SRU-mini

Sizes
8 ... 14

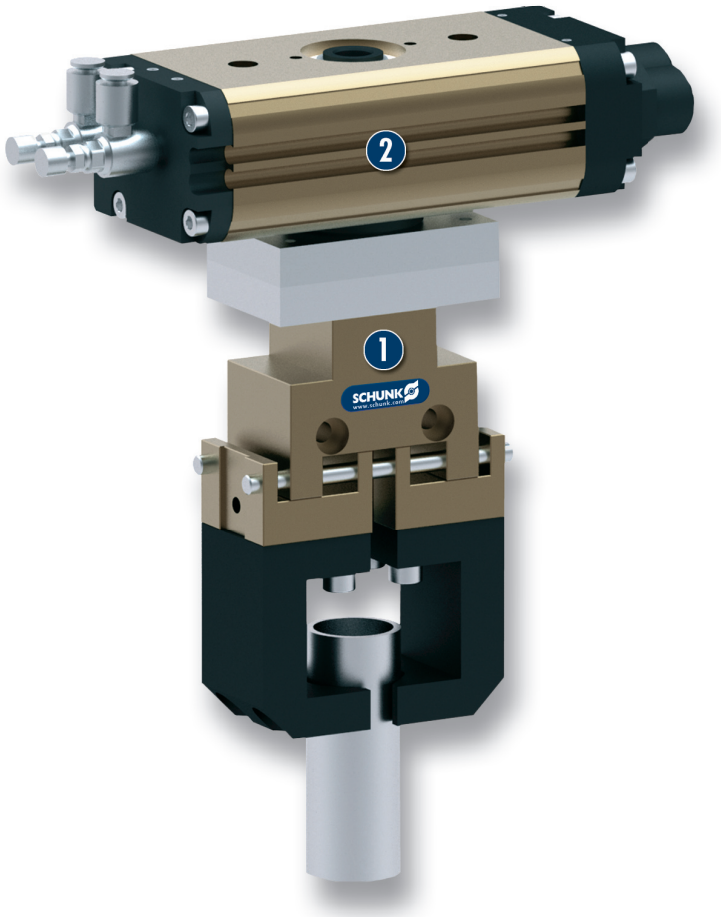
Weight
0.15 kg ... 0.65 kg

Torque
0.16 Nm ... 1.15 Nm

Axial force
255 N ... 330 N

Bending moment
2.5 Nm ... 4.5 Nm

Application example



Reversing unit for the economical reorientation of cylindrical bar material

1. 2-Finger Parallel Gripper PGM
2. SRU-mini Miniature Rotary Unit

Universal Rotary Actuators

light and fast swivel unit with multiple options like fluid feed-through, hydraulic shock absorbers and pneumatic middle position

Field of application

Applications in clean environments such as assembly or packaging, and wherever fast movement cycles are required. For achieving any point in space you like, freely combineable with linear modules or for rotating or turning around workpieces.

Your advantages and benefits

Clearly graduated series with uniform torque increase
which means that the correct size for numerous applications is available as a standard product

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 disturbing piping systems disappear

end positions absolutely free from backlash
for high accurancy

Middle position
for flexible manufacturing

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

General note to the series

Principle of function
Double piston-rack-pinion principle

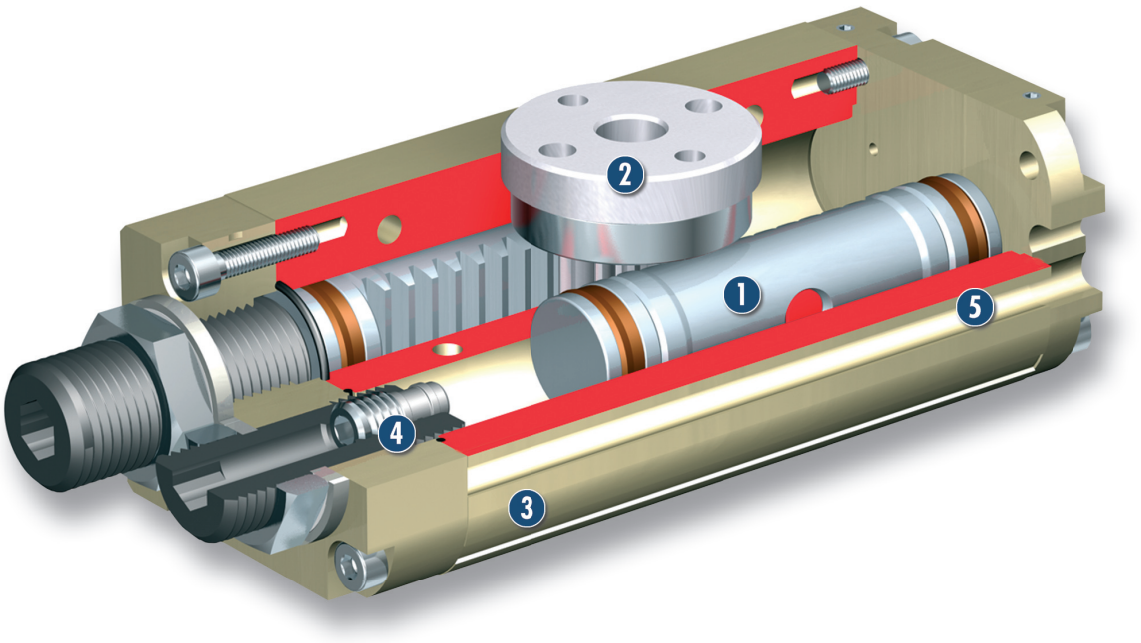
Housing material
Aluminum extruded section

Actuation
pneumatic, with filtered compressed air (10 microns): dry, lubricated or non-lubricated
Pressure medium: Required quality class of compressed air according to DIN ISO 8573-1: 6 4 4

Warranty
24 months (details, general terms and conditions and operation manuals can be downloaded under www.schunk.com)

Scope of delivery
Flow control coupling, centering bushings, O-rings for direct connection, fitting screws (SRU-plus 63 only), assembly and operating manual with manufacturer'sdeclaration

Sectional diagram



1 Damping
integrated elastomer damping

2 bearing
high precisie roller bearing

3 Housing
weight-optimized through application of hard-anodized, high-strength aluminum alloy

4 End position
for flexible end position

5 Kinematics
Rack- and pinion principle for a reduced back-lash transmission of the drive force into the rotary motion

Functional description

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

Options and special information

Special swivel angles and swivel ranges are available on request.

Torque in end positions

Note that the final angular degrees (approx. 2°) before the end position can only be approached using the force of a drive piston. For this reason, double pressurized modules only have about half the rated torque available in this area. An external stop can provide the full torque in even the end positions.

Accessories

Accessories from SCHUNK – the suitable supplement for maximum functionality, reliability and performance of all automation modules.

Centering sleeves

Fittings

Sensor system

Sensor cables

Pressure maintenance valve

Sensor Distributor

ⓘ For the exact size of the required accessories, availability of this size and the designation and ID, please refer to the additional views at the end of the size in question. You will find more detailed information on our accessory range in the "Accessories" catalog section.

General note to the series

Repeat accuracy
is defined as the spread of the limit positions for 100 consecutive swiveling cycles.

Pinion position
The position of the pinion is always shown in the left end position. The pinion rotates from here to the right in the clockwise direction. The arrow makes the direction of rotation clear.

Pinion screw connection diagram
Please note that when the angle of traverse is to be set for less than 90°, the left stop will generally be completely turned in. The left end position therefore has a screw connection diagram which has been rotated by 90° in the clockwise direction in relation to the drawing, which is shown at a 180° angle of rotation.

Special swivel angle
Special swivel angles and swivel ranges are available on request.

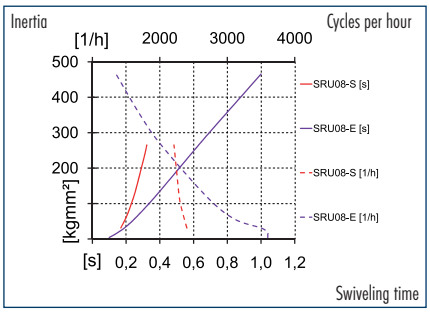
Travel to the pneumatic middle position
The travel to the middle position is carried out using only half the nominal torque.

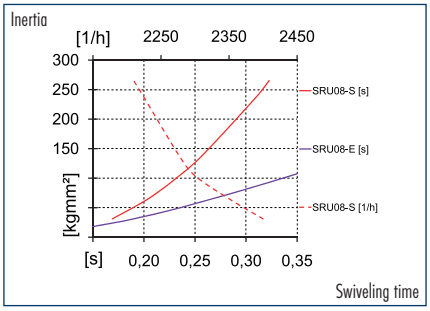
Cycle time
The cycle times are the real rotation times of the pinion/ flange around a nominal angle of rotation. Valve switching times, filling times of hoses or PLC reaction times are not included and have to be considered for the determination of cycle times.

Swivel time depending on the loading
The diagrams shown here apply for angles of rotation of 90° and 180°, for units without a middle position, as well as for use with a vertical swiveling axis, and for purely centric loads with a horizontal swiveling axis and an operating pressure of 6 bar. The diagrams show the expected swiveling times and allowed cycles per hour, depending on the mass moment of inertia. Throttles should be used to keep to the swiveling times, otherwise the life span could be shortened. We would be happy to help you design other applications.

