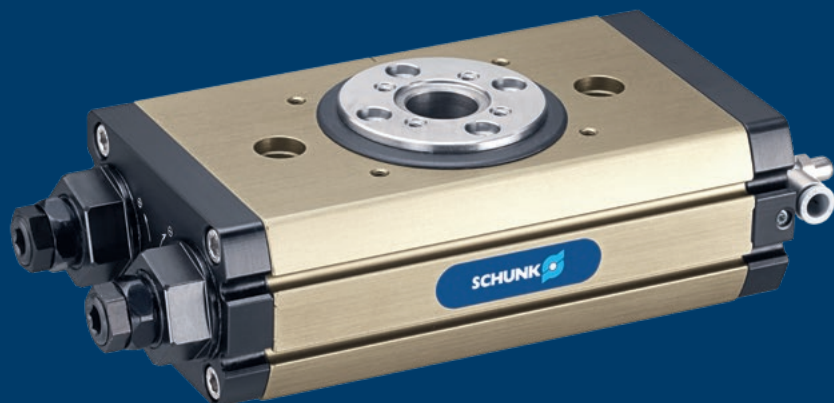




Hand in hand for tomorrow



Product data sheet

Universal swivel unit SRM 14

Robust. Fast. High Performance.

Universal rotary actuator SRM

Universally usable unit for pneumatic swivel and turning movements

Field of application

Can be used in either clean or dirty areas, or wherever pneumatic swiveling is required.



Advantages – Your benefits

Finely graded series with a steady increase in torque for multiple cases of application, the correct size as a standard product is available

Large center bore for feed-through of cables and hoses with the same unit height

Pre-adjusted shock absorber stroke for fast and easy commissioning

Swivel angle can be selected as either 90° or 180° complete flexibility in selecting the angle of rotation, application-specific angles possible on request

Selectable end position adjustability either small or large for flexible adjustability of the swivel angle

Optionally attachable fluid feed-through and electrical feed-through for permanently safe feed-through of gases, vacuum, and electrical sensor and actuator signals

Modular attachment to various options for individual adjustment to various cases of application

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



Sizes
Quantity: 8



Weight
0.252 .. 11.14 kg



Torque
0.45 .. 23.7 Nm



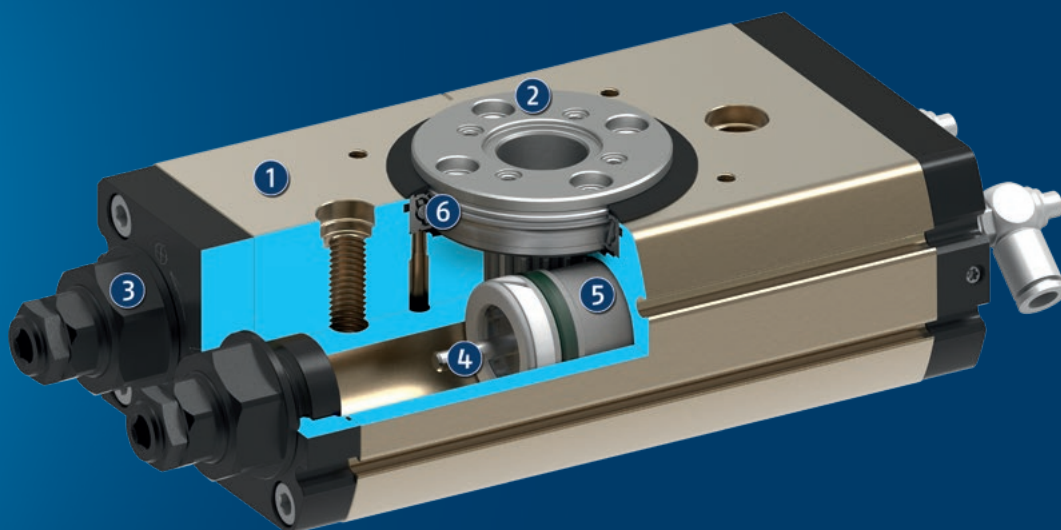
Repeat accuracy
0.03 .. 0.07°



Angle of rotation
90 .. 180°

Functional description

When subjected to pressure, the two pneumatic pistons move their end faces in a straight line in their respective bores thus turning the pinion by means of the serrations on their sides.

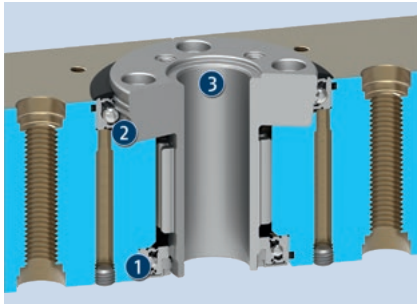


- ① **Housing**
weight-optimized due to the use of hard-anodized aluminum alloy
- ② **Pinion**
stable pinion for transforming the piston movement into a rotary movement
- ③ **Swivel angle adjustment**
for quick, easy and intuitive end position adjustment

- ④ **Damping**
Hydraulic shock absorbers for high moments of inertia
- ⑤ **Drive**
Pneumatic, powerful double piston drive
- ⑥ **Bearing**
play-free, pre-loaded bearing

Detailed functional description

Bearing of the pinion



The pinion of the rotary module SRM is driven by two pistons, and is mounted at two points. The upper bearing is integrated in the pinion, whereby a minimum height of the entire unit is achieved. The lower bearing is pre-loaded free from play, whereby a very high accuracy and bearing stiffness is achieved. Both bearings are sealed to the outside with double-lip seals made of sturdy and durable FKM material.

- ❶ Pre-loaded bearing with double lip seal
- ❷ Integrated bearing with double lip seal
- ❸ Large center hole for feeding through cables and hoses

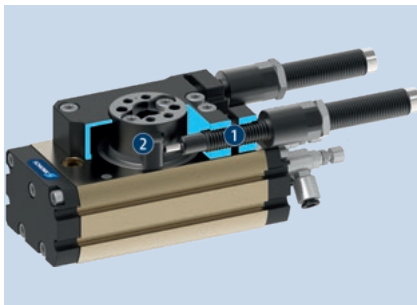
Adjustment of end position and shock absorber stroke



The two end positions and the respective shock absorber stroke can be manually adjusted laterally on the unit. Due to the factory presetting of the shock absorber stroke, its adaptation is not necessary for many applications. The markings on the cover show the influence of the direction of rotation on the adjustment of the swivel angle.

- ❶ Adjustment of the shock absorber stroke
- ❷ Adjustment of the end position

Version with external damping



In the basic variant of the SRM, the movement of the drive pistons is damped by the shock absorbers in the piston chamber. In the variant with external damping, the shock absorbers are mounted on the output side of the unit. Here, the movement is directly damped on the rotary table. As a result, higher moments of inertia and a higher repeat accuracy can be realized. In addition, full torque is available in all positions.

