

Platform Cylinder Series CXT

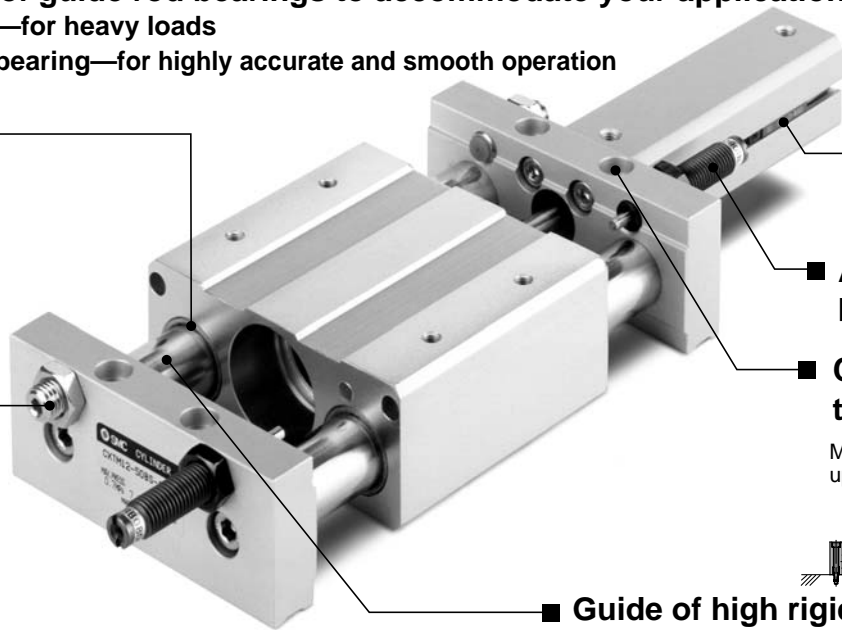
ø12, ø16, ø20, ø25, ø32, ø40

A highly rigid and highly accurate slide table integrated with an actuator.

■ **Two styles of guide rod bearings to accommodate your application**

Slide bearing—for heavy loads

Ball bushing bearing—for highly accurate and smooth operation

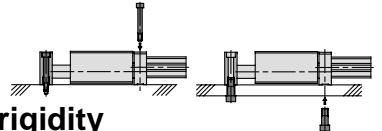


■ **Auto switches can be installed.**

■ **A shock absorber can be installed (option).**

■ **Can be mounted on two sides.**

Mounting from upper side Mounting from bottom side



■ **Guide of high rigidity**

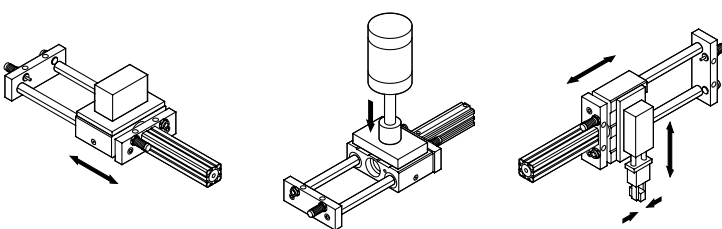
■ **Adjustment bolt with bumper is standard.**

Performs the function of a cushion and adjusts the stroke 5mm on each side, or 10mm for both sides.

For moving and transporting workpieces.

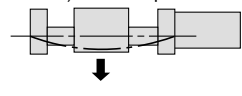
For moving the receptacle for workpieces used in stamping or press-fitting processes.

For using as a P&P unit in combination with other actuators.

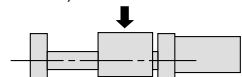


Series	Max. movable weigh (kg)	CXTM (Slide bearing)		CXTL (Ball bushing bearing)	
		Table displacement (mm)	Allowable static weight (kg)	Table displacement (mm)	Allowable static weight (kg)
CXT□12	3	0.002	350	0.015	60
CXT□16	7	0.004	500	0.019	70
CXT□20	12	0.007	900	0.044	125
CXT□25	20	0.030	900	0.180	125
CXT□32	30	0.032	1100	0.123	140
CXT□40	50	0.025	1900	0.109	170

Note 1) Table displacement



Note 2) Allowable static load



Note 1) "Table displacement" is the amount of deflection of the guide rod that occurs when a maximum load weight is placed on the maximum stroke table while the table is at the center of the stroke (the amount of looseness is not included).

Note 2) An "allowable stationary weight" is the allowable amount of stationary weight that can be applied vertically to the workpiece mounting surface of the table while the table is at the stroke end.

■ **Variations**

Bearing		Bore size (mm)	Stroke (mm)										
Slide	Ball bushing		15	25	50	75	100	125	150	175	200	250	300
CXTM12	CXTL12	12	●	●	○	○	○						
CXTM16	CXTL16	16	●	●	○	○	○						
CXTM20	CXTL20	20		●	●	○	○	○	○	○	○	○	○
CXTM25	CXTL25	25		●	●	○	○	○	○	○	○	○	○
CXTM32	CXTL32	32		●	●	○	○	○	○	○	○	○	○
CXTM40	CXTL40	40		●	●	○	○	○	○	○	○	○	○

●.....Standard stroke ○.....Long stroke

Platform Cylinder

Series CXT

ø12, ø16, ø20, ø25, ø32, ø40

How to Order

CXT M 20-100 B-A90 S

Platform cylinder

Bearing

M	Slide bearing
L	Ball bushing bearing

Number of auto switches

—	2
S	1
n	n

Auto switch

—	Without auto switch (Built-in magnet)
---	---------------------------------------

Refer to p.2-118 for common specification and wire specification.
* Refer to the table below for part numbers for applicable auto switches.

Option

—	Adjusting bolt with bumper only (Standard)
B	With 2 shock absorbers (Set only on the driving cylinder side when packed.)
BS	With 1 shock absorber (Set on the driving cylinder side when packed.)

Bore size/Stroke (mm)

Bore size (mm)	Stroke (mm)										
	15	25	50	75	100	125	150	175	200	250	300
12	●	●	○	○	○						
16	●	●	○	○	○						
20	●	●	○	○	○	○	○	○	○		
25	●	●	○	○	○	○	○	○	○	○	○
32	●	●	○	○	○	○	○	○	○	○	○
40	●	●	○	○	○	○	○	○	○	○	○

●.....Standard stroke ○.....Long stroke

* Refer to p.2-118 for minimum strokes for auto switch equipped style.

Applicable auto switches

Style	Special function	Electrical entry	Indicator	Wiring (Output)	Load voltage		Direct mounting		Rail mounting		Wire length ⁽¹⁾ (m)				Applicable load								
					DC	AC	ø12 to ø40		ø32, ø40		0.5 (—)	3 (L)	5 (Z)	— (N)									
							Perpendicular	In-line	Perpendicular	In-line													
Reed switch	—	Grommet	Yes	3 wire (Equivalent to NPN)	—	5V	—	A96V	A96	—	A76H	●	●	—	—	IC	—						
								—	—	A72	A72H	●	●	—	—								
								—	—	A73	A73H	●	●	●	—								
								24V	12V	100V	A93V	A93	—	—	●			●	—	—	Relay PLC		
											5V, 12V	≤100V	A90V	A90	A80			A80H	●	●		—	—
											12V	—	—	—	A73C			—	●	●		●	●
Connector	Yes	No	2 wire	5V, 12V	≤24V	—	—	A80C	—	●	●	●	●	—	IC	—							
																	5V, 12V	—	—	A79W		—	●
Solid state switch	—	Grommet	Yes	3 wire (NPN)	—	5V, 12V	—	—	—	F7NV	F79	●	●	○	—	Relay PLC	—						
								M9NV	M9N	—	—	●	●	—	—			—					
								—	—	F7PV	F7P	●	●	○	—			—	IC				
								M9PV	M9P	—	—	●	●	—	—			—	—				
								—	—	F7BV	J79	●	●	○	—			—	—				
								M9BV	M9B	—	—	●	●	—	—			—	—				
								—	—	J79C	—	●	●	●	●			—	—				
								M9NWV	M9NW	F7NWV	—	●	●	○	—			—	—				
								—	—	—	F79W	●	●	○	—			—	IC				
								—	—	—	F7PW	●	●	○	—			—	—				
								M9PWV	M9PW	—	—	●	●	○	—			—	—				
								M9BWV	M9BW	F7BWV	J79W	●	●	○	—			—	—				
								—	M9BA	—	F7BA	—	●	○	—			—	—				
								—	—	—	F7NT	—	●	○	—			—	IC				
								—	—	—	F79F	●	●	○	—			—	—				
—	—	—	F7LF	●	●	○	—	—	—														