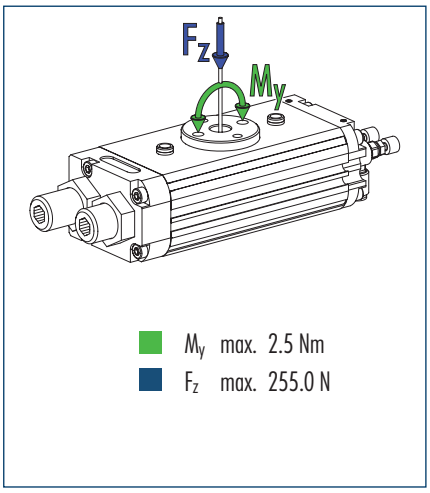
SRU-mini 8

Maximum admissible inertia J





Pinion load



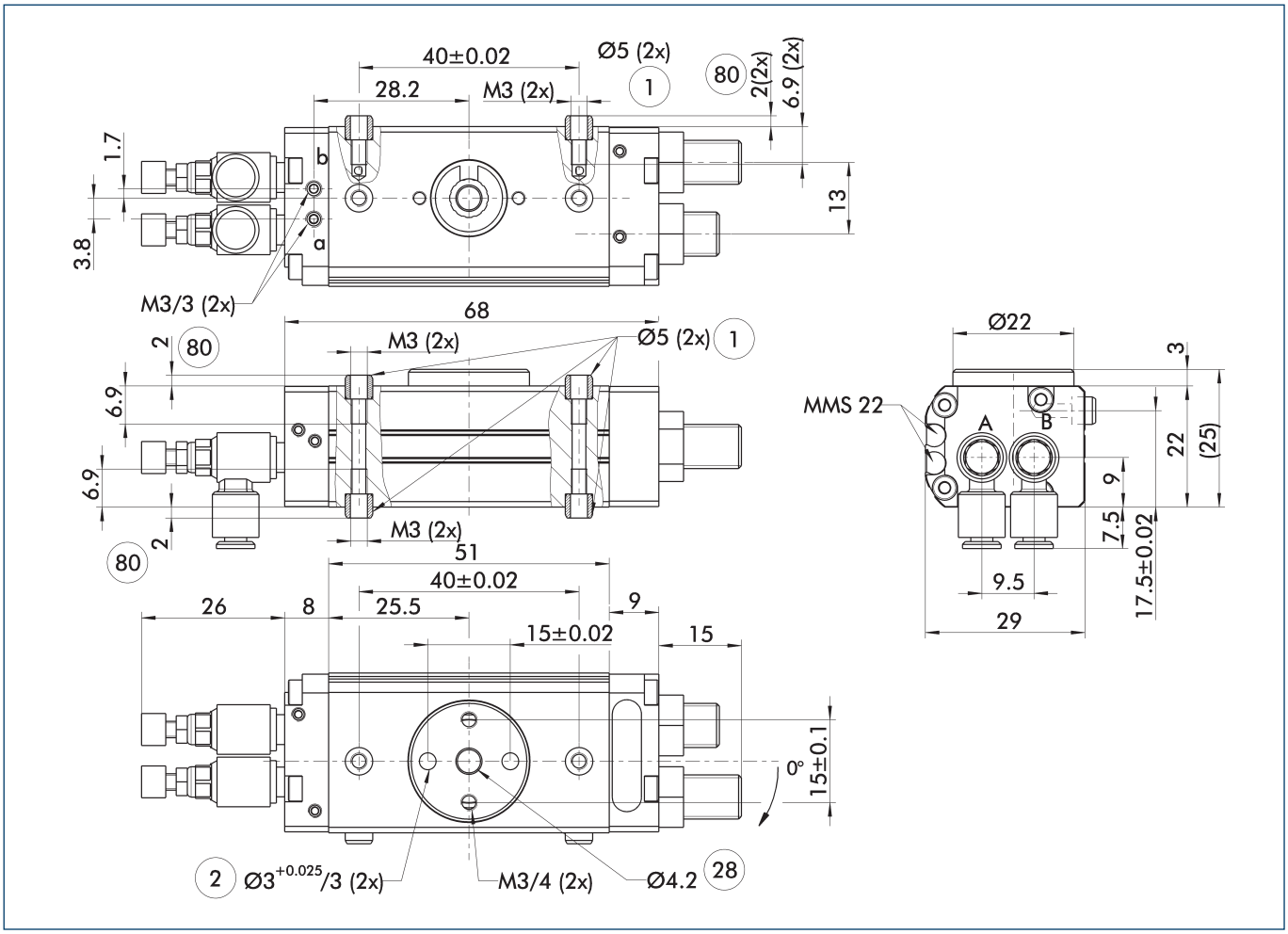
ⓘ The indicated moments and forces are statical values and should not appear simultaneously. In case of heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description		SRU 8.2-E	SRU 8.2-E-M	SRU 8.2-E-2	SRU 8.2-E-M-2
ID		**0356810**	**0356811**	**0356812**	**0356813**
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]	0.2	0.2	0.16	0.16
Middle position			M (pneumatic)		M (pneumatic)
Adjustability of middle position	[°]		45.0		45.0
IP class		65	65	65	65
Weight	[kg]	0.15	0.18	0.17	0.2
Cycle time without attached load	[s]	0.12	0.12	0.14	0.14
Fluid consumption (2 x nominal angle)	[cm³]	3.3	4.4	3.3	4.4
Nominal operating pressure	[bar]	6.0	6.0	6.0	6.0
Min./max. operating pressure	[bar]	4.5/8	4.5/8	4.5/8	4.5/8
Diameter of connecting hose	[mm]	3.0	3.0	3.0	3.0
Min./max. ambient temperature	[°C]	-10/90	-10/90	-10/90	-10/90
Repeat accuracy	[°]	0.07	0.07	0.07	0.07
Cleanroom class ISO 14644-1		5	5	5	5
OPTIONS and their characteristics					
Version of shock absorber		SRU 8.2-S	SRU 8.2-S-M	SRU 8.2-S-2	SRU 8.2-S-M-2
ID		0356814	0356815	0356816	0356817
Weight	[kg]	0.17	0.2	0.19	0.22
Min./max. ambient temperature	[°C]	5/60	5/60	5/60	5/60
Minimum pressure	[bar]	3	3	3	3

ⓘ The diagrams are valid for rotary angles of 90° and 180°, units without middle position and for applications with vertical rotary axis. Also for absolutely centric loads with horizontal rotary axis and with a pneumatic working pressure of 6 bars. The swiveling times need to be adjusted by using throttle valves, otherwise the life time could be reduced. Please contact us for calculations of other applications and further information..

Main view

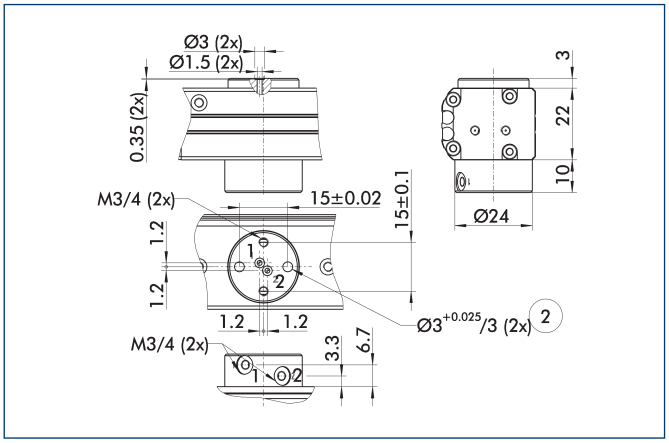


The drawing shows the basic version of the unit without considering the following described options.

ⓘ The SDV-P pressure maintenance valve can be used to hold the position in case of pressure drop (see "Accessories" catalog section).