- ❶ Hydraulic shock absorber
- ❷ Rotary table with mechanical stop

Variant with media feed-through



The SRM swivel unit can optionally be equipped with a media feed-through, which enables process-reliable feed-through of compressed air, gases, or vacuum. In case of sizes 10, 12, 14, and 16, the media feed-through can be optionally routed through the center bore, and in turn is covering it. In case of sizes SRM 20, 25, 32 and 40, the large center bore is completely intact, even if the option media feed-through is chosen.

- ❶ Connection for the set-up to be swiveled, equipped with fluid feed-throughs
- ❷ Connection fluid feed-throughs fixed part

Variant with electric rotary feed-through



The swivel unit SRM can optionally be equipped with an electrical rotary feed-through, thus ensuring operationally reliable feed-through of electrical signals. The electric rotary feed-through is equipped on both sides with standardized and color-coded M8 or M12 cable plugs. This makes it easy to identify the signal flow and simplify commissioning.

- ① Plug connector on the driving side, 4-pole, color coded
- ② Plug connector on the driven side, 3-pole, color coded
- ③ Plug connector on the driven side, 4-pole, color coded

Monitoring via electronic magnetic switches



There are two C-slots on each side of the SRM swivel unit, into which the SCHUNK electronic magnetic switches MMS can be inserted. This ensures flexible monitoring of the end positions, regardless of the installation position of the SRM.

- ① Monitoring with magnetic switch on the back of the swivel unit
- ② Monitoring with magnetic switch on the front of the swivel unit

Monitoring via inductive proximity sensors and adjustable control cam



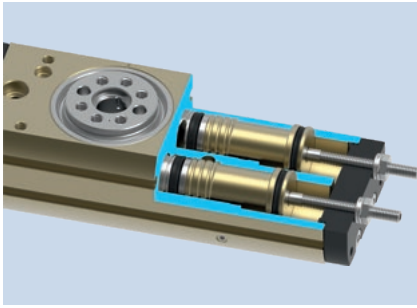
To monitor the end positions of the swivel unit with inductive sensors, an additional set-up is mounted onto the rotary table. For flexible monitoring of individual swivel angles, a version with adjustable control cam is available. This allows up to three positions to be inductively monitored.

Monitoring via inductive proximity sensors and fixed control cam



For simple commissioning and maintenance of inductive monitoring, a version with a fixed control cam is also available. This is not adjustable and therefore only available for swivel angles of 180° or 90°. As a result, monitoring of up to three positions is possible.

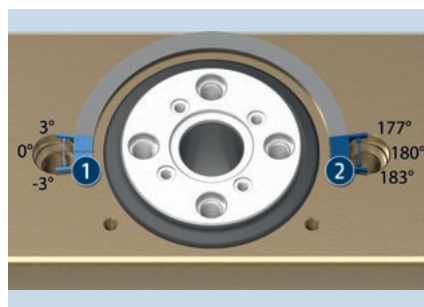
Variant with pneumatic center position



The SRM swivel unit can optionally be ordered with pneumatic center position. This makes it possible, to control a third position in addition to the two end positions.

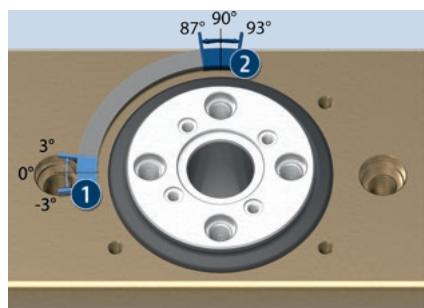
Adjustment range of end positions and swivel angle

Versions with small end position adjustability



Slight end position adjustability for fine adjustment of both end positions ($\pm 3^\circ$) in case of swivel units with a swivel angle of 180°

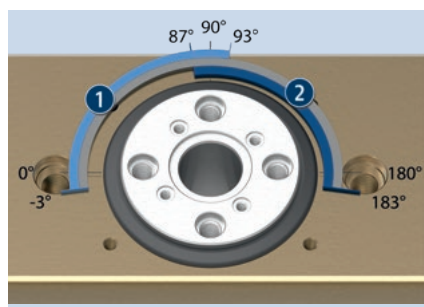
- ❶ Adjustment range starting angle ❷ Adjustment range end angle



Slight end position adjustability for fine adjustment of both end positions ($\pm 3^\circ$) in case of swivel units with a swivel angle of 90°

- ❶ Adjustment range starting angle ❷ Adjustment range end angle

Version with large end position adjustability



Large end position adjustability for variable adjustment of the swivel angle between 0° and 186° . Both end positions can each be limited by 90° ($\pm 3^\circ$).

- ❶ Adjustment range starting angle ❷ Adjustment range end angle

Ordering example

	SRM	25	-	H	-	180	-	3	-	M	-	4P	-	6E	-	SI
Description	SRM															
Size	10/12/14/16/20/25/32/40															
Type of damping method	H = hydraulic E = Elastomer (for sizes 10-14) X = external damping (for sizes 10-14) S = Speed damping (for size 12 and 14)															
Swivel angle	90°/180°															
End position adjustability	3 = ±3° 90 = +5°/-95° (for sizes 10 - 14) 90 = +3°/-93° (for sizes 16 - 40)															
Middle position	M = pneumatic center position															
Number of media feed-throughs	- = no 2P = 2 pneumatic feed-throughs (for size 10) 4P = 4 pneumatic feed-throughs (for sizes 12 - 40)															
Number of connectors for electric rotary feed-through	- = no 6E = 6 connectors per side (for sizes 16-32) 10E = 10 connectors per side (for size 40)															
Option for inductive proximity switches	- = no SI = with adjustable position (for sizes 16-40) SF = with fixed position (for sizes 16-40)															

General notes about the series

Standard conditions: The technical data shown refers to an environment of 20 °C and atmospheric pressure.

Housing material: Aluminum (extruded profile)

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

Operating principle: Double piston rack and pinion principle

Scope of delivery: Swivel unit in the ordered variant, accessory kit (centering sleeves, O-rings for direction connection/detailed contents see operating manual) and safety information. Product-specific instructions can be downloaded at schunk.com/downloads-manuals.

Warranty: 24 months

Service life characteristics: on request

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

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°.

Customized angle of rotation: More swivel angles are available on request.

Torque in the end positions: Please note that the final angular degrees (approx. 2°) before the end position can only be approached using the force of a single drive piston. For this reason, double actuated modules only have about half the rated torque available in this area.

