



Superior Clamping and Gripping



Product Information

Miniature swivel unit SRU-mini 14

SRU-mini

Miniature swivel unit

Fast. Compact. High Performance.

Small, universal swivel unit SRU-mini

Light and fast miniature swivel unit with multiple options such as fluid feed-through, hydraulic damping, elastomer damping, and a pneumatic center position

Field of application

Can be used in clean to slightly dirty environments such as assembly or packaging areas, or wherever fast movement cycles are 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

Always with large end position adjustability for flexible adjustability of the swivel angle

Fluid feed-through can be used for gases, fluids, and vacuum therefore no interfering hoses

scope-free end positions for high accuracy

Middle position for flexible manufacturing

Series extends upwards with the SRU-plus, for a wide range of applications



Sizes
Quantity: 4



Weight
0.15 .. 0.65 kg



Torque
0.16 .. 1.15 Nm



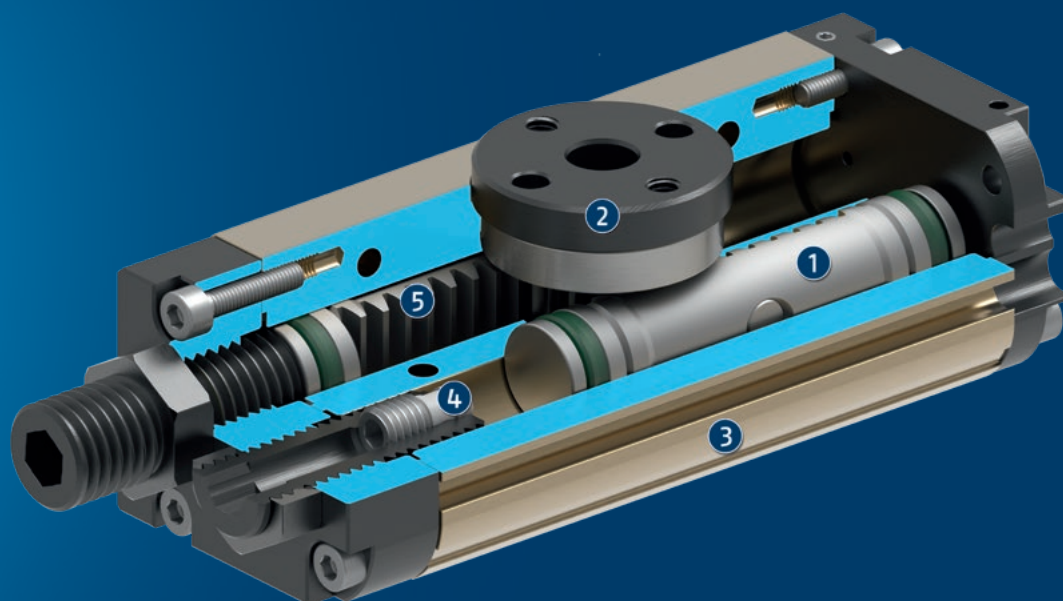
Repeat accuracy
0.07°



Angle of rotation
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 **Damping**
via elastomer, hydraulic shock absorbers or spring-elastomer dampers
- ② **Bearing**
high-precision bearing seat due to the use of high-quality rolling bearings
- ③ **Housing**
is weight-optimized due to the use of high-strength aluminum alloy
- ④ **End position**
for flexible end position
- ⑤ **Kinematics**
Rack and pinion principle for a reduced backlash transmission of the driving force into the rotary motion

General notes about the series

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: Flow control coupling, centering bushings, O-rings for direct connection, assembly and operating manual with declaration of incorporation

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. An external stop can be used to provide the full torque even in the end positions.

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 for reorientation of cylindrical bar material

- ❶ 2-finger gripper for small components KGG
- ❷ Miniature swivel unit SRU-mini



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



Fastened with screws



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

More swivel angles are available on request.

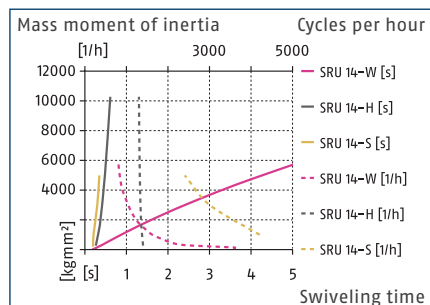
Please note that suitable emergency stop scenarios (e.g. controlled shut down) and restarting scenarios (e.g. pressure build-up valves, appropriate valve switching sequences) are needed for all pneumatic actuators. Cutting off the pressure in an uncontrolled manner could lead to undefined states and behavior.