Note 1) Symbols for wire length

0.5m —
3m L
5m Z
— N

Ex.) A80C
A80CL
A80CZ
A80CN

Note 2) Solid switches marked with "O" are manufactured upon receipt of order.

Note 3) To operate a relay as the load on the D-F7BV, J79(C)(W), M9B(V), F7NWV, F79W, M98W(V), F7BWV, F7BA, F7LF, or M9BA, use 24V DC because, the operation could become unstable due to an internal voltage drop if 12V DC is used.

Specifications



Fluid	Air
Action	Double acting
Proof pressure	1.5MPa
Max. operating pressure	0.7MPa ⁽¹⁾
Min. operating pressure	0.15MPa
Ambient and fluid temperature	-10 to 60 °C (No freezing)
Piston speed	50 to 500mm/s
Cushion	Bumper (Both sides/Standard), Shock absorber (Option)
Lubrication	Not required (Non-lube)
Stroke adjustable range	-10mm (Forward end, Backward end: -5mm each)



Note 1) Maximum operating pressure for this product with the bumper ability and the else concerned.

Long Adjusting Bolt

For Made to Order Specifications (add "-x138" to the end of the part number), adjustment bolt with a longer overall length can be used to further extend the adjustment range of the stroke. Refer to the table below for the adjustable range.

	CXT□12, 16	CXT□20, 25	CXT□32	CXT□40
Stroke adjustable range	-26mm (One side -13mm)	-28mm (One side -14mm)	-44mm (One side -22mm)	-42mm (One side -21mm)

Shock Absorber Specifications

Model	CXT□ 12 16	CXT□20	CXT□25	CXT□ 32 40	
Shock absorber	RB0806	RB1007	RB1411	RB2015	
Max. absorbed energy (J)	2.94	5.88	14.7	58.8	
Absorbed stroke (mm)	6	7	11	15	
Collision speed	0.05 to 5m/s				
Max. operating frequency* (cyc/min)	80	70	45	25	
Ambient temperature	-10 to 80°C				
Spring force (N)	Expanded	1.96	4.22	6.86	8.34
	Compressed	4.22	6.86	15.30	20.50
Weight (g)	15	25	65	150	

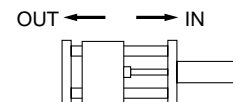


* The value shown is for when the absorption energy per cycle is at a maximum level. Accordingly, the operating frequency can be increased in accordance with the absorption energy.

Theoretical Force

Cylinder bore size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)			(N)
			0.3	0.5	0.7	
12	IN	84.8	25	42	59	
	OUT	113	34	57	79	
16	IN	151	45	75	106	
	OUT	201	60	101	141	
20	IN	236	71	118	165	
	OUT	314	94	157	220	
25	IN	378	113	189	264	
	OUT	491	147	245	344	
32	IN	603	181	302	422	
	OUT	804	241	402	563	
40	IN	1056	317	528	739	
	OUT	1257	377	628	880	

Theoretical force (N) = Pressure (MPa) X Piston area (mm²)



Series CXT

Weight

CXTM (Slide bearing)

Bore size (mm) \ Stroke (mm)	(kg)										
	15	25	50	75	100	125	150	175	200	250	300
12	0.85 (0.35)	0.90 (0.35)	1.02 (0.35)	1.13 (0.36)	1.25 (0.37)	—	—	—	—	—	—
16	1.18 (0.50)	1.24 (0.50)	1.39 (0.51)	1.54 (0.52)	1.68 (0.53)	—	—	—	—	—	—
20	—	2.35 (0.85)	2.61 (0.87)	2.89 (0.88)	3.15 (0.90)	3.41 (0.91)	3.66 (0.93)	3.92 (0.94)	4.18 (0.96)	—	—
25	—	2.76 (1.09)	3.03 (1.11)	3.34 (1.14)	3.62 (1.16)	3.89 (1.18)	4.16 (1.21)	4.43 (1.23)	4.70 (1.25)	5.25 (1.30)	5.79 (1.34)
32	—	4.62 (2.06)	4.98 (2.10)	5.34 (2.14)	5.70 (2.17)	6.00 (2.21)	6.35 (2.25)	6.69 (2.29)	7.04 (2.33)	7.73 (2.41)	8.43 (2.49)
40	—	8.30 (3.71)	8.82 (3.75)	9.32 (3.79)	9.83 (3.83)	10.40 (3.87)	10.91 (3.91)	11.43 (3.95)	11.95 (3.99)	12.98 (4.07)	14.02 (4.15)

CXTL (Ball bushing bearing)

Bore size (mm) \ Stroke (mm)	(kg)										
	15	25	50	75	100	125	150	175	200	250	300
12	0.75 (0.41)	0.78 (0.42)	0.85 (0.42)	0.92 (0.42)	0.98 (0.43)	—	—	—	—	—	—
16	1.05 (0.57)	1.08 (0.57)	1.18 (0.58)	1.27 (0.59)	1.35 (0.60)	—	—	—	—	—	—
20	—	2.00 (1.02)	2.15 (1.04)	2.32 (1.05)	2.46 (1.07)	2.60 (1.08)	2.75 (1.10)	2.89 (1.11)	3.03 (1.13)	—	—
25	—	2.41 (1.25)	2.57 (1.28)	2.77 (1.30)	2.92 (1.33)	3.08 (1.35)	3.24 (1.37)	3.40 (1.39)	3.56 (1.42)	3.78 (1.46)	4.19 (1.50)
32	—	4.23 (2.26)	4.47 (2.30)	4.71 (2.34)	4.95 (2.38)	5.13 (2.42)	5.36 (2.46)	5.59 (2.50)	5.82 (2.54)	6.27 (2.62)	6.73 (2.70)
40	—	7.55 (4.31)	7.86 (4.35)	8.16 (4.39)	8.46 (4.43)	8.82 (4.47)	9.13 (4.51)	9.44 (4.55)	9.75 (4.59)	10.37 (4.67)	10.99 (4.74)

Note 1) Factors in parentheses are weight of movable parts (weight of movable parts of the cylinder is included.)

Note 2) The weight indicated above does not include a shock absorber.