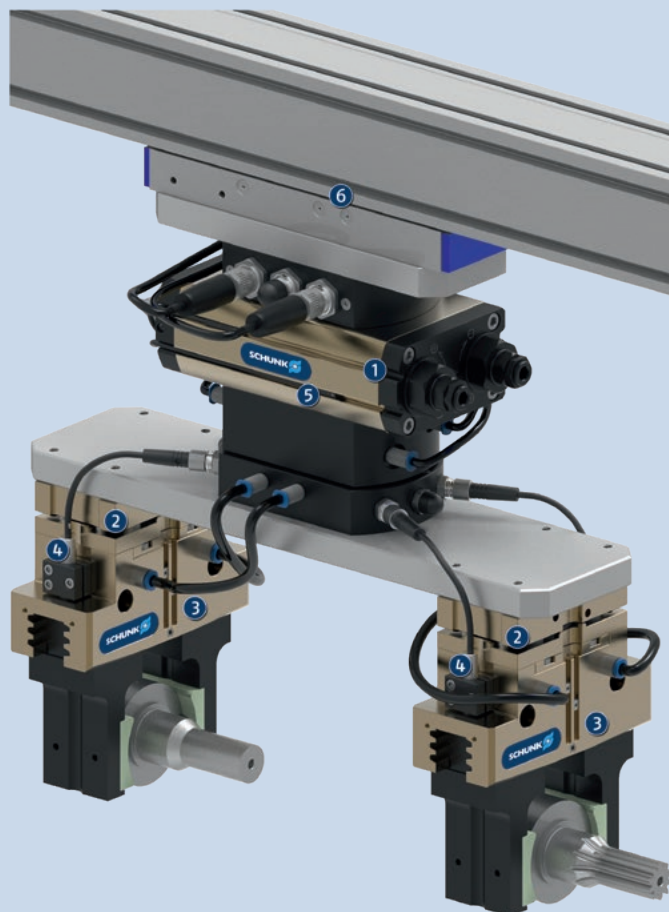
Travel to the pneumatic middle position: is carried out using only half of the nominal torque.

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

Swivel unit with electrical and pneumatic feed-through and double gripper for loading and unloading a machine tool

- ❶ Universal rotary actuator SRM
- ❷ Tolerance compensation unit TCU
- ❸ Universal gripper PGN-plus-P
- ❹ Inductive proximity switches IN
- ❺ Magnetic switch MMS
- ❻ Universal linear axis Beta with toothed belt drive



SCHUNK offers more ...

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



Universal gripper



Gripper for small components



Linear axis



Room gantry



Fastened with screws



Inductive proximity switch



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

Shock absorber variants: The basic version of the swivel unit SRM is equipped with hydraulic shock absorbers. Additional shock absorber variants are available: elastomer damping (E), external damping (X) and speed damping (S).

End position adjustability: The SRM is available in the two swivel angles 90° and 180° and the end positions can be fine adjusted. In this case, a fine adjustment of the end positions of $\pm 3^\circ$ is possible. For all deviating swivel angles, a large end position adjustability is optionally available. Thus, any angle of rotation between -3° and $+183^\circ$ can be realized.

Variant with media feed-through MDF: The optional media feed-through ensures process-reliable feeding through of compressed air, gases, or vacuum with four fluid channels.

Variant with electric rotary feed-through EDF: The optional electric rotary feed-through ensures process-reliable feed-through of electrical signals.

Variant with inductive monitoring: An additional attachment is required to monitor the SRM with inductive proximity switches. Here you can choose between fixed (SF) and adjustable (SI) switching position.

Please note that suitable emergency stop scenarios (e.g. controlled shut down) and restarting scenarios (e.g. pressure build-up valves, appropriate valve switching sequences) are needed for all pneumatic actuators.

Variant with pneumatic center position: The SRM swivel unit can optionally be ordered with pneumatic center position. This makes it possible, to control a third position in addition to the two end positions.

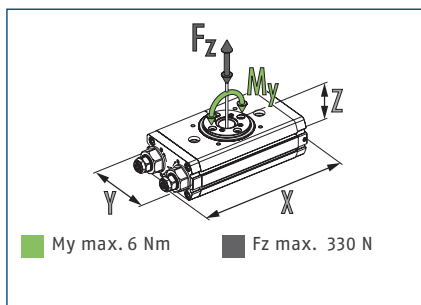
Food-grade lubrication: The product contains food-compliant lubricants as standard. The requirements of standard EN 1672-2:2020 are not fully met. The relevant NSF certificates are available at <https://info.nsf.org/USDA/Listings.asp> using the lubricant information in the operating manual. Components such as rolling bearings, linear guides, or shock absorbers are not provided with food-compliant lubricants.

SRM 14

Universal swivel unit



Dimensions and maximum loads



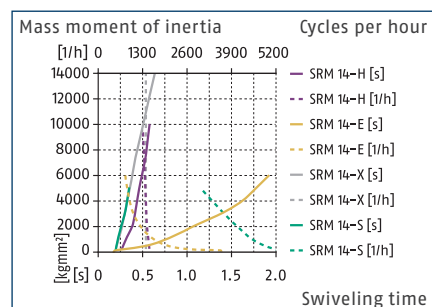
① The indicated moments and forces are static values, valid for the base unit, and may appear simultaneously. Throttling has to be done for ensuring that the rotary movement takes place without impact or bouncing. Otherwise the service life reduces.

Technical data SRM

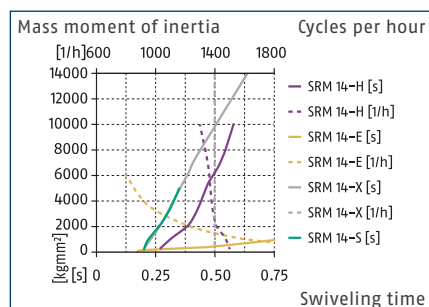
Description		SRM 14-H-180-90	SRM 14-E-180-90	SRM 14-S-180-90	SRM 14-X-90-3	SRM 14-X-180-3
ID		1331278	1331258	1412969	1347008	1331282
End position damping		hydr. damper	Elastomer	hydr. damper	External damper	External damper
Angle of rotation	[°]	180.0	180.0	180.0	90.0	180.0
End position adjustability	[°]	+5/-95	+5/-95	+5/-95	+3/-3	+3/-3
Torque	[Nm]	1.15	1.15	1.15	1.15	1.15
Number of intermediate positions		none	none	none	none	none
IP protection class		40	40	40	40	40
Weight	[kg]	0.44	0.41	0.55	0.67	0.67
Fluid consumption (2x nom. angle)	[cm³]	15.0	15.0	15.0	8.2	15.0
Min./nom./max. operating pressure	[bar]	3/6/6.5	4.5/6/6.5	3/6/6.5	3/6/6.5	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	3 x 1.8 x 0.6
Min./max. ambient temperature	[°C]	5/60	5/75	5/60	5/60	5/60
Cleanroom class ISO 14644-1:2015		5	5	5	5	5
Repeat accuracy	[°]	0.03	0.06	0.03	0.03	0.03
Diameter of center bore	[mm]	9	9	9	9	9
Max. permissible mass moment of inertia	[kgm²]	0.01	0.006	0.005	0.014	0.014
Dimensions X x Y x Z	[mm]	146.5 x 45 x 33	126.5 x 45 x 33	157 x 45 x 33	149.8 x 52 x 46.2	149.8 x 52 x 46.2
Options						
with media feed-through (MDF)		SRM 14-H-180-90-4P	SRM 14-E-180-90-4P	SRM 14-S-180-90-4P	SRM 14-X-90-3-4P	SRM 14-X-180-3-4P
ID		1331281	1331263	1413290	1347015	1331284

① The complete or supplementary technical data of all possible combinations can be found in the catalog below or at schunk.com.