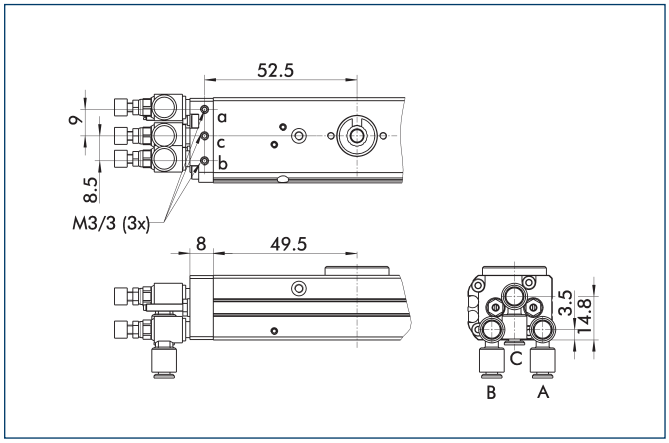
A, a Main/direct connection, gripper opening
B, b Main/direct connection, gripper closing
① Gripper connection
② Finger connection
㉘ Through-bore
㉚ Depth of the centering sleeve hole in the matching part

Connections for fluid feed-through



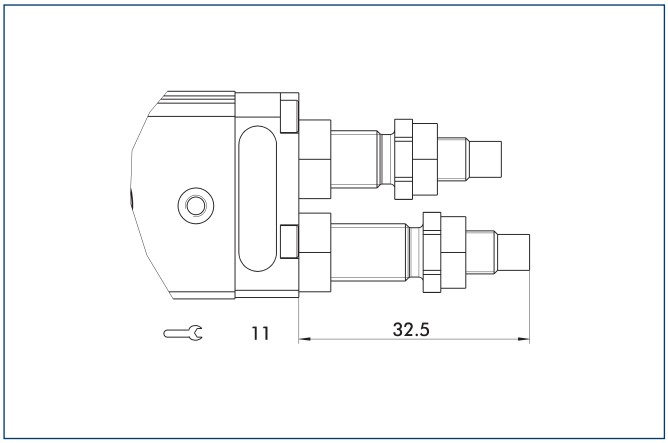
② Attachment connection

Pneumatic middle position (M)



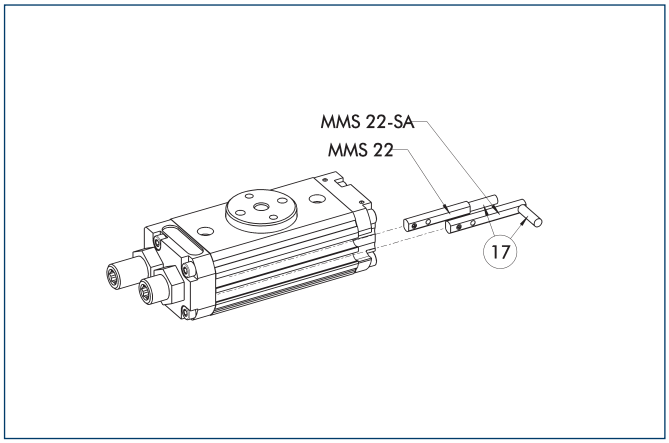
A, a Main/direct connection, gripper opening
B, b Main/direct connection, gripper closing
C, c Main/direct connection, gripper opening

Version with shock absorbers



The drawing shows changes in dimensions of the shock absorber versions, compared to the elastomer versions shown on the main view.

Electronic magnetic switches

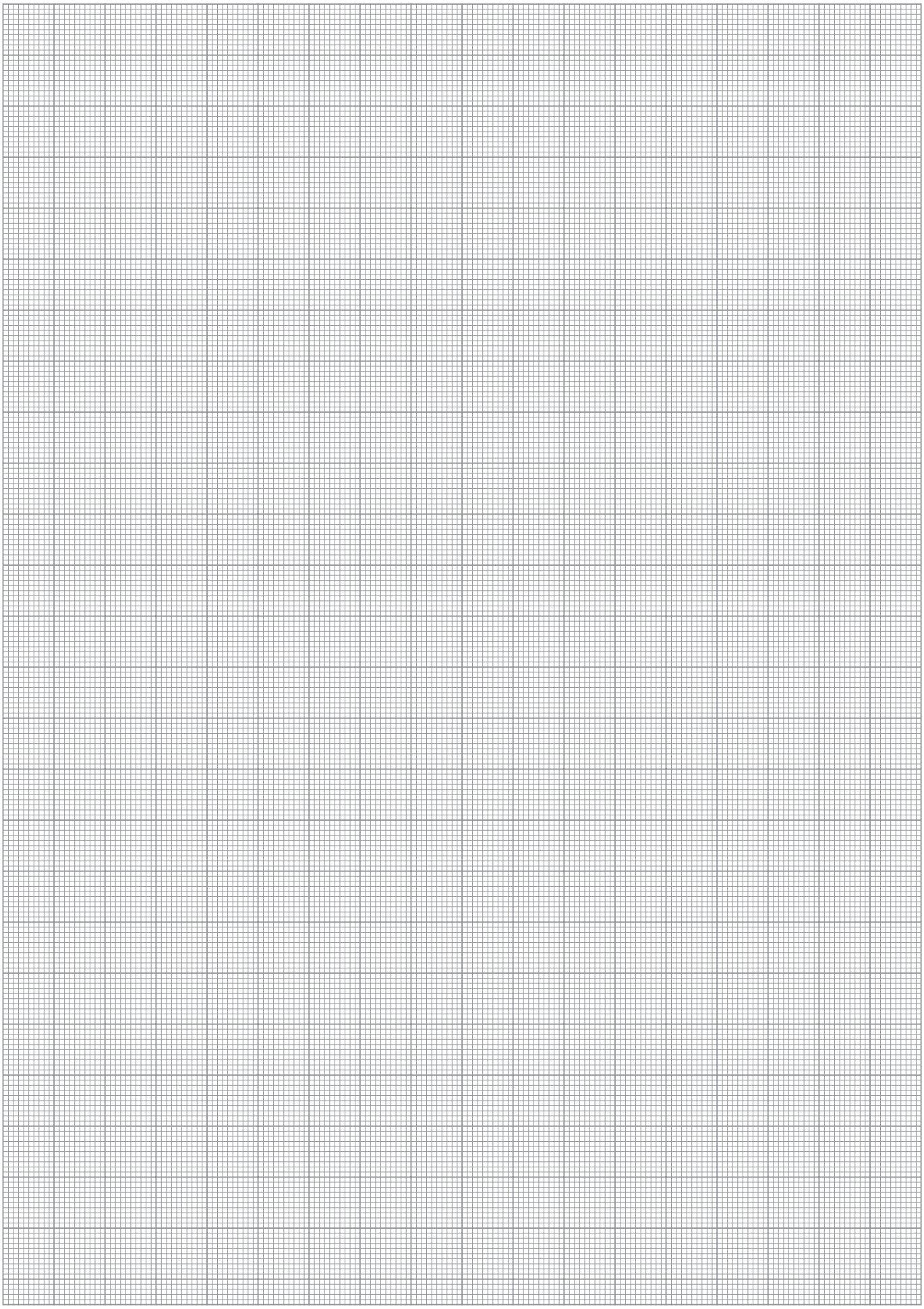


⑰ Cable outlet

End position monitoring for mounting in the C-slot

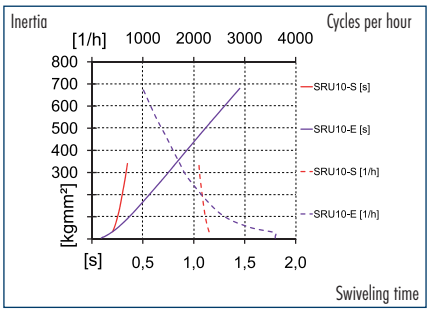
Description	ID	Recommended product
Electronic magnetic switches		
MMS 22-S-M5-PNP	**0301438**	
MMS 22-S-M5-NPN	**0301439**	
MMS 22-S-M8-PNP	**0301032**	•
MMS 22-S-M8-NPN	**0301433**	
MMSK 22-S-PNP	**0301034**	
MMSK 22-S-NPN	**0301435**	
Electronic magnetic switches with lateral cable outlet		
MMS 22-S-M5-PNP-SA	**0301448**	
MMS 22-S-M5-NPN-SA	**0301449**	
MMS 22-S-M8-PNP-SA	**0301442**	•
MMS 22-S-M8-NPN-SA	**0301443**	
MMSK 22-S-PNP-SA	**0301444**	
MMSK 22-S-NPN-SA	**0301445**	
Connection cables		
KA BG05-L 3P-0300	**0301652**	
KA BG08-L 3P-0300-PNP	**0301622**	
KA BG08-L 3P-0500-PNP	**0301623**	
KA BW05-L 3P-0300	**0301650**	
KA BW08-L 3P-0300-NPN	**0301602**	
KA BW08-L 3P-0300-PNP	**0301594**	
KA BW08-L 3P-0500-NPN	**9641116**	
KA BW08-L 3P-0500-PNP	**0301502**	
Cable extensions		
KV BW08-SG08 3P-0030-PNP	**0301495**	
KV BW08-SG08 3P-0100-PNP	**0301496**	
KV BW08-SG08 3P-0200-PNP	**0301497**	

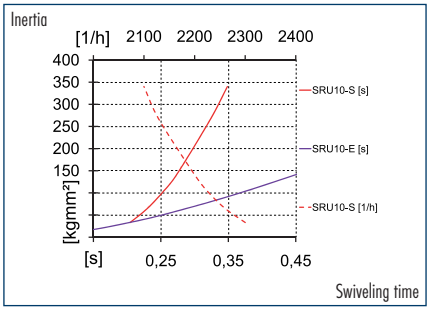
ⓘ Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.



