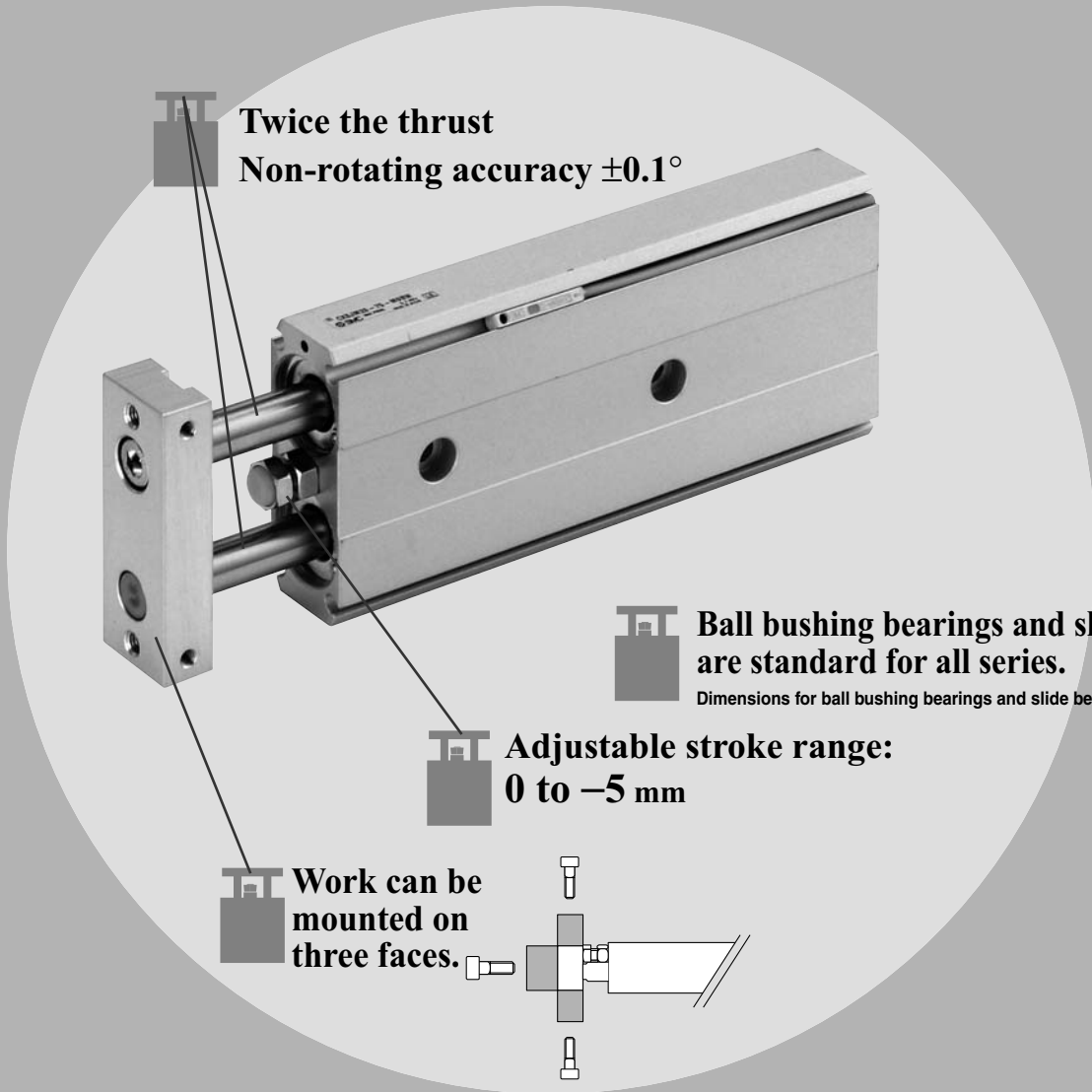


# Dual Rod Cylinder

## Series *CXSJ/CXS*

ø6, ø10, ø15, ø20, ø25, ø32

Dual rod cylinder with guide function suitable for pick & place applications.



### Series Variations

Series	Bore size (mm)						Axial foot piping	Clean Series			Page
	6	10	15	20	25	32		10-	11-	12-	
Compact type	●	●	●	●	●	●	● (ø6, ø10 only)	●	● (Ball bushing bearing only)	●	P.549
Basic type	●	●	●	●	●	●	● (ø6 only)	●	● (Ball bushing bearing only)	●	P.561
With air cushion	●	●	●	●	●	●					P.571
With end lock	●	●	●	●	●	●					P.578
Double rod type	●	●	●	●	●	●					P.585

CX2

CXW

CXT

CXSJ

CXS

D-□

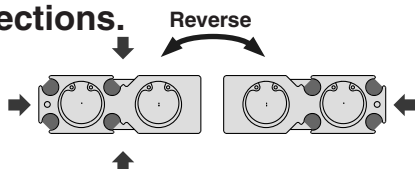
-X□

Individual  
-X□

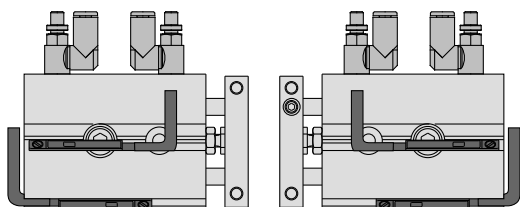
# Compact Type

## Series CXSJ

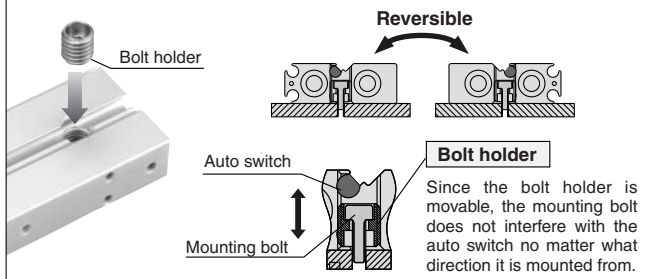
- Auto switch can be installed from 3 directions.



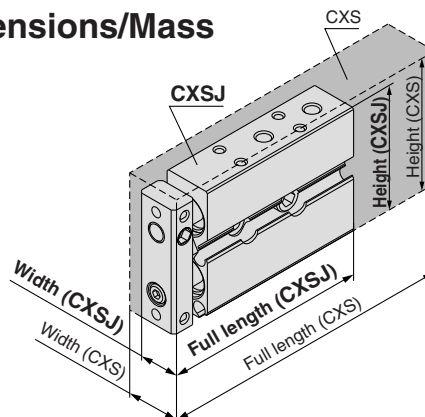
- Symmetric mounting



### Reverse mounting mechanism



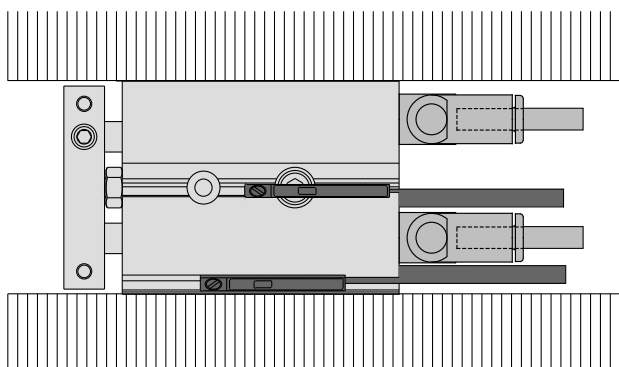
- Dimensions/Mass



Bore size (mm)	Series	Dimensions (mm)			Mass (kg)
		Height	Width	Full length	
ø6	CXSJ□6	13.4	32	42 + Stroke	0.057
	CXS□6	16	37	58.5 + Stroke	0.095
ø10	CXSJ□10	15	42	56 + Stroke	0.114
	CXS□10	17	46	72 + Stroke	0.170
ø15	CXSJ□15	19	54	70 + Stroke	0.219
	CXS□15	20	58	79 + Stroke	0.280
ø20	CXSJ□20	24	62	84 + Stroke	0.371
	CXS□20	25	64	94 + Stroke	0.440
ø25	CXSJ□25	29	73	87 + Stroke	0.544
	CXS□25	30	80	96 + Stroke	0.660
ø32	CXSJ□32	37	94	100.5 + Stroke	1.078
	CXS□32	38	98	112 + Stroke	1.230

Note) Slide bearing, 20 mm strokes

- Axial piping available (ø6, ø10)

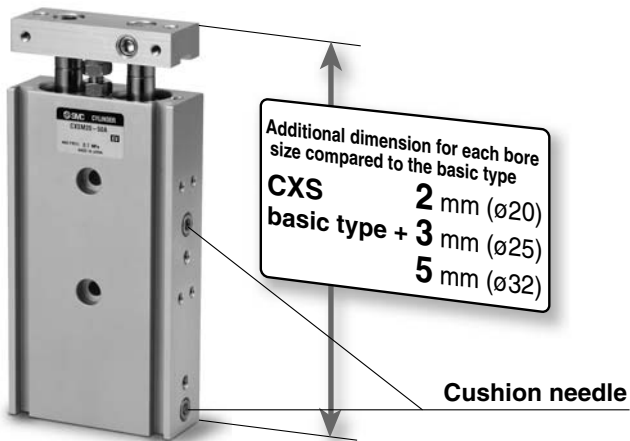


- Allowable kinetic energy, allowable load, and non-rotating accuracy are equivalent to those of CXS basic type.

# With air cushion

Series CXS:  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$

**Air cushion only minimally adds to full length dimension, compared with the standard type cylinder.**

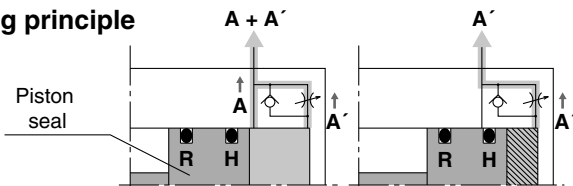


- 1 Improved allowable kinetic energy:  
**Two to three times that of the standard type**
- 2 Improved noise reduction:  
**Reduction of more than 6 dB is possible**

## Unique air cushion mechanism with no cushion ring

Elimination of the cushion ring used in conventional type air cushions has made it possible to reduce the overall length of the cylinder while retaining all the advantages of a compact profile.

### Working principle



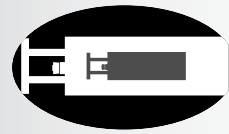
1. When the piston is retracting, air is exhausted through both A and A' until piston seal H passes air passage A.
2. After piston seal H has passed air passage A, air is exhausted only through A'. The section marked with slanted lines becomes a cushion chamber, and an air cushion effect is achieved.
3. When air is supplied for the piston extension, the check seal opens and the piston extends with no delay.



## Clean Series

11- CXSJ Series/ $\varnothing 6$ ,  $\varnothing 10$   
12-

Series	Type	Bearing type
11-CXSJ	Vacuum specifications	Slide bearing Ball bushing bearing
12-CXSJ	Relieving type Special treatment	Ball bushing bearing



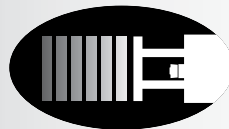
**Compact type**

Series CXSJ  
 $\varnothing 6$ ,  $\varnothing 10$ ,  $\varnothing 15$ ,  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



**Basic type**

Series CXS  
 $\varnothing 6$ ,  $\varnothing 10$ ,  $\varnothing 15$ ,  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



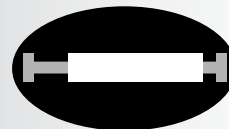
**With air cushion**

Series CXS  
 $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



**With end lock**

Series CXS  
 $\varnothing 6$ ,  $\varnothing 10$ ,  $\varnothing 15$ ,  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



**Double rod type**

Series CXSW  
 $\varnothing 6$ ,  $\varnothing 10$ ,  $\varnothing 15$ ,  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



CX2

CXW

CXT

CXSJ

CXS

D-□

-X□

Individual  
-X□

# Series CXSJ

## Model Selection

**⚠ Caution** Theoretical output must be confirmed separately, referring to the table on page 550.

### Model Selection

#### Vertical Mounting

Mounting orientation					
	Up to 200		Up to 400		
Max. speed (mm/s)	Up to 200		Up to 400		
Stroke (mm)	All strokes				
Selection graph	ø6	1	2	3	4
	ø10				
	ø15				
	ø20				
	ø25				
	ø32				

#### Horizontal Mounting

Mounting orientation											
	* Refer to the caution notes below.										
Stroke (mm)	Up to 10		Up to 30		Up to 50		Up to 75		Up to 100		
Max. speed (mm/s)	Up to 400	Over 400	Up to 400	Over 400	Up to 400	Over 400	Up to 400	Over 400	Up to 400	Over 400	
Selection graph	ø6	5		6		7		14		15	
	ø10										
	ø15										
	ø20	8	9	10	11	12	13				
	ø25										
	ø32										

\* The maximum speeds for ø6 to ø32 are: ø6, 10: up to 800 mm/s; ø15, 20: up to 700 mm/s; ø25, 32: up to 600 mm/s

### ⚠ Caution

If the cylinder is horizontally mounted and the plate end does not reach the load's center of gravity, use the formula below to calculate the imaginary stroke  $\ell'$  that includes the distance between the load's center of gravity and the plate end. Select the graph that corresponds to the imaginary stroke  $\ell'$ .

$$\text{Imaginary stroke } \ell' = (\text{Stroke}) + k + \ell$$

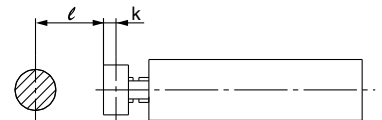
k: Distance between the center and end of the plate

ø6	2.75 mm
ø10	4 mm
ø15	5 mm
ø20	6 mm
ø25	
ø32	8 mm

(Example)

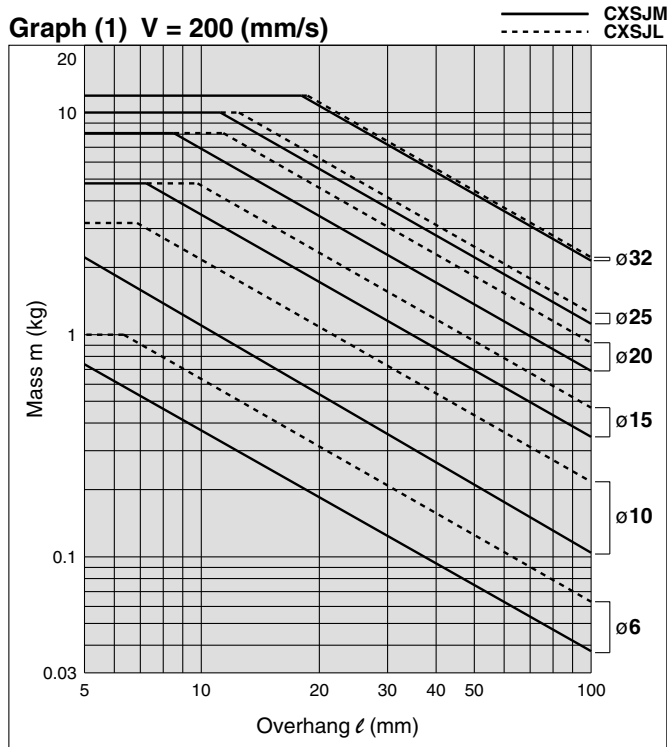
① When using CXSJM6-10 and  $\ell = 15$  mm:  
Imaginary stroke  $\ell' = 10 + 2.75 + 15 = 27.75$   
Therefore, the graph used for your model selection should be the one for CXSJM6-30 [6].

② When using CXSJL25-50 and  $\ell = 10$  mm:  
Imaginary stroke  $\ell' = 50 + 6 + 15 = 71$   
Therefore, the graph used for your model selection should be the one for CXSJL25-75 [14].

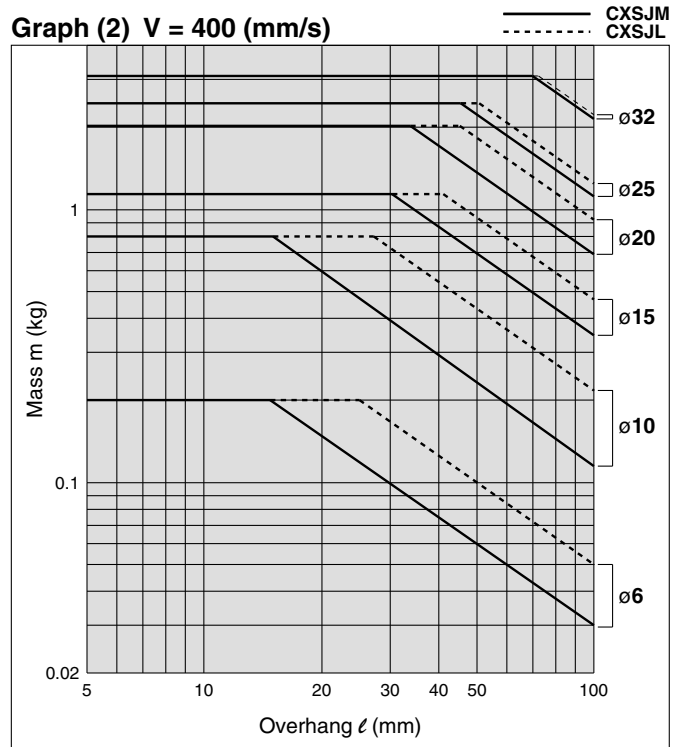


**Vertical Mounting**

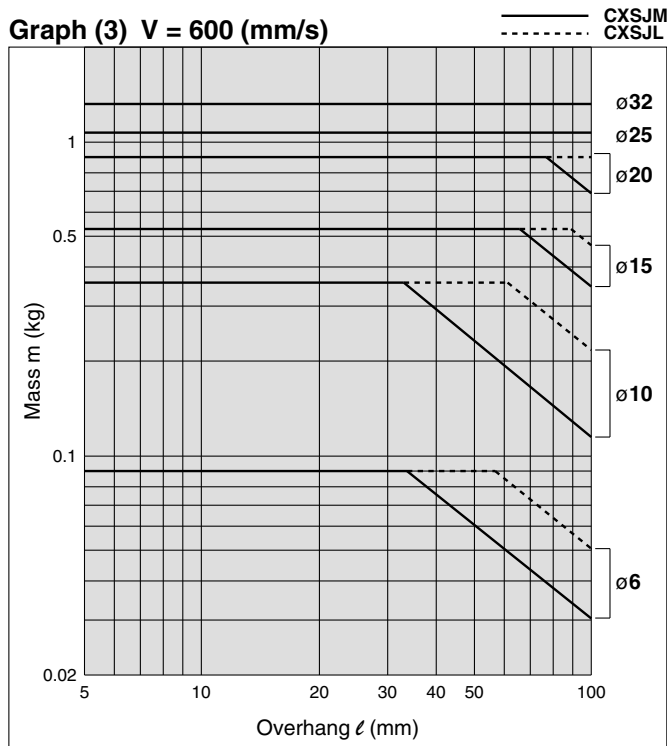
**Graph (1) V = 200 (mm/s)**



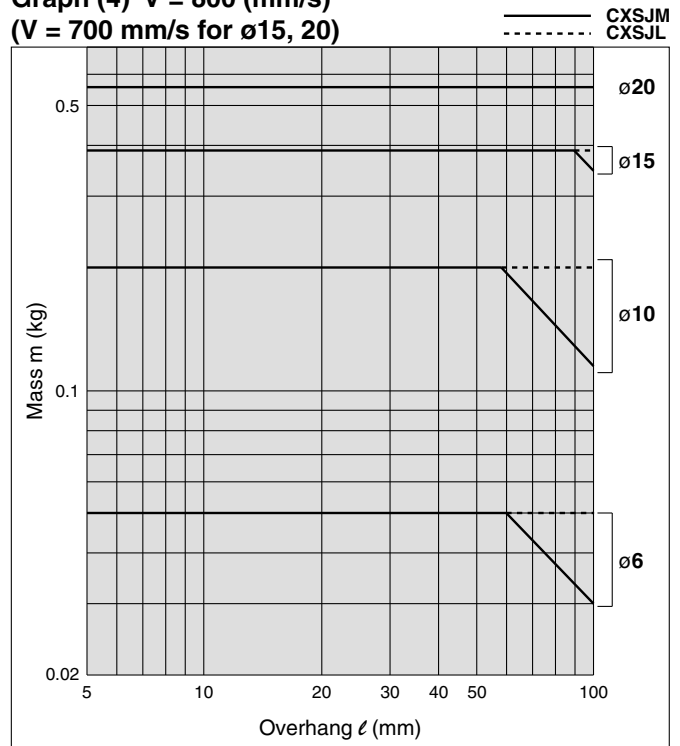
**Graph (2) V = 400 (mm/s)**



**Graph (3) V = 600 (mm/s)**



**Graph (4) V = 800 (mm/s)  
(V = 700 mm/s for ø15, 20)**



Note) V = 700 mm/s for ø15, ø20.

**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

**-X□**

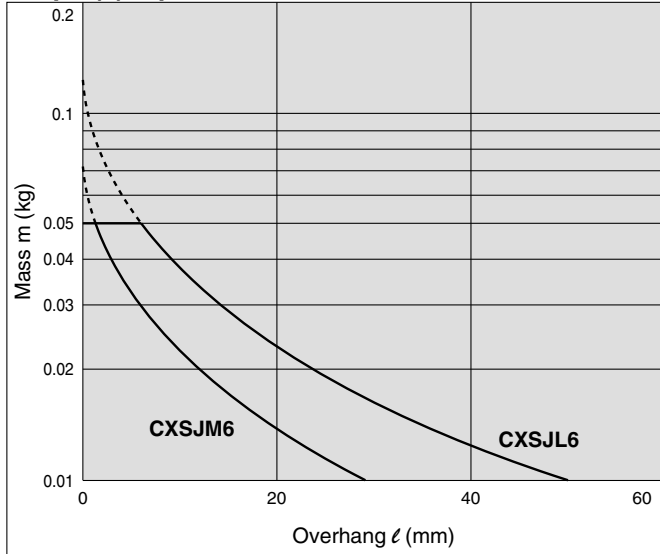
Individual

**-X□**

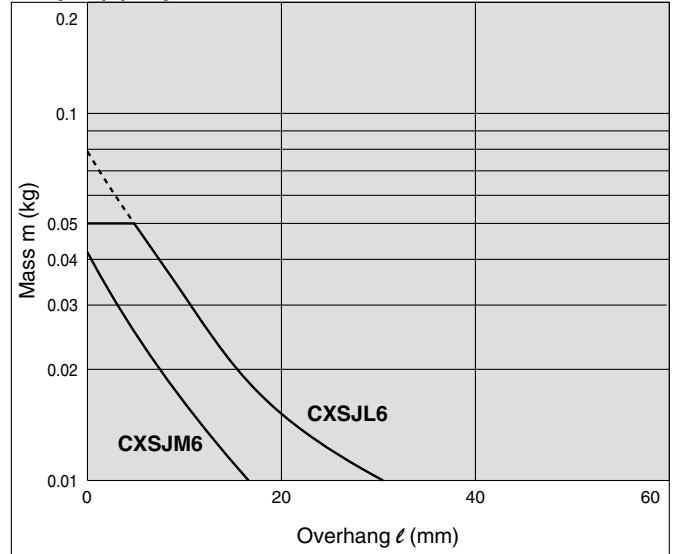
# Series CXSJ

## Horizontal Mounting

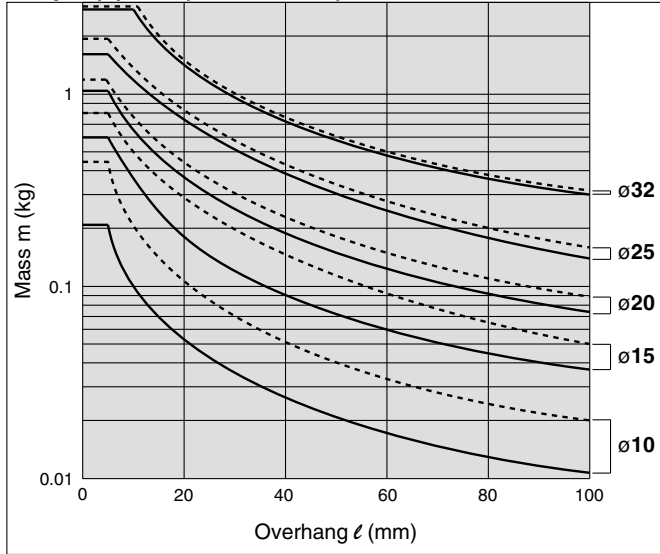
**Graph (5) Up to 10 mm stroke** ----- V = Up to 400 mm/s  
———— V = Up to 800 mm/s



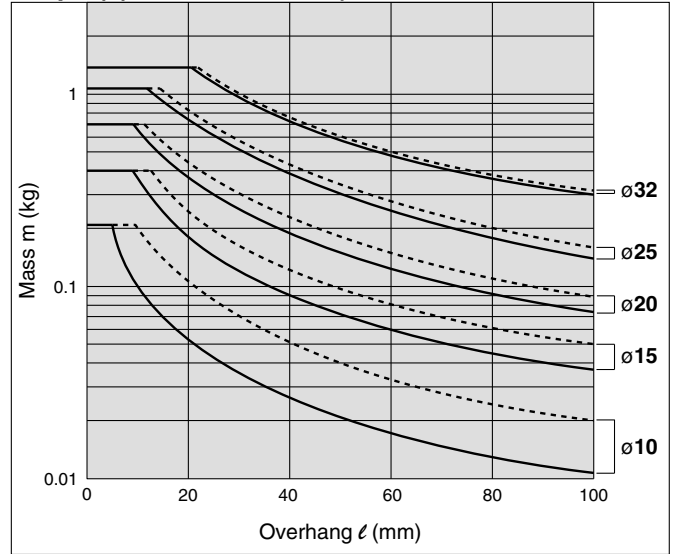
**Graph (6) Up to 30 mm stroke** ----- V = Up to 400 mm/s  
———— V = Up to 800 mm/s



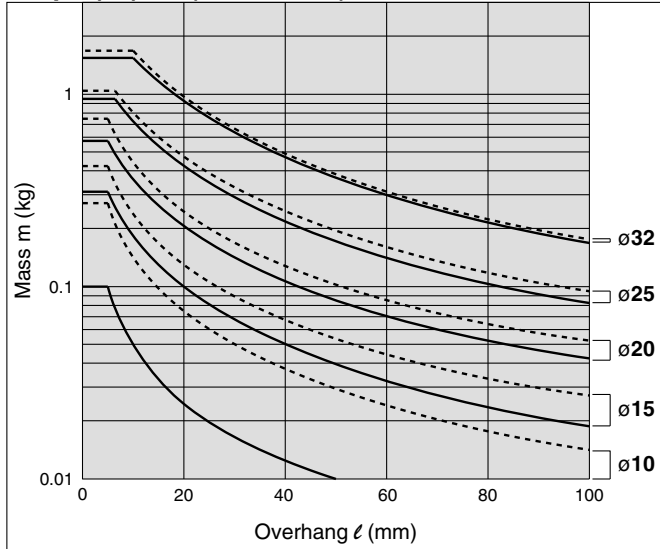
**Graph (8) V = Up to 400 mm/s; Up to 10 mm stroke** ———— CXSJM  
----- CXSJL



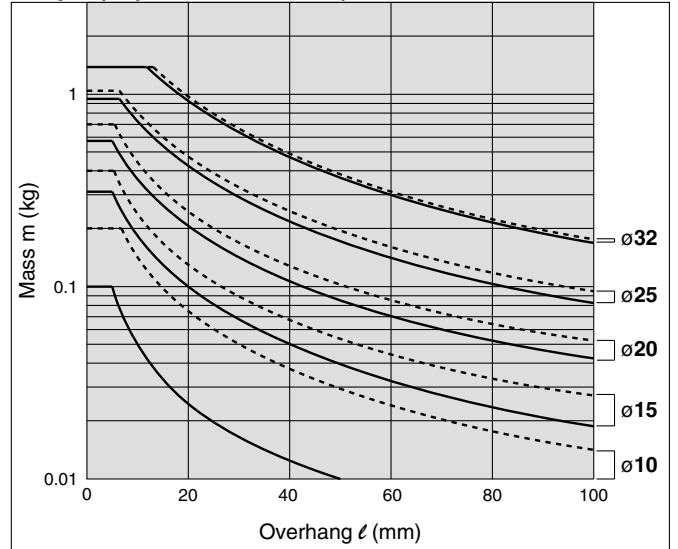
**Graph (9) V = Over 400 mm/s; Up to 10 mm stroke** ———— CXSJM  
----- CXSJL



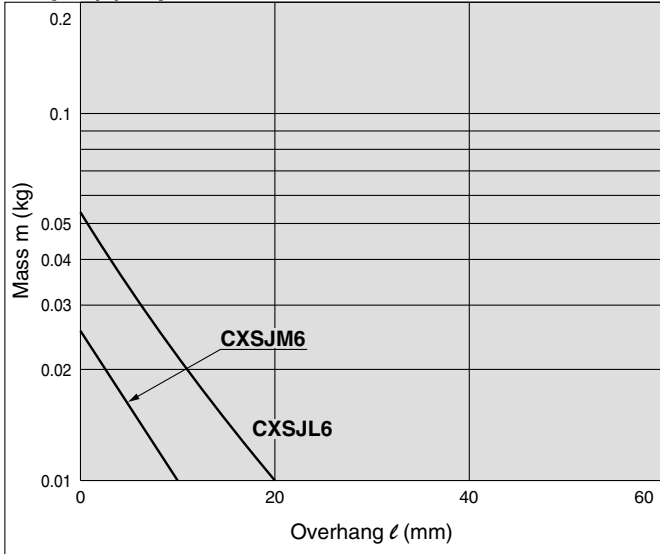
**Graph (12) V = Up to 400 mm/s; Up to 50 mm stroke** ———— CXSJM  
----- CXSJL



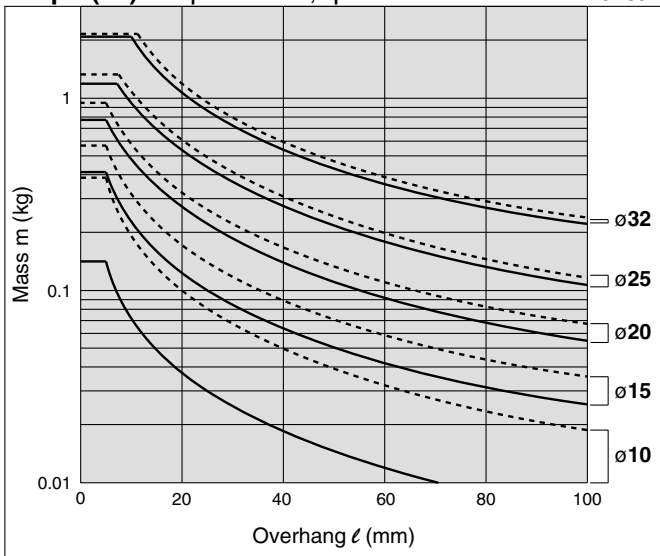
**Graph (13) V = Over 400 mm/s; Up to 50 mm stroke** ———— CXSJM  
----- CXSJL



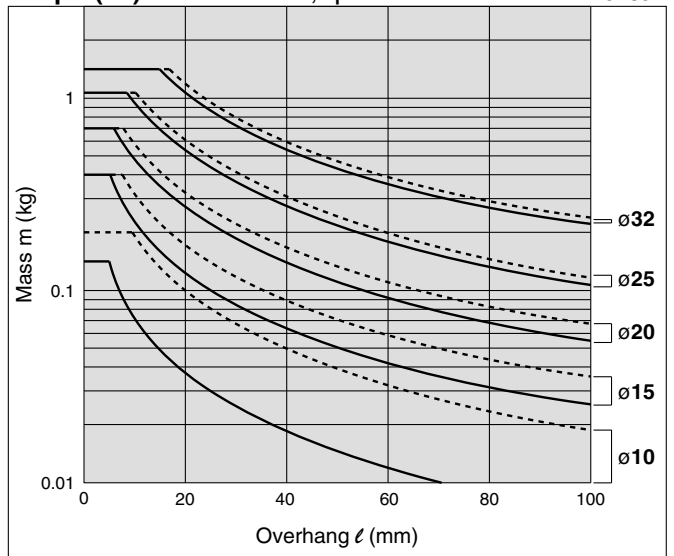
**Graph (7) Up to 50 mm stroke** ——— V = Up to 800mm/s



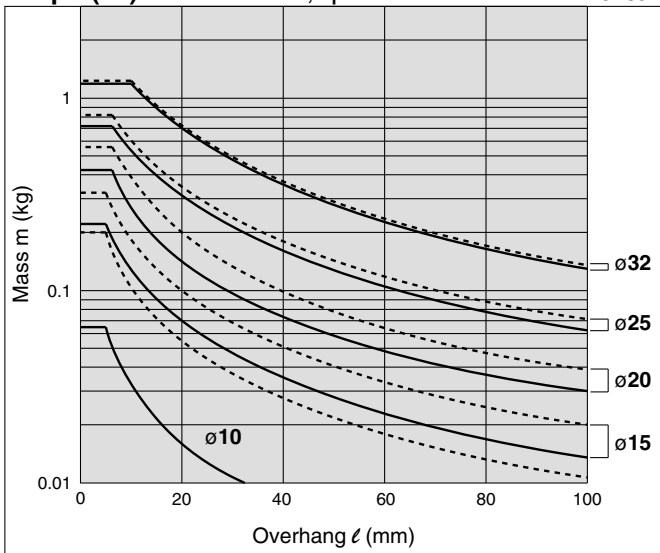
**Graph (10) V = Up to 400 mm/s; Up to 30 mm stroke** ——— CXSJM  
----- CXSJL



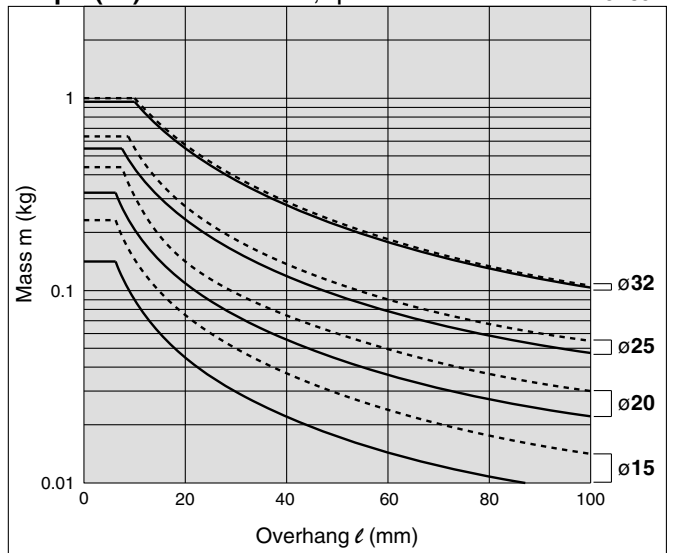
**Graph (11) V = Over 400 mm/s; Up to 30 mm stroke** ——— CXSJM  
----- CXSJL



**Graph (14) V = Over 400 mm/s; Up to 75 mm stroke** ——— CXSJM  
----- CXSJL



**Graph (15) V = Over 400 mm/s; Up to 100 mm stroke** ——— CXSJM  
----- CXSJL



**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

**-X□**

Individual  
**-X□**

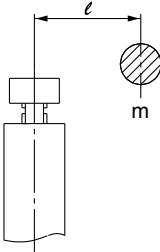
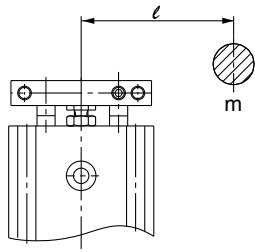
# Series CXS

## Model Selection/Basic Type

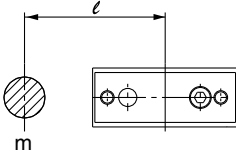
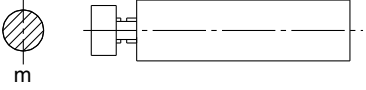
**⚠ Caution** Confirmation of theoretical output is required separately.  
Refer to “Theoretical Output” on page 562.

