

Stopper Cylinder

Series RSQ (Fixed mounting height)

ø12, ø16, ø20, ø32, ø40, ø50

Series RSG (Adjustable mounting height)

ø40, ø50

Realize labor saving and automation of conveyor line

A through-hole style and a both ends tapped style are available.
Series RSQ (Fixed mounting height type)
ø12, ø16, ø20, ø32, ø40, ø50

Mounting position can be adjusted arbitrarily by changing the attached flange height.
Series RSG (Adjustable mounting height type)
ø40, ø50

Numerous variations

It is possible to select option for many applications.

Style: Fixed mounting height (RSQ), Adjustable mounting height (RSG)
Action: Double acting, Single acting (Spring extend), Double acting with spring

Rod end configuration: Round bar type, Chamfered type, Roller type, Lever type

Mounting: Through-hole, Both ends tapped (RSQ)

Flange: (RSG)

Equipped with an easy-to-maintain shock absorber.

The shock absorber incorporated in the lever type is adjustment-free and easy-to-maintain.
(ø32, ø40, ø50)

Auto switch option available

Compact auto switch mounting to enable miniaturization of machines and designs.

Lever type selected according to applications

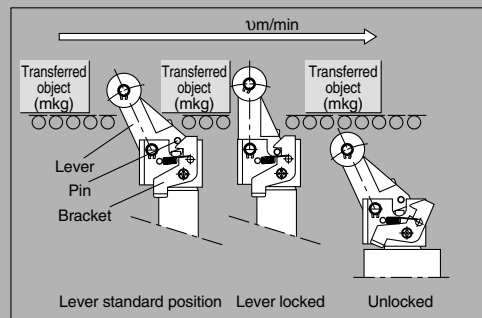
- Prevention of repulsion by light pallets....Locking mechanism
- Partial passing of work.....With cancel



Series RSG

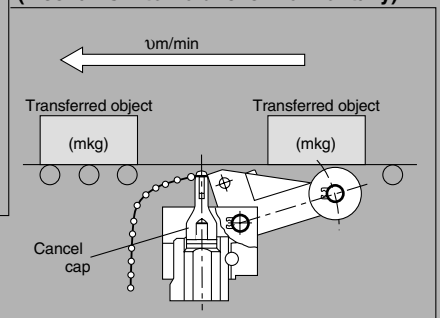
Series RSQ

Lock Mechanism



Cancel Cap

(Mechanism to hold lever horizontally)



Series Variations

Series	Mounting	Action	Rod end configuration	Standard variations				Bore size (mm)	Standard stroke (mm)				
				Built-in magnet	With lock mechanism	With cancel	Built-in One-touch fittings		10	15	20	25	30
RSQ	Through-hole	Double acting	Round bar type	•			•	12	•				
			Roller type	•			•	16	•	•			
			Chamfered type	•			•	20	•	•	•		
		Double acting with spring loaded	Lever type Fixed	•			•	32	•	•	•	•	
			Lever type Adjustable	•	•		•	40			•	•	•
RSG	Flange style	Double acting	Round bar type	•			•	40					
			Roller type	•			•	40					
			Chamfered type	•			•	40					
		Double acting with spring loaded	Lever type Fixed	•			•	40					
			Lever type Adjustable	•	•		•	50					

D-☐

-X☐

Individual
-X☐

Stopper Cylinder / Fixed Mounting Height

Series RSQ

ø12, ø16, ø20, ø32, ø40, ø50

How to Order

Standard

RSQ B 20 - 15 D

With auto switch

RSDQ B 20 - 15 D M9BW

Mounting bracket

B Through-hole (Standard)
A Both ends tapped style

Note 1) Since ø12 uses a common tube for both A and B, only B is used for part no. denotation.

Bore size

12	12 mm
16	16 mm
20	20 mm
32	32 mm
40	40 mm
50	50 mm

Port thread type

Nil	M thread	ø12, ø16
TN	Rc	ø20 to ø50
TF	NPT	
F	G	
Built-in One-touch fittings (2)		

Note 2) Bore sizes available w/ One-touch fittings are ø20 to ø50.
Note 3) TF for ø20 indicates M5.

Cylinder stroke (mm)

12	10
16	10, 15
20	10, 15, 20
32	10, 15, 20
40	20, 25, 30
50	20, 25, 30

Built-in Magnet Cylinder Model

If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) RSDQB32-15D

Auto switch

Nil Without auto switch

* For the applicable auto switch model, refer to the table below.

Made to Order Specifications
For details, refer to page 1374.

Number of auto switches

Nil	2 pcs.
S	1 pc.

Rod end configuration

Symbol	Configuration	Application
Nil	Round bar type	—
K	Chamfered type	—
R	Roller type	—
L	Lever type (Non-adjustable) (4)	Basic style
B	Lever type (4) (Energy absorbing Adjustable deformation)	—
C		With cancel cap
D		With lock mechanism
E		With lock & cancel

Note 4) The lever types are applicable only to bore sizes ø32, ø40 and ø50.

Action

D	Double acting
B	Double acting with spring loaded
T	Single acting (Spring extend)

Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model				Lead wire length (m)					Pre-wired connector	Applicable load					
					DC	AC	Perpendicular		In-line		0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)							
							ø12	ø16, ø20, ø32 to ø50	ø12	ø16, ø20, ø32 to ø50												
Solid state switch	_____	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV		M9N	●	●	●	○	—	○	IC circuit					
		3-wire (PNP)		M9PV				M9P	●	●	●	○	—	○								
	Connector	2-wire		M9BV				M9B	●	●	●	○	—	○	—							
		—		J79C				—		●	—	●	●	●		—						
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)				24 V	5 V, 12 V	—	M9N WV		M9N W	●	●	●	○	—	○	IC circuit		
				3-wire (PNP)							M9P WV		M9P W	●	●	●	○	—	○			
	2-wire			M9B WV		M9B W	●				●	●	○	—	○	—						
	3-wire (NPN)			M9N AV**		M9N A**	○				○	●	○	—	○							
	Water resistant (2-color indication)			3-wire (PNP)	M9P AV**		M9P A**				○	○	●	○	—	○	IC circuit					
				2-wire	M9B AV**		M9B A**				○	○	●	○	—	○						
With diagnostic output (2-color indication)	Grommet	4-wire	5 V, 12 V	—		—	F79F	●	—	●	○	—	○	IC circuit								
Reed switch		_____	Grommet	Yes	3-wire (NPN equivalent)	—	5V	—	A96V		A96	●	—	●	—	—	—	IC circuit	—			
	—								A72	—	A72H	●	—	●	—	—	—	—				
	Connector		2-wire		24 V				12 V	100 V	100 V or less	A93V		A93	●	—	●	—		—	—	—
												A90V		A90	●	—	●	—		—	—	—
		A73C				—		●				—	●	●	●	—	—	—				
		A80C				—		●				—	●	●	●	—	—	IC circuit				
	Diagnostic indication	Grommet	Yes		2-wire	24 V	24 V or less	A79W		—		●	—	●	—	—	—	—				

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m Nil (Example) M9NV
1 m M (Example) M9NWM
3 m L (Example) M9NWL
5 m Z (Example) M9NWZ
None N (Example) J79CN

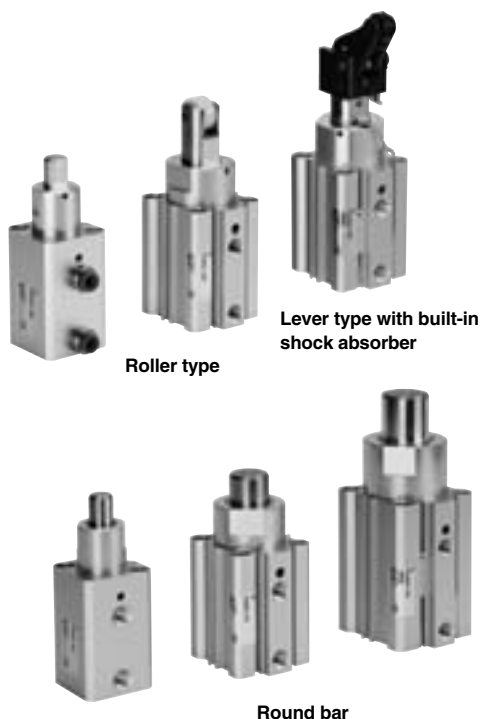
* Solid state auto switches marked with "○" are produced upon receipt of order.

* Since there are other applicable auto switches than listed, refer to page 1386 for details.

* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.

* When D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types with ø32 to ø50 are mounted on a side other than the port side, order auto switch mounting brackets separately.
Refer to page 1386 for details.

Series RSQ



Made to Order Specifications
(For details, refer to pages 1836 and 1872.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC3	Special port location

Spring Force (Single acting)

Bore size (mm)	Extended	Compressed
12	3.9	9.6
16	4.9	14.9
20	3.4	14.9
32	8.8	18.6
40, 50	13.7	27.5

* Applicable only to round bar type, chamfered type and roller type end configurations.

Model

Bore size (mm)		12	16	20	32	40	50
Mounting	Through-hole	● Note1)	●	●	●	●	●
	Both ends tapped style		●	●	●	●	●
Built-in magnet		●	●	●	●	●	●
Piping	Screw-in type	M5 x 0.8		1/8 Note2)			
	Built-in One-touch fittings	—		ø6/4		ø8/6	
Action		Double acting, Single acting (Spring extend), Double acting with spring loaded					
Rod end configuration	Round bar	●			●		
	Chamfered	●			●		
	Roller type	●			●		
	Lever type	—			●		

Note 1) ø12 tubes can have both through-hole and tap mountings in the same tube.

Note 2) TF (G thread) for ø20 indicates M5 x 0.8.

Specifications

Action	Double acting, Double acting with spring loaded, Single acting (Spring extend)
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C With auto switch: -10 to 60°C
Lubrication	Not required (Non-lube)
Cushion	Rubber bumper
Stroke length tolerance	+1.4 0
Mounting	Through-hole/Both ends tapped
Auto switch	Mountable

* No freezing (for cylinders with or without an auto switch)

Bore Size/Standard Stroke

Bore size (mm)	Rod end configuration		
	Round bar, Chamfered type	Roller type	Lever type with shock absorber
12	10	10	—
16	10, 15	10, 15	—
20	10, 15, 20	10, 15, 20	—
32			10, 15, 20
40	20, 25, 30	20, 25, 30	20, 25, 30
50			

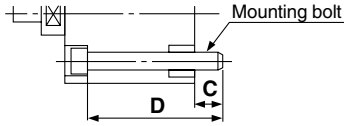
Mass

Action	Bore size (mm)	Rod end configuration	Cylinder stroke (mm)				
			10	15	20	25	30
Double acting	12	Round bar, Chamfered, Roller	0.07	—	—	—	—
	16	Round bar, Chamfered, Roller	0.14	0.15	—	—	—
	20	Round bar, Chamfered, Roller	0.23	0.24	0.25	—	—
Single acting, Spring extend	32	Round bar, Chamfered, Roller	0.42	0.44	0.46	—	—
		Lever with built-in shock absorber	0.51	0.53	0.55	—	—
Double acting with spring loaded	40	Round bar, Chamfered, Roller	—	—	0.74	0.80	0.86
		Lever with built-in shock absorber	—	—	0.97	1.01	1.05
	50	Round bar, Chamfered, Roller	—	—	1.03	1.07	1.11
		Lever with built-in shock absorber	—	—	1.26	1.30	1.34

Mounting Bolt for RSQB

Mounting method: Mounting bolt for through-hole mounting style of RSQB is available as an option.
Refer to the following for ordering procedures.
Order the actual number of bolts that will be used.

Example) CQ-M3x45L 2 pcs.



Cylinder model	C	D	Mounting bolt part no.
RSQB12-10□ RSQB16-10□ -15□	5 7.5	45 55 60	CQ-M3 x 45L CQ-M3 x 55L x 60L
RSQB20-10□ -15□ -20□	7	55 60 65	CQ-M5 x 55L x 60L x 65L
RSQB32-10□ -15□ -20□	9	60 65 70	CQ-M5 x 60L x 65L x 70L

Note) Be sure to use the attached flat washers when mounting $\phi 12$ cylinders with through-holes.

Cylinder model	C	D	Mounting bolt part no.
RSQB40-20□ -25□ -30□	9.5	75 80 85	CQ-M5 x 75L CQ-M5 x 80L x 85L
RSQB50-20□ -25□ -30□	9	75 80 85	CQ-M6 x 75L x 80L x 85L

Operating Ranges by Rod End Configuration

(Example 1) For roller type with transfer speed of 15 m/min. and the mass of transferred object of 30 kg.

<How to read the graphs>

To select a cylinder based on the specifications above, find the intersection of the speed of 15 m/min. on the horizontal axis and the mass of 30 kg on the vertical axis in graph (1) below, and select RSQ□40-□□R that falls in the cylinder operating range.

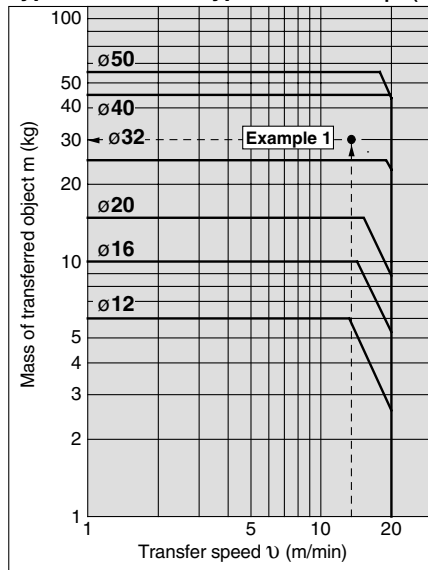
(Example 2) Transfer speed of 15 m/min., Mass of transferred object of 60 kg, Friction coefficient $\mu = 0.1$, Lever type (Lever type with lock mechanism)

<How to read the graphs>

To select a cylinder based on the specifications above, find the intersection of the speed of 15 m/min. on the horizontal axis and the mass of 60 kg on the vertical axis in graph (3) below, and select RSQ□40-□□D that falls in the cylinder operating range.

