Series CYP Clean rodless cylinder ø15, ø32

How to Order

CYP 15 □ — 200 □ — Y59B □

Clean rodless cylinder

Cylinder bore size

15	15mm
32	32mm

Port type

Nil	M5 x 0.8	15
	Rc	32
TN	NPT	
TF	G	

Standard stroke

Bore size (mm)	Standard stroke (mm)
15·32	100, 150, 200, 250, 300, 350 400, 450, 500, 600, 700

Note 1) Contact SMC if the maximum stroke is exceeded.
Note 2) Intermediate strokes are available upon request.

Piping port location

Nil	a	Operating direction right
	b	Operating direction left
L	c	Operating direction right
	d	Operating direction left
R	e	Operating direction right
	f	Operating direction left
S	g	Operating direction right
	h	Operating direction left

Number of auto switches

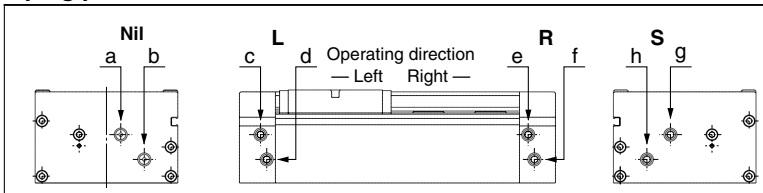
Nil	2 pcs.
S	1 pc.
n	n pcs.

Type of auto switch

Nil	Without auto switch

For auto switch model numbers, refer to the table below.

Piping port location



Note) Ports other than those specified will be plugged.

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

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model	∗ Lead wire length (m)			Applicable load	
					DC		AC	Electrical entry direction / Horizontal	0.5 Nil	3 (L)	5 (Z)		
Reed switch	—	Grommet	Yes	2-wire	24V	12V	100V	Z73	●	●	●	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24V	5V, 12V	—	Y59A	●	●	○	IIC circuit	Relay, PLC
				2-wire		12V		Y59B	●	●	○	—	

∗ Lead wire symbol 0.5m……Nil (Example) Y59B
3 m……L Y59BL
5 m……Z Y59BZ

PLC: Programmable Logic Controller

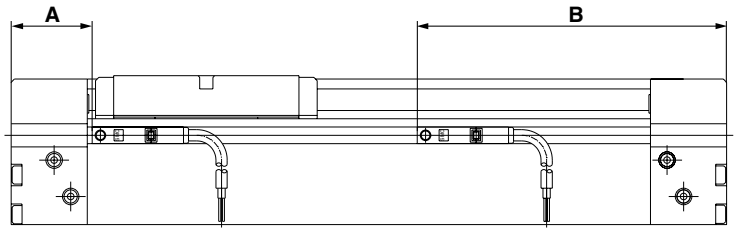
∗∗ Solid state switches marked with ○ are produced upon receipt of order.

Refer to applicable auto switch list. — Page 182

Specifications

Bore size (mm)	15	32
Fluid	Air and inert gas	
Action	Double acting	
Proof pressure	0.5MPa	
Operating pressure range	0.05 to 0.3MPa	
Ambient and fluid temperature	–10 to 60°C (With no condensation)	
Piston speed	50 to 300mm/s	
Lubrication	Non-lube	
Stroke adjustable range	±1mm on each side (total ±2mm)	
Cushion	Sine cushion (Air cushion)	
Piping port size	M5 x 0.8	Rc1/8, NPT1/8, G1/8
Grease	Fluorine grease	
Particle generation grade (Refer to front matter pages 13 to 22 for details.)	Grade 2	

