Product data sheet AGM-Z 031 Katalog

Compensation unit

Hand in hand for tomorrow

Precise. Reliable. Modular.

Compensation unit AGM-Z

Modular compensation unit with z-axis flexibility for the compensation of inaccuracies and tolerances as well as differences in height. As part of the AGM product family, the AGM-Z can be flexibly combined with the AGM-XY and AGM-W and therefore always offers the right compensation behavior for a wide range of applications.

Field of application

For handling tasks such as automated machine loading, assembly tasks such as pressing in components or positioning components for joining tasks. For use with magnetic grippers, where reliable compensating is required. Compensation units can be used on robots as well as in stationary applications.

Advantages – Your benefits

- **Highest bearing load capacity**
  enables the handling of high loads and moments thanks to the ball guide
- **Maximum flexibility**
  thanks to the modularity of the AGM product family, combinations with XY and W are possible
- **Locking**
  for switching the unit rigidly in a defined, extended or retracted position
- **Easily adaptable spring forces**
  by manually reducing the springs
- **Increased process stability**
  by various sensing options via magnetic switches or inductive proximity switches

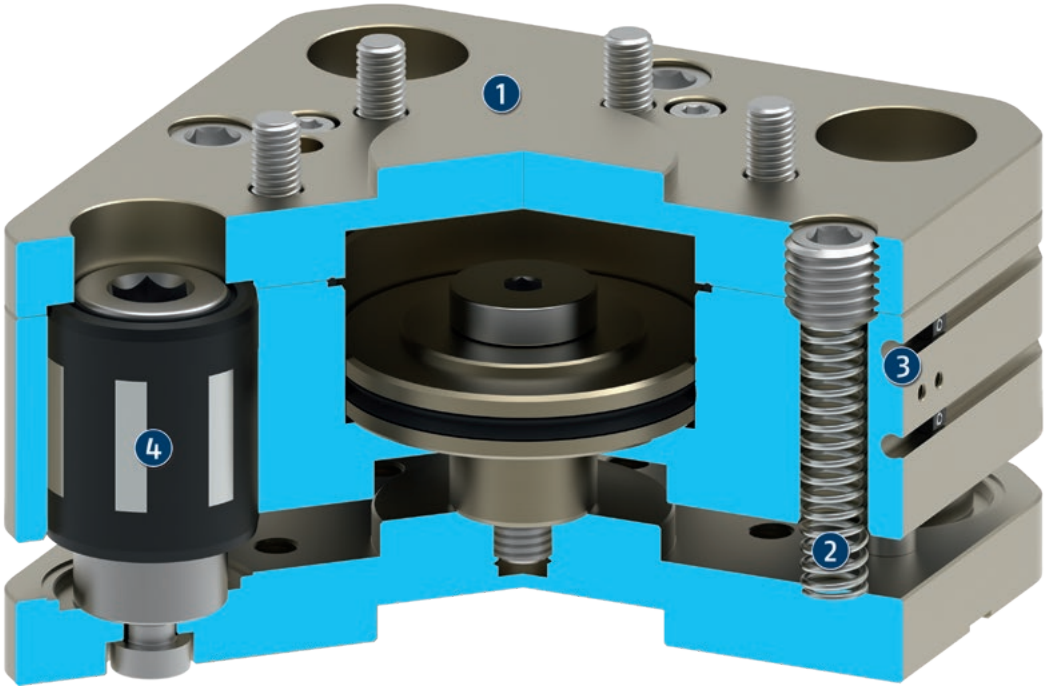
Sizes
Quantity: 10

Handling weight
2.2 .. 430 kg

Compensation Z
4 .. 20 mm

Functional description

The AGM-Z offers compensation in the z-axis, for example for removal and storage processes in any spatial orientation. Robust ball guides ensure maximum bearing load capacity when handling high loads and moments. The stiffness of the integrated pressure springs can be adjusted for optimal contact pressure forces during storage. This can be increased by additional actuation of the pneumatic cylinder. The modular and compact design enables combinations to be made, and saves installation height. The retracted and extended positions are monitored by magnetic switches or inductive proximity switches.



