load capacity and smooth operation with minimal installation height
- ❺ **Stroke adjustment**
for mechanical, continuous adjustment or locking of the compensating stroke
- ❻ **Monitoring groove**
Monitoring of the locked and unlocked status with magnetic switches

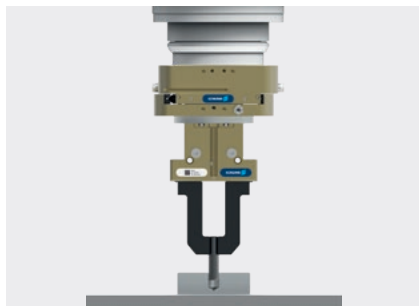
Detailed functional description

Workpiece pick up (vertical, hanging): AGM unlocked – gripper opened



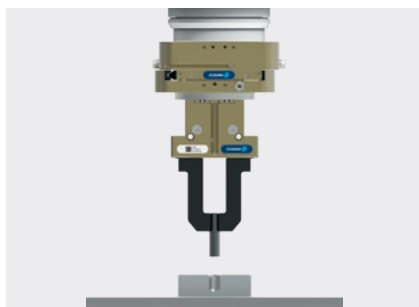
The robot approaches the workpiece with an open gripper and the AGM (compensation unit) unlocked; the workpiece is positioned with an axis offset due to the tolerances or inaccuracies.

AGM deflected – gripper closed



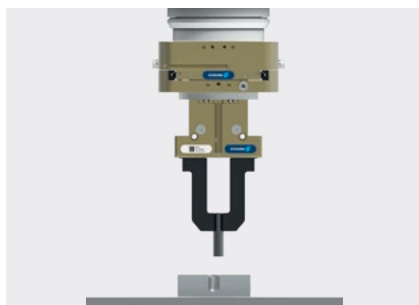
The unlocked AGM can compensate for the existing axis offset between the gripper axis and the workpiece axis, ensuring that the workpiece can be gripped safely. The resulting eccentric position of the AGM can be locked/clamped by means of the integrated position memory.

AGM eccentrically locked via position memory – gripper closed



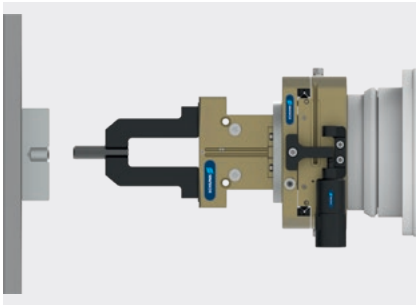
The robot picks up the workpiece and moves up.

AGM centrally locked – gripper closed



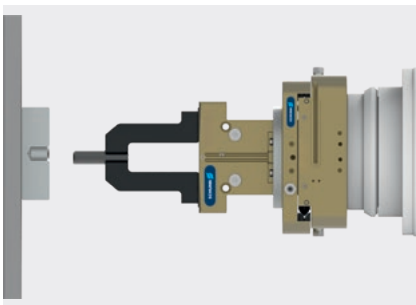
The position memory of the AGM is unlocked and the centric locking of the AGM is activated. This eliminates the previously existing axis offset, as the gripper and robot axis are now centered relative to each other.

AGM unlocked with spring or air cartridge – gripper closed



The robot moves to the drop-off position with the gripped workpiece and the AGM (compensation unit) is locked. There is an axis offset due to tolerances or inaccuracies. The AGM is unlocked for joining the workpiece. The unlocked AGM is held stable against gravity by the spring or air cartridges.

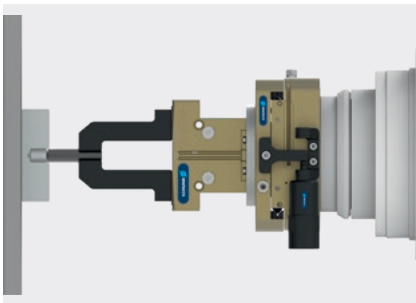
For comparison: AGM unlocked, without spring & air cartridge – gripper closed



Without a spring or air cartridge, the AGM is not stabilized against gravity and cannot compensate from the neutral middle position. It sags down due to its weight and gravity.

Select the cartridge suitable for your application to keep the AGM in the neutral center position during horizontal and inclined compensating processes, and to enable reliable compensating. Talk to us, we will be happy to advise you.

AGM deflected with spring or air cartridge – gripper closed



Thanks to the weight compensation, the AGM can compensate for the existing axis offset between the gripper axis and the workpiece axis from the neutral center position in the x- and y-directions.

Note: The spring cartridge works exclusively via the spring force and can be adjusted manually. Depending on the size, different force ranges are available to optimally adapt the weight compensation to the specific requirements of the application. The air cartridge combines spring force with the option of supplying additional compressed air. This allows the forces to be adjusted during the process via the compressed air and flexibly adapted to the respective requirements.

Combined units AGM-XYZ and AGM-WZ



The AGM-XYZ and AGM-WZ compensation units from SCHUNK combine several compensation paths in one compact component.