Precautions for Handling

Operation

- Make sure not to apply to the slide block a load that exceeds the value that has been calculated in the selection procedure.
- Operate the cylinder securing it by its plates, not by securing it by its slide block.
- The clearance between the slide block and the plate at the stroke end is approximately 1mm to 6mm. It could be extremely dangerous, as there is the risk of getting your fingers caught. Install a cover as necessary.
- At both stroke ends, adjust the damper portion at the end of the adjustment bolt so that it comes in contact with the slide block. (The clearance between the slide block and the plate must be 1mm or more.)
If it is operated without making any contact, the piston rod of the actuating cylinder or the connecting hardware (adapter) could become damaged by an excessive impact, or the slide block could collide with the plate and create an abnormal noise.
- The load weight or operating speed will be limited if only the adjustment bolt is used. Refer to the section on "Allowable load when only the adjustment bolt is used" on p.2-113
- Contact SMC if this product will be used in an environment in which the piston rod and the guide shaft surfaces will be exposed to water (hot water), coolant, cutting chips, or dust.
- The slide block bearings must be greased periodically. Inject grease (Class 1 or 2 lithium soap grease consistency) through the grease inlet.

Note) On those with a cylinder bore of $\phi 12$, apply grease to the guide shaft.

- To operate the cylinder, use a non-lubricating air supply. To lubricate, use Class 1 turbine oil (ISOVG32). (Never use machine oil or spindle oil.)

Installation

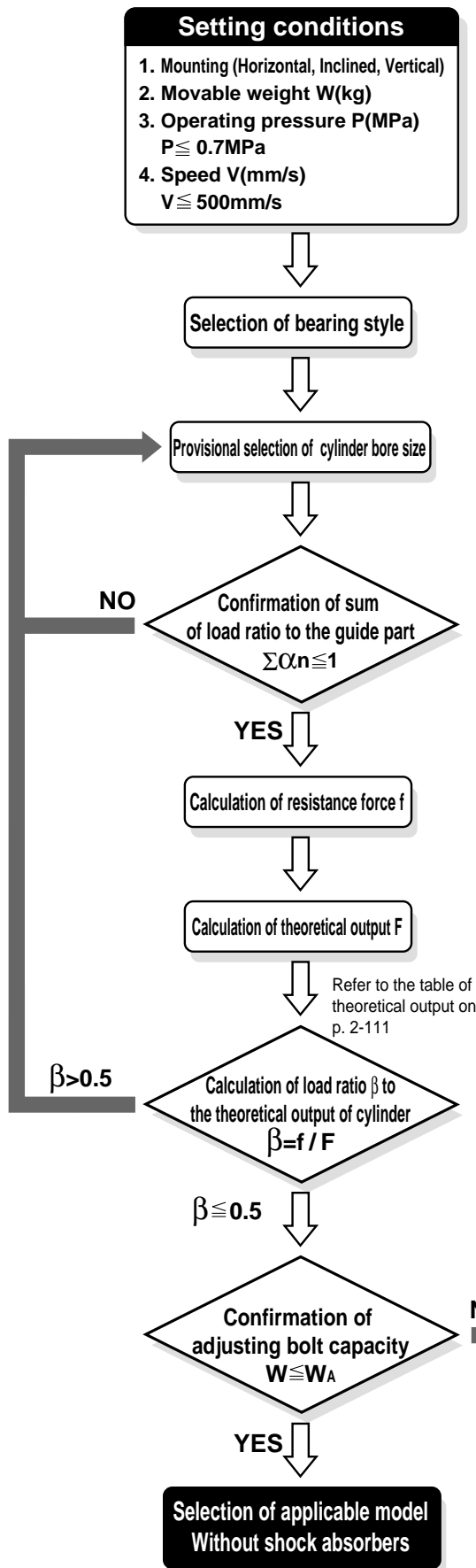
- While a high level of flatness is desired for the surface on which the cylinder is to be mounted, if sufficient flatness cannot be attained, use shims to adjust the installation of the cylinder so that the slide block can operate throughout its stroke under the minimum operating pressure.
- Do not scratch or gouge the piston rod of the actuating cylinder, as this could damage the rod seal and lead to air leaks. The same applies to the guide shaft.
- Make sure not to apply shocks or excessive moment to the slide block of the ball bushing style.
- The port direction of the actuating cylinder can be changed in 90° increments by removing the four bolts that secure the cylinder in place. After changing the direction, verify the operation at the minimum operating pressure.
- Before the installation, thoroughly flush out the piping to prevent dust or cutting chips from entering the cylinder.
- The mounting position of the adjustment bolt and the shock absorber cannot be inverted due to the constraints imposed by the locating pin for the shock absorber that is provided on the slide block. To invert the position, contact SMC.

Handling the shock absorber

- The RB Series (SMC made) shock absorbers can absorb a wide range of energy without requiring adjustment. (No adjustment screw is provided.)
- The screw at the bottom is not for adjustment. Never turn this screw as it could cause an oil leak (lowered performance).
- Do not scratch the surface of the shock absorber rod because doing so could affect the shock absorber's durability or lead to poor retraction.

How To Select Models

Selection Procedures



Setting conditions

1. Mounting (Horizontal, Inclined, Vertical)
2. Movable weight W (kg)
3. Operating pressure P (MPa)
 $P \leq 0.7\text{MPa}$
4. Speed V (mm/s)
 $V \leq 500\text{mm/s}$

Selection of bearing style

Provisional selection of cylinder bore size

Confirmation of sum of load ratio to the guide part
 $\Sigma\alpha_n \leq 1$

Calculation of resistance force f

Calculation of theoretical output F

Refer to the table of theoretical output on p. 2-111

Calculation of load ratio β to the theoretical output of cylinder
 $\beta = f / F$

Confirmation of adjusting bolt capacity
 $W \leq W_A$

Selection of applicable model Without shock absorbers

Guideline for selection of bearing style

Bearing	Required conditions
Slide bearing	<ul style="list-style-type: none"> •Impact load and vibration load are added. •Change in load is large. •Long life span is required.
Ball bushing bearing	<ul style="list-style-type: none"> •High accuracy (Little rattle is allowed.) •Smooth operation

$$\Sigma\alpha_n = \frac{\text{Movable weight}[W]}{\text{Max. movable weight}[W_{\text{max}}]} + \frac{\text{Moment}[mn]}{\text{Allowable moment}[M_n]}$$

Movable weight $[W]$ are as follows in compliance to the mounting way.

Horizontal mounting: W

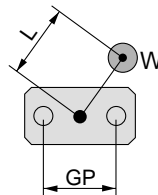
Inclined mounting: $W \cos \theta$ (θ : Angle of inclination, Refer to the diagram below.)

Vertical mounting: 0 (None)

The moment load rate must be calculated in accordance with the above formula for all types, M1 to M3. As for W_{max} and M_n , refer to the maximum load mass and allowable moment table in the next section.

Note) Make sure that the distance between the guide shaft center to the center of gravity of the load does not exceed the distance GP between the guide shafts given in the table below. (Refer to the diagram below.) If the distance must be exceeded due to unavoidable circumstances, decrease the load rate that is applied to the guide as indicated below in order to determine the distance.

$$\Sigma\alpha_n \leq \frac{1}{(L/GP)^2} \quad (\text{provided that } L > GP)$$



	(mm)					
Cylinder bore size	12	16	20	25	32	40
Distance between guide rods GP	50	65	80	90	110	130

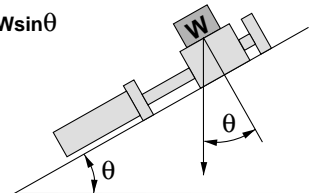
Horizontal mounting: $f = \mu \times W$

Inclined mounting: $f = \mu \times W \cos \theta + W \sin \theta$
(Refer to the diagram on the right.)