Roller Type/Round Bar Type/Chamfered Type

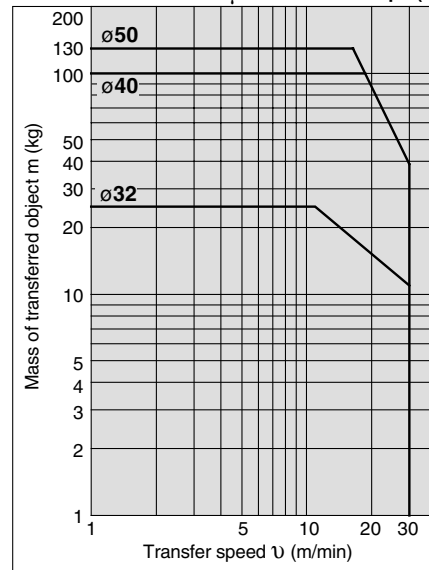
Graph (1)



Lever Type (With shock absorber)

Friction coefficient $\mu = 0$

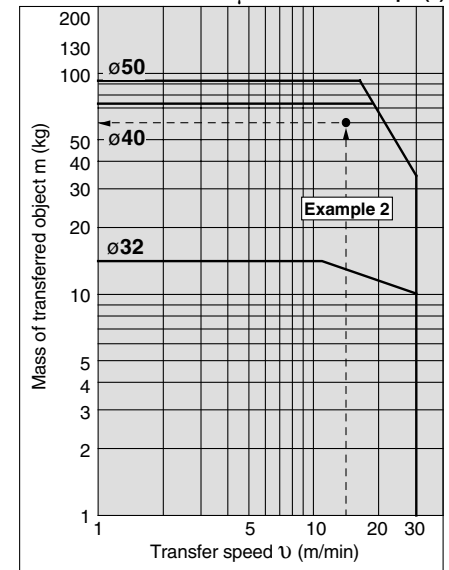
Graph (2)



Lever Type (With shock absorber)

Friction coefficient $\mu = 0.1$

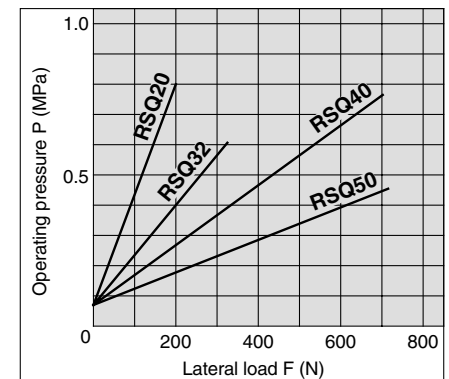
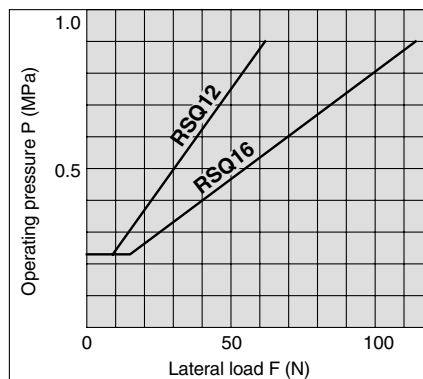
Graph (3)



* Lever-type mass of transferred object and transfer speed graphs (graphs (2) and (3)) show the values at room temperature (20 to 25°C).
* When selecting cylinders, confirm the Specific Product Precautions as well.

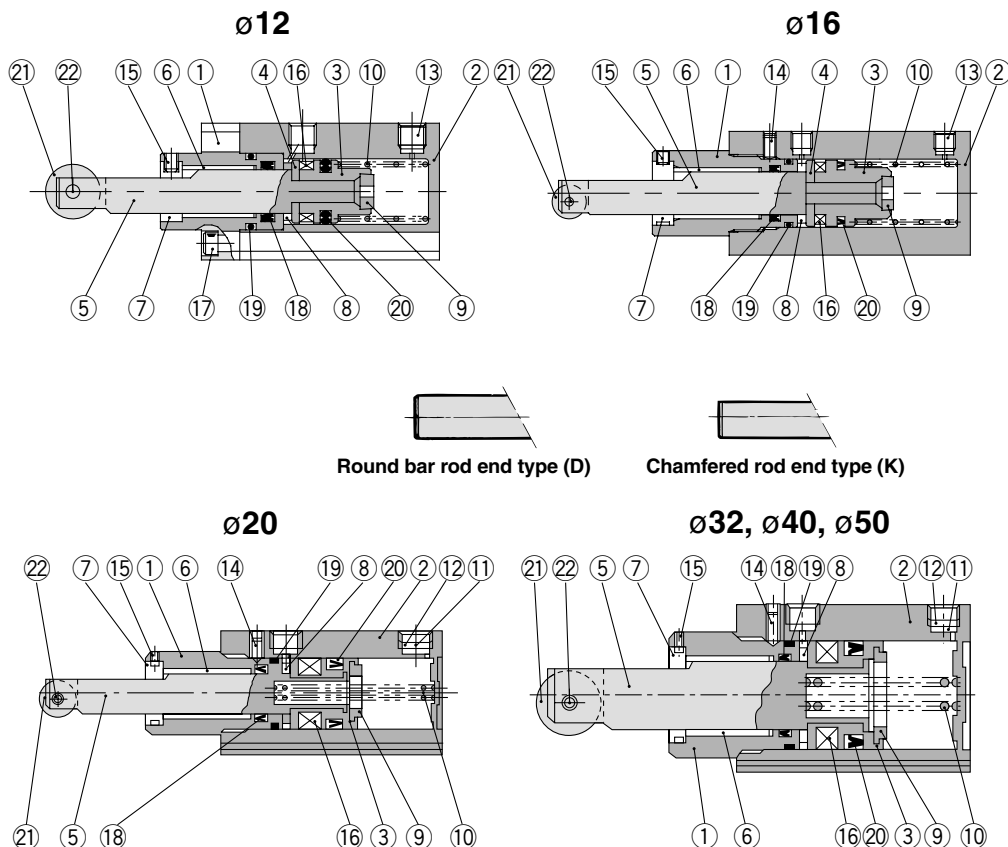
Lateral Load and Operating Pressure

The larger the lateral load, the higher the operating pressure required for the stopper cylinder. Set the operating pressure using the graphs as a guide.
(Applicable for round bar, roller and chamfered type rod end configurations.)



Construction

Roller rod end



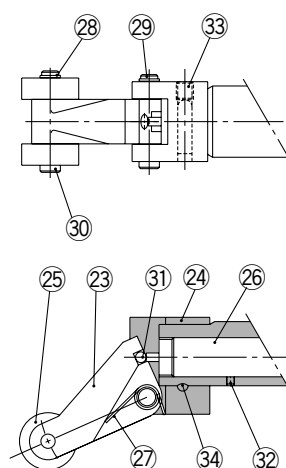
Component Parts

No.	Description	Material	Note
1	Rod cover	Aluminum alloy	Anodized*
2	Cylinder tube	Aluminum alloy	Hard anodized
3	Piston	Aluminum alloy	Chromated
4	Spacer for switch	Aluminum alloy	ø12, ø16 only
5	Piston rod	ø12, ø16, ø20 Stainless steel ø32, ø40, ø50 Carbon steel	Hard chrome plated
6	Bushing	Copper alloy	
7	Non-rotating guide	Rolled steel	Non-rotating type only
8	Bumper A	Urethane	
9	Bumper B	Urethane	
10	Return spring	Steel wire	Zinc chromated (Except double acting)
11	Element	Sintered metallic BC	ø20 to ø50 (Single acting only)
12	Retaining ring	Carbon tool steel	ø20 to ø50 (Single acting only)
13	Plug with fixed orifice	Alloy steel	ø12, ø16 only
14	Hexagon socket head set screw	Chromium molybdenum steel	Except ø12
15	Hexagon socket head set screw	Chromium molybdenum steel	
16	Magnet	—	
17	Hexagon socket head cap screw	Alloy steel	ø12 only
18	Rod seal	NBR	
19	Gasket	NBR	
20	Piston seal	NBR	

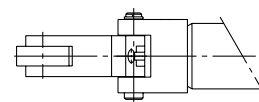
Roller type

21	Roller A	Resin	
22	Spring pin	Carbon tool steel	

Built-in shock absorber Lever rod end type (ø32, ø40, ø50 only)



Only one roller is provided for ø32.



Component Parts (For single acting)

No.	Description	Material	Note
23	Lever	Cast iron	
24	Lever holder	Rolled steel	
25	Roller B	Resin	
26	Shock absorber	—	ø32-RB1007-X225 ø40, 50-RB1407-X552
27	Lever spring	Stainless steel wire	
28	Type C retaining ring for axis	Carbon tool steel	
29	Lever pin	Carbon steel	
30	Roller pin	Carbon steel	
31	Steel balls	High carbon chrome bearing steel	
32	Hexagon socket head set screw	Chromium molybdenum steel	
33	Hexagon socket head set screw	Chromium molybdenum steel	
34	One-side tapered pin	Carbon steel	

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.			Contents
	Double acting	Double acting with spring loaded	Single acting	
12	RSQ12D-PS	RSQ12T-PS		Set of above nos. (18, 19, 20)
16	RSQ16D-PS	RSQ16B-PS	RSQ16T-PS	
20	RSQ20D-PS	RSQ20B-PS	RSQ20T-PS	
32	RSQ32D-PS	RSQ32B-PS	RSQ32T-PS	
40	RSQ40D-PS	RSQ40B-PS	RSQ40T-PS	
50	RSQ50D-PS	RSQ50B-PS	RSQ50T-PS	

* Seal kit includes (18, 19, 20). Order the seal kit, based on each bore size.

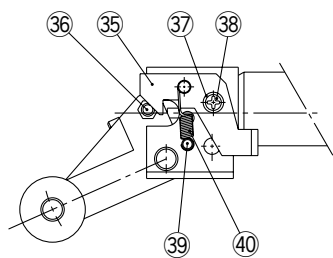
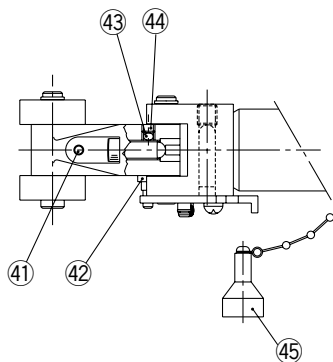
* Since the seal kit does not include a grease pack, order it separately.

Grease pack part no.: GR-S-010 (10g)

Replacement Parts: Shock Absorber

Bore size (mm)	Kit no.
32	RB1007-X225
40, 50	RB1407-X552

Lever rod end type (With lock mechanism and cancel cap)
(ø32, ø40, ø50)



Component Parts

No.	Description	Material	Note
With lock mechanism			
35	Bracket	Carbon steel	
36	Pin B	Carbon steel	
37	Spacer	Carbon steel	
38	Round head Phillips screw	Rolled steel	
39	Pin A	Rolled steel	
40	Bracket spring	Steel wire	
41	Hexagon socket head cap set screw	Chromium molybdenum steel	
42	Spring washer	Steel wire	
43	Urethane ball	Urethane	
44	Hexagon socket head cap set screw	Chromium molybdenum steel	
With cancel cap			
45	Cancel cap	Aluminum alloy	

RSQ

RSG

RS□

MI□

D-□

-X□

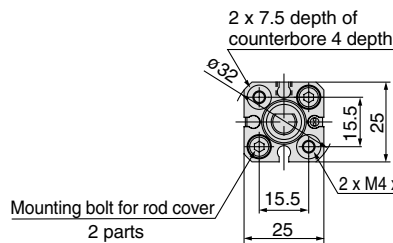
**Individual
-X□**

Rod End Configuration: Chamfered (Non-rotating piston rod)

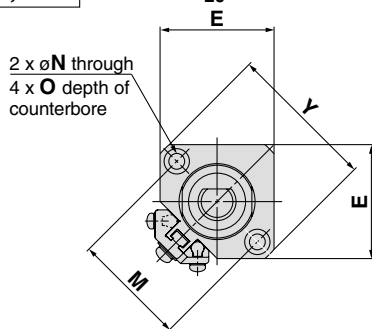
Basic style: Through-hole mounting, Screw mounting

These 5 figures show the piston rod extended.

