



Superior Clamping and Gripping



Product Information

Miniature swivel vane SFL

Flexible. Freely adjustable swivel angle.

Vane swivel unit SFL

Miniature vane swivel unit for light swiveling tasks up to 180°

Field of application

Optimum solution when using for easy rotation tasks.

Advantages – Your benefits

Compact design due to the almost cube shaped design several modules can be mounted in parallel

Flexible adjustment of the swivel angle from 0 –180° this results in a versatile range of applications

Fine adjustment of the angle of rotation for sensitive adjustment of end positions

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

High life time and excellent synchronization due to machining of the running surfaces



Sizes
Quantity: 3



Weight
0.09 .. 0.71 kg



Torque
0.1 .. 3.6 Nm



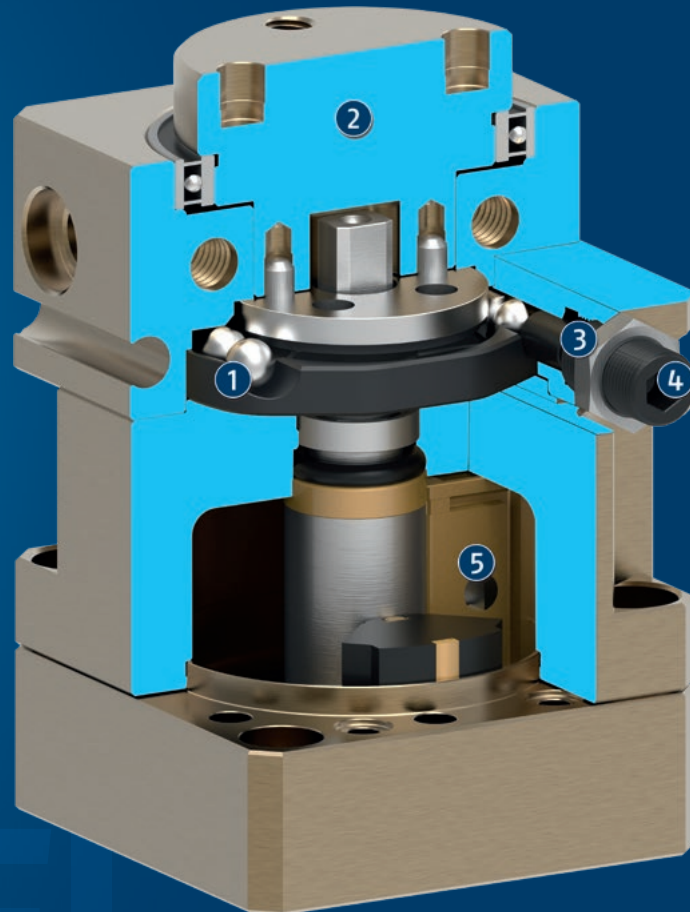
Repeat accuracy
0.05°



Angle of rotation
90 .. 180°

Functional description

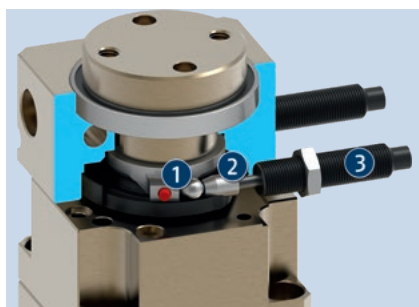
The drive is pneumatic and based on the rotor principle. The complete module can be supplied via a central, base-side connection using the direct connection.



- ① **Pre-adjustment of rotating angle**
using steel balls for any desired angle of rotation
- ② **Rotary table**
for mounting the attachment
- ③ **Fine adjustment of the angle of rotation**
for sensitive adjustment of end positions
- ④ **End position damping**
via elastomer or hydraulic shock absorbers
- ⑤ **Vane swivel unit**
as a compact, powerful drive

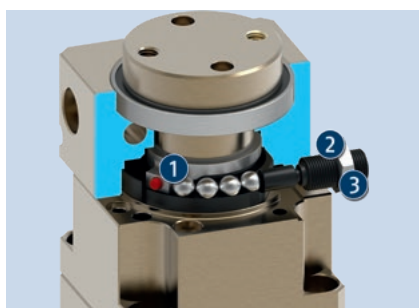
Detailed functional description

Adjustment for a large swivel angle for units with hydraulic shock absorbers



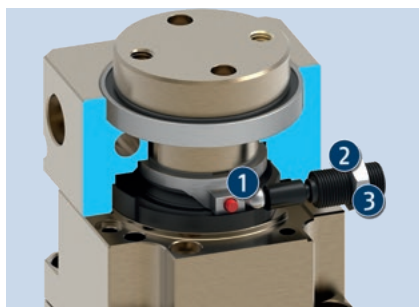
- ❶ End position coarse adjustment via number of balls
- ❷ End position fine adjustment via threads of the shock absorber
- ❸ Damping via hydraulic shock absorbers

Adjustment for a small swivel angle for units with elastomer damping



- ❶ End position coarse adjustment via number of balls
- ❷ End position fine adjustment via threads of the stop
- ❸ Damping via elastomer

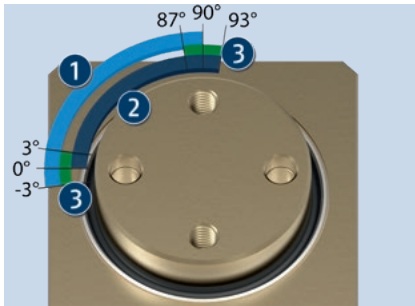
Adjustment for a large swivel angle for units with elastomer damping