Vertical mounting: $f = W$

$\mu = 0.3$ (Slide bearings)

$\mu = 0.1$ (Ball bushing bearings)



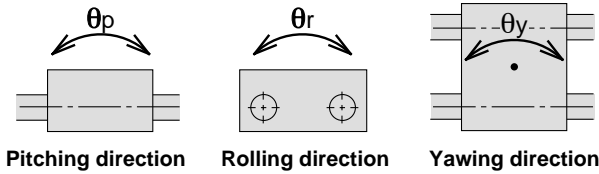
NO

Determine the movable weight W_A which can be operated only by adjusting bolts.

Selection of applicable model With shock absorbers

Series CXT

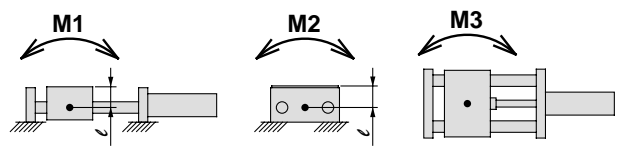
Non-rotating Accuracy of Slide Block



Bore size (mm)	CXTM (Slide bearing)		CXTL (Ball bushing bearing)	
	$\theta_p(=\theta_y)$	θ_r	$\theta_p(=\theta_y)$	θ_r
12	$\pm 0.09^\circ$	$\pm 0.12^\circ$	$\pm 0.05^\circ$	$\pm 0.05^\circ$
16	$\pm 0.08^\circ$	$\pm 0.10^\circ$	$\pm 0.05^\circ$	$\pm 0.04^\circ$
20	$\pm 0.07^\circ$	$\pm 0.08^\circ$	$\pm 0.04^\circ$	$\pm 0.03^\circ$
25	$\pm 0.07^\circ$	$\pm 0.07^\circ$	$\pm 0.04^\circ$	$\pm 0.03^\circ$
32	$\pm 0.08^\circ$	$\pm 0.07^\circ$	$\pm 0.04^\circ$	$\pm 0.03^\circ$
40	$\pm 0.06^\circ$	$\pm 0.06^\circ$	$\pm 0.03^\circ$	$\pm 0.03^\circ$

Table of Maximum Movable Weight and Allowable Moment

Bore size (mm)	Bearing	Max. movable weight W_{max} (kg)	Allowable moment (N-m)	
			M1(=M3)	M2
12	Slide	3	1.25	1.68
	Ball bushing		0.53	0.70
16	Slide	7	3.34	4.25
	Ball bushing		1.53	2.11
20	Slide	12	11.4	17.1
	Ball bushing		5.60	7.28
25	Slide	20	11.4	19.3
	Ball bushing		5.60	8.19
32	Slide	30	19.8	23.3
	Ball bushing		10.1	14.8
40	Slide	50	37.3	46.2
	Ball bushing		21.3	27.5



Note) For the purpose of calculating the moment, the length of the arm is the distance that is measured from the guide shaft center ("*" mark). Dimension ℓ from the guide shaft center to the top surface of the table is indicated below.

	(mm)					
Bore size	12	16	20	25	32	40
ℓ dimension	19.5	24	28	31	39.5	47.5

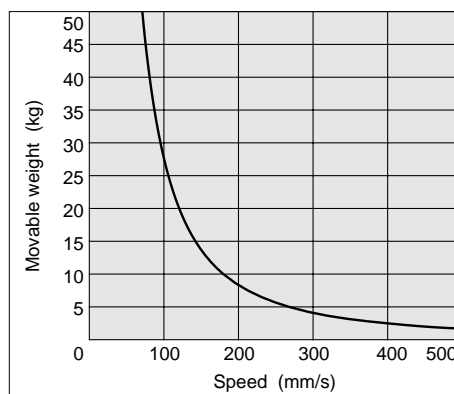
Allowable Load Only by Adjusting Bolts

If only the adjustment bolt is used for stopping the load, make sure that the load weight and the speed will be below the curve in the graph on the right, taking into consideration the durability of the rubber bumper that is attached to the end of the adjustment bolt and the vibration and noise that are created when stopping (provided that the maximum load weight is not exceeded).

In conditions in which the load mass and the speed will be above the curve, use a shock absorber (provided that the maximum load weight is not exceeded).

Caution

In the case of the ball bushing style, the service life could be drastically shortened if shocks or excessive moments are applied. Therefore, even if the conditions given above are not exceeded, the use of a shock absorber is recommended.



Static Movable Weight When Stopped

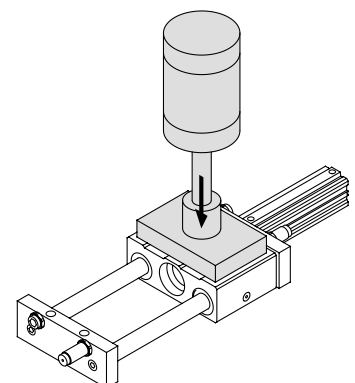
When the CXT Series cylinder is used for moving the workpiece receptacle, such as in a stamping or press-fitting process, a vertical load will be applied to the top surface of the stopped slide block (refer to the diagram on the right). In this case, the allowable weight is greater than the maximum load weight, as given in the table on the right.

Caution

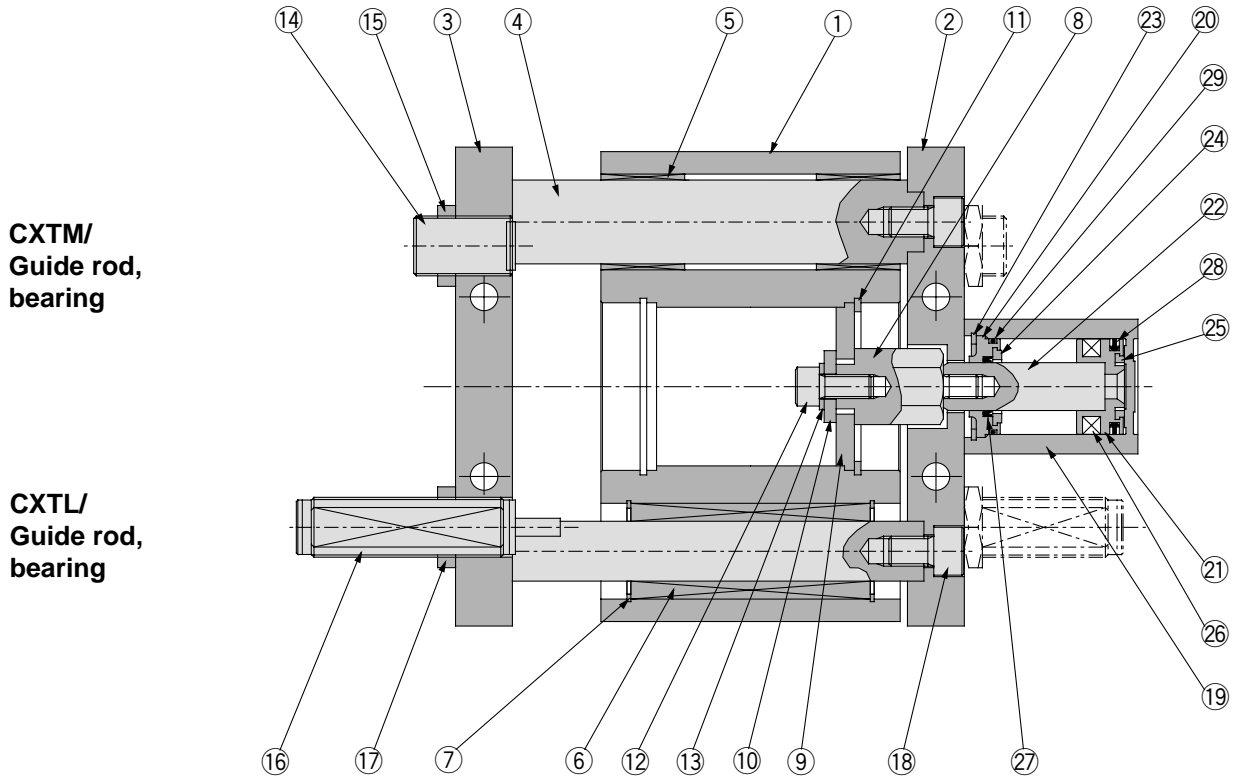
- Make sure that the slide block is stopped at the stroke end.
- Match the center of the weight to be applied with the center of the slide block. The direction of the weight must be vertically downward in relation to the surface on which the workpiece is mounted, as shown in the diagram on the right.
- Do not apply a load that involves shocks such as those caused by pounding (particularly with the ball bushing style).
- If this weight is applied, the deflection of the guide shaft will also have a large value.