- AGM-XYZ: Combines the compensation paths in the xy- and z-axes
- AGM-WZ: Combines angular compensation and compensation in the z-axis

Both units are pre-assembled and available with their own ID as a standard solution. Thanks to the compact design of the combined units, you benefit from significant savings in structural height and inherent weight compared to individual, stacked compensation units. This saves space, reduces the load on the robot and end effector, and ensures efficient implementation of your processes.

General notes about the series

Guidance system: Linear roller guides

Monitoring: by magnetic switch

Actuation: pneumatic, with filtered compressed air as per ISO 8573-1:2010 [7:4:4].

Housing: hard anodized aluminum alloy, functional parts made of hardened steel

Scope of delivery: Compensation unit in the ordered variant, elements for mechanical connection and safety information. Product-specific instructions can be downloaded at schunk.com/downloads-manuals.

Warranty: 24 months

Harsh environmental conditions: Please note that use under harsh environmental conditions (e.g. in the coolant area, cast and grinding dust) can considerably reduce the service life of the units, and we will not take over any warranty. However, in many cases we can find a solution. Please contact us for assistance.

Fluid consumption: refers to the air consumption per one locking and unlocking cycle



Application example

During automated loading and unloading of machine tools, compensation units can effectively compensate for tolerances.

① Combined compensation unit XYZ with optional spring cartridges

② Universal gripper EGU

SCHUNK offers more ...

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



Tool changer pneumatic



Manual tool changer



AGM-Z



Universal gripper



Adapter plates as per DIN ISO 9409



Magnetic switches



Spring and air cartridges



Centric Grippers

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

Ordering example AGM-XY

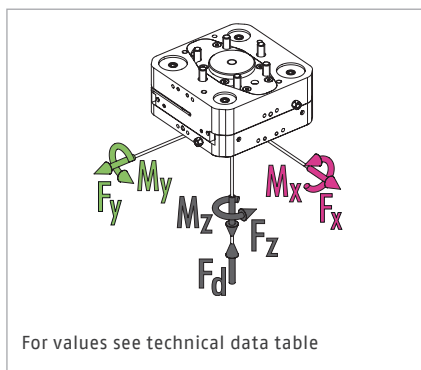
AGM - XY - 031 - P			
Description			
AGM			
Compensation direction			
XY = Compensation in x- and y-axis			
XYZ = Compensation in x-, y- and z-axes (combined)			
Size			
031			
040			
050			
063			
080			
100			
125			
160			
160L			
200			
Variant			
P = Position memory			

AGM-XY 031

Compensation unit



Max. loads



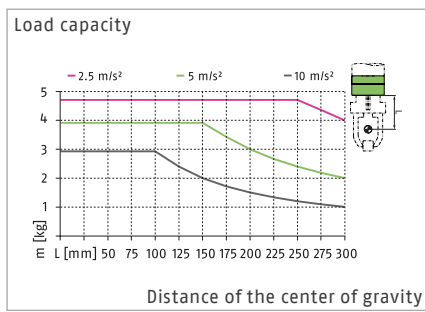
① This is the sum of all static loads that are permitted to act on the compensation unit.

Technical data

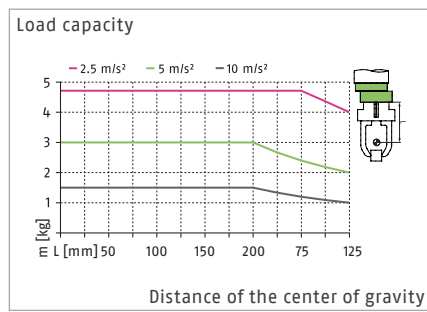
Description	AGM-XY 031	AGM-XY 031-P	AGM-XYZ 031	AGM-XYZ 031-P
ID	1577130	1582575	1591320	1601257
Compensation Z	[mm]		4	4
Compensation XY	[mm]	±2	±2	±2
Max. holding force locked (Fx, Fy)	[N]	400	400	400
Radial holding force position memory	[N]	15		15
Locking force retracted	[N]		270	270
Locking force extended	[N]		170	170
Min./max. spring force	[N]		28/50	28/50
Breakaway force	[N]	3	3	3
Min./nom./max. operating pressure	[bar]	4/6/6.5	4/6/6.5	4/6/6.5
Repeat accuracy	[mm]	0.03	0.03	0.03
Robot-side connection		ISO 9409-1-31.5-4-M5	ISO 9409-1-31.5-4-M5	ISO 9409-1-31.5-4-M5
Tool-side connection		ISO 9409-1-31.5-4-M5	ISO 9409-1-31.5-4-M5	ISO 9409-1-31.5-4-M5
Weight	[kg]	0.5	0.9	0.9
Min./max. ambient temperature	[°C]	5/60	5/60	5/60
Extension/retraction time	[s]		0.2/0.2	0.2/0.2
Locking time	[s]	0.2	0.2	0.2
Max. eccentric load	[mm]		200	200
IP protection class		20	20	20
Max. static moment M_x/M_y	[Nm]	6	6	6
Max. static moment M_z	[Nm]	6	6	6
Max. static force F_x/F_y	[N]	45	45	45
Max. static force F_z	[N]	125	100	100
Max. dynamic moment M_x/M_y	[Nm]	3	2.7	2.7
Max. dynamic moment M_z	[Nm]	3	3	3
Force F_x max. dynamic	[N]	30	30	30
Force F_y max. dynamic	[N]	30	30	30
Force F_z max. dynamic	[N]	58	50	50
Max. force F_d	[N]	250	200	200

① Further technical data can be found at schunk.com.