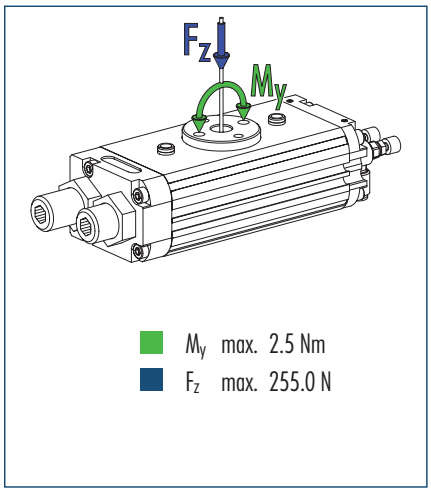
SRU-mini 10

Maximum admissible inertia J





Pinion load



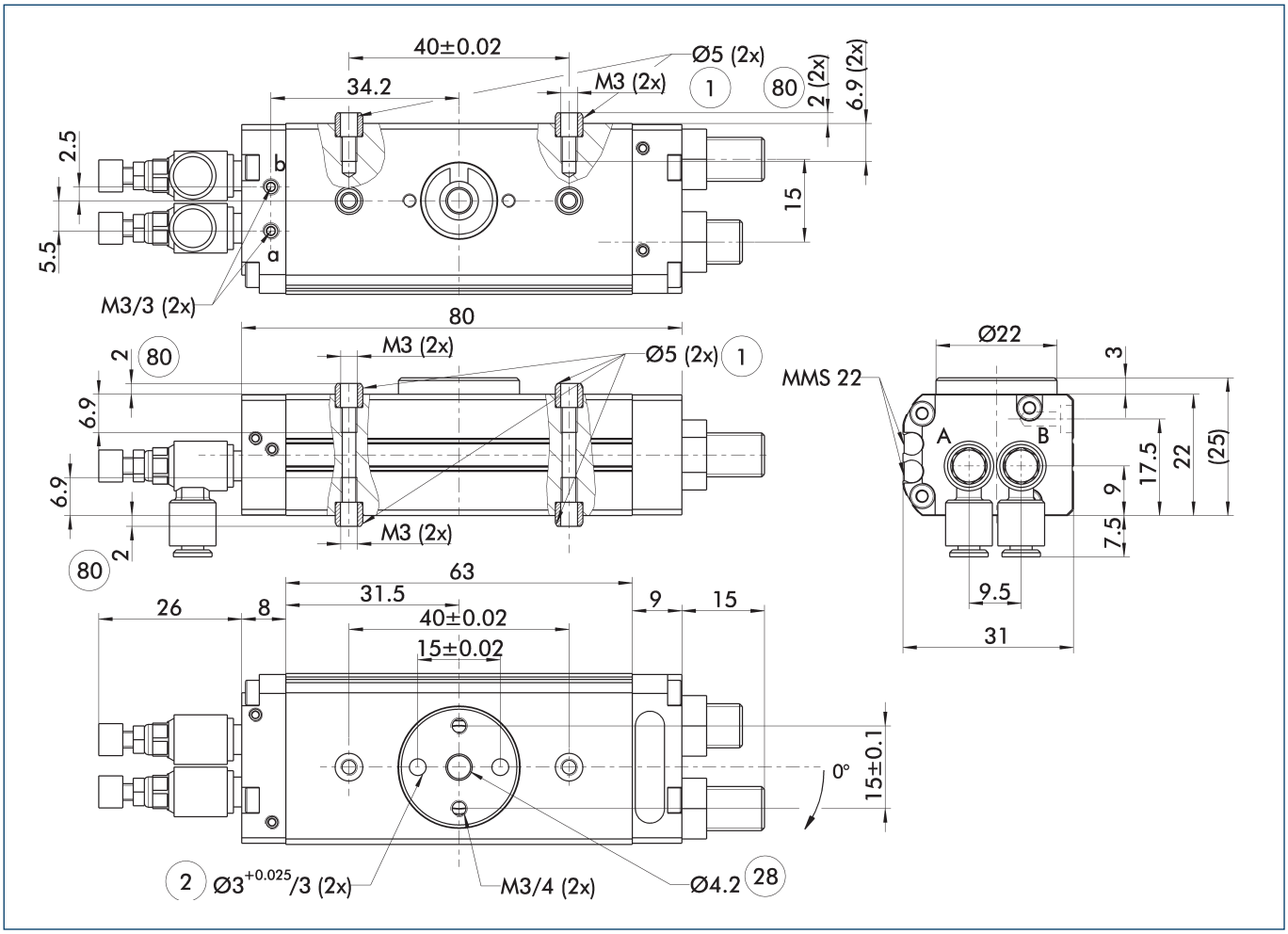
ⓘ The indicated moments and forces are statical values and should not appear simultaneously. In case of heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description		SRU 10.2-E	SRU 10.2-E-M	SRU 10.2-E-2	SRU 10.2-E-M-2
ID		**0356830**	**0356831**	**0356832**	**0356833**
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]	0.28	0.28	0.24	0.24
Middle position			M (pneumatic)		M (pneumatic)
Adjustability of middle position	[°]		45.0		45.0
IP class		65	65	65	65
Weight	[kg]	0.18	0.22	0.2	0.24
Cycle time without attached load	[s]	0.14	0.14	0.16	0.16
Fluid consumption (2 x nominal angle)	[cm³]	4.3	5.8	4.3	5.8
Nominal operating pressure	[bar]	6.0	6.0	6.0	6.0
Min./max. operating pressure	[bar]	4.5/8	4.5/8	4.5/8	4.5/8
Diameter of connecting hose	[mm]	3.0	3.0	3.0	3.0
Min./max. ambient temperature	[°C]	-10/90	-10/90	-10/90	-10/90
Repeat accuracy	[°]	0.07	0.07	0.07	0.07
Cleanroom class ISO 14644-1		5	5	5	5
OPTIONS and their characteristics					
Version of shock absorber		SRU 10.2-S	SRU 10.2-S-M	SRU 10.2-S-2	SRU 10.2-S-M-2
ID		**0356834**	**0356835**	**0356836**	**0356837**
Weight	[kg]	0.2	0.24	0.22	0.26
Min./max. ambient temperature	[°C]	5/60	5/60	5/60	5/60
Minimum pressure	[bar]	3	3	3	3

ⓘ The diagrams are valid for rotary angles of 90° and 180°, units without middle position and for applications with vertical rotary axis. Also for absolutely centric loads with horizontal rotary axis and with a pneumatic working pressure of 6 bars. The swiveling times need to be adjusted by using throttle valves, otherwise the life time could be reduced. Please contact us for calculations of other applications and further information..

Main view

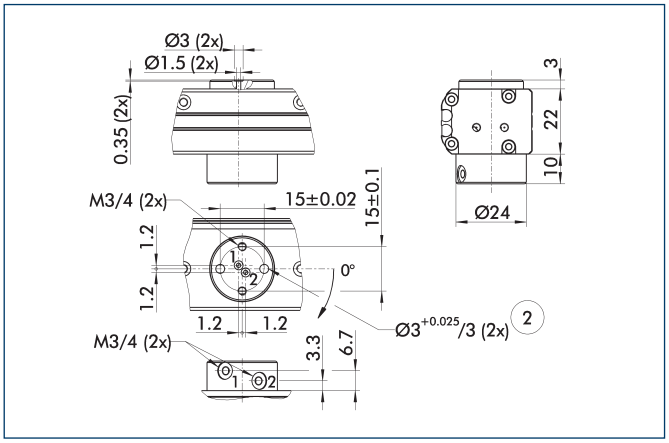


The drawing shows the basic version of the unit without considering the following described options.

ⓘ The SDV-P pressure maintenance valve can be used to hold the position in case of pressure drop (see "Accessories" catalog section).

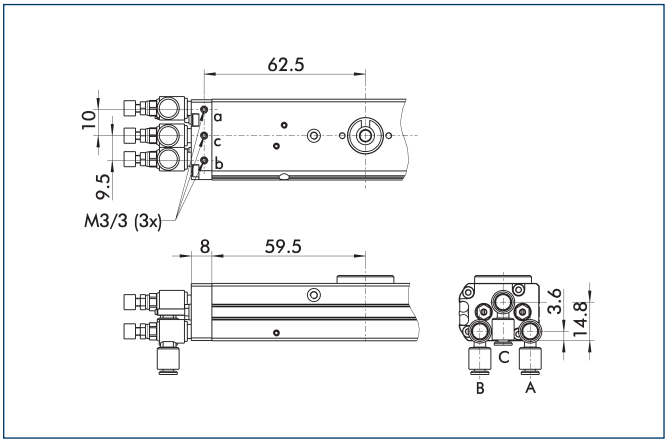
A, a Main/direct connection, rotary actuator clockwise turning
B, b Main/direct connection, rotary actuator anti-clockwise turning
① Rotary actuator connection
② Attachment connection
㉘ Through-bore
㉚ Depth of the centering sleeve hole in the matching part

Connections for fluid feed-through



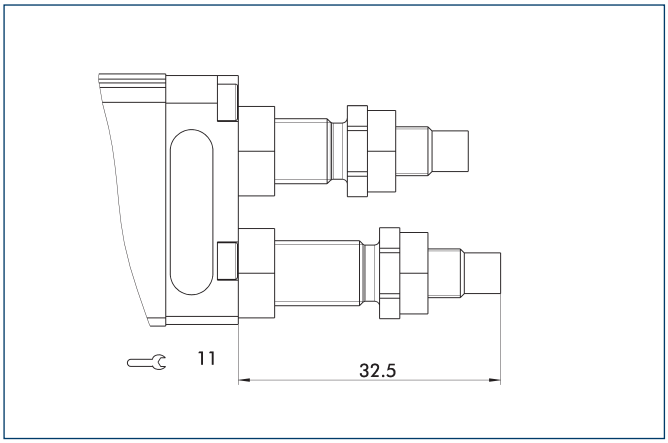
② Attachment connection

Pneumatic middle position (M)