- ❶ End position coarse adjustment via number of balls
- ❷ End position fine adjustment via threads of the stop
- ❸ Damping via elastomer

Adjustment range of end positions and switching range of the sensor

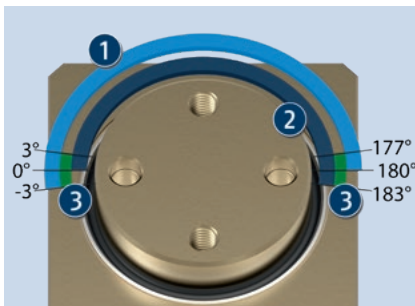
Version with 90° swivel angle



Both end positions are adjustable in order to display variable swivel angles over the entire swivel range. However, the magnetic sensors can switch only within a limited swivel range for monitoring of end positions.

- ❶ Adjustment range starting angle
- ❷ Adjustment range end angle
- ❸ Sensor switching range

Version with 180° swivel angle



Both end positions are adjustable in order to display variable swivel angles over the entire swivel range. However, the magnetic sensors can switch only within a limited swivel range for monitoring of end positions.

- ❶ Adjustment range starting angle
- ❷ Adjustment range end angle
- ❸ Sensor switching range

Ordering example

	SFL	25	-	E	-	090
Description						
SFL						
Size						
25/40/64						
Type of damping method						
E = Elastomer						
S = shock absorber						
Swivel angle						
90°/180°						

General notes about the series

Swivel vane material: Steel

Housing material: Aluminum alloy, anodized

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

Operating principle: Vane swivel unit

Scope of delivery: Centering sleeves, centering pins, O-rings for direct connection, assembly and operating manual with manufacturer's declaration

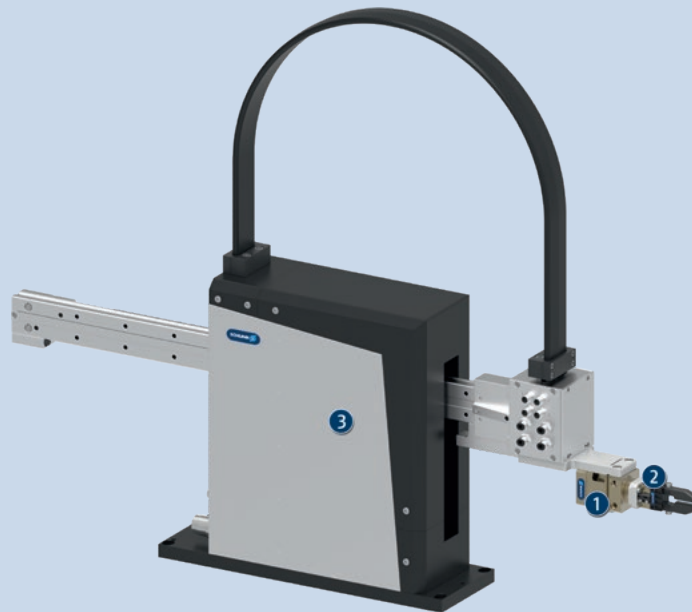
Warranty: 24 months

Service life characteristics: on request

Repeat accuracy: is defined as a distribution of the end position for 100 consecutive cycles.

Flange position: is always drawn in the left end position. It rotates from here to the right in clockwise direction. The arrow points out the direction of rotation.

Swiveling time: is the rotation time of pinion/flange around the nominal rotation angle. Valve switching times, hose filling times, or PLC reaction times are not included and are to be considered when cycle times are calculated.



Application example

Electric Pick & Place unit with swivel vane and gripper for shifting and horizontal turning of small workpieces.

① Vane swivel unit SFL

② Gripper for small components MPG-plus

③ Pick & place unit PPU-E

SCHUNK offers more ...

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



Gripper for small components



Gripper for small components



Linear module



Pick & Place Unit



Magnetic switches



Pressure maintenance valve

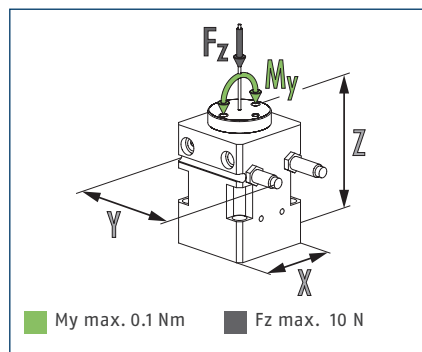
① For more information on these products can be found on the following product pages or at [schunk.com](https://www.schunk.com).

Options and special information

The end positions of the vane swivel unit SFL can be set to anywhere between 0° and 180° due to the innovative back stop concept.