Allowable static weight (kg)

Bore size (mm)	CXTM (Slide bearing)	CXTL (Ball bushing bearing)
12	350	60
16	500	70
20	900	125
25	900	125
32	1100	140
40	1900	170



Construction



Component Parts

No.	Description	Material	Notes
①	Slide block	Aluminum alloy	Hard anodized
②	Plate A	Aluminum alloy	Hard anodized
③	Plate B	Aluminum alloy	Hard anodized
④	Guide rod	CXTM Carbon steel CXTL Bearing steel	Hard chrome plated High frequency quenching, Hard chrome plating
⑤	Slide bearing	Bearing alloy, Carbon steel	
⑥	Ball bushing bearing	—	
⑦	C set ring	Carbon tool steel	Nickel plated
⑧	Adapter	Carbon steel	Nickel plated
⑨	Connected disk	Carbon steel	Nickel plated
⑩	Flat seat metal	Carbon steel	Zinc chromated
⑪	C type set ring	Carbon tool steel	Nickel plated
⑫	Hex. socket head cap bolt	Chrome molybdenum steel	Nickel plated
⑬	Spring seat metal	Steel wire	Nickel plated
⑭	Adjusting bolt (With damper)	Carbon steel, Elastomer	Nickel plated
⑮	Nut	Carbon steel	Nickel plated

Component Parts

No.	Description	Material	Notes
⑯	Shock absorber	—	Option
⑰	Nut	Carbon steel	Shock absorber accessory
⑱	Hex. socket head cap bolt	Chrome molybdenum steel	Nickel plated
⑲	Cylinder tub	Aluminum alloy	Hard anodized
⑳	Collar	Aluminum alloy	White anodized
㉑	Piston	Aluminum alloy	Chromate
㉒	Piston rod	Stainless steel Carbon steel	— Hard chrome plating
㉓	C set ring	Carbon tool steel	Phosphate zinc coating
㉔	Bumper A	Poly-urethane	
㉕	Bumper B	Poly-urethane	
㉖	Magnet	—	
㉗	Rod seal	NBR	
㉘	Piston seal	NBR	
㉙	Tube gasket	NBR	

Replacement Parts: Seal Kits (A rod seal ㉗, a piston seal ㉘ and a tube gasket ㉙ are included in the seal kits. Order the seal kits with ordering numbers.)

Model Cylinder	Kit No.					
	CXT□12	CXT□16	CXT□20	CXT□25	CXT□32	CXT□40
Stroke	CDQSB12	CDQSB16	CDQSB20	CDQSB25	CDQ2A32	CDQ2A40
Standard stroke	CQSB12-PS	CQSB16-PS	CQSB20-PS	CQSB25-PS	CQ2B32-PS	CQ2B40-PS
Long stroke ⁽¹⁾	CQSB12-L-PS	CQSB16-L-PS	CQSB20-L-PS	CQSB25-L-PS	CQ2A32-L-PS	CQ2A40-L-PS

Note 1) The same type of the part is equipped to the head side for the long stroke style.

Series CXT

Dimensions $\varnothing 12$ to $\varnothing 25$

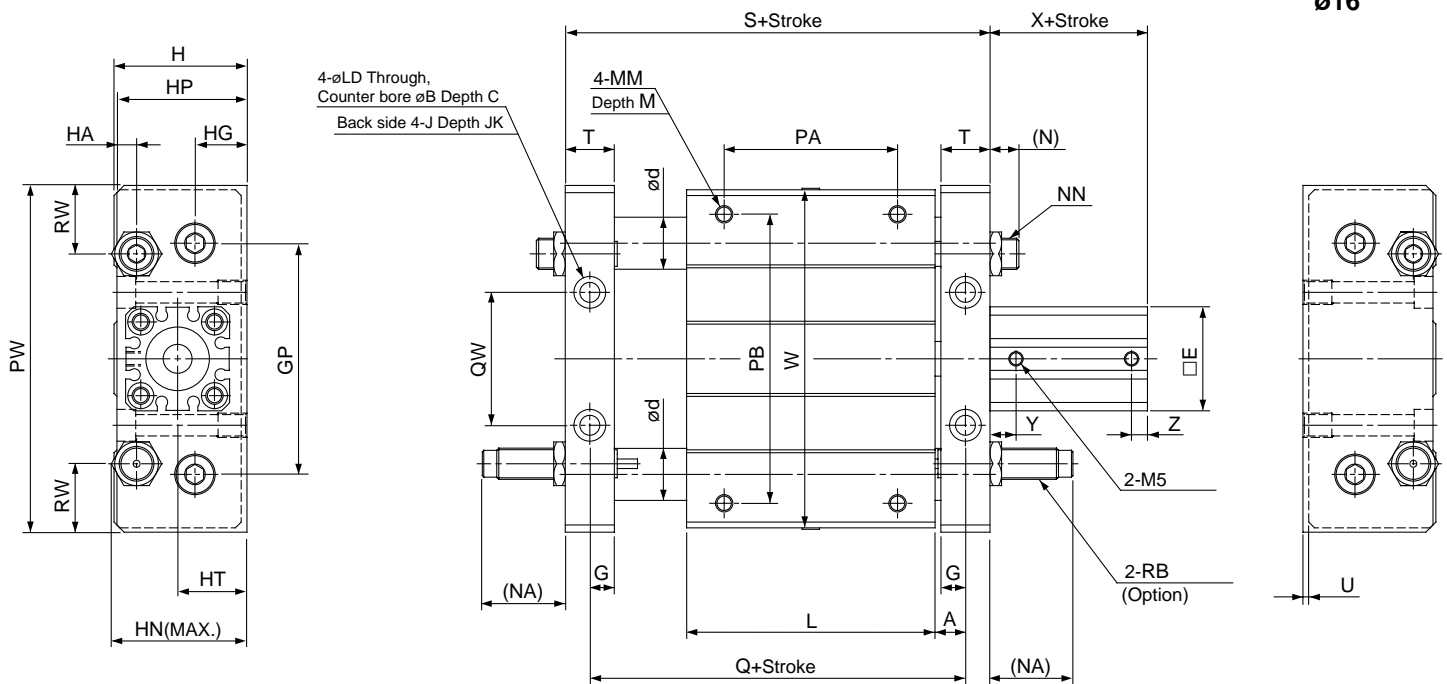
Cylinder form



$\varnothing 12$



$\varnothing 16$



(mm)