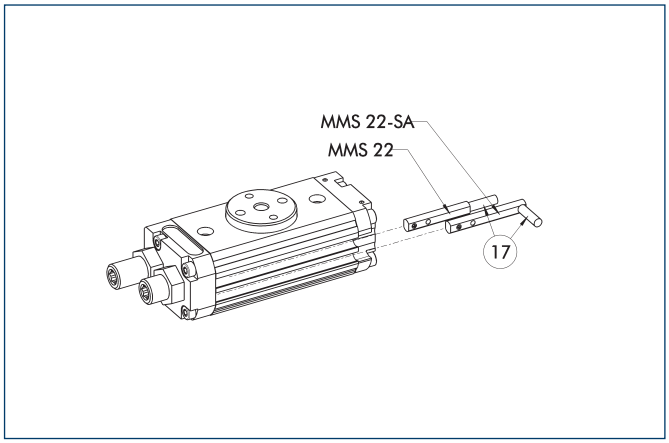
A, a Main/direct connection, rotary actuator clockwise turning
B, b Main/direct connection, rotary actuator anti-clockwise turning
C, c Main/direct connection, gripper opening

Version with shock absorbers



The drawing shows changes in dimensions of the shock absorber versions, compared to the elastomer versions shown on the main view.

Electronic magnetic switches

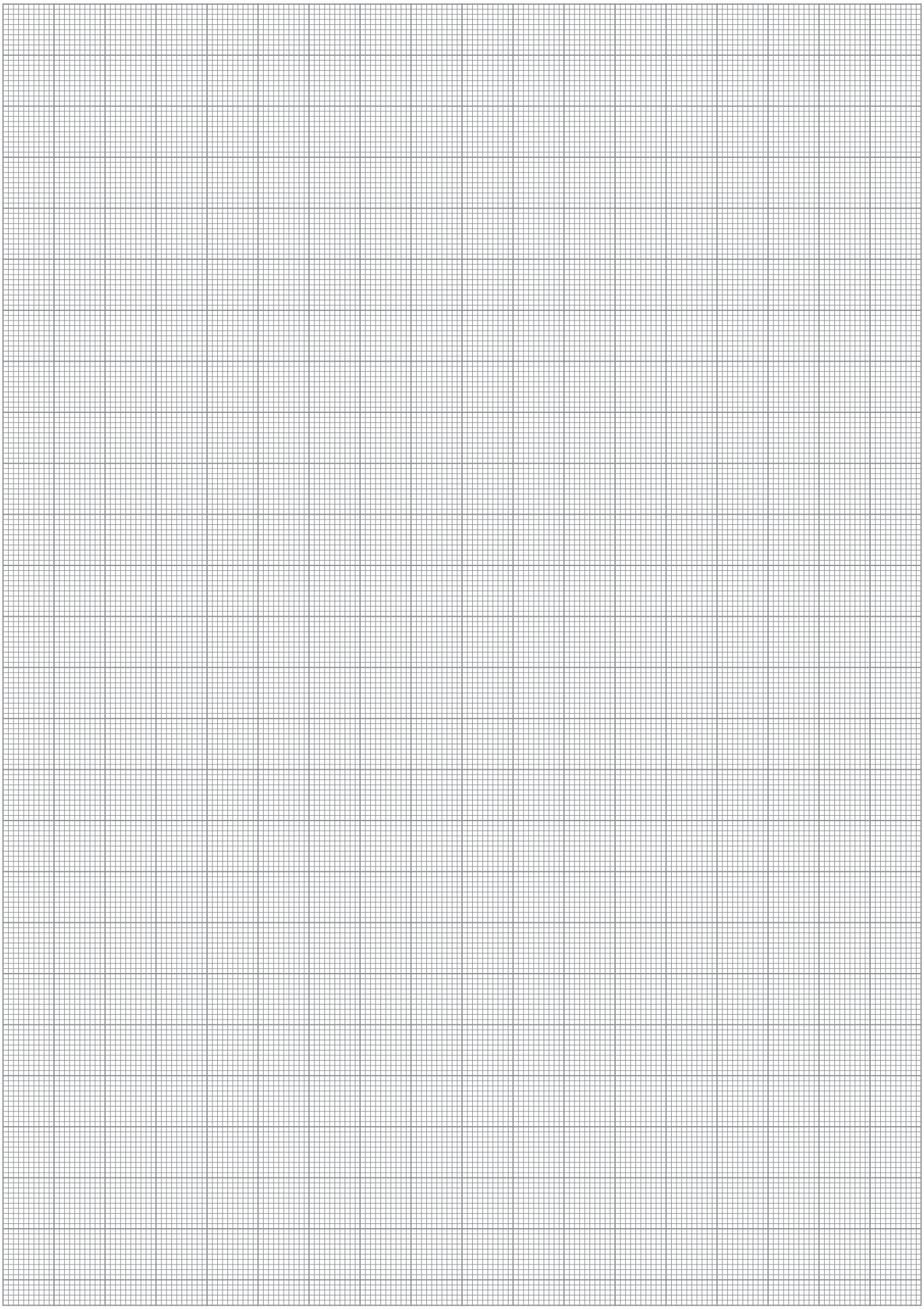


⑰ Cable outlet

End position monitoring for mounting in the C-slot

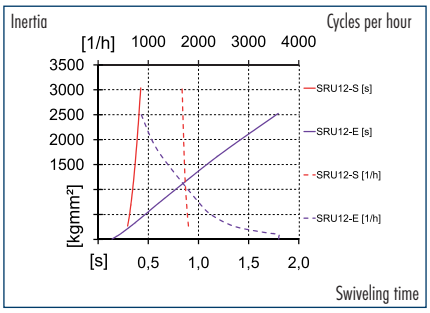
Description	ID	Recommended product
Electronic magnetic switches		
MMS 22-S-M5-PNP	**0301438**	
MMS 22-S-M5-NPN	**0301439**	
MMS 22-S-M8-PNP	**0301032**	•
MMS 22-S-M8-NPN	**0301433**	
MMSK 22-S-PNP	**0301034**	
MMSK 22-S-NPN	**0301435**	
Electronic magnetic switches with lateral cable outlet		
MMS 22-S-M5-PNP-SA	**0301448**	
MMS 22-S-M5-NPN-SA	**0301449**	
MMS 22-S-M8-PNP-SA	**0301442**	•
MMS 22-S-M8-NPN-SA	**0301443**	
MMSK 22-S-PNP-SA	**0301444**	
MMSK 22-S-NPN-SA	**0301445**	
Connection cables		
KA BG05-L 3P-0300	**0301652**	
KA BG08-L 3P-0300-PNP	**0301622**	
KA BG08-L 3P-0500-PNP	**0301623**	
KA BW05-L 3P-0300	**0301650**	
KA BW08-L 3P-0300-NPN	**0301602**	
KA BW08-L 3P-0300-PNP	**0301594**	
KA BW08-L 3P-0500-NPN	**9641116**	
KA BW08-L 3P-0500-PNP	**0301502**	
Cable extensions		
KV BW08-SG08 3P-0030-PNP	**0301495**	
KV BW08-SG08 3P-0100-PNP	**0301496**	
KV BW08-SG08 3P-0200-PNP	**0301497**	

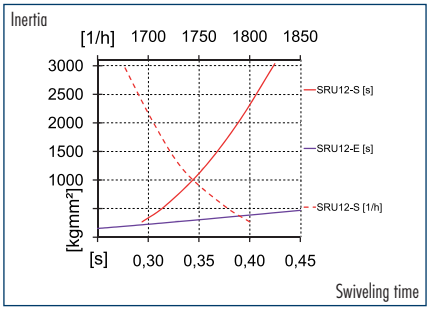
ⓘ Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.



