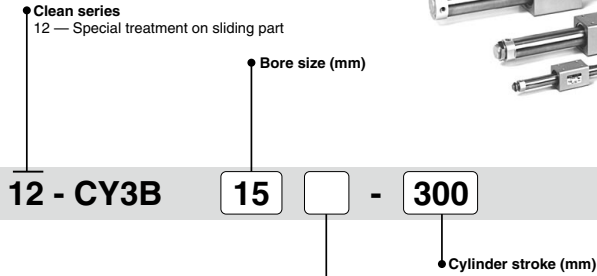


# Series 12-CY3B $\phi 6, \phi 10, \phi 15, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$ Magnetically Coupled Rodless Cylinder

## How to Order



### Port thread type

Symbol	Type	Bore size
Nil	M3 x 0.5	6
	M5 x 0.8	10, 15
	Rc	20, 25, 32, 40
TN	NPT	
TF	G	50, 63

## Model

Model	Bore size (mm)	Port size	Lubrication	Standard stroke (mm)	Maximum manufacturable stroke	Cushion	
						Rubber	Air
12-CY3B6	6	M3 x 0.5	Non-lube	50, 100, 150, 200	300	○ (Both sides)	—
12-CY3B10	10	M5 x 0.8		50, 100, 150, 200, 250, 300	500		
12-CY3B15	15			50, 100, 150, 200, 250, 300, 350, 400, 450, 500	1000		
12-CY3B20	20	Rc1/8		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1300		
12-CY3B25	25	NPT1/8					
12-CY3B32	32	G1/8					
12-CY3B40	40	Rc1/4		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000			
12-CY3B50	50	NPT1/4					
12-CY3B63	63	G1/4					

Note 1) Stroke exceeding the standard stroke but below the maximum manufacturable stroke is available as special order.

Note 2) Intermediate strokes are available in 1 mm increments.

Note 3) Please contact SMC if the maximum manufacturable stroke is exceeded.

## Specifications

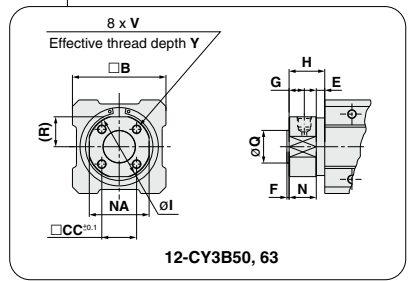
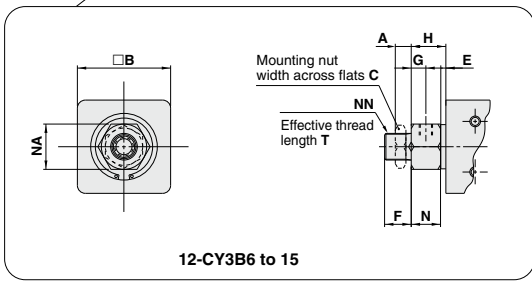
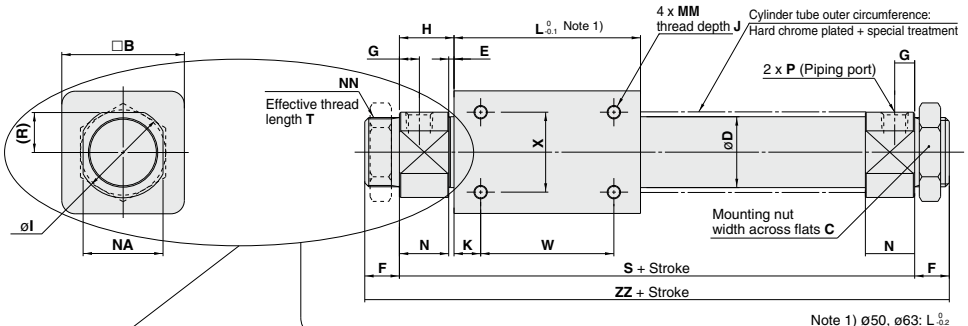
Item	Bore size (mm)									
	6	10	15	20	25	32	40	50	63	
Proof pressure	1.05 MPa									
Maximum operating pressure	0.7 MPa									
Minimum operating pressure	0.16 MPa		0.15 MPa		0.14 MPa		0.12 MPa			
Ambient and fluid temperature	-10°C to 60°C (No freezing)									
Piston speed	50 to 400 mm/s									
Stroke length tolerance	0 to 250 st: $^{+1.0}_0$ , 251 to 1000 st: $^{+1.4}_0$ , Over 1001 st: $^{+1.8}_0$									
Mounting bracket	2 mounting nuts (Standard)									
Grease	Fluorine grease									
Cleanliness class (ISO class)	Class 5									