Bore size (mm)	Standard stroke (mm)	A	B	C	d		E	G	GP	H	HA	HG	HN	HP	HT	J	JK	L	LD
					Slide	Ball bushing													
12	15, 25	8.5	8	4	16	10	25	7.5	50	34	6	14.5	34	33	18	M5	9.5	68	4.3
16	15, 25	7.5	9.5	5	18	12	29	6.5	65	40	6.5	16	39.5	39	21	M6	9.5	75	5.2
20	25, 50	9.5	11	6.5	25	16	36	8.5	80	46	9	18	44.1	45	24	M8	10	86	6.9
25	25, 50	9.5	11	6.5	25	16	40	8.5	90	54	9	23	55	53	28	M8	10	86	6.9

Bore size (mm)	MM	M	(N)	(NA)	NN	PA*	PB	PW	Q	QW	RB	RW	S	T	U	W	X	Y	Z
12	M4	6	8	27	M8 X 1.0	30	60	80	85	26	RB0806	17.5	96	13	1	77	22	7.5	5
16	M5	8	8	27	M8 X 1.0	45	70	95	90	40	RB0806	15	103	13	2	92	22	7.5	5
20	M6	10	10	29	M10 X 1.0	60	100	120	105	46	RB1007	26	122	17	2	117	29.5	9	5.5
25	M6	10	12	50	M14 X 1.5	60	100	130	105	50	RB1411	22	122	17	2	127	32.5	11	5.5

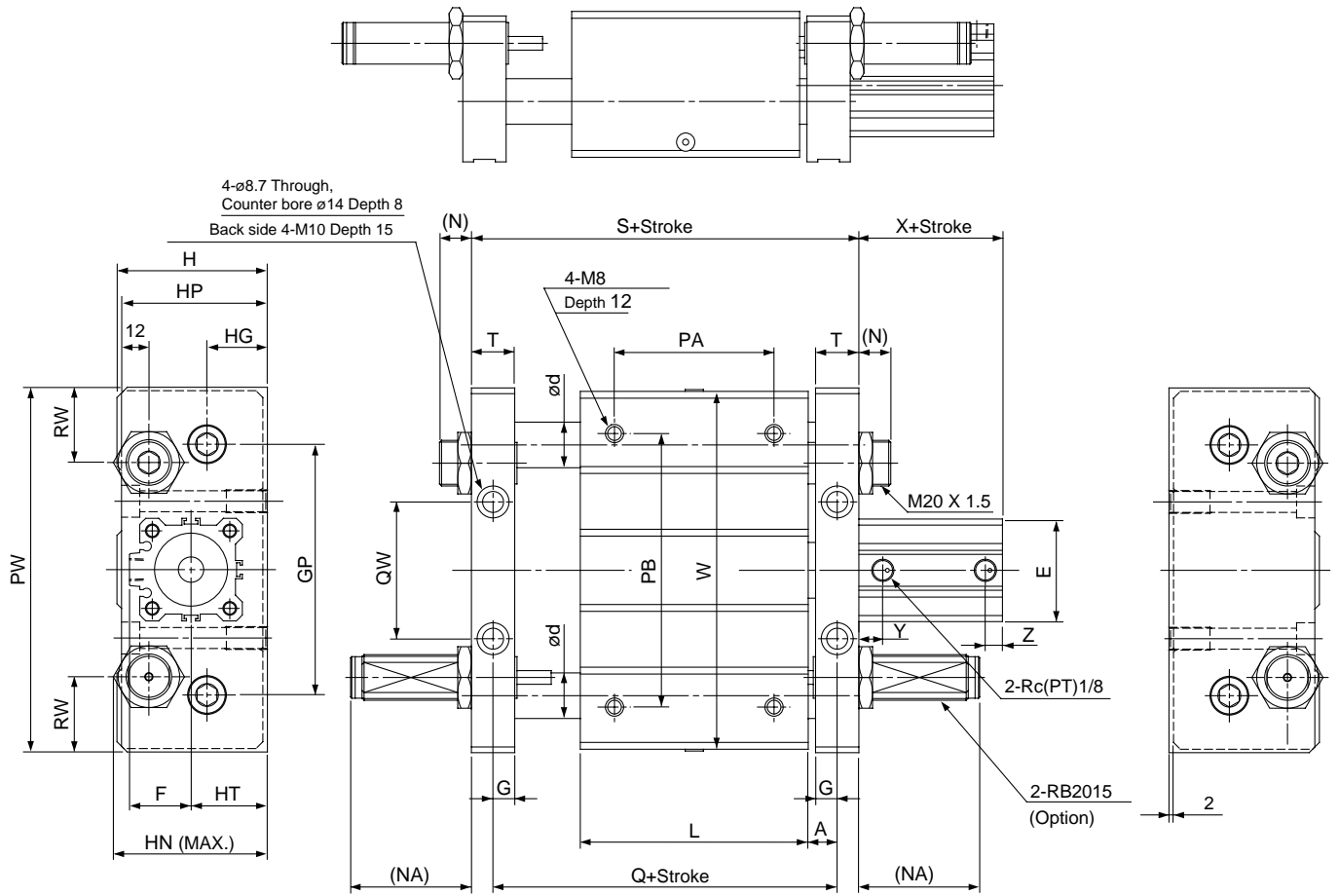
* PA dimension is the center sorted factor of the L dimension.

Long stroke

(mm)

Bore size (mm)	Stroke range (mm)	X	Y	Z
12	50, 75, 100	32	7.5	7.5
16	50, 75, 100	32	7.5	7.5
20	75, 100, 125, 150, 175, 200	41	9	9
25	75, 100, 125, 150, 175, 200, 250, 300	44	11	11

ø32, ø40



(mm)

Bore (mm)	Standard stroke (mm)	A	d		E	F	G	GP	H	HG	HN	HP	HT	L	(N)	(NA)	PA*	PB	PW	Q
			Slide	Ball bushing																
32	25, 50, 75, 100	10.5	28	20	45	27	9.5	110	66	26.5	67.6	64	33.5	100	14	53	70	120	160	121
40	25, 50, 75, 00	11.5	36	25	52	31	10.5	130	78	30.5	77.6	74	40.5	136	12	51	90	140	190	159

Bore (mm)	QW	RW	S	T	W	X	Y	Z
32	60	33	140	19	157	33	10.5	7.5
40	84	35	180	21	187	39.5	11	8

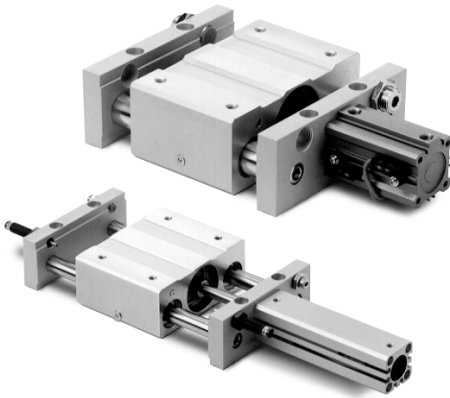
* PA dimension is the center sorted factor of the L dimension.

Long stroke (mm)

Bore (mm)	Stroke range (mm)	X	Y	Z
32	125, 150, 175, 200, 250, 300	45.5	12.5	12.5
40	125, 150, 175, 200, 250, 300	55	14	14

Series CXT Auto Switch Specifications

Refer to p.6-15 for details on auto switch.