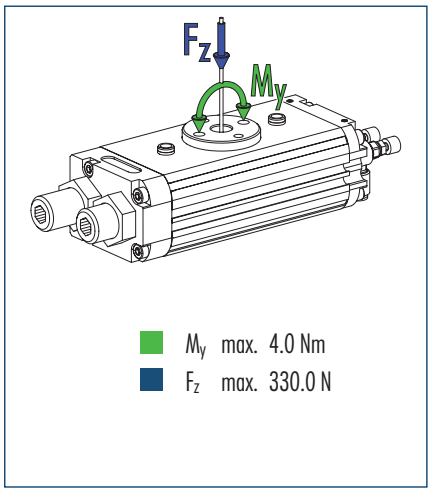
SRU-mini 12

Maximum admissible inertia J





Pinion load



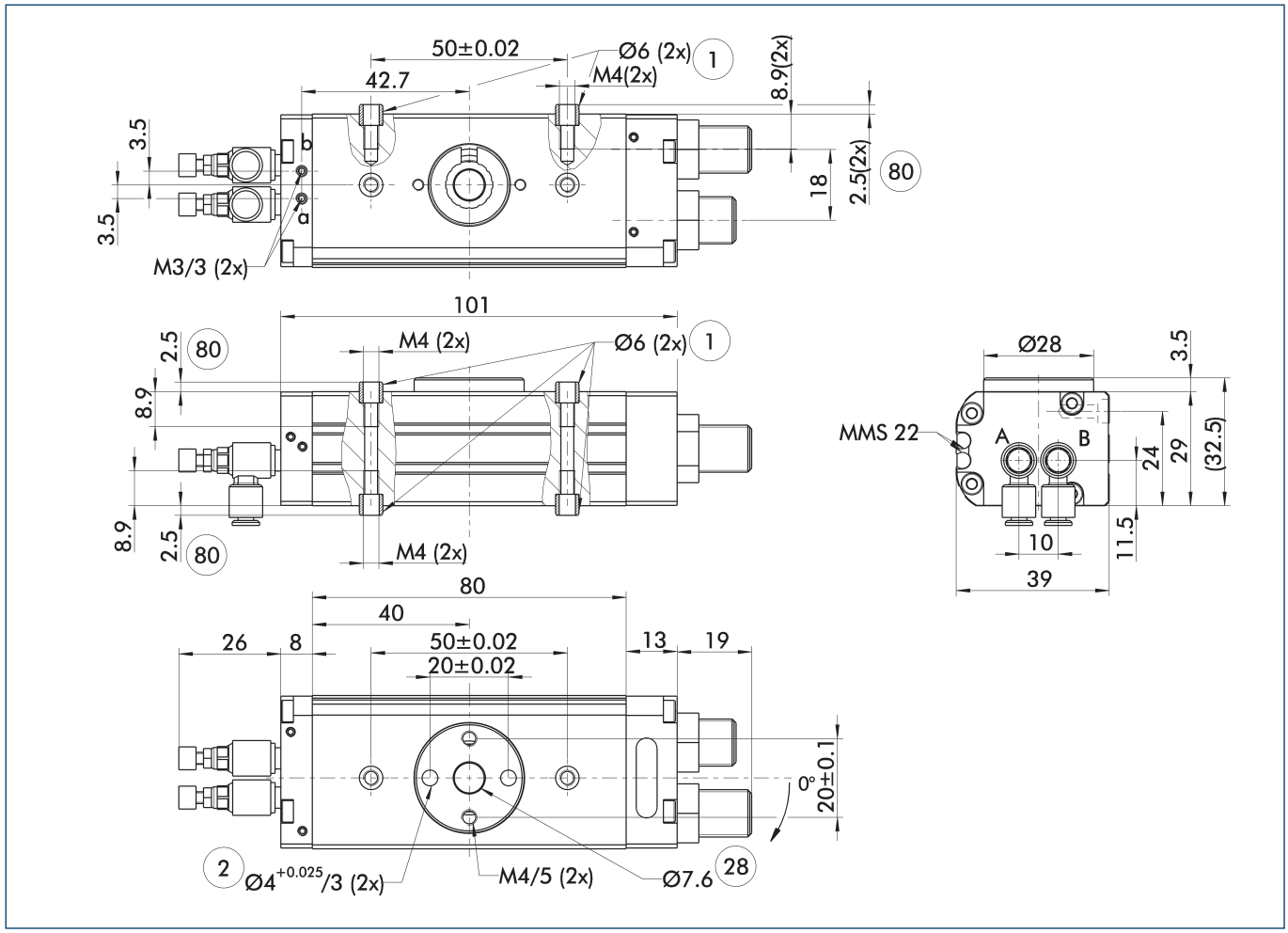
ⓘ The indicated moments and forces are statical values and should not appear simultaneously. In case of heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description		SRU 12.2-E	SRU 12.2-E-M	SRU 12.2-E-4	SRU 12.2-E-M-4
ID		**0356850**	**0356851**	**0356852**	**0356853**
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]	0.75	0.75	0.6	0.6
Middle position			M (pneumatic)		M (pneumatic)
Adjustability of middle position	[°]		45.0		45.0
IP class		65	65	65	65
Weight	[kg]	0.39	0.47	0.44	0.52
Cycle time without attached load	[s]	0.18	0.18	0.20	0.20
Fluid consumption (2 x nominal angle)	[cm³]	11.8	14.5	11.8	14.5
Nominal operating pressure	[bar]	6.0	6.0	6.0	6.0
Min./max. operating pressure	[bar]	4.5/8	4.5/8	4.5/8	4.5/8
Diameter of connecting hose	[mm]	3.0	3.0	3.0	3.0
Min./max. ambient temperature	[°C]	-10/90	-10/90	-10/90	-10/90
Repeat accuracy	[°]	0.07	0.07	0.07	0.07
Cleanroom class ISO 14644-1		5	5	5	5
OPTIONS and their characteristics					
Version of shock absorber		SRU 12.2-S	SRU 12.2-S-M	SRU 12.2-S-4	SRU 12.2-S-M-4
ID		**0356854**	**0356855**	**0356856**	**0356857**
Weight	[kg]	0.41	0.49	0.46	0.54
Min./max. ambient temperature	[°C]	5/60	5/60	5/60	5/60
Minimum pressure	[bar]	3	3	3	3

ⓘ The diagrams are valid for rotary angles of 90° and 180°, units without middle position and for applications with vertical rotary axis. Also for absolutely centric loads with horizontal rotary axis and with a pneumatic working pressure of 6 bars. The swiveling times need to be adjusted by using throttle valves, otherwise the life time could be reduced. Please contact us for calculations of other applications and further information..

Main view

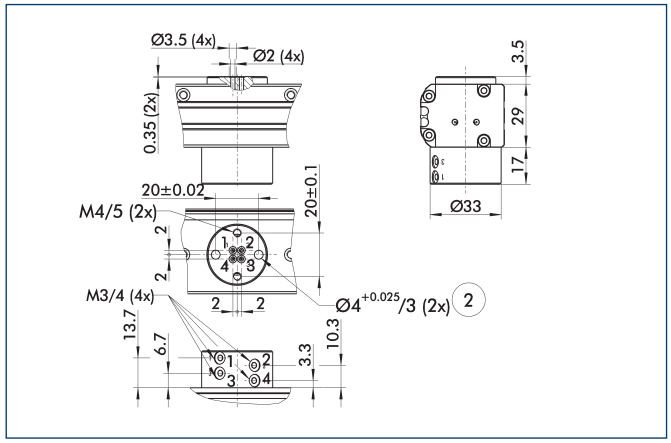


The drawing shows the basic version of the unit without considering the following described options.

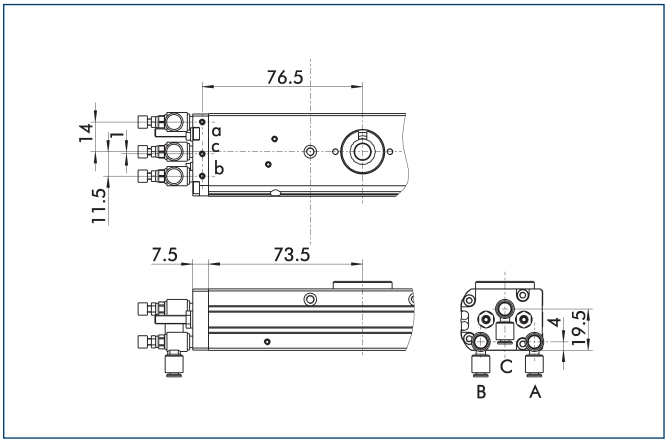
ⓘ The SDV-P pressure maintenance valve can be used to hold the position in case of pressure drop (see "Accessories" catalog section).

A, a Main/direct connection, gripper opening
B, b Main/direct connection, gripper closing
① Gripper connection
② Finger connection
㉘ Through-bore
㉚ Depth of the centering sleeve hole in the matching part

Connections for fluid feed-through

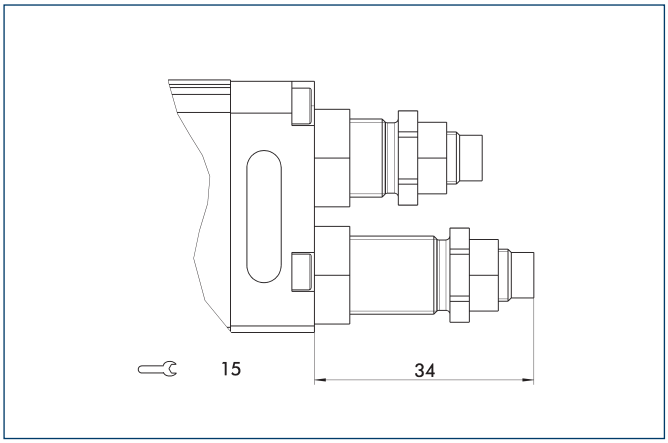


Pneumatic middle position (M)



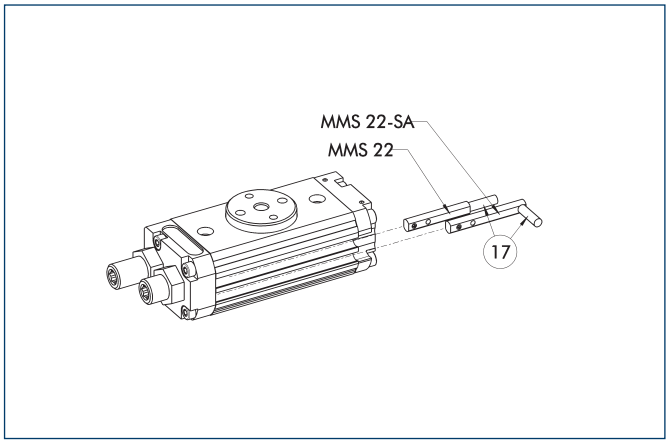
A, a Main/direct connection, rotary actuator clockwise turning
B, b Main/direct connection, rotary actuator anti-clockwise turning
C, c Main/direct connection, gripper opening

Version with shock absorbers



The drawing shows changes in dimensions of the shock absorber versions, compared to the elastomer versions shown on the main view.