### Basic Type: CXS

#### Vertical Mounting

Mounting orientation							
Max. speed (mm/s)		Up to 100	Up to 200	Up to 300	Up to 400	Up to 600	Up to 700 (Up to 800)
Stroke (mm)		All strokes					
Selection graph	ø6	(1)		(2)			
	ø10						
	ø15						
	ø20	(3)			(4)	(5)	(6)
	ø25						
	ø32						

#### Horizontal Mounting

Mounting orientation													
Stroke (mm)		Up to 10		Up to 30		Up to 50		Up to 75		Up to 100			
Max. speed (mm/s)		Up to 100	Up to 300	Up to 400	Over 400	Up to 100	Up to 300	Up to 400	Over 400	Up to 100	Up to 300	Up to 400	Over 400
Selection graph	ø6	(7)		(8)		(9)							
	ø10												
	ø15												
	ø20	(10) (11)		(12) (13)		(14) (15)		(16)		(17)			
	ø25												
	ø32												

\* Refer to the caution notes below.

\* The maximum speeds for ø10 to ø32 are: ø10: up to 800 mm/s; ø15, 20: up to 700 mm/s; ø25, 32: Up to 600 mm/s

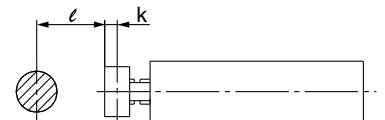
### ⚠ Caution

If the cylinder is horizontally mounted and the plate end does not reach the load's center of gravity, use the formula below to calculate the imaginary stroke  $l'$  that includes the distance between the load's center of gravity and the plate end. Select the graph that corresponds to the imaginary stroke  $l'$ .

Imaginary stroke  $l' = (\text{Stroke}) + k + l$

k: Distance between the center and end of the plate

ø6	2.75 mm
ø10	4 mm
ø15	5 mm
ø20	6 mm
ø25	
ø32	8 mm



(Example)

When using CXSM6-10 and  $l = 15$  mm:

Imaginary stroke  $l' = 10 + 2.75 + 15 = 27.75$

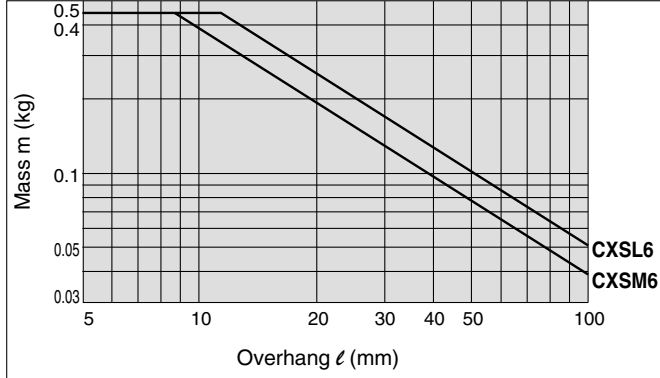
Therefore, the graph used for your model selection should be the one for CXSM6-30.



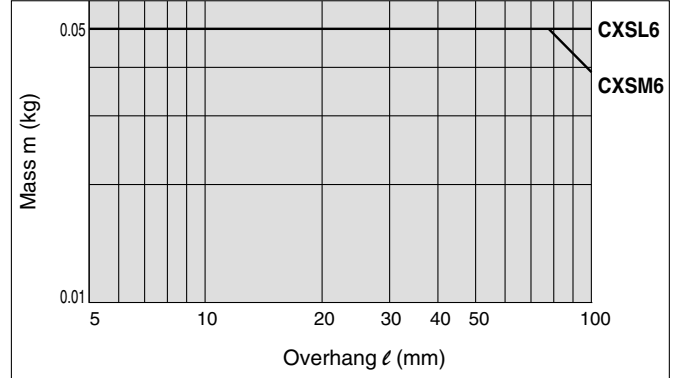
**Vertical Mounting**

**ø6**

**Graph (1) V=100(mm/s)**

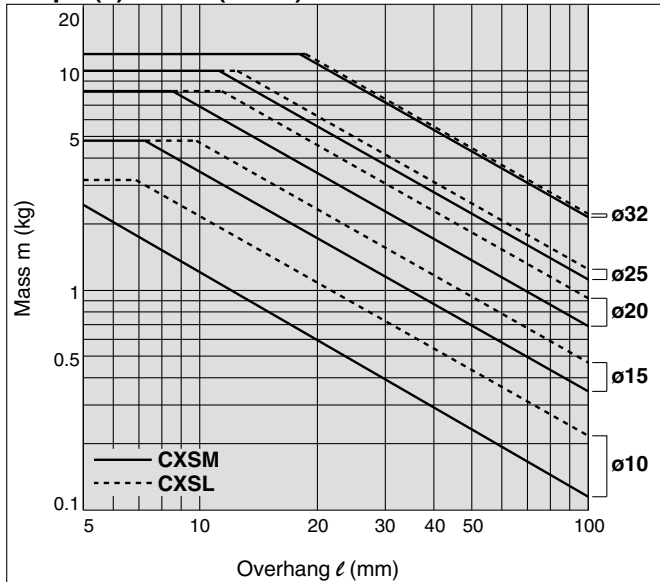


**Graph (2) V=300(mm/s)**

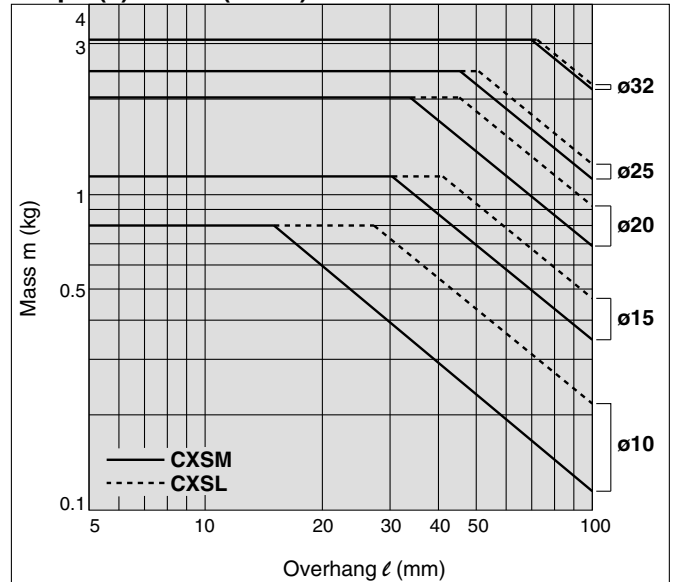


**ø10 to ø32**

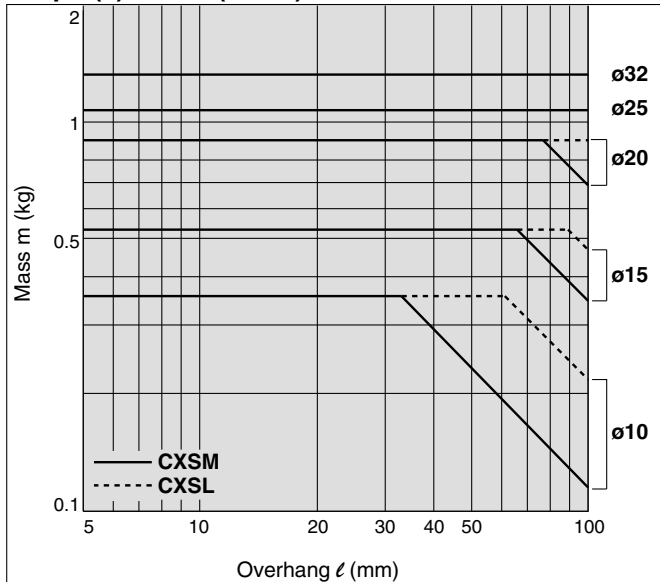
**Graph (3) V=200(mm/s)**



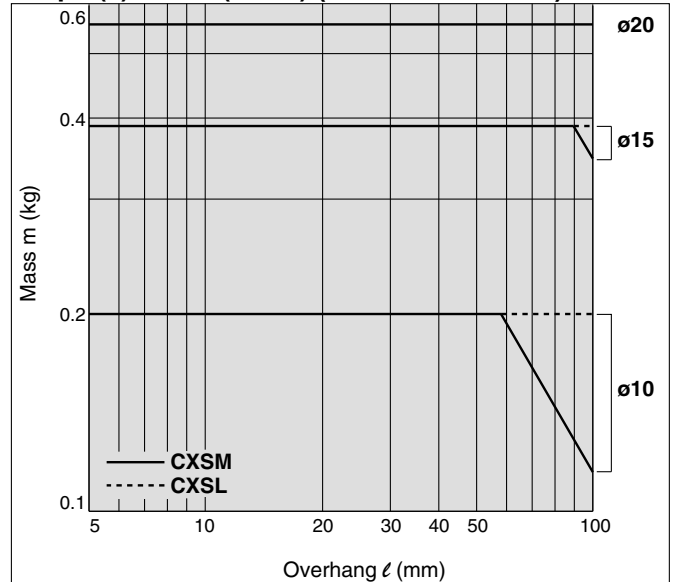
**Graph (4) V=400(mm/s)**



**Graph (5) V=600(mm/s)**



**Graph (6) V=700(mm/s) (800 mm/s for ø10)**



**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

**-X□**

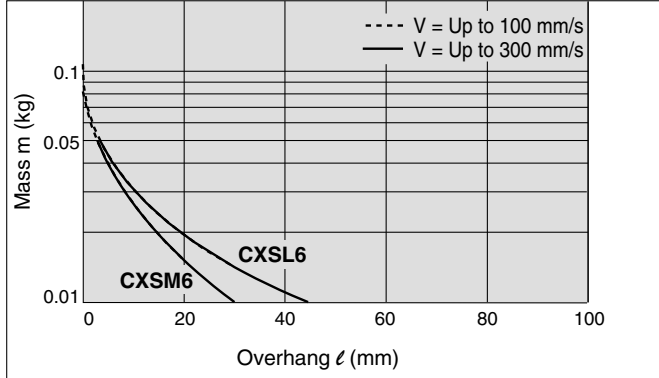
**Individual  
-X□**

# Series CXS

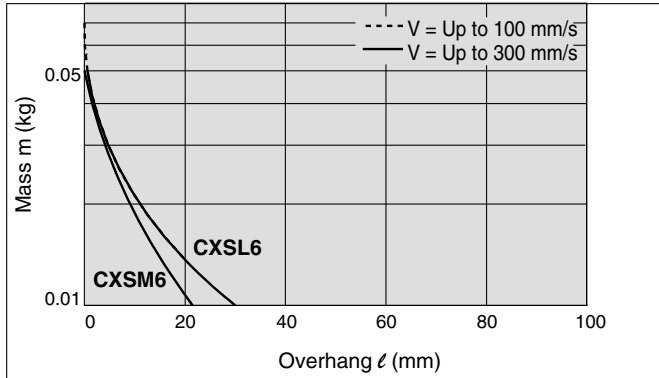
## Horizontal Mounting

∅6

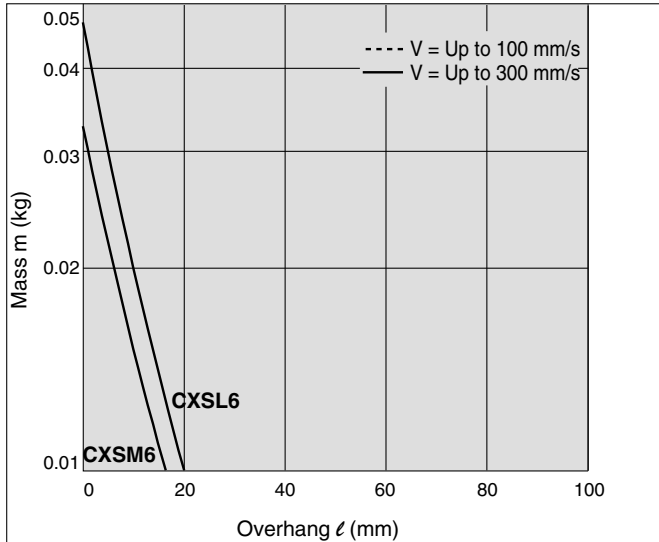
Graph (7) Up to 10 st



Graph (8) Up to 30 st

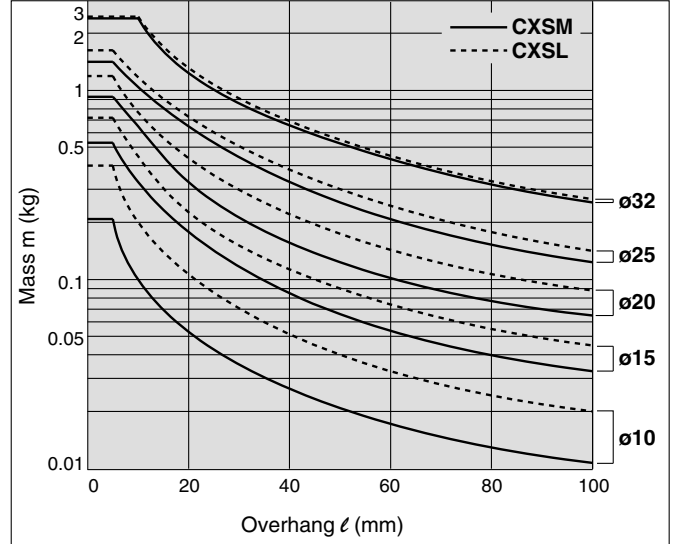


Graph (9) Up to 50 st

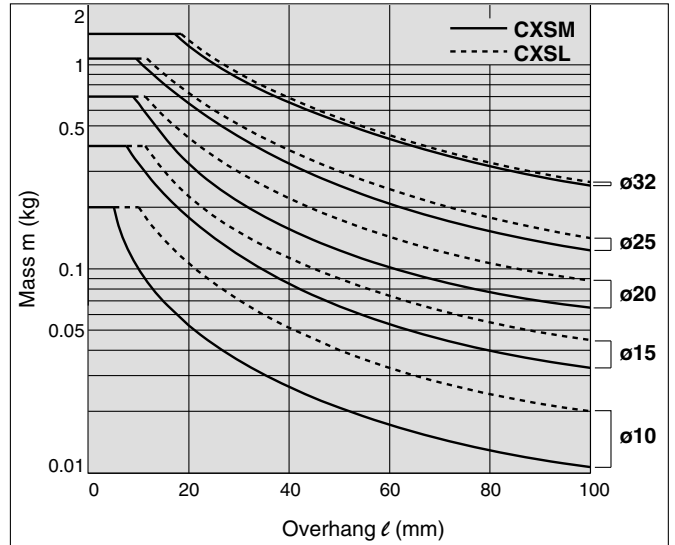


∅10 to ∅32

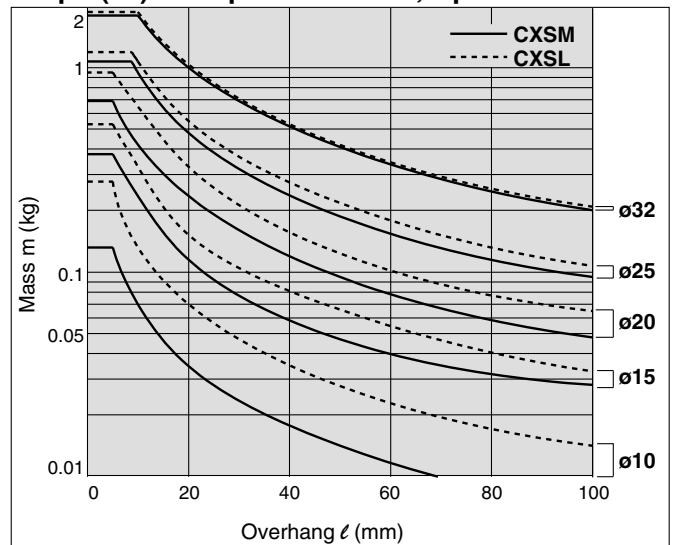
Graph (10) V = Up to 400 mm/s; Up to 10 st



Graph (11) V = Over 400 mm/s; Up to 10 st



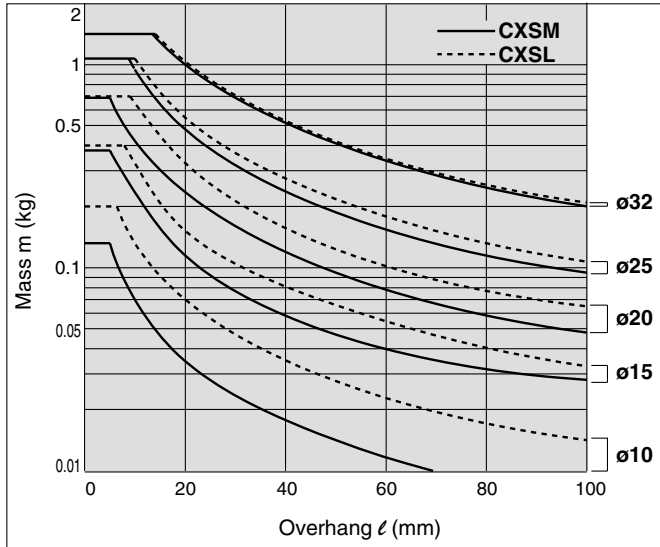
Graph (12) V = Up to 400 mm/s; Up to 30 st



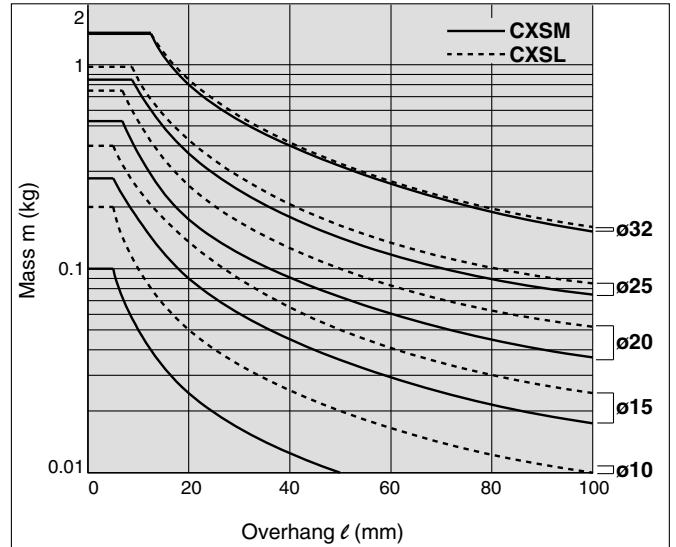
**Horizontal Mounting**

**ø10 to ø32**

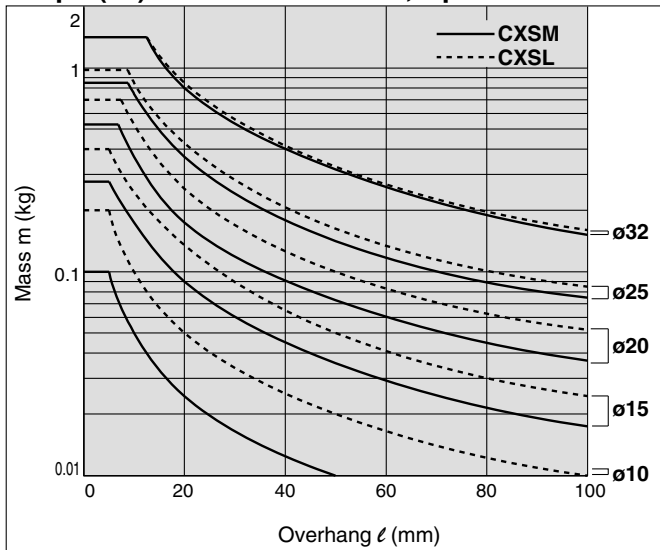
**Graph (13) V = Over 400 mm/s; Up to 30 st**



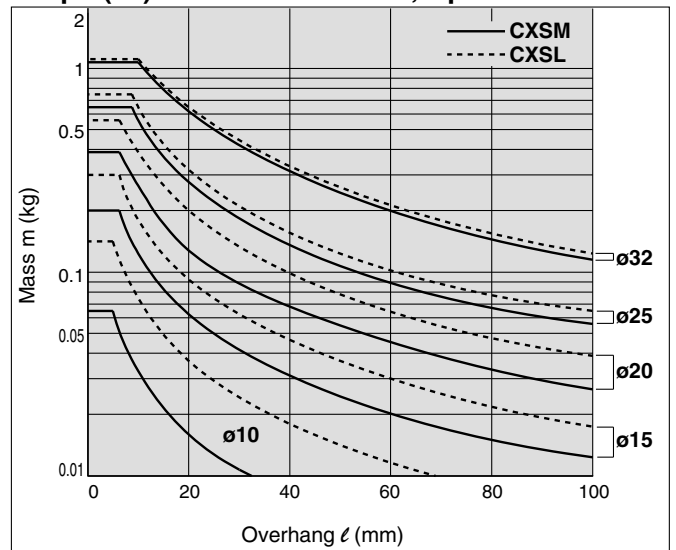
**Graph (14) V = Up to 400 mm/s; Up to 50 st**



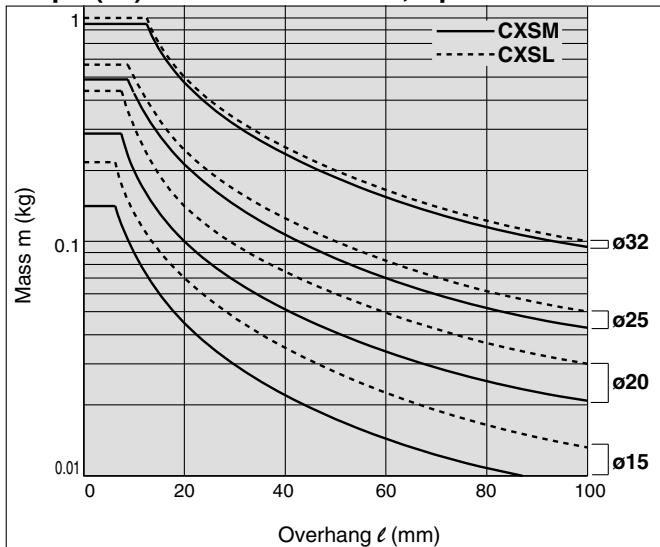
**Graph (15) V = Over 400 mm/s; Up to 50 st**



**Graph (16) V = Over 400 mm/s; Up to 75 st**



**Graph (17) V = Over 400 mm/s; Up to 100 st**



**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

**-X□**

**Individual**

**-X□**

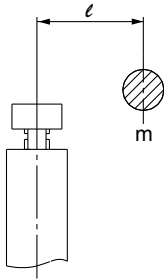
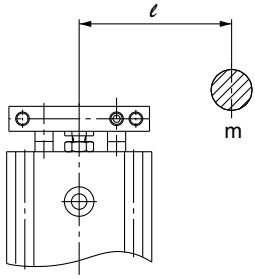
# Series CXS

## Model Selection/With Air Cushion

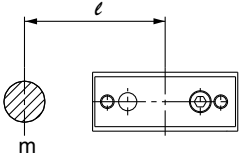
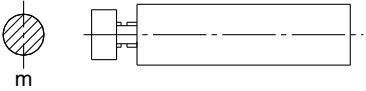
**⚠ Caution** Confirmation of theoretical output is required separately.  
Refer to "Theoretical Output Table" on page 571.

### With Air Cushion: CXS

#### Vertical Mounting

Mounting orientation						
	Max. speed (mm/s)	Up to 200	Up to 400	Up to 600	Up to 800	Up to 1000
Stroke (mm)	All strokes					
Selection graph	ø20	(1)	(2)	(3)	(4)	(5)
	ø25					
	ø32					

#### Horizontal Mounting

Mounting orientation								
	* Refer to the caution notes below.							
Stroke (mm)	Up to 10		Up to 30		Up to 50	Up to 75	Up to 100	
Max. speed (mm/s)	Up to 800	Up to 1000	Up to 800	Up to 1000	Up to 1000	Up to 1000	Up to 1000	
Selection graph	ø20	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	ø25							
	ø32							

### ⚠ Caution

If the cylinder is horizontally mounted and the plate end does not reach the load's center of gravity, use the formula below to calculate the imaginary stroke  $\ell'$  that includes the distance between the load's center of gravity and the plate end. Select the graph that corresponds to the imaginary stroke  $\ell'$ .

$$\text{Imaginary stroke } \ell' = (\text{Stroke}) + k + \ell$$

k: Distance between the center and the end of the plate

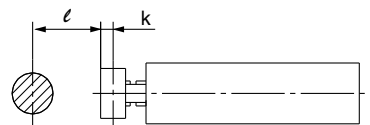
ø20	6 mm
ø25	
ø32	

(Example)

When using CXSM20-10 and  $\ell = 10$  mm:

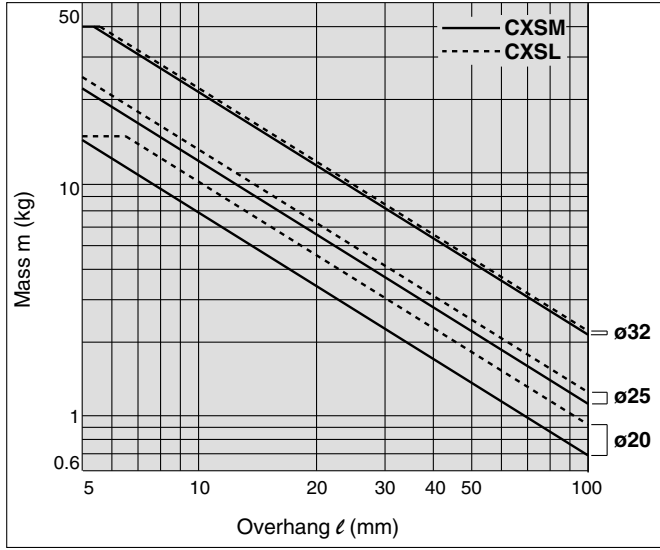
$$\text{Imaginary stroke } \ell' = 10 + 6 + 10 = 26$$

Therefore, the graph used for your model selection should be the one for CXSM20-30.

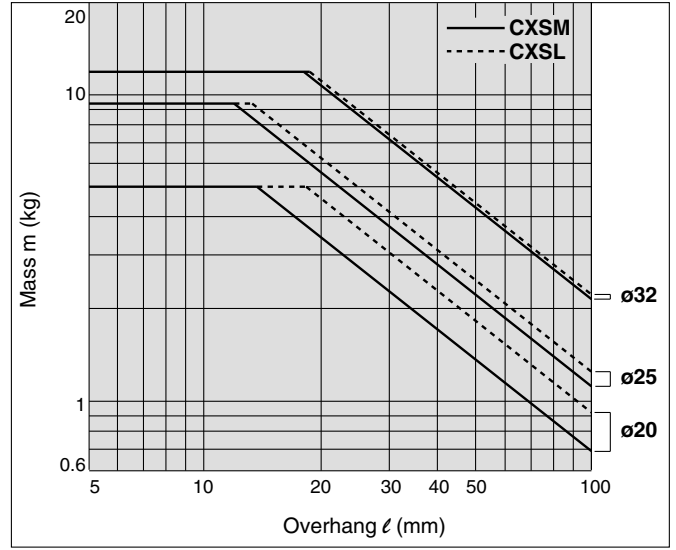


**Vertical Mounting**

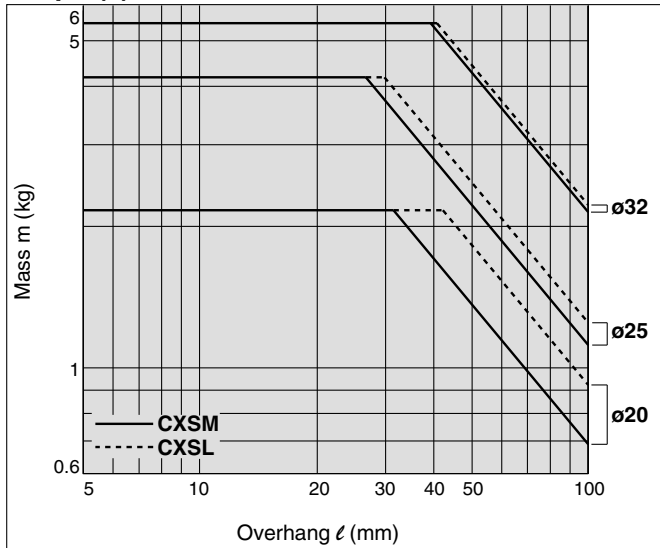
**Graph (1) V = 200 mm/s**



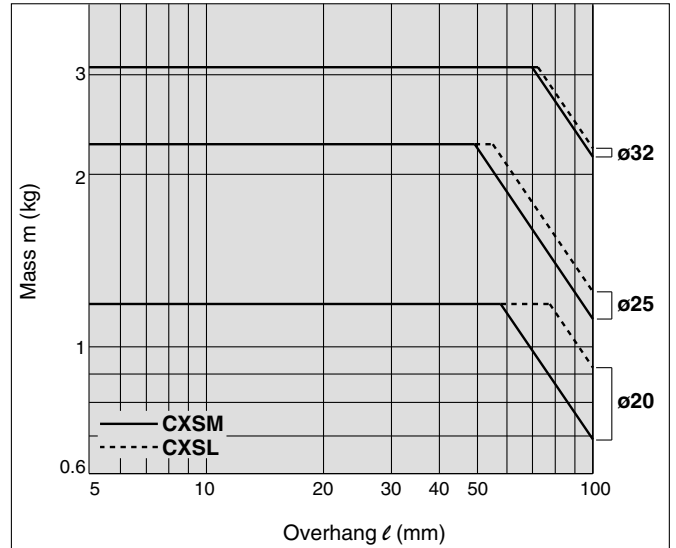
**Graph (2) V = 400 mm/s**



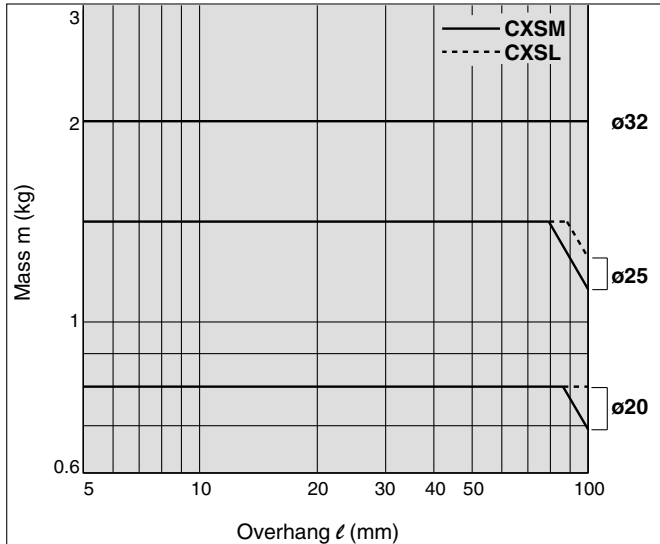
**Graph (3) V = 600 mm/s**



**Graph (4) V = 800 mm/s**



**Graph (5) V = 1000 mm/s**



**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

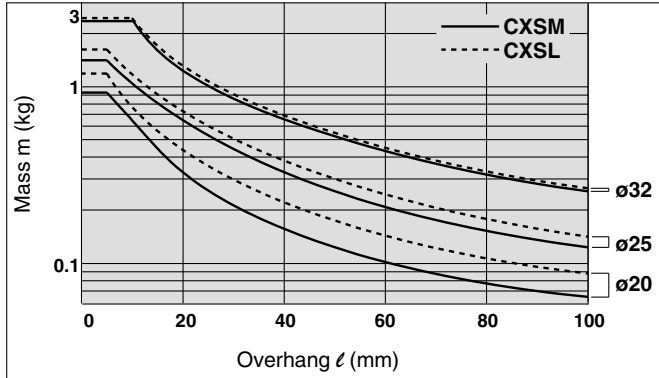
**-X□**

Individual  
**-X□**

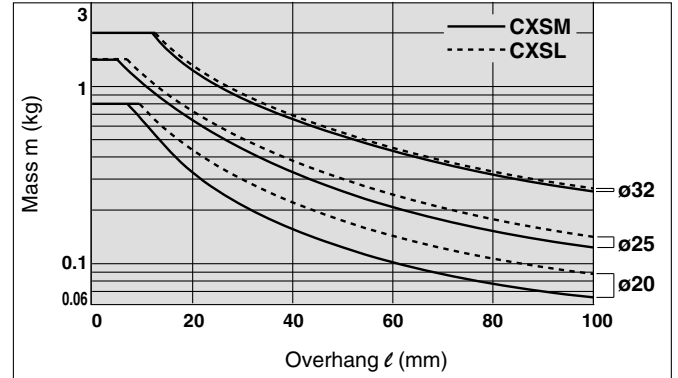
# Series CXS

## Horizontal Mounting

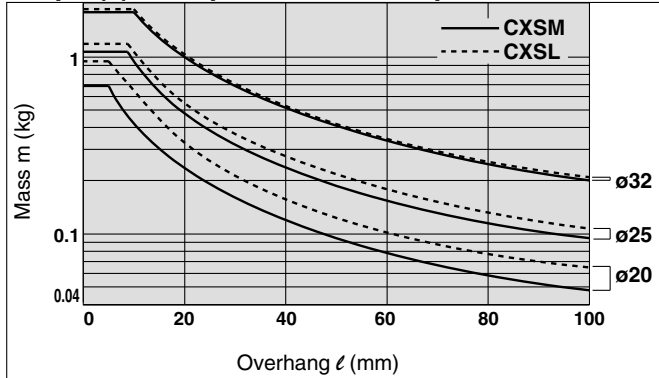
Graph (6) V = Up to 800 mm/s; Up to 10 st



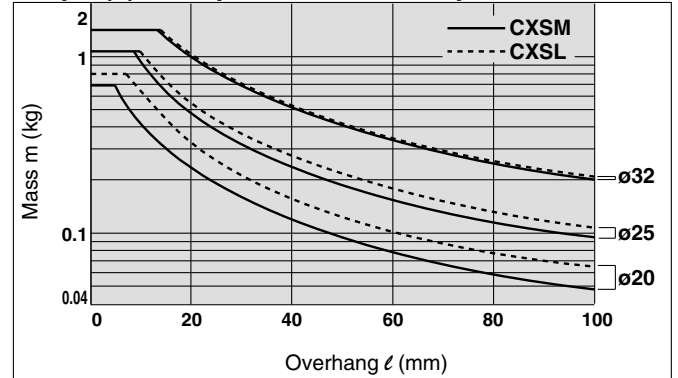
Graph (7) V = Up to 1000 mm/s; Up to 10 st



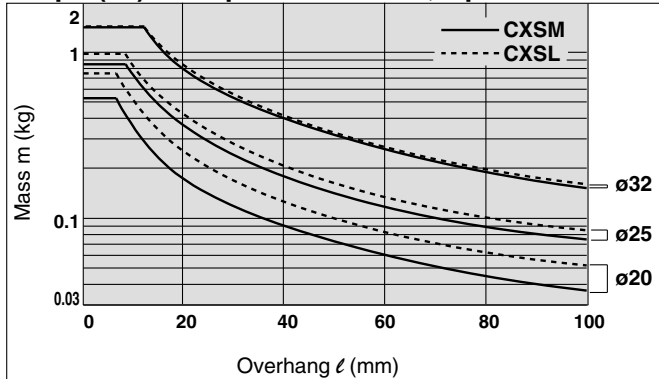
Graph (8) V = Up to 800 mm/s; Up to 30 st



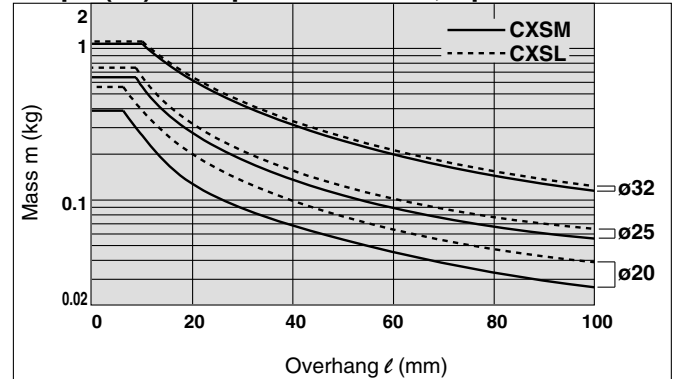
Graph (9) V = Up to 1000 mm/s; Up to 30 st



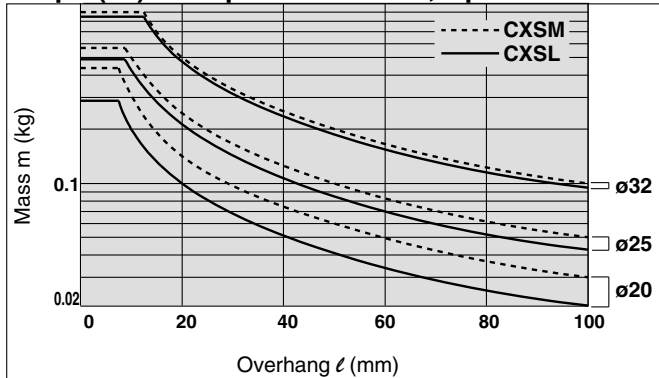
Graph (10) V = Up to 1000 mm/s; Up to 50 st



Graph (11) V = Up to 1000 mm/s; Up to 75 st



Graph (12) V = Up to 1000 mm/s; Up to 100 st



# Dual Rod Cylinder/Compact Type

## Series CXSJ

ø6, ø10, ø15, ø20, ø25, ø32

### How to Order

**Port thread type**

Nil	M thread	ø6 to ø25
	Rc 1/8	
TN	NPT 1/8	ø32
TF	G 1/8	

**Piping**

Nil	Standard (ø6 to ø32)
P	Axial (ø6, ø10)

**Bearing type**

M	Slide bearing
L	Ball bushing bearing

**Auto switch**

Nil	Without auto switch (with built-in magnet)
-----	--

**Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Bore size / Stroke (mm)**

Bore size	Standard stroke
6	10, 20, 30, 40, 50
10	10, 20, 30, 40, 50, 75
15	10, 20, 30, 40, 50, 75, 100
20	
25	
32	

**Made to Order**  
(For details, refer to pages 1851 to 1954.)

Symbol	Specifications
XB6	Heat resistant cylinder (-10 to 150°C)
XB13	Low speed cylinder (5 to 50 mm/s)
XC6 <sup>Note)</sup>	Made of stainless steel
XC19	Intermediate stroke (spacer)
XC22	Fluoro rubber seals

Note) Slide bearing type (M) only

### Applicable Auto Switches/Refer to pages 1719 to 1827 for detailed auto switch specifications.

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)			
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	●	●	○	○	IC circuit
				3-wire (PNP)				M9PV	M9P	●	●	●	○	○	
				2-wire				M9BV	M9B	●	●	●	○	○	
				3-wire (NPN)				M9NVW	M9NW	●	●	●	○	○	
	Diagnostic indication (2-color display)			3-wire (PNP)	M9PVW	M9PW	●	●	●	○	○	IC circuit			
				2-wire	M9BWW	M9BW	●	●	●	○	○				
				3-wire (NPN)	M9NAV	M9NA	○	○	●	○	○		IC circuit		
				3-wire (PNP)	M9PAV	M9PA	○	○	●	○	○				
Water resistant (2-color display)	2-wire	M9BAV	M9BA	○	○	●	○	○	—						
	3-wire (NPN equiv.)	24 V	5 V	—	A96V	A96	●	—		●	—	—	IC circuit	—	
	2-wire				A93V	A93	●	—		●	—	—	—		Relay, PLC
	—	24 V	5 V, 12 V	100 V or less	A90V	A90	●	—		●	—	—	IC circuit	Relay, PLC	

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NW  
 1 m ..... M M9NWM  
 3 m ..... L M9NWL  
 5 m ..... Z M9NWZ

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

- Since there are applicable auto switches other than listed, refer to page 559 for details.
- For details about switch with pre-wired connector, refer to pages 1784 and 1785.
- \* Auto switches are shipped together (not assembled).