Auto switches / Proper mounting position for stroke end detection

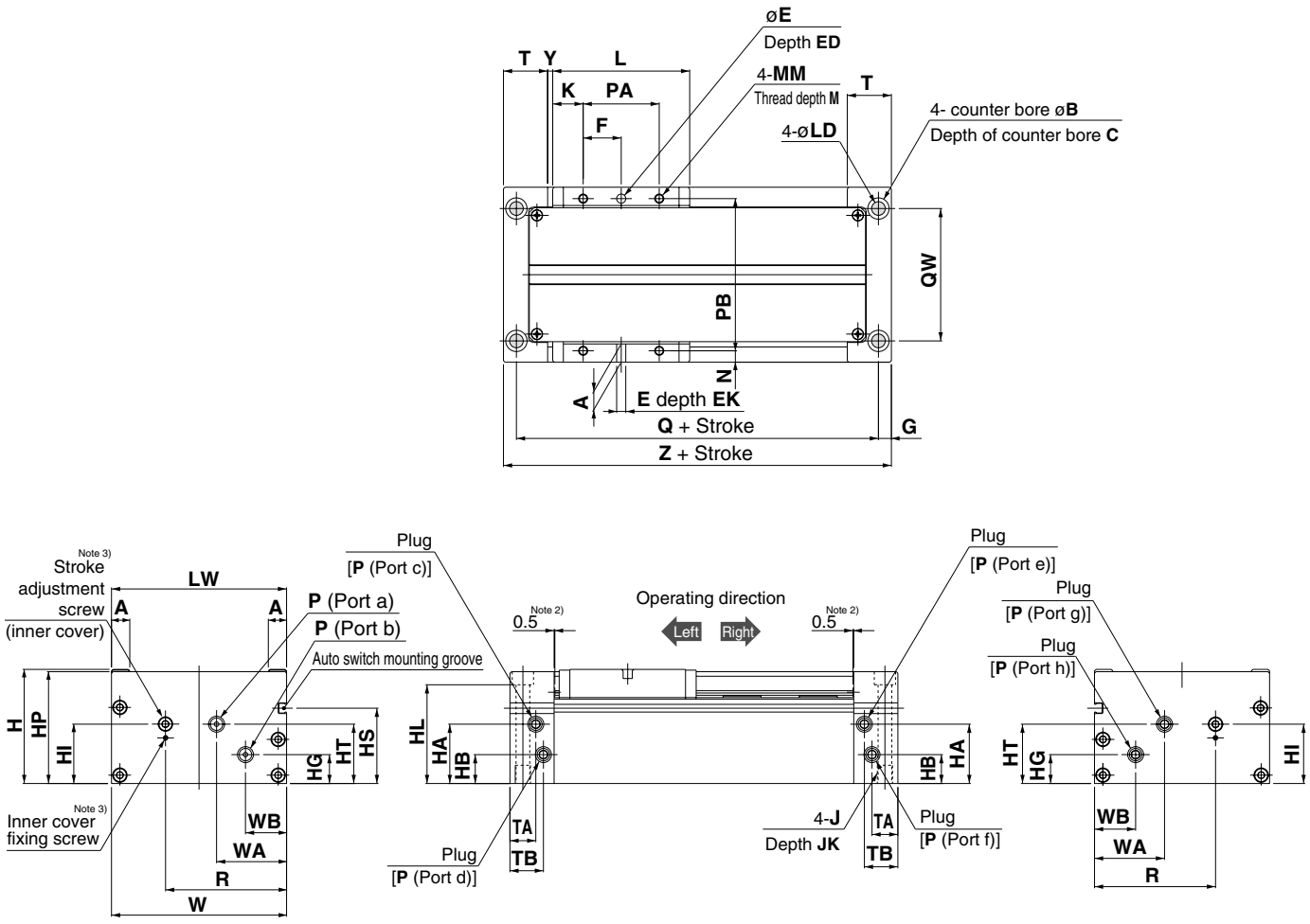


Auto switch proper mounting position

Auto switch model / Cylinder model	A		B	
	D-Z73	**D-Y5□**	**D-Z73**	**D-Y5□**
CYP15	24.5		93.5	
CYP32	33		122	

Note) 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.

Dimensions



(mm)

Model	A	B	C	E	ED	EK	F	G	H	HA	HB	HG	HI	HL	HP	HS	HT	J	JK	K
CYP15	8	9.5	5.4	4H9 $^{+0.030}_{0}$	9.5	4	12.5	6.5	45	19.5	8.5	8.5	23	38.6	44	27	19.5	M6 x 1	10	21
CYP32	12	14	8.6	6H9 $^{+0.030}_{0}$	13	6	25	8.5	75	39	19	19	39	64.9	73.5	49.5	39	M10 x 1.5	12	20

Model	L	LD	LW	MM	M	N	PA	PB	Q	QW	R	T	TA	TB	W	WA	WB	Y	Z
CYP15	67	5.4	69	M4 x 0.7	6	4.5	25	60	105	48	45	23	13	18	69	32	17	2.5	118
CYP32	90	8.6	115	M6 x 1	8	7.5	50	100	138	87	79.5	29	17	22	115	46	27	3.5	155

Model	P		
	Nil	TN	TF
CYP15	M5 x 0.8	—	—
CYP32	Rc1/8	NPT1/8	G1/8

Note 1) These dimensional drawings apply to piping port position "Nil".
Note 2) These dimensional drawings indicate the protrusion of bumper.
Note 3) Refer to the specific product precautions (stroke adjustment and cushion effect (sine cushion)).