## Magnetic Holding Force (N)

Bore size (mm)	6	10	15	20	25	32	40	50	63
Holding force	19.6	53.9	137	231	363	588	922	1471	2256

**Dimensions**

**12-CY3B6 to 63**



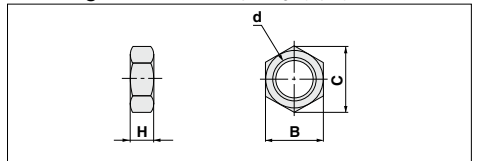
Model	A	B	C	CC	D	E	F	G	H	I	J	K	L	MM	N	NA	NN	Q	R	S	T	V
12-CY3B6	4	17	8*	—	7.6	4	8*	5	13.5*	—	4.5	5	35	M3 x 0.5	9.5*	10*	M6 x 1*	—	—	62 <sup>3</sup>	6.5	—
12-CY3B10	4	25	14	—	12	1.5	9	5	12.5	—	4.5	4	38	M3 x 0.5	11	14	M10 x 1	—	—	63	7.5	—
12-CY3B15	4	35	14	—	16.6*	2	10	5.5	13	—	6	11	57	M4 x 0.7	11	17	M10 x 1	—	—	83	8	—
12-CY3B20	8	36	26	—	21.6*	2*	13	7.5*	20	28	6	8	66	M4 x 0.7	18*	24	M20 x 1.5	—	12*	106	10	—
12-CY3B25	8	46	32	—	26.4*	2*	13	7.5*	20.5	34	8	10	70	M5 x 0.8	18.5*	30	M26 x 1.5	—	15*	111	10	—
12-CY3B32	8	60	32	—	33.6*	2*	16	8*	22	40	8	15	80	M6 x 1	20*	36	M26 x 1.5	—	18*	124	13	—
12-CY3B40	10	70	41	—	41.6*	3*	16	11	29	50	10	16	92	M6 x 1	26*	46	M32 x 2	—	23*	150	13	—
12-CY3B50	—	86	—	32	52.4*	8	2	14	33	58*	12	25	110	M8 x 1.25	25	55	—	30 <sup>-0.007</sup>	27.5*	176	—	M8 x 1.25
12-CY3B63	—	100	—	38	65.4*	8	2	14	33	72*	12	26	122	M8 x 1.25	25	69	—	32 <sup>-0.043</sup>	34.5*	188	—	M10 x 1.5

Model	W	X	Y	ZZ	P (Piping port)		
					NII	TN*	TF*
12-CY3B6	25	10	—	78*	M3 x 0.5*	—	—
12-CY3B10	30	16	—	81	M5 x 0.8	—	—
12-CY3B15	35	19	—	103	M5 x 0.8	—	—
12-CY3B20	50	25	—	132	Rc 1/8	NPT 1/8	G 1/8
12-CY3B25	50	30	—	137	Rc 1/8	NPT 1/8	G 1/8
12-CY3B32	50	40	—	156	Rc 1/8	NPT 1/8	G 1/8
12-CY3B40	60	40	—	182	Rc 1/4	NPT 1/4	G 1/4
12-CY3B50	60	60	16	180	Rc 1/4	NPT 1/4	G 1/4
12-CY3B63	70	70	16	192	Rc 1/4	NPT 1/4	G 1/4

Note 2) The asterisk denotes the dimensions which are different from the 12-CY1B series.

Note 3) Mounting nuts can be screwed on only for the effective thread length of the head cover (T dimension). When mounting a cylinder, consider the thickness of flange, etc.