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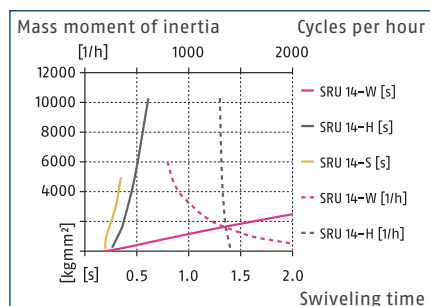
Miniature swivel unit



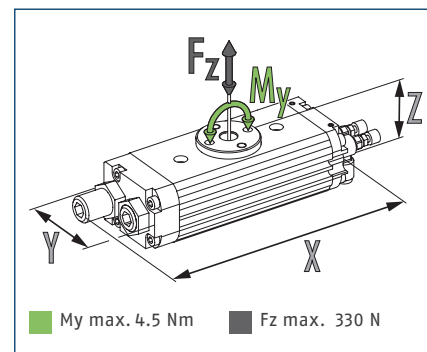
Max. permissible inertia J*



Max. permissible inertia J*



Dimensions and maximum loads



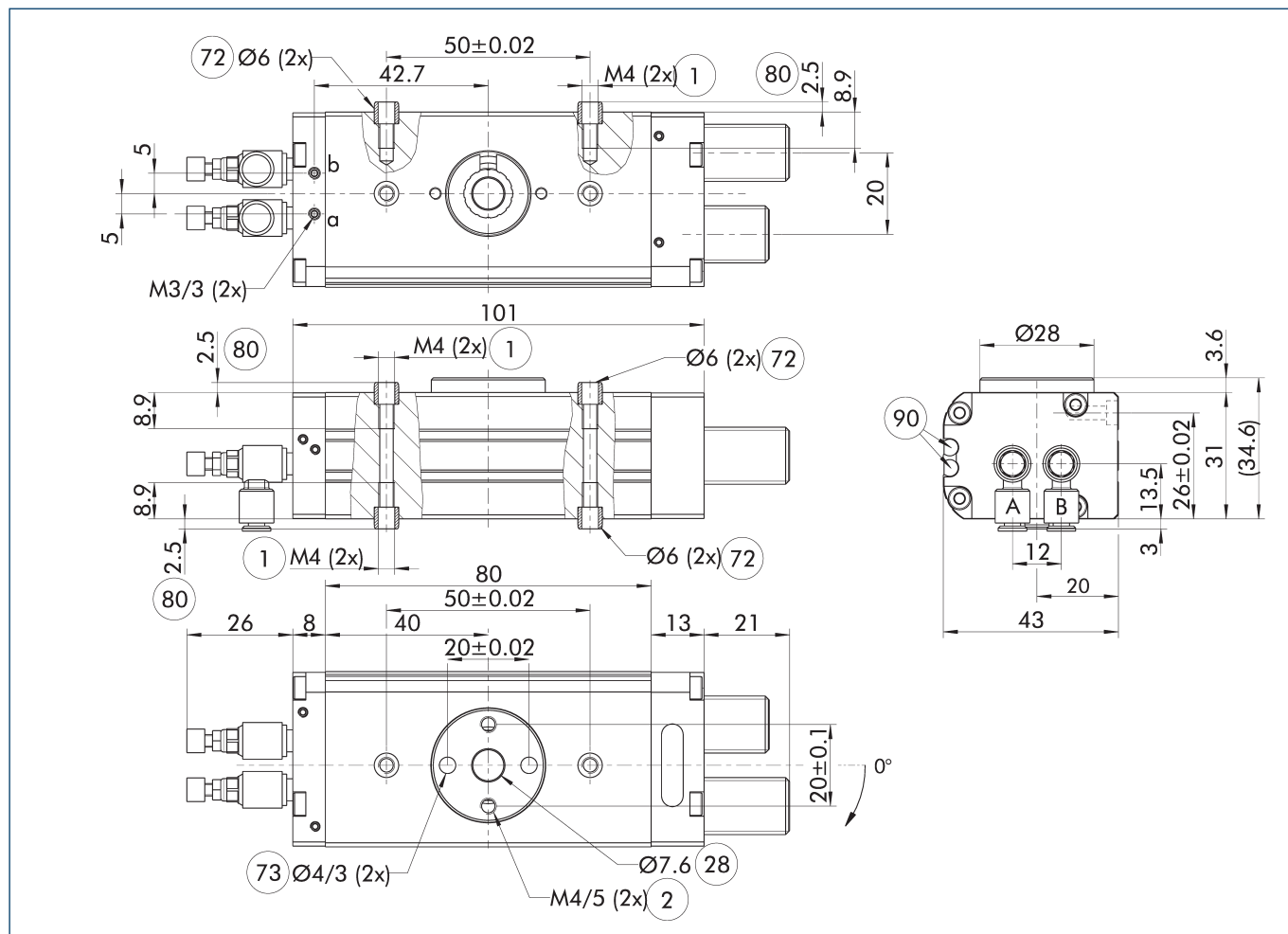
① The indicated moments and forces are static values and may appear simultaneously. Throttling has to be done for ensuring that the rotary movement takes place without impact or bouncing. Otherwise the service life reduces.