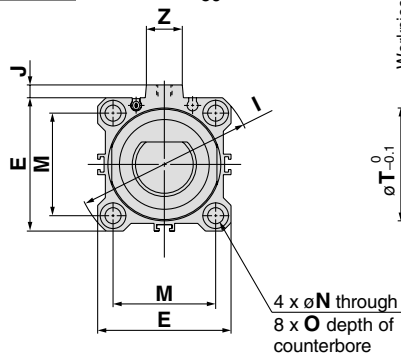
Bore size: $\phi 12$ RS□QB12-10□K



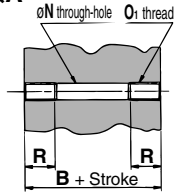
Bore size: $\phi 16, \phi 20$ RS□QB¹⁶₂₀-□□K



Bore size: $\phi 32, \phi 40, \phi 50$ RS□QB³²₄₀₅₀-□□K

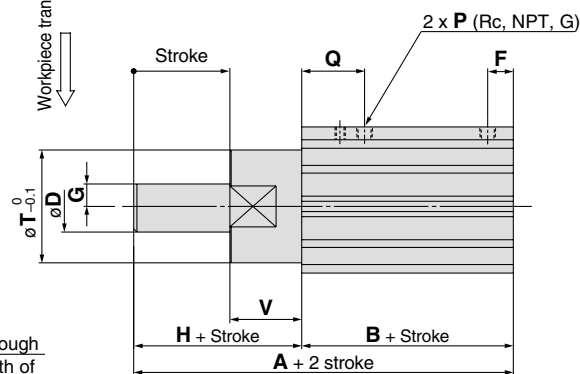
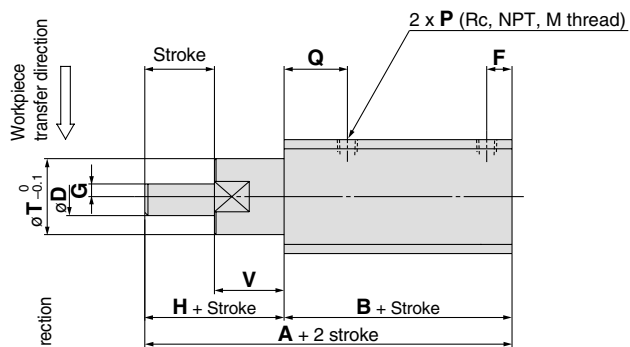
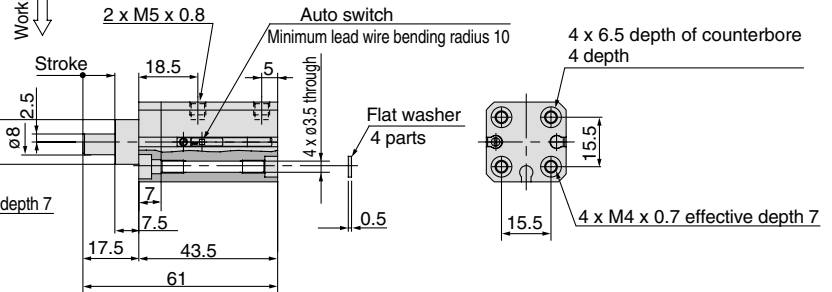


Screw mounting style: Both ends tapped style RS□QA

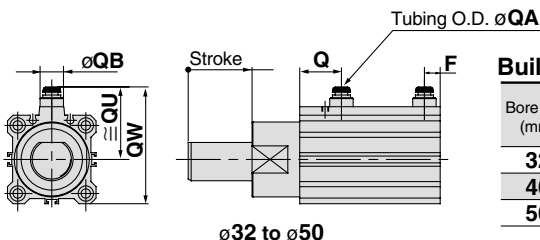
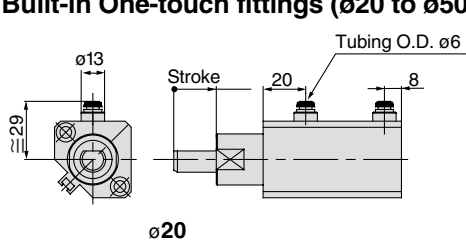


Model	B	N	O ₁	R
RS□QA16	41.5	3.5	M4 x 0.7	7
RS□QA20	45	5.5	M6 x 1	10
RS□QA32	48	5.5	M6 x 1	10
RS□QA40	52.5	5.5	M6 x 1	10
RS□QA50	54	6.6	M8 x 1.25	14

* Dimensions other than above are the same as below drawings.



Built-in One-touch fittings ($\phi 20$ to $\phi 50$)



Bore size (mm)	Applicable tubing O.D. QA	F	Q	QB	QU	QW
32	6	7.5	20	13	38	60.5
40	6	8	24.5	13	42	68
50	8	9.5	26	16	50	82

Bore size (mm)	A	B	D	E	F	G	H	I	J	M	N	O	P	Q	T	V	Y	Z
16	59.5	41.5	10	29	6	3	18	—	—	28	3.5	6.5 depth 4	M5 x 0.8	17	20	18	38	—
20	67	45	12	36	8	4	22	—	—	36	5.5	9 depth 7	1/8	20	24	22	47	—
32	68	48	20	45	7.5	8	20	60	4.5	34	5.5	9 depth 7	1/8	20	36	20	—	14
40	80.5	52.5	25	52	8	10	28	69	5	40	5.5	9 depth 7	1/8	24.5	44	28	—	14
50	82	54	25	64	8	10	28	86	7	50	6.6	11 depth 8	1/8	24.5	56	28	—	19

Note 1) M thread (M5 x 0.8) is applicable for $\phi 12$ and $\phi 16$ piping ports.
TF (G thread) for $\phi 20$ also indicates M5 x 0.8.

Note 2) For the auto switch mounting position and its mounting height, refer to page 1384.

Note 3) These figures show the piston rod extended.

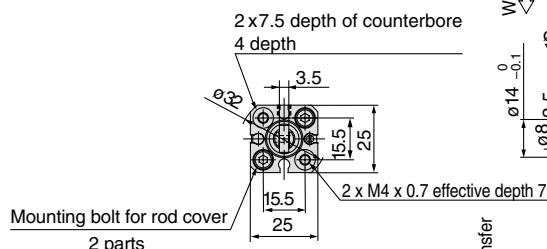
Note 4) In the case of single acting type, a One-touch fitting is on the rod side only.

Rod End Configuration: Roller Type

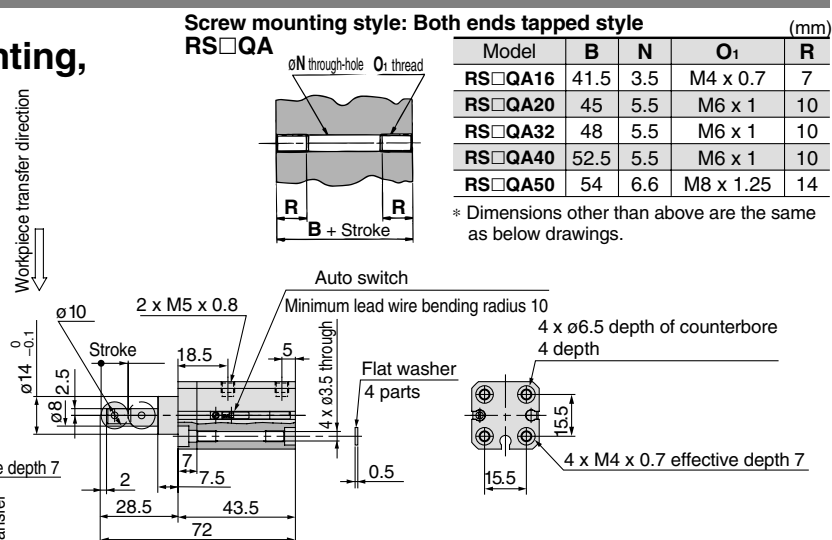
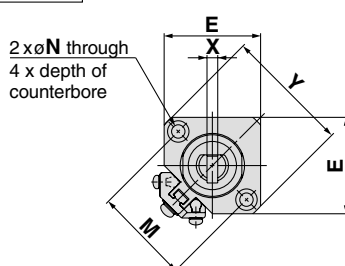
Basic style: Through-hole mounting, Screw mounting

These 5 figures show the piston rod extended.

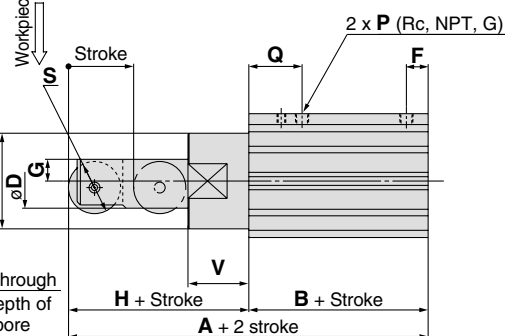
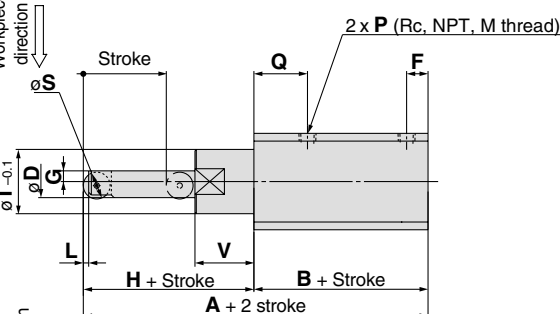
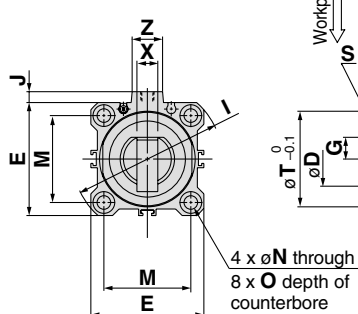
Bore size: $\phi 12$ RS□QB12-10□R



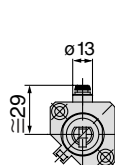
Bore size: $\phi 16, \phi 20$ RS□QB¹⁶₂₀-□□R



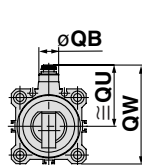
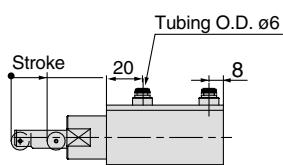
Bore size: $\phi 32, \phi 40, \phi 50$ RS□QB³²₄₀⁴⁰₅₀□□R



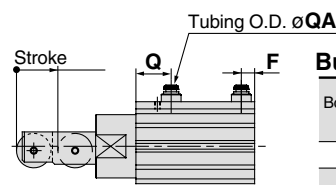
Built-in One-touch fittings ($\phi 20$ to $\phi 50$)



$\phi 20$



$\phi 32$ to $\phi 50$



Built-in One-touch Fittings (mm)

Bore size (mm)	Applicable tubing O.D. QA	F	Q	QB	QU	QW
32	6	7.5	20	13	38	60.5
40	6	8	24.5	13	42	68
50	8	9.5	26	16	50	82

Bore size (mm)	A	B	D	E	F	G	H	I	J	L	M	N	O	P	Q	S	T	V	X	Y	Z
16	68	41.5	10	29	6	3	26.5	—	—	2	28	3.5	6.5 depth 4	M5 x 0.8	17	8	20	18	3.5	38	—
20	78	45	12	36	8	4	33	—	—	2	36	5.5	9 depth 7	1/8	20	10	24	22	4	47	—
32	87	48	20	45	7.5	8	39	60	4.5	3	34	5.5	9 depth 7	1/8	20	18	36	20	8	—	14
40	105.5	52.5	25	52	8	10	53	69	5	4	40	5.5	9 depth 7	1/8	24.5	24	44	28	9	—	14
50	107	54	25	64	8	10	53	86	7	4	50	6.6	11 depth 8	1/8	24.5	24	56	28	9	—	19

Note 1) M thread (M5 x 0.8) is applicable for $\phi 12$ and $\phi 16$ piping ports.

TF (G thread) for $\phi 20$ also indicates M5 x 0.8.

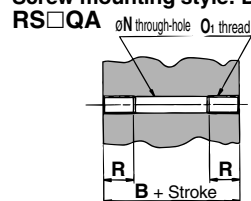
Note 2) For the auto switch mounting position and its mounting height, refer to page 1384.

Note 3) These figures show the piston rod extended.

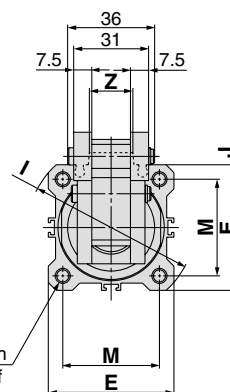
Note 4) In the case of single acting type, a One-touch fitting is on the rod side only.

Basic style: Through-hole mounting, Screw mounting

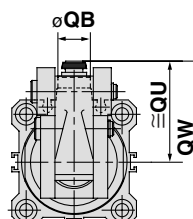
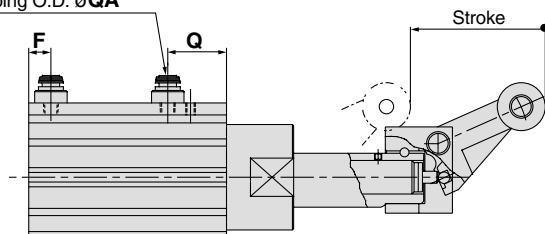
Bore size: ø32 **RS□QB32-□□L**



Model	B	N	O ₁	R
RS□QA32	48	5.5	M6 x 1	10
RS□QA40	52.5	5.5	M6 x 1	10
RS□QA50	54	6.6	M8 x 1.25	14

[illegible]

Tubing O.D. $\varnothing$ **QA**



Bore size (mm)	Applicable tubing O.D. QA	F	Q	QB	QU	QW
32	6	7.5	20	13	38	60.5
40	6	8	24.5	13	42	68
50	8	9.5	26	16	50	82

Bore size (mm)	A	B	E	I	J	M	N	O	T	Z
40	152.5	52.5	52	69	5	40	5.5	9 depth 7	44	14
50	154	54	64	86	7	50	6.6	11 depth 8	56	19

Note 3) In the case of single acting type, a One-touch fitting is on the rod side only.

RSQ

RSG

RS ☐MI ☐D-☐

-X ☐

Individual
-X ☐

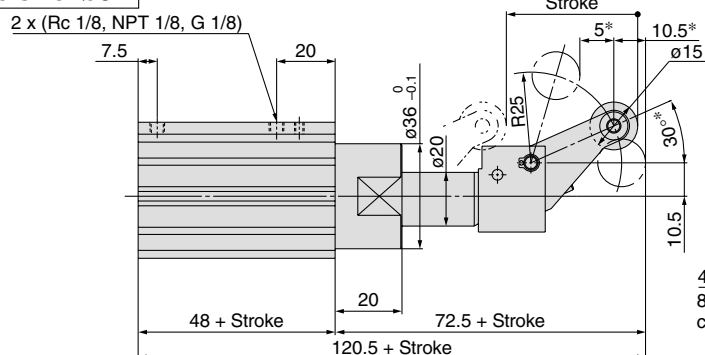
Series RSQ

Rod End Configuration: Lever Type with Shock Absorber

Variable energy absorbing type/
Through-hole mounting, Screw mounting style
Adjustable shock absorber stroke

These 3 figures show the
piston rod extended.