Max. permissible inertia J*



Max. permissible inertia J*



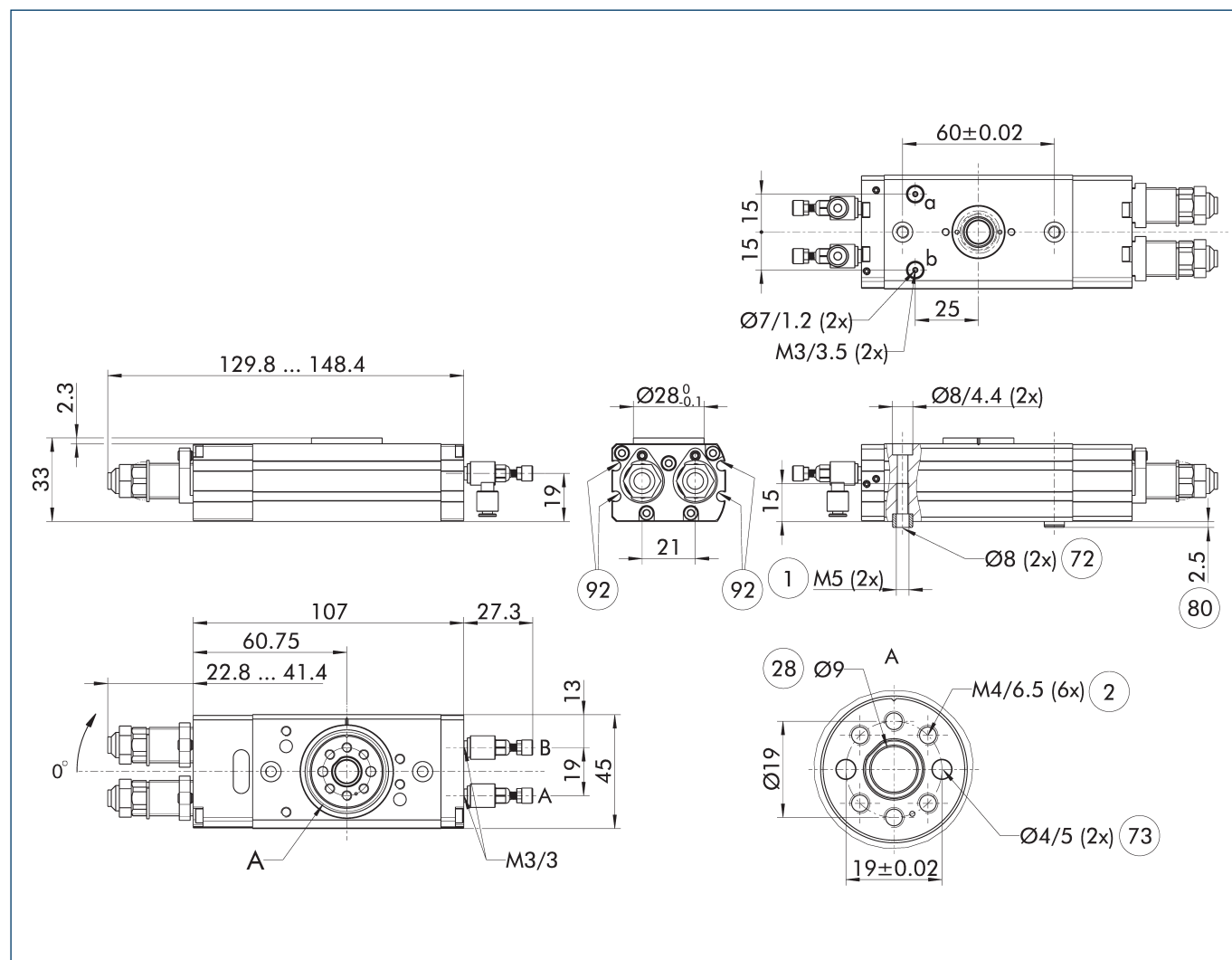
* The diagrams are valid for basic units and for applications with a vertical swivel axis as well as for absolutely centric loads with a horizontal swivel axis and with an operating pressure of 6 bar. The swiveling times per throttling have to be observed, otherwise the life time may reduce. We will be happy to help you designing other applications. In addition, the SCHUNK Swiveling sizing assistant is available online.

Technical data SRM with center position

Description		SRM 14-H-180-90-M	SRM 14-E-180-90-M
ID		1457320	1457317
End position damping		hydr. damper	Elastomer
Angle of rotation	[°]	180.0	180.0
End position adjustability	[°]	+5/-95	+5/-95
Torque	[Nm]	1.15	1.15
Torque center position	[Nm]	0.8	0.8
Number of intermediate positions		1 x M (pneumatic)	1 x M (pneumatic)
Adjustability of middle position	[°]	+45/-45	+45/-45
IP protection class		40	40
Weight	[kg]	0.65	0.63
Fluid consumption (2x nom. angle)	[cm³]	19.0	19.0
Min./nom./max. operating pressure	[bar]	3/6/6.5	4.5/6/6.5
Diameter of connecting hose		3 x 1.8 x 0.6	3 x 1.8 x 0.6
Min./max. ambient temperature	[°C]	5/60	5/75
Cleanroom class ISO 14644-1:2015		5	5
Repeat accuracy	[°]	0.03	0.06
Diameter of center bore	[mm]	9	9
Max. permissible mass moment of inertia	[kgm²]	0.01	0.006
Dimensions X x Y x Z	[mm]	195 x 45 x 33	180 x 45 x 33
Options			
with media feed-through (MDF)		SRM 14-H-180-90-M-4P	SRM 14-E-180-90-M-4P
ID		1464297	1464298

① The complete or supplementary technical data of all possible combinations can be found in the catalog below or at schunk.com.

Main view of basic version with hydraulic damping



The drawing shows the unit in standard design, without considering any dimensions of the options described below.

