Series 12-CY3B

ø6, ø10, ø15, ø20, ø25, ø32, ø40 ø50, ø63
Magnetically Coupled Rodless Cylinder

How to Order

Clean series
12 — Special treatment on sliding part

Bore size (mm)

12 - CY3B **15** □ - **300** **Z**

Cylinder stroke (mm)

Port thread type

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

Model

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

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.

Specifications

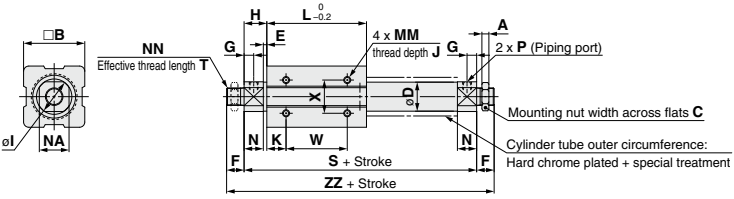
Item \ Bore size (mm)	6	10	15	20	25	32	40	50	63
Proof pressure	1.05 MPa								
Maximum operating pressure	0.7 MPa								
Minimum operating pressure	0.16 MPa				0.15 MPa	0.14 MPa	0.12 MPa		
Ambient and fluid temperature	–10°C to 60°C (No freezing)								
Piston speed	50 to 400 mm/s								
Cushion	Rubber bumper								
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)

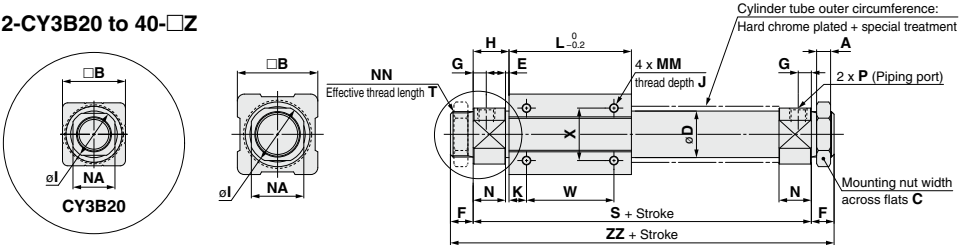
Bore size (mm)	6	10	15	20	25	32	40	50	63
Holding force	19.6	53.9	137	231	363	588	922	1471	2256

Dimensions

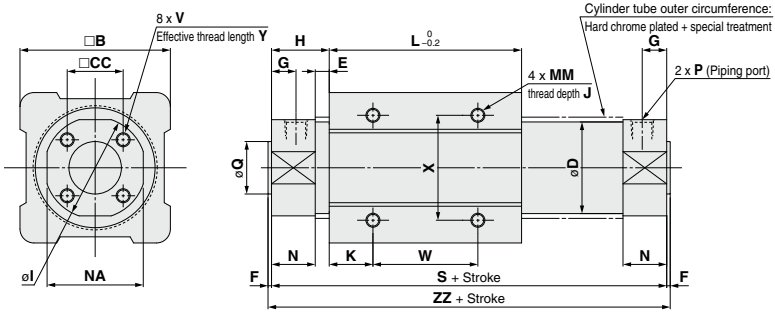
12-CY3B6 to 15-□Z



12-CY3B20 to 40-□Z



12-CY3B50, 63-□Z



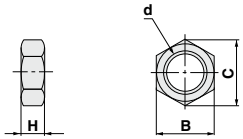
[mm]