Technical data

Description		SRU 14.2-W	SRU 14.2-W-M	SRU 14.2-W-4	SRU 14.2-W-M-4
ID		0356870	0356871	0356872	0356873
Angle of rotation	[°]	180.0	180.0	180.0	180.0
End position adjustability	[°]	90.0	90.0	90.0	90.0
End position damping		Elastomer	Elastomer	Elastomer	Elastomer
Torque	[Nm]	1.15	1.15	1	1
Number of intermediate positions		none	1 x M (pneumatic)	none	1 x M (pneumatic)
Adjustability of middle position	[°]		45.0		45.0
IP protection class		65	65	65	65
Weight	[kg]	0.47	0.57	0.52	0.62
Fluid consumption (2x nom. angle)	[cm³]	15.9	18.9	15.9	18.9
Min./nom./max. operating pressure	[bar]	4.5/6/8	4.5/6/8	4.5/6/8	4.5/6/8
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
No. of fluid feed-throughs				4	4
Max. pressure fluid feed-through	[bar]			8	8
Min./max. ambient temperature	[°C]	5/90	5/90	5/90	5/90
Repeat accuracy	[°]	0.07	0.07	0.07	0.07
Dimensions X x Y x Z	[mm]	122 x 43 x 34.6	188.5 x 43 x 34.6	122 x 43 x 51.5	188.5 x 43 x 51.5
Options and their characteristics					
Designation (hard damping)		SRU 14.2-H	SRU 14.2-H-M	SRU 14.2-H-4	SRU 14.2-H-M-4
ID		0356874	0356875	0356876	0356877
End position damping		hydr. damper	hydr. damper	hydr. damper	hydr. damper
Weight	[kg]	0.5	0.6	0.55	0.65
Min./max. ambient temperature	[°C]	5/60	5/60	5/60	5/60
Description (Speed Damping)		SRU 14.2-S	SRU 14.2-S-M	SRU 14.2-S-4	SRU 14.2-S-M-4
ID		0356970	0356971	0356972	0356973
End position damping		Damper-elastomer	Damper-elastomer	Damper-elastomer	Damper-elastomer
Min./max. operating pressure	[bar]	3/8	3/8	3/8	3/8

* *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 Design Tool Swiveling is available online.

Main view



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

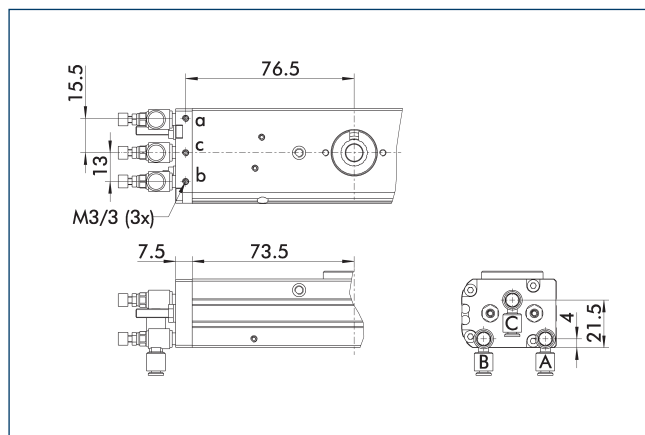
⑧① Depth of the centering sleeve hole in the counter part

⑨① Sensor MMS 22..

SRU-mini 14

Miniature swivel unit

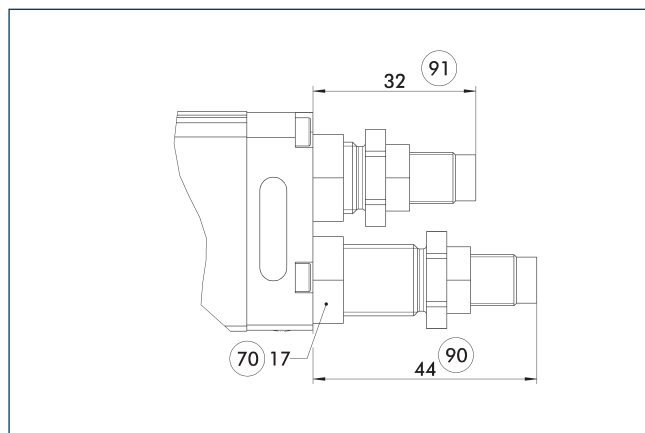
Pneumatic middle position (M)



- | | |
|------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| A, a Main / direct connection,
rotary actuator rotates
clockwise | B, b Main / direct connection,
rotary actuator rotates
counterclockwise |
| | C, c Main / direct connection,
middle 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.