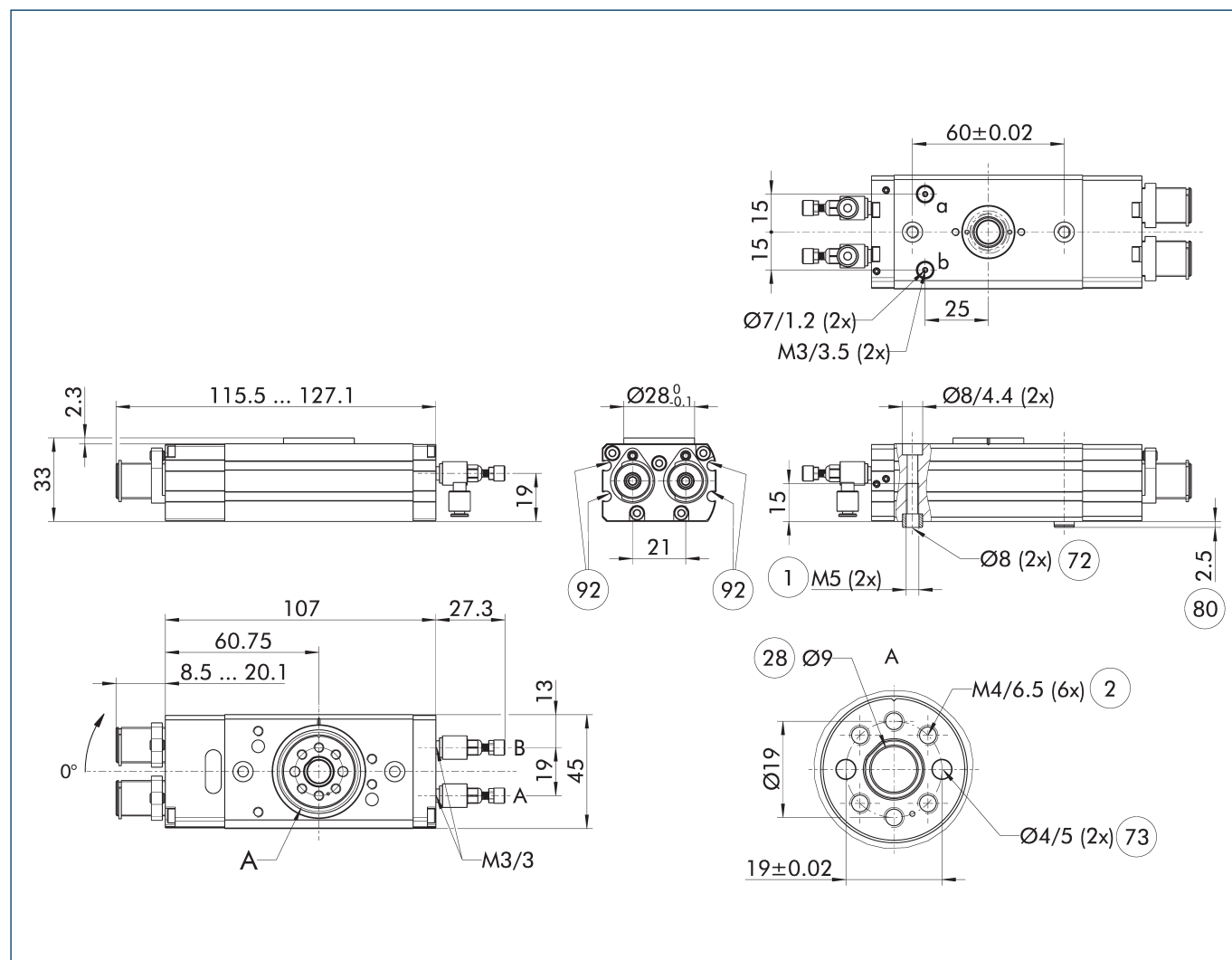
- ① The SDV-P pressure maintenance valve can be used to maintain the position in the case of a loss of pressure (see "Accessories" catalog section).

- 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
- ②⑧ Through-hole
- ⑦② Fit for centering sleeves
- ⑦③ Fit for centering pins
- ⑧① Depth of the centering sleeve hole in the counter part
- ⑨② Sensor MMS 22..

Main view of basic version with elastomer damping



The drawing shows the unit in standard design, without considering any dimensions of the options described below.

