

# 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	No. of auto switch
Nil	2 pcs.
S	1 pc.
n	"n" pcs.

**Auto switch**

Symbol	Without auto switch (Built-in magnet)
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			
															24 V	5 V, 12 V	Y69A
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)	5 V, 12 V		Y7NWV	Y7NW	●	●	○	○	IC circuit				
				3-wire (PNP)			Y7PWV	Y7PW	●	●	○						
				2-wire	12 V		Y7BWV	Y7BW	●	●	○						
Water resistant (2-color indication)	—	Grommet	None	2-wire	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	PLC										

\* 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).

## ⚠ 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

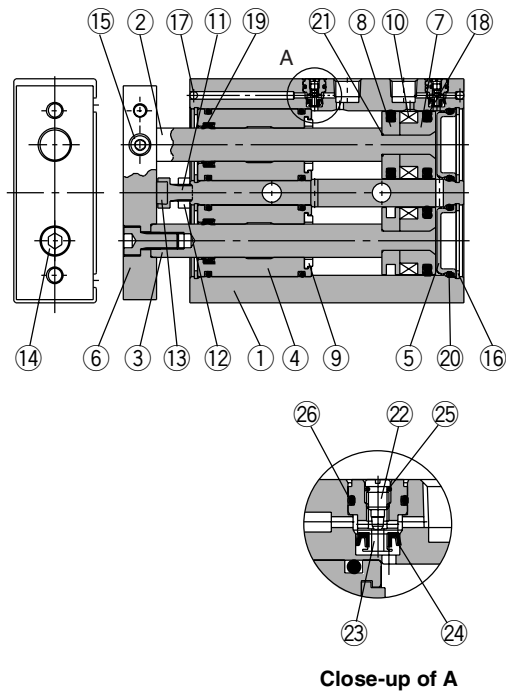
(Note) Theoretical output (N) = Pressure (MPa) x Piston area (mm<sup>2</sup>)

## Mass

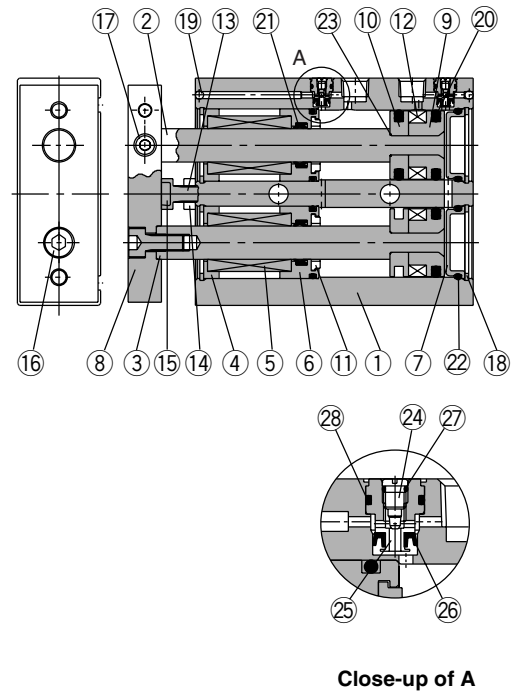
Model	Standard stroke (mm)												
	20	25	30	35	40	45	50	60	70	75	80	90	100
CXSM20-□A	0.50	0.52	0.54	0.56	0.58	0.60	0.62	0.66	0.70	0.715	0.735	0.755	0.815
CXSL20-□A	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.68	0.72	0.735	0.755	0.775	0.835
CXSM25-□A	—	0.78	0.80	0.82	0.84	0.86	0.88	0.92	0.96	0.98	1.00	1.04	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	Phosphate coated
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	Phosphate coated
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	