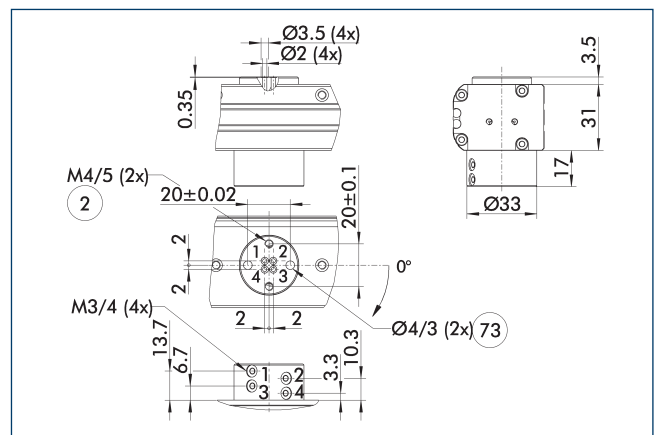
Version with shock absorbers



- 70 Wrench size
- 90 Projection with max. end position adjustability
- 91 Projection with min. end position adjustability

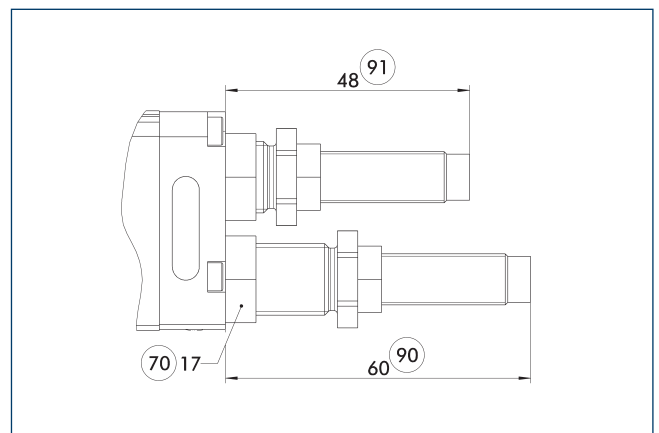
The drawing shows the dimensional changes of the shock absorber versions in comparison to the drawing in the main view which shows the elastomer version.

Connections for fluid feed-through



- ② Attachment connection ⑦③ Fit for centering pins
- ① Maximum permissible pressure in the fluid feed-through is 8 bar.

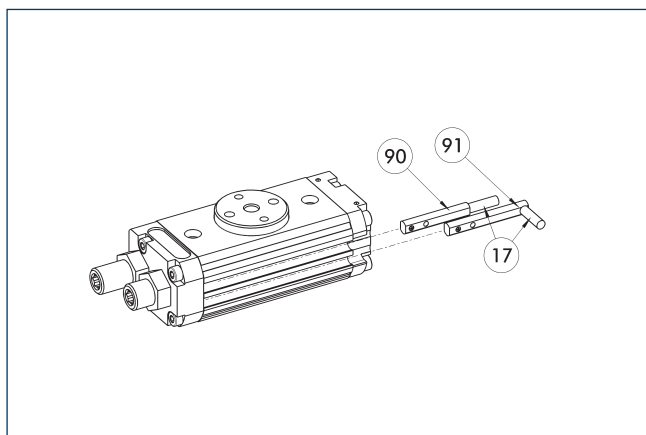
Speed version S



- 70 Wrench size
- 90 Projection with max. end position adjustability
- 91 Projection with min. end position adjustability

The speed version reduces the swiveling times and increases the possible number of cycles per hour by using a different shock absorber. The drawing shows the changes in dimension of the speed version compared to the basic version found in the main view.

Electronic magnetic switch MMS



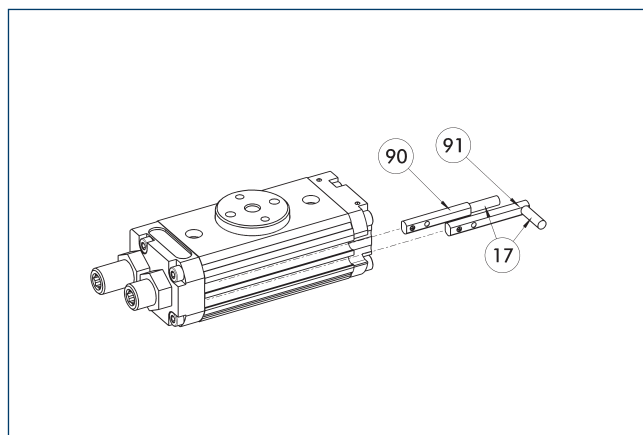
- ①⑦ Cable outlet
 ⑨① Sensor MMS 22...-SA
 ⑨① Sensor MMS 22..

End and intermediate position monitoring mounted in 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
 ⑨① 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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