CX2

CXW

CXT

CXSJ

CXS

D-□

-X□

Individual

-X□

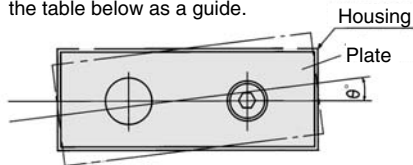
# Series CXSJ



## Operating Conditions

### Non-rotating Accuracy

Non-rotating accuracy  $\theta^\circ$  without a load should be less than or equal to the value provided in the table below as a guide.

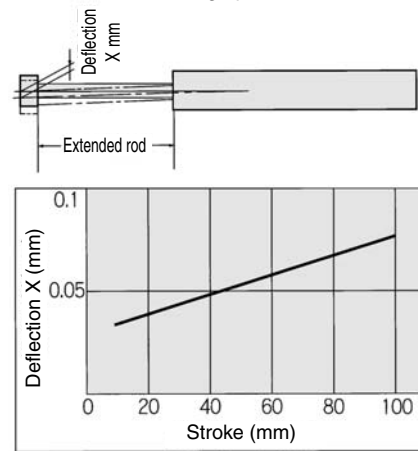


Bore size (mm)	$\theta$
$\phi 6$ to $\phi 32$	$\pm 0.1^\circ$
CXSJM (Slide bearing)	
CXSJL (Ball bushing bearing)	

### CXSJ $\phi 6$ to 32

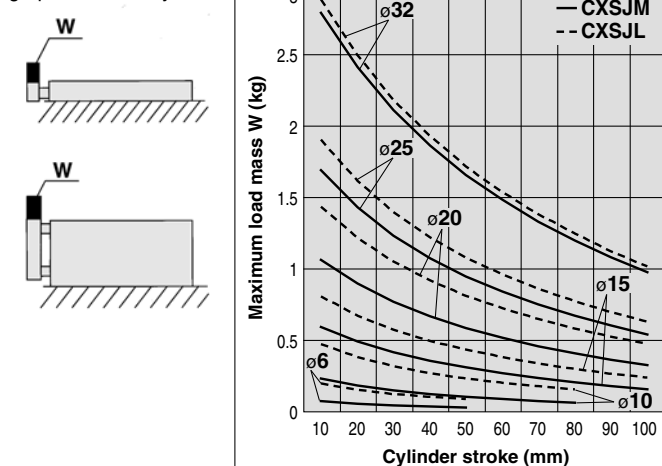
#### Deflection at the Plate End

An approximate plate-end deflection X without a load is shown in the graph below.



### Maximum Load Mass

When the cylinder is mounted as shown in the diagrams below, the maximum load mass W should not exceed the values illustrated in the graph immediately



## Specifications

Bore size (mm)	6	10	15	20	25	32
Fluid	Air (Non-lube)					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Minimum operating pressure	0.15 MPa	0.1 MPa		0.05 MPa		
Ambient and fluid temperature	-10 to 60°C (No freezing)					
Piston speed	30 to 800 mm/s		30 to 700 mm/s		30 to 600 mm/s	
Cushion	Rubber bumper on both ends					
Stroke adjustable range	0 to -5 mm compared to the standard stroke					
Port size	M3 x 0.5		M5 x 0.8			Rc (NPT, PF) 1/8
Allowable kinetic energy	0.016 J	0.064 J	0.095 J	0.17 J	0.27 J	0.32 J

## Standard Stroke

Model	Standard stroke	Manufacturable stroke range (mm)
CXSJ $\phi 6$	10, 20, 30, 40, 50	60 to 100
CXSJ $\phi 10$	10, 20, 30, 40, 50, 75	80 to 150
CXSJ $\phi 15$	10, 20, 30, 40, 50, 75, 100	110 to 150
CXSJ $\phi 20, 25, 32$		110 to 200

\* Strokes beyond the standard stroke range are available as a special order.

## Theoretical Output

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)							
				0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
CXSJ $\phi 6$	4	OUT	56	—	8.4	11.2	16.8	22.4	28.0	33.6	39.2
		IN	31	—	4.6	6.2	9.3	12.4	15.5	18.6	21.7
CXSJ $\phi 10$	6	OUT	157	15.7	—	31.4	47.1	62.8	78.5	94.2	110
		IN	100	10.0	—	20.0	30.0	40.0	50.0	60.0	70.0
CXSJ $\phi 15$	8	OUT	353	35.3	—	70.6	106	141	177	212	247
		IN	252	25.2	—	50.4	75.6	101	126	151	176
CXSJ $\phi 20$	10	OUT	628	62.8	—	126	188	251	314	377	440
		IN	471	47.1	—	94.2	141	188	236	283	330
CXSJ $\phi 25$	12	OUT	982	98.2	—	196	295	393	491	589	687
		IN	756	75.6	—	151	227	302	378	454	529
CXSJ $\phi 32$	16	OUT	1608	161	—	322	482	643	804	965	1126
		IN	1206	121	—	241	362	482	603	724	844

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## Mass

Model	Standard stroke (mm)						
	10	20	30	40	50	75	100
CXSJM6	0.047	0.057	0.067	0.077	0.087	—	—
CXSJL6	0.048	0.058	0.068	0.078	0.088	—	—
CXSJM10	0.099	0.114	0.129	0.144	0.159	0.198	—
CXSJL10	0.106	0.121	0.136	0.151	0.166	0.205	—
CXSJM15	0.198	0.219	0.240	0.261	0.282	0.335	0.387
CXSJL15	0.218	0.239	0.260	0.281	0.302	0.355	0.407
CXSJM20	0.345	0.371	0.397	0.423	0.449	0.514	0.579
CXSJL20	0.375	0.401	0.427	0.453	0.479	0.544	0.609
CXSJM25	0.506	0.544	0.582	0.620	0.658	0.753	0.848
CXSJL25	0.516	0.554	0.592	0.630	0.668	0.763	0.858
CXSJM32	1.022	1.078	1.134	1.190	1.246	1.386	1.526
CXSJL32	1.032	1.088	1.144	1.200	1.256	1.396	1.536

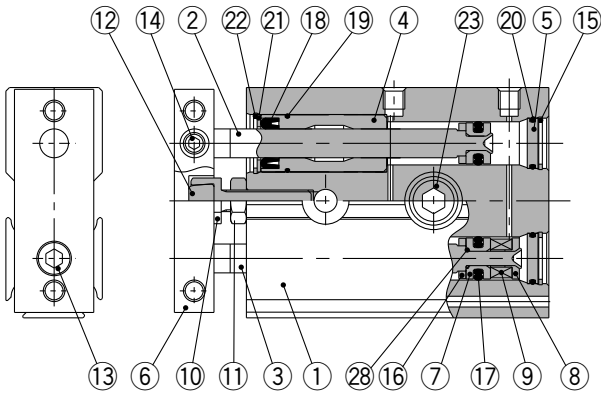
Note) For axial piping of CXSJ $\phi 6$ P-□ and CXSJ $\phi 10$ P-□, please add the following mass. CXSJ $\phi 6$ P-□: 0.009 kg, CXSJ $\phi 10$ P-□: 0.014 kg



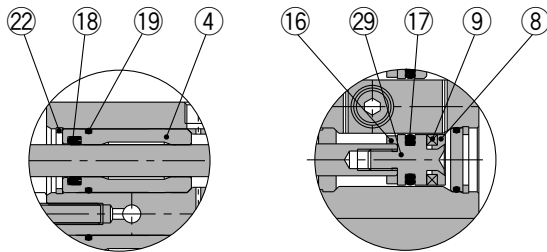
## Construction: Standard Piping

### CXSJM (Slide bearing)

#### CXSJM6



#### CXSJM10

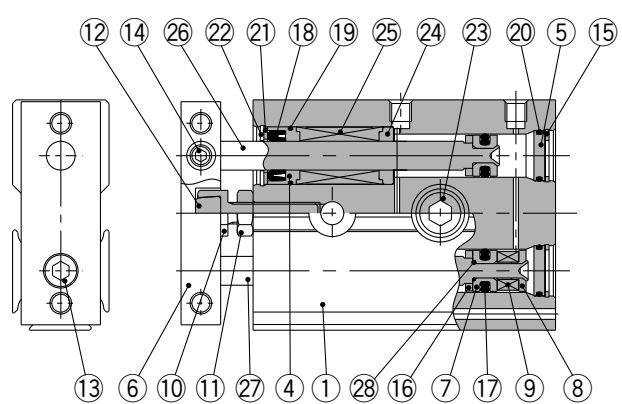


Rod cover

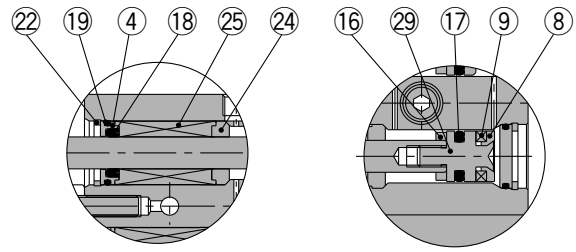
Piston rod B-side piston

### CXSJL (Ball bushing bearing)

#### CXSJL6



#### CXSJL10



Rod cover

Piston rod B-side piston

### Component Parts: Standard Piping

No.	Description	Material	Note
1	<b>Housing</b>	Aluminum alloy	Hard anodized
2	<b>Piston rod A</b>	Carbon steel <small>(Note)</small>	Hard chromium electroplated
3	<b>Piston rod B</b>	Carbon steel <small>(Note)</small>	Hard chromium electroplated
4	<b>Rod cover</b>	Aluminum bearing alloy	
5	<b>Head cover</b>	Aluminum alloy	Anodized
6	<b>Plate</b>	Aluminum alloy	Glossy, self-coloring hard anodized
7	<b>Piston A</b>	Aluminum alloy	Chromated
8	<b>Piston B</b>	Aluminum alloy	Chromated
9	<b>Magnet</b>	—	
10	<b>Bumper bolt</b>	Carbon steel	Nickel plated
11	<b>Hexagon nut</b>	Carbon steel	Nickel plated
12	<b>Bumper</b>	Polyurethane	
13	<b>Hexagon socket head cap screw</b>	Chromium steel	Nickel plated
14	<b>Hexagon socket head set screw</b>	Chromium steel	Nickel plated
15	<b>Retaining ring</b>	Special steel	Nickel plated

Note) Stainless steel for CXSJM6.

No.	Description	Material	Note
16	<b>Bumper B</b>	Polyurethane	
17	<b>Piston seal</b>	NBR	
18	<b>Rod seal</b>	NBR	
19	<b>O-ring</b>	NBR	
20	<b>O-ring</b>	NBR	
21	<b>Seal retainer</b>	Stainless steel	
22	<b>Retaining ring B</b>	Special steel	Nickel plated
23	<b>Bolt holder</b>	Stainless steel	
24	<b>Bearing spacer</b>	Aluminum bearing alloy	
25	<b>Ball bushing</b>	—	
26	<b>Piston rod A</b>	Special steel	Hard chromium electroplated
27	<b>Piston rod B</b>	Special steel	Hard chromium electroplated
28	<b>O-ring</b>	NBR	
29	<b>Piston C</b>	Stainless steel	
30	<b>Bumper holder</b>	Resin	

### Replacement Parts/ Seal Kit

Model	Seal kit no.	Contents
CXSJM6	CXSJM6-PS	Set of nos. above 17, 18, and 20
CXSJL6	CXSJL6-PS	
CXSJM10	CXSJM10-PS	
CXSJL10	CXSJL10-PS	

\* Seal kit includes 17, 18, and 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)

CX2

CXW

CXT

CXSJ

CXS

D-□

-X□

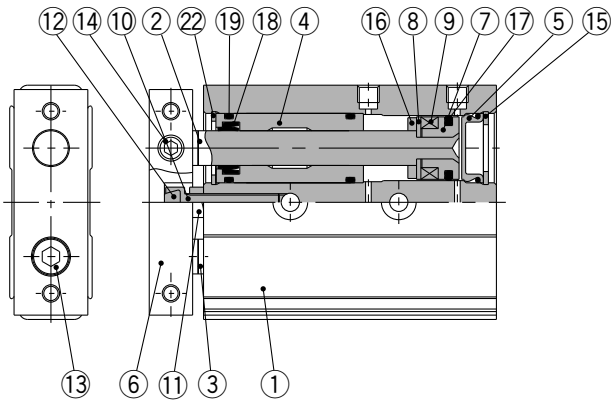
Individual  
-X□

# Series CXSJ

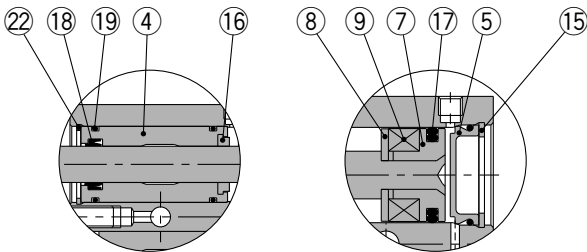
## Construction: Standard Piping

### CXSJM (Slide bearing)

#### CXSJM15



#### CXSJM20 to 32

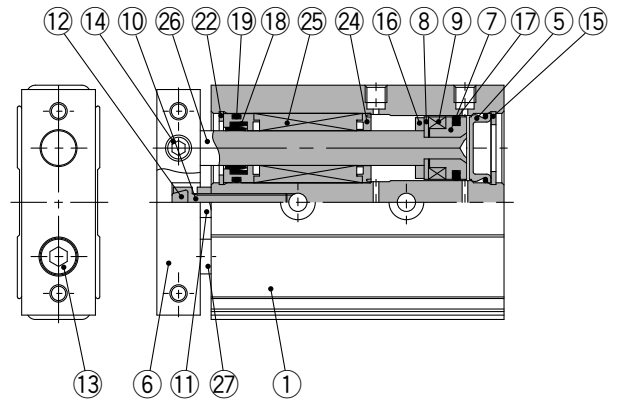


Rod cover

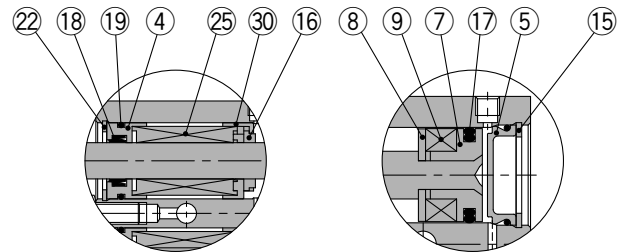
Head cover

### CXSJL (Ball bushing bearing)

#### CXSJL15



#### CXSJL20 to 32



Rod cover

Head cover

### Component Parts: Standard Piping

No.	Description	Material	Note
1	Housing	Aluminum alloy	Hard anodized
2	Piston rod A	Carbon steel	Hard chromium electroplated
3	Piston rod B	Carbon steel	Hard chromium electroplated
4	Rod cover	Aluminum bearing alloy	
5	Head cover	Special steel	
6	Plate	Aluminum alloy	Glossy, self-coloring hard anodized
7	Piston A	Aluminum alloy	Chromated
8	Piston B	Stainless steel	
9	Magnet	—	
10	Bumper bolt	Carbon steel	Nickel plated
11	Hexagon nut	Carbon steel	Nickel plated
12	Bumper	Polyurethane	
13	Hexagon socket head cap screw	Chromium steel	Nickel plated
14	Hexagon socket head set screw	Chromium steel	Nickel plated
15	Retaining ring	Special steel	Nickel plated

No.	Description	Material	Note
16	Bumper B	Polyurethane	
17	Piston seal	NBR	
18	Rod seal	NBR	
19	O-ring	NBR	
20	O-ring	NBR	
21	Seal retainer	Stainless steel	
22	Retaining ring B	Special steel	Nickel plated
23	Bolt holder	Stainless steel	
24	Bearing spacer	Resin	
25	Ball bushing	—	
26	Piston rod A	Special steel	Hard chromium electroplated
27	Piston rod B	Special steel	Hard chromium electroplated
28	O-ring	NBR	
29	Piston C	Stainless steel	
30	Bumper holder	Resin	

### Replacement Parts/ Seal Kit

Model	Seal kit no.	Contents
CXSJM15	CXSM15-PS	Set of nos. above 17, 18, and 19
CXSJM20	CXSM20-PS	
CXSJM25	CXSM25-PS	
CXSJM32	CXSM32-PS	
CXSJL15	CXSL15APS	
CXSJL20	CXSL20APS	
CXSJL25	CXSL25APS	
CXSJL32	CXSL32APS	

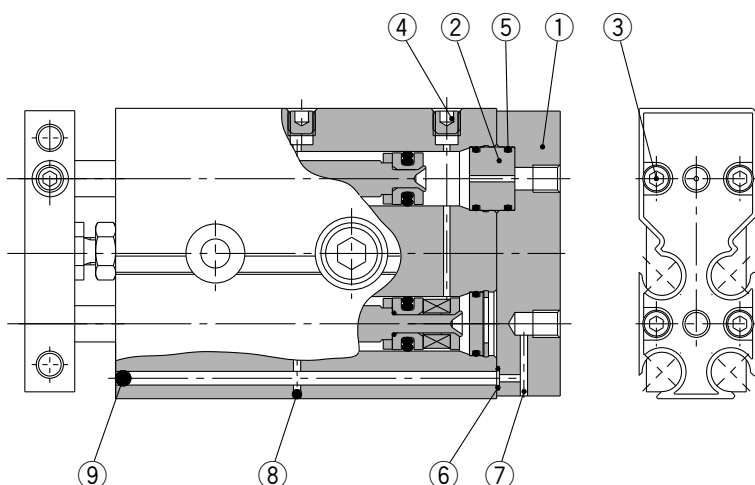
\* Seal kit includes 17, 18, and 19. Order the seal kit, based on each bore size.

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

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

## Construction: Axial Piping

CXSJ□6P, CXSJ□10P



### Component Parts: Axial Piping

No.	Description	Material	Note
1	Cover	Aluminum alloy	Hard anodized
2	Adapter	Aluminum alloy	Anodized
3	Hexagon socket head cap screw	Chromium steel	Nickel plated
4	Hexagon socket head plug	Chromium steel	Nickel plated
5	O-ring	NBR	
6	O-ring	NBR	
7	Steel ball	Special steel	Hard chromium electroplated
8	Steel ball	Special steel	Hard chromium electroplated
9	Steel ball	Special steel	Hard chromium electroplated

\* Parts other than those listed above are the same as those of CXSJ basic type.

## Clean Series

There are two types of cylinders, relieving type and vacuum type, available for a clean room environment. The relieving type specification with the double-seal construction of the rod section allows the cylinder to channel exhaust through the relief port directly to the outside of a clean room environment. The vacuum type specification allows for the application of a vacuum on the rod section while forced exhaust of air takes place through the vacuum port to the outside of a clean room environment.

### How to Order

**11** - CXSJ **M** Bore size - Stroke - Auto switch

● Bore size / Stroke

<b>6</b>	10, 20, 30, 40, 50
<b>10</b>	10, 20, 30, 40, 50

● Bearing type

<b>M</b>	Slide bearing
<b>L*</b>	Ball bushing bearing

\* 12-series is compatible with the ball bushing bearing type only.

● Clean room specifications

<b>11</b>	Vacuum type
<b>12</b>	Relieving type (with specially treated sliding parts)

### Specifications

Bore size (mm)	6	10
<b>Proof pressure</b>	1.05 MPa	
<b>Maximum operating pressure</b>	0.7 MPa	
<b>Minimum operating pressure</b>	0.15 MPa	0.1 MPa
<b>Ambient and fluid temperature</b>	-10 to 60°C (No freezing)	
<b>Piston speed</b>	30 to 400 mm/s	
<b>Stroke adjustable range</b>	0 to -5 mm compared to the standard stroke	
<b>Bearing type</b>	Slide bearing, Ball bushing bearing	

\* Refer to "SMC Pneumatic Clean Series" catalog for dimensions.

**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

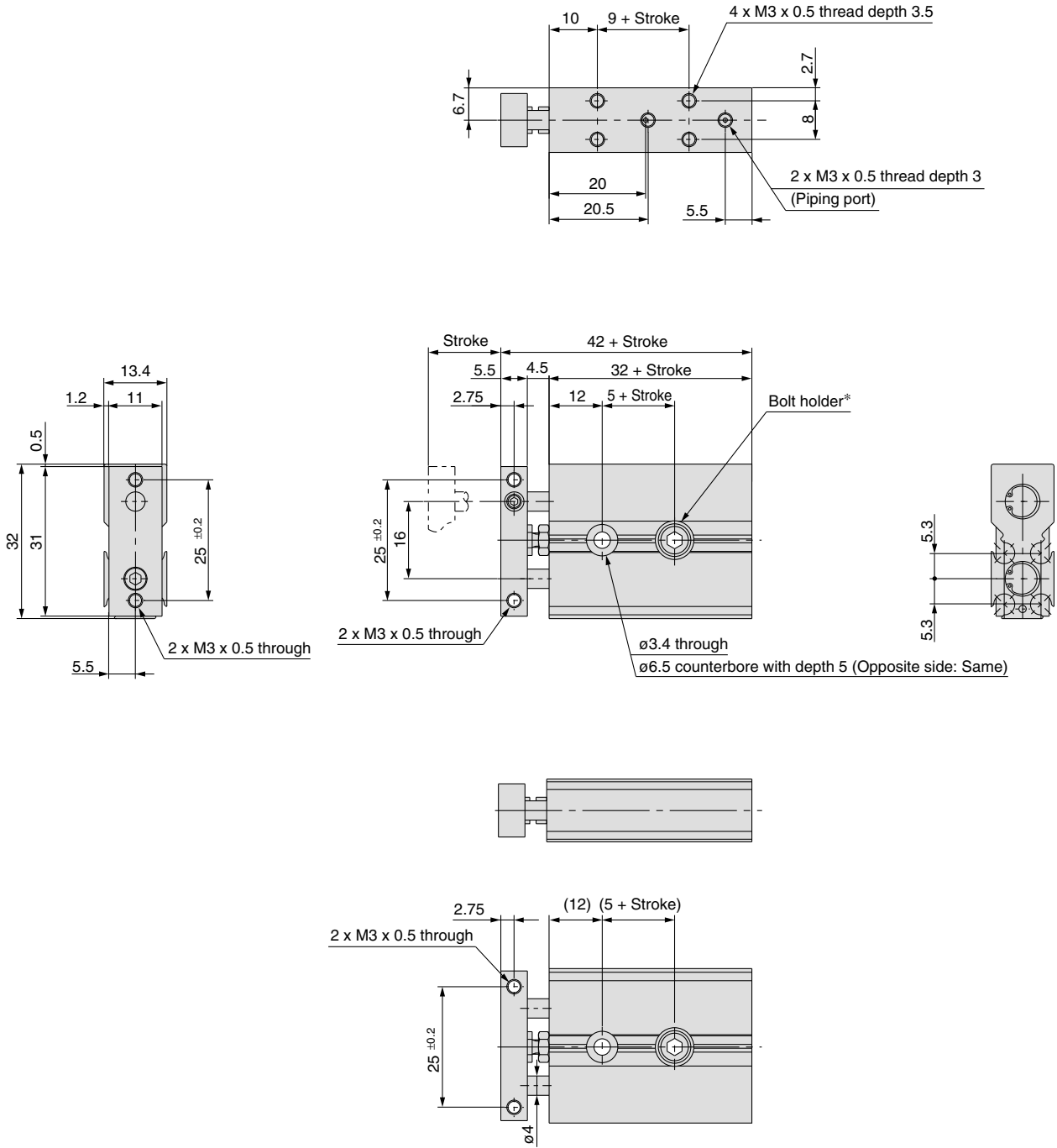
**D-□**

**-X□**

Individual  
**-X□**

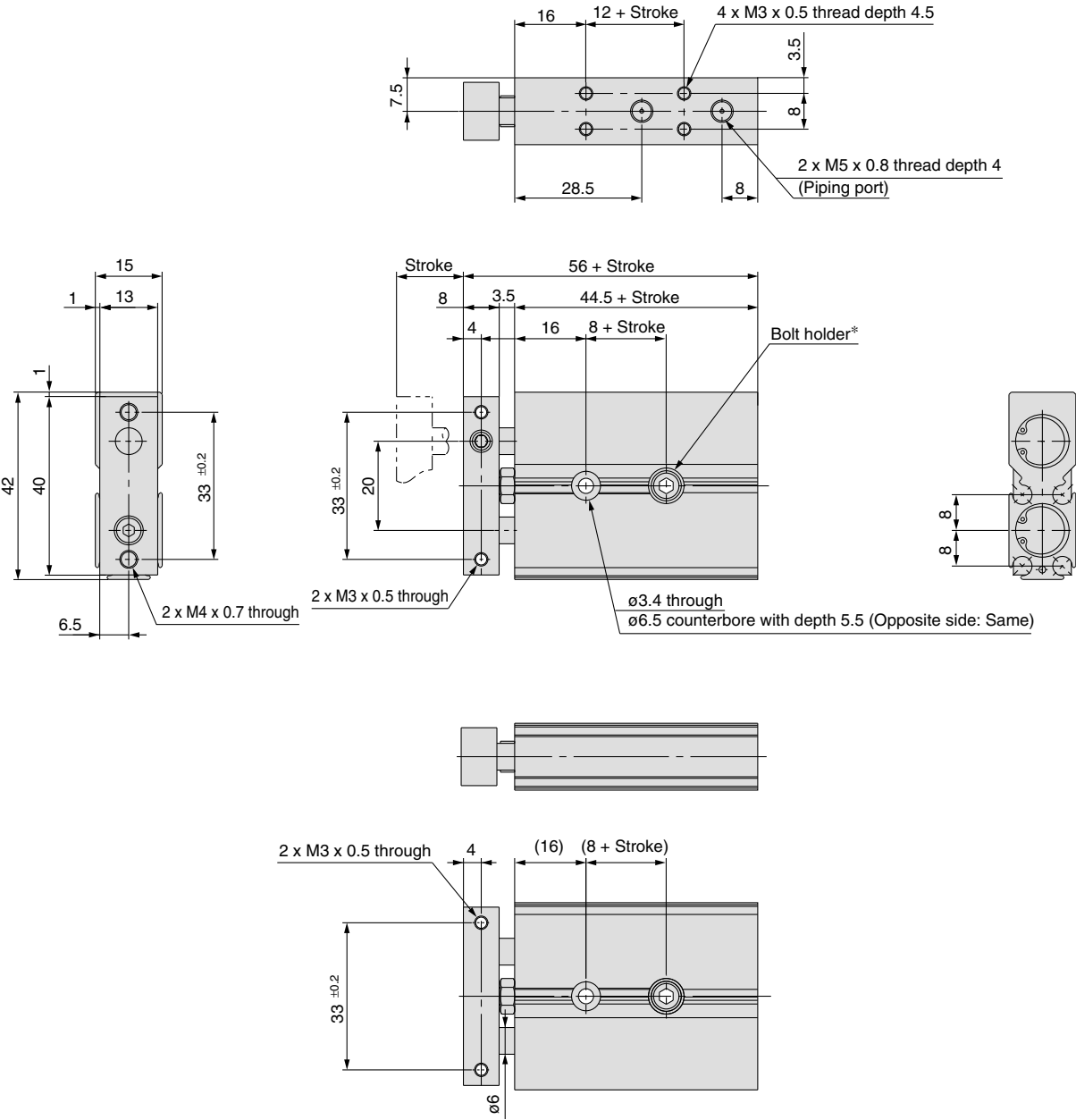
# Series CXSJ

## Dimensions: $\phi 6$ Standard Piping



\* For bolt holder, refer to page 560, "Mounting".

**Dimensions:  $\phi 10$  Standard Piping**



\* For bolt holder, refer to page 560, "Mounting".