Electronic magnetic switches

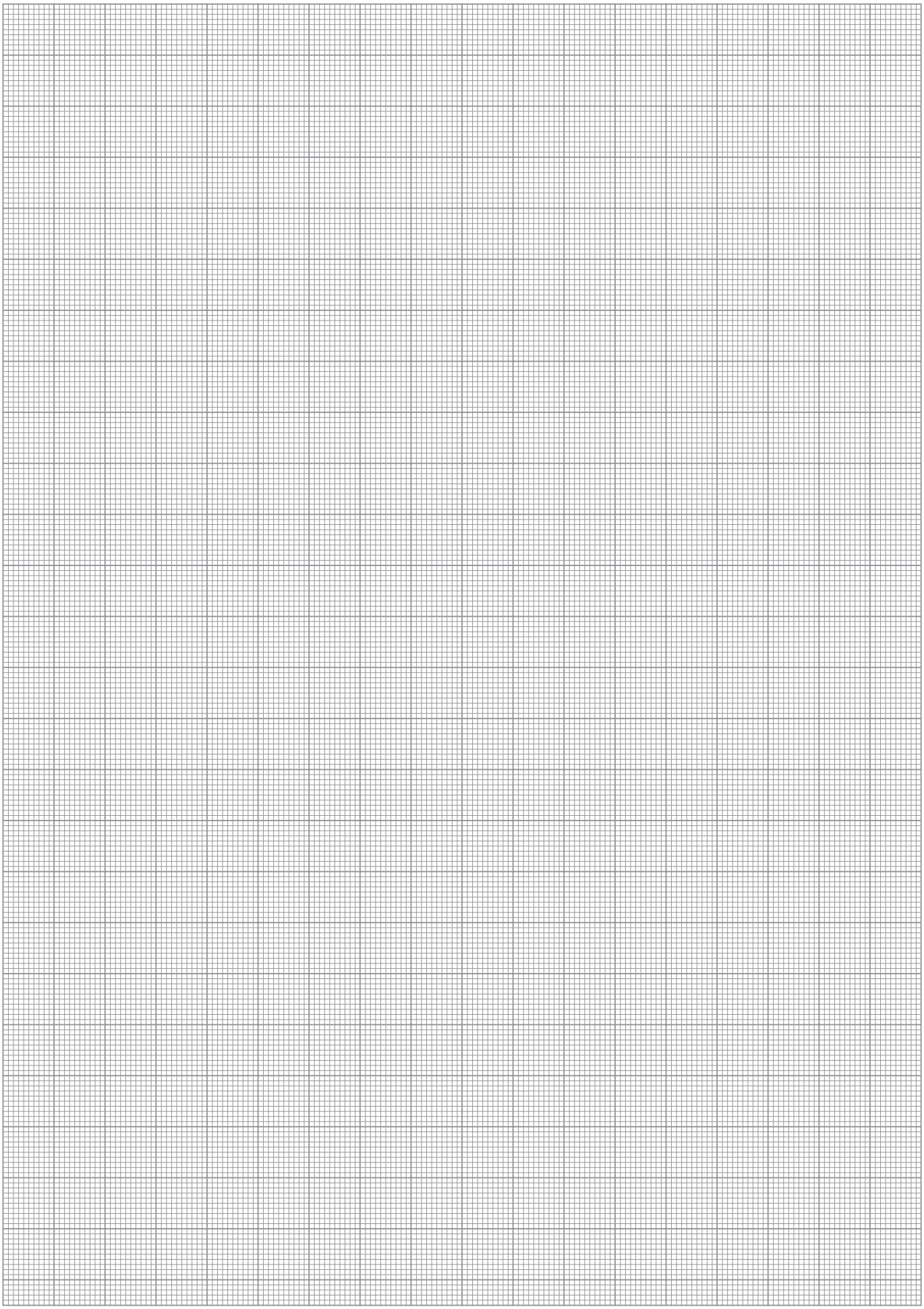


⑰ Cable outlet

End position monitoring for mounting in the C-slot

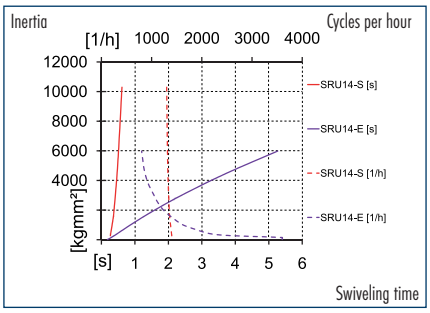
Description	ID	Recommended product
Electronic magnetic switches		
MMS 22-S-M5-PNP	**0301438**	
MMS 22-S-M5-NPN	**0301439**	
MMS 22-S-M8-PNP	**0301032**	•
MMS 22-S-M8-NPN	**0301433**	
MMSK 22-S-PNP	**0301034**	
MMSK 22-S-NPN	**0301435**	
Electronic magnetic switches with lateral cable outlet		
MMS 22-S-M5-PNP-SA	**0301448**	
MMS 22-S-M5-NPN-SA	**0301449**	
MMS 22-S-M8-PNP-SA	**0301442**	•
MMS 22-S-M8-NPN-SA	**0301443**	
MMSK 22-S-PNP-SA	**0301444**	
MMSK 22-S-NPN-SA	**0301445**	
Connection cables		
KA BG05-L 3P-0300	**0301652**	
KA BG08-L 3P-0300-PNP	**0301622**	
KA BG08-L 3P-0500-PNP	**0301623**	
KA BW05-L 3P-0300	**0301650**	
KA BW08-L 3P-0300-NPN	**0301602**	
KA BW08-L 3P-0300-PNP	**0301594**	
KA BW08-L 3P-0500-NPN	**9641116**	
KA BW08-L 3P-0500-PNP	**0301502**	
Cable extensions		
KV BW08-SG08 3P-0030-PNP	**0301495**	
KV BW08-SG08 3P-0100-PNP	**0301496**	
KV BW08-SG08 3P-0200-PNP	**0301497**	

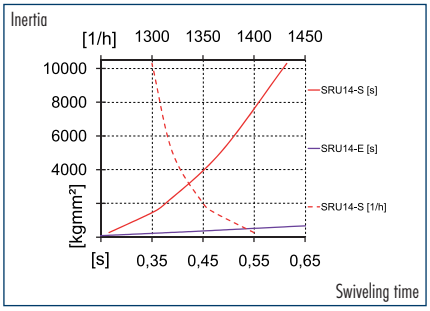
ⓘ Please note the minimum permitted bending radii for the sensor cables, which are generally 35 mm.