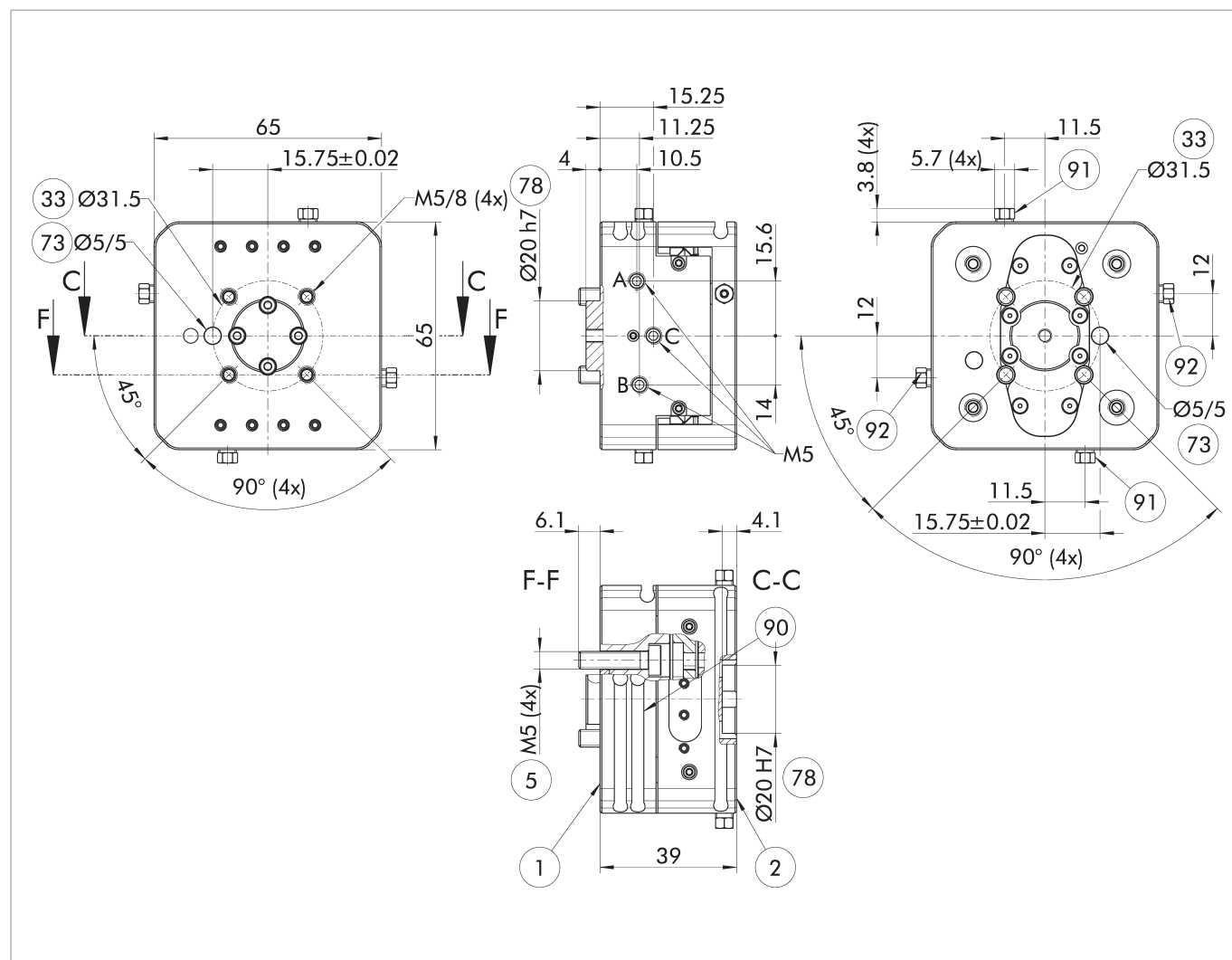
AGM-XY load diagram – vertical structure, centered



AGM-XY-P load diagram – vertical structure, non-centered



Main view AGM-XY 031



The drawing shows the basic version of the compensation unit in the centric position, without considering any dimensions of the options described below.