**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

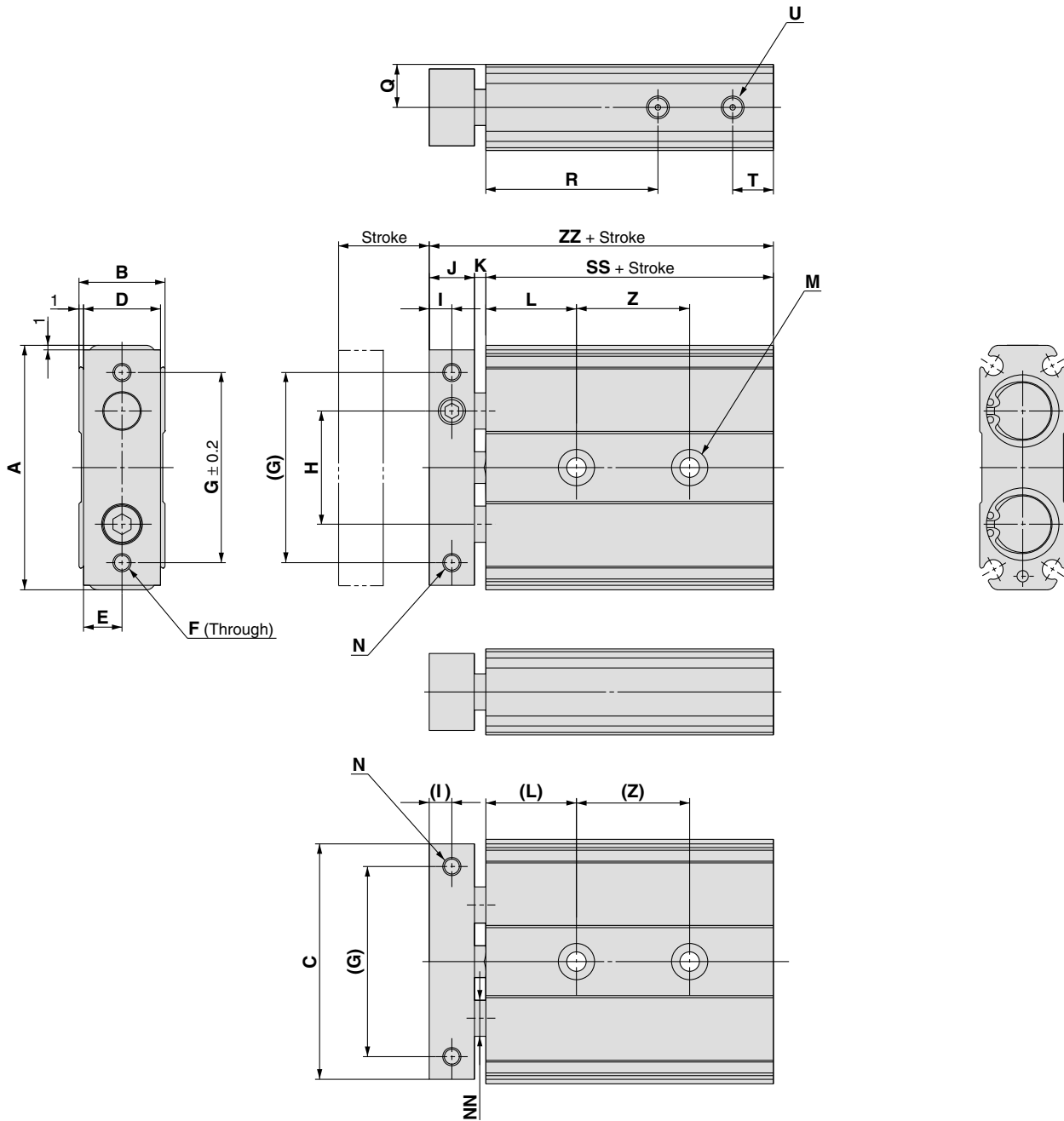
**D-□**

**-X□**

**Individual  
-X□**



**Dimensions:  $\phi 15$  to 32 Standard Piping**



Bore size (mm)	A	B	ZZ	C	D	E	F	G	H	I	J	K	L	M	N	NN	Q	R	T	U	SS
15	54	19	70	52	17	8.5	2 x M5 x 0.8	42	25	5	10	2.5	20	2 x 2 x $\phi 4.3$ through 2 x 2 x $\phi 8$ counterbore with depth 4.3	2 x M4 x 0.7 with thread depth 6	$\phi 8$	9.5	38	9	2 x M5 x 0.8 with thread depth 4	57.5
20	62	24	84	60	22	11	2 x M5 x 0.8	50	29	6	12	4.5	25	2 x 2 x $\phi 5.5$ through 2 x 2 x $\phi 9.5$ counterbore with depth 5.3	2 x M4 x 0.7 with thread depth 6	$\phi 10$	12	45	9	2 x M5 x 0.8 with thread depth 4	67.5
25	73	29	87	71	27	13.5	2 x M6 x 1.0	60	35	6	12	4.5	30	2 x 2 x $\phi 6.5$ through 2 x 2 x $\phi 11$ counterbore with depth 6.3	2 x M5 x 0.8 with thread depth 7.5	$\phi 12$	14.5	46	9	2 x M5 x 0.8 with thread depth 4	70.5
32	94	37	100.5	92	35	17.5	2 x M6 x 1.0	75	45	8	16	4	30	2 x 2 x $\phi 6.5$ through 2 x 2 x $\phi 11$ counterbore with depth 6.3	2 x M5 x 0.8 with thread depth 7.5	$\phi 16$	18.5	56	10	2 x Rc1/8 with thread depth 5	80.5

Bore size (mm)	Symbol	Z			
	Stroke	10, 20	30, 40, 50	75	100
15		25	35	45	55
20		30	40	60	60
25		30	40	60	60
32		40	50	70	70

**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

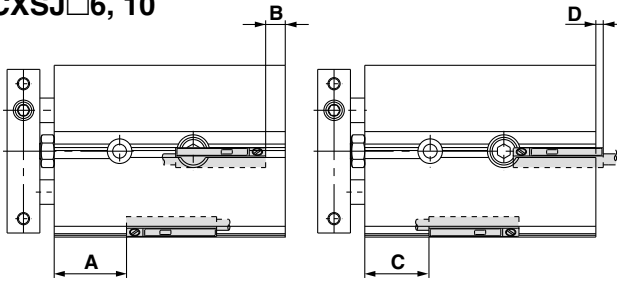
**-X□**

Individual

**-X□**

## Auto Switch Proper Mounting Position for Stroke End Detection

### CXSJ□6, 10



### Operating Range

(mm)

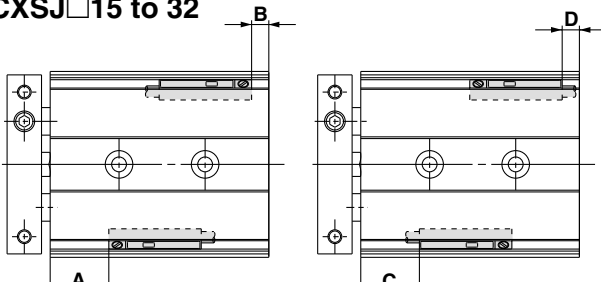
Auto switch model	Bore size					
	6	10	15	20	25	32
D-A9□, D-A9□V	5	6	6	7.5	8	9
D-M9□, D-M9□V						
D-M9□A, D-M9□AV	2.5	3	3.5	4.5	4.5	5
D-M9□W, D-M9□WV						

\* The operating ranges are provided as guidelines including hystereses and are not guaranteed values (assuming approximately ±30% variations). They may vary significantly with ambient environments.

### Auto Switch Proper Mounting Position

Bore size (mm)	D-A90, D-A96				D-A93				D-M9□, D-M9□W D-M9□AVL				D-M9□V, D-M9□WV			
	A	B	C	D	A	B	C	D	A	B	C	D	A	B	C	D
6	15.5	—	13.5	5.5	15.5	—	11	8	19.5	0.5	9.5	9.5	19.5	0.5	11.5	7.5
10	25.5	—	23.5	3	25.5	—	21	5.5	29.5	3	19.5	7	29.5	3	21.5	5
15	31.5	6	29.5	4	31.5	6	27	1.5	35.5	10	25.5	0	35.5	10	27.5	2
20	39	9	37	7	39	9	34.5	4.5	43	13	33	3	43	13	35	5
25	40	11	38	9	40	11	35.5	6.5	44	15	34	5	44	15	36	7
32	49	11.5	47	9.5	49	11.5	44.5	7	53	15.5	43	5.5	53	15.5	45	7.5

### CXSJ□15 to 32



Electrical entry direction:  
Inward

Electrical entry direction:  
Outward

Bore size (mm)	D-M9□AL			
	A	B	C	D
6	19.5	0.5	7.5	11.5
10	29.5	3	17.5	9
15	35.5	10	23.5	2
20	43	13	31	5
25	44	15	32	7
32	53	15.5	41	7.5

Note 1) ø6: D-A90, A96, A93, F9BAL

ø10: D-A90, A96, A93

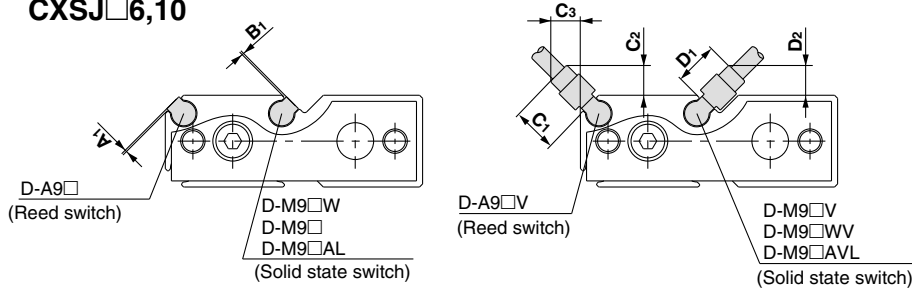
Only outward electrical entry (D dimension) is available.

Note 2) Minus value in D column (ø15, ø20, ø25, ø32) means that the auto switches are to be mounted beyond the cylinder body edges.

Note 3) When setting an auto switch, confirm the operation and adjust its mounting position.

## Auto switch mounting dimensions

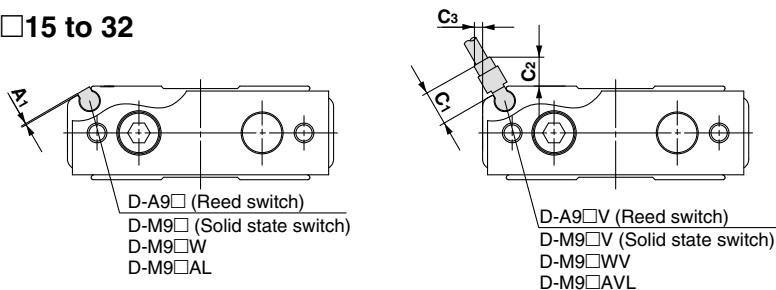
### CXSJ□6,10



(mm)

Auto switch model	Symbol	Bore size	
		6	10
D-A9□	A <sub>1</sub>	1	1
D-M9□, D-M9□W	B <sub>1</sub>	1	1
D-M9□AL	B <sub>1</sub>	2	2
D-A9□V	C <sub>1</sub> , D <sub>1</sub>	5.5	5.5
	C <sub>2</sub> , C <sub>3</sub> , D <sub>2</sub>	4	4
D-M9□V, D-M9□WV	C <sub>1</sub> , D <sub>1</sub>	8	8
	C <sub>2</sub> , C <sub>3</sub> , D <sub>2</sub>	6	6

### CXSJ□15 to 32

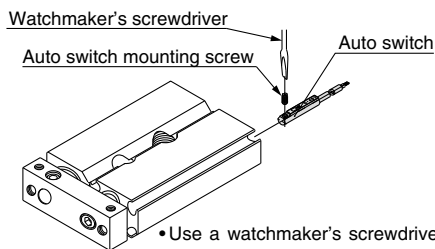


(mm)

Auto switch model	Symbol	Bore size			
		15	20	25	32
D-M9□, D-M9□W	A <sub>1</sub>	1	1	1	1
D-M9□AL	A <sub>1</sub>	2	2	2	2
D-A9□V	C <sub>1</sub>	5.5	5.5	5.5	5.5
	C <sub>2</sub>	4.5	4.5	4.5	4.5
D-M9□WV	C <sub>2</sub>	4.5	4.5	4.5	4.5
	C <sub>3</sub>	1	—	—	—
D-M9□AVL	C <sub>3</sub>	1	—	—	—



## Auto Switch Mounting



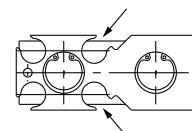
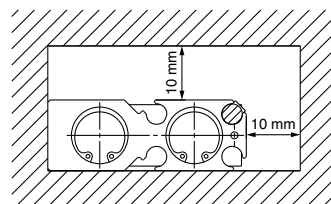
- Use a watchmaker's screwdriver with a handle 5 to 6 mm in diameter when tightening the auto switch mounting screw.

Tightening Torque of Auto Switch Mounting Screw (N·m)

Auto switch model	Tightening torque
<b>D-A9□(V)</b>	0.10 to 0.20
<b>D-M9□(V)</b> <b>D-M9□W(V)</b>	0.05 to 0.15

### ⚠ Caution

- ① **Avoid proximity to magnetic objects.**  
When magnetic substances such as iron (including flange brackets) are in close proximity to an auto switch cylinder (auto switch mounting side), be sure to provide a clearance between the magnetic substance and the cylinder body as shown in the drawing below. If the clearance is less than 10 mm, the auto switch may not function properly.
- ② **For CXSJ□6/10, the switch cannot be attached or detached from the plate side if the middle groove (indicated by arrows in the figure on the right) is used. (It will interfere with the bumper bolt at the end of the groove.)**



Other than the applicable auto switches listed in "How to Order," the following auto switches can be mounted.

\* Normally closed (NC = b contact), solid state auto switches (D-F9G and D-F9H type) are also available. For details, refer to page 1746.

CX2

CXW

CXT

**CXSJ**

CXS

D-□

-X□

Individual  
-X□



# Series CXSJ Specific Product Precautions

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.

## Mounting

### ⚠ Caution

1. Make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness: 0.05 or less).

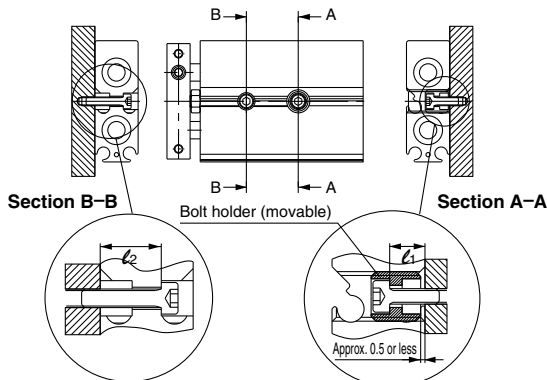
Dual-rod cylinders can be mounted from 3 directions, however, make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness: 0.05 or less). Otherwise, the accuracy of the piston rod operation is not achieved, and malfunctioning can occur.

2. The piston rod must be retracted when mounting the cylinder.

Scratches or gouges in the piston rod may lead to damaged bearings and seals and cause malfunctions or air leakage.

3. CXSJ (ø6, ø10)

Adjust the bolt holder using a hexagon wrench 3 mm in width across flats so that it does not protrude from the cylinder surface (approx. 0.5 mm depth from the cylinder surface to the top of the holder). If the bolt holder is not properly adjusted, it can interfere with the switch rail, hindering the auto switch mounting. The required length of the mounting bolt for a bolt holder and mounting hole in the rod cover side varies depending on the bearing surface position for the mounting bolt. Refer to dimensions  $l_1$  and  $l_2$  provided below to select the appropriate mounting bolt length.



	$l_1$ (mm)	$l_2$ (mm)	Applicable mounting bolt size
CXSJ□6	5	8.4	M3
CXSJ□10	5	9.5	M3

Be sure to mount the cylinder to the bolt holder. If it is operated without using the bolt holder, the bolt holder may drop.

## Piping

### ⚠ Caution

1. For axial piping, the side port of the standard cylinder is plugged. However, a plugged port can be switched according to the operating conditions. When switching the plugged port, check the air leakage. If small air leakage is detected, order the below plugs, and reassemble it.

Plug part no.: (ø6) MTS08-08-P6830  
(ø10) CXS10-08-28747A

## Stroke Adjustment

### ⚠ Caution

1. After adjusting the stroke, make sure to tighten the hexagon nut to prevent it from loosening.

Dual-rod cylinders have a bolt to adjust 0 to -5 mm strokes on the retracted end (IN).

Loosen the hexagon nut to adjust the stroke; however, make sure to tighten the hexagon nut after making an adjustment.

2. Never operate a cylinder with its bumper bolt removed. Also, do not attempt to tighten the bumper bolt without using a nut.

If the bumper bolt is removed, the piston hits the head cover causing damage to the cylinder. Therefore, do not use a cylinder without a bumper bolt.

Furthermore, if the bumper bolt is tightened without a nut, the piston seal is caught in the leveled part, damaging the seal.

3. A bumper at the end of the bumper bolt is replaceable.

In case of a missing bumper, or a bumper has a permanent settling, use the right part numbers for ordering.

Bore size (mm)	6, 10, 15	20, 25	32
Part no.	CXS10-34A 28747	CXS20-34A 28749	CXS32-34A 28751
Qty.	1		

## Disassembly and Maintenance

### ⚠ Caution

1. Never use a cylinder with its plate removed.

When removing the hexagon socket head cap screw on the end plate, the piston rod must be secured to prevent from rotating. However, if the sliding parts of the piston rod are scratched and gouged, a malfunction may occur.

2. When disassembling and reassembling the cylinder, contact SMC or refer to the separate instruction manual.

### ⚠ Warning

1. Take precautions when your hands are near the plate and housing.

When the cylinder is operated, take extra precautions to avoid getting your hands and fingers caught between the plate and housing, that can cause a bodily injury.

## Operating Environment

### ⚠ Caution

1. Do not operate the cylinder in a pressurized environment.  
The pressurized air may flow inside the cylinder due to its construction.
2. Do not use as a stopper. This may cause malfunction.  
When using as a stopper, select a stopper cylinder (Series RS) or a compact guide cylinder (Series MGP).

## Speed Adjustment

### ⚠ Caution

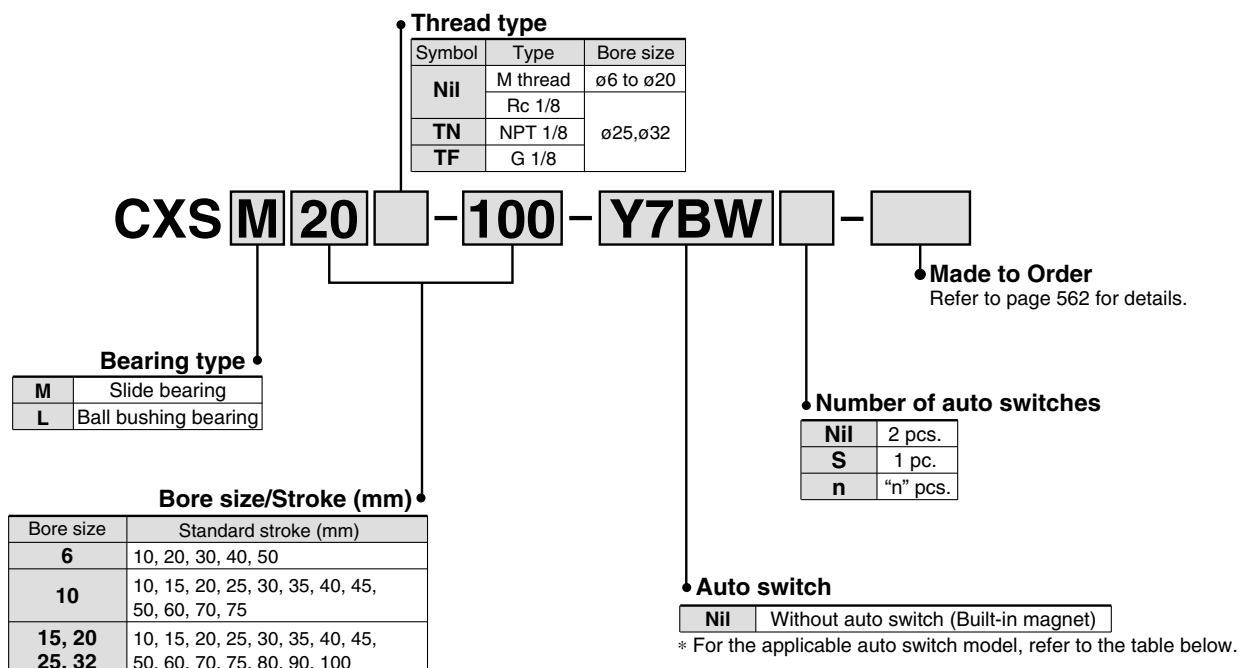
1. When CXSJ□6 is operated at a low speed, adjust the speed with an IN/OUT control by installing two dual speed controllers due to the small cylinder capacity. This can prevent the cylinder from ejecting.

# Dual Rod Cylinder Basic Type

# Series CXS

ø6, ø10, ø15, ø20, ø25, ø32

## How to Order



### 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)	3 (L)	5 (Z)		IC circuit	Relay, PLC		
															5 V, 12 V	—
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	Y69A	Y59A	●	●	○	○	IC circuit	Relay, PLC	
				3-wire (PNP)				Y7PV	Y7P	●	●	○				
				2-wire				Y69B	Y59B	●	●	○				
	Diagnostic indication (2-color indication)			3-wire (NPN)	5 V, 12 V	Y7NWV	Y7NW	●	●	○	○					
				3-wire (PNP)		Y7PWV	Y7PW	●	●	○						
				2-wire		Y7BWV	Y7BW	●	●	○						
Water resistant (2-color indication)	2-wire	12 V	—	Y7BA	—	●	○	○								
	—	—	—	—	—	—	—	—								
Reed switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	5 V	—	—	Z76	●	●	—	—	IC circuit	—	
				2-wire				100 V	—	Z73	●	●	●	—	—	Relay, PLC
								100 V or less	—	Z80	●	●	—	—	IC circuit	

\* Lead wire length symbols: 0.5 m ..... Nil (Example) Y59A  
 3 m ..... L (Example) Y59AL  
 5 m ..... Z (Example) Y59AZ

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

- Since there are other applicable auto switches than listed, refer to page 569 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- Auto switches are shipped together (not assembled).

CX2

CXW

CXT

CXSJ

CXS

D-

-X

Individual  
-X

# Series CXS



**Made to Order Specifications**  
(For details, refer to pages 1851 to 1954 and 2003.)

Symbol	Specifications
-XB6	Heat resistant cylinder (-10 to 150°C)
-XB9	Low speed cylinder (10 to 50 mm/s)
-XB11	Long stroke type
-XB13	Low speed cylinder (5 to 50 mm/s)
-XB19	High speed specification
-XC22	Fluororubber seals
-X593	Without plate

## Specifications

Bore size (mm)	6	10	15	20	25	32
Fluid	Air (Non-lube)					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Minimum operating pressure	0.15 MPa	0.1 MPa		0.05 MPa		
Ambient and fluid temperature	-10 to 60°C (No freezing)					
Piston speed	30 to 300 mm/s	30 to 800 mm/s	30 to 700 mm/s		30 to 600 mm/s	
Cushion	Rubber bumper					
Stroke adjustable range	0 to -5 mm compared to the standard stroke					
Port size	M5 x 0.8				Rc 1/8	
Bearing type	Slide bearing, Ball bushing bearing (Same dimensions for both)					
Allowable kinetic energy	0.0023 J	0.064 J	0.095 J	0.17 J	0.27 J	0.32 J

## Standard Stroke

Model	Standard stroke		Long stroke	
	(mm)		(mm)	
CXS□6	10, 20, 30, 40, 50		60, 70, 75, 80, 90, 100	
CXS□10	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 75		80, 90, 100, 110, 120, 125, 150	
CXS□15			110, 120, 125, 150	
CXS□20	10, 15, 20, 25, 30, 35, 40, 45, 50,			
CXS□25	60, 70, 75, 80, 90, 100		110, 120, 125, 150, 175, 200	
CXS□32				

\* Refer to "Made to Order Specifications" for stroke which exceeds the standard stroke length.  
Non-standard strokes for a size ø6 cylinder are available as a special order.

## Theoretical Output

Model	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)									
				0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7		
CXS□6	4	OUT	56	—	8.4	11.2	16.8	22.4	28.0	33.6	39.2		
		IN	31	—	4.6	6.2	9.3	12.4	15.5	18.6	21.7		
CXS□10	6	OUT	157	15.7	—	31.4	47.1	62.8	78.5	94.2	110		
		IN	100	10.0	—	20.0	30.0	40.0	50.0	60.0	70.0		
CXS□15	8	OUT	353	35.3	—	70.6	106	141	177	212	247		
		IN	252	25.2	—	50.4	75.6	101	126	151	176		
CXS□20	10	OUT	628	62.8	—	126	188	251	314	377	440		
		IN	471	47.1	—	94.2	141	188	236	283	330		
CXS□25	12	OUT	982	98.2	—	196	295	393	491	589	687		
		IN	756	75.6	—	151	227	302	378	454	529		
CXS□32	16	OUT	1608	161	—	322	482	643	804	965	1126		
		IN	1206	121	—	241	362	482	603	724	844		

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## Mass

Model	Standard stroke (mm)															
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100	
CXSM 6	0.081	—	0.095	—	0.108	—	0.122	—	0.135	—	—	—	—	—	—	
CXSL 6	0.081	—	0.095	—	0.108	—	0.122	—	0.135	—	—	—	—	—	—	
CXSM10	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.25	0.27	0.28	—	—	—	
CXSL 10	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.25	0.27	0.28	—	—	—	
CXSM15	0.25	0.265	0.28	0.29	0.30	0.315	0.33	0.345	0.36	0.39	0.42	0.435	0.45	0.48	0.51	
CXSL 15	0.27	0.285	0.30	0.31	0.32	0.335	0.35	0.365	0.38	0.41	0.44	0.455	0.47	0.50	0.53	
CXSM20	0.40	0.42	0.44	0.46	0.48	0.495	0.51	0.53	0.55	0.585	0.62	0.64	0.66	0.70	0.74	
CXSL 20	0.43	0.445	0.46	0.48	0.50	0.515	0.53	0.55	0.57	0.605	0.64	0.66	0.68	0.715	0.75	
CXSM25	0.61	0.635	0.66	0.69	0.72	0.745	0.77	0.80	0.83	0.89	0.95	0.97	0.995	1.06	1.10	
CXSL 25	0.62	0.645	0.67	0.70	0.73	0.755	0.78	0.81	0.84	0.895	0.955	0.98	1.005	1.065	1.11	
CXSM32	1.15	1.19	1.23	1.275	1.32	1.36	1.40	1.45	1.49	1.58	1.665	1.71	1.755	1.84	1.93	
CXSL 32	1.16	1.205	1.25	1.295	1.34	1.38	1.42	1.465	1.51	1.595	1.68	1.72	1.765	1.855	1.94	

## Clean Series

There are two types of cylinders, relieving type and vacuum type, available for a clean room environment. The relieving type specification with the double-seal construction of the rod section allows the cylinder to channel exhaust through the relief port directly to the outside of a clean room environment. The vacuum type specification allows for the application of a vacuum on the rod section while forced exhaust of air takes place through the vacuum port to the outside of a clean room environment.

## How to Order

**12** – **CXS L** [Bore size] – [Stroke] – [Auto switch]

● **Ball bushing bearing**

<b>M</b>	Slide bearing
<b>L*</b>	Ball bushing bearing

\* 12-series is compatible with the ball bushing bearing type only.

● **Clean room specifications**

<b>10</b>	Relieving type
<b>11</b>	Vacuum type
<b>12</b>	Relieving type (With specially treated sliding parts)

## Specifications

Bore size (mm)	6	10	15	20	25	32
<b>Proof pressure</b>	1.05 MPa					
<b>Maximum operating pressure</b>	0.7 MPa					
<b>Minimum operating pressure</b>	0.15 MPa	0.1 MPa				0.05 MPa
<b>Ambient and fluid temperature</b>	-10 to 60°C (No freezing)					
<b>Piston speed</b>	30 to 400 mm/s					
<b>Stroke adjustable range</b>	0 to -5 mm compared to the standard stroke					
<b>Bearing type</b>	Ball bushing bearing					

Refer to "Pneumatic Clean Series" catalog for dimensions.

## Copper and Fluorine-free (For CRT manufacturing process)

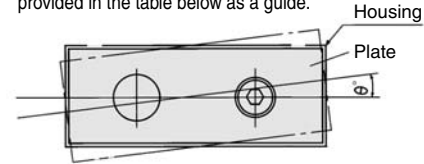
To prevent the influence of copper ions or halogen ions during CRT manufacturing processes, copper and fluorine materials are not used in the component parts.

Note) Since the standard cylinders are essentially copper and fluorine-free, those are conforming to 20-specifications. However, in the event of combined specifications, it is likely to happen non-conformity to 20-specifications. (e.g. combination between 20- and -XB9 (-XB13)) In order to avoid such a non-conformity, we distinguish the model no. from the one for standard products by prefixing 20-.

## Operating Conditions

### Non-rotating Accuracy

Non-rotating accuracy  $\theta^\circ$  at the retracted end and without a load should be less than or equal to the value provided in the table below as a guide.

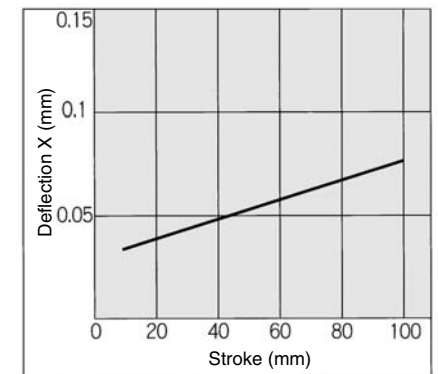
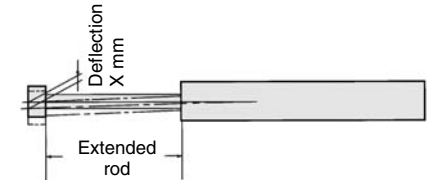


Bore size (mm)	$\theta$ to $\theta_{32}$
<b>CXSM</b> (Slide bearing)	$\pm 0.1^\circ$
<b>CXSL</b> (Ball bushing bearing)	

### CXS□6 to 32

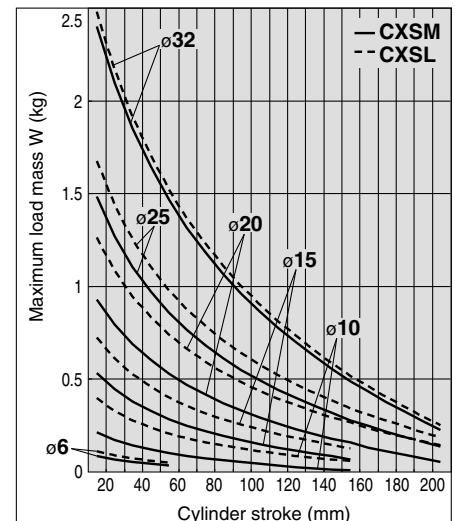
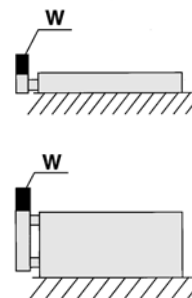
#### Deflection at the Plate End

An approximate plate-end deflection X without a load is shown in the graph below.



## Maximum Load Mass

When the cylinder is mounted as shown in the diagrams below, the maximum load mass W should not exceed the values illustrated in the graph immediately following the diagrams.



**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

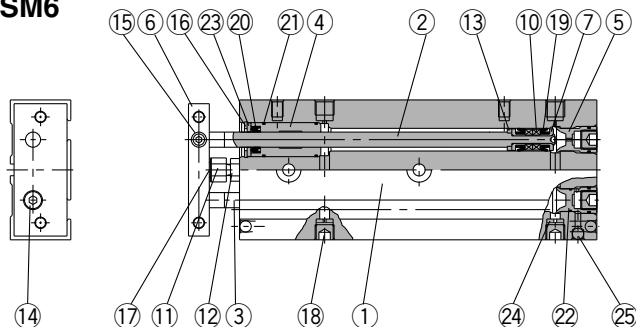
**-X□**

Individual  
**-X□**

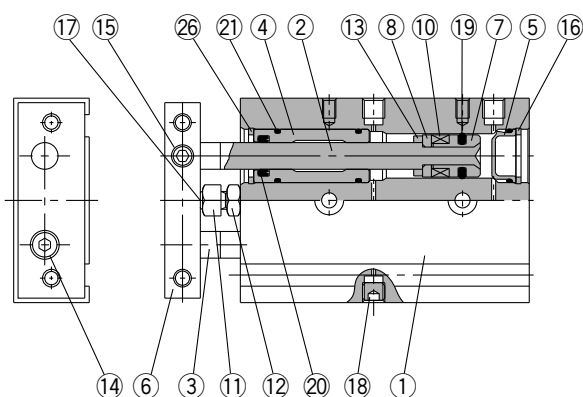
# Series CXS

## Construction: Slide Bearing

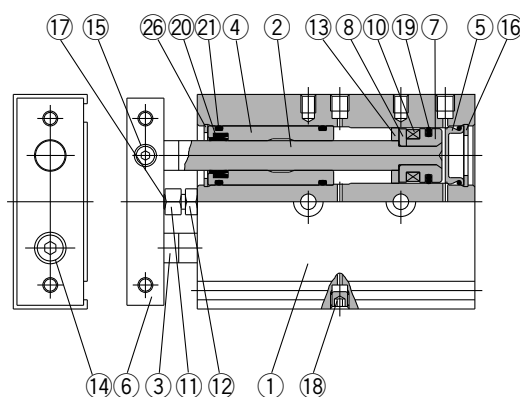
### CXSM6



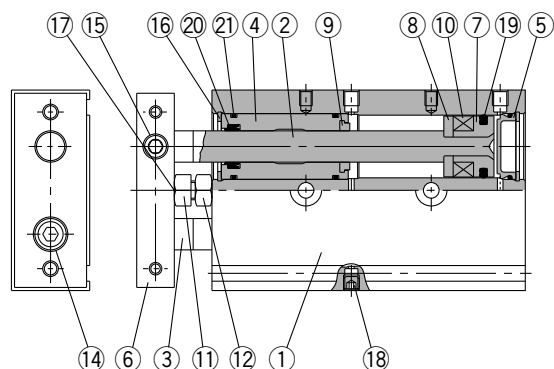
### CXSM10



### CXSM15



### CXSM20 to 32



### Component Parts

No.	Description	Material	Note
1	Housing	Aluminum alloy	Hard anodized
2	Piston rod A	Carbon steel <sup>(1)</sup>	Hard chrome plated
3	Piston rod B	Carbon steel <sup>(1)</sup>	Hard chrome plated
4	Rod cover	Aluminum bearing alloy	
5	Head cover	Special steel <sup>(2)</sup>	
6	Plate	Aluminum alloy	Hard anodized
7	Piston A	Aluminum alloy	Chromated
8	Piston B	Aluminum alloy	Chromated
9	Bumper A	Polyurethane	
10	Magnet	—	
11	Bumper bolt	Carbon steel	Nickel plated
12	Hexagon nut	Carbon steel	Nickel plated
13	Bumper B	Polyurethane	
14	Hexagon socket head cap screw	Chromium steel	Nickel plated
15	Hexagon socket head set screw	Chromium steel	Nickel plated
16	Retaining ring	Special steel	Nickel plated

Note 1) Stainless steel for CXSM6.  
Note 2) Anodized aluminum alloy for CXSM6.

### Component Parts

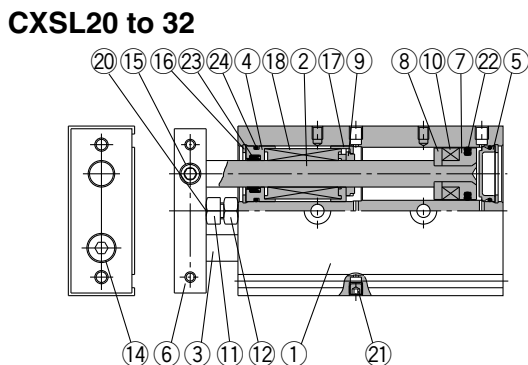
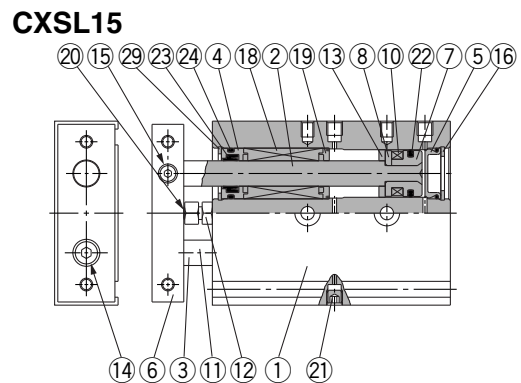
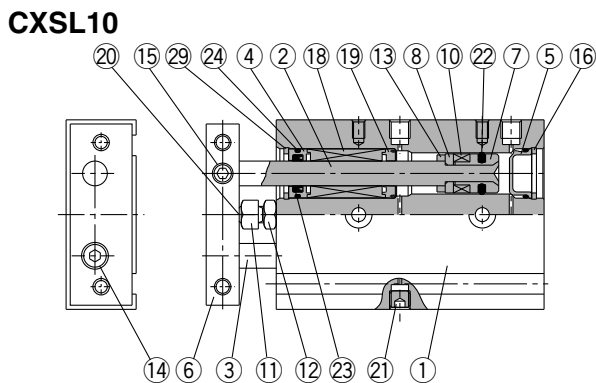
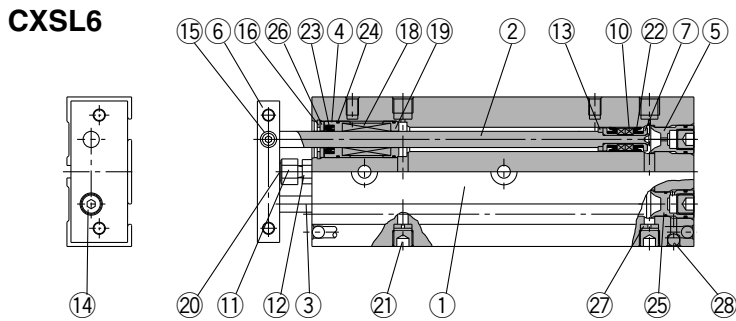
No.	Description	Material	Note
17	Bumper	Polyurethane	
18	Plug	Chromium steel	Nickel plated
19	Piston seal	NBR	
20	Rod seal	NBR	
21	O-ring	NBR	
22	Head cover B	Aluminum alloy	Nickel plated
23	Seal retainer	Aluminum alloy	
24	Port spacer	Aluminum alloy	
25	Steel ball	Special steel	Hard chrome plated
26	Retaining ring B	Special steel	Nickel plated

### Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
6	CXSM 6-PS	Set of nos. above (19, 20 and 21)
10	CXSM 10 A PS	
15	CXSM 15-PS	
20	CXSM 20-PS	
25	CXSM 25-PS	
32	CXSM 32-PS	

\* Seal kit includes (19), (20) and (21). 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)

## Construction: Ball Bushing Bearing



### Component Parts: Standard Piping

No.	Description	Material	Note
1	<b>Housing</b>	Aluminum alloy	Hard anodized
2	<b>Piston rod A</b>	Special steel	Hard chrome plated
3	<b>Piston rod B</b>	Special steel	Hard chrome plated
4	<b>Rod cover</b>	Aluminum bearing alloy	
5	<b>Head cover</b>	Special steel <sup>(1)</sup>	
6	<b>Plate</b>	Aluminum alloy	Hard anodized
7	<b>Piston A</b>	Aluminum alloy	Chromated
8	<b>Piston B</b>	Aluminum alloy	Chromated
9	<b>Bumper A</b>	Polyurethane	
10	<b>Magnet</b>	—	
11	<b>Bumper bolt</b>	Carbon steel	Nickel plated
12	<b>Hexagon nut</b>	Carbon steel	Nickel plated
13	<b>Bumper B</b>	Polyurethane	
14	<b>Hexagon socket head cap screw</b>	Chromium steel	Nickel plated
15	<b>Hexagon socket head set screw</b>	Chromium steel	Nickel plated
16	<b>Retaining ring</b>	Special steel	Nickel plated
17	<b>Bumper holder</b>	Synthetic resin	



Note 1) Anodized aluminum alloy for CXSL6.