Dimensions and maximum loads

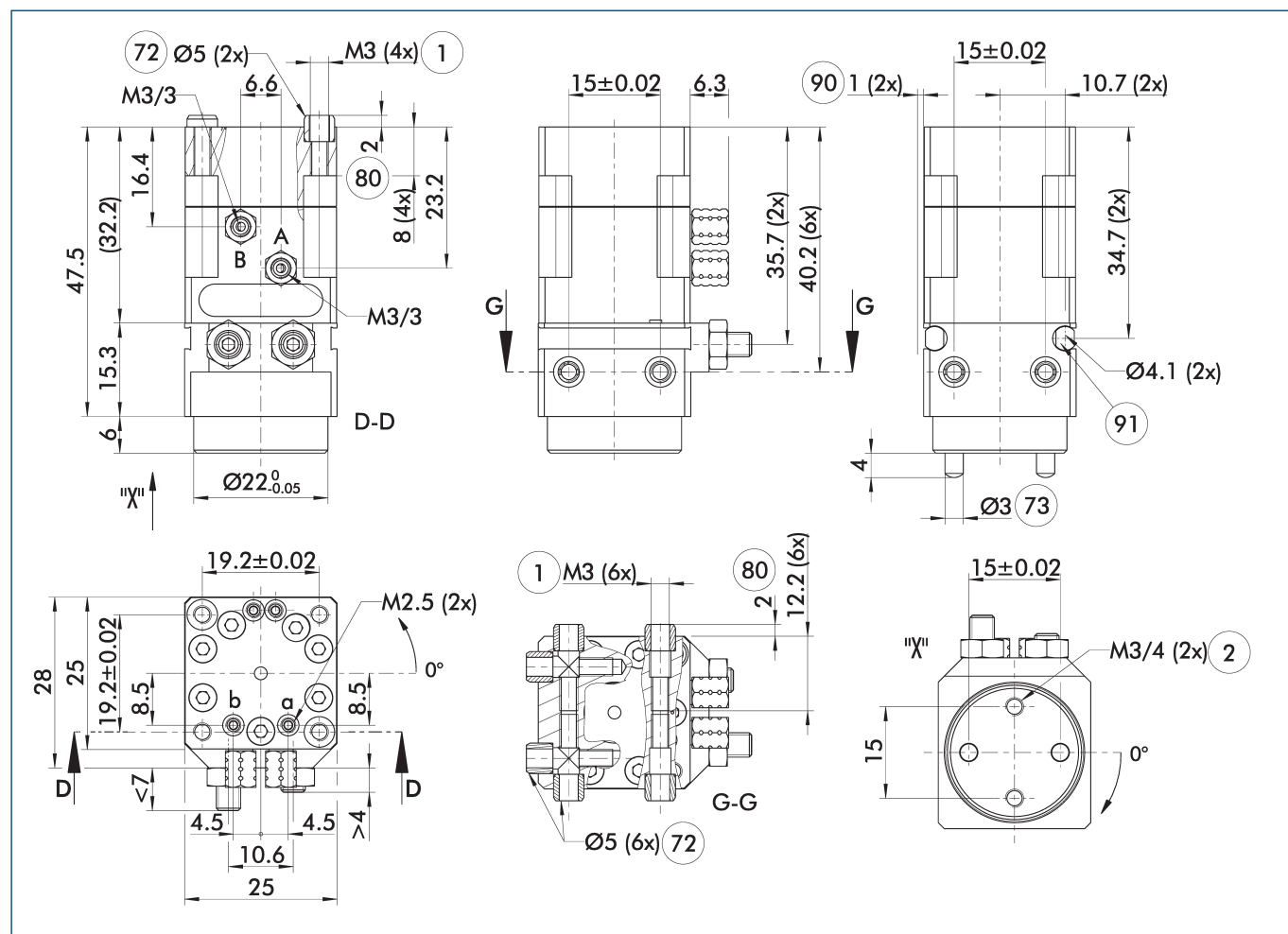


① The indicated moments and forces are static values and may appear simultaneously. Throttling has to be done for ensuring that the rotary movement takes place without impact or bouncing. Otherwise the service life reduces.

Technical data

Description		SFL-25-E-090	SFL-25-E-180
ID		0304560	0304060
Angle of rotation	[°]	90.0	180.0
End position adjustability	[°]	90.0	180.0
End position damping		Elastomer	Elastomer
Torque	[Nm]	0.1	0.1
IP protection class		52	52
Weight	[kg]	0.09	0.09
Swiveling time (1x nominal rotation angle) without attached load	[s]	0.06	0.10
Fluid consumption (2x nom. angle)	[cm³]	2.0	3.0
Min./nom./max. operating pressure	[bar]	4/6/6.5	4/6/6.5
Diameter of connecting hose		3 x 1.8 x 0.6	3 x 1.8 x 0.6
Min./max. ambient temperature	[°C]	5/90	5/90
Max. permissible inertia of the set-up	[kgmm²]	50	50
Repeat accuracy	[°]	0.05	0.05
Dimensions X x Y x Z	[mm]	25 x 35 x 53.5	25 x 35 x 53.5

Main view



The drawing shows the basic design of the vane swivel unit with elastomer damping.

- ① The SDV-P pressure maintenance valve can be used to maintain the position in the case of a loss of pressure (see “Accessories” catalog section).