1. **ISO mounting pattern**
   on the robot and tool side, for easy mounting on most types of robots without needing an additional adapter plate
2. **Pressure springs**
   for adjustable clamping forces during storage
3. **Monitoring groove**
   Monitoring of the retracted and extended status
4. **Ball guides**
   enables great maximum moments at minimum size

Detailed functional description

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: Ball guides

Monitoring: via magnetic switch or inductive proximity sensor

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 retraction and extension cycle

Application example

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

❶ **Combined compensation unit XYZ with optional spring cartridges**

❷ **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-XY

AGM-W

Inductive proximity switch

Electric magnetic gripper

Universal gripper

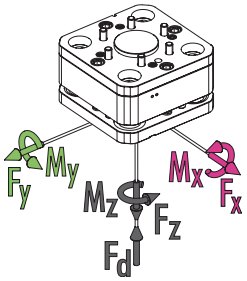
Universal gripper

Magnetic switches

Adapter plates as per DIN ISO 9409

ⓘ For more information on these products can be found on the following product pages or at schunk.com.

Max. loads



For values see technical data table

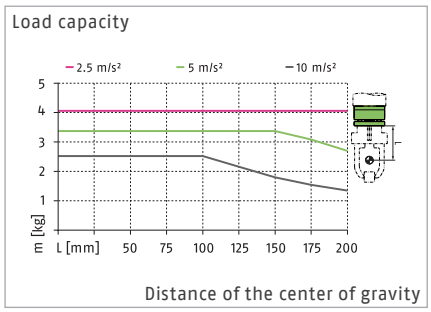
ⓘ This is the sum of all static loads that are permitted to act on the compensation unit.

Technical data

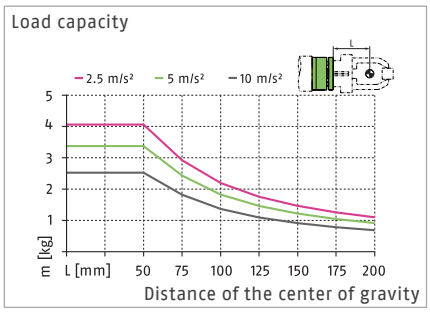
Description		AGM-Z 031	AGM-XYZ 031	AGM-XYZ 031-P
ID		*1575899*	*1591320*	*1601257*
Compensation Z	[mm]	4	4	4
Compensation XY	[mm]		±2	±2
Max. holding force locked (Fx, Fy)	[N]		400	400
Radial holding force position memory	[N]			15
Locking force retracted	[N]	170	270	270
Locking force extended	[N]	270	170	170
Min./max. spring force	[N]	28/50	28/50	28/50
Breakaway force	[N]		3	3
Min./nom./max. operating pressure	[bar]	2.5/6/6.5	4/6/6.5	4/6/6.5
Repeat accuracy	[mm]	0.02	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]	0.08/0.08	0.2/0.2	0.2/0.2
Locking time	[s]		0.2	0.2
Max. eccentric load	[mm]	300	200	200
IP protection class		50	20	20
Max. static moment M_x/M_y	[Nm]	12	6	6
Max. static moment M_z	[Nm]	20	6	6
Max. static force Fx/Fy	[N]	100	45	45
Max. static force Fz	[N]	100	100	100
Max. dynamic moment M_x/M_y	[Nm]	2.7	2.7	2.7
Max. dynamic moment M_z	[Nm]	4.5	3	3
Force Fx max. dynamic	[N]	50	30	30
Force Fy max. dynamic	[N]	50	30	30
Force Fz max. dynamic	[N]	50	50	50
Max. force F_d	[N]	200	200	200