- 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

②⑧ Through-hole

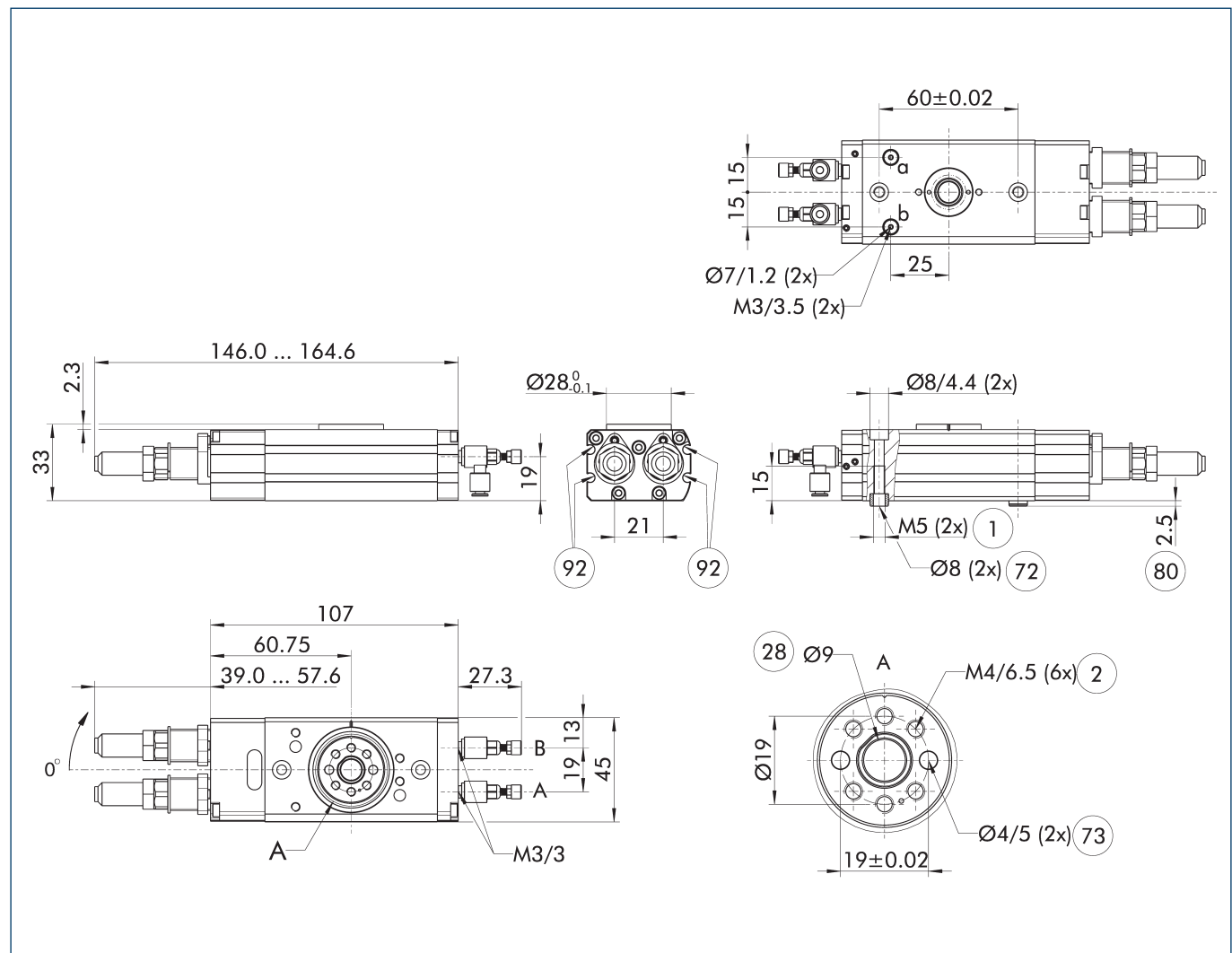
⑦② Fit for centering sleeves

⑦③ Fit for centering pins

⑧① Depth of the centering sleeve hole in the counter part

⑨② Sensor MMS 22..

Main view of basic version with speed damping



The drawing shows the unit in standard design, without considering any dimensions of the options described below.

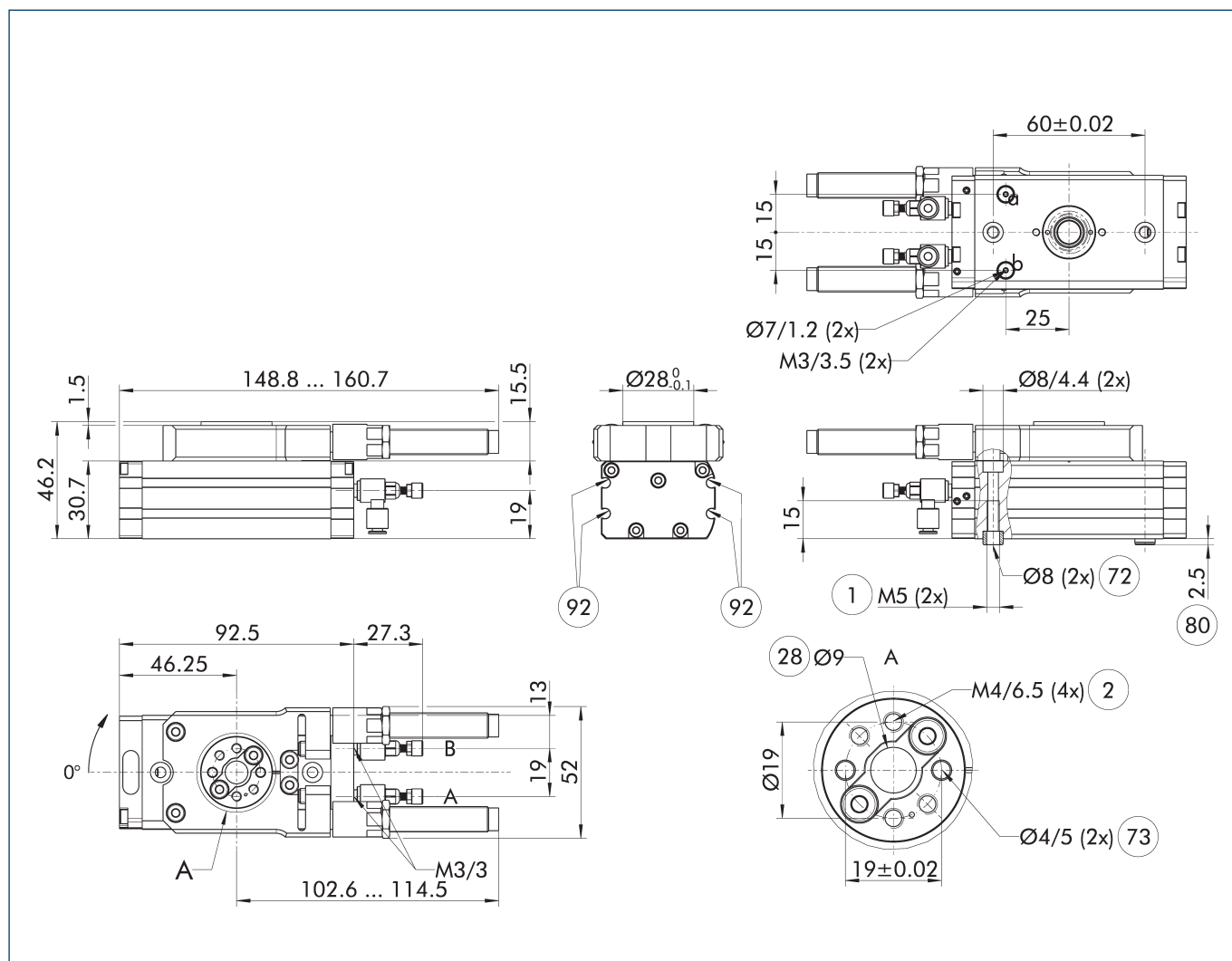
- ① The SDV-P pressure maintenance valve can be used to maintain the position in the case of a loss of pressure (see "Accessories" catalog section).

- 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
- 28 Through-hole
- 72 Fit for centering sleeves
- 73 Fit for centering pins
- 80 Depth of the centering sleeve hole in the counter part
- 92 Sensor MMS 22..

Main view of basic version with external damping



The drawing shows the unit in standard design, without considering any dimensions of the options described below.

- 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

②⑧ Through-hole

⑦② Fit for centering sleeves

⑦③ Fit for centering pins

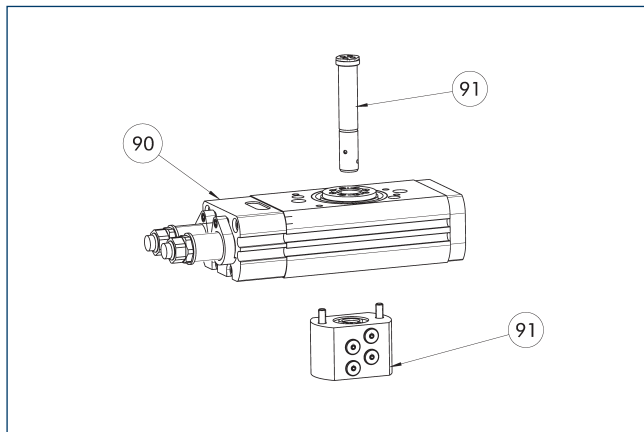
⑧① Depth of the centering sleeve hole in the counter part

⑨② Sensor MMS 22..