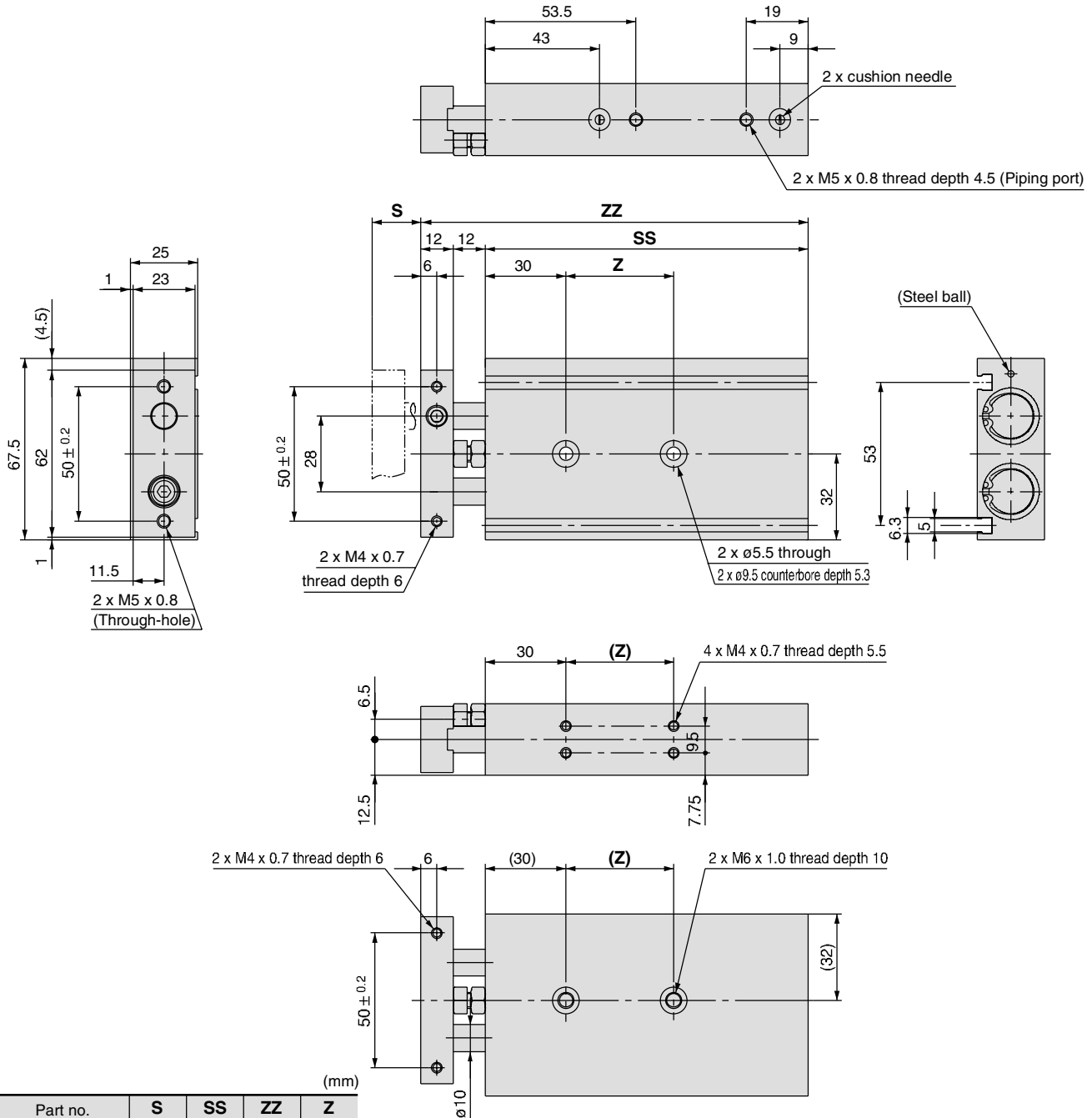
### Replacement Parts/Seal Kit

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)**

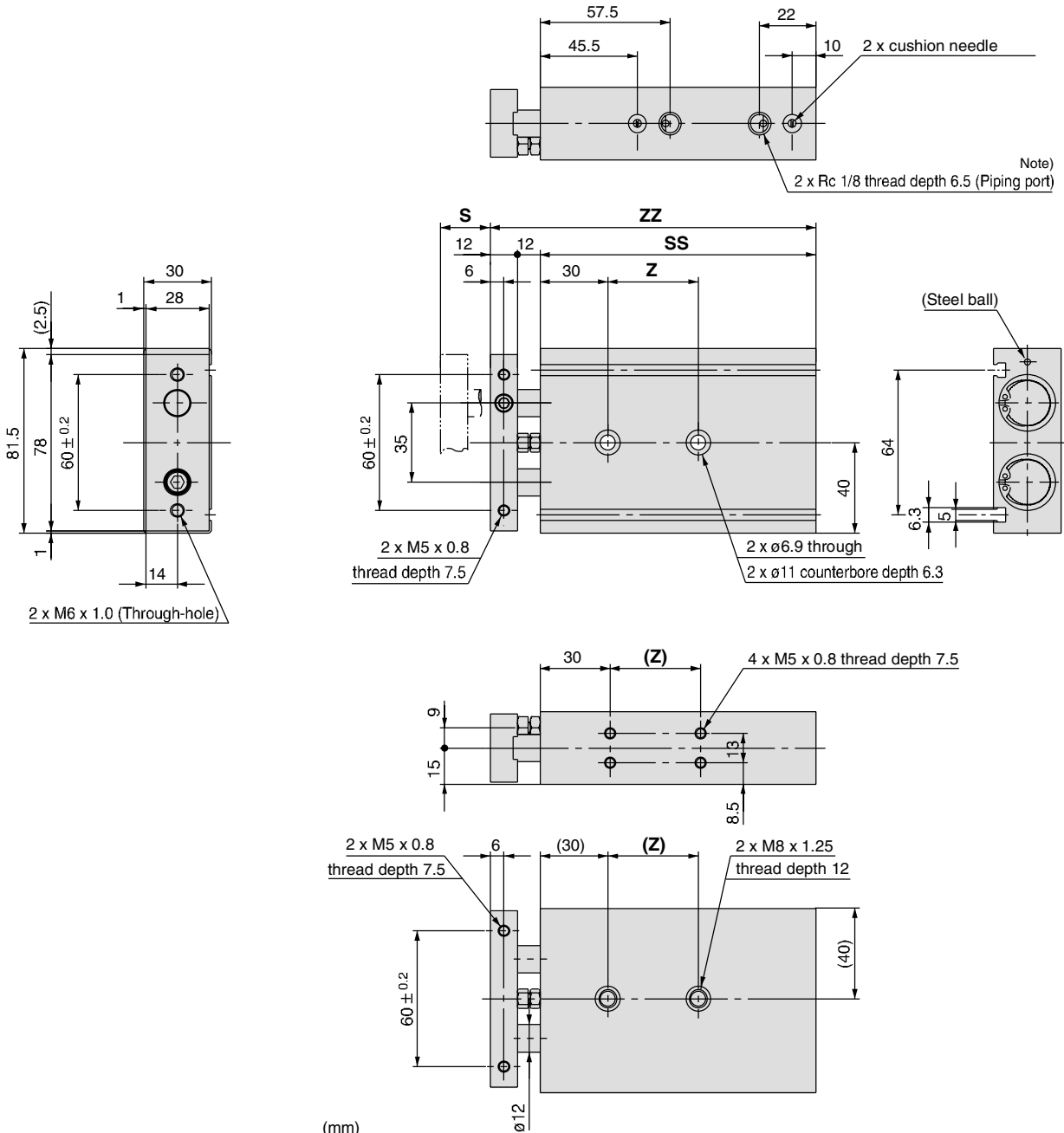
# Series CXS

## 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:  $\phi 25$**

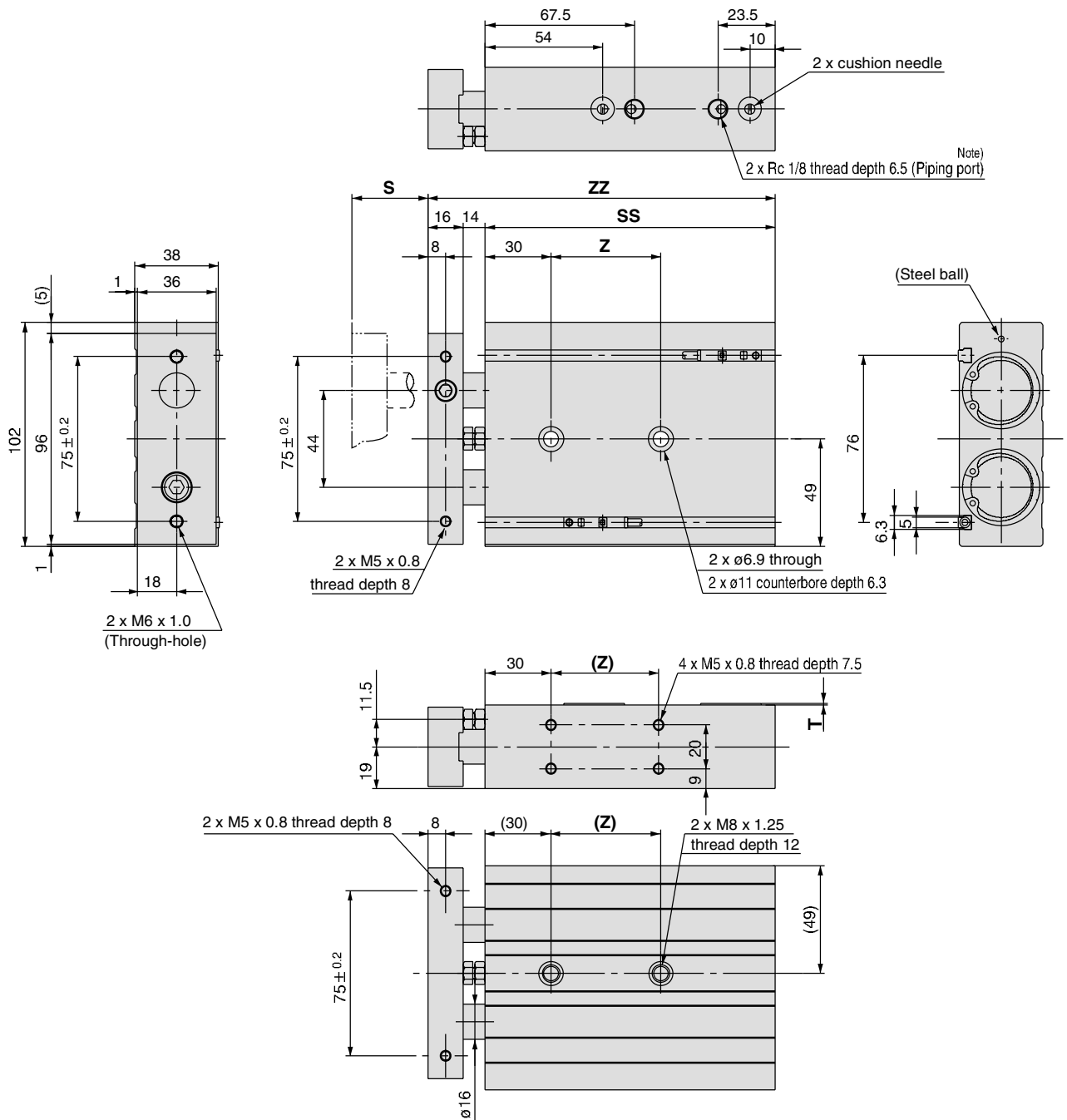


(mm)

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	

# Series CXS

## Dimensions: $\phi 32$



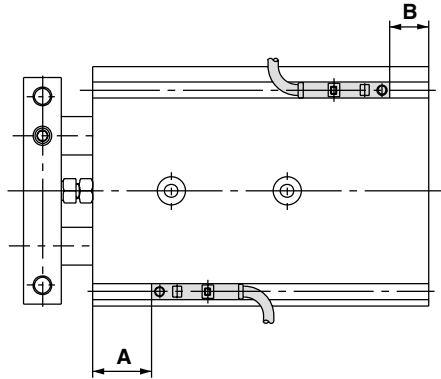
(mm)

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

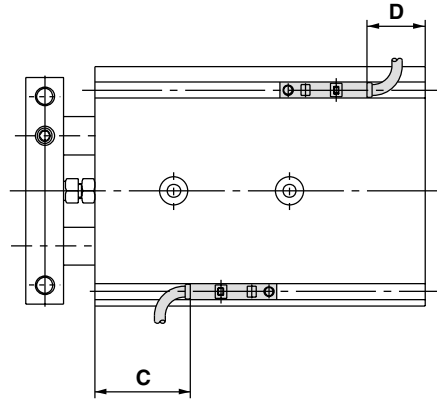
Note) For port threads TN and TF, only the piping port type varies.

## 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.**