**Mounting Nut/Included in the package (2 pcs).**



Part no.	Applicable bore size (mm)	d	H	B	C
SNJ-006B	6	M6 x 1.0	4	8	9.2
SNJ-016B	10, 15	M10 x 1.0	4	14	16.2
SN-020B	20	M20 x 1.5	8	26	30
SN-032B	25, 32	M26 x 1.5	8	32	37
SN-040B	40	M32 x 2.0	10	41	47.3

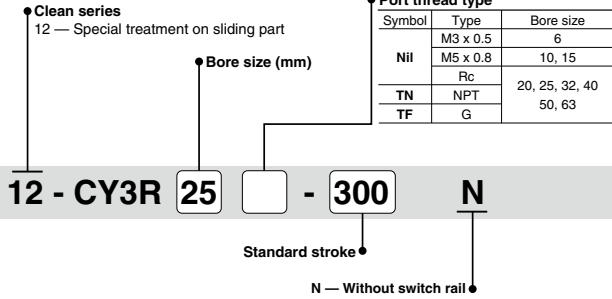
Note) Mounting nuts are not available for ø50 and ø63.

Directional Control Valves  
 Air Cylinders  
 Rotary Actuators  
 Air Grippers  
 Air Preparation Equipment  
 Modular F. R.  
 Pressure Control Equipment  
 Fittings & Tubing  
 Flow Control Equipment  
 Pressure Switches/ Pressure Sensors

# Series 12-CY3R $\phi 6, \phi 10, \phi 15, \phi 20, \phi 25, \phi 32, \phi 40, \phi 50, \phi 63$

Magnetically Coupled Rodless Cylinder (Direct Mount)

## How to Order



\* Switch rail is not available for 12-series.

## Model

Model	Bore size (mm)	Port size	Lubrication	Standard stroke (mm)	Maximum manufacturable stroke (mm)	Cushion	
						Rubber	Air
12-CY3R6	6	M3 x 0.5	Non-lube	50, 100, 150, 200	300	○ (Both sides)	—
12-CY3R10	10	M5 x 0.8		50, 100, 150, 200, 250, 300	500		
12-CY3R15	15			50, 100, 150, 200, 250, 300, 350, 400, 450, 500	1000		
12-CY3R20	20	Rc1/8		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1300		
12-CY3R25	25	NPT1/8					
12-CY3R32	32	G1/8					
12-CY3R40	40	Rc1/4					
12-CY3R50	50	NPT1/4		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000			
12-CY3R63	63	G1/4					

Note 1) Stroke exceeding the standard stroke but below the maximum manufacturable stroke is available as special order.

Note 2) Intermediate strokes are available in 1 mm increments.

Note 3) Please contact SMC if the maximum manufacturable stroke is exceeded.

## Specifications

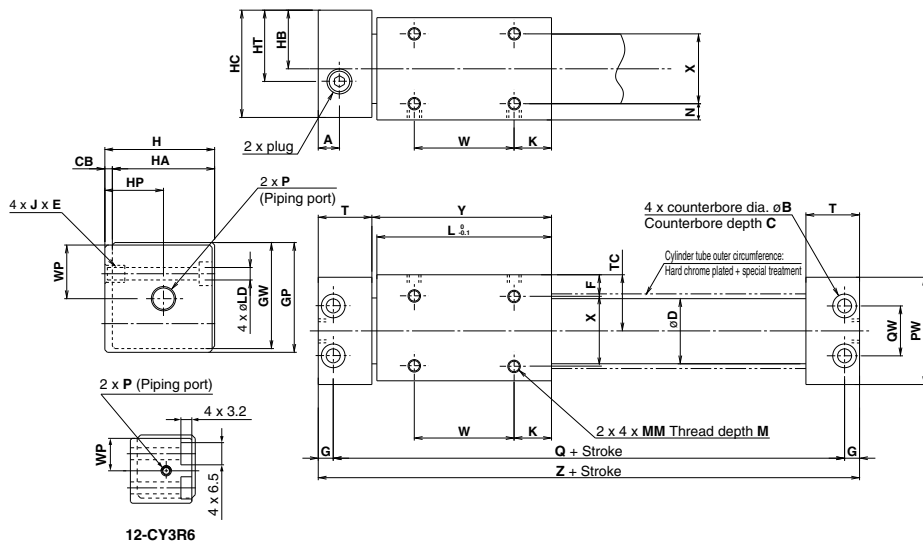
Item	Bore size (mm)									
	6	10	15	20	25	32	40	50	63	
Proof pressure	1.05 MPa									
Maximum operating pressure	0.7 MPa									
Minimum operating pressure	0.16 MPa				0.15 MPa		0.14 MPa		0.12 MPa	
Ambient and fluid temperature	-10°C to 60°C (No freezing)									
Piston speed	50 to 400 mm/s									
Stroke length tolerance	0 to 250 st: $^{+1.0}_0$ , 251 to 1000 st: $^{+1.4}_0$ , Over 1001 st: $^{+1.8}_0$									
Mounting	Direct mount									
Grease	Fluorine grease									
Cleanliness class (ISO class)	Class 5									