SRM 14

Universal swivel unit

Exemplary design

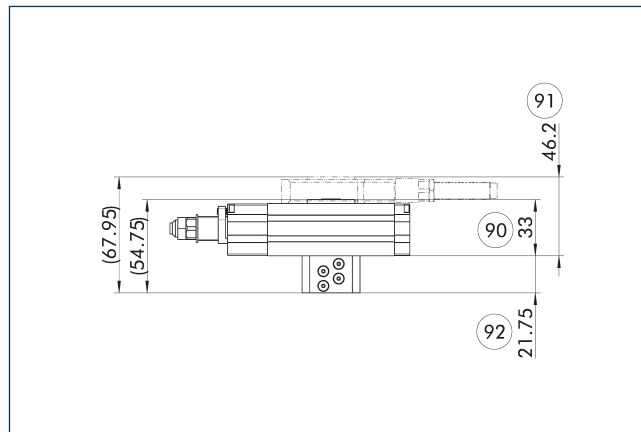


90 SRM basis

91 Option MDF

The drawing shows an example of the SRM with the maximum possible number of optional modules. The SRM can be ordered as a basic version without optional modules, with each option individually, or as a combination of several optional modules. The unit is supplied fully assembled. The options cannot be ordered separately. You can find a list of the available combinations including IDs in the technical data table.

Total height



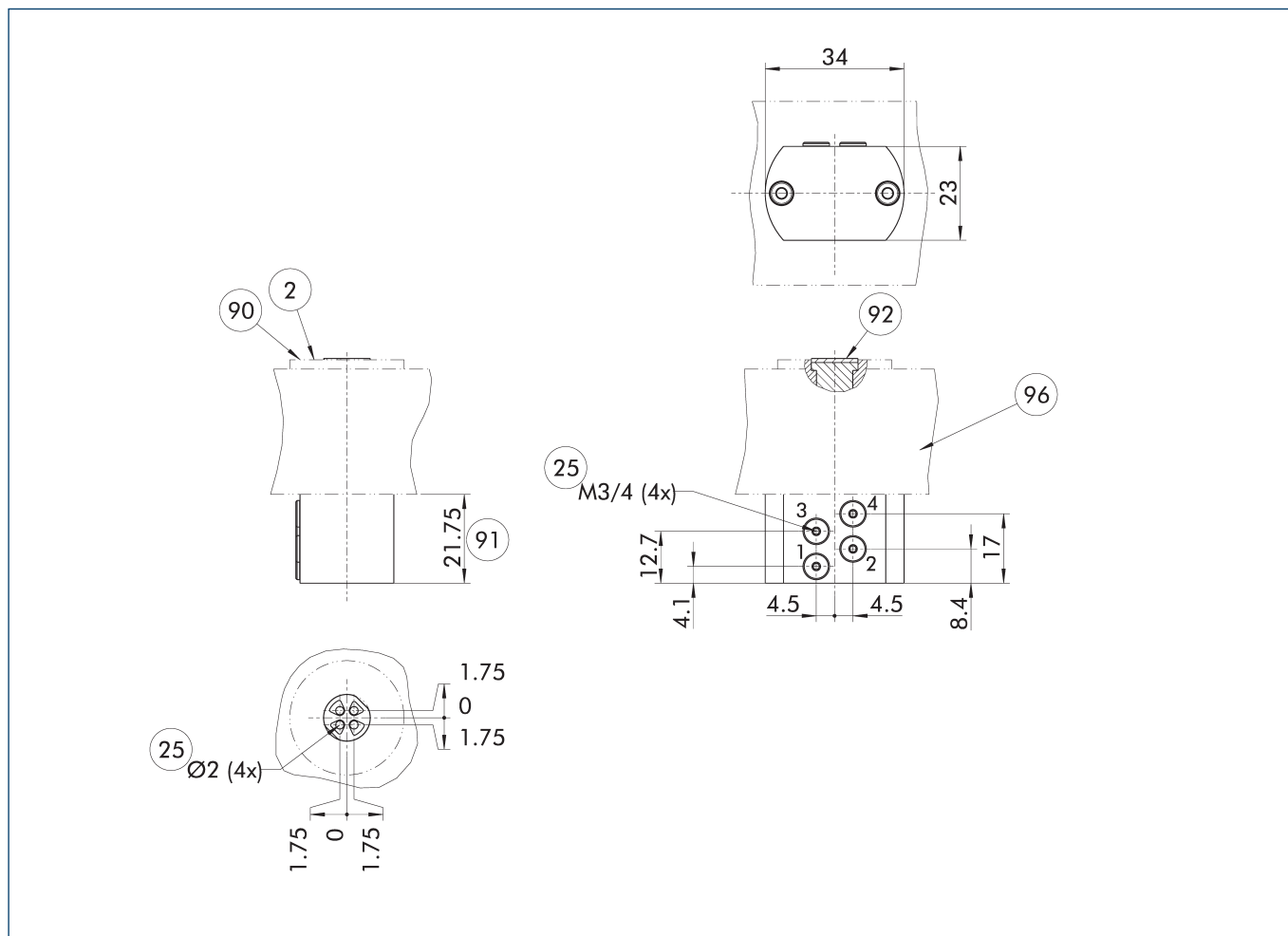
90 Total height SRM basic version (damping method H/E/S)

92 Additional dimension of the attached module, option MDF

91 Total height SRM basic (type of damping method X)

The drawing shows the maximum additional dimension. Depending on the selected optional modules, the total height is reduced accordingly

Main view option of media feed-through MDF



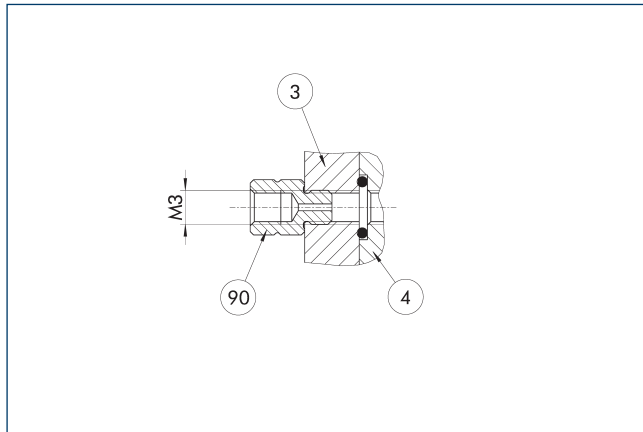
The drawing shows the option of media feed-through, without the base module or other options for the swivel unit.

- ② Attachment connection
- ②⑤ Fluid feed-through
- ⑨⑩ The screw connection diagram can be found in the drawing of the base unit.
- ⑨① Additional dimension of the attached module, option MDF
- ⑨② Seal
- ⑨⑥ SRM basis

Reduction of torque at 6 bar in the fluid feed-through	Weight of the module without base unit	No. of fluid feed-throughs	Min. pressure in the fluid feed-through	Max. pressure fluid feed-through	Max. volumetric flow of feed-through (at 6 bar)
[Nm]	[kg]		[bar]	[bar]	[l/min]
Option for media feed-through MDF					
- 0.15	0.05	4	-0.8	8	60

① This option cannot be ordered separately. It is a part of a configured version of the swivel unit. For the complete technical data of all the possible combination options, please configure the swivel unit at schunk.com. Please note that the above-mentioned data refer only to the option and not to the complete unit.