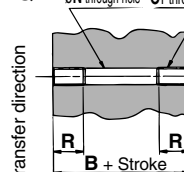
Bore size: $\phi 32$ RS□QB32-□□B



Screw mounting style: Both ends tapped style

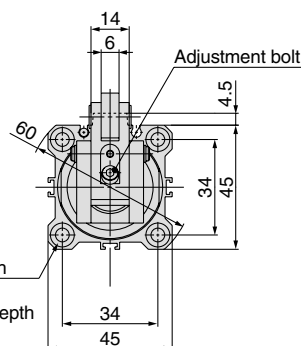
RS□QA

ϕN through-hole O_1 thread

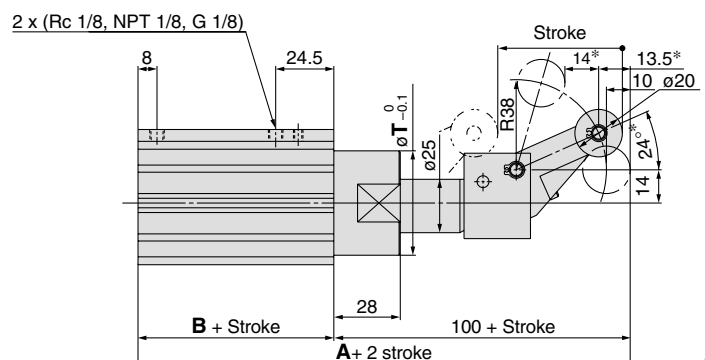


Model	B	N	O_1	R
RS□QA32	48	5.5	M6 x 1	10
RS□QA40	52.5	5.5	M6 x 1	10
RS□QA50	54	6.6	M8 x 1.25	14

* Dimensions other than above are the same as below drawings.

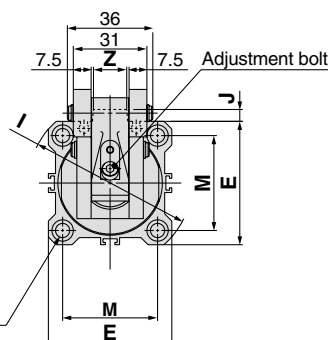


Bore size: $\phi 40, \phi 50$ RS□QB⁴⁰₅₀-□□B



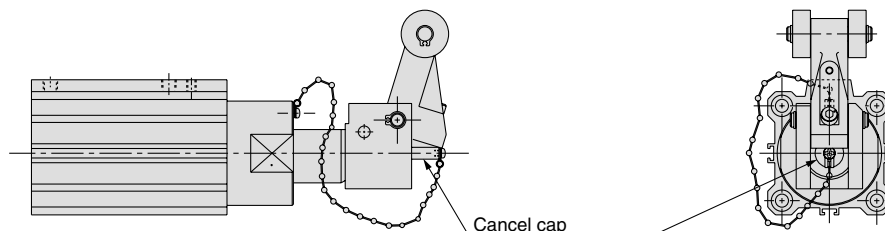
Workpiece transfer direction

4 x $\phi 5.5$ through
8 x 9 depth of
counterbore 7 depth



With cancel cap RS□QB□-□□C

* Dimensions when equipped with cancel cap are the same as the drawing above.



* These figures show dimensions when set for maximum energy absorbing capacity. (mm)

Bore size (mm)	A	B	E	I	J	M	N	O	T	Z
40	152.5	52.5	52	69	5	40	5.5	9 depth 7	44	14
50	154	54	64	86	7	50	6.6	11 depth 8	56	19

Note 1) For the auto switch mounting position and its mounting height, refer to page 1384.

Note 2) These figures show the piston rod extended.

Note 3) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 4) The figures show the dimensions when the adjustment bolt is lowered

(when energy absorption is at its maximum).

However, these dimensions change within the ranges shown below as the adjustment bolt is raised (energy absorption is reduced).

$\phi 32 \dots 30^\circ \rightarrow 20^\circ$, $10.5^\circ \rightarrow 9^\circ$, $5^\circ \rightarrow 6^\circ$

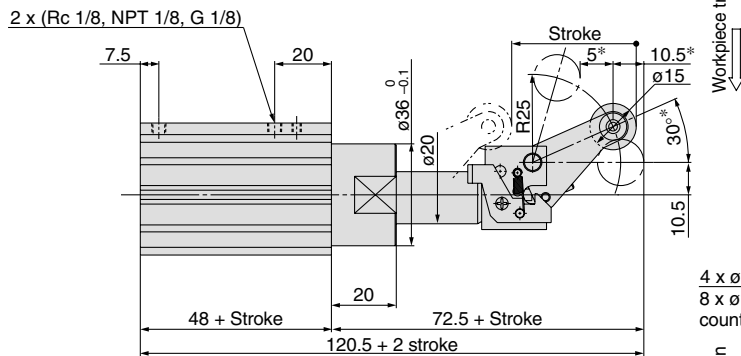
$\phi 40, 50 \dots 24^\circ \rightarrow 16^\circ$, $13.5^\circ \rightarrow 11.5^\circ$, $14^\circ \rightarrow 16^\circ$

Rod End Configuration: Lever Type with Shock Absorber

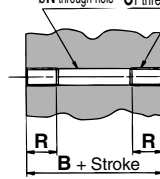
Variable energy absorbing type/
Through-hole mounting, Screw mounting style
With lock mechanism

These 3 figures show the
piston rod extended.

Bore size: $\phi 32$ RS□QB32-□□D



Screw mounting style: Both ends tapped style
RS□QA

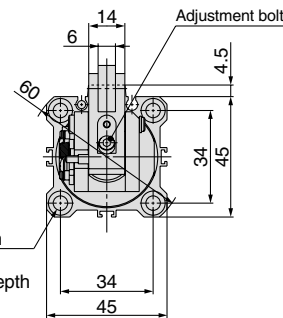


Model	B	N	O ₁	R
RS□QA32	48	5.5	M6 x 1	10
RS□QA40	52.5	5.5	M6 x 1	10
RS□QA50	54	6.6	M8 x 1.25	14

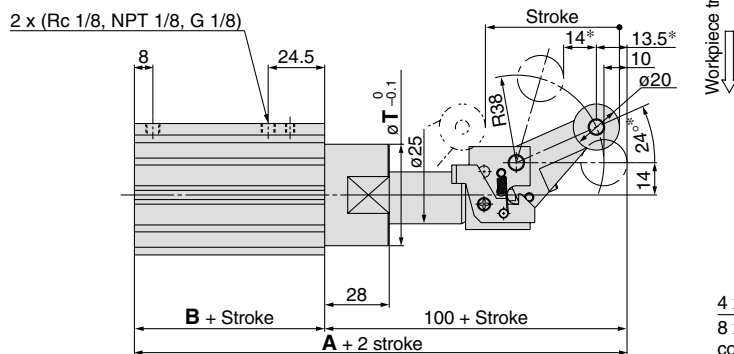
* Dimensions other than above are the same as below drawings.

Workpiece transfer direction

4 x $\phi 5.5$ through
8 x $\phi 9$ depth of
counterbore 7 depth

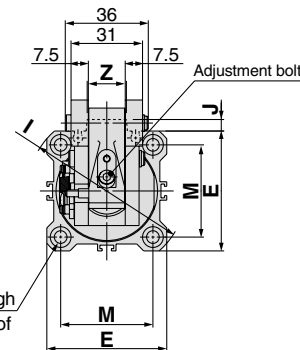


Bore size: $\phi 40, \phi 50$ RS□QB⁴⁰₅₀-□□D



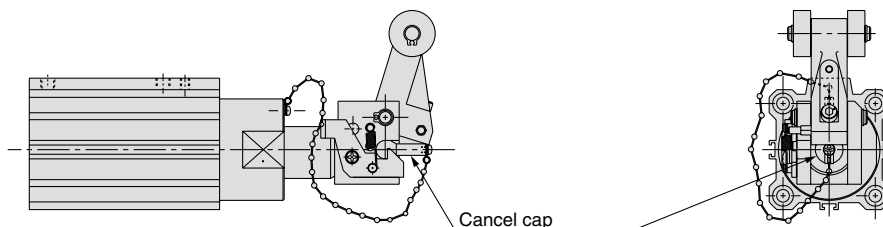
Workpiece transfer direction

4 x ϕN through
8 x ϕO depth of
counterbore



With lock mechanism + Cancel cap RS□QB□□-□□E

* Dimensions when equipped with lock and cancel cap are the same as the figure drawing.



* These figures show dimensions when set for maximum energy absorbing capacity. (mm)

Bore size (mm)	A	B	E	I	J	M	N	O	T	Z
40	152.5	52.5	52	69	5	40	5.5	9 depth 7	44	14
50	154	54	64	86	7	50	6.6	11 depth 8	56	19

Note 1) For the auto switch mounting position and its mounting height, refer to page 1384.

Note 2) These figures show the piston rod extended.

Note 3) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 4) The figures shows the dimensions when the adjustment bolt is lowered

(when energy absorption is at its maximum).

However, these dimensions change within the ranges shown below as the adjustment bolt is raised (energy absorption is reduced).

$\phi 32 \dots 30^\circ \rightarrow 20^\circ$, $10.5^\circ \rightarrow 9^\circ$, $5^\circ \rightarrow 6^\circ$

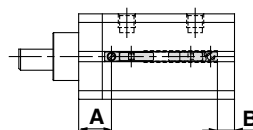
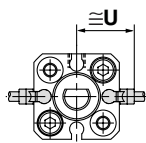
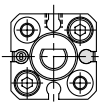
$\phi 40, 50 \dots 24^\circ \rightarrow 16^\circ$, $13.5^\circ \rightarrow 11.5^\circ$, $14^\circ \rightarrow 16^\circ$

Series RSQ

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

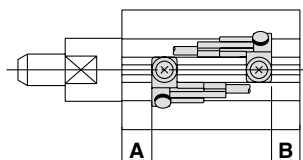
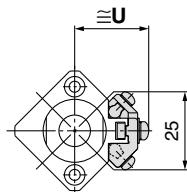
$\phi 12$ D-A9□
 D-M9□
 D-M9□W
 D-M9□AL

D-A9□V
 D-M9□V
 D-M9□WV
 D-M9□AVL



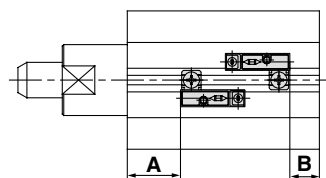
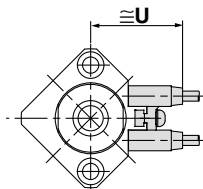
D-A9□
 D-M9□
 D-M9□W
 D-A9□V
 D-M9□V
 D-M9□WV
 D-M9□AL
 D-M9□AVL

$\phi 16, 20$

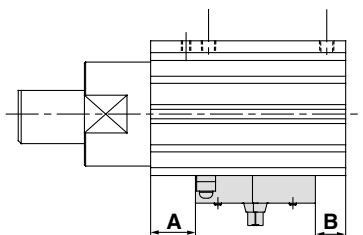
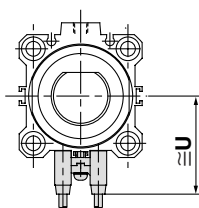


D-A7□
 D-A80
 D-A7□H
 D-A80H
 D-F7□
 D-J79
 D-F7□W
 D-J79W
 D-F79F
 D-F7NTL
 D-F7BAL
 D-A73C
 D-A80C
 D-J79C
 D-A79W
 D-F7□WV
 D-F7□V
 D-F7BAVL

$\phi 16, \phi 20$



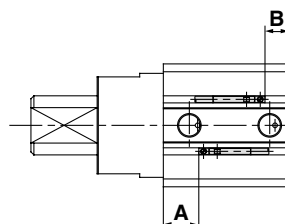
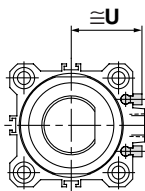
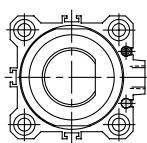
$\phi 32$ to $\phi 50$



$\phi 32$ to $\phi 50$

D-A9□
 D-M9□
 D-M9□W
 D-M9□AL

D-A9□V
 D-M9□V
 D-M9□WV
 D-M9□AVL



Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Auto Switch Proper Mounting Position

(mm)

Auto switch model Bore size (mm)	D-A9□ D-A9□V		D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL		D-A73 D-A80		D-A72/A7□H/A80H D-A73C/A80C D-F7□/J79 D-F7□V/J79C D-F7BAVL/F7BAL D-F7□W/J79W D-F7□WV/F79F		D-F7NTL		D-A79W	
	A	B	A	B	A	B	A	B	A	B	A	B
12	9	7	13	11	—	—	—	—	—	—	—	—
16	9	9	13	13	11.5	11.5	12	12	17	17	9	9
20	15	7	19	11	17.5	9.5	18	10	23	15	15	7
32	17	11	21	15	18	12	18.5	12.5	23.5	17.5	15.5	9.5
40	21.5	11	25.5	15	22.5	12	23	12.5	28	17.5	20	9.5
50	29.5	4.5	33.5	8.5	30.5	5.5	31	6	36	11	28	3

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

Auto Switch Mounting Height

(mm)

Auto switch model Bore size (mm)	D-A9□V	D-M9□V D-M9□WV D-M9□AVL	D-A7□ D-A80	D-A7□H D-A80H/F7□ D-J79/F7□W D-F7BAL D-J79W D-F79F D-F7NTL	D-A73C D-A80C	D-F7□V D-F7□WV D-F7BAVL	D-J79C	D-A79W
	U	U	U	U	U	U	U	U
12	17	19.5	—	—	—	—	—	—
16	23.5	23.5	22.5	23.5	29.5	26	29	25
20	25.5	25.5	24.5	25.5	31.5	28	31	27
32	27	29	31.5	32.5	38.5	35	38	34
40	30.5	32.5	35	36	42	38.5	41.5	37.5
50	36.5	38.5	41	42	48	44.5	47.5	43.5

Operating Range

(mm)

Auto switch model	Bore size (mm)					
	12	16	20	32	40	50
D-A9□/A9□V	6	9.5	9	9.5	9.5	9.5
D-M9□/M9□V D-M9□W/M9□WV D-M9□AL/M9□AVL	3	5	5.5	6	6	7
D-A7□/A80 D-A7H/A80H D-A73C/A80C	—	12	12	12	11	10
D-A79W	—	13	13	13	14	14
D-F7□/J79 D-F7□V/J79C D-F7□W/J7□WV D-F7BAL/F7BAVL D-F79F/F7NTL	—	6	5.5	6	6	6

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately ±30% dispersion) There may be the case to change substantially depending on an ambient environment.