A, a Air connection unlocked

B, b Air connection locked

C, c Air connection position memory XY

① Robot-side connection

② Tool-side connection

⑤ Through hole for connection with screws

③③ DIN ISO-9409 bolt circle

⑦③ Fit for centering pins

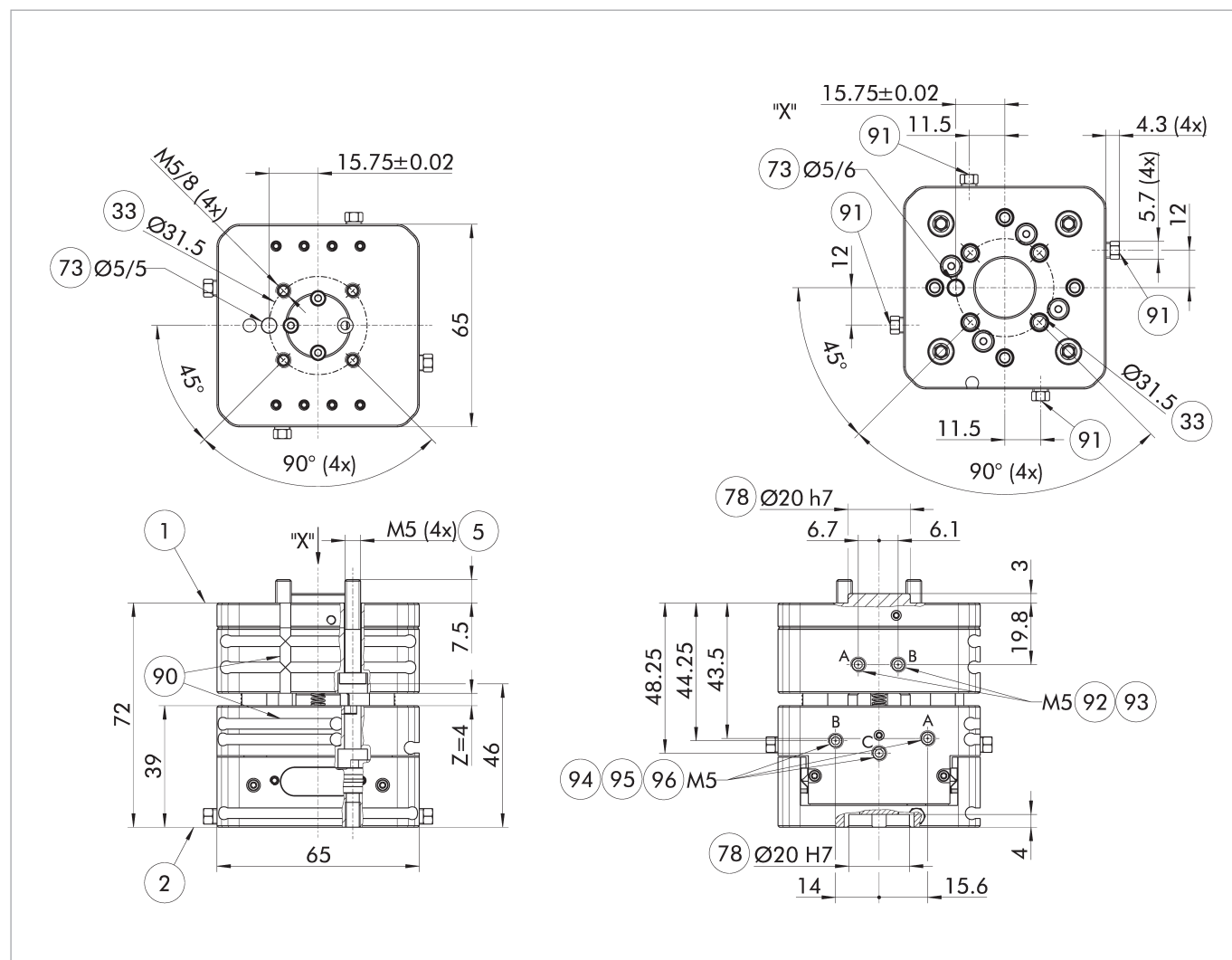
⑦⑧ Fit for centering

⑨⑩ Slot for magnetic switch

⑨① Stroke adjustment in X

⑨② Stroke adjustment in Y

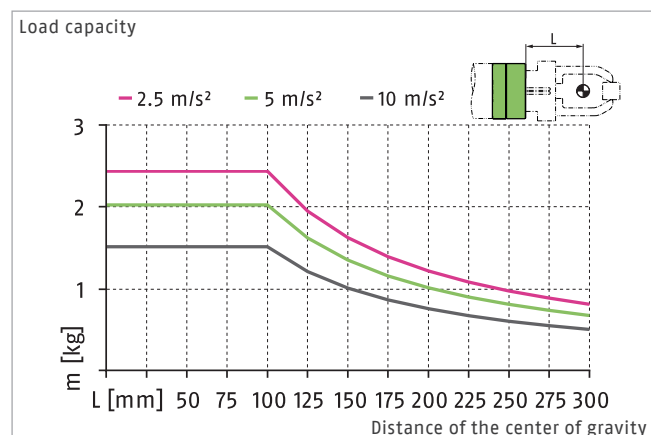
Main view AGM-XYZ 031



The drawing shows the basic version of the compensation unit in the centric position, without considering any dimensions of the options described below.