Common Specifications

Style	Reed switch	Solid state switch
Current leakage	None	3 wire style: 100 mA or less 2 wire style: 1mA or less
Operating time	1.2ms	1 ms or less ⁽²⁾
Shock resistance	300m/s ²	1000m/s ²
Insulation resistance	50M Ω or more at 500V DC (Electrical wire, Between bowls)	
Voltage resistance	1 minute at 1500V AC ⁽¹⁾ (Electrical wire, Between bowls)	1 minute at 1000V AC (Electrical wire, Between bowls)
Ambient temperature	-10 to 60°C	
Enclosure	IP67 according to IEC529 standard, C 0920 osmosis proof construction according to JIS standard	



Note 1) Electrical entry for the connector style and model D-A9 \square (V): 1 minute at 1000V AC
(Between electrical wire and case)

Note 2) Except for the solid state switch with a timer (D-F7NT)

Electrical Wire Specifications

Auto switch model		Wire specification
Reed switch	Solid state switch	
D-A90(V) D-A93(V)	D-M9B(V) D-M9BW(V) D-M9BAL	Oil proof vinyl cab tire cord ϕ 2.7 0.18mm ² X 2 cores (brown, blue)
D-A96(V)	D-M9N(V) D-M9P(V) D-M9NW(V) D-M9PW(V)	Oil proof vinyl cab tire cord ϕ 2.7 0.15mm ² X 3 cores (brown, black, blue)
D-A72(H) D-A73(H)(C) D-A76H D-A80(H)(C) D-A79W	D-J79(C)(W) D-F7BV D-F7BWV D-F7BAL	Oil proof vinyl cab tire cord ϕ 3.4 0.2mm ² X 2 cores (brown, blue)
—	D-F79(W) D-F7P(V)(W) D-F7NV D-F7NWV D-F7NTL	Oil proof vinyl cab tire cord ϕ 3.4 0.2mm ² X 3 cores (brown, black, blue)
—	D-F7LF D-F79F	Oil proof vinyl cab tire cord ϕ 3.4 0.2mm ² X 4 cores (brown, black, blue, orange)

Minimum Strokes for Auto Switch Mounting

Applicable model	Auto switch model Number of mountings	(mm)						
		D-A9 \square	D-A9 \square V	D-M9N	D-M9B D-M9P D-M9 \square W	D-M9 \square V	D-M9 \square WV	D-M9BAL
CXT \square 12 to CXT \square 25	2 pcs.	10	10	15	20	5	10	25
	1 pc.	10	5	15	20	5	10	25
CXT \square 32 40	2 pcs.	10	10	10	15	5	15	20
	1 pc.	10	5	10	15	5	10	20

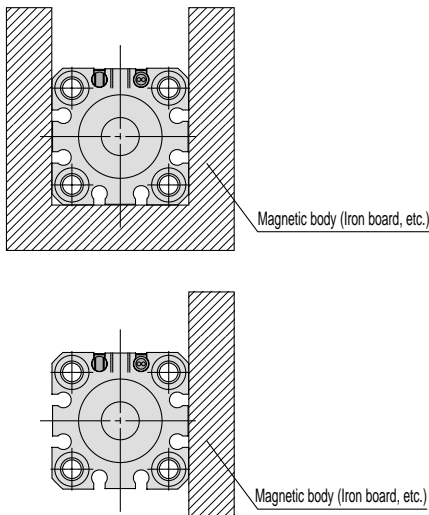
Applicable model	Auto switch model Number of mountings	(mm)						
		D-F7 \square V D-J79C	D-A7 \square D-A8 \square D-A73C D-A80C	D-F7 \square WV	D-A7 \square H D-A80H D-F7 \square D-J79	D-A79W	D-F7 \square W D-J79W D-M9BAL D-F7NT D-F79F	D-F7LF
CXT \square 32 40	2 pcs.	5	10	15	15	20	20	25
	1 pc.	5	5	10	15	15	20	25



Precautions on Handling Auto Switches

Installation

- ① When handling the product, do not drop an object on it, gouge it, or apply an excessive impact on it.
- ② Do not operate it in an area in which a large amount of magnetism is present.
- ③ If the cylinder is operated in an area in which magnetic objects are placed in proximity to the actuating cylinder, the operation of auto switches could become unstable. If this is the case, contact SMC.



- ④ Avoid wire routing that applies repetitive bending stress or tensile force to the lead wires.
- ⑤ To operate the product in an area in which a large amount of water, oil, or cleaning fluid is present in the atmosphere, contact SMC.
- ⑥ When tightening the auto switch retaining screw, for the D-A9□(V) or D-M9□□(V), use a watchmaker's screwdriver with a grip diameter of 5 to 6mm. The tightening torque is approximately 0.1 to 0.2Nm.
- ⑦ It might not be possible to install the D-A9□(V) or D-M9□□(V) auto switches on the cylinders with a bore size of $\phi 20$ and $\phi 25$, due to their stroke or the size of their pipe fittings. If this is the case, contact SMC.
- ⑧ For detailed specifications of the auto switches, refer to the pages on auto switches in SMC's Best Pneumatics No. 2 catalog.

Cylinder piston speed

In an application in which an auto switch is placed in the middle of a stroke to actuate a load as the piston passes, be aware that if the piston speed is too fast, even though the auto switch will activate, the length of time during which the switch is activated will be short, without being able to properly actuate the load.

Reed switches

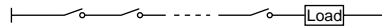
Contact capacity

Never operate a load that exceeds the maximum contact capacity of the auto switch. To operate a relay as a load, use the relay shown in the table below or the equivalent, in order to extend the life of the switch.

Fuji Electric	MRON	Matsushita
HH5	MY	HC
Tokyo Electric	Izumi Electric	Mitsubishi Electric
MPM	RM	RD

Wiring: amperage and voltage

- ① Make sure to connect the load before connecting the auto switch to the power supply.
- ② If switches with an indicator light such as D-A93(V) or D-A73(H, C) are used under a DC load, their polarities must be observed. The brown lead wire is positive (+) and the blue lead wire is negative (-). The switches will operate even if the wires are reversed, but their LEDs will not illuminate. Be aware that if an amperage that is greater than the rated amperage is applied, the LED will become damaged and will not operate.
- ③ Using switches with an indicator light (except DA96, A96V, and A76H)
 - If the switch is operated below the rated amperage, its switch function will operate without a problem, even if its LED becomes dim or does not illuminate at all.
 - If the switches are connected in series as shown in the diagram below, be aware that the internal voltage drop of the LEDs will be significant (up to 2.4V or 2.6V per switch).



- If a switch is operated below the rated voltage, even if the switch operation is normal, the load might not operate due to the problem of the switch's internal voltage drop. Therefore, make sure to verify the load's allowable voltage range before operating the switch.

- ④ If the internal voltage drop of an LED poses a problem, use a switch without an indicator light.

Solid state switches

- ① Never operate a load that exceeds the maximum contact capacity of the auto switch.
- ② Make sure to connect the load before connecting the auto switch to the power supply.
- ③ Make sure to wire it correctly because improper wiring could also cause damage to the load.
- ④ A 2 wire auto switch has an internal voltage drop of 5V or less and leak amperage of 1mA or less. Therefore, it will satisfy the input specifications of most PLCs. However, if there is any problem, use a 3 wire DC style.