* The values above for a bore size ø12 and over ø32 of D-A9□(V)/M9□(V)/M9□W(V)/M9□A(V)L types are measured when the conventional switch installation groove is attached without using the auto switch mounting bracket BQ2-012.

RSQ

RSG

RS□

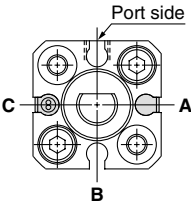
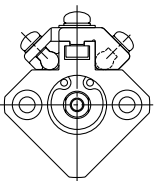
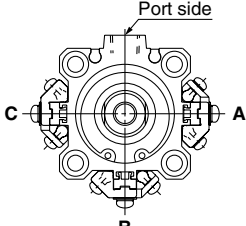
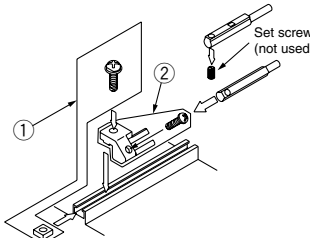
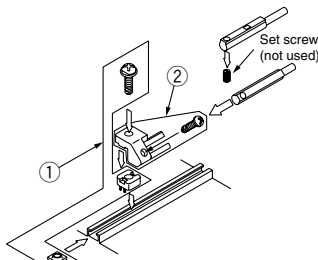
MI□

D-□

-X□

Individual
-X□

Auto Switch Mounting Bracket: Part No.

Auto switch mounting surface	Bore size (mm)		
	ø12	ø16, ø20	ø32, ø40, ø50
			
Auto switch model	Auto switch mounting surface		
	A, B, C side	Only auto switch mounting rail surface	Port side
D-A9□ D-A9□V D-M9□ D-M9□V D-M9□W D-M9□WV D-M9□AL D-M9□AVL	Auto switch mounting brackets are not required.	①BQ-1 ②BQ2-012 Two kinds of auto switch mounting brackets are used as a set. 	Auto switch mounting brackets are not required. 

Note 1) For each cylinder series, when a compact auto switch is mounted on the three sides (A, B and C above) other than the port side of bore sizes ø32 to ø50, the auto switch mounting brackets above are required. Order them separately from cylinders.

Ordering example:
 RSDQB32-20-M9BW.....1 unit
 BQ-2.....2 pcs.
 BQ2-012.....2 pcs.

Note 2) Auto switch mounting brackets and auto switches are shipped together with cylinders.

Auto switch model	Bore size (mm)				
	16	20	32	40	50
D-A7□/A80 D-A73C/A80C D-A7□H/A80H D-A79W D-F7□/J79 D-F7□V D-J79C D-F7□W/J79W D-F7□WV D-F7BAL/F7BAVL D-F79F/F7NTL	BQ-1		BQ-2		

Note 3) Auto switch mounting brackets and auto switches are shipped together with cylinders.

[Mounting screw set made of stainless steel]

The following set of mounting screws made of stainless steel (including nuts) is available. Use it in accordance with the operating environment. (Please order BQ-2 separately, since auto switch spacers (for BQ-2) are not included.)

BBA2: For D-A7/A8/F7/J7 types

D-F7BAL/F7BAVL auto switches are set on the cylinder with the stainless steel screws above when shipped. When an auto switch is shipped independently, BBA2 is attached.

Note 4) When D-M9□A(V)L type is mounted on a side other than the ø32, ø40 or ø50 port side, order auto switch mounting brackets BQ2-012S or BQ-2, or a stainless steel screw set BBA2 separately.

Note 5) Refer to page 1817 for the details of BBA2.

Auto Switch Mounting Bracket Mass

Auto switch mounting bracket part no.	Mass (g)
BQ-1	1.5
BQ-2	1.5
BQ2-012	5

Besides the models listed in How to Order, the following auto switches are applicable.

Other Applicable Auto Switches

Auto switch type	Model	Electrical entry (Fetching direction)	Features
Reed	D-A73	Grommet (Perpendicular)	—
	D-A80		Without indicator light
	D-A73H, A76H	Grommet (In-line)	—
	D-A80H		Without indicator light
Solid state	D-F7NV, F7PV, F7BV	Grommet (Perpendicular)	—
	D-F7NWV, F7BWV		Diagnostic indication (2-color indication)
	D-F7BAVL		Water resistant (2-color indication)
	D-F79, F7P, J79	Grommet (In-line)	—
	D-F79W, F7PW, J79W		Diagnostic indication (2-color indication)
	D-F7BAL		Water resistant (2-color indication)
	D-F7NTL		With timer

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.

* Normally closed (NC = b contact), solid state switch (D-F9G/F9H types) are also available. Refer to page 1746 for details.

* D-A7/A8/F7/J7 cannot be mounted on ø12.

Stopper Cylinder / Adjustable Mounting Height

Series *RSG*

ø40, ø50

How to Order

With auto switch RSDG 40 - 30 D - M9BW

With auto switch (Built-in magnet) RSG 40 - 30 D -

Bore size

40	40 mm
50	50 mm

Port type

Nil	Rc
TN	NPT
TF	G
F	Built-in One-touch fittings

Cylinder stroke (mm)

40, 50	20, 25, 30
--------	------------

Action

D	Double acting
B	Double acting with spring loaded
T	Single acting (Spring extend)

Auto switch

Nil	Without auto switch
-----	---------------------

Number of auto switches

Nil	2 pcs.
S	1 pc.

Made to Order Specifications
For details, refer to page 1388.

Rod end configuration

Symbol	Configuration	Application
Nil	Round bar type	—
K	Chamfered type	—
R	Roller type	—
L	Lever type (Non-adjustable)	Basic style
B	Lever type	—
C	(Energy absorbing)	With cancel cap
D	(Adjustable deformation)	With lock mechanism
E		With lock & cancel

Built-in Magnet Cylinder Model
If a built-in magnet cylinder without an auto switch is required, there is no need to enter the symbol for the auto switch.
(Example) RSDG50-25D

Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model	Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC		Applicable bore size	0.5 (Nil)	1 (M)	3 (L)	5 (Z)				None (N)	
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9N	●	●	●	○	—	○	IC circuit	Relay, PLC	
				3-wire (PNP)				M9P	●	●	●	○	—	○			
	2-wire	12 V		M9B				●	●	●	○	—	○				
				H7C				●	—	●	●	●	—				
	Diagnostic indication (2-color indication)	Grommet		3-wire (NPN)	24 V	5 V, 12 V	—	M9NW	●	●	●	○	—	○	IC circuit		
				3-wire (PNP)				M9PW	●	●	●	○	—	○			
				2-wire				12 V	M9BW	●	●	●	○	—			○
									H7BA**	—	—	●	○	—			○
				With diagnostic output (2-color indication)				4-wire (NPN)	5 V, 12 V	H7NF	●	—	●	○			—
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	12 V	—	A96	●	—	●	—	—	—	IC circuit	Relay, PLC	
				2-wire				100 V	A93	●	—	●	—	—	—		—
								100 V or less	A90	●	—	●	—	—	—		—
		—						C73C	●	—	●	●	●	—	—		—
		Connector						No	24 V or less	C80C	●	—	●	●	●		—

** Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW
1 m..... M (Example) M9NWM
3 m..... L (Example) M9NWL
5 m..... Z (Example) M9NWZ
None N (Example) H7CN

* Solid state auto switches marked with "○" are produced upon receipt of order.

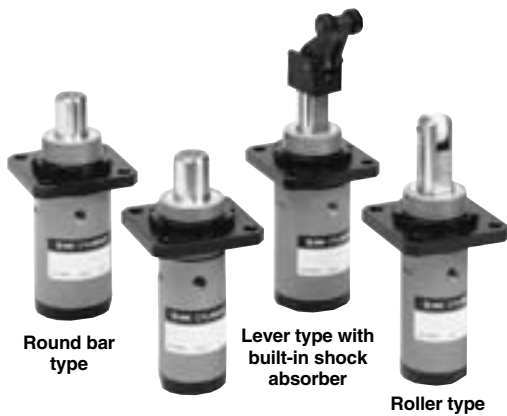
* D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)

* Since there are other applicable auto switches than listed, refer to page 1398 for details.

* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.

* D-A9□/M9□/M9□W auto switches are shipped together (not assembled). (Only auto switch mounting brackets are assembled before shipped.)

Series RSG



Spring Force (Single acting)

Bore size (mm)	Extended	Compressed
40, 50	13.7	27.5

(N)
* For Round bar type, Chamfered type and Roller type.



Made to Order Specifications

(For details, refer to pages 1836 and 1872.)

Symbol	Specifications
-XA□	Change of rod end shape
-XC3	Special port position

Model

Bore size (mm)		40	50
Mounting	Flange	●	●
Built-in magnet		●	●
Piping	Screw-in type	Rc 1/8	
	Built-in One-touch fittings	ø6/4	ø8/6
Action		Double acting, Single acting (Spring extended), Double acting with spring loaded	
Rod end configuration	Round bar type	●	●
	Chamfered type	●	●
	Roller type	●	●
	Lever type	●	●

Specifications

Action	Double acting, Double acting with spring loaded, Single acting (Spring extended)
Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Ambient and fluid temperature	Without auto switch: -10 to 70°C With auto switch: -10 to 60°C
Lubrication	Not required (Non-lube)
Cushion	Rubber bumper
Stroke length tolerance	+1.4 0
Mounting	Flange style

* No freezing (for cylinders with or without an auto switch)

Bore Size/Standard Stroke

Bore size (mm)	Rod end configuration	
	Round bar type, Chamfered type, Roller type, Lever type with shock absorber	
40	20, 25, 30	
50	20, 25, 30	

Mass

Action	Bore size (mm)	Rod end configuration	Cylinder stroke (mm)		
			20	25	30
Double acting	40	Round bar type, Chamfered type, Roller type	1.14	1.17	1.2
		Lever type with built-in shock absorber	1.38	1.41	1.44
Single acting, Spring extend	50	Round bar type, Chamfered type, Roller type	1.34	1.37	1.4
		Lever type with built-in shock absorber	1.56	1.59	1.62

Operating Ranges by Rod End Configuration

(Example 1) For roller type with transfer speed of 15 m/min. and the mass of transferred object of 30 kg.

<How to read the graphs>

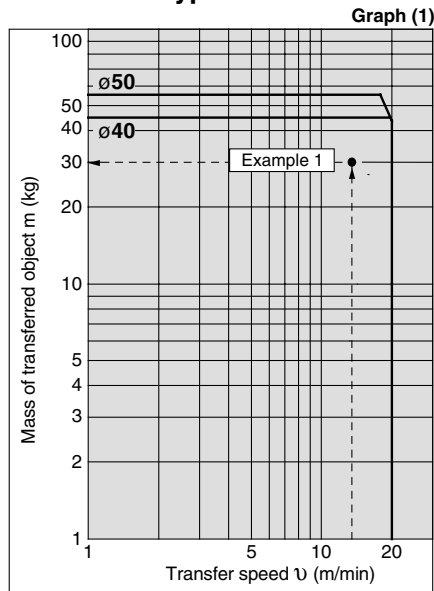
To select a cylinder based on the specifications above, find the intersection of the speed of 15 m/min. on the horizontal axis and the mass of 30 kg on the vertical axis in graph (1) below, and select **RSG□40-□□R** that falls in the cylinder operating range.

(Example 2) Transfer speed of 15 m/min., Mass of transferred object of 60 kg, Friction coefficient $\mu = 0.1$, Lever type (Lever type with lock mechanism)

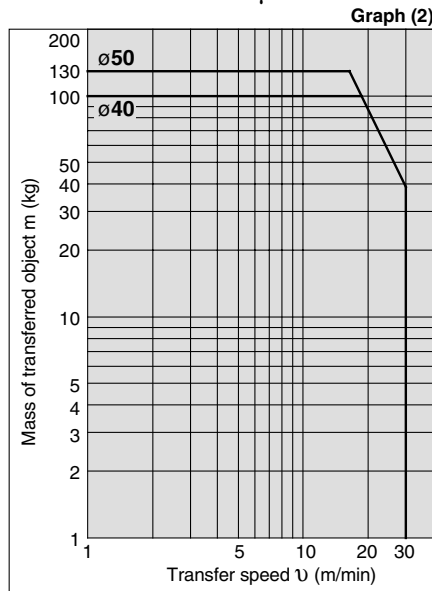
<How to read the graphs>

To select a cylinder based on the specifications above, find the intersection of the speed of 15 m/min. on the horizontal axis and the mass of 60 kg on the vertical axis in graph (3) below, and select **RSG□40-□□D** that falls in the cylinder operating range.

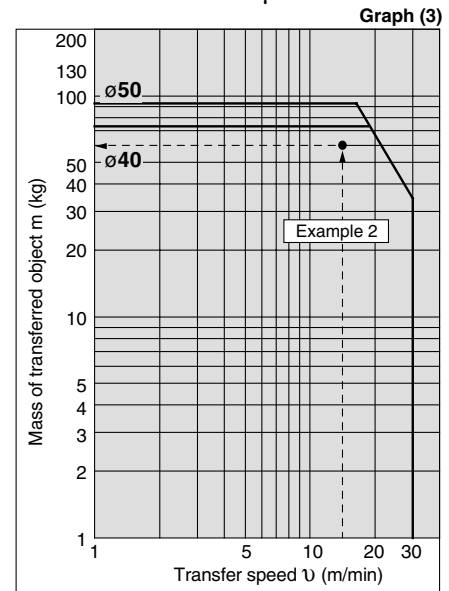
Roller Type/Round Bar Type/ Chamfered Type



Lever Type (With shock absorber) Friction coefficient $\mu = 0$



Lever Type (With shock absorber) Friction coefficient $\mu = 0.1$



RSQ

RSG

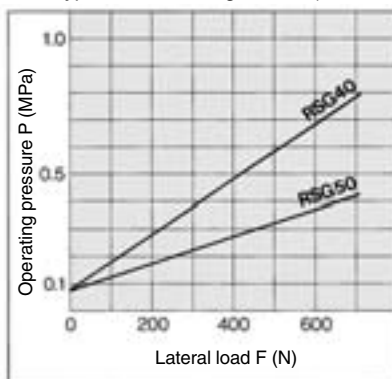
RS□

MI□

Lateral Load and Operating Pressure

The larger the lateral load, the higher the operating pressure required for the stopper cylinder. Set the operating pressure using the graphs as a guide.