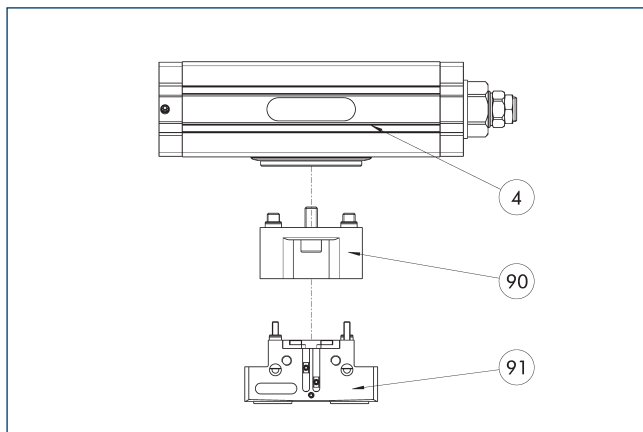
Hose-free direct connection M3



- ③ Adapter
- ④ Rotary unit
- ⑨⑩ Fixed throttle

The direct connection is used for compressed air supply without error-prone tubing. Instead, the pressure medium is fed through the bore-holes in the mounting plate. The required O-ring as well as the fixed throttle are enclosed to the product's accessory kit.

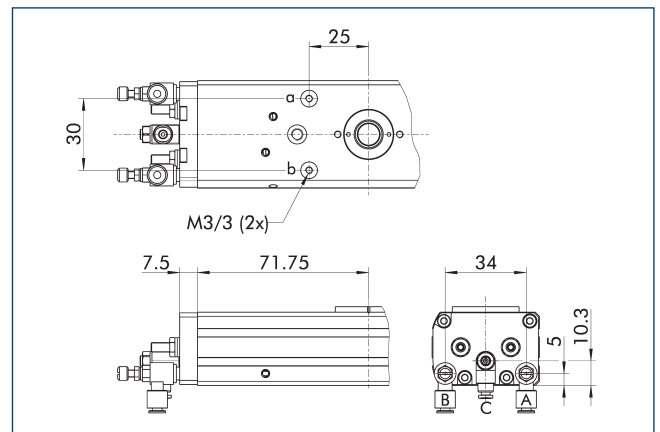
Adapter for SCHUNK gripper



- ④ Rotary unit
- ⑨⑩ Adapter plate
- ⑨⑪ Grippers

Adapter plates are available for mounting many types of SCHUNK grippers. All combinations of swivel/gripping units, and associated adapter plates can be configured in the SCHUNK PARTCommunity and downloaded as a 3D model.

Pneumatic middle position (M)



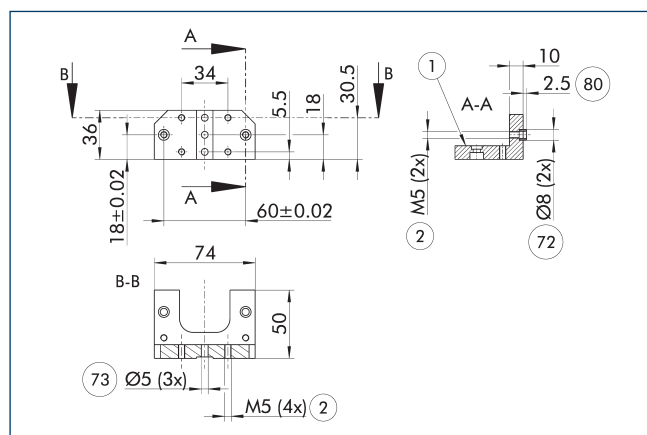
A, a Main / direct connection, rotary actuator rotates clockwise

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

C Main connection center position

The drawing shows the change in dimension of the "pneumatic center position (M)" option compared to the basic variant. Heavy attachments may swing before they reach the final position.

Angle adapter WA

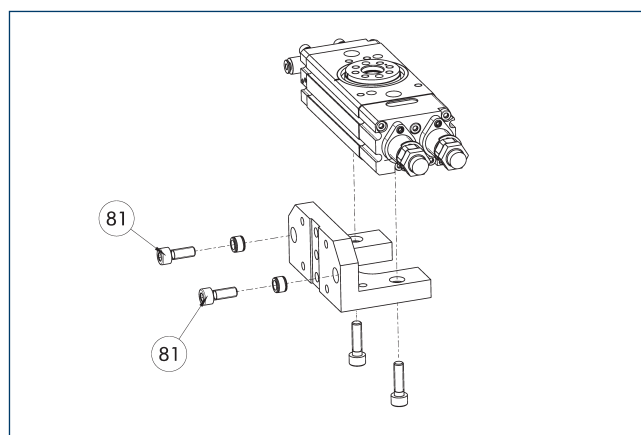


- ① Connection swivel unit
- ② Attachment connection
- ⑦ Fit for centering sleeves
- ⑦ Fit for centering pins
- ⑧ Depth of the centering sleeve hole in the counter part

The angle adapter enables the swivel unit to be laterally connected with screws.

Description	ID	
Adapter plate		
WA-SRM 14	1372525	

Angle adapter WA

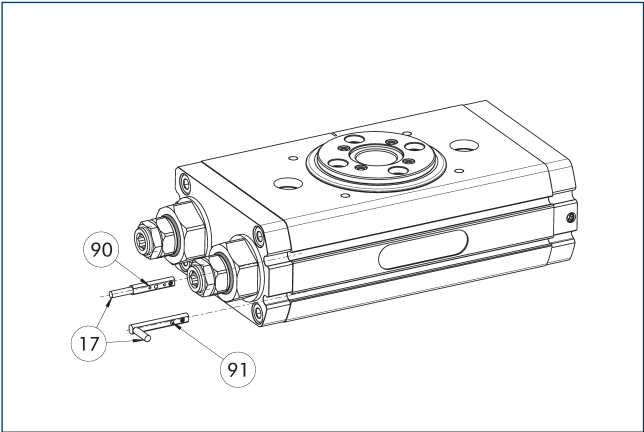


- ⑧ Not included in the scope of delivery

The angle adapter enables the swivel unit to be laterally connected with screws to the customer-specific superstructures or components from the modular assembly automation system.

Description	ID	
Adapter plate		
WA-SRM 14	1372525	

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.



SCHUNK SE & Co. KG

Spanntechnik

Greiftechnik

Automatisierungstechnik

Bahnhofstr. 106 - 134

D-74348 Lauffen/Neckar

Tel. +49-7133-103-0

Fax +49-7133-103-2399

info@de.schunk.com

schunk.com

Folgen Sie uns | *Follow us*