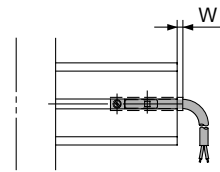
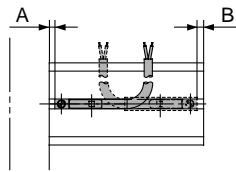
Series CXT

Auto Switch Mounting Position and Mounting Height

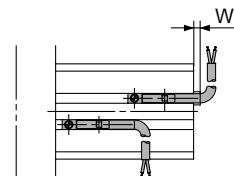
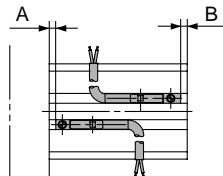
Reed switch
D-A90
D-A93
D-A96

Solid state switch
D-M9N D-M9NW
D-M9P D-M9PW
D-M9B D-M9BW
D-M9BAL

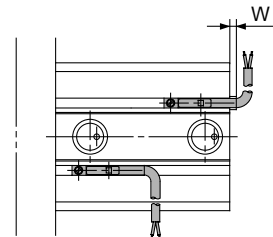
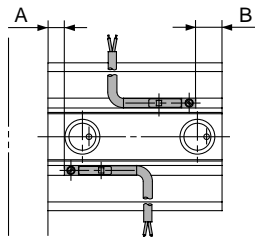
ø12



ø16, 20, 25



ø32, 40



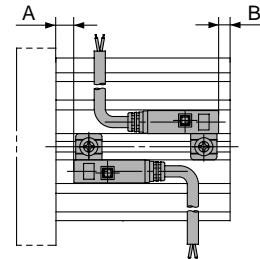
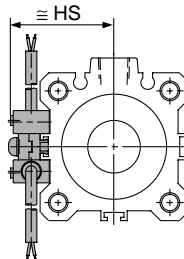
(mm)

Auto switch model	D-A90 D-A93 D-A96			D-M9N D-M9NW D-M9P D-M9PW D-M9B D-M9BW			D-M9BAL			
	A	B	W	A	B	W	A	B	W	
Standard stroke										
Bore size (mm)	12	1.5	0	1.5(4)	5.5	4.5	5.5	4.5	3.5	14.5
	16	2	0	2(4.5)	6	4	6	5	3	15
	20	6	3.5	-1.5(1)	10	7.5	2.5	9	6.5	11.5
	25	7	5.5	-3.5(-1)	11	9.5	0.5	10	8.5	9.5
	32	8	5	-3(-0.5)	12	9	1	11	8	10
40	12	7.5	-5.5(-3)	16	11.5	-1.5	15	10.5	7.5	
Long stroke										
Bore size (mm)	12	5	7	-5(-2.5)	9	11	-1	8	10	8
	16	5.5	6	-4.5(-2)	9.5	10.5	-0.5	8.5	9.5	8.5
	20	9	11.5	-10(-7.5)	13	16	-6	12	15	3.5
	25	10	13.5	-12(-9.5)	14	18	-8	13	17	1
	32	8.5	16.5	-14.5(-12)	12.5	20.5	-10.5	11.5	19.5	-1.5
40	12	22.5	-20.5(-18)	16	26.5	-16.5	15	25.5	-7.5	

Reed switch
D-A72H
D-A73H
D-A76H
D-A80H

Solid state switch
D-F79 D-J79W
D-F7P D-F7BAL
D-J79 D-F79F
D-F79W D-F7LF
D-F7PW D-F7NTL

ø32, 40



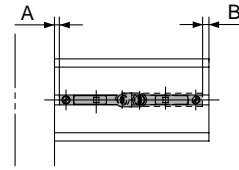
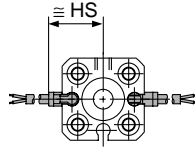
(mm)

Auto switch model	D-A72H D-A80H D-A73H D-A76H			D-F79 D-F7P D-J79			D-F79W D-F7BAL D-F7PW D-F79F D-J79W D-F7LF			D-F7NTL			
	A	B	Hs	A	B	Hs	A	B	Hs	A	B	Hs	
Standard stroke													
Bore size (mm)	32	9.5	6.5	32.5	9.5	6.5	32.5	13.5	10.5	32.5	14.5	10.5	32.5
	40	13.5	9	36	13.5	9	36	17.5	13	36	18.5	13	36
Long stroke													
Bore size (mm)	32	10	18	32.5	10	18	32.5	14	22	32.5	15	23	32.5
	40	13.5	24	36	13.5	24	36	17.5	28	36	18.5	29	36

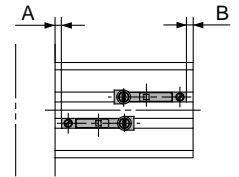
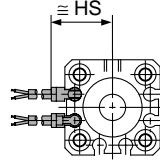
Reed switch
D-A90V
D-A93V
D-A96V

Solid state switch
D-M9NV D-M9NWV
D-M9PV D-M9PWV
D-M9BV D-M9BWV

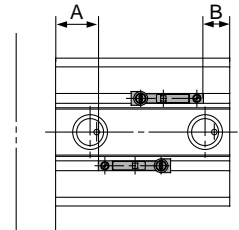
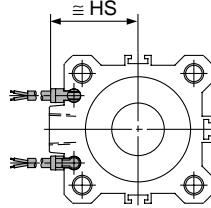
ø12



ø16, 20, 25



ø32, 40



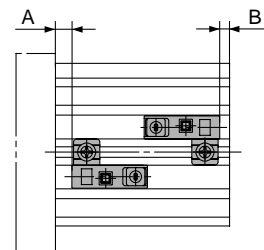
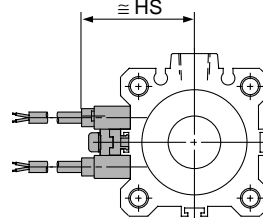
(mm)

Auto switch model	D-A90V D-A93V D-A96V			D-M9NV, M9NWV D-M9PV, M9PWV D-M9BV, M9BWV			
	Symbol	A	B	Hs	A	B	Hs
Standard stroke							
Bore size (mm)	12	1.5	0	17	5.5	4.5	19
	16	2	0	19	6	4	21
	20	6	3.5	22.5	10	7.5	24
	25	7	5.5	24.5	11	9.5	26
	32	8	5	27	12	9	29
40	12	7.5	30.5	16	11.5	32.5	
Long stroke							
Bore size (mm)	12	5	7	17	9	11	19
	16	5.5	6	19	9.5	10.5	21
	20	9	11.5	22.5	13	16	24
	25	10	13.5	24.5	14	18	26
	32	8.5	16.5	27	12.5	20.5	29
40	12	22.5	30.5	16	26.5	32.5	

Reed switch
D-A72
D-A73
D-A80
D-A73C
D-A80C
D-A79W

Solid state switch
D-F7NV D-F7NWV
D-F7PV D-F7BWV
D-F7BV
D-J79C

ø32, 40



(mm)

Auto switch model	D-A72 D-A73 D-A80			D-A73C D-A80C			D-A79W			D-F7NV D-F7PV D-F7BV			D-J79C			D-F7NWV D-F7BWV			
	Symbol	A	B	Hs	A	B	Hs	A	B	Hs	A	B	Hs	A	B	Hs	A	B	Hs
Standard stroke																			
Bore size (mm)	32	9	6	31.5	9.5	6.5	38.5	6.5	3.5	34	9.5	6.5	35	9.5	6.5	38	10	7	38.5
	40	13	8.5	35	13.5	9	42	10.5	6	37.5	13.5	9	38.5	13.5	9	41.5	14	9.5	42
Long stroke																			
Bore size (mm)	32	9.5	17.5	31.5	10	18	38.5	7	15	34	10	18	35	10	18	38	10.5	18.5	38.5
	40	13	23.5	35	13.5	24	42	10.5	21	37.5	13.5	24	38.5	13.5	24	41.5	14	24.5	42