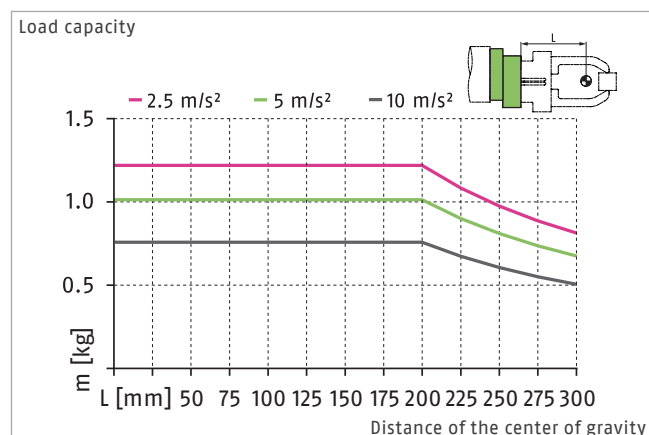
- | | |
|---|---------------------------------------|
| ① Robot-side connection | ⑨1 Stroke adjustment |
| ② Tool-side connection | ⑨2 Retract air connection A (locked) |
| ⑤ Through hole for connection with screws | ⑨3 Extend air connection B (unlocked) |
| ③3 DIN ISO-9409 bolt circle | ⑨4 Air connection A unlocked |
| ⑦3 Fit for centering pins | ⑨5 Air connection B locked |
| ⑦8 Fit for centering | ⑨6 Air connection position memory XY |
| ⑨0 Slot for magnetic switch | |

AGM-XY load diagram – horizontal structure, centered



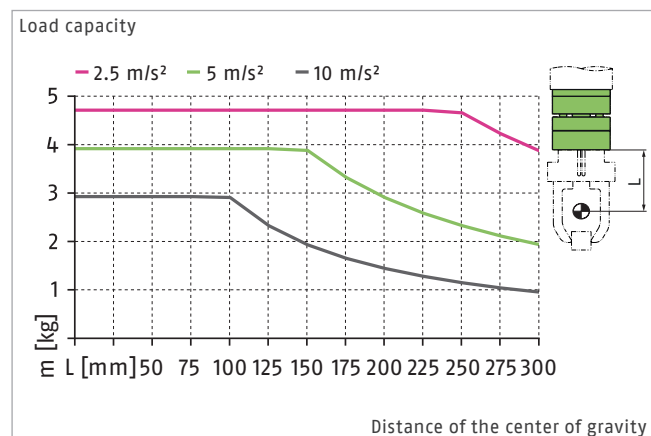
① The maximum recommended horizontal handling weight refers to applications without spring or air cartridges. We recommend their use for horizontal compensation processes.

AGM-XY-P load diagram – horizontal structure, non-centered

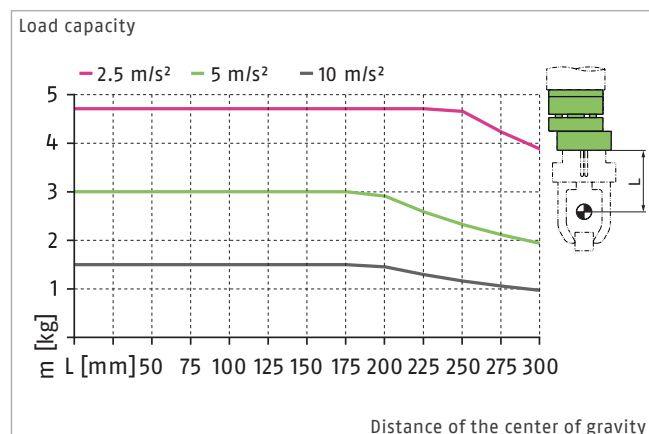


① The maximum recommended horizontal handling weight refers to applications without spring or air cartridges. We recommend their use for horizontal compensation processes.

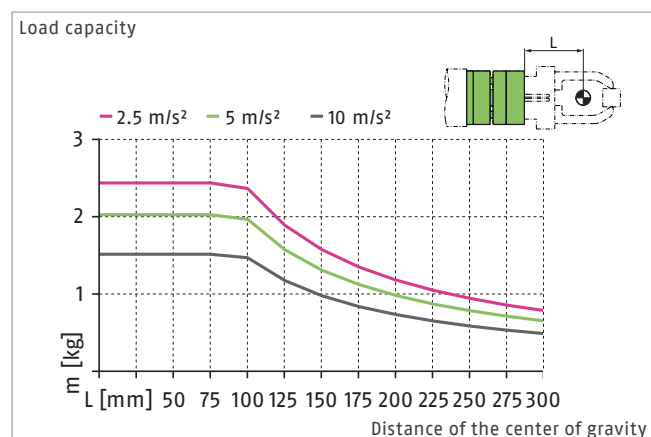
AGM-XYZ load diagram – vertical structure, centered