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

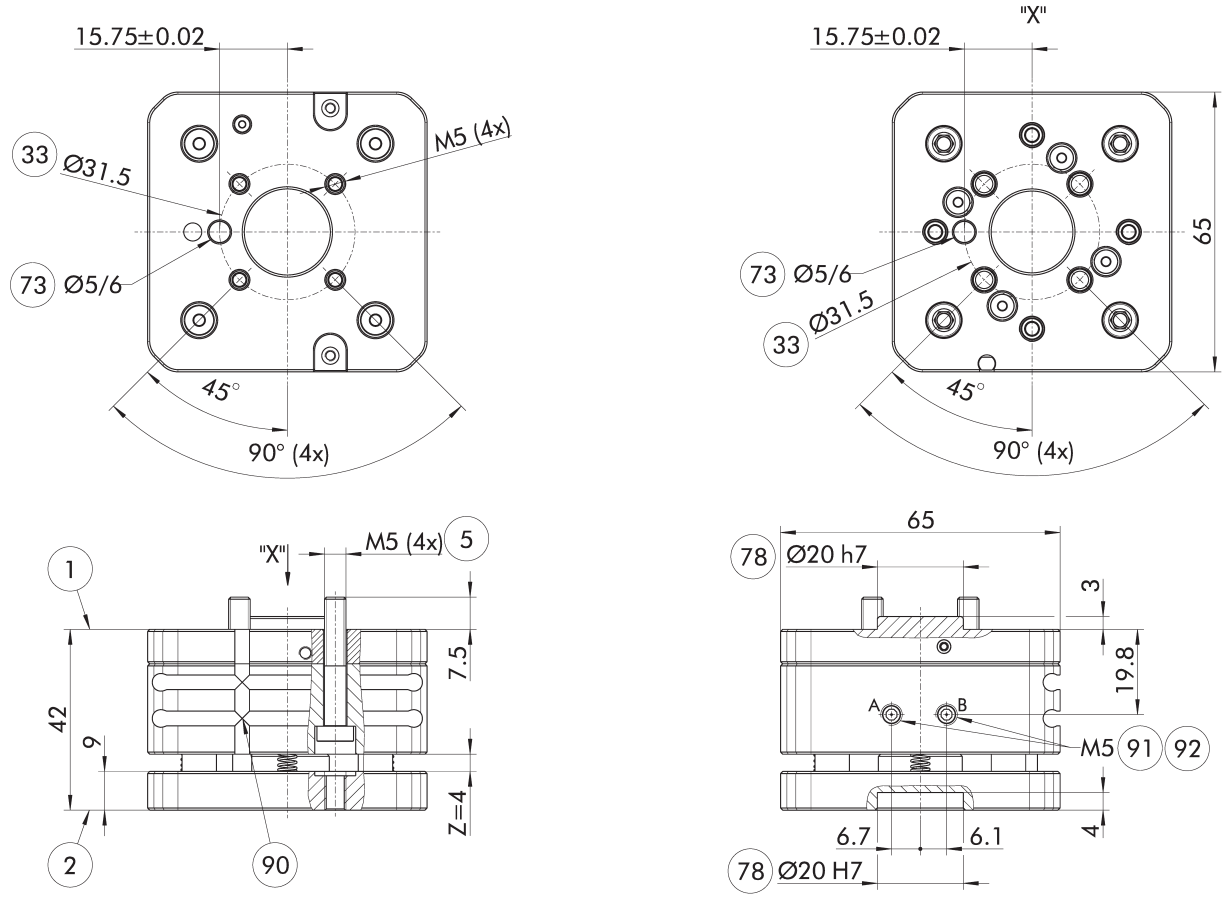
AGM-Z load diagram – vertical structure



AGM-Z load diagram – horizontal structure



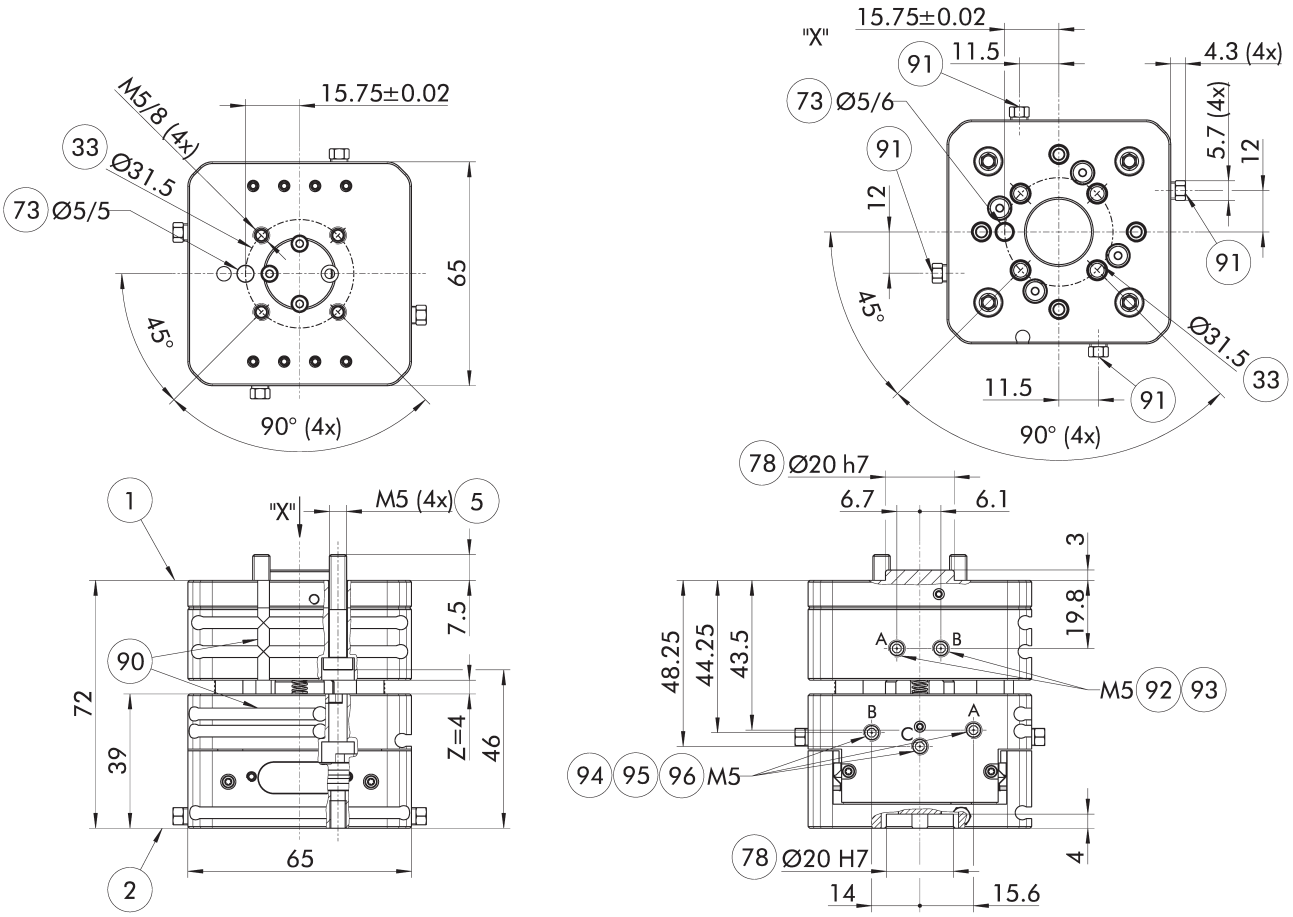
Main view AGM-Z 031



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

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
90. Slot for magnetic switch
91. Retract air connection A (locked)
92. Extend air connection B (unlocked)