### Component Parts

No.	Description	Material	Note
18	<b>Ball bushing</b>	—	
19	<b>Bearing spacer</b>	Synthetic resin <sup>(2)</sup>	
20	<b>Bumper</b>	Polyurethane	
21	<b>Plug</b>	Chromium steel	Nickel plated
22	<b>Piston seal</b>	NBR	
23	<b>Rod seal</b>	NBR	
24	<b>O-ring</b>	NBR	
25	<b>Head cover B</b>	Aluminum alloy	Nickel plated
26	<b>Seal retainer</b>	Aluminum alloy	
27	<b>Port spacer</b>	Aluminum alloy	
28	<b>Steel ball</b>	Special steel	Hard chrome plated
29	<b>Retaining ring B</b>	Special steel	Nickel plated

Note 2) Aluminum bearing alloy for CXSL6.

### Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
6	CXSL 6 - PS	Set of nos. above 22, 23 and 24
10	CXSL 10 B PS	
15	CXSL 15 A PS	
20	CXSL 20 A PS	
25	CXSL 25 A PS	
32	CXSL 32 A PS	

\* Seal kit includes 22, 23 and 24. 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)

**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

**D-□**

**-X□**

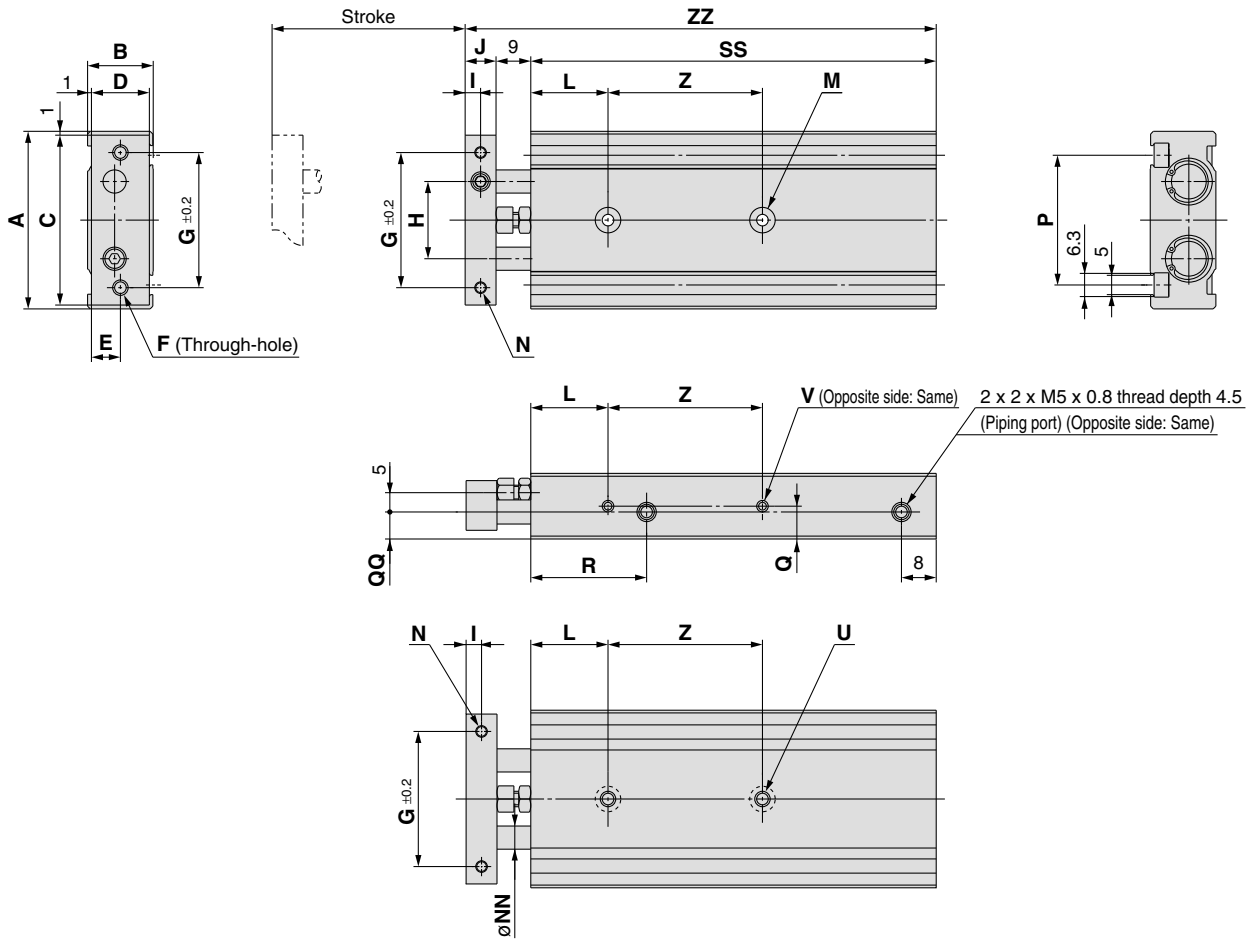
**Individual**

**-X□**





**Dimensions: ø10, ø15**



Model	A	B	C	D	E	F	G	H	I	J	L	M	N	NN	P	Q	QQ	R	U	V
CXS□10	46	17	44	15	7.5	2 x M4 x 0.7	35	20	4	8	20	2 x ø3.4 through 2 x ø6.5 counter- bore depth 3.3	2 x M3 x 0.5 thread depth 5	ø6	33.6	8.5	7	30	2 x M4 x 0.7 thread depth 7	4 x M3 x 0.5 thread depth 4.5
CXS□15	58	20	56	18	9	2 x M5 x 0.8	45	25	5	10	30	2 x ø4.3 through 2 x ø8 counter- bore depth 4.4	2 x M4 x 0.7 thread depth 6	ø8	48	10	10	38.5	2 x M5 x 0.8 thread depth 8	4 x M4 x 0.7 thread depth 5

**Dimensions by Stroke**

Model	SS										Z					ZZ																			
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100	10, 15 20, 25	30, 35, 40, 45, 50	60, 70, 75	80	90, 100	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100
CXS□10	65	70	75	80	85	90	95	100	105	115	125	130	-	-	30	40	50	-	-	82	87	92	97	102	107	112	117	122	132	142	147	-	-	-	
CXS□15	70	75	80	85	90	95	100	105	110	120	130	135	140	150	160	25	35	45	45	55	89	94	99	104	109	114	119	124	129	139	149	154	159	169	179

CX2

CXW

CXT

CXSJ

CXS

D-□

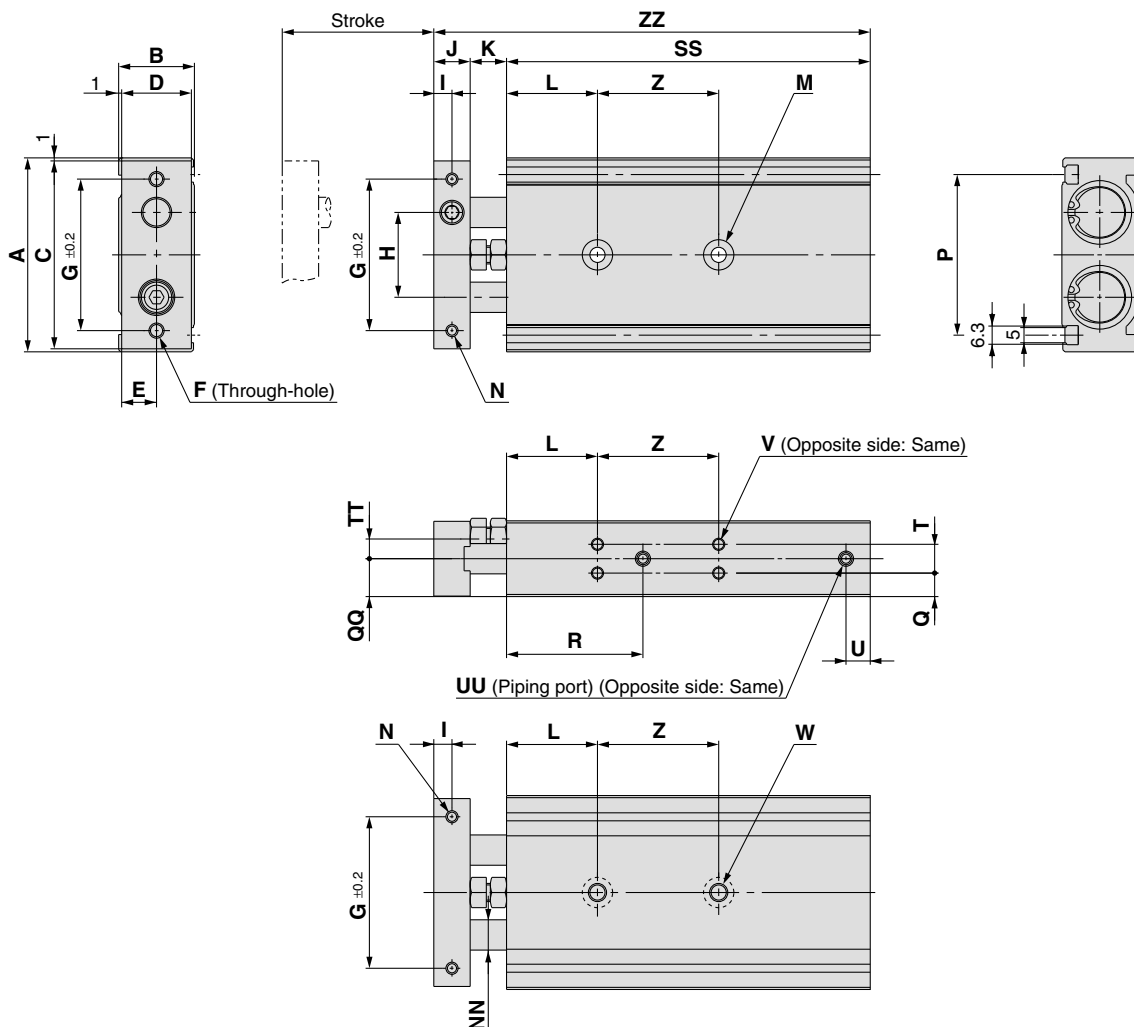
-X□

Individual

-X□

# Series CXS

Dimensions:  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



(mm)

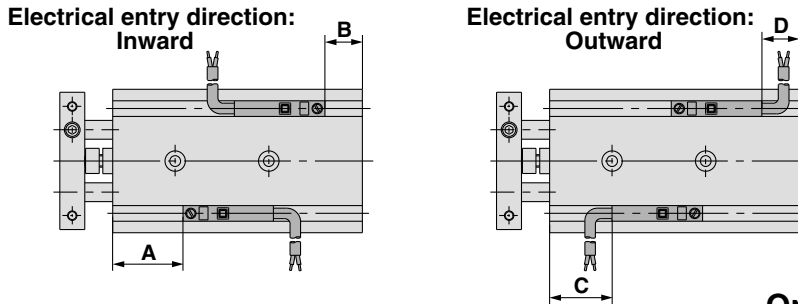
Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	NN	P
CXS□20	64	25	62	23	11.5	2 x M5 x 0.8	50	28	6	12	12	30	2 x $\varnothing 5.5$ through 2 x $\varnothing 9.5$ counterbore depth 5.3	2 x M4 x 0.7 thread depth 6	$\varnothing 10$	53
CXS□25	80	30	78	28	14	2 x M6 x 1.0	60	35	6	12	12	30	2 x $\varnothing 6.9$ through 2 x $\varnothing 11$ counterbore depth 6.3	2 x M5 x 0.8 thread depth 7.5	$\varnothing 12$	64
CXS□32	98	38	96	36	18	2 x M6 x 1.0	75	44	8	16	14	30	2 x $\varnothing 6.9$ through 2 x $\varnothing 11$ counterbore depth 6.3	2 x M5 x 0.8 thread depth 8	$\varnothing 16$	76

Model	Q	QQ	R	T	TT	U	UU	V	W
CXS□20	7.75	12.5	45	9.5	6.5	8	4 x M5 x 0.8 thread depth 4.5	8 x M4 x 0.7 thread depth 5.5	2 x M6 x 1.0 thread depth 10
CXS□25	8.5	15	46	13	9	9	4 x Rc $\frac{1}{8}$ thread depth 6.5	8 x M5 x 0.8 thread depth 7.5	2 x M8 x 1.25 thread depth 12
CXS□32	9	19	56	20	11.5	10	4 x Rc $\frac{1}{8}$ thread depth 6.5	8 x M5 x 0.8 thread depth 7.5	2 x M8 x 1.25 thread depth 12

## Dimensions by Stroke

Model	SS																Z			ZZ															
	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100	10, 15, 20, 25	30, 35, 40, 45, 50	60, 70, 75, 80, 90, 100	10	15	20	25	30	35	40	45	50	60	70	75	80	90	100		
CXS□20	80	85	90	95	100	105	110	115	120	130	140	145	150	160	170	30	40	60	104	109	114	119	124	129	134	139	144	154	164	169	174	184	194		
CXS□25	82	87	92	97	102	107	112	117	122	132	142	147	152	162	172	30	40	60	106	111	116	121	126	131	136	141	146	156	166	171	176	186	196		
CXS□32	92	97	102	107	112	117	122	127	132	142	152	157	162	172	182	40	50	70	122	127	132	137	142	147	152	157	162	172	182	187	192	202	212		

### Auto Switch Proper Mounting Position (Detection at Stroke End)



Bore size (mm)	A	B	D-Z7/Z8, D-Y7□W D-Y5□, D-Y7□		D-Y6□, D-Y7□V D-Y7□WV		D-Y7BAL	
			C	D	C	D	C	D
6	15.5	4.5	11.5 (10)	0.5 (-1)	13	2	5.5	-5.5
10	22.5	7.5	18.5 (17)	3.5 (2)	20	5	12.5	-2.5
15	30.5	4.5	26.5 (25)	0.5 (-1)	28	2	20.5	-5.5
20	38	7	34 (32.5)	3 (1.5)	36	4.5	28	-3
25	38	9	34 (32.5)	5 (3.5)	36	6.5	28	-1
32	48	9	44 (42.5)	5 (3.5)	46	6.5	38	-1

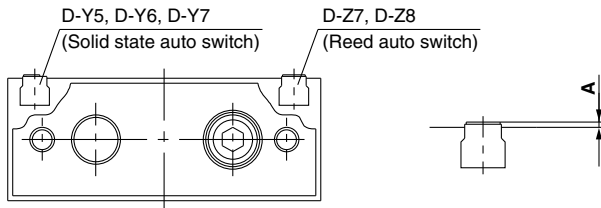
Lead wire entry is inward prior to shipment.  
 Note 1) Negative figures in the table D indicate how much the load wires protrude from the cylinder body.  
 Note 2) ( ): Denotes the dimensions of D-Z73.  
 Note 3) Adjust the auto switch after confirming the operating conditions in the actual setting.

### Operating Range

Auto switch model	Bore size (mm)					
	6	10	15	20	25	32
D-Z7□/Z80	9	7	9	9	9	11
D-Y59□, D-Y69□ D-Y7P/Y7PV D-Y7□W/Y7□WV D-Y7BAL	3	3	3.5	3.5	4	4.5

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

### Dimensions for Mounting of Auto Switch



### A Dimension

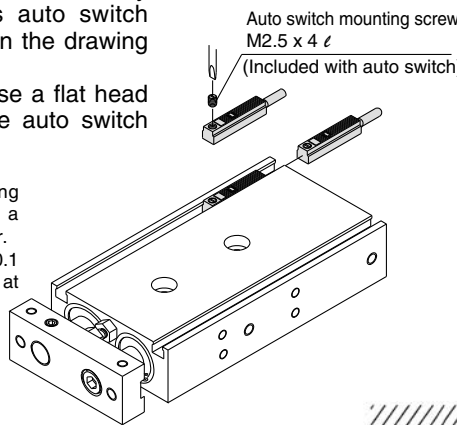
Auto switch model	Bore size (mm)					
	6	10	15	20	25	32
D-Y59A/Y7P/Y59B D-Y69A/Y7PV/Y69B D-Y7NWV/Y7PWV/Y7BWV D-Y7NW/Y7PW/Y7BW D-Y7BAL	0.7		0.2			
D-Z7, D-Z8	1.2		0.7			

### Auto Switch Mounting

When mounting and securing auto switches, they should be inserted into the cylinder's auto switch mounting rail from the direction shown in the drawing below.

After setting in the mounting position, use a flat head watchmaker's screwdriver to tighten the auto switch mounting screw that is included.

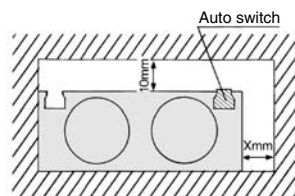
Note) When tightening an auto switch mounting screw, use a watchmakers' screwdriver with a handle of approximately 5 to 6 mm in diameter. Also, tighten with a torque of about 0.05 to 0.1 N·m. As a guide, turn about 90° past the point at which tightening can first be felt.



### Caution

#### 1. Avoid proximity to magnetic objects

When magnetic substances such as iron (including flange brackets) are in close proximity to a cylinder body with an auto switch, be sure to provide a clearance between the magnetic substance and the cylinder body as shown in the drawing below. If the clearance is less than the values noted in the table below, the auto switch may not function properly.



Bore size	X (mm)
ø6	0
ø10	0
ø15	10
ø20	10
ø25	0
ø32	0

Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted. For detailed specifications, refer to pages 1719 to 1827.

\* Normally closed (NC = b contact), solid state auto switch (D-Y7G/Y7H type) are also available. For details, refer to page 1748.

CX2

CXW

CXT

CXSJ

CXS

D-□

-X□

Individual  
-X□



# Series CXS Specific Product Precautions

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.

## Mounting

### ⚠ Caution

1. **Make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness: 0.05 or less).**

Dual rod cylinders can be mounted from 3 directions, however, make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness: 0.05 or less). Otherwise, the accuracy of the piston rod operation is not achieved, and malfunctioning can occur.

2. **Piston rod must be retracted when mounting the cylinder.**

Scratches or gouges in the piston rod may lead to damaged bearings and seals and cause malfunctions or air leakage.

## Piping

### ⚠ Caution

1. **Plug the appropriate supply port(s) according to the operating conditions.**

Dual-rod cylinders have 2 supply ports for each operating direction (3 supply ports for  $\phi 6$  only). Plug the appropriate supply port according to the operating conditions. However, when switching the plugged port, verify air leakage. If small air leakage is detected, order the below plugs, and ressemble it.

Plug part no.: ( $\phi 6$ )CXS10-08-28747A  
 ( $\phi 10$  to  $\phi 20$ )CXS20-08-28749  
 ( $\phi 25$  to  $\phi 32$ )CYP025-08B29449(Rc 1/8)  
 CXS25-08-A3025A(NPT 1/8)  
 CXS25-08-A3911(G 1/8)

## Stroke Adjustment

### ⚠ Caution

1. **After adjusting the stroke, make sure to tighten the hexagon nut to prevent it from loosening.**

Dual rod cylinders have a bolt to adjust 0 to -5 mm strokes on the retracted end (IN).

Loosen the hexagon nut to adjust the stroke; however, make sure to tighten the hexagon nut after making an adjustment.

2. **Never operate a cylinder with its bumper bolt removed. Also, do not attempt to tighten the bumper bolt without using a nut.**

If the bumper bolt is removed, the piston hits the head cover causing damage to the cylinder. Therefore, do not use a cylinder without a bumper bolt.

Furthermore, if the bumper bolt is tightened without a nut, the piston seal is caught in the leveled part, damaging the seal.

## Stroke Adjustment

### ⚠ Caution

3. **A bumper at the end of the bumper bolt is replaceable.**  
 In case a missing bumper, or a bumper has a permanent settling, use following part numbers for ordering.

Bore size (mm)	6, 10, 15	20, 25	32
Part no.	CXS10-34A 28747	CXS20-34A 28749	CXS32-34A 28751
Qty.	1		

## Disassembly and Maintenance

### ⚠ Caution

1. **Never use a cylinder with its plate removed.**

When removing the hexagon socket head cap screw on the end plate, the piston rod must be secured to prevent from rotating. However, if the sliding parts of the piston rod are scratched and gouged, a malfunction may occur. If the plate is not required for your application, use the cylinder that does not come with a plate, available through made-to-order (-X593) on page 2003.

2. **When disassembling and reassembling the cylinder, please contact SMC or refer to the separate instruction manual.**

### ⚠ Warning

1. **Take precautions when your hands are near the plate and housing.**

Take sufficient care to avoid getting your hands or fingers caught when the cylinder is operated.

## Operating Environment

### ⚠ Caution

1. **Do not operate the cylinder in a pressurized environment.**  
 The pressurized air may flow inside the cylinder due to its construction.
2. **Do not use as a stopper. This may cause malfunction. When using as a stopper, select a stopper cylinder (Series RS) or a compact guide cylinder (Series MGP).**

## Speed Adjustment

### ⚠ Caution

1. **When CXSJ□6 is operated at a low speed, adjust the speed with an IN/OUT control by installing two dual speed controllers due to the small cylinder capacity. This can prevent the cylinder from ejecting.**

# Dual Rod Cylinder With Air Cushion

## Series CXS

ø20, ø25, ø32



### How to Order

**Thread type**

Symbol	Type	Bore size
Nil	M thread	ø20
	Rc	
TN	NPT	ø25, ø32
TF	G	

**CXS M 20 - 100 A - Y7BW**

**Dual Rod Cylinder**

**Bearing type**

Symbol	Type
M	Slide bearing
L	Ball bushing bearing

**Bore size/Stroke (mm)**

Bore size	Stroke
20	20, 25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100
25, 32	25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100

**Number of auto switches (No. of auto switch)**

Symbol	Type
Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Auto switch**

Symbol	Type
Nil	Without auto switch (Built-in magnet)

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

**Air cushion**

**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)	3 (L)	5 (Z)		IC circuit	Relay, PLC						
															3-wire (NPN)	3-wire (PNP)	2-wire	3-wire (NPN)	3-wire (PNP)	2-wire
Solid state switch	—	Grommet	Yes	3-wire (NPN)	5 V, 12 V	—	Y69A	Y59A	●	●	○	○	IC circuit	Relay, PLC						
				3-wire (PNP)			Y7PV	Y7P	●	●	○	○								
				2-wire			Y69B	Y59B	●	●	○	○								
	Diagnostic indication (2-color indication)			3-wire (NPN)	24 V		5 V, 12 V	Y7NWV	Y7NW	●	●	○	○		○	IC circuit				
				3-wire (PNP)				Y7PWV	Y7PW	●	●	○	○		○					
				2-wire				Y7BWV	Y7BW	●	●	○	○		○					
Water resistant (2-color indication)	—	Grommet	None	2-wire	24 V	12 V	—	Y7BA	—	●	○	○	—							
				Reed switch			—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	Z76	●	●	—	—	IC circuit	—
										2-wire	24 V	12 V	100 V	—	Z73	●	●	●	—	—
—	—	—	—	—	100 V or less	—	Z80	●	●	—	—	—	—	IC circuit	—					

\* Lead wire length symbols: 0.5 m ..... Nil (Example) Y59A  
 3 m ..... L (Example) Y59AL  
 m ..... Z (Example) Y59AZ

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

- Since there are other applicable auto switches than listed, refer to page 569 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- Auto switches are shipped together (not assembled).

CX2

CXW

CXT

CXSJ

CXS

D-□

-X□

Individual  
-X□

## ⚠ Precautions

**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

## ⚠ Caution

- Operate the cylinder until the stroke end.**  
 If the stroke is restricted by the external stopper and clamp workpiece, effective cushioning and noise reduction will not be achieved.
- Adjust the cushion needles to absorb the kinetic energy during the cushion stroke so that excessive kinetic energy does not remain when the piston reaches the stroke end.**  
 If the piston reaches the stroke end with excessive kinetic energy remaining (more than the values given in table (1) below) due to an improper adjustment, excessive impact will occur, causing damage to machinery.

Table (1) Allowable Kinetic Energy at Piston Impact

Bore size (mm)	20	25	32
Piston speed (mm/s)	50 to 700	50 to 600	50 to 600
Allowable kinetic energy (J)	0.17	0.27	0.32

### Cushion Needle Adjustment

## ⚠ Caution

- Keep the adjusting range for the cushion needle between the fully closed position and the rotations shown below.**

Bore size (mm)	20	25	32
Rotations	2.5 rotations or less	3 rotations or less	

Use a 3 mm flat head watchmakers screwdriver to adjust the cushion needles to the fully closed position, as this will cause damage to the seals. The adjusting range for the cushion needles must be between the fully closed position and the open position ranges indicated in the table above. A retaining mechanism prevents the cushion needles from slipping out; however, they may spring out during operation if they are rotated beyond the ranges shown above.

Precautions for selection standard, mounting, piping, and operating environment are same as for the standard series.

## Specifications

Bore size (mm)	20	25	32
Fluid	Air (Non-lube)		
Proof pressure	1.05 MPa		
Maximum operating pressure	0.7 MPa		
Minimum operating pressure	0.1 MPa		
Ambient and fluid temperature	-10 to 60°C (No freezing)		
Piston speed	50 to 1000 mm/s		
Port size	M5 x 0.8	Rc 1/8 (NPT 1/8, G 1/8)	
Bearing type	Slide bearing, Ball bushing bearing (Same dimensions for both)		
Cushion	Air cushion (Both ends)		

## Cushion mechanism

Bore size (mm)	Effective cushion length (mm)	Absorbable kinetic energy (J)
20	5.9	0.40
25	5.7	0.75
32	5.6	1.0

\* Maximum load mass is the same as the standard type.

## Standard Stroke

Model	Standard stroke (mm)
CXS□20	20, 25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100
CXS□25 CXS□32	25, 30, 35, 40, 45, 50, 60, 70, 75, 80, 90, 100

## Theoretical Output

Model	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)						
				0.1	0.2	0.3	0.4	0.5	0.6	0.7
CXS□20	10	OUT	628	62.8	126	188	251	314	377	440
		IN	471	47.1	94.2	141	188	236	283	330
CXS□25	12	OUT	982	98.2	196	295	393	491	589	687
		IN	756	75.6	151	227	302	378	454	529
CXS□32	16	OUT	1608	161	322	482	643	804	965	1126
		IN	1206	121	241	362	482	603	724	844

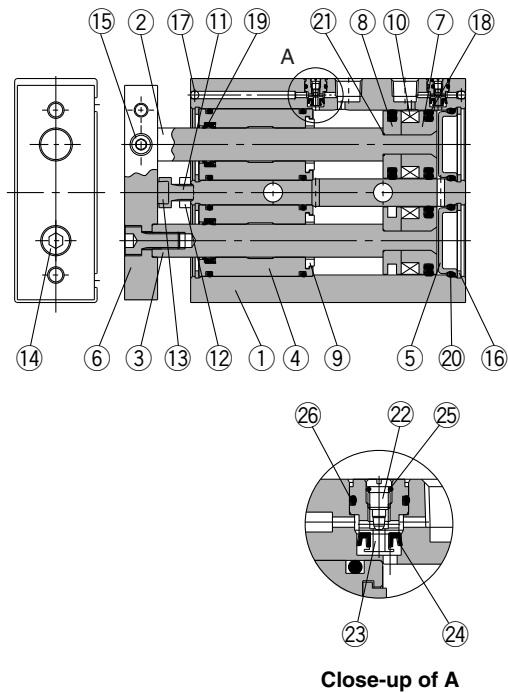
Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## Mass

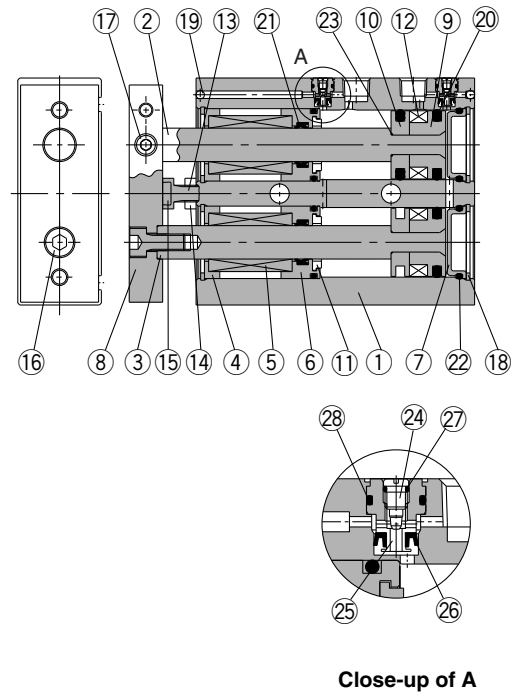
Model	Standard stroke (mm)												
	20	25	30	35	40	45	50	60	70	75	80	90	100
CXSM20-□A	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.66	0.70	0.715	0.735	0.755	0.815
CXSL20-□A	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.68	0.72	0.735	0.755	0.775	0.835
CXSM25-□A	—	0.78	0.80	0.82	0.84	0.86	0.88	0.92	0.96	0.98	1.00	1.04	1.08
CXSL25-□A	—	0.79	0.81	0.83	0.85	0.87	0.89	0.93	0.97	0.99	1.01	1.05	1.09
CXSM32-□A	—	1.48	1.53	1.575	1.62	1.67	1.72	1.82	1.92	1.96	2.06	2.14	2.20
CXSL32-□A	—	1.51	1.55	1.60	1.64	1.69	1.74	1.84	1.94	1.98	2.08	2.16	2.22

## Construction

### CXSM/With air cushion



### CXSL/With air cushion



### Component Parts: CXSM

No.	Description	Material	Note
1	Housing	Aluminum alloy	Hard anodized
2	Piston rod A	Carbon steel	Hard chrome plated
3	Piston rod B	Carbon steel	Hard chrome plated
4	Rod cover	Aluminum bearing alloy	
5	Head cover	Special steel	Electroless nickel plated
6	Plate	Aluminum alloy	Glossy, self-coloring
7	Piston A	Aluminum alloy	Chromated
8	Piston B	Aluminum alloy	Chromated
9	Bumper B	Polyurethane	
10	Magnet	—	
11	Bumper bolt	Carbon steel	Nickel plated
12	Hexagon nut	Carbon steel	Nickel plated
13	Bumper	Polyurethane	
14	Hexagon socket head cap screw	Chromium steel	Nickel plated
15	Hexagon socket head set screw	Chromium steel	Nickel plated
16	Retaining ring	Special steel	Nickel plated
17	Steel ball	Special steel	Nickel plated
18	Piston seal	NBR	
19	Rod seal	NBR	
20	O-ring	NBR	
21	O-ring	NBR	
22	Cushion needle	Stainless steel	
23	Check seal retainer	Copper alloy	
24	Check seal	NBR	
25	Needle gasket	NBR	
26	Check gasket	NBR	

### Component Parts: CXSL

No.	Description	Material	Note
1	Housing	Aluminum alloy	Hard anodized
2	Piston rod A	Special steel	Hard chrome plated
3	Piston rod B	Special steel	Hard chrome plated
4	Bearing spacer	Aluminum alloy	
5	Ball bushing	—	
6	Bumper holder	Aluminum alloy	
7	Head cover	Special steel	Electroless nickel plated
8	Plate	Aluminum alloy	Glossy, self-coloring
9	Piston A	Aluminum alloy	Chromated
10	Piston B	Aluminum alloy	Chromated
11	Bumper B	Polyurethane	
12	Magnet	—	
13	Bumper bolt	Carbon steel	Nickel plated
14	Hexagon nut	Carbon steel	Nickel plated
15	Bumper	Polyurethane	
16	Hexagon socket head cap screw	Chromium steel	Nickel plated
17	Hexagon socket head set screw	Chromium steel	Nickel plated
18	Retaining ring	Special steel	Nickel plated
19	Steel ball	Special steel	Nickel plated
20	Piston seal	NBR	
21	Rod seal	NBR	
22	O-ring	NBR	
23	O-ring	NBR	
24	Cushion needle	Stainless steel	
25	Check seal retainer	Copper alloy	
26	Check seal	NBR	
27	Needle gasket	NBR	
28	Check gasket	NBR	

### Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
20	CXS□20A-PS	Set of nos. above 18, 19 and 20
25	CXS□25A-PS	
32	CXS□32A-PS	

\* Seal kit includes 18, 19 and 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)**