AGM-XYZ-P load diagram – vertical structure, non-centered

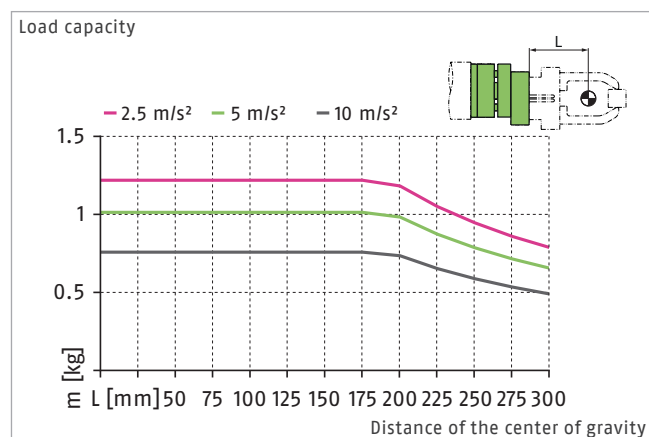


AGM-XYZ load diagram – horizontal structure, centered



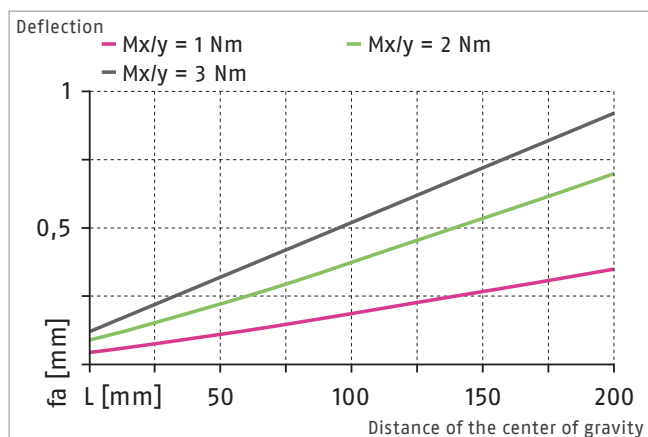
① The maximum recommended horizontal handling weight refers to applications without spring or air cartridges. We recommend their use for horizontal compensation processes.

AGM-XYZ-P load diagram – horizontal structure, non-centered



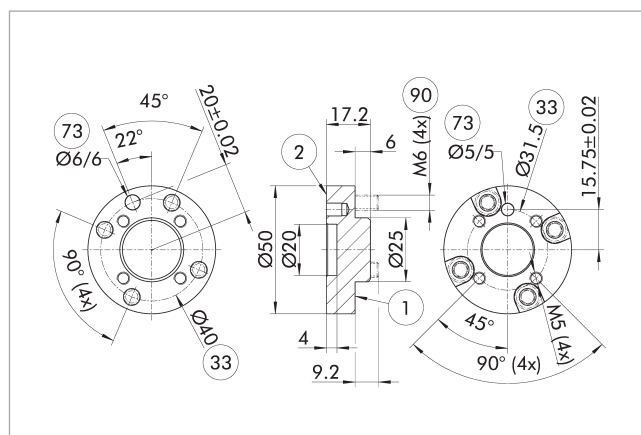
① The maximum recommended horizontal handling weight refers to applications without spring or air cartridges. We recommend their use for horizontal compensation processes.

AGM-XYZ deflection diagram – horizontal structure



① The diagram shows the change in the maximum deflection (f_a) as a function of the lever arm (L) in the depressurized status and the moments ($M_{x,y}$) acting on the additionally attached mass. The diagram does not replace the technical design.

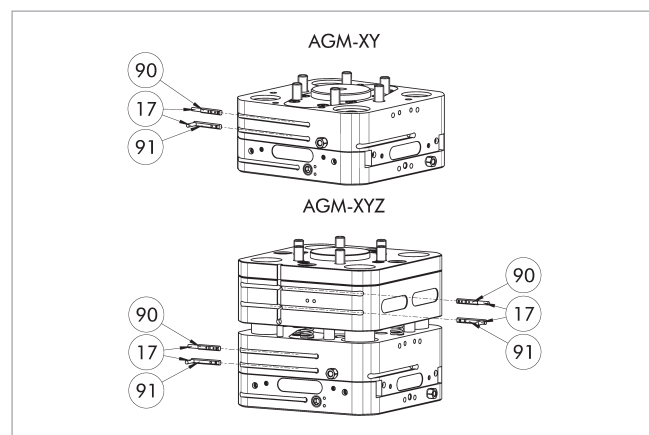
Adapter plate A-IS0031/IS0040



- ① Robot-side connection
- ② Tool-side connection
- ③ DIN ISO-9409 bolt circle
- ⑦③ Fit for centering pins
- ⑨⑩ Fastening screw for the screw connection on robot side

Description	ID
Adapter plate	
A-IS0031/IS0040	1600680

Electronic magnetic switch MMS



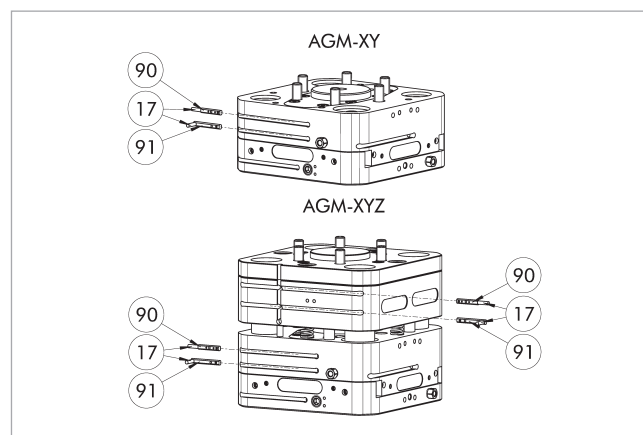
- 17 Cable outlet
91 Sensor MMS 22...-SA
90 Sensor MMS 22..