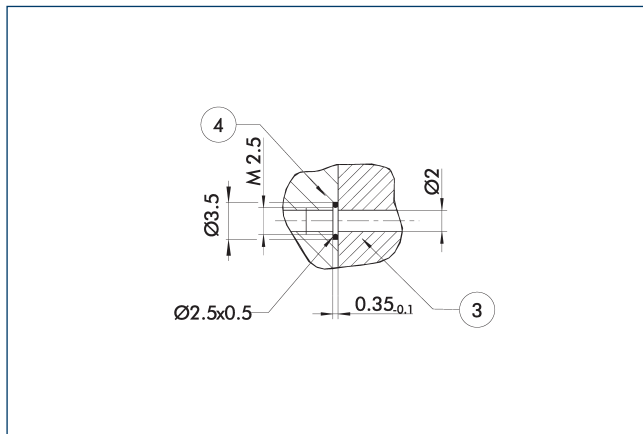
- A, a Main / direct connection,
rotary actuator rotates
clockwise

- B, b Main / direct connection,
rotary actuator rotates
counterclockwise

- ① Connection swivel unit
- ② Attachment connection

- 72 Fit for centering sleeves
- 73 Fit for centering pins
- 80 Depth of the centering sleeve hole in the counter part
- 90 Sensor projection beyond housing
- 91 Sensor MMS 22..

Hose-free direct connection M2.5

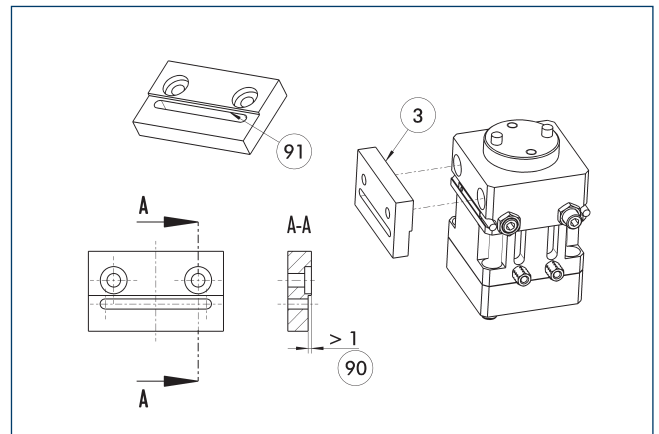


③ Adapter

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.

Adapter plate design



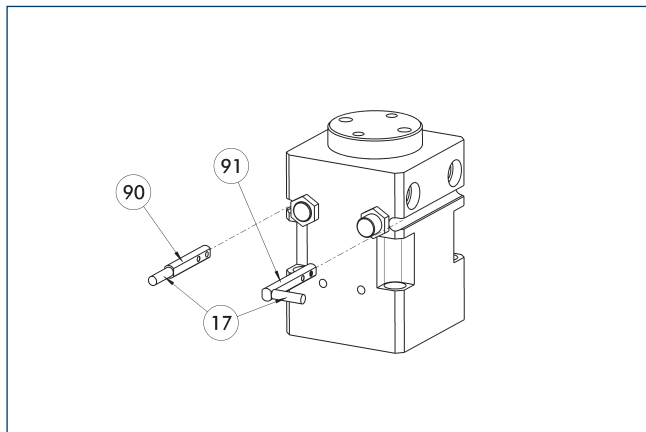
③ Adapter

⑨1 Recess as mounting aid

⑨0 Step

Suggested here is an adapter plate design which allows for access to the sensors as easily as possible.

Electronic magnetic switch MMS



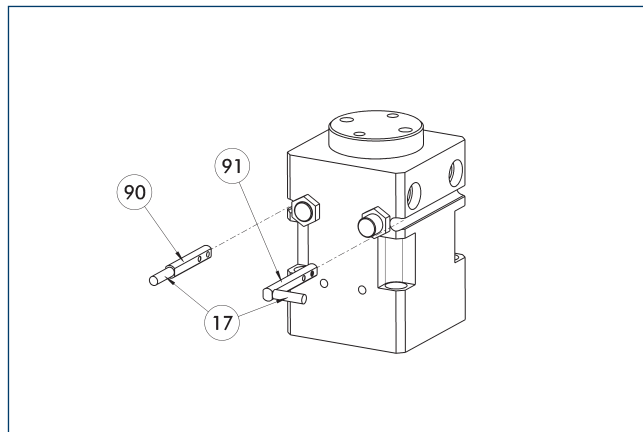
- ①⑦ Cable outlet ①⑨ Sensor MMS 22...-SA
 ①⑩ Sensor MMS 22..

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 plug/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 ①⑨ Sensor MMS 22...-PI1...-SA
 ①⑩ Sensor MMS 22 PI1...

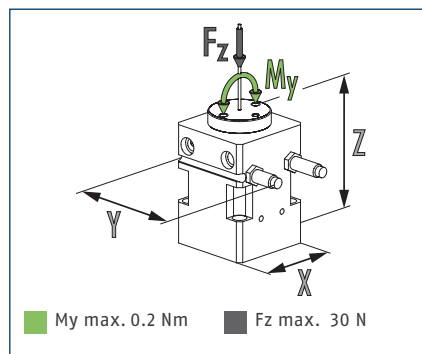
Position monitoring with one programmable position per sensor and integrated electronic system in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching 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.