CX2

CXW

CXT

CXSJ

CXS

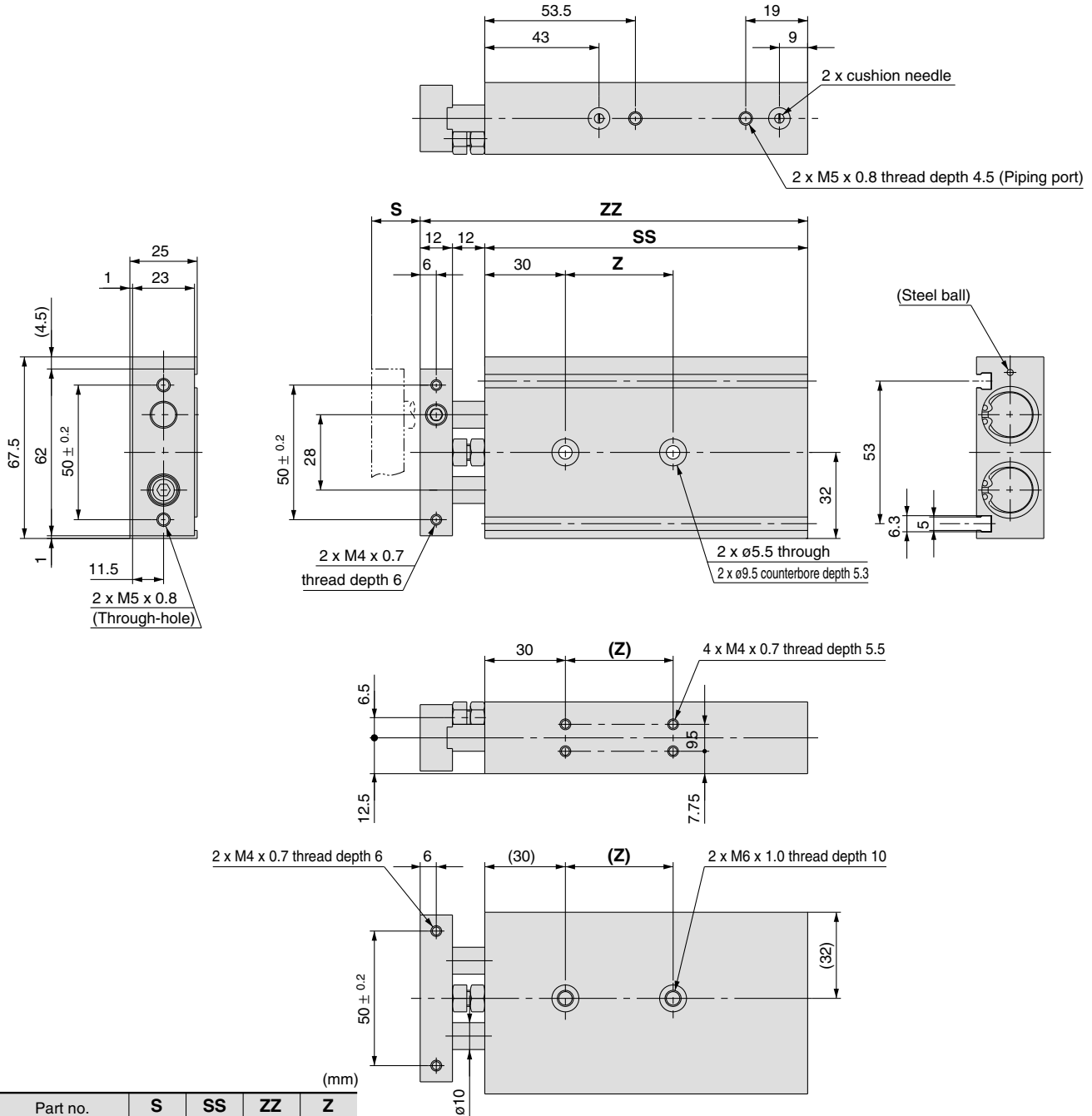
D-□

-X□

Individual  
-X□

# Series CXS

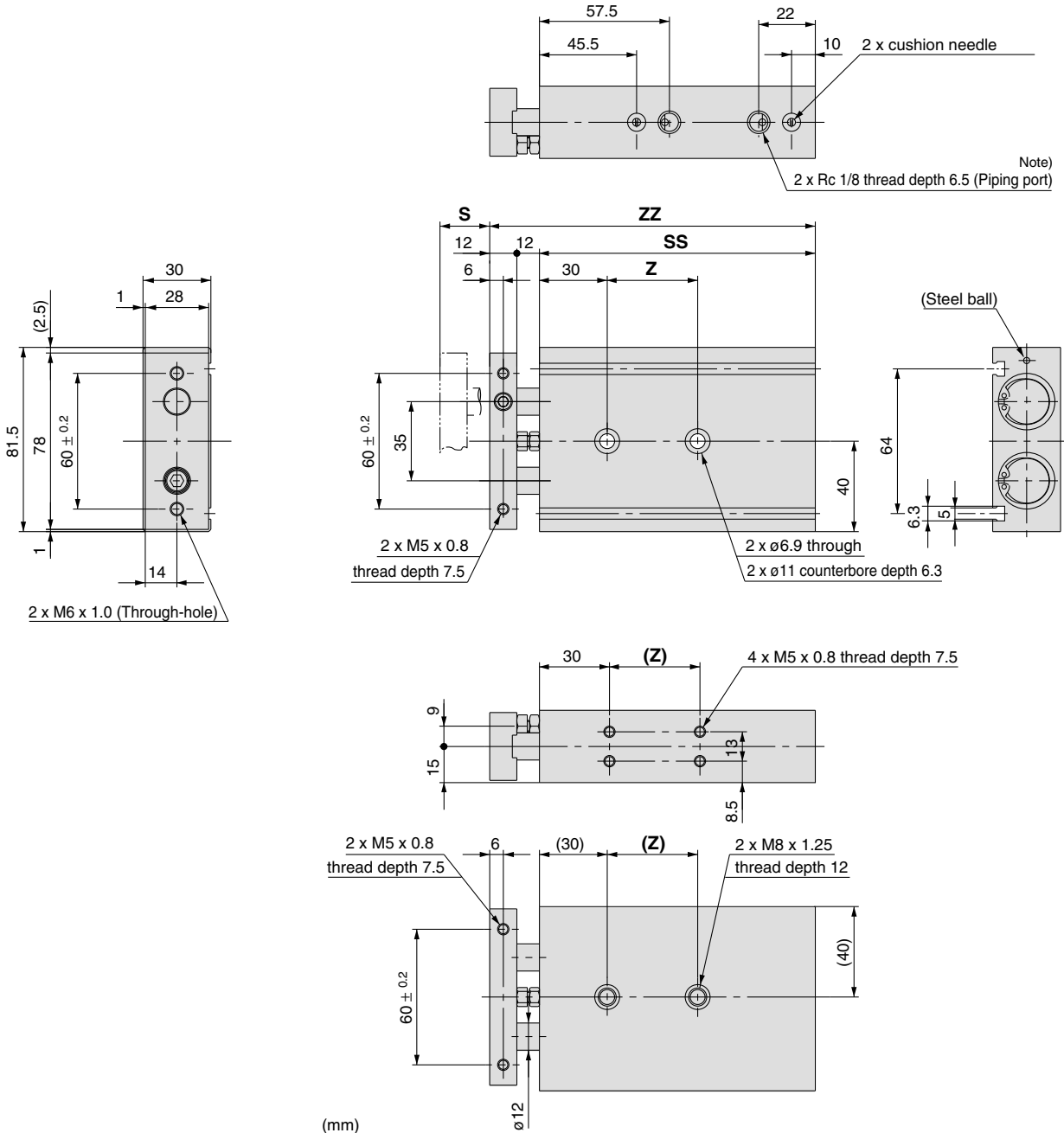
## Dimensions: $\phi 20$



Part no.	S	SS	ZZ	Z
CXS□20-20A	20	92	116	30
CXS□20-25A	25	97	121	
CXS□20-30A	30	102	126	
CXS□20-35A	35	107	131	40
CXS□20-40A	40	112	136	
CXS□20-45A	45	117	141	
CXS□20-50A	50	122	146	60
CXS□20-60A	60	132	156	
CXS□20-70A	70	142	166	
CXS□20-75A	75	147	171	60
CXS□20-80A	80	152	176	
CXS□20-90A	90	162	186	
CXS□20-100A	100	172	196	



## Dimensions: $\phi 25$



(mm)

Part no.	S	SS	ZZ	Z
CXS□25-25A	25	100	124	30
CXS□25-30A	30	105	129	40
CXS□25-35A	35	110	134	
CXS□25-40A	40	115	139	
CXS□25-45A	45	120	144	
CXS□25-50A	50	125	149	
CXS□25-60A	60	135	159	60
CXS□25-70A	70	145	169	
CXS□25-75A	75	150	174	
CXS□25-80A	80	155	179	
CXS□25-90A	90	165	189	
CXS□25-100A	100	175	199	

Note) For port threads TN and TF, only the piping port type varies.

**CX2**

**CXW**

**CXT**

**CXSJ**

**CXS**

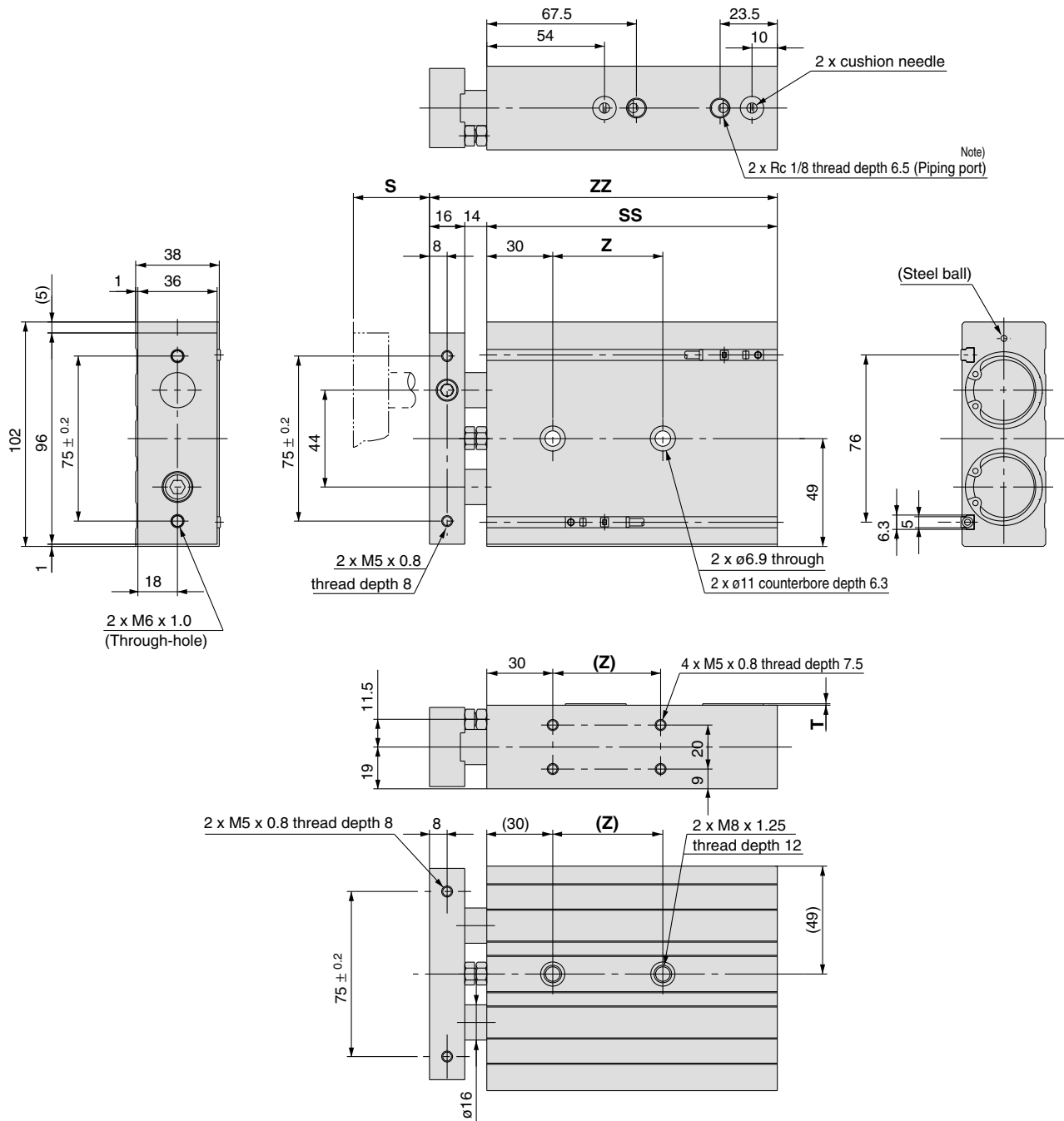
**D-□**

**-X□**

Individual  
**-X□**

# Series CXS

## Dimensions: $\phi 32$



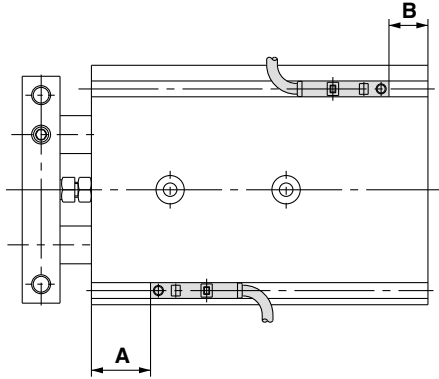
(mm)

Part no.	S	SS	ZZ	Z
CXS□32-25A	25	112	142	40
CXS□32-30A	30	117	147	50
CXS□32-35A	35	122	152	
CXS□32-40A	40	127	157	
CXS□32-45A	45	132	162	
CXS□32-50A	50	137	167	70
CXS□32-60A	60	147	177	
CXS□32-70A	70	157	187	
CXS□32-75A	75	162	192	
CXS□32-80A	80	167	197	70
CXS□32-90A	90	177	207	
CXS□32-100A	100	187	217	

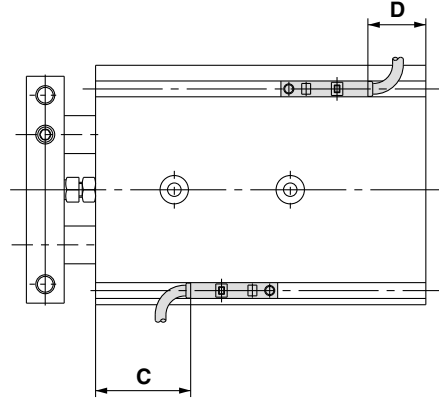
Note) For port threads TN and TF, only the piping port type varies.

**Auto Switch Proper Mounting Position (Detection at Stroke End)**

Electrical entry direction: Inward



Electrical entry direction: Outward



Bore size (mm)	A	B	D-Z7/Z8, D-Y7□W D-Y5□, D-Y7□		D-Y6□, D-Y7□V D-Y7□WV		D-Y7BAL	
			C	D	C	D	C	D
20	40.5	6.5	36.5(35)	2.5(1)	38.5	4	30.5	-3.5
25	42	8	38(36.5)	4(2.5)	40	5.5	32	-2
32	52.5	9.5	48.5(47)	5.5(4)	50.5	7	42.5	-0.5

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

**As for auto switch mounting dimensions, auto switch mounting method and its operating range, those are the same as basic type. Refer to page 569.**

CX2

CXW

CXT

CXSJ

**CXS**

D-□

-X□

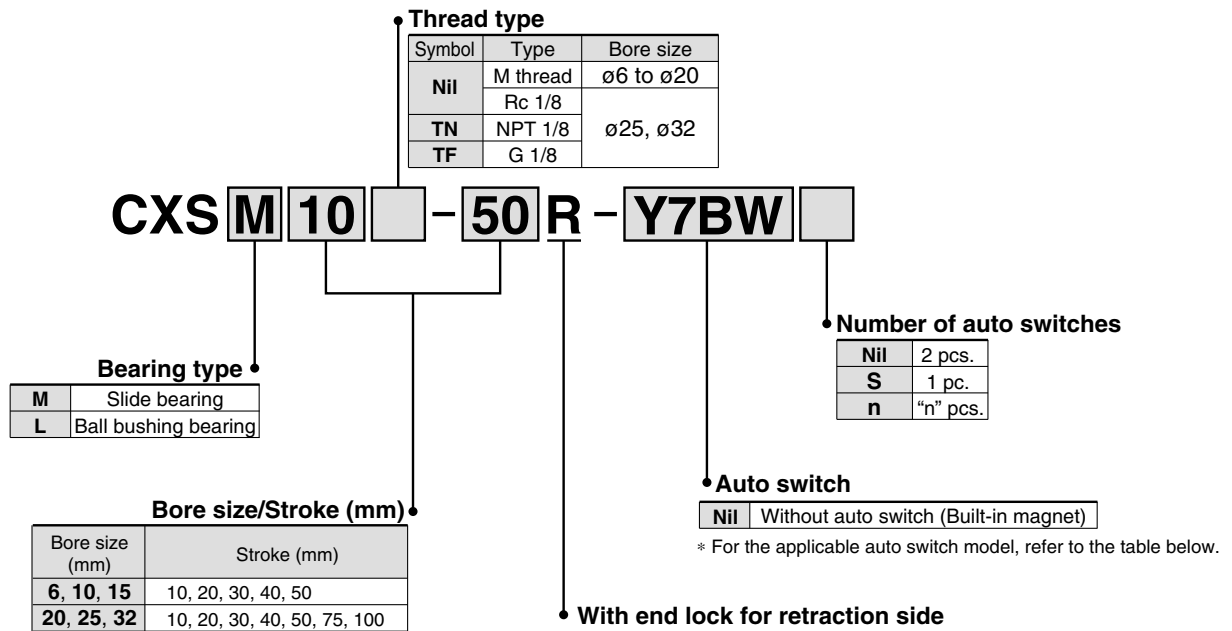
Individual  
-X□

# Dual Rod Cylinder With End Lock for Retraction Side

## Series CXS

ø6, ø10, ø15, ø20, ø25, ø32

### How to Order



### 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)	3 (L)	5 (Z)		IC circuit	Relay, PLC			
															5 V, 12 V	—	●
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	Y69A	Y59A	●	●	○	○	IC circuit	Relay, PLC		
				3-wire (PNP)				Y7PV	Y7P	●	●	○	○				
				2-wire				Y69B	Y59B	●	●	○	○				
	Diagnostic indication (2-color indication)			3-wire (NPN)	5 V, 12 V	Y7NWV	Y7NW	●	●	○	○	IC circuit					
				3-wire (PNP)		Y7PWV	Y7PW	●	●	○	○						
				2-wire		Y7BWV	Y7BW	●	●	○	○						
Water resistant (2-color indication)	—	Grommet	None	—	24 V	12 V	—	—	Y7BA	—	●	○	○	—			
				3-wire (NPN equivalent)				—	5 V	—	Z76	●	●	—	—	IC circuit	—
				2-wire				—	100 V	—	Z73	●	●	●	—	—	Relay, PLC
—	—	—	—	—	—	100 V or less	—	Z80	●	●	—	—	IC circuit	—			

\* Lead wire length symbols: 0.5 m ..... Nil (Example) Y59A  
 3 m ..... L (Example) Y59AL  
 5 m ..... Z (Example) Y59AZ

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

- Since there are other applicable auto switches than listed, refer to page 569 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- Auto switches are shipped together (not assembled).

# Dual Rod Cylinder *Series CXS*

With End Lock for Retraction Side



## Specifications

Bore size (mm)	6	10	15	20	25	32
Fluid	Air (Non-lube)					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Minimum operating pressure	0.3 MPa					
Ambient and fluid temperature	-10 to 60°C (No freezing)					
Piston speed	30 to 300mm/s	30 to 800mm/s	30 to 700mm/s	30 to 600mm/s		
Cushion	Bumper is standard on both ends					
Port size	M5 x 0.8				Rc 1/8	
Bearing type	Slide bearing, Ball bushing bearing (Same dimensions for both)					
Allowable kinetic energy	0.0023 J	0.064 J	0.095 J	0.17 J	0.27 J	0.32 J

## Lock Specifications

Lock specifications	Rear end lock					
Bore size (mm)	6	10	15	20	25	32
Maximum holding force (N)	14.7	39.2	98.1	157	235	382
Manual release	Non-lock type					

\* Maximum load mass is the same as the standard type.

## Standard Stroke

Model	Standard stroke (mm)
CXS□6	10, 20, 30, 40, 50
CXS□10	
CXS□15	
CXS□20	
CXS□25	10, 20, 30, 40, 50, 75, 100
CXS□32	

\* Strokes which exceed the standard stroke length will be available as special goods.

## Theoretical Output

Model	Rod size (mm)	Operating direction	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)							
				0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7
CXS□6	4	OUT	56	—	8.4	11.2	16.8	22.4	28.0	33.6	39.2
		IN	31	—	4.6	6.2	9.3	12.4	15.5	18.6	21.7
CXS□10	6	OUT	157	15.7	—	31.4	47.1	62.8	78.5	94.2	110
		IN	100	10.0	—	20.0	30.0	40.0	50.0	60.0	70.0
CXS□15	8	OUT	353	35.3	—	70.6	106	141	177	212	247
		IN	252	25.2	—	50.4	75.6	101	126	151	176
CXS□20	10	OUT	628	62.8	—	126	188	251	314	377	440
		IN	471	47.1	—	94.2	141	188	236	283	330
CXS□25	12	OUT	982	98.2	—	196	295	393	491	589	687
		IN	756	75.6	—	151	227	302	378	454	529
CXS□32	16	OUT	1608	161	—	322	482	643	804	965	1126
		IN	1206	121	—	241	362	482	603	724	844

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

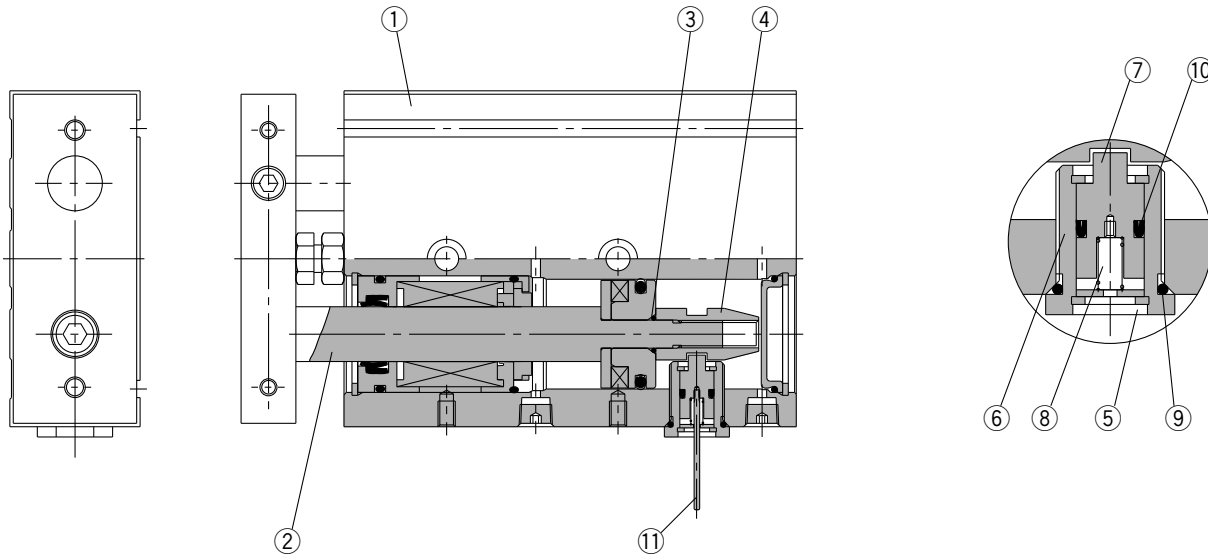
## Mass

Model	Standard stroke (mm)						
	10	20	30	40	50	75	100
CXSM6-□R	0.105	0.12	0.135	0.15	0.165	—	—
CXSL6-□R	0.105	0.12	0.135	0.15	0.165	—	—
CXSM10-□R	0.18	0.2	0.225	0.25	0.27	—	—
CXSL10-□R	0.18	0.2	0.225	0.25	0.27	—	—
CXSM15-□R	0.3	0.33	0.355	0.38	0.41	—	—
CXSL15-□R	0.32	0.35	0.375	0.4	0.43	—	—
CXSM20-□R	0.465	0.5	0.54	0.58	0.62	0.715	0.815
CXSL20-□R	0.485	0.52	0.56	0.60	0.64	0.735	0.835
CXSM25-□R	0.72	0.76	0.8	0.84	0.88	0.98	1.08
CXSL25-□R	0.73	0.77	0.81	0.85	0.89	0.99	1.09
CXSM32-□R	1.33	1.43	1.53	1.62	1.72	1.96	2.2
CXSL32-□R	1.35	1.45	1.55	1.64	1.74	1.98	2.22

# Series CXS

## Construction: Slide Bearing

### CXSM6



### Component Parts

No.	Description	Material	Note
1	<b>Housing</b>	Aluminum alloy	Hard anodized
2	<b>Piston rod B</b>	Carbon steel	Hard chrome plated
3	<b>O-ring</b>	NBR	
4	<b>Lock rod</b>	Special steel	
5	<b>Retaining ring</b>	Special steel	
6	<b>Lock holder</b>	Aluminum alloy	
7	<b>Lock pin</b>	Special steel	
8	<b>Lock spring</b>	Piano wire	
9	<b>O-ring</b>	NBR	
10	<b>Rod seal</b>	NBR	
11	<b>Manual lever</b>	Special steel	

\* Parts other than those listed above are the same as those for standard type.

### Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
6	CXSRM6-PS	Includes the kit components of the seal kit featured on page 565 plus items ⑨ and ⑩ from the parts list above.
	CXSRL6APS	
10	CXSRM10-PS	
	CXSRL10APS	
15	CXSRM15-PS	
	CXSRL15APS	
20	CXSRM20-PS	
	CXSRL20APS	
25	CXSRM25-PS	
	CXSRL25APS	
32	CXSRM32-PS	
	CXSRL32APS	

\* Seal kits includes the basic type seal (page 565), ⑨ and ⑩. Order the seal kit, based on each bore size.

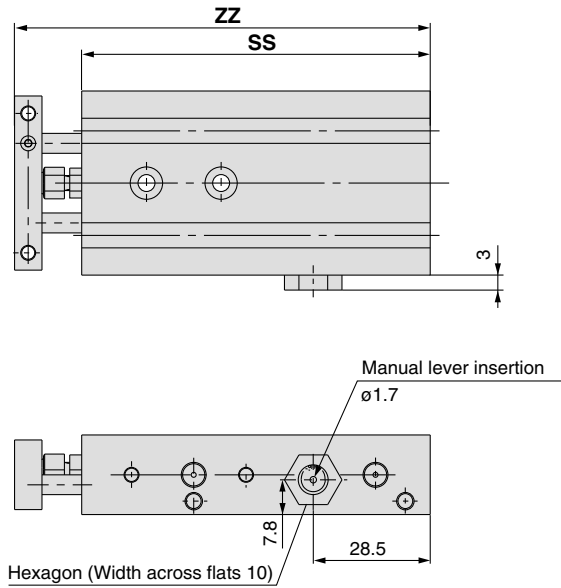
\* Since the seal kit does not include a grease pack, order it separately.

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

# Dual Rod Cylinder With End Lock for Retraction Side *Series CXS*

## Dimensions: $\phi 6$ , $\phi 10$ , $\phi 15$

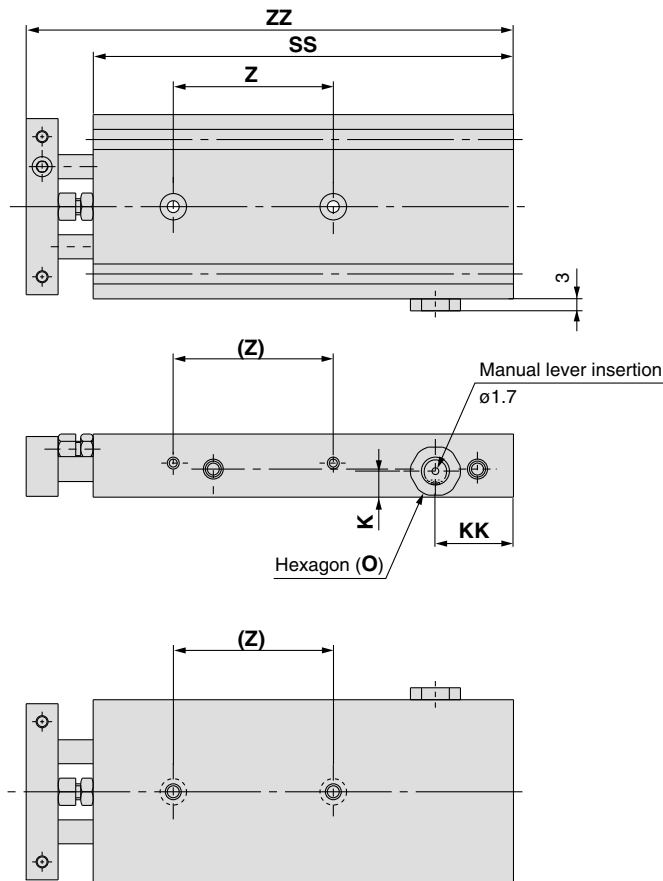
### CXS□6-□R



Model	SS	ZZ
CXS□6-10R	75	88.5
CXS□6-20R	85	98.5
CXS□6-30R	95	108.5
CXS□6-40R	105	118.5
CXS□6-50R	115	128.5

\* Dimensions other than those listed above are the same as for the standard type.

### CXS□ $\frac{10}{15}$ -□R



Model	K	O
CXS□10-□R	6.5	Width across flats 12
CXS□15-□R	8.5	Width across flats 13

Model	Symbol Stroke	KK					SS					Z					ZZ					
		10	20	30	40	50	10	20	30	40	50	10	20	30	40	50	10	20	30	40	50	
CXS□10-□R		19.5		24.5			80	90	100	115	125	30	40		50			97	107	117	132	142
CXS□15-□R		20.5					90	100	110	120	130	35			45		109	119	129	139	149	

\* Dimensions other than those listed above are the same as for the standard type.

CX2

CXW

CXT

CXSJ

CXS

D-□

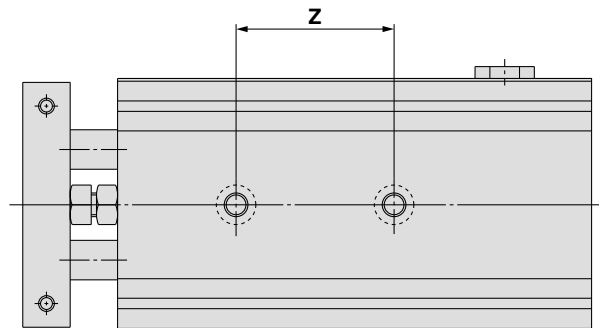
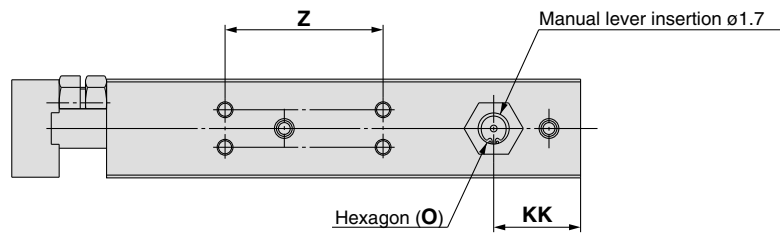
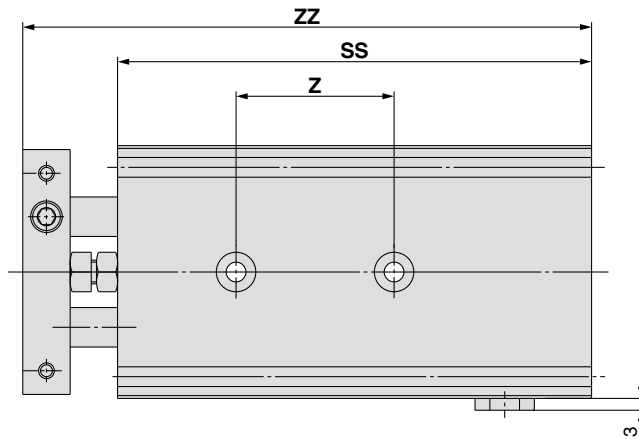
-X□

Individual

-X□

# Series CXS

Dimensions:  $\varnothing 20$ ,  $\varnothing 25$ ,  $\varnothing 32$



(mm)

Model	O
CXS□20-□R	Width across flats13
CXS□25-□R	Width across flats16
CXS□32-□R	Width across flats19

(mm)

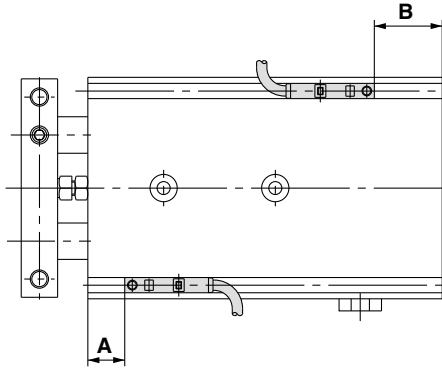
Model	Symbol Stroke	KK								SS								Z								ZZ							
		10	20	30	40	50	75	100	10	20	30	40	50	75	100	10	20	30	40	50	75	100	10	20	30	40	50	75	100				
CXS□20-□R		22				27	22	100	110	120	130	140	170	190	40				60				80	124	134	144	154	164	194	214			
CXS□25-□R		24.5	29.5			24.5		107	117	132	142	147	172	197	40	60				80	131	141	156	166	171	196	221						
CXS□32-□R		29				34	49	122	132	142	152	162	192	232	50	70				90	152	162	172	182	192	222	262						

\* Dimensions other than those listed above are the same as for the standard type.

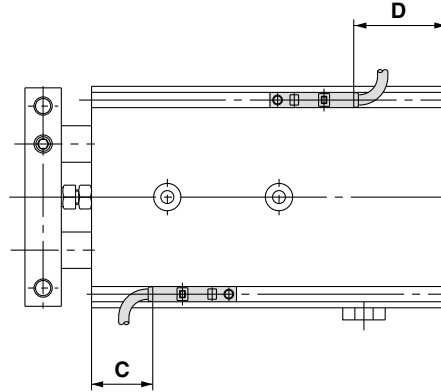


**Auto Switch Proper Mounting Position (Detection at Stroke End)**

Electrical entry direction: Inward



Electrical entry direction: Outward



Bore size (mm)	A	B	D-Z7/Z8, D-Y7□W D-Y5□, D-Y7□		D-Y6□, D-Y7□V D-Y7□WV		D-Y7BAL	
			C	D	C	D	C	D
6	15.5	24.5	11.5 (10)	20.5 (19)	13	22	5.5	14.5
10	22.5	22.5	18.5 (17)	18.5 (17)	20	20	12.5	12.5
15	30.5	24.5	26.5 (25)	20.5 (19)	28	22	20.5	14.5
20	38	27	34 (32.5)	23 (21.5)	36	24.5	28	17
25	38	34	34 (32.5)	30 (28.5)	36	31.5	28	24
32	48	39	44 (42.5)	35 (33.5)	46	6.5	38	29

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

As for auto switch mounting dimensions, auto switch mounting method and its operating range, those are the same as basic type. Refer to page 569.

CX2

CXW

CXT

CXSJ

**CXS**

D-□

-X□

Individual  
-X□



# Series CXS With End Lock for Retraction Side Specific Product Precautions

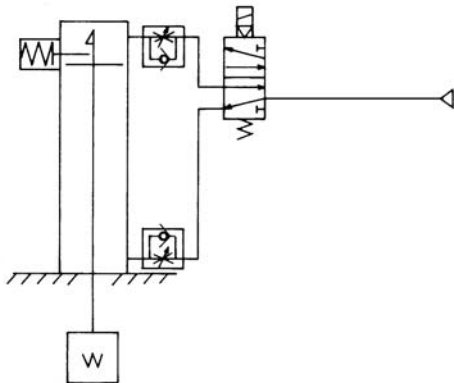
Be sure to read before handling.

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

## Recommended Pneumatic Circuit

### ⚠ Caution

● This is necessary for the proper operation and release of the lock.