(Applicable for round bar, roller and chamfered type rod end configurations.)



* Lever-type mass of transferred object and transfer speed graphs (graphs (2) and (3)) show the values at room temperature (20 to 25°C).

* When selecting cylinders, confirm the Specific Product Precautions as well.

D-□

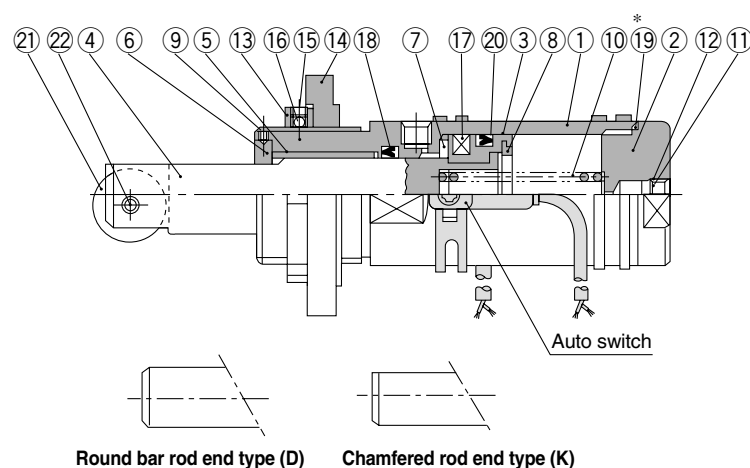
-X□

Individual
-X□

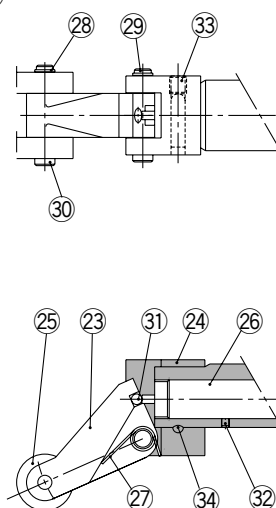
Series RSG

Construction

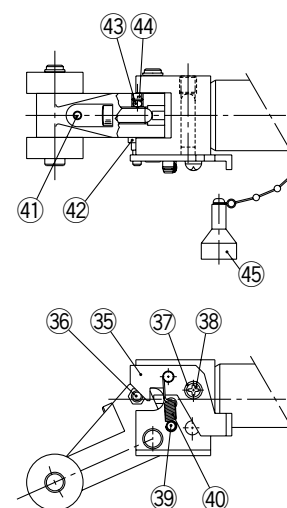
Roller rod end



Lever rod end with shock absorber type



Lever rod end type (With lock mechanism and cancel cap)



Component Parts

No.	Description	Material	Note
1	Tube cover	Aluminum alloy	Hard anodized
2	Head cover	Aluminum alloy	Anodized
3	Piston	Aluminum alloy	Chromated
4	Piston rod	Carbon steel	Hard chrome plated
5	Bushing	Copper alloy	
6	Non-rotating guide	Rolled steel	Use collar for round bar type.
7	Bumper A	Urethane	
8	Bumper B	Urethane	
9	Hexagon socket head set screw	Chromium molybdenum steel	
10	Return spring	Steel wire	Zinc chromated (Except double acting)
11	Retaining ring	Carbon tool steel	(Single acting only)
12	Element	Sintered metallic BC	(Single acting only)
13	Lock nut	Carbon steel	
14	Flange	Cast iron	
15	Hexagon socket head set screw	Chromium molybdenum steel	
16	Ball	Resin	
17	Magnet	—	
18	Rod seal	NBR	
*19	Gasket	NBR	Used Only for double acting and double acting with spring loaded.
20	Piston seal	NBR	

Replacement Parts/Seal Kit

Bore size (mm)	Kit no.			Contents
	Double acting	Double acting with spring loaded	Single acting	
40	RSG40D-PS	RSG40B-PS	RSG40T-PS	Set of above nos. (18, 19, 20)
50	RSG50D-PS	RSG50B-PS	RSG50T-PS	

* Seal kit includes (18, 19, 20). Order the seal kit, based on each bore size.

* Since the seal kit does not include a grease pack, order it separately.

Grease pack part no.: GR-S-010 (10 g)

Component Parts (For single acting)

No.	Description	Material	Note
Roller type			
21	Roller A	Resin	
22	Spring pin	Carbon tool steel	
Lever type			
23	Lever	Cast iron	
24	Lever holder	Rolled steel	
25	Roller B	Resin	
26	Shock absorber	—	RB1407-X552
27	Lever spring	Stainless steel wire	
28	Type C retaining ring for shaft	Carbon tool steel	
29	Lever pin	Carbon steel	
30	Roller pin	Carbon steel	
31	Steel balls	High carbon chrome bearing steel	
32	Hexagon socket head set screw	Chromium molybdenum steel	
33	Hexagon socket head set screw	Chromium molybdenum steel	
34	One-side tapered pin	Carbon steel	

With lock mechanism

35	Bracket	Carbon steel	
36	Pin B	Carbon steel	
37	Spacer	Carbon steel	
38	Round head Phillips screw	Rolled steel	
39	Pin A	Rolled steel	
40	Bracket spring	Steel wire	
41	Hexagon socket head cap set screw	Chromium molybdenum steel	
42	Spring washer	Steel wire	
43	Urethane ball	Urethane	
44	Hexagon socket head cap set screw	Chromium molybdenum steel	

With cancel cap

45	Cancel cap	Aluminum alloy	
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Replacement Parts: Shock Absorber

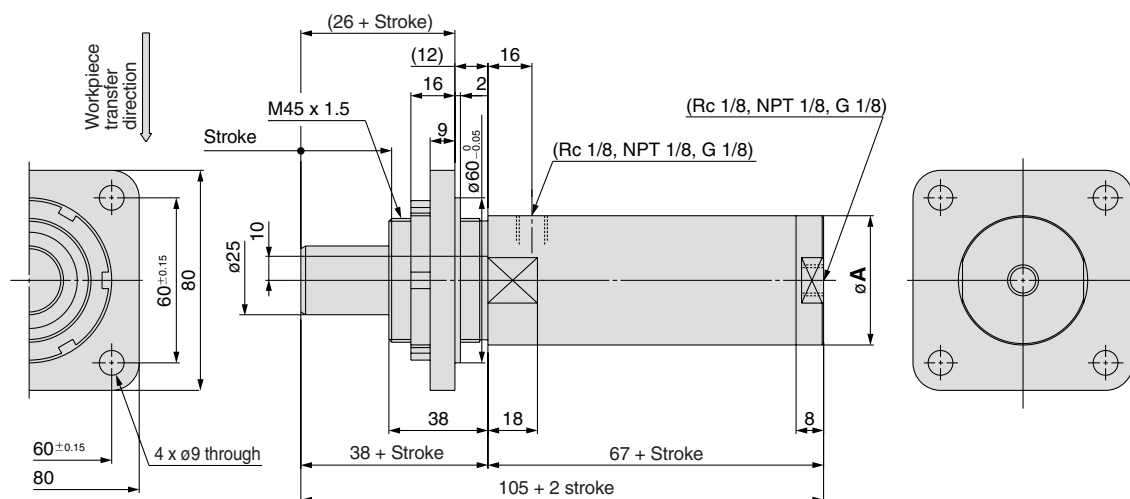
Bore size (mm)	Kit no.
40, 50	RB1407-X552

Rod End Configuration: Round Bar Type

Basic style: Flange mounting

These 2 figures show the piston rod extended.

Bore size: $\phi 40, \phi 50$ RS□G□-□□



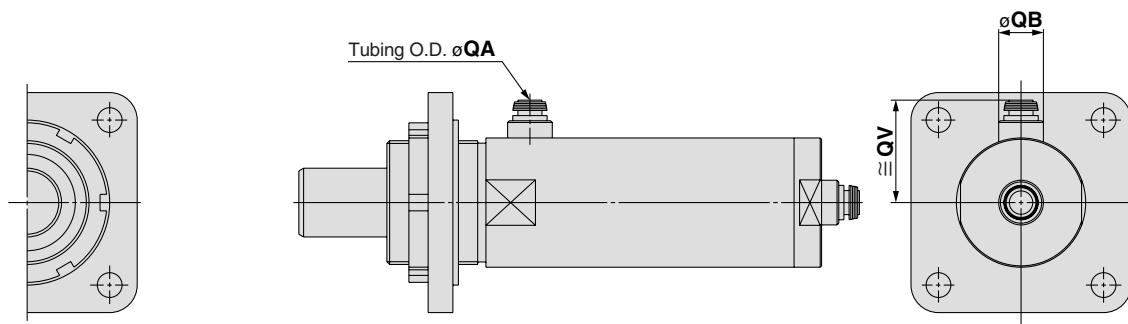
RSQ

RSG

RS□

MI□

Built-in One-touch fittings



(mm)				
Bore size (mm)	A	QA	QB	QV
40	47	6	13	33
50	58	8	16	38.5



Note 1) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 2) These figures show the piston rod extended.

Note 3) For the auto switch mounting position and its mounting height, refer to page 1397.

D-□

-X□

Individual
-X□

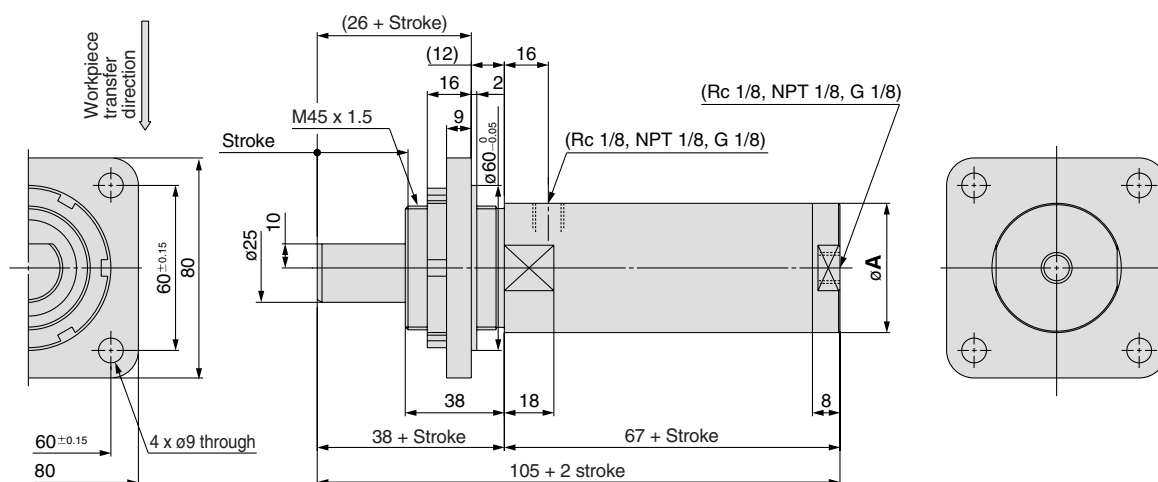
Series RSG

Rod End Configuration: Chamfered Type (Non-rotating piston rod)

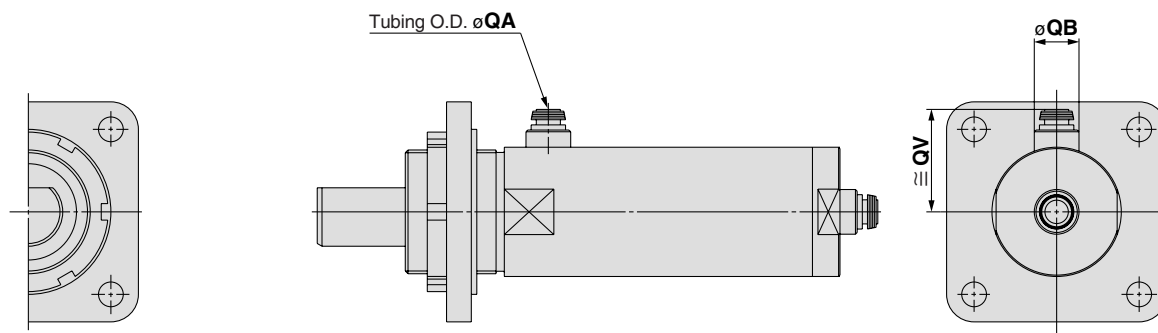
Basic style: Flange mounting

These 2 figures show the piston rod extended.

Bore size: $\varnothing 40, \varnothing 50$ RS□G□-□□K



Built-in One-touch fittings



(mm)				
Bore size (mm)	A	QA	QB	QV
40	47	6	13	33
50	58	8	16	38.5



Note 1) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 2) These figures show the piston rod extended.

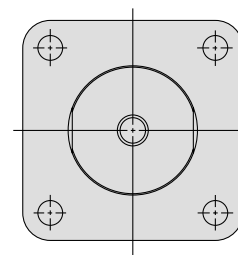
Note 3) For the auto switch mounting position and its mounting height, refer to page 1397.

Rod End Configuration: Roller Type

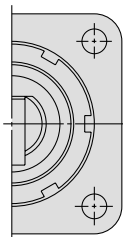
Basic style: Flange mounting

These 2 figures show the piston rod extended.

Bore size: ø40, ø50 **RS□G□-□□R**

**RSG**RS ☐MI ☐

Built-in One-touch fittings



	(mm)			
Bore size (mm)	A	QA	QB	QV
40	47	6	13	33
50	58	8	16	38.5

Note 1) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 2) These figures show the piston rod extended.

Note 3) For the auto switch mounting position and its mounting height, refer to page 1397.