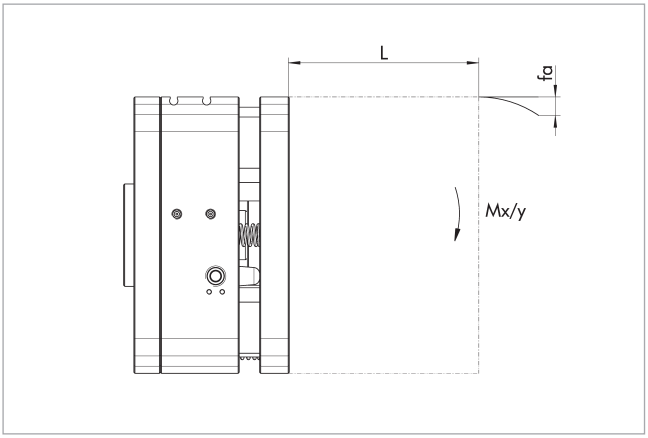
Main view AGM-XYZ 031



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

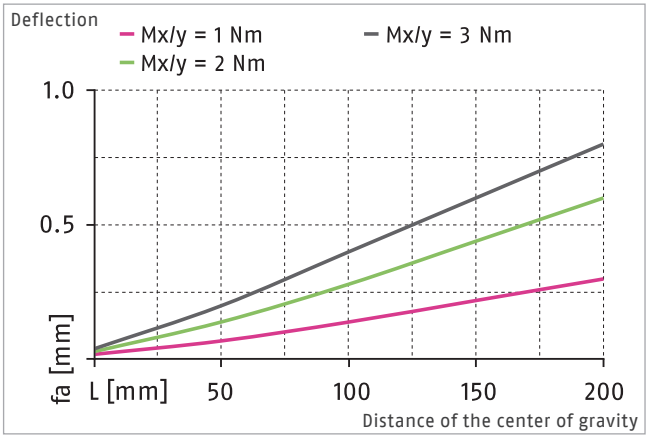
1. Robot-side connection
2. Tool-side connection
5. Through hole for connection with screws
33. DIN ISO-9409 bolt circle
73. Fit for centering pins
78. Fit for centering
90. Slot for magnetic switch
91. Stroke adjustment
92. Retract air connection A (locked)
93. Extend air connection B (unlocked)
94.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

Deflection



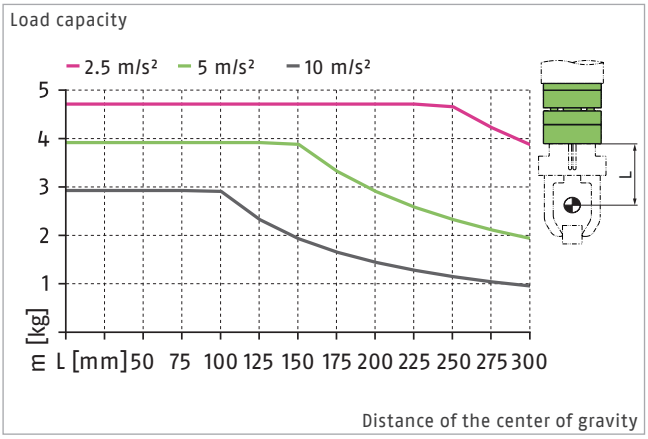
ⓘ Illustration applies to AGM-Z and AGM-XYZ

AGM-Z deflection diagram – horizontal structure

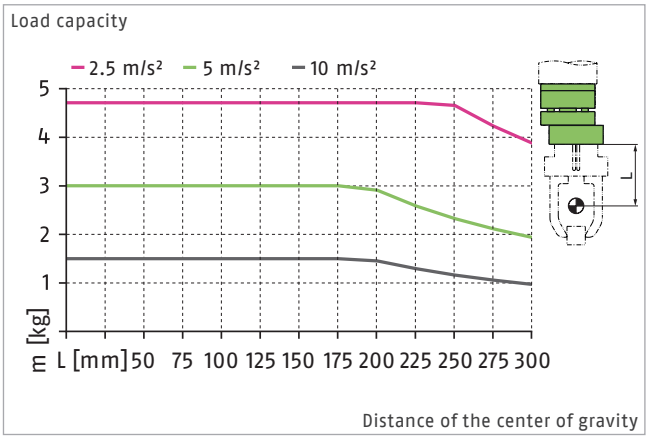


ⓘ The diagram shows the change in the maximum deflection (fa) as a function of the lever arm (L) in the depressurized status and the moments (Mx,y) acting on the additionally attached mass. The diagram does not replace the technical design.