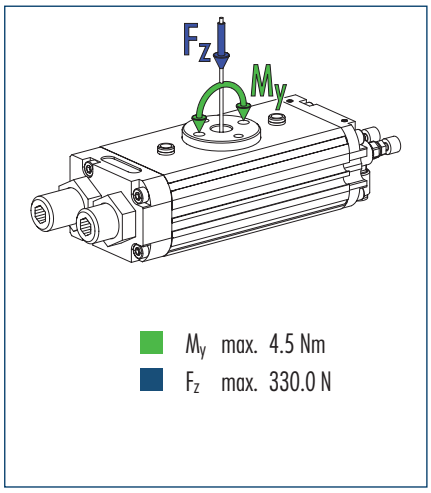
SRU-mini 14

Maximum admissible inertia J





Pinion load



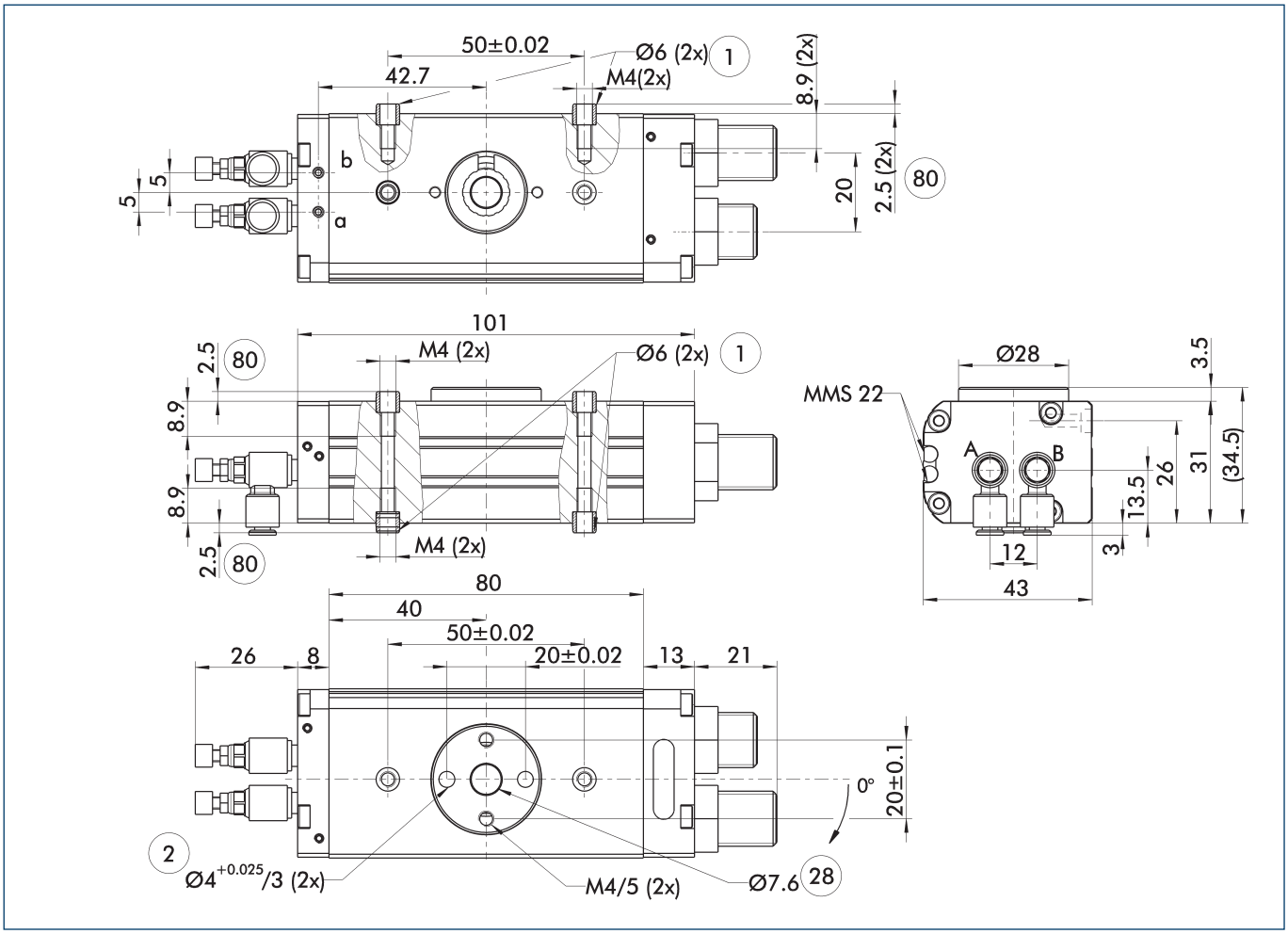
ⓘ The indicated moments and forces are statical values and should not appear simultaneously. In case of heavy attachments or ones with high mass moments of inertia, the speed must be restricted to ensure that the rotary movement occurs without any hitting or bouncing. Service life may be reduced.

Technical data

Description		SRU 14.2-E	SRU 14.2-E-M	SRU 14.2-E-4	SRU 14.2-E-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
Middle position			M (pneumatic)		M (pneumatic)
Adjustability of middle position	[°]		45.0		45.0
IP class		65	65	65	65
Weight	[kg]	0.47	0.57	0.52	0.62
Cycle time without attached load	[s]	0.20	0.20	0.22	0.22
Fluid consumption (2 x nominal angle)	[cm³]	15.9	18.9	15.9	18.9
Nominal operating pressure	[bar]	6.0	6.0	6.0	6.0
Min./max. operating pressure	[bar]	4.5/8	4.5/8	4.5/8	4.5/8
Diameter of connecting hose	[mm]	3.0	3.0	3.0	3.0
Min./max. ambient temperature	[°C]	-10/90	-10/90	-10/90	-10/90
Repeat accuracy	[°]	0.07	0.07	0.07	0.07
Cleanroom class ISO 14644-1		5	5	5	5
OPTIONS and their characteristics					
Version of shock absorber		SRU 14.2-S	SRU 14.2-S-M	SRU 14.2-S-4	SRU 14.2-S-M-4
ID		**0356874**	**0356875**	**0356876**	**0356877**
Weight	[kg]	0.5	0.6	0.55	0.65
Min./max. ambient temperature	[°C]	5/60	5/60	5/60	5/60
Minimum pressure	[bar]	3	3	3	3

ⓘ The diagrams are valid for rotary angles of 90° and 180°, units without middle position and for applications with vertical rotary axis. Also for absolutely centric loads with horizontal rotary axis and with a pneumatic working pressure of 6 bars. The swiveling times need to be adjusted by using throttle valves, otherwise the life time could be reduced. Please contact us for calculations of other applications and further information..

Main view



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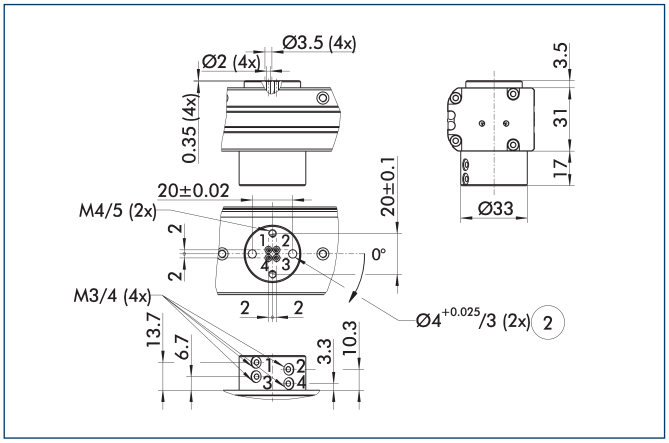
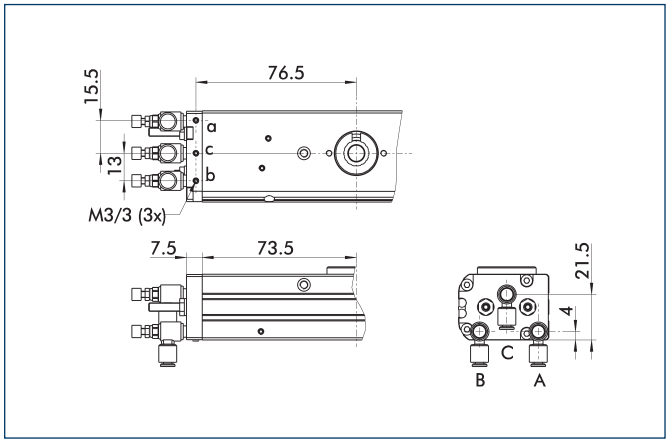
A, a Main/direct connection, rotary actuator clockwise turning
B, b Main/direct connection, rotary actuator anti-clockwise turning
① Rotary actuator connection
② Attachment connection
㉘ Through-bore
㉚ Depth of the centering sleeve hole in the matching part

Connections for fluid feed-through



② Attachment connection

Pneumatic middle position (M)



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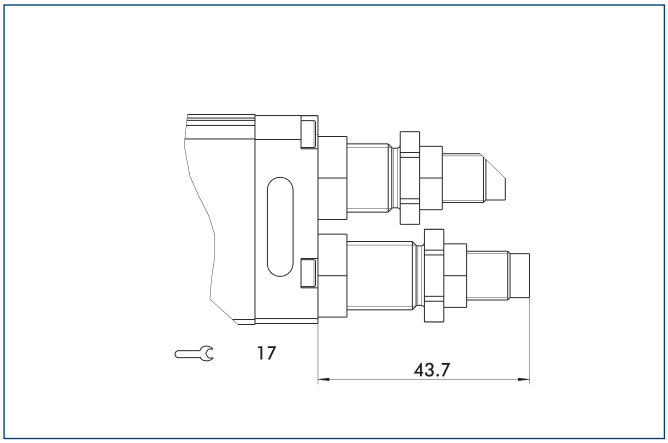

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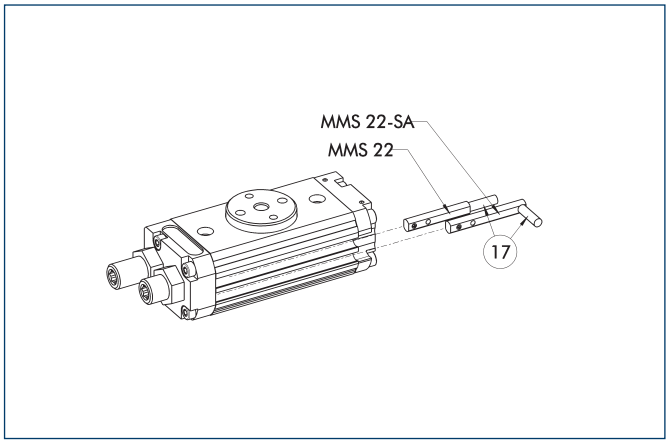

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MMS 22-S-M8-NPN	**0301433**	
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