D-☐

-X ☐

Individual
-X ☐

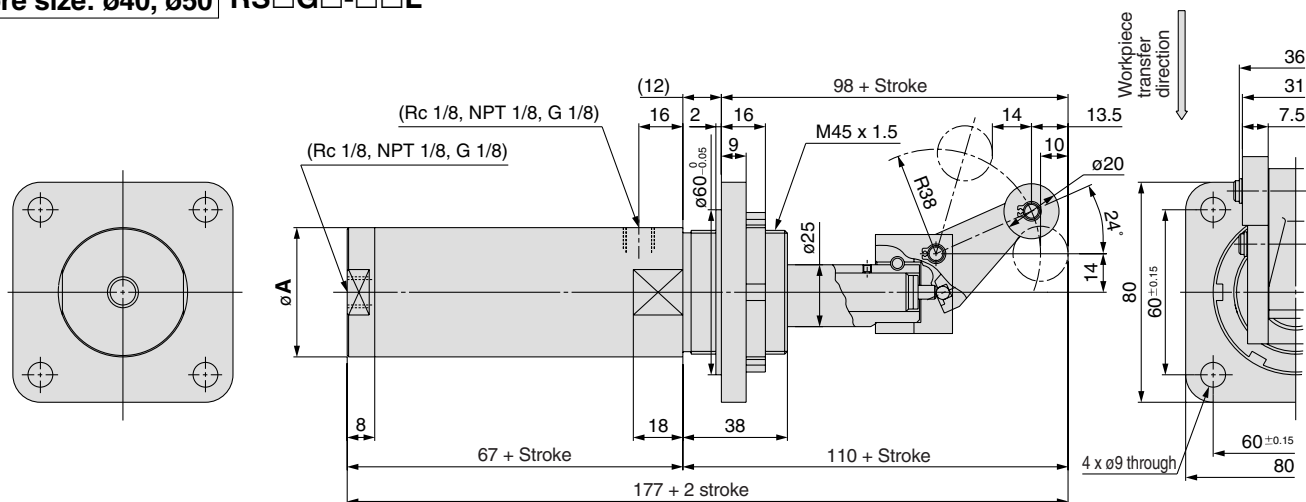
Series RSG

Rod End Configuration: Lever Type with Shock Absorber

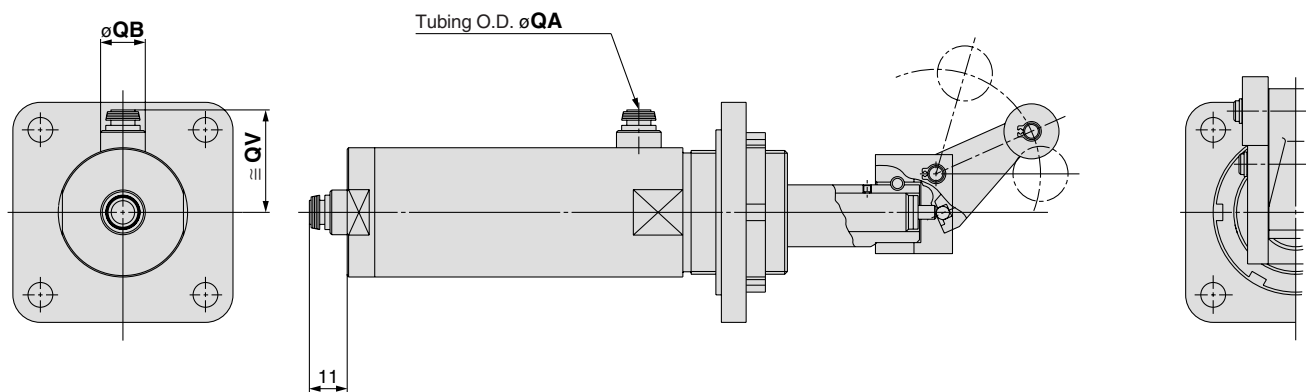
Basic style: Flange mounting

These 2 figures show the piston rod extended.

Bore size: $\varnothing 40$, $\varnothing 50$ RS□G□-□□L



Built-in One-touch fittings



(mm)				
Bore size (mm)	A	QA	QB	QV
40	47	6	13	33
50	58	8	16	38.5



Note 1) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 2) These figures show the piston rod extended.

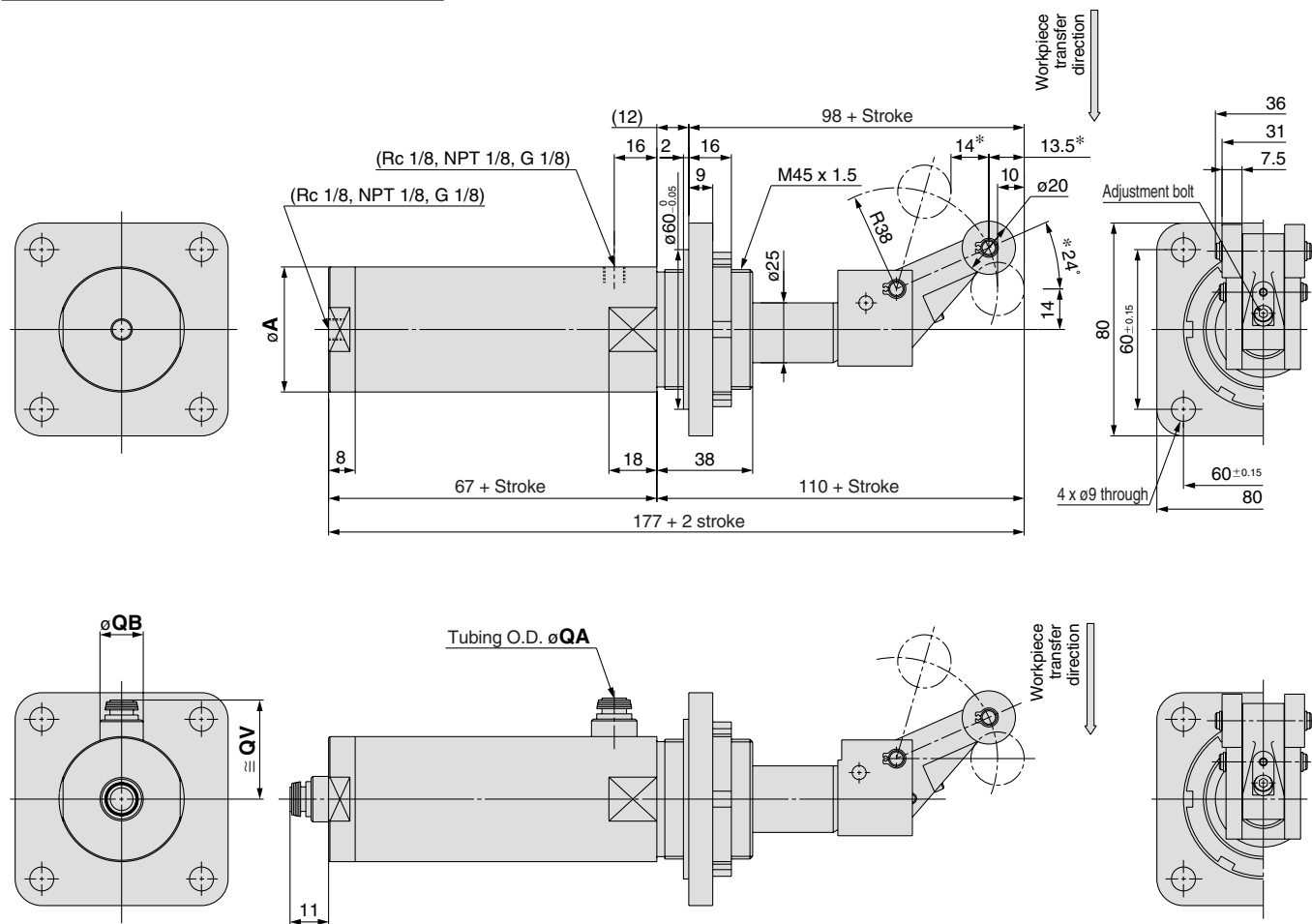
Note 3) For the auto switch mounting position and its mounting height, refer to page 1397.

Rod End Configuration: Lever Type with Shock Absorber

Variable energy absorbing type/Flange mounting style

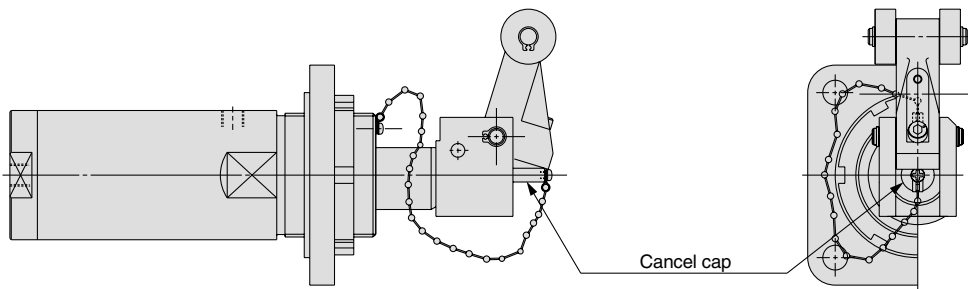
These 2 figures show the piston rod extended.

Adjustable shock absorber stroke RS□G□-□□B



With cancel cap RS□G□-□□C

* Dimensions when equipped with cancel cap are the same as the drawing above.



	(mm)			
Bore size (mm)	A	QA	QB	QV
40	47	6	13	33
50	58	8	16	38.5

Note 1) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 2) These figures show the piston rod extended.

Note 3) For the auto switch mounting position and its mounting height, refer to page 1397.

Note 4) The figure shows these dimensions when the adjustment bolt is lowered (when energy absorption is at its maximum).

However, these dimensions change within the ranges shown below as the adjusting bolt is raised (energy absorption is reduced).

$$24^{\circ*} \rightarrow 16^{\circ*}, 13.5^* \rightarrow 11.5^*, 14^* \rightarrow 16^*$$
RSQ**RSG**

RS□

MI ☐D-☐

-X ☐

Individual

-X ☐

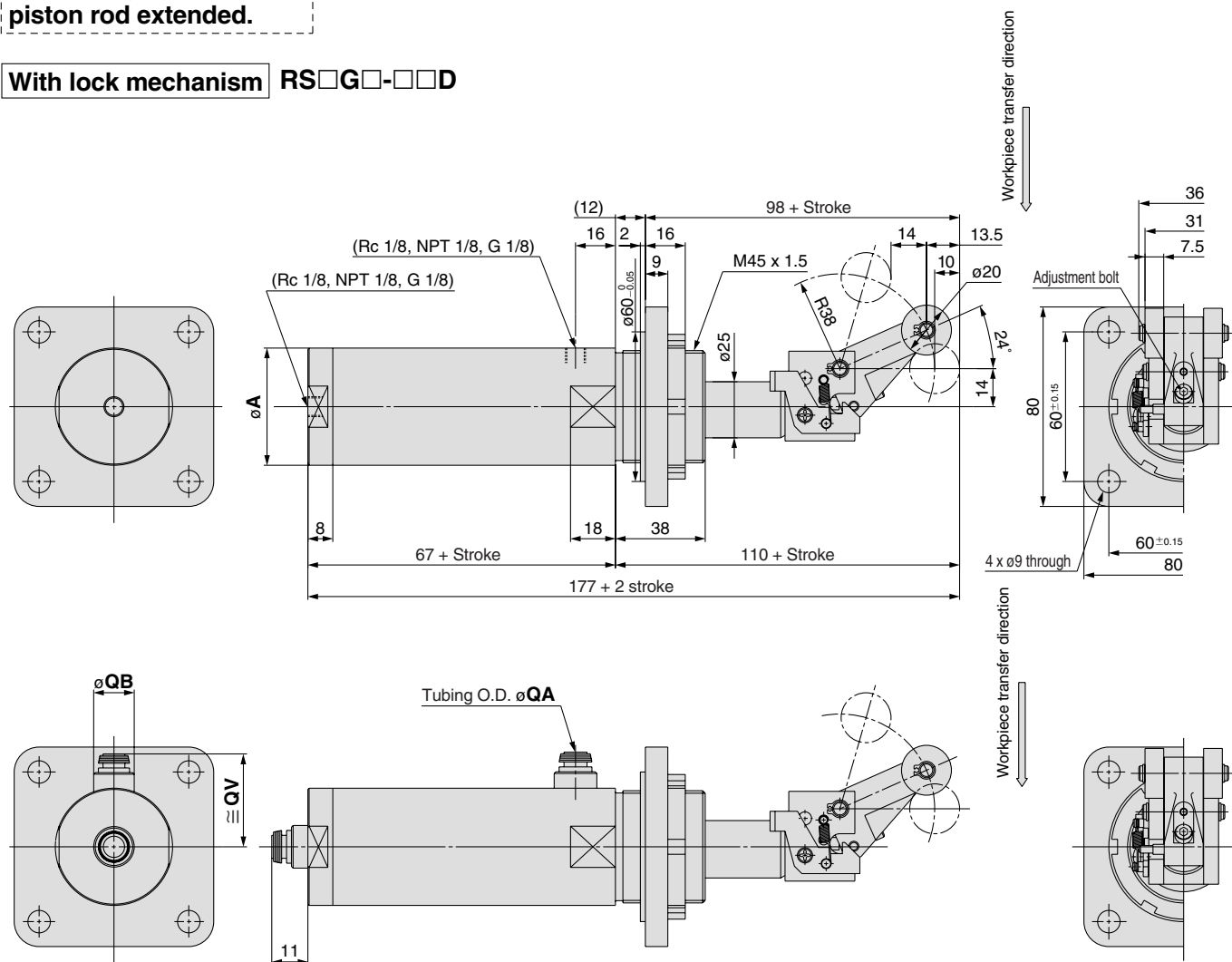
Series RSG

Rod End Configuration: Lever Type with Shock Absorber

Variable energy absorbing type/Flange mounting style

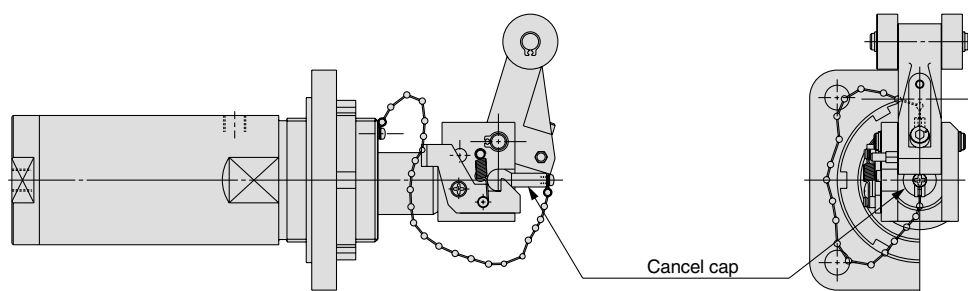
These 2 figures show the piston rod extended.