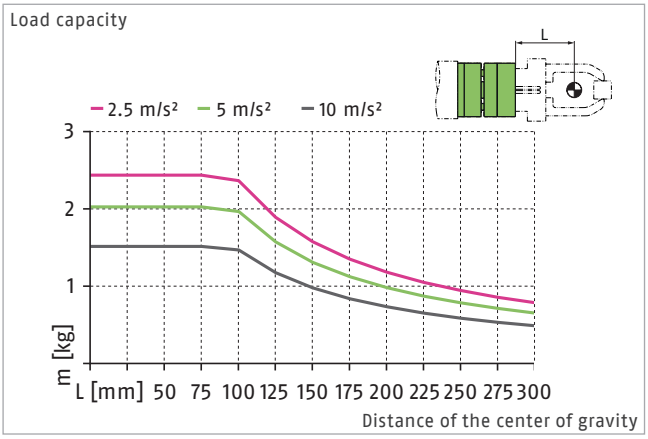
AGM-XYZ load diagram – vertical structure, centered



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

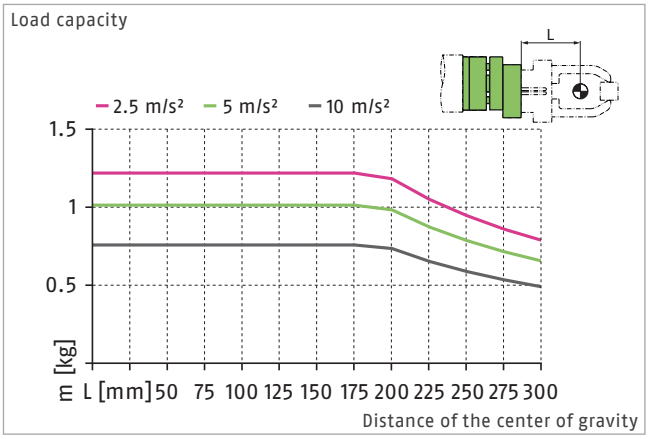


AGM-XYZ load diagram – horizontal structure, centered



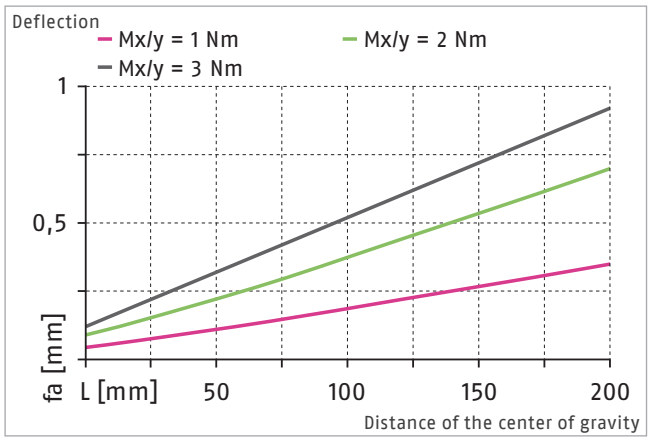
ⓘ The maximum recommended horizontal handling weight refers to applications without spring or air cartridges. We recommend their use for horizontal compensation processes.

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



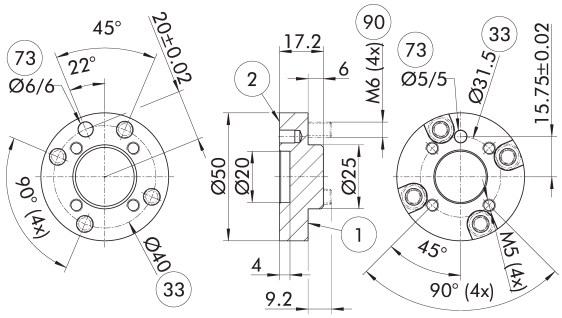
ⓘ The maximum recommended horizontal handling weight refers to applications without spring or air cartridges. We recommend their use for horizontal compensation processes.