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.

Programmable magnetic switch MMS 22-PI1



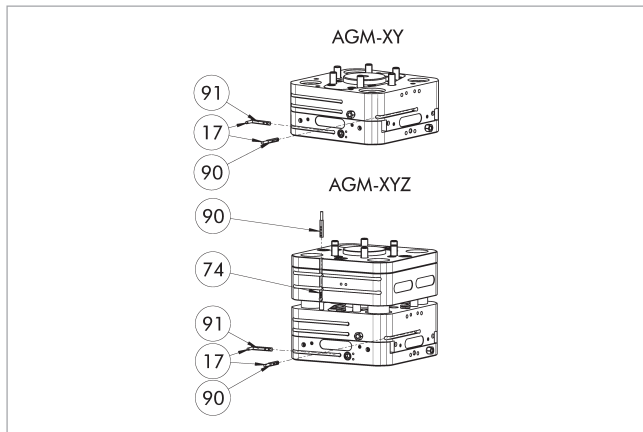
- 17 Cable outlet
91 Sensor MMS 22 ...-PI1-...-SA
90 Sensor MMS 22 PI1-...

Position monitoring with one programmable position per sensor and integrated electronic system in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

Description	ID	Often combined
Programmable magnetic switch		
MMS 22-PI1-S-M8-PNP	0301160	●
MMSK 22-PI1-S-PNP	0301162	
Programmable magnetic switch with lateral cable outlet		
MMS 22-PI1-S-M8-PNP-SA	0301166	●
MMSK 22-PI1-S-PNP-SA	0301168	
Programmable magnetic switch with stainless steel housing		
MMS 22-PI1-S-M8-PNP-HD	0301110	●
MMSK 22-PI1-S-PNP-HD	0301112	

- 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.

Programmable magnetic switch MMS 22-PI2



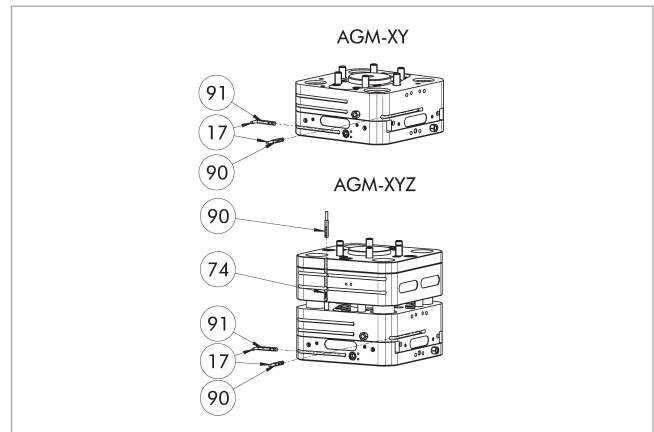
- ①⑦ Cable outlet ⑨① Sensor MMS 22...-PI2-...-SA
⑨② MMS 22...-PI2-... sensor

Position monitoring with two programmable positions per sensor and electronics integrated in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching tools are listed in the table provided, teaching is only possible with the ST teaching tools.

Description	ID	Often combined
Programmable magnetic switch		
MMS 22-PI2-S-M8-PNP	0301180	●
MMSK 22-PI2-S-PNP	0301182	
Programmable magnetic switch with lateral cable outlet		
MMS 22-PI2-S-M8-PNP-SA	0301186	●
MMSK 22-PI2-S-PNP-SA	0301188	
Programmable magnetic switch with stainless steel housing		
MMS 22-PI2-S-M8-PNP-HD	0301130	●
MMSK 22-PI2-S-PNP-HD	0301132	

- ① One sensor is required per unit for monitoring two positions.
Extension cables and sensor distributors are optionally available.
Additional product variants of the sensor, and further information and technical data can be found in the catalog chapter sensor systems.

Analog position sensor MMS-A



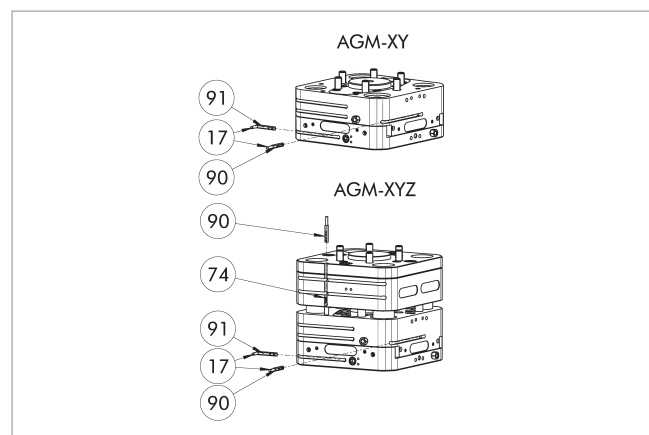
- ①⑦ Cable outlet ⑨① Sensor MMS 22...-SA
⑨② MMS 22-A-... sensor

Non-contact measuring, analog multi-position monitoring for any number of positions, easy to assemble in the C-slot. Can be programmed using MT magnetic teaching tool (included in the scope of delivery, ID 0301030) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching tools are listed in the chart provided, teaching is only possible with the ST teaching tools.