## Handling Precautions

### ⚠ Caution

- Do not use 3 position solenoid valves.**  
Avoid using in combination with 3 position solenoid valves (especially closed center metal seal types). If pressure is trapped in the port on the lock mechanism side, the cylinder cannot be locked. Even after being locked, the lock may be released after some time, due to air leakage from the solenoid valve entering the cylinder.
- Back pressure is required to release the end lock.**  
Be sure that air is supplied to the cylinder side without the locking mechanism (For cylinders with a double lock, the side with an unlocked piston rod) before starting operation, as shown in the drawing on the left. The lock may not be released. (Refer to the section on releasing the lock.)
- Release the lock when mounting and adjusting the cylinder.**  
An attempt to mount or adjust a cylinder while it is locked can damage the lock.
- Operate with a load ratio of 50% or less.**  
If the load ratio exceeds 50%, this may cause problems such as failure of the lock to release, or damage to the lock unit.
- Do not operate multiple cylinders in synchronization.**  
Avoid applications in which two or more end lock cylinders are synchronized to move one workpiece, as one of the cylinder locks may not be able to release when required.
- Install speed controllers as they will be meter-out control.**  
When they are used under meter-in control, the lock may not be released.
- Never adjust the retracting stroke using a bumper bolt or external stopper. The lock will not function.**

## Operating Pressure

### ⚠ Caution

- Apply a pressure more than 0.3 MPa to the port on the side with the locking mechanism. The pressure is necessary to release the lock.

## Exhaust Speed

### ⚠ Caution

- Locking will occur automatically if the pressure applied to the port on the lock mechanism side falls to 0.05 MPa or less. In cases where the piping on the lock mechanism side is long and thin, or the speed controller is separated at some distance from the cylinder port, the exhaust speed will be reduced. Note that some time may be required for the lock to engage. In addition, clogging of a silencer mounted on the solenoid valve exhaust port can produce the same effect.

## Releasing the lock

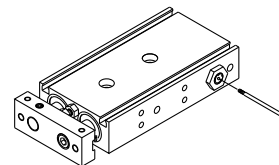
### ⚠ Warning

- Before releasing the lock, be sure to supply air to the side without the lock mechanism, so that there is no load applied to the lock mechanism when it is released. (Refer to the Recommended Pneumatic Circuit.) If the lock is released when the port on the other side is in an exhaust state, and with a load applied to the lock unit, the lock unit may be subjected to an excessive force and be damaged. Furthermore, sudden movement of the slide table is extremely dangerous.

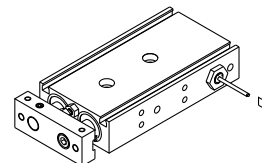
## Manual Release

### Manual release (Non-locking type)

- Insert the manual lever and screw it into the lock holder assembly. If the lever is screwed in sidelong, it may damage the lock spring.



- To unlock, pull the manual lever in the direction of the arrow. Release the manual lever to return the cylinder to a ready-to-lock state.



- The manual lever ( $\phi 1.6 \times 35 \ell$ , tip part: M1.6 x 0.35 x 3  $\ell$ ) is included with the cylinder. If additional manual levers are required, use the following part number to place an order: CXS06-48BK2777 (for all series).

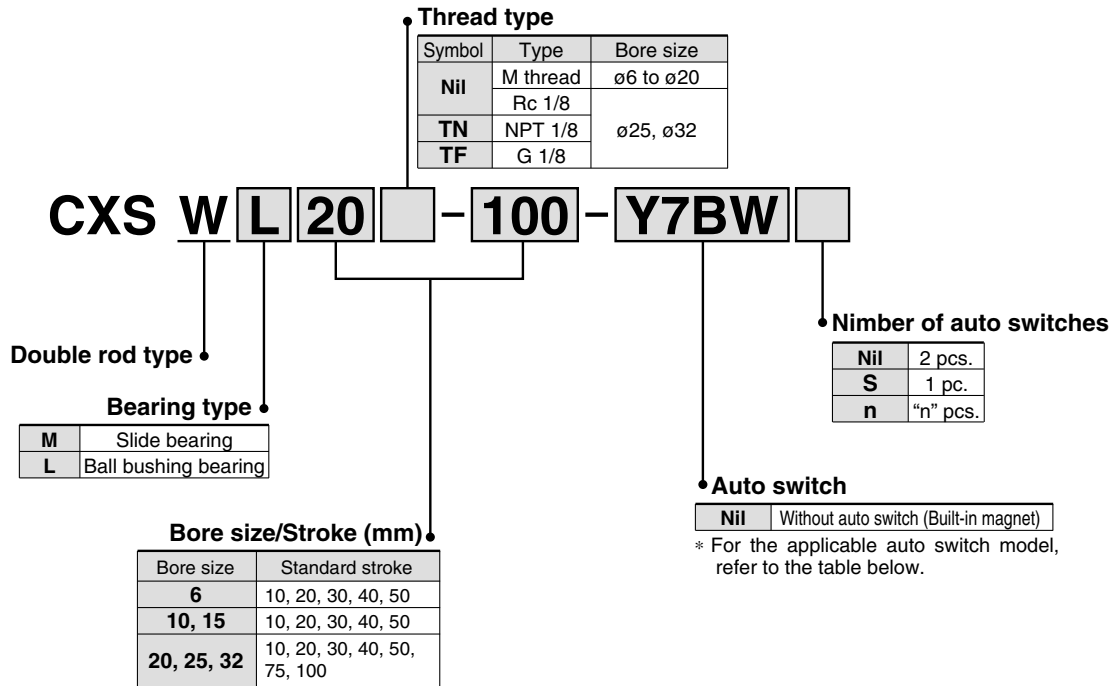
### ⚠ Caution

Do not use the cylinder while the manual lever is screwed in. It may damage the lock mechanism.

# Dual Rod Cylinder Double Rod Type Series CXSW

ø6, ø10, ø15, ø20, ø25, ø32

## How to Order



### 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)	3 (L)	5 (Z)		IC circuit	Relay, PLC		
															3-wire (NPN)	3-wire (PNP)
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	Y69A	Y59A	●	●	○	○	Relay, PLC		
				3-wire (PNP)				Y7PV	Y7P	●	●	○	○			
				2-wire				Y69B	Y59B	●	●	○	○			
	Diagnostic indication (2-color indication)			3-wire (NPN)	5 V, 12 V	Y7NWV	Y7NW	●	●	○	○					
	3-wire (PNP)			Y7PWV		Y7PW	●	●	○	○						
	Water resistant (2-color indication)			2-wire	12 V	Y7BWV	Y7BW	●	●	○	○					
Reed switch	—	Grommet	None	3-wire (NPN equivalent)	24 V	5 V	100 V or less	—	Z76	●	●	—	—	IC circuit	—	
				2-wire				12 V	—	Z73	●	●	●	—	—	Relay, PLC
									—	Z80	●	●	—	—	IC circuit	—

\* Lead wire length symbols: 0.5 m ..... Nil (Example) Y59A  
 3 m ..... L (Example) Y59AL  
 5 m ..... Z (Example) Y59AZ

\* Solid state auto switches marked with "○" are produced upon receipt of order.  
 \*\* ø10, 15, 20 are not applicable. Please consult with SMC separately.

- Since there are other applicable auto switches than listed, refer to page 569 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- Auto switches are shipped together (not assembled).

CX2

CXW

CXT

CXSJ

CXS

D-□

-X□

Individual  
-X□

# Series CXSW



## Specifications

Bore size (mm)	6	10	15	20	25	32
Fluid	Air (Non-lube)					
Proof pressure	1.05 MPa					
Maximum operating pressure	0.7 MPa					
Minimum operating pressure	0.15 MPa			0.1 MPa		
Ambient and fluid temperature	-10 to 60°C (No freezing)					
Piston speed	50 to 500 mm/s					
Cushion	Bumper is standard on both ends					
Stroke adjustable range	0 to -10 mm compared to the standard stroke (Extended end: 5 mm, Retracted end: 5 mm)					
Port size	M5 x 0.8			Rc 1/8		
Bearing type	Slide bearing, Ball bushing bearing (Same dimensions for both)					

## Standard Stroke

Model	Standard stroke	Long stroke
CXSW□6	10, 20, 30, 40, 50	—
CXSW□10	10, 20, 30, 40, 50	75, 100, 125, 150
CXSW□15		
CXSW□20	10, 20, 30, 40, 50, 75, 100	125, 150, 175, 200
CXSW□25		
CXWS□32		

\* For long strokes, it will be made-to-order. (-XB11)

## Theoretical Output

Model	Rod size (mm)	Piston area (mm <sup>2</sup> )	Operating pressure (MPa)						
			0.1	0.2	0.3	0.4	0.5	0.6	0.7
CXSW□6	4	31	4.6	6.2	9.3	12.4	15.5	18.6	21.7
CXSW□10	6	100	10	20	30	40	50	60	70
CXSW□15	8	252	25.2	50.4	75.6	101	126	151	176
CXSW□20	10	471	47.1	94.2	141	188	236	283	330
CXSW□25	12	756	75.6	151	227	302	378	454	529
CXSW□32	16	1206	121	241	362	482	603	724	844

Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## Mass

Model	Standard stroke (mm)						
	10	20	30	40	50	75	100
CXSWM 6	0.11	0.13	0.14	0.16	0.17	—	—
CXSWL 6	0.12	0.13	0.15	0.16	0.18	—	—
CXSWM10	0.24	0.26	0.28	0.30	0.32	0.37	0.42
CXSWL 10	0.25	0.27	0.29	0.31	0.33	0.38	0.43
CXSWM15	0.43	0.45	0.48	0.51	0.54	0.61	0.68
CXSWL 15	0.47	0.50	0.52	0.55	0.58	0.65	0.72
CXSWM20	0.71	0.74	0.78	0.82	0.85	0.95	1.04
CXSWL 20	0.75	0.79	0.82	0.86	0.90	0.99	1.08
CXSWM25	1.06	1.11	1.17	1.22	1.28	1.41	1.55
CXSWL 25	1.07	1.12	1.18	1.23	1.29	1.42	1.56
CXSWM32	2.04	2.12	2.21	2.29	2.38	2.59	2.81
CXSWL 32	2.06	2.15	2.23	2.32	2.41	2.62	2.83



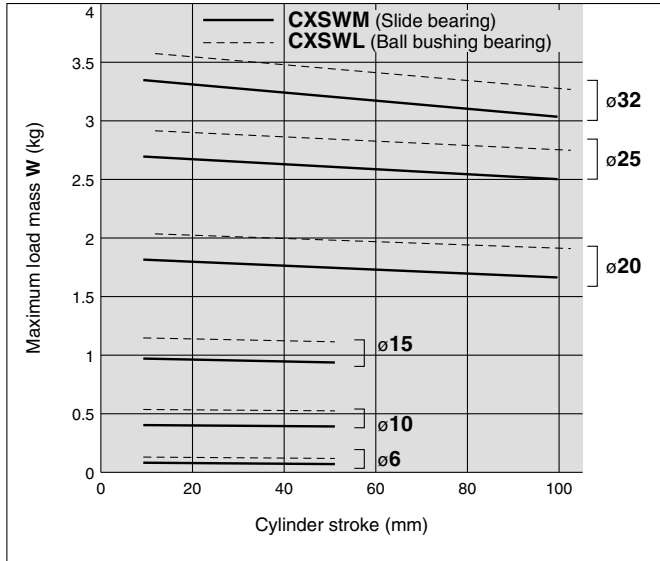
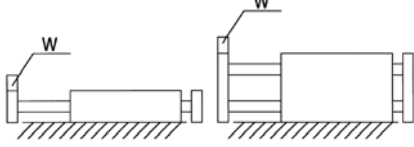
**Made to Order Specifications**  
(For details, refer to page 1861.)

Symbol	Specifications
-XB11	Long stroke

## Operating Conditions

### Maximum Load Mass

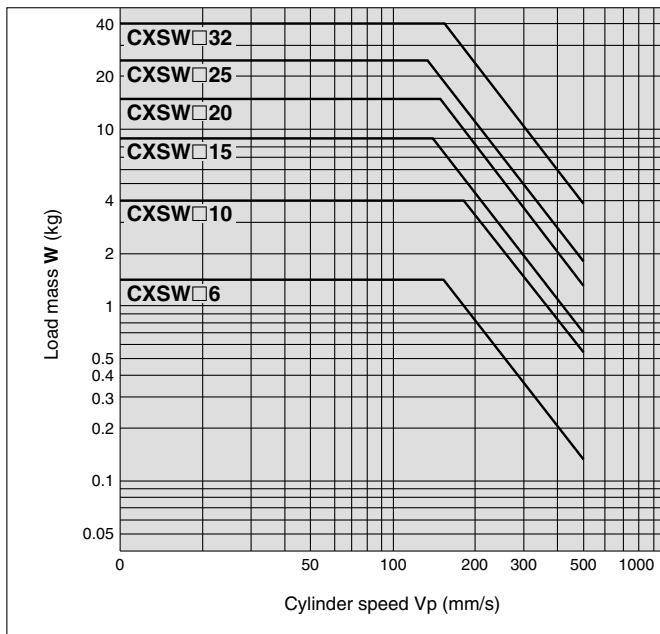
When the cylinder is mounted as shown in the diagrams below, the maximum load mass  $W$  should not exceed the values illustrated in the graph immediately following the diagrams.



Note) Please consult with SMC regarding the maximum load mass for long strokes depending on your specific usage conditions.

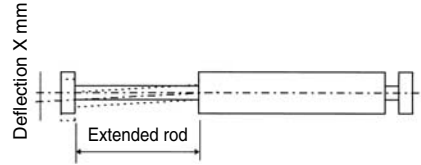
### Allowable Kinetic Energy

Operate a vertically mounted cylinder with a load mass and cylinder speed not exceeding the ranges shown in the graph below. A horizontally mounted cylinder should also be operated with a load mass less than the ranges given in the graph at left. Cylinder speed should be adjusted using a speed controller.



### Deflection at the Plate End

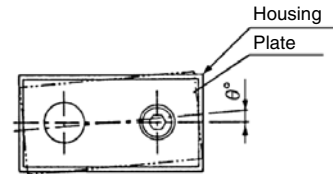
An approximate plate-end deflection  $X$  without a load is shown in the table below.



Bore size (mm)	6 to 32
CXSWM (Slide bearing)	±0.03 mm
CXSWL (Ball bushing bearing)	

### Non-rotating accuracy

Non-rotating accuracy  $\theta^\circ$  without a load should be less than or equal to the value provided in the table below as a guide.



Bore size (mm)	6 to 32
CXSWM (Slide bearing)	±0.1°
CXSWL (Ball bushing bearing)	

CX2

CXW

CXT

CXSJ

CXS

D-□

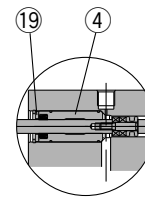
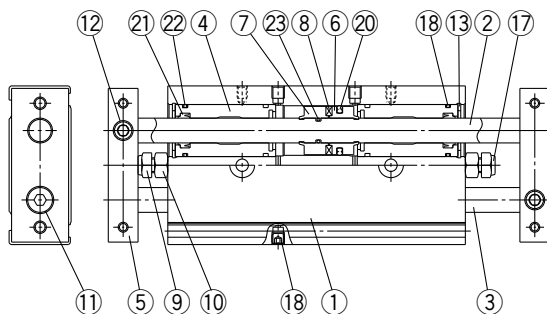
-X□

Individual  
-X□

# Series CXSW

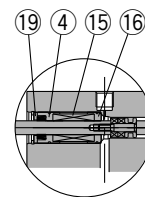
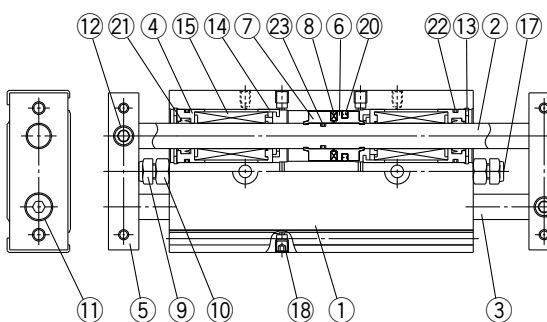
## Construction

### CXSWM (Slide bearing)



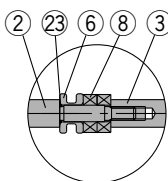
CXSWM6

### CXSWL (Ball bushing bearing)

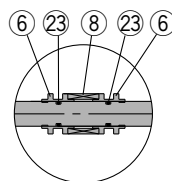


CXSWL6

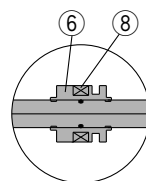
### (Piston part)



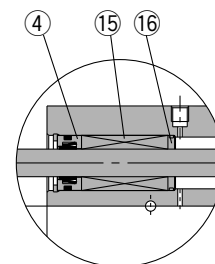
CXSW□6



CXSW□10



CXSW□25, 32



CXSWL10, 15

### Component Parts

No.	Description	Material	Note
1	Housing	aluminum alloy	Hard anodized
2	Piston rod A	Carbon steel	Hard chrome plated
3	Piston rod B	Carbon steel	Hard chrome plated
4	Rod cover	Aluminum bearing alloy	
5	Plate	Aluminum alloy	Hard anodized
6	Piston A	Aluminum alloy	Chromated
7	Piston B	Aluminum alloy	Chromated
8	Magnet	—	
9	Bumper bolt	Carbon steel	Nickel plated
10	Hexagon nut	Carbon steel	Nickel plated
11	Hexagon socket head cap screw	Chromium steel	Nickel plated
12	Hexagon socket head set screw	Chromium steel	Nickel plated

Note) Piston rod for CXSL is quenched.

### Replacement Parts/Seal Kit

Bore size (mm)	Kit no.	Contents
6	CXSWM6-PS	Set of nos. above ⑳, ㉑ and ㉒
	CXSWL6-PS	
10	CXSWM10-PS	
	CXSWL10APS	
15	CXSWM15-PS	
	CXSWL15APS	
20	CXSWM20-PS	
	CXSWL20APS	
25	CXSWM25-PS	
	CXSWL25APS	
32	CXSWM32-PS	
	CXSWL32APS	

### Component Parts

No.	Description	Material	Note
13	Retaining ring	Special steel	Nickel plated
14	Bumper holder	Synthetic resin	
15	Ball bushing	—	
16	Bearing spacer	Synthetic resin	
17	Bumper	Polyurethane	
18	Plug	Chromium steel	Nickel plated
19	Seal retainer	Aluminum alloy	
20 <sup>†</sup>	Piston seal	NBR	
21 <sup>†</sup>	Rod seal	NBR	
22 <sup>†</sup>	O-ring	NBR	
23	O-ring	NBR	

\* For CXSWL6, aluminum bearing alloy is used for ⑯.

\* Seal kit includes ㉑ to ㉒. To order them, use the order number given in the left table.

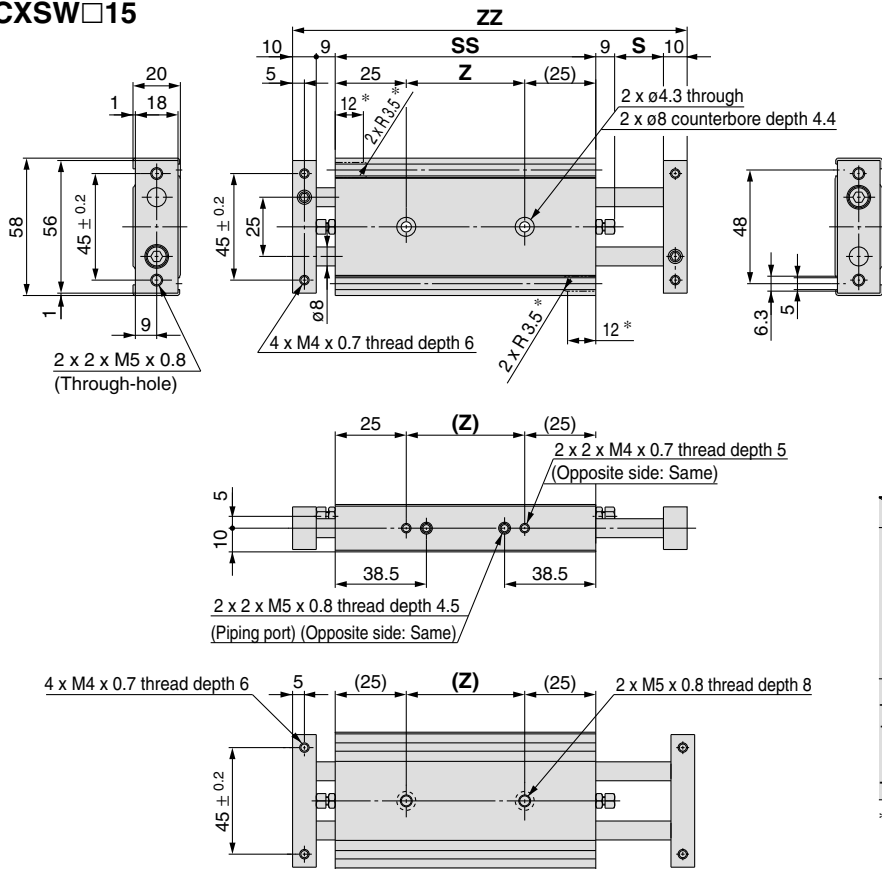
\* Since the seal kit does not include a grease pack, order it separately.  
Grease pack part no.: GR-S-010 (10 g)



# Series CXSW

## Dimensions: $\phi 15$ , $\phi 20$

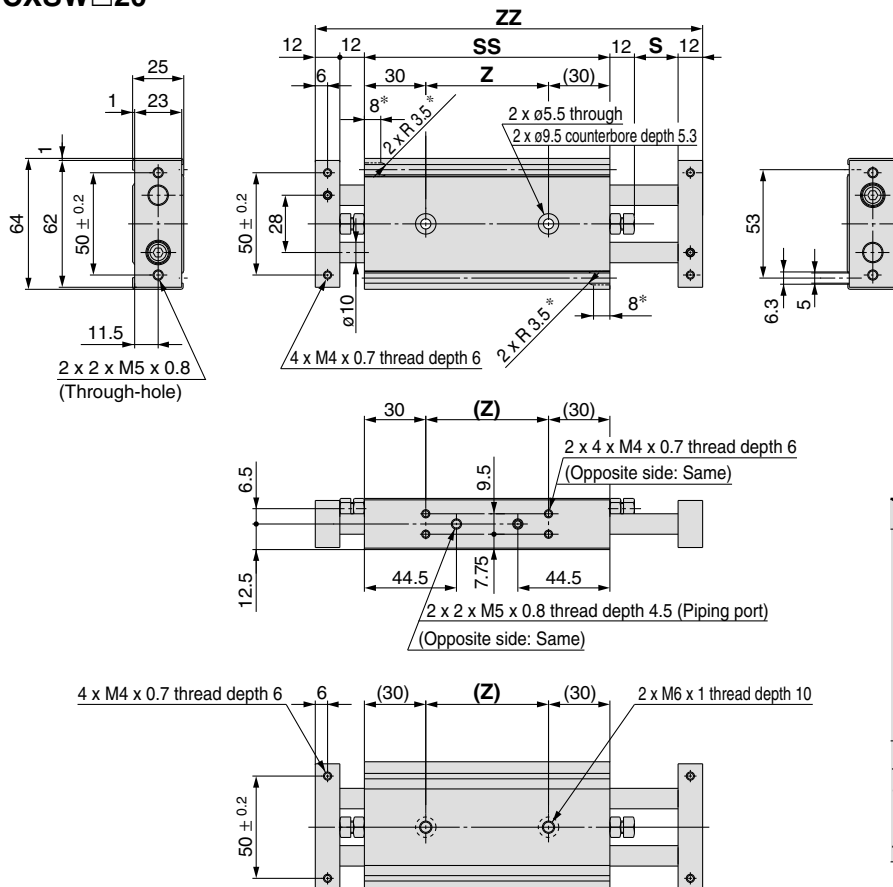
### CXSW□15



		(mm)				
		Model	S	SS	ZZ	Z
Standard stroke	CXSW□15-10	10	105	153	55	
	CXSW□15-20	20	115	173	65	
	CXSW□15-30	30	125	193	75	
	CXSW□15-40	40	135	213	85	
	CXSW□15-50	50	145	233	95	
Long stroke (-XB11)	CXSW□15-75	75	170	283	120	
	CXSW□15-100	100	195	333	145	
	CXSW□15-125	125	220	383	170	
	CXSW□15-150	150	245	433	195	

\* Only the CXSW□15-10 and the CXSW□15-20 have a groove cut out for installing auto switches.  
(The dimensions are marked "\*").

### CXSW□20



		(mm)				
		Model	S	SS	ZZ	Z
Standard stroke	CXSW□20-10	10	120	178	60	
	CXSW□20-20	20	130	198	70	
	CXSW□20-30	30	140	218	80	
	CXSW□20-40	40	150	238	90	
	CXSW□20-50	50	160	258	100	
Long stroke (-XB11)	CXSW□20-75	75	185	308	125	
	CXSW□20-100	100	210	358	150	
	CXSW□20-125	125	235	408	175	
	CXSW□20-150	150	260	458	200	
	CXSW□20-175	175	285	508	225	
	CXSW□20-200	200	310	558	250	

\* Only the CXSW□20-10 has a groove cut out for installing auto switches.  
(The dimensions are marked "\*").

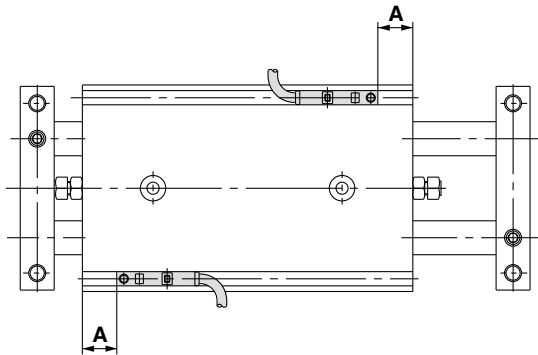




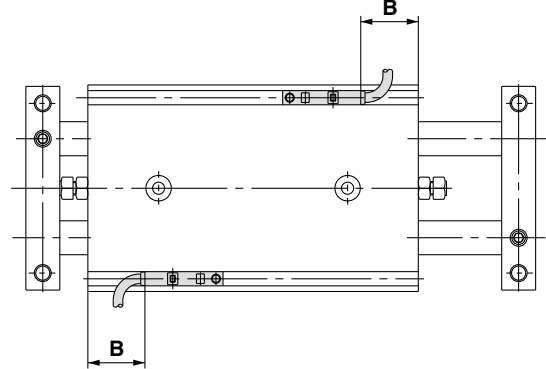
# Series CXSW

## Auto Switch Proper Mounting Position (Detection at Stroke End)

Electrical entry direction: Inward



Electrical entry direction: Outward



Bore size (mm)	A	D-Z7/Z8, D-Y7□W D-Y5□, D-Y7□	D-Y6□, D-Y7□V D-Y7□WV	D-Y7BAL
		B	B	B
6	13.8	9.8(8.3)	11.3	3.8
10	28.5	24.5(23)	26	—
15	35	31(29.5)	32.5	—
20	42.5	38.5(37)	40.5	—
25	43.5	39.5(38)	41.5	33.5
32	54	50(48.5)	52	44

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

As for auto switch mounting dimensions, auto switch mounting method and its operating range, those are the same as basic type. Refer to page 569

# Series 10-/11-/12- 21-/22-CXS


Dual rod cylinder  
 $\phi 6, \phi 10, \phi 15, \phi 20, \phi 25, \phi 32$

## How to Order

● Clean series

10	Relief type	CXSM,CXSL
11	Vacuum suction type	CXSM,CXSL
12	Relief type (with specially treated sliding parts)	CXSL

● Dual rod cylinder



10 - CXS M 15 - 30 - Y59A

21 - CXS L 15 - 30 - Y59A

● Bearing type

L	Ball bushing bearing
M	Slide bearing

● Copper, fluorine and silicon-free + low particle generation

21	Relief type	CXSL
22	Vacuum suction type	CXSM,CXSL

● Bore size (mm)

Symbol	Type	Bore size
Nil	M5 x 0.8	$\phi 6$ to $\phi 20$
	Rc	
TN	NPT	$\phi 25, \phi 32$
TF	G	

● Port type

● Number of auto switches

Nil	2 pcs.
S	1 pc.
n	n pcs.

● Type of auto switch

Reed switch	Z73
Solid state switch	Y59A, Y59B

● Cylinder stroke (mm)

## Model

Model	Bore size (mm)	Port size	Lubrication	Action	Standard stroke (mm)	Auto switch mounting	Cushion	
							Rubber	Air
Vacuum suction type	11-/22-CXS□6	6	Non-lube	Double acting single rod	10, 20, 30, 40, 50	○	○ (Both sides)	—
	11-/22-CXS□10	10						
	11-/22-CXS□15	15						
	11-/22-CXS□20	20			10, 20, 30, 40, 50, 75, 100			
	11-/22-CXS□25	25						
	11-/22-CXS□32	32						
Relief type	10-/12-/21-CXS□6	6	M5 x 0.8	Double acting single rod	10, 20, 30, 40, 50	○	○ (Both sides)	—
	10-/12-/21-CXS□10	10						
	10-/12-/21-CXS□15	15						
	10-/12-/21-CXS□20	20			10, 20, 30, 40, 50, 75, 100			
	10-/12-/21-CXS□25	25						
	10-/12-/21-CXS□32	32						

## Specifications

Item	Bore size (mm)		
	6	10/15	20/25/32
Proof pressure	1.05MPa		
Max. operating pressure	0.7MPa		
Min. operating pressure	0.15MPa	0.1MPa	0.05MPa
Ambient and fluid temperature	-10 to 60°C (With no condensation)		
Piston speed	30 to 400mm/s		
Stroke adjustable range	0 to -5mm compared to the standard stroke		
Bearing type	Ball bushing bearing/Slide bearing		
Grease	10-/11-/12-: Fluorine grease 21-/22-: Lithium soap base grease		
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	10-/12-: Grade 2, 21-: Grade 3 11-/22-: Grade 1		

## Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate $l/min$ (ANR)
6	2
10	5
15	10
20/25	15
32	20

**Auto switch specifications** (Refer to Best Pneumatics catalog for detailed specifications and auto switches not in the following table.)

Style	Auto switch part no.	Load voltage	Load current range	Indicator light	Application
Reed switch	<b>D-Z73</b>	24 VDC, 100 VAC	5 to 40mA, 5 to 20mA	○	Relay, PLC
Solid state switch	2-wire type <b>D-Y59B</b>	24 VDC (10 to 28V)	5 to 40mA	○	24 VDC Relay, PLC
	3-wire type <b>D-Y59A</b>	28 VDC or less	40mA or less	○	IC circuit, Relay, PLC

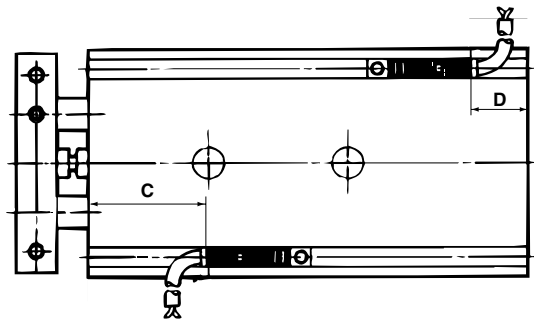
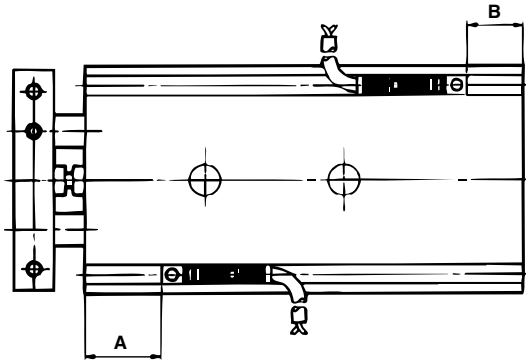
Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

**Auto switches / Proper mounting position for stroke end detection**

Electrical entry direction: Inward

Electrical entry direction: Outward



(mm)

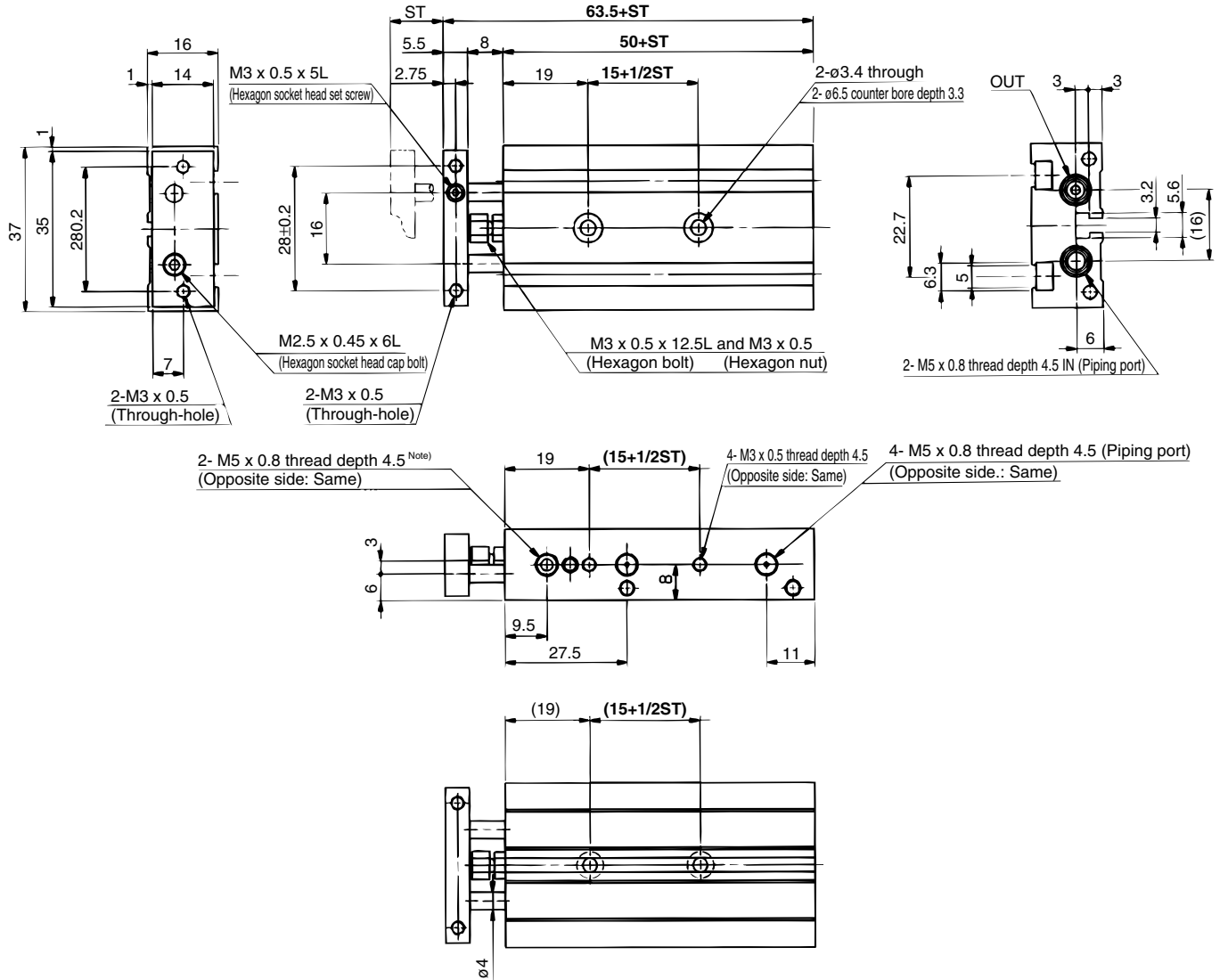
Bore size	A	B	D-Z73		D-Y59A, D-Y59B	
			C	D	C	D
6	20.5	4.5	15	-1	16.5	0.5
10	27	8	21.5	2.5	23	4
15	38	4.5	32.5	-1	34	0.5
20	50	7	44.5	1.5	46	3
25	50.5	8.5	45	3.5	46.5	5
32	60	9	54.5	3.5	56	5

Note 1) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) Lead wire entry is inward when the product is shipped.