With lock mechanism RS□G□-□□D



With lock mechanism + Cancel cap RS□G□-□□E

* Dimensions when equipped with lock and cancel cap are the same as the figure drawing.



Bore size (mm)	A	QA	QB	QV
40	47	6	13	33
50	58	8	16	38.5



Note 1) In the case of single acting type, a One-touch fitting is on the rod side only.

Note 2) These figures show the piston rod extended.

Note 3) The figure shows these dimensions when the adjustment bolt is lowered (when energy absorption is at its maximum).

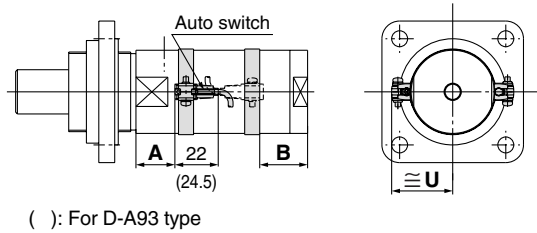
However, these dimensions change within the ranges shown below as the adjusting bolt is raised (energy absorption is reduced).

24°* → 16°*, 13.5°* → 11.5°*, 14°* → 16°*

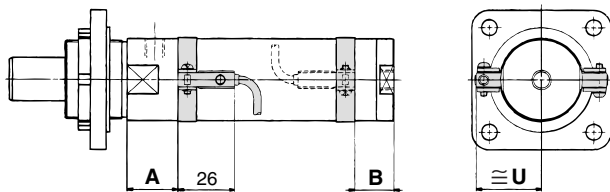
Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Reed Auto Switch

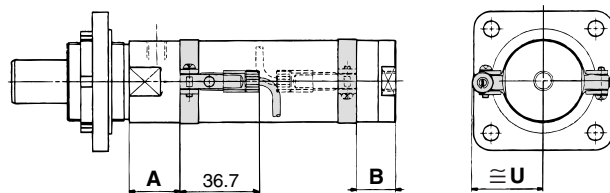
D-A9□



D-C7
D-C8

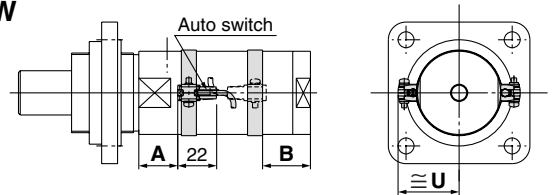


D-C73C
D-C80C

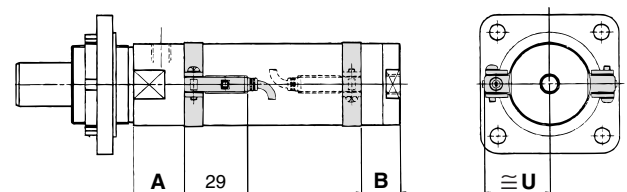


Solid State Auto Switch

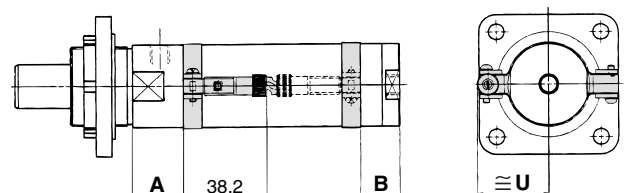
D-M9□
D-M9□W



D-H7
D-H7□W
D-H7NF
D-H7BAL



D-H7C



RSQ

RSG

RS□

MI□

Auto Switch Proper Mounting Position

Auto switch model	Note 2) D-A9□		Note 2) D-M9□ D-M9□W		D-C7□ D-C80 D-C73C D-C80C		D-H7BAL D-H7□W D-H7 D-H7C		D-H7NF	
	A	B	A	B	A	B	A	B	A	B
40	21.5	25.5	25.5	29.5	22.0	26.0	21.0	25.0	19.5	23.5
50	29.5	17.5	33.5	21.5	30.0	18	29.0	17.0	27.5	15.5

(mm)

Auto Switch Mounting Height

Auto switch model	D-A9□ D-M9□ D-M9□W		D-C7□ D-C80 D-H7□W D-H7NF D-H7BAL		D-H7C	D-C73C D-C80C
	U		U		U	U
40	34.5		35.0		38.0	37.5
50	40		40.5		43.5	43.0

(mm)

Note 1) Adjust the auto switch after confirming the operating conditions in the actual setting.

Note 2) Auto switch mounting (The adjustment as shown in the figures below is required with the following stroke ranges.)

Auto switch model	With 2 auto switches	
	Different surfaces	Same surface
Auto switch model	Auto switch D-M9□ D-M9□W The proper auto switch mounting position is 6 mm inward from the switch holder edge.	The auto switch is mounted by slightly displacing it in a direction (cylinder tube circumferential exterior) so that the auto switch and lead wire do not interfere with each other.

D-□

-X□

Individual
-X□

Operating Range

Auto switch model	Bore size (mm)	
	40	50
D-A9□	8	8
D-M9□ D-M9□W	4.5	5
D-C7□/C80 D-C73C/C80C	10	10
D-H7□/H7□W D-H7BAL/H7NF	5	6
D-H7C	10	9.5

* Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately $\pm 30\%$ dispersion) There may be the case to change substantially depending on an ambient environment.

Auto Switch Mounting Bracket: Part No.

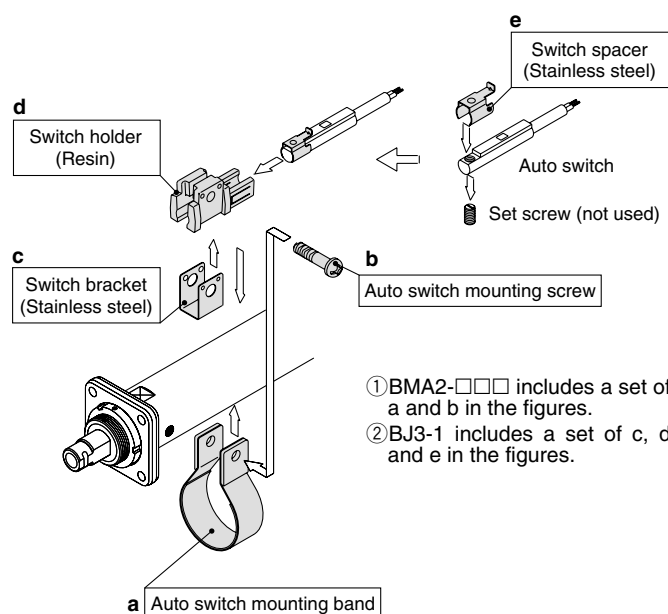
Auto switch model	Bore size (mm)	
	ø40	ø50
D-A9□ D-M9□ D-M9□W	Note 1) ① BMA2-040 ② BJ3-1	Note 1) ① BMA2-050 ② BJ3-1
D-C7□/C80 D-C73C/C80C D-H7□ D-H7□W D-H7BAL D-H7NF	BMA2-040	BMA2-050

Note 1) Two kinds of auto switch mounting brackets are used as a set.

[Mounting screw set made of stainless steel]

The following set of mounting screws made of stainless steel is available. Use it in accordance with the operating environment. (Please order the auto switch mounting bracket separately, since it is not included.) D-H7BAL auto switch is set on the cylinder with the stainless steel screws above when shipped. When an auto switch is shipped independently, BBA4 is attached.

Note 2) Refer to page 1814 for the details of BBA4.



Besides the models listed in How to Order, the following auto switches are applicable. Refer to pages 1719 to 1827 for detailed specifications.

Auto switch type	Part no.	Electrical entry (Fetching direction)	Features
Reed	D-C73, C76	Grommet (In-let)	—
	D-C80, C80C		Without indicator light
Solid state	D-H7A1, H7A2, H7B		—
	D-H7NW, H7PW, H7BW		Diagnostic indication (2-color)

* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.

* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H types) are also available. Refer to page 1746 for details.



Series RSQ/RSG

Specific Product Precautions 1

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Selection

⚠ Danger

1. Use within the range of specifications.

If using beyond the specifications, excessive impacts or vibrations could be applied to the stopper cylinder and might cause breakage.

⚠ Danger

1. Do not allow a pallet to collide with the cylinder when the lever is upright.

In the case of the lever type with built-in shock absorber, if the next pallet runs into the lever when it is in the upright position (after the shock absorber has assimilated energy), the cylinder body will receive the full energy of the impact, and this should not be permitted.

2. Do not apply pressure from the head side of a single acting type cylinder.

If air is supplied from the head side of a single acting cylinder, blow-by of the air will occur.

3. Do not scratch or gouge the sliding portion of a piston.

Quenching of the piston rod has not been performed. If there is a danger of scratching or nicking the piston rod due to sharp edges, etc. on the contact area of a pallet, the pallet should not be used, as this can cause a malfunction.

4. When using a stopper cylinder for intermediate stopping of a load connected directly to a cylinder, etc.

The operating ranges shown in this catalog apply only for stopping of a pallet on a conveyor. When using a stopper cylinder to stop a load connected directly to a cylinder, etc., the cylinder thrust will become a lateral load. In this case, refer to the instruction manual and select a cylinder remaining within the allowable energy and allowable lateral load ranges.

5. For the lever type with a built-in shock absorber (without a lock mechanism), the lever may be pushed back in the opposite direction to the transfer direction due to the return force of the shock absorber, if 10N of thrust or more in the transfer direction is not applied to the lever after the pallet collides with the lever.

If the lever must be continuously upright, select a lever with a lock mechanism.

6. The operating range for the lever type with a built-in shock absorber indicates the range in which the lever is not damaged due to the shock absorber's performance and cylinder rigidity. It is not the same as the range in which the lever can stop softly and fully.

Near the upper limit, collision may occur at the end. If a soft stop is required, sufficient clearance is necessary. Consult with SMC when a reliable soft stop is required near the upper limit.

Mounting

⚠ Caution

1. Do not apply rotational torque to the cylinder rod.

In order to prevent rotational torque from acting upon the cylinder rod, mount it so that the contacting surfaces of the pallet and cylinder are parallel to one another.

When mounting a cylinder, tighten the body lock nut, and then tighten the set screws (2 locations) which are included with the lock nut. (Except RSQ)

2. When the lever type with a built-in shock absorber is installed from the direction of the lever side, mounting holes must be machined in accordance with recommend hole diameters in the table below.

When it is installed from the direction of the lever side of the stopper cylinder as shown below, note that the lever's outer diameter is larger than the rod cover boss diameter.

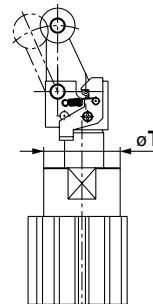
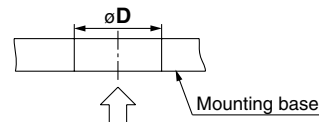


Figure 1

Lever type models

RS (D) □32/40/50-□□L
RS (D) □32/40/50-□□B
RS (D) □32/40/50-□□C
RS (D) □32/40/50-□□D
RS (D) □32/40/50-□□E

Table 1 Recommended hole diameter

Model	Rod cover boss O.D.	Recommended hole diameter for mounting base
	øT	øD
RS (D) □32	36	38
RS (D) □40	44	48
RS (D) □50	56	57

RSQ

RSG

RS□

MI□

D-□

-X□

Individual
-X□



Series RSQ/RSG

Specific Product Precautions 2

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Operation

⚠ Caution

1. In the case of the model with locking mechanism, do not apply an external force from the opposite side when the lever is locked.

When moving pallets during conveyor adjustments, first lower the cylinder.

2. Do not use oil, etc. on the sliding parts of the piston rod.

This can cause trouble with retraction or other malfunctions.

3. Do not get your hands caught during cylinder operation.

Since the lever section moves up and down when the cylinder is in operation, take sufficient care to avoid getting your hands caught between the rod cover and the lever holder.

4. Do not expose the shock absorber to machining oil, water, or dust.

This will cause the shock absorber to become damaged, leading to air leaks.

Maintenance

⚠ Caution

1. After the shock absorber has been replaced, tighten the set screw M3 x 2.5 L securely so that it makes contact with the threaded section of the shock absorber.

Tightening torque: 0.29 N·m

2. When changing the non-rotating direction, loosen the set screws (2 locations) in the cover (tube cover or rod cover), change the detent to the desired position by rotating the non-rotating guide, and then retighten.

After tightening the set screw, confirm that the non-rotating guide and the piston rod does not contact and rise before using.

Tightening torque: 0.63 N·m

3. How to adjust the lever type, variable energy absorbing type

For the lever type, variable energy absorbing type, strokes of the shock absorber can be adjusted with an adjustment bolt included in order to stop in accordance with the transfer conditions.

Follow the procedures below to adjust strokes.

Procedures

- 1) Loosen the set screw (M4) on the lever side.
- 2) Adjust the adjustment bolt in accordance to the energy of the transferred object.
(The stroke of the shock absorber becomes larger (absorbing energy becomes bigger) when tightening the adjustment bolt, while it becomes smaller when loosening the bolt.)
- 3) After adjusting the adjustment bolt, fix the bolt with the set screw (M4) loosened in 1).

Tightening torque M4: 1.5 N·m