## Magnetic Holding Force (N)

Bore size (mm)	6	10	15	20	25	32	40	50	63
Holding force	19.6	53.9	137	231	363	588	922	1471	2256

**Dimensions**

**12-CY3R6 to 63**



**12-CY3R6**

(mm)

Model	A	B	C	CB	D	F	G	GP	GW	H	HA	HB	HC	HP	HT	J x E	K
12-CY3R6	7*	—*	—*	2	7.6	5.5	3*	20	18.5	19	17	10.5	18	10.5*	10.5*	M4 x 0.7 x 6	7
12-CY3R10	9	6.5	3.2	2	12	6.5	4	27	25.5	26	24	14	25	14	14	M4 x 0.7 x 6	9
12-CY3R15	10.5	8	4.2	2	16.6*	8	5	33	31.5	32	30	17	31	17	17	M5 x 0.8 x 7	11
12-CY3R20	9	9.5	5.2	3	21.6*	9	6	39	37.5	39	36	21	38	24	24	M6 x 1 x 8	14
12-CY3R25	8.5	9.5	5.2	3	26.4*	8.5	6	44	42.5	44	41	23.5	43	23.5	23.5	M6 x 1 x 8	15
12-CY3R32	10.5	11	6.5	3	33.6*	10.5	7	55	53.5	55	52	29	54	29	29	M8 x 1.25 x 10	13
12-CY3R40	10	11	6.5	5	41.6*	13	7	65	63.5	67	62	36	66	36	36	M8 x 1.25 x 10	15
12-CY3R50	14	14	8.2	5	52.4*	17	8.5	83	81.5	85	80	45	84	45	45	M10 x 1.5 x 15	25
12-CY3R63	15	14	8.2	5	65.4*	18	8.5	95	93.5	97	92	51	96	51	51	M10 x 1.5 x 15	24

Model	L	LD	M	MM	N	PW	Q	QW	T	TC	W	WP	X	Y	Z
12-CY3R6	34	3.5	3.5	M3 x 0.5	3.5	19	60*	10	14.5*	10.5	20	9.5	10	35.5	66*
12-CY3R10	38	3.5	4	M3 x 0.5	4.5	26	68	14	17.5	14	20	13	15	39.5	76
12-CY3R15	53	4.3	5	M4 x 0.7	6	32	84	18	19	17	25	16	18	54.5	94
12-CY3R20	62	5.4	5	M4 x 0.7	7	38	95	17	20.5	20	40	19	22	64	107
12-CY3R25	70	5.4	6	M5 x 0.8	6.5	43	105	20	21.5	22.5	40	21.5	28	72	117
12-CY3R32	76	7	7	M6 x 1	8.5	54	116	26	24	28	50	27	35	79	130
12-CY3R40	90	7	8	M6 x 1	11	64	134	34	26	33	60	32	40	93	148
12-CY3R50	110	8.6	10	M8 x 1.25	15	82	159	48	30	42	60	41	50	113	176
12-CY3R63	118	8.6	10	M8 x 1.25	16	94	171	60	32	48	70	47	60	121	188

Model	P (Piping port)		
	NH	TN*	TF*
12-CY3R6	M3 x 0.5*	—	—
12-CY3R10	M5 x 0.8	—	—
12-CY3R15	M5 x 0.8	—	—
12-CY3R20	Rc 1/8	NPT 1/8	G 1/8
12-CY3R25	Rc 1/8	NPT 1/8	G 1/8
12-CY3R32	Rc 1/8	NPT 1/8	G 1/8
12-CY3R40	Rc 1/4	NPT 1/4	G 1/4
12-CY3R50	Rc 1/4	NPT 1/4	G 1/4
12-CY3R63	Rc 1/4	NPT 1/4	G 1/4

Note) The asterisk denotes the dimensions which are different from the 12-CY1R series.

Directional Control Valves

Air Cylinders

Rotary Actuators

Air Grippers

Air Preparation Equipment

Modular F. R.