Description	ID
Analog position sensor	
MMS 22-A-10V-M08	0315825
MMS 22-A-10V-M12	0315828

- ① One sensor is required per balancing plane. Further information and technical data can be found in the catalog chapter sensor systems.

Magnetic switch MMS 22-I0-Link



17 Cable outlet

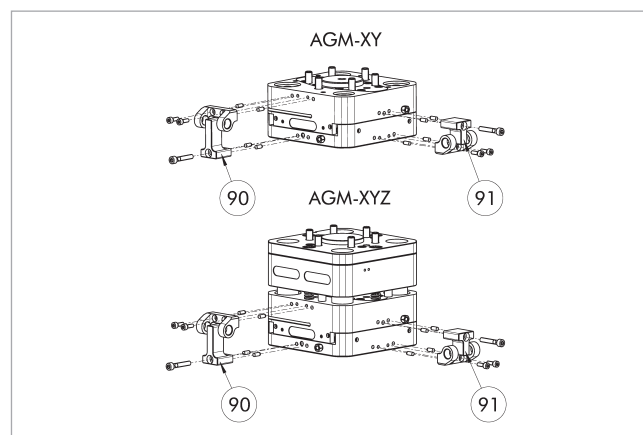
90 Sensor MMS 22-I0L-...

Sensor for multi-position monitoring through detection of the complete compensation stroke. The sensor is mounted directly in the C-slot of the compensation unit. The sensor is programmed for the compensation unit via the IO-Link interface, magnet teaching tool MT (included in scope of delivery; ID 0301030) or the ST plug teaching tool (not included in scope of delivery; ID 0301026). An IO-Link master is required for operation.

Description	ID	Often combined
Programmable magnetic switch		
MMS 22-I0L-M08	0315830	●
MMS 22-I0L-M12	0315835	

① One sensor is required per balancing plane. Further information and technical data can be found in the catalog chapter sensor systems.

Attachment kit for spring and air cartridges

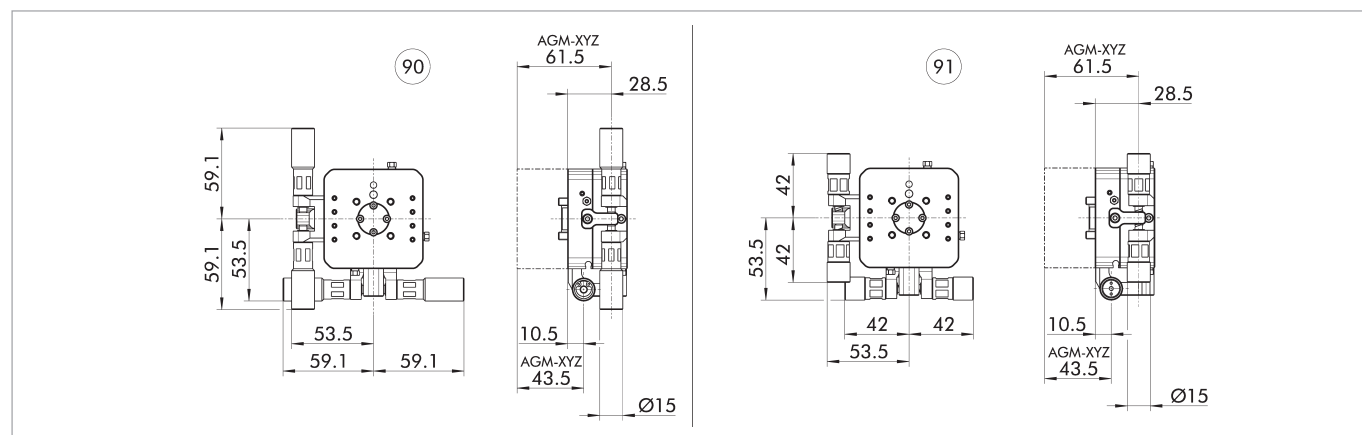


90 Attachment kit long (L)

91 Attachment kit short (K)

Description	ID
Attachment kit for spring/air cartridge	
AS-AGM-031/040-FP/LP-K	1602229
AS-AGM-031/040-FP/LP-L	1602230

Spring/air cartridge



90 Spring cartridge (FP)

91 Air cartridge (LP)

Description	ID	Min. force without plunger deflection	Max. force without plunger deflection	Increase in spring force per mm of plunger deflection	Weight
		[N]	[N]	[N]	[kg]
Attachment kit for spring/air cartridge					
AS-AGM-031/040-FP/LP-K	1602229				
AS-AGM-031/040-FP/LP-L	1602230				
Spring cartridge					
FP1-AGM-031/040	1601825	5	45	2.5	0.04
Air cartridge					
LP1-AGM-031/040	1601827	5	45	0.2	0.03



SCHUNK SE & Co. KG

Spanntechnik

Greiftechnik

Automatisierungstechnik

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