Dimensions and maximum loads

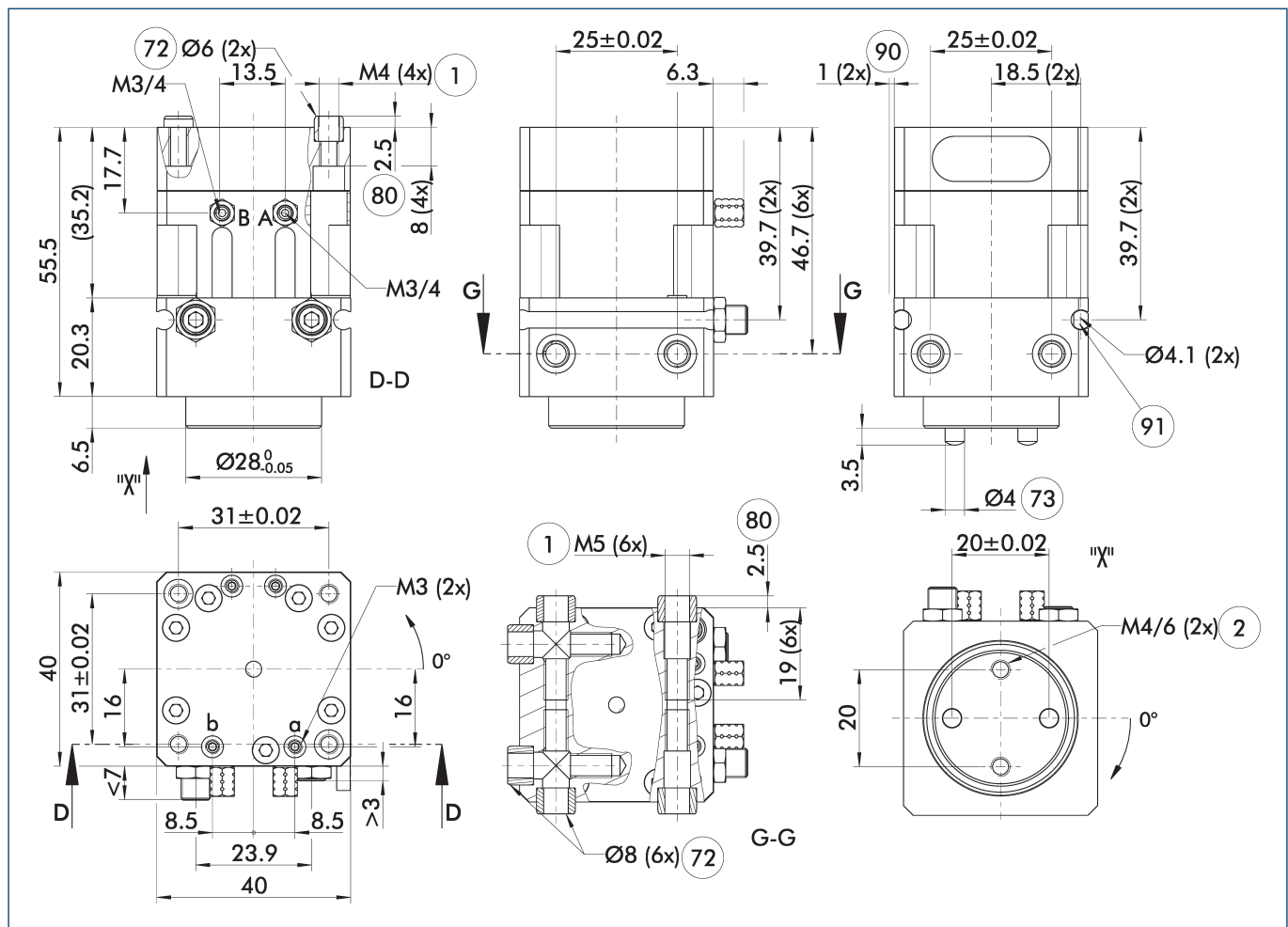


- ① The indicated moments and forces are static values and may appear simultaneously. Throttling has to be done for ensuring that the rotary movement takes place without impact or bouncing. Otherwise the service life reduces.

Technical data

Description		SFL-40-E-090	SFL-40-S-090	SFL-40-E-180	SFL-40-S-180
ID		0304564	0304565	0304064	0304065
Angle of rotation	[°]	90.0	90.0	180.0	180.0
End position adjustability	[°]	90.0	90.0	180.0	180.0
End position damping		Elastomer	hydr. damper	Elastomer	hydr. damper
Torque	[Nm]	0.5	0.5	0.5	0.5
IP protection class		52	52	52	52
Weight	[kg]	0.24	0.24	0.24	0.24
Swiveling time (1x nominal rotation angle) without attached load	[s]	0.07	0.07	0.12	0.12
Fluid consumption (2x nom. angle)	[cm³]	9.0	9.0	15.0	15.0
Min./nom./max. operating pressure	[bar]	2.5/6/6.5	3/6/6.5	2.5/6/6.5	3/6/6.5
Diameter of connecting hose		3 x 1.8 x 0.6	3 x 1.8 x 0.6	3 x 1.8 x 0.6	3 x 1.8 x 0.6
Min./max. ambient temperature	[°C]	-10/90	5/60	-10/90	5/60
Max. permissible inertia of the set-up	[kgmm²]	75	150	75	150
Repeat accuracy	[°]	0.05	0.05	0.05	0.05
Dimensions X x Y x Z	[mm]	40 x 47 x 62	40 x 47 x 62	40 x 47 x 62	40 x 47 x 62

Main view



The drawing shows the basic design of the vane swivel unit with elastomer damping.

- ① The SDV-P pressure maintenance valve can be used to maintain the position in the case of a loss of pressure (see "Accessories" catalog section).