Dual rod cylinder  $10\text{-}/11\text{-}/22\text{-}$  **CXS**□/ $12\text{-}/21\text{-}$  **CXSL**

Basic style /  $10\text{-}/11\text{-}/22\text{-}$  **CXS**□6,  $12\text{-}/21\text{-}$  **CXSL**6



Note) 11-, 22- : Vacuum suction port Vacuum air from 2 ports on both sides.  
 10-/12-, 21- : Exhaust port Exhaust air from a port on one side. The port on the piston rod B side for 10-/12-, 21- is plugged since unlike the vacuum, it is not necessary to exhaust from 2 ports.

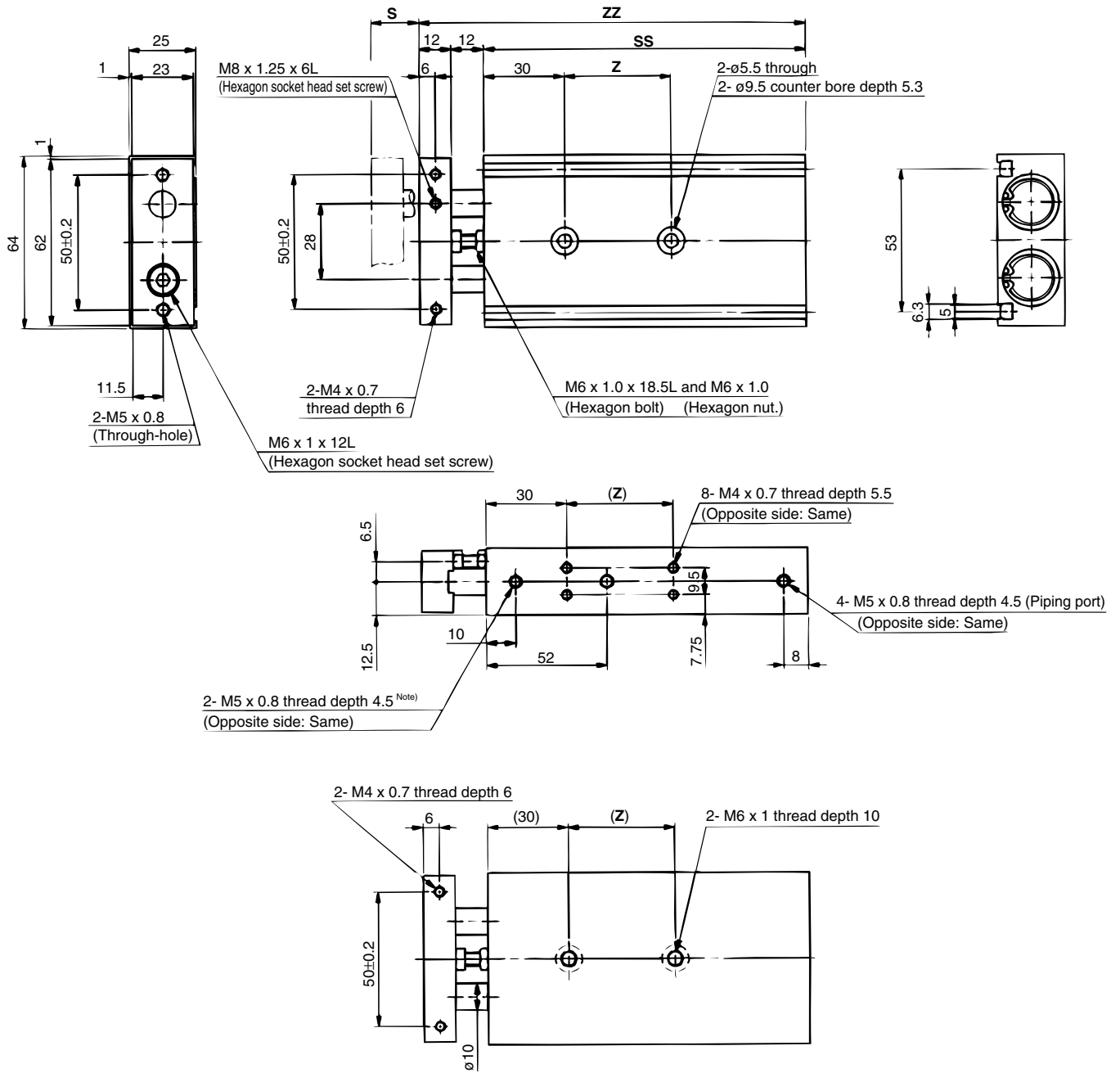
(mm)

Model	15+1/2ST	50+ST	63.5+ST
$10\text{-}/11\text{-}/12\text{-}/21\text{-}/22\text{-}$ <b>CXS</b> □6-10	20	60	73.5
$10\text{-}/11\text{-}/12\text{-}/21\text{-}/22\text{-}$ <b>CXS</b> □6-20	25	70	83.5
$10\text{-}/11\text{-}/12\text{-}/21\text{-}/22\text{-}$ <b>CXS</b> □6-30	30	80	93.5
$10\text{-}/11\text{-}/12\text{-}/21\text{-}/22\text{-}$ <b>CXS</b> □6-40	35	90	103.5
$10\text{-}/11\text{-}/12\text{-}/21\text{-}/22\text{-}$ <b>CXS</b> □6-50	40	100	113.5





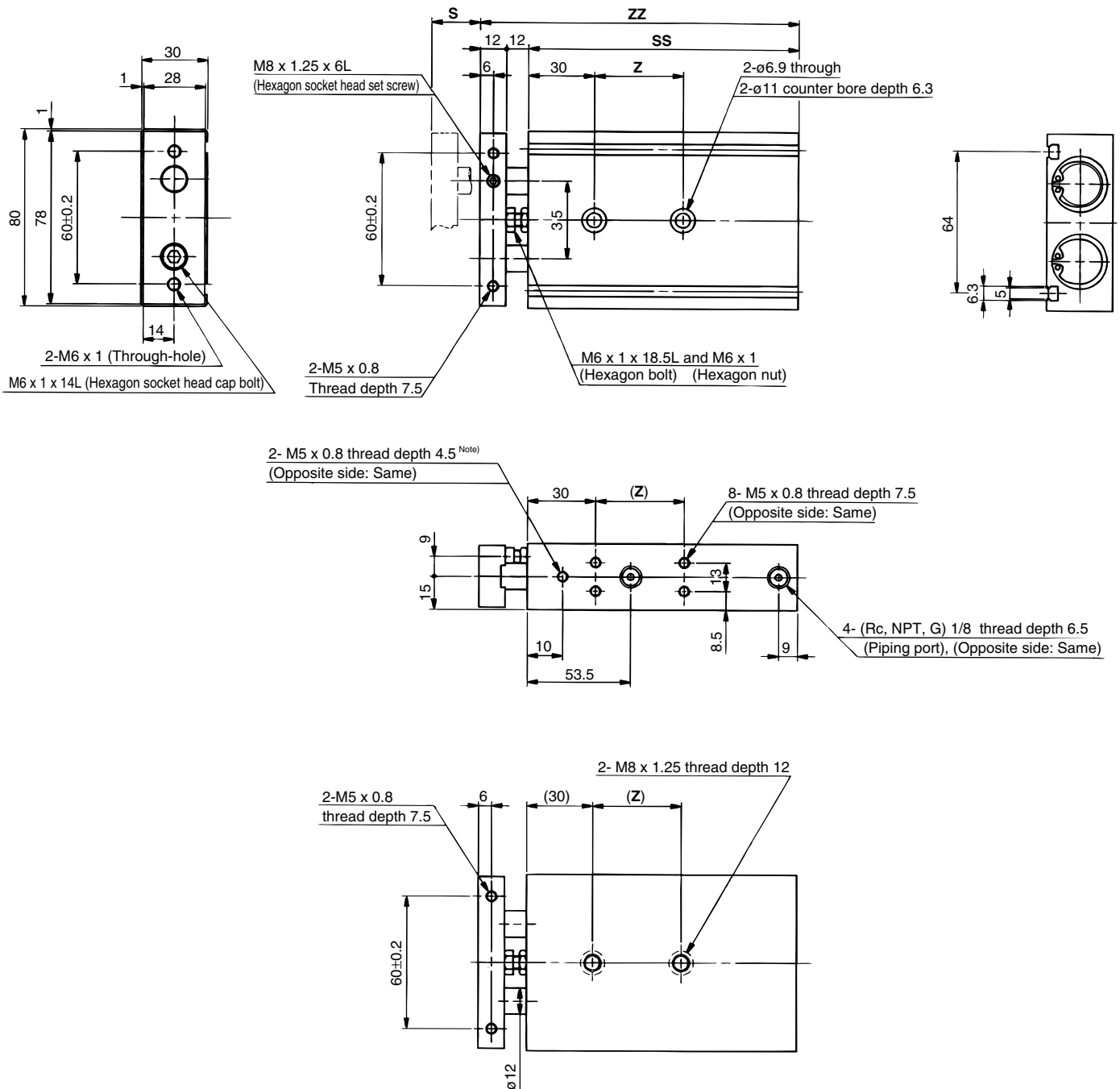
Basic style / 10-/11-22- **CXS** □ 20, 12-21- **CXSL** 20



Note) 11-, 22- : Vacuum suction port Vacuum air from 2 ports on both sides. 10-/12-, 21- : Exhaust port Exhaust air from a port on one side. The port on the piston rod B side for 10-/12-, 21- is plugged since unlike the vacuum, it is not necessary to exhaust from 2 ports.

Model	S	SS	ZZ	Z
10-/11-12-21-/22- <b>CXS</b> □ 20-10	10	92	116	30
10-/11-12-21-/22- <b>CXS</b> □ 20-20	20	102	126	40
10-/11-12-21-/22- <b>CXS</b> □ 20-30	30	112	136	40
10-/11-12-21-/22- <b>CXS</b> □ 20-40	40	122	146	40
10-/11-12-21-/22- <b>CXS</b> □ 20-50	50	132	156	60
10-/11-12-21-/22- <b>CXS</b> □ 20-75	75	157	181	60
10-/11-12-21-/22- <b>CXS</b> □ 20-100	100	182	206	80



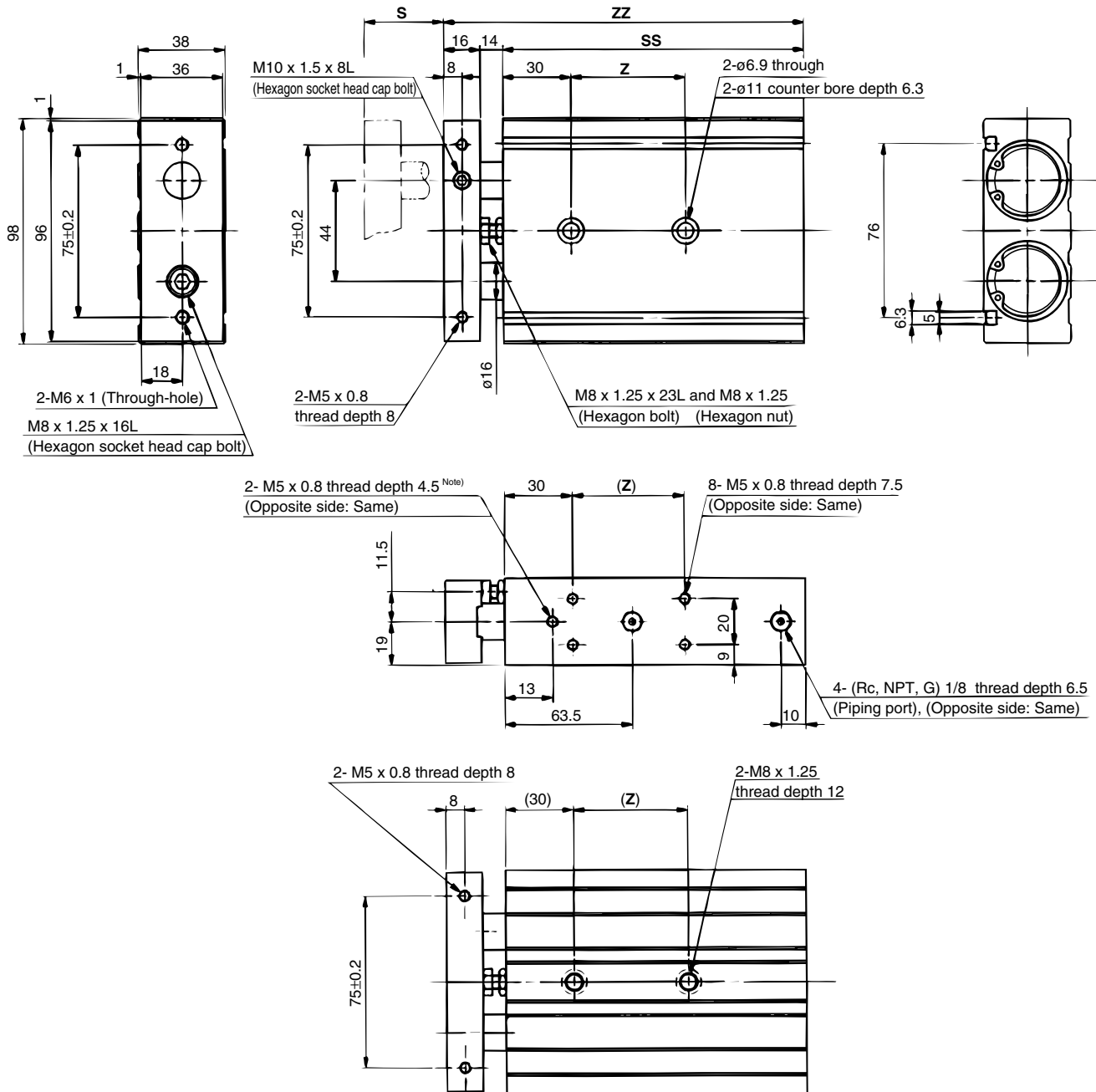


Note) 11-, 22- : Vacuum suction port Vacuum air from 2 ports on both sides. 10-/12-, 21- : Exhaust port Exhaust air from a port on one side. The port on the piston rod B side for 10-/12-, 21- is plugged since unlike the vacuum, it is not necessary to exhaust from 2 ports.

(mm)

Model	S	SS	ZZ	Z
<sup>10-/11-/12-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>25-10</b>	10	94	118	30
<sup>10-/11-/12-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>25-20</b>	20	104	128	40
<sup>10-/11-/12-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>25-30</b>	30	114	138	40
<sup>10-/11-/12-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>25-40</b>	40	124	148	40
<sup>10-/11-/12-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>25-50</b>	50	134	158	60
<sup>10-/11-/12-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>25-75</b>	75	159	183	60
<sup>10-/11-/12-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>25-100</b>	100	184	208	80

Basic style / <sup>10-/11-</sup><sub>22-</sub>**CXS** □ **32**, <sup>12-</sup><sub>21-</sub>**CXSL** **32**



Note) 11-, 22- : Vacuum suction port Vacuum air from 2 ports on both sides. 10-/12-, 21- : Exhaust port Exhaust air from a port on one side. The port on the piston rod B side for 10-/12-, 21- is plugged since unlike the vacuum, it is not necessary to exhaust from 2 ports.

Model	S	SS	ZZ	Z
<sup>10-/11-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>32-10</b>	10	104	134	40
<sup>10-/11-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>32-20</b>	20	114	144	50
<sup>10-/11-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>32-30</b>	30	124	154	50
<sup>10-/11-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>32-40</b>	40	134	164	50
<sup>10-/11-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>32-50</b>	50	144	174	60
<sup>10-/11-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>32-75</b>	75	169	199	70
<sup>10-/11-</sup> <sub>21-/22-</sub> <b>CXS</b> □ <b>32-100</b>	100	194	224	90



# Specific product precautions

Be sure to read before handling.

## Mounting

### ⚠ Caution

- 1. Make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness : 0.05 or less).**  
Dual rod cylinders can be mounted from 3 directions, however, make sure that the surface on which the cylinder is to be mounted is flat (reference value for flatness: 0.05 or less). Otherwise, the accuracy of the piston rod operation is not achieved, and malfunction may occur.
- 2. The piston rod must be retracted when mounting the cylinder.**  
Scratches or gouges in the piston rod may lead to damaged bearings and seals, and causes malfunction or air leakage.
- 3. Secure the plate before mounting the load.**  
Load mounting without securing the plate may cause galling of the piston rod, leading to particle generation.

## Piping

### ⚠ Caution

- 1. Plug the appropriate supply port(s) according to the operating conditions.**  
Dual rod cylinders have 2 supply ports for each operating direction (3 supply ports for ø6 only). Plug the appropriate supply port according to the operating conditions. After the plugged port has been changed, check the port for air leakage. If small leakage is detected, unplug the port, check the seat surface, and reassemble it.
- 2. For 12- relief port, change the plug position according to the operating conditions.**  
A relief port is provided on each side. Change the plug position according to the operating conditions. After the change, apply 0.1 MPa pressure from the relief port to check the plugged portion for air leakage. If small leakage is detected, unplug the port, check the seat surface, and reassemble it.
- 3. Vacuum air from vacuum ports on both sides of 11- and 22-.**  
Vacuum from one side is insufficient. Be sure to vacuum simultaneously from both sides.

## Stroke Adjustment

### ⚠ Caution

- 1. After adjusting the stroke, tighten firmly the hexagon nut to prevent it from loosening.**  
Dual rod cylinders have a bolt to adjust 0 to - 5 strokes on the retracted end (IN).  
Loosen the hexagon nut to adjust the stroke. However, make sure to tighten the hexagon nut after making an adjustment.
- 2. Do not operate a cylinder with its bumper bolt removed.**  
If the bumper bolt is removed, the piston hits the head cover, causing damage to the cylinder. Therefore, do not use a cylinder without a bumper bolt.
- 3. A bumper at the end of the bumper bolt is replaceable. In case a missing bumper, or a bumper has a permanent setting, use the following part numbers for ordering.**

Model	CXS6/10/15	CXS20/25	CXS32
Part number	CXS10-34A 28747	CXS20-34A 28749	CXS32-34A 28751
No. of bumpers	1		

## Disassembly and Maintenance

### ⚠ Caution

- 1. Never use a cylinder with its plate removed.**  
When removing the hexagon socket head cap screw from the end plate, the piston rod must be secured to prevent rotation. However, if the sliding parts of the piston rod are scratched or gouged, malfunction may occur. If a plate is not required for your applications, use the cylinder that does not come with a plate, available through Made to Order (-X593).
- 2. When disassembling and reassembling the cylinder, contact SMC or refer to the separate instruction manual.**


### ⚠ Warning

- 1. Take precautions when your hands are near the plate and housing.**  
During cylinder operation, be careful not to get your hand or fingers caught between the plate and housing.

# Series 11-/12- 21-/22-**CXSJ**

Dual rod cylinder/Compact type  
ø6, ø10

## How to Order



**• Clean series**

11	Vacuum suction type
12	Relief type (with specially treated sliding parts)

**11** — **CXS** **J** **L** **6** — **50** — **M9B** **S**

**21** — **CXS** **J** **L** **6** — **50** — **M9B** **S**

**• Number of auto switches**

Nil	2 pcs.
S	1 pc.
n	n pcs.

**• Type of auto switch**

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

\* Select the applicable auto switch from the table below.

**• Bore size / Stroke (mm)**

Bore size	Standard stroke
6	10, 20, 30, 40, 50
10	10, 20, 30, 40, 50

**• Bearing type**

M	Slide Bearing
L*	Ball bushing bearing

\* Only ball bushing bearing is available for series 12- and 21-.

**• Compact Cylinder**

Copper, fluorine and silicon-free + low particle generation

21	Relief type
22	Vacuum suction type

## Auto switch specifications (Refer to Best Pneumatics No. 7 to 12 for detailed specifications and auto switches not in the following table.)

Style	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model	Lead wire length (m)*			Applicable load	
					DC	AC	Electrical entry direction		0.5 Nil	3 (L)	5 (Z)		
Reed switch	—	Grommet	Yes	2-wire	24V	12V	100V	A93	●	●	—	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	12V	—	M9N	●	●	—	—	Relay, PLC
				2-wire		12V							

\* Lead wire symbol 0.5m.....Nil (Example) A93  
3m.....L A93L

Refer to applicable auto switch list — Page 182.

PLC: Programmable Logic Controller

## Specifications

<b>Bore size mm</b>	6	10
<b>Fluid</b>	Air (Non-lube)	
<b>Proof pressure</b>	1.05MPa	
<b>Max. operating pressure</b>	0.7MPa	
<b>Min. operating pressure</b>	0.15MPa	0.1MPa
<b>Ambient and fluid temperature</b>	-10°C to 60°C (With no condensation)	
<b>Piston speed</b>	30 to 400 mm/s	
<b>Cushion</b>	Rubber bumper	
<b>Stroke adjustable range</b>	0 to -5mm compared to the standard stroke	
<b>Port size</b>	M3 x 0.5	M5 x 0.8
<b>Grease</b>	11-/12-: Fluorine grease 21-/22-: Lithium soap base grease	
<b>Particle generation grade</b> (Refer to front matter pages 13 to 22 for details.)	12-: Grade 2, 21-: Grade 3 11-/22-: Grade 1	

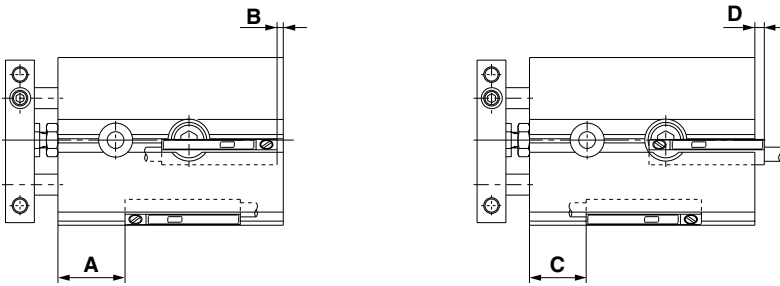
\*The maximum piston speed shown in the table above applies to the extension side.  
The maximum piston speed for retraction is approximately 70% that of extension.

## Suction flow rate of vacuum suction type (Reference values)

Size	Suction flow rate ℓ/min (ANR)
6	7
10	15

## Auto switches / Proper mounting positions for stroke end detection

11-**CXSJ**□6 / <sup>21-</sup>**CXSJ**□6



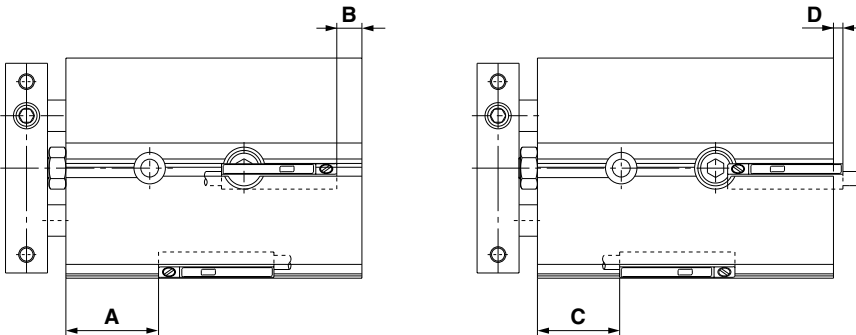
(mm)		
Symbol	D-A93	D-M9□
<b>A</b>	19(20)	23(24)
<b>B</b> <sup>Note 1)</sup>	—	2(1)
<b>C</b>	14.5(15.5)	13(11.5)
<b>D</b>	6.5(7.5)	8(9)

Note 1) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) For D-A93, only outward electrical entry (D dimension) is available.

Note 3) Dimensions in parentheses apply to 12-CXSJ□6.

11-**CXSJ**□10 / <sup>21-</sup>**CXSJ**□10



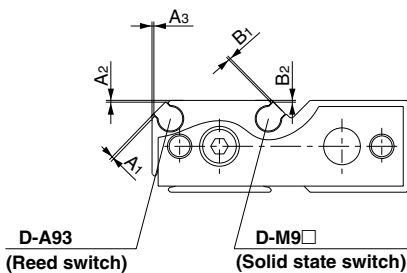
(mm)		
Symbol	D-A93	D-M9□
<b>A</b>	30 (31.5)	34(35.5)
<b>B</b> <sup>Note 1)</sup>	—	3.5(2)
<b>C</b>	25.5 (27)	24(25.5)
<b>D</b>	5 (6.5)	6.5(8)

Note 1) The above mentioned values are indicated as a guide for auto switch mounting position for stroke end detection. When actually mounting an auto switch, adjust the position after confirming the operating state of the auto switch.

Note 2) For D-A93, only outward electrical entry (D dimension) is available.

Note 3) Dimensions in parentheses apply to 12-CXSJ□10.

### Auto switch mounting dimensions



(mm)		
Auto switch model	Symbol	Bore size
		6, 10
<b>D-A93</b>	A1	0.4
	A2, A3	0.3
	B1	0.4
<b>D-M9□</b>	B2	0.3



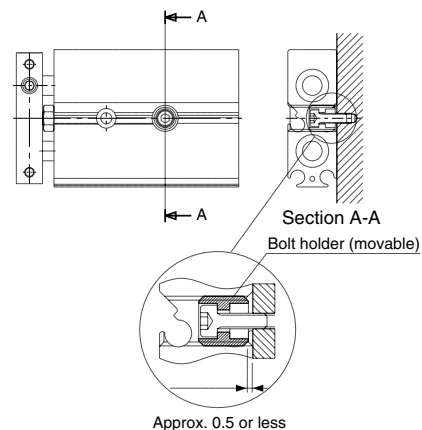
## Specific product precautions

Be sure to read before handling.

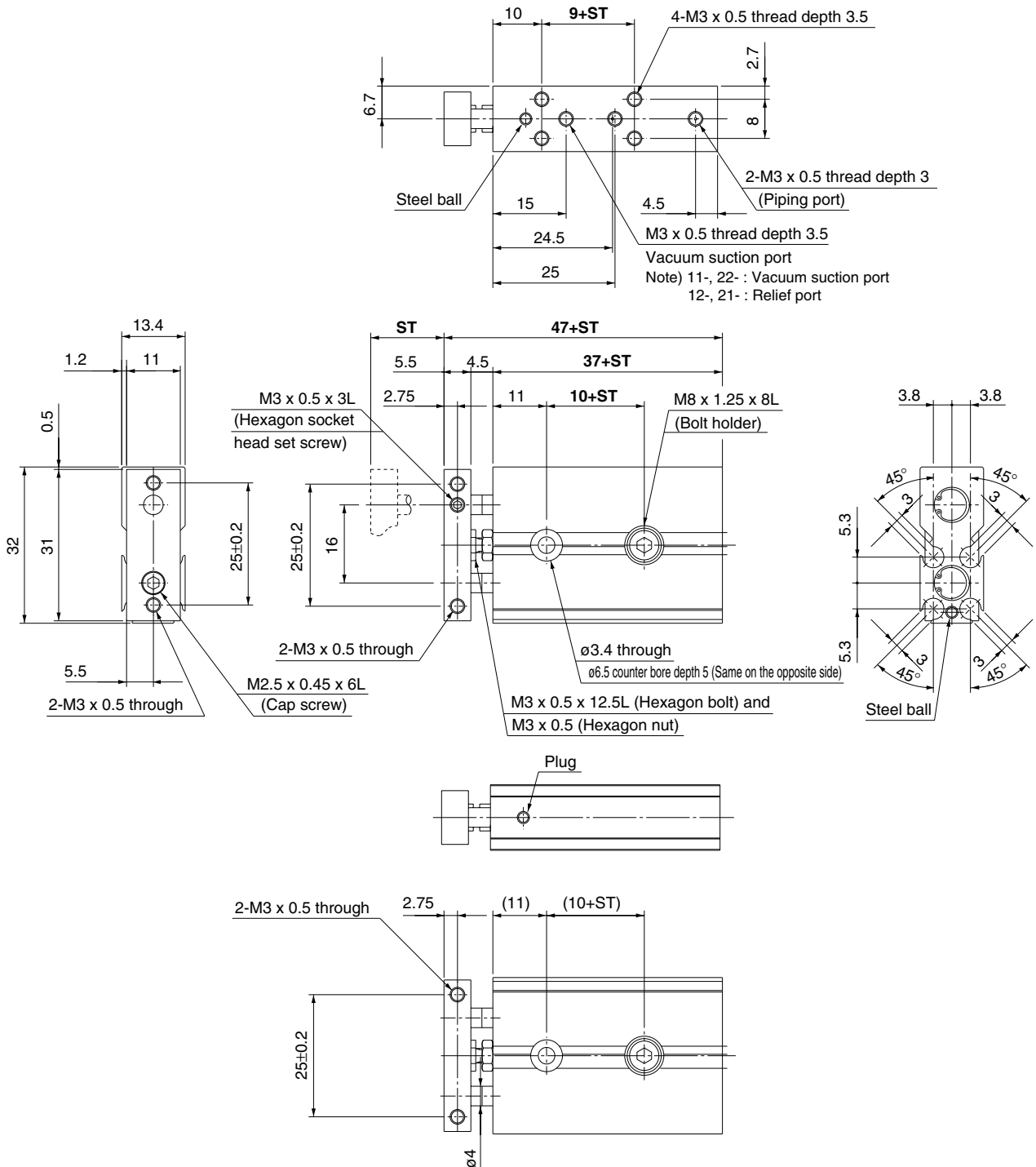
### Mounting

Adjust the bolt holder with a hexagon wrench 3mm in width across flats so that it does not protrude from the cylinder surface (approx. 0.5mm depth from the cylinder surface to the top of the holder).

If the bolt holder is not properly adjusted, it can interfere with the switch rail, hindering the auto switch mounting.

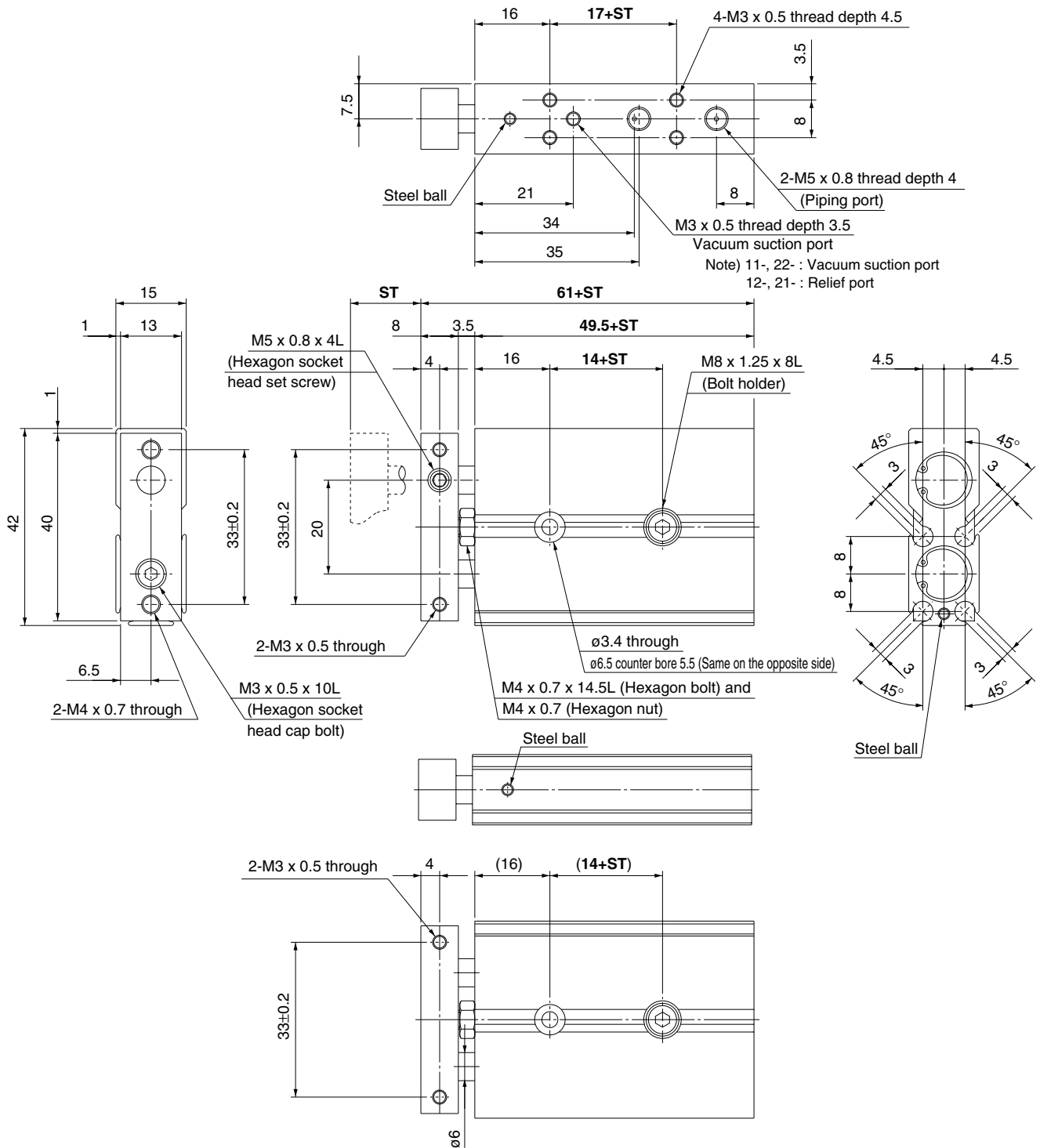


Dimensions /  $\phi 6$



Part no.	ST	9+ST	10+ST	37+ST	47+ST
<del>11-12</del> : <b>CXSJ□6-10</b>	10	19	20	47	57
<del>21-22</del> : <b>CXSJ□6-20</b>	20	29	30	57	67
<del>11-12</del> : <b>CXSJ□6-30</b>	30	39	40	67	77
<del>21-22</del> : <b>CXSJ□6-40</b>	40	49	50	77	87
<del>11-12</del> : <b>CXSJ□6-50</b>	50	59	60	87	97

Dimensions /  $\phi 10$



(mm)

Part no.	ST	14+ST	17+ST	49.5+ST	61+ST
11-12- <b>CXSJ</b> □10-10 21-22- <b>CXSJ</b> □10-10	10	24	27	59.5	71
11-12- <b>CXSJ</b> □10-20 21-22- <b>CXSJ</b> □10-20	20	34	37	69.5	81
11-12- <b>CXSJ</b> □10-30 21-22- <b>CXSJ</b> □10-30	30	44	47	79.5	91
11-12- <b>CXSJ</b> □10-40 21-22- <b>CXSJ</b> □10-40	40	54	57	89.5	101
11-12- <b>CXSJ</b> □10-50 21-22- <b>CXSJ</b> □10-50	50	64	67	99.5	111