Pressure Control Equipment

Fittings & Tubing

Flow Control Equipment

Pressure Switches/ Pressure Sensors

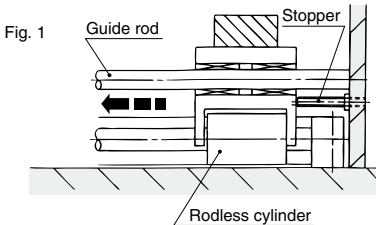
## ⚠ Specific Product Precautions

Be sure to read this before handling.

### 12-CY3B/3R Common Precautions

#### ⚠ Caution

- 1. Use caution to the rotation of the external slider.**  
Rotation should be controlled by connecting the external slider to another shaft (linear guide, etc.).
- 2. 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 position slider with air pressure) back to the proper position at the stroke end.
- 3. Do not apply a lateral load to the external slider.**  
When a load is mounted directly to the cylinder, variations in the alignment of each shaft center cannot be offset, which results in the generation of a lateral load that can cause malfunction. The cylinder should be operated using a connection method which allows for shaft alignment variations and deflection due to the cylinder's own weight. A drawing of a recommended mounting method is shown in Fig. 1.



- 4. When used vertically for applications, use caution regarding allowable load.**  
When used vertically for applications, use caution as there is a possibility of dropping due to separation of the magnetic coupling if a load greater than the allowable value is added. Please contact SMC for the operating conditions (pressure, load, speed, stroke, frequency, etc.) before use.  
Refer to the WEB catalog (CY3 series model selection method) for details.
- 5. Do not scratch or gouge the external surface of the cylinder.**  
It can damage the wear ring, increase particle generation and cause malfunction.
- 6. Do not use the cylinder with its body fixed.**  
Be sure to secure both head covers (or end covers in case of CY3R) before using the cylinder. Operation of the cylinder with its body fixed will damage the wear ring, resulting in increase of particle generation or malfunction.

### 12-CY3R

#### ⚠ Caution

- 1. Use caution to the cylinder mounting surface.**  
If there is any clearance between the end covers on both ends and the mounting surfaces, adjust the shim with a spacer for secure installation.

## Disassembly and Maintenance

12-CY3B

12-CY3R

### ⚠ Warning

1. Use caution as the attractive power of the magnets is very strong.

When removing the external slider and piston slider from the cylinder tube for maintenance, etc., handle with caution, since the magnets installed in each slider have a very strong attractive force.

### ⚠ Caution

1. Use caution when taking off the external slider, as the piston slider will be directly attracted to it.

When removing the external slider or piston slider from the cylinder tube, first force the sliders out of their magnetically coupled positions, and then remove them individually when there is no longer any holding force. If they are removed while still magnetically coupled, they will be directly attracted to one another and will not come apart.

2. Use caution to the direction of the external slider and the piston slider.

Since the external slider and piston slider are directional for  $\phi 6$ ,  $\phi 10$ , refer to the figures below when performing disassembly or maintenance. Put the external slider and piston slider together, and insert the piston slider into the cylinder tube so that they will have the correct positional relationship as shown in Fig. 2. If they align as shown in Fig. 3, insert the piston slider after turning it around  $180^\circ$ .

If the direction is not correct, it will be impossible to obtain the specified holding force.



Fig. 2 Correct positioning

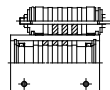


Fig. 3 Positioning in incorrect direction

3. Do not disassemble the magnetic components (piston slider and external slider).

This can cause a loss of holding force and malfunction.

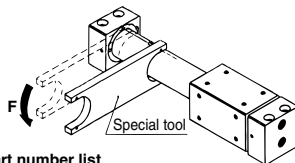
4. When disassembling to replace the seals and wear ring, refer to the separate disassembly instructions.

### ⚠ Caution

5. Apply additional tightening when remounting the head cover after disassembly.

When disassembling, hold the wrench flat section of one head cover with a vise, and remove the other cover using a spanner or adjustable angle wrench on its wrench flat section. When retightening, first coat with Loctite (No. 542 red) and retighten  $3^\circ$  to  $5^\circ$  past the original position prior to removal.

5. Special tools are necessary for disassembly.



#### Special tool part number list

Part no.	Applicable bore size (mm)
<b>CYRZ-V</b>	6, 10, 15, 20
<b>CYRZ-W</b>	25, 32, 40
<b>CYRZ-X</b>	50
<b>CYRZ-Y</b>	63

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