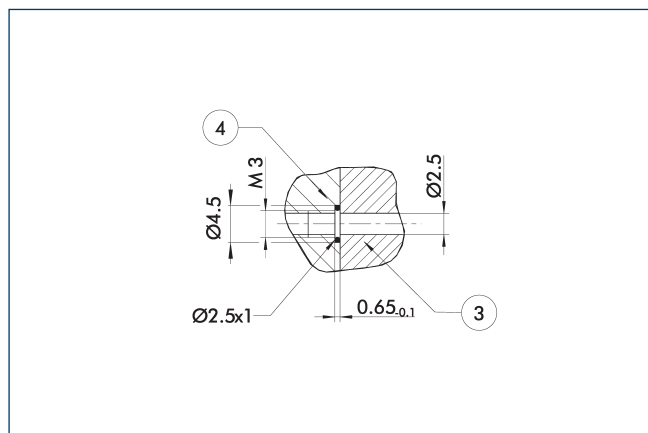
- A, a Main / direct connection,
rotary actuator rotates
clockwise

- B, b Main / direct connection,
rotary actuator rotates
counterclockwise

- ① Connection swivel unit
- ② Attachment connection

- ⑦2 Fit for centering sleeves
- ⑦3 Fit for centering pins
- ⑧0 Depth of the centering sleeve hole in the counter part
- ⑨0 Sensor projection beyond housing
- ⑨1 Sensor MMS 22..

Hose-free direct connection M3

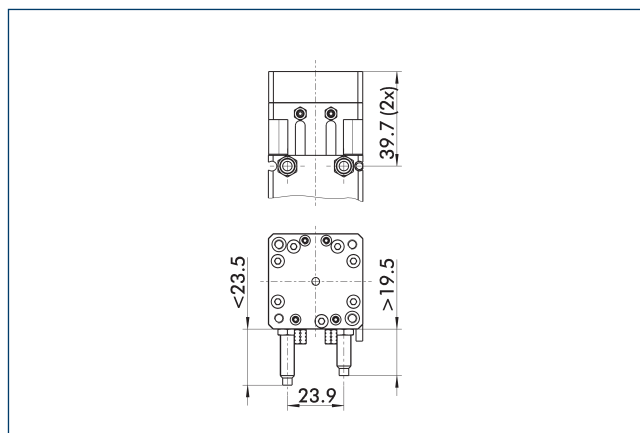


③ Adapter

④ Rotary unit

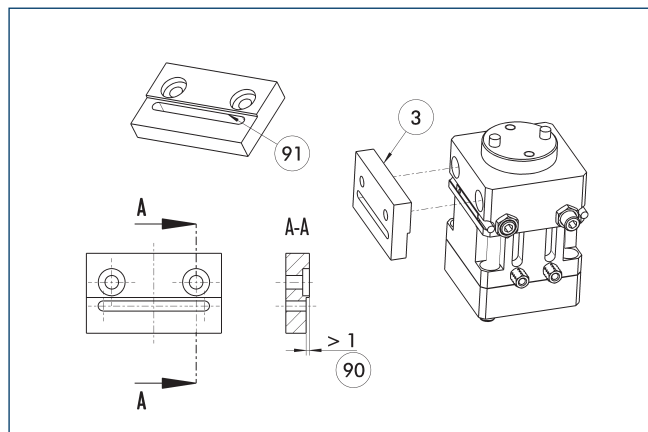
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

Version with shock absorbers



Changed dimensions for the shock absorber variant

Adapter plate design



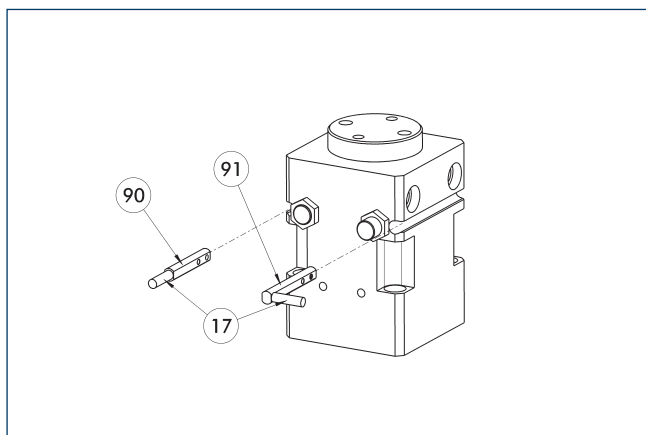
③ Adapter

⑨① Recess as mounting aid

⑨① Step

Suggested here is an adapter plate design which allows for access to the sensors as easily as possible.

Electronic magnetic switch MMS



⑪ Cable outlet

⑨① Sensor MMS 22...-SA

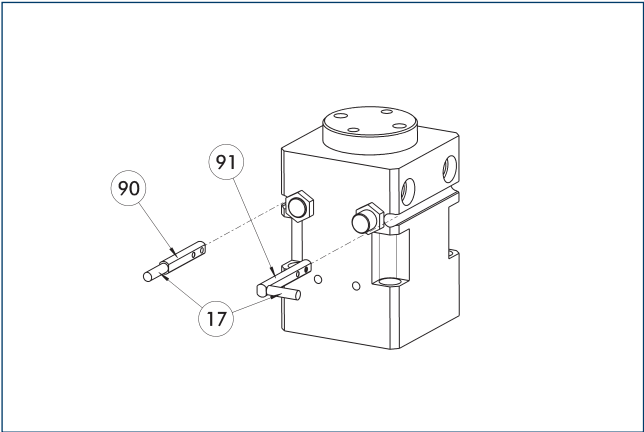
⑨① Sensor MMS 22..