Model	A	B	C	CC	D	E	F	G	H	I	J	K	L	MM	N	NA	NN	Q	S	T	V
CY3B6-□Z	4	17	8	—	7.6	4	8	5	13.5	11.9	4.5	5	35	M3 x 0.5	9.5	10	M6 x 1	—	62	6.5	—
CY3B10-□Z	4	25	14	—	12	1.5	9	5	12.5	16.9	4.5	4	38	M3 x 0.5	11	14	M10 x 1	—	63	7.5	—
CY3B15-□Z	4	35	14	—	16.6	2	10	5.5	13	19.9	6	11	57	M4 x 0.7	11	17	M10 x 1	—	83	8	—
CY3B20-□Z	8	36	26	—	21.6	2	13	7.5	20	27.9	6	8	66	M4 x 0.7	18	24	M20 x 1.5	—	106	10	—
CY3B25-□Z	8	46	32	—	26.4	2	13	7.5	20.5	33.4	8	10	70	M5 x 0.8	18.5	30	M26 x 1.5	—	111	10	—
CY3B32-□Z	8	60	32	—	33.6	2	16	8	22	39.9	8	15	80	M6 x 1	20	36	M26 x 1.5	—	124	13	—
CY3B40-□Z	10	70	41	—	41.6	3	16	11	29	49.9	10	16	92	M6 x 1	26	46	M32 x 2	—	150	13	—
CY3B50-□Z	—	86	—	32	52.4	8	2	14	33	58.2	12	25	110	M8 x 1.25	25	55	—	$30^{-0.007}_{-0.037}$	176	—	M8 x 1.25
CY3B63-□Z	—	100	—	38	65.4	8	2	14	33	72.2	12	26	122	M8 x 1.25	25	69	—	$32^{-0.007}_{-0.043}$	188	—	M10 x 1.5

Model	W	X	Y	ZZ	P (Piping port)		
					Nil	TN	TF
CY3B6-□Z	25	10	—	78	M3 x 0.5	—	—
CY3B10-□Z	30	16	—	81	M5 x 0.8	—	—
CY3B15-□Z	35	19	—	103	M5 x 0.8	—	—
CY3B20-□Z	50	25	—	132	Rc1/8	NPT1/8	G1/8
CY3B25-□Z	50	30	—	137	Rc1/8	NPT1/8	G1/8
CY3B32-□Z	50	40	—	156	Rc1/8	NPT1/8	G1/8
CY3B40-□Z	60	40	—	182	Rc1/4	NPT1/4	G1/4
CY3B50-□Z	60	60	16	180	Rc1/4	NPT1/4	G1/4
CY3B63-□Z	70	70	16	192	Rc1/4	NPT1/4	G1/4

Note) 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.

12-CY3B Series
Specific Product Precautions

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Handling

⚠ Warning

1. Pay attention to the space between the head cover and the body.

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

2. Do not apply a load to a cylinder which is greater than the allowable value stated in the Model Selection.

Applying an improper load may cause malfunctions. Refer to the CY3B series **Web Catalog** for details on model selection.

Mounting

⚠ Caution

1. Take care to avoid nicks or other damage on the outside surface of the cylinder tube.

This can lead to damage of the wear ring, which in turn can cause malfunctions.

2. Pay attention to any connections with any other axis.

As the external slider rotates, pay attention not to obstruct the floating at the time of connection with another axis.

3. Do not operate with the magnetic coupling out of position.

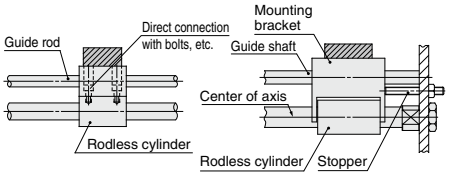
In case the magnetic coupling is out of position, push the external slider back into the correct position by hand at the end of the stroke (or correct the piston slider with air pressure).

4. Be sure that both end covers are secured to the mounting surface before operating the cylinder.

Avoid operation with the external slider secured to the surface.

5. 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 assimilated, which results in the generation of a lateral load that can cause malfunctions. (Fig. 1) The cylinder should be operated using a connection method which allows for assimilation of shaft alignment variations and deflection due to the cylinder's self-weight. A drawing of a recommended mounting is shown in Fig. 2.



Variations in the load and cylinder shaft alignment cannot be assimilated, resulting in malfunction.

Fig. 1. Incorrect mounting

Shaft alignment variations are assimilated by providing clearance for the mounting bracket and cylinder. Moreover, the mounting bracket is extended above the cylinder shaft center, so that the cylinder is not subjected to moment. Provide clearance so that the cylinder is able to operate smoothly within the min. operating pressure range for a full stroke.

Fig. 2. Recommended mounting

Mounting

⚠ Caution

6. Careful alignment is necessary when connecting to a load having an external guide mechanism.

As the stroke becomes longer, variations in the center axis become larger. Consider using a connection method (floating mechanism) that is able to absorb these variations.

7. Use caution regarding the allowable load mass when operating in a vertical direction.

When using the cylinder in the vertical direction, be sure to use it with a load equivalent to or lower than the allowable load weight (reference value on page 3). If a load exceeding the allowable values is applied, the magnetic coupling will be detached and the cylinder will drop. When using the cylinder, check the use conditions (pressure and load).