Specific product precautions

Be sure to read before handling.

Handling

⚠ Caution

1. Open the inner package of the double packaged clean series inside a clean room or other clean environment.

2. Perform parts replacement and disassembly work in a clean room after exhausting compressed air in the piping outside the clean room.

Mounting

⚠ Caution

1. Take care to avoid striking the cylinder tube with other objects or handling it in a way that could cause deformation.
The cylinder tube and slider units have a non-contact construction. For this reason, even a slight deformation or slippage of position can cause malfunction and loss of durability, as well as a danger of degrading the particulate generation characteristics.

2. Do not scratch or gouge the linear guide by striking it with other objects.
Since the linear guide is specially treated for maximum suppression of particle generation due to sliding, even a slight scratch can cause malfunction and loss of durability, as well as degradation in the particulate generation characteristics.

3. Since the slide table is supported by precision bearings, do not apply strong impacts or excessive moment when mounting work pieces.

4. Be sure to operate the cylinder with the plates on both sides secured.
Avoid applications in which the slide table or only one plate is secured.

5. When changing the ports to be used, be sure that unused ports are securely sealed.
Take sufficient care in sealing unused ports, because if ports are not properly sealed, air can leak from the ports and particulate generation characteristics can be degraded.

Operation

⚠ Caution

1. The max. operating pressure of the clean rodless cylinder is 0.3 MPa.
If the max. operating pressure of 0.3 MPa for the clean rodless cylinder is exceeded, the magnetic coupling could be broken, causing a danger of malfunction or degradation of particulate generation characteristics, etc.

2. The product can be used with a direct load applied within the allowable range, but careful alignment is necessary when connecting to a load having an external guide mechanism.
Since alignment variations increase as the stroke gets longer, use a connection method which can absorb these variations and consider measures to control particulate generation.

Operation

⚠ Caution

3. When used for vertical operation, use caution regarding possible dropping due to separation of the magnetic coupling.
When used for vertical operation, use caution as there is a possibility of dropping due to separation of the magnetic coupling if a load (pressure) greater than the allowable value is applied.

4. Do not operate with the magnetic coupling out of position.
If the magnetic coupling is out of position, push the external slider by hand (or the piston slider with air pressure) back to the proper position at the stroke end.

5. Do not supply lubrication, as this is a non-lube product.
The interior of the cylinder is lubricated at the factory, and lubrication with turbine oil, etc., will not satisfy the product's specifications.

6. Never reapply lubricant.
Never reapply lubricant, as there may be a degradation of particulate generation characteristics or operation characteristics.

Speed adjustment

⚠ Caution

1. A throttle valve for clean room use is recommended for speed adjustment. (Please consult with SMC regarding equipment and methods to be used)
Speed adjustment can also be performed with a meter-in or meter-out type speed controller for clean room use, but it may not be possible to obtain smooth starting and stopping operation.

Throttle valves and dual speed controllers for recommended speed adjustment of CYP cylinders

Throttle valve \ Series		Model	
		CYP15	**CYP32**
Metal body piping type	Elbow type	10-AS1200-M5-X216	10-AS2200-01-X214
	In-line type	10-AS1000-M5-X214	10-AS2000-01-X209
Resin body with one-touch fitting	Elbow type (Throttle valve)	10-AS1201F-M5-04-X214	10-AS2201F-01-04-X214
		10-AS1201F-M5-06-X214	10-AS2201F-01-06-X214
			10-AS2201F-01-06-X214
	Universal type (Throttle valve)	10-AS1301F-M5-04-X214	10-AS2301F-01-04-X214
		10-AS1301F-M5-06-X214	10-AS2301F-01-06-X214
			10-AS2301F-01-06-X214
	In-line type (Throttle valve)	10-AS1001F-04-X214	10-AS2001F-04-X214
		10-AS1001F-06-X214	10-AS2001F-06-X214
	Dual type (Speed controller)	10-ASD230F-M5-04	10-ASD330F-01-06
		10-ASD230F-M5-06	10-ASD330F-01-08

Note 1) For the selection method of the metal body piping type and the resin body type with one-touch fittings, refer to pages 718 to 760.
Note 2) For fittings used with the metal body piping type, refer to pages 804 to 873.

2. In the case of vertical mounting, a system with a reduced pressure supply circuit installed on the down side is recommended. (This is effective against upward starting delays and for air saving.)

Specific Product Precautions

Be sure to read before handling.