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 plug/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-...

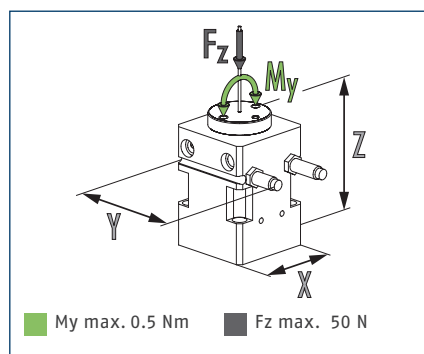
Position monitoring with one programmable position per sensor and integrated electronic system in the sensor. Can be programmed using MT magnetic teaching tool (included in the scope of delivery) or ST plug teaching tool (optional). End position monitoring for mounting in the C-slot. If the ST plug teaching 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.



Dimensions and maximum loads



- ① The indicated moments and forces are static values and may appear simultaneously. Throttling has to be done for ensuring that the rotary movement takes place without impact or bouncing. Otherwise the service life reduces.

Technical data

Description		SFL-64-E-090	SFL-64-S-090	SFL-64-E-180	SFL-64-S-180
ID		0304568	0304569	0304068	0304069
Angle of rotation	[°]	90.0	90.0	180.0	180.0
End position adjustability	[°]	90.0	90.0	180.0	180.0
End position damping		Elastomer	hydr. damper	Elastomer	hydr. damper
Torque	[Nm]	3.6	3.6	3.6	3.6
IP protection class		52	52	52	52
Weight	[kg]	0.71	0.71	0.71	0.71
Swiveling time (1x nominal rotation angle) without attached load	[s]	0.11	0.11	0.18	0.18
Fluid consumption (2x nom. angle)	[cm³]	51.0	51.0	85.0	85.0
Min./nom./max. operating pressure	[bar]	2/6/6.5	2/6/6.5	2/6/6.5	2/6/6.5
Diameter of connecting hose		6 x 3.9 x 1.05	6 x 3.9 x 1.05	6 x 3.9 x 1.05	6 x 3.9 x 1.05
Min./max. ambient temperature	[°C]	-10/90	5/60	-10/90	5/60
Max. permissible inertia of the set-up	[kgmm²]	250	500	250	500
Repeat accuracy	[°]	0.05	0.05	0.05	0.05
Dimensions X x Y x Z	[mm]	64 x 73.5 x 76	64 x 73.5 x 76	64 x 73.5 x 76	64 x 73.5 x 76

Technical drawing of a 4-way valve assembly, showing six views: front, top, side, and three cross-sections (D-D, G-G, and X-X). The drawing includes detailed dimensions and part callouts.

Front View: Shows the main body with a central port (Ø10 (2x)), two side ports (M5/4), and a bottom port (M6 (4x)). Dimensions include overall width 72, height 48.2, and port diameters Ø52_{0.05} and Ø4.1 (2x). Callouts include 72, Ø10 (2x), M6 (4x), 1, 18.5, 23.2, 23.8, 4.2, M5/4, 80, 11 (4x), 3, and D-D.

Top View: Shows the top of the assembly with a central port (Ø10 (6x)) and two side ports (M6 (6x)). Dimensions include overall width 64, height 50±0.02, and port diameters Ø10 (6x) and Ø5 (73). Callouts include 1, M6 (6x), 80, 3, 25 (6x), 0°, 28.4, 4.5, 8.3, 42, 64, and D.

Side View: Shows the side of the assembly with a central port (Ø10 (6x)) and two side ports (M6 (6x)). Dimensions include overall width 43±0.02, height 53.7 (2x) and 62.2 (6x), and port diameters Ø10 (6x) and Ø5 (73). Callouts include 1, M6 (6x), 80, 3, 25 (6x), 0°, 28.4, 4.5, 8.3, 42, 64, and D.

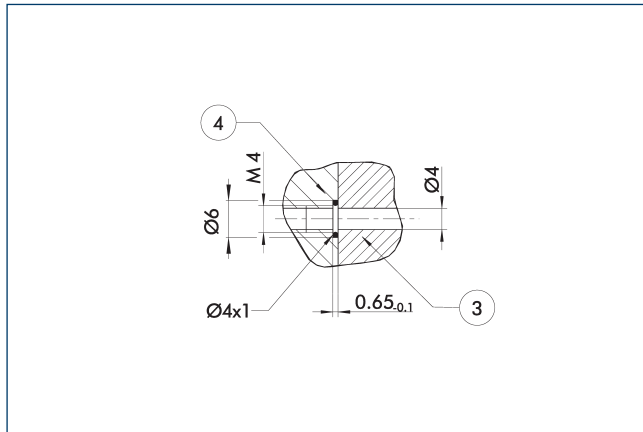
Cross-section D-D: Shows the internal structure of the valve, including the central port (Ø10 (6x)) and two side ports (M6 (6x)). Dimensions include overall width 43±0.02, height 53.7 (2x) and 62.2 (6x), and port diameters Ø10 (6x) and Ø5 (73). Callouts include 1, M6 (6x), 80, 3, 25 (6x), 0°, 28.4, 4.5, 8.3, 42, 64, and D.