AGM-XYZ deflection diagram – horizontal structure



ⓘ The diagram shows the change in the maximum deflection (fa) as a function of the lever arm (L) in the depressurized status and the moments (Mx,y) acting on the additionally attached mass. The diagram does not replace the technical design.

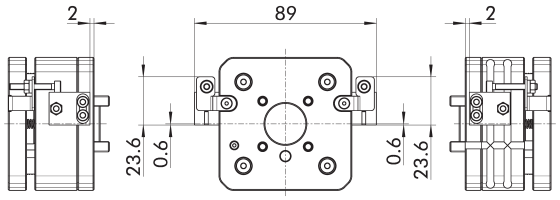
Adapter plate A-IS0031/IS0040



(1) Robot-side connection
(2) Tool-side connection
(33) DIN ISO-9409 bolt circle
(73) Fit for centering pins
(90) Fastening screw for the screw connection on robot side

Description	ID
Adapter plate	
A-IS0031/IS0040	*1600680*

Attachment kit for proximity switch IN 80

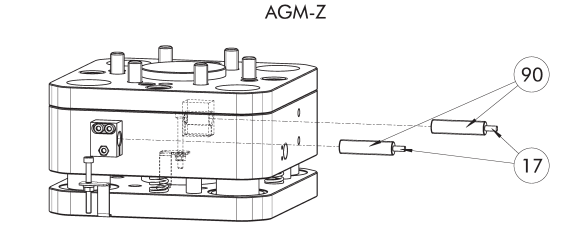


End position monitoring can be mounted with an attachment kit.

Description	ID
Attachment kit for proximity switch	
AS-AGM-Z-031-IN80	*1601727*

ⓘ This attachment kit needs to be ordered optionally as an accessory.

IN 80 inductive proximity switches



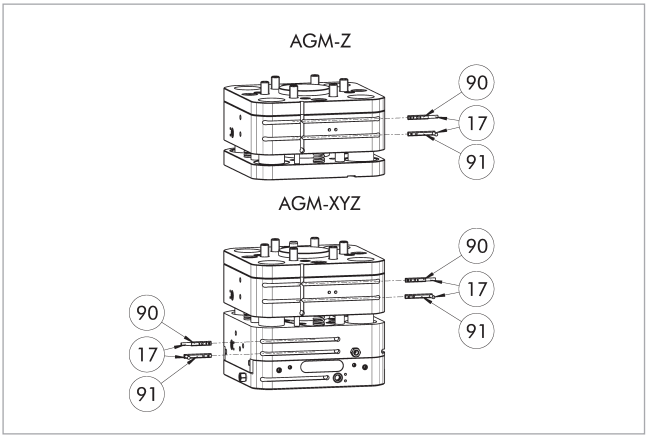
(17) Cable outlet
(90) IN proximity switch

End position monitoring can be mounted with an attachment kit.

Description	ID	Often combined
Attachment kit for proximity switch		
AS-AGM-Z-031-IN80	*1601727*	
Inductive proximity switch		
IN 80-S-M12	*0301578*	
IN 80-S-M8	*0301478*	●
INK 80-S	*0301550*	
Inductive proximity switch with lateral cable outlet		
IN 80-S-M12-SA	*0301587*	
IN 80-S-M8-SA	*0301483*	●
INK 80-S-SA	*0301566*	

ⓘ Two sensors (closer/S) are required for each unit and extension cables are available 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.