Stroke adjustment and cushion effect (Sine cushion)

⚠ Caution

1. A sine cushion function (for smooth start and soft stop) is included in the standard specifications.
Due to the nature of a sine cushion, adjustment of the cushion effect is not possible. There is no cushion needle adjustment as in the case of conventional cushion mechanisms.

2. The stroke adjustment is a mechanism to adapt the slide table's stroke end position to a mechanical stopper on other equipment, etc.
(Adjustment range : Total of both sides ±2mm)
To ensure safety, perform adjustment after shutting off the drive air, exhausting the residual pressure and implementing drop prevention measures.

1) Loosen the inner cover holding screw with a hexagon wrench, etc.

2) To align the position with a mechanical stopper on other equipment, rotate the stroke adjustment screw (inner cover) to the left or right with a flat head screw driver to move the inner cover back and force. Approximately 1mm of adjustment is possible with one rotation.

3) The maximum adjustment on one side is ±1mm. A total adjustment of approximately ±2mm is possible with one rotation.

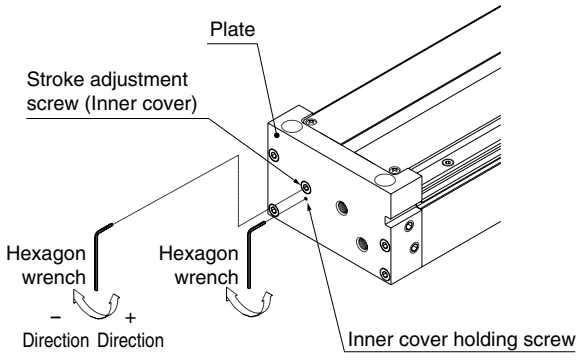
4) After completing the stroke adjustment, tighten the inner cover holding screw with a hexagon wrench, etc.

Inner cover holding screw tightening torque [N·m]

Model	Thread size	Tightening torque	Hexagon wrench size
CYP15	M3 x 0.5	0.3	1.5
CYP32	M6 x 1	2.45	3

Stroke adjustment screw

Model	Hexagon wrench size
CYP15	2.5
CYP32	4



Maintenance

⚠ Caution

1. Never disassemble the cylinder tube or linear guide, etc.
If disassembled, the slide table may touch the outside surface of the cylinder tube, resulting in a degradation of particulate generation characteristics.

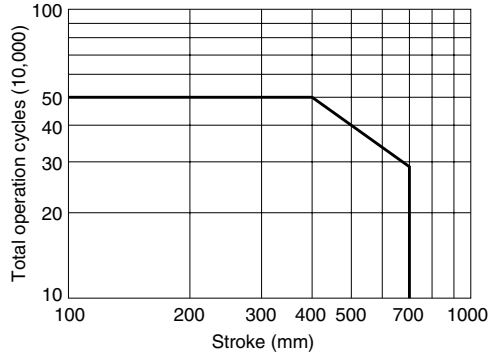
2. Please consult with SMC when replacing seals and bearings (wear rings).

Particulate generation characteristics

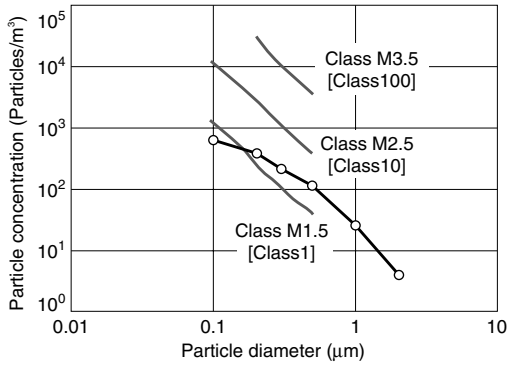
⚠ Caution

1. In order to maintain the particulate generation grade, use operation of 500 thousand cycles or travel distance of about 400 km as a standard. (Graph (1) below)
If operation is continued beyond the recommended values, lubrication failure of the linear guide and loss of particulate generation characteristics may occur.

Graph (1)



Graph (2)



Note 1) This chart shows the level of cleanliness inside the measurement chamber.
Note 2) The vertical axis shows the number of particles per unit volume (1 m^3) of air which are no smaller than the particle size shown on the horizontal axis.
Note 3) The dotted lines show the upper concentration limit of the cleanliness class based on Fed. Std. 209E-1992.
Note 4) The plots indicate a 95% upper reliability limit value for time series data up to 500 thousand operation cycles. (Cylinder: CYP32-200, Workpiece weight 5 kg, Average speed: 200 mm/s)
Note 5) The data above provides a guide for selection but is not guaranteed.