Cross-section G-G: Shows the internal structure of the valve, including the central port (Ø10 (6x)) and two side ports (M6 (6x)). Dimensions include overall width 43±0.02, height 53.7 (2x) and 62.2 (6x), and port diameters Ø10 (6x) and Ø5 (73). Callouts include 1, M6 (6x), 80, 3, 25 (6x), 0°, 28.4, 4.5, 8.3, 42, 64, and D.

Cross-section X-X: Shows the internal structure of the valve, including the central port (Ø10 (6x)) and two side ports (M6 (6x)). Dimensions include overall width 43±0.02, height 53.7 (2x) and 62.2 (6x), and port diameters Ø10 (6x) and Ø5 (73). Callouts include 1, M6 (6x), 80, 3, 25 (6x), 0°, 28.4, 4.5, 8.3, 42, 64, and D.

⑨0 Sensor MMS 22..

Hose-free direct connection M4

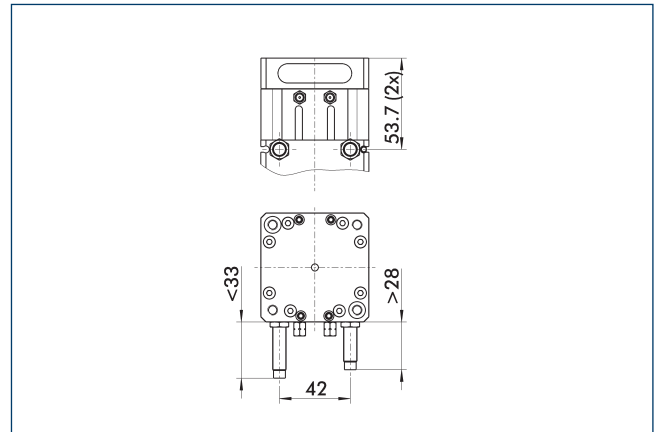


③ Adapter

④ Rotary unit

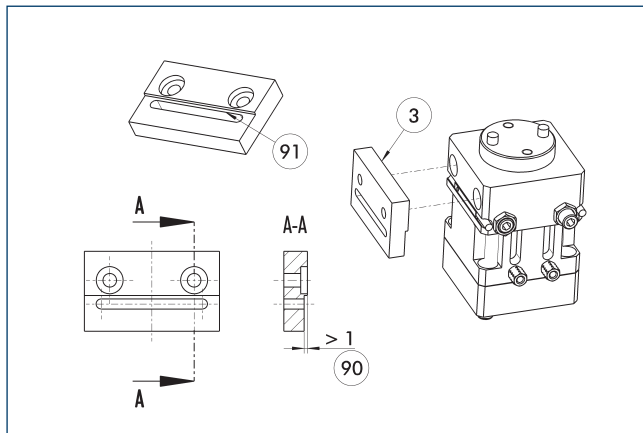
The direct connection is used for supplying compressed air without hoses. Instead, the pressure medium is fed through bore-holes in the mounting plate.

Version with shock absorbers



Changed dimensions for the shock absorber variant

Adapter plate design



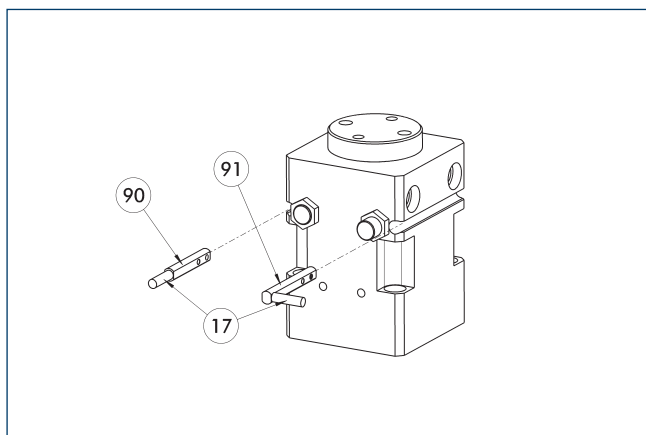
③ Adapter

⑨① Recess as mounting aid

⑨① Step

Suggested here is an adapter plate design which allows for access to the sensors as easily as possible.

Electronic magnetic switch MMS



⑪ Cable outlet

⑨① Sensor MMS 22...-SA

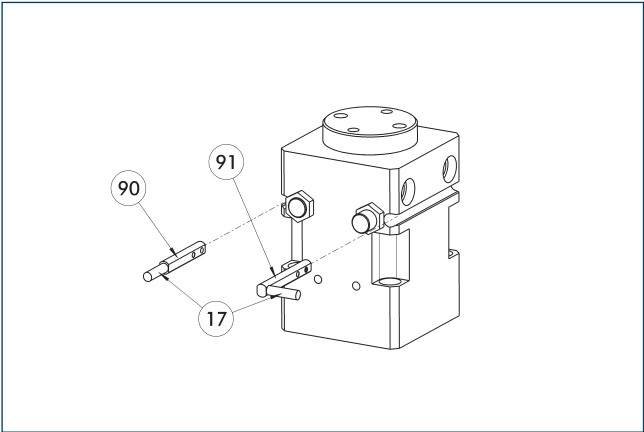
⑨① Sensor MMS 22..

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 plug/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) 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.



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