Electronic magnetic switch MMS



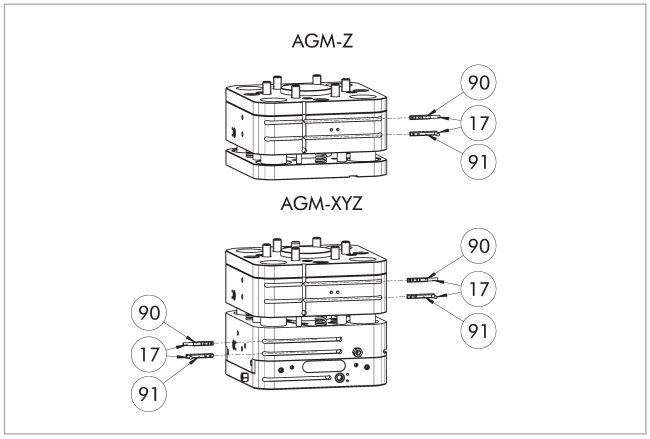
(17) Cable outlet
(91) Sensor MMS 22...-SA
(90) Sensor MMS 22..

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	

ⓘ 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



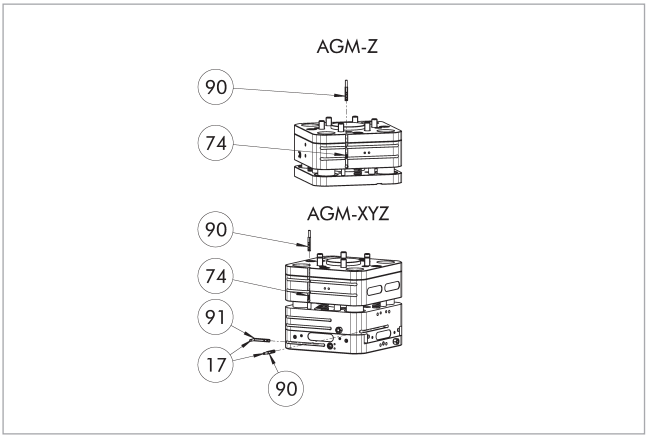
(17) Cable outlet
(91) Sensor MMS 22 ..-PI1-...-SA
(90) Sensor MMS 22 PI1-...

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	

ⓘ 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



74 Limit stop for sensor

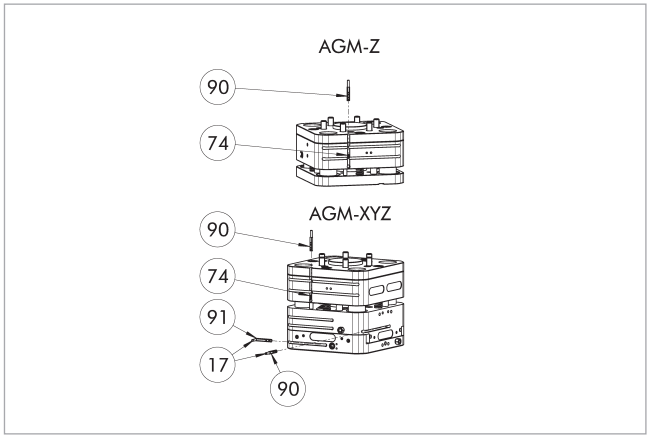
90 MMS 22...-PI2-... sensor

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*	●
Programmable magnetic switch with lateral cable outlet		
MMS 22-PI2-S-M8-PNP-SA	*0301186*	●
Programmable magnetic switch with stainless steel housing		
MMS 22-PI2-S-M8-PNP-HD	*0301130*	●

ⓘ 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



74 Limit stop for sensor

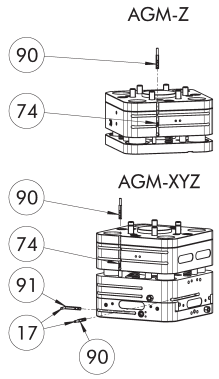
90 MMS 22-A-... sensor

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*

ⓘ 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-IO-Link



74 Limit stop for sensor

90 Sensor MMS 22-IOL-...

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
Programmable magnetic switch	
MMS 22-IOL-M08	*0315830*
MMS 22-IOL-M12	*0315835*

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

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