8. Do not apply excessive impact to the stroke end.

If excessive impact is applied to the stroke end, a large number of particles may be generated as a result. Be sure to take operating conditions such as the load mass and speed into account before use.

Maintenance

⚠ Warning

1. When applying grease to the cylinder (only on the outer surface of the tube), use the grease that has already been applied to the product.
Grease pack: GR-F-005 (5 g)

2. As this product cannot be disassembled, there is no replacement seal kit available.

Series 12-CY3B

ø6, ø10, ø15, ø20, ø25, ø32, ø40 ø50, ø63
Magnetically Coupled Rodless Cylinder

How to Order

Clean series
12 — Special treatment on sliding part

Bore size (mm)

12 - CY3B **15** □ **-** **300**

Cylinder stroke (mm)

Port thread type

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

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 NPT1/8 G1/8		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1300		
12-CY3B25	25						
12-CY3B32	32						
12-CY3B40	40	Rc1/4 NPT1/4 G1/4		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000			
12-CY3B50	50						
12-CY3B63	63						

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

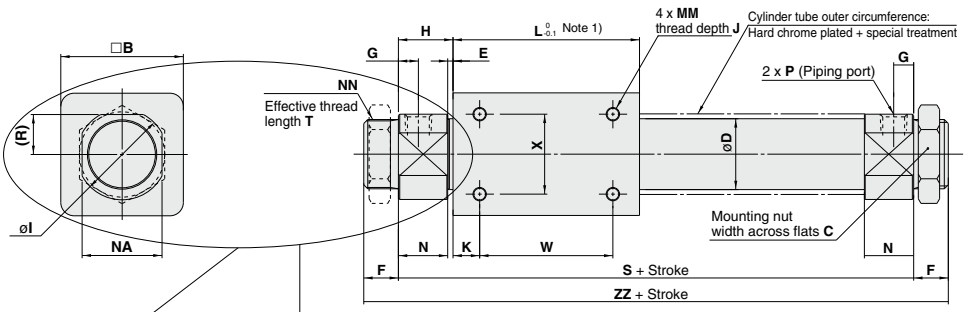
Item \ Bore size (mm)	6	10	15	20	25	32	40	50	63
Proof pressure	1.05 MPa								
Maximum operating pressure	0.7 MPa								
Minimum operating pressure	0.16 MPa				0.15 MPa	0.14 MPa	0.12 MPa		
Ambient and fluid temperature	–10°C to 60°C (No freezing)								
Piston speed	50 to 400 mm/s								
Stroke length 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								

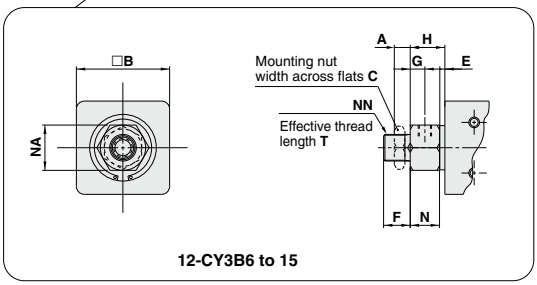
Magnetic Holding Force (N)

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

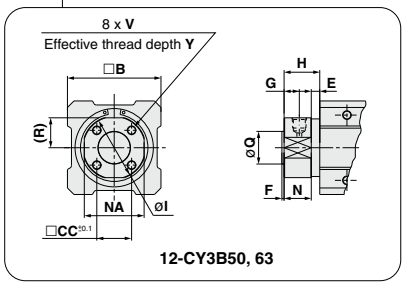
Dimensions

12-CY3B6 to 63





12-CY3B6 to 15



12-CY3B50, 63

(mm)

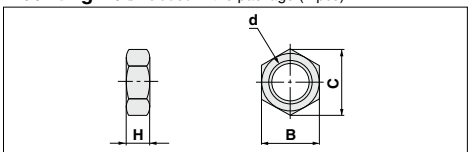
Model	A	B	C	CC	D	E	F	G	H	I	J	K	L	MM	N	NA	NN	Q	R	S	T	V
12-CY3B6	4	17	8*	—	7.6	4	8*	5	13.5*	—	4.5	5	35	M3 x 0.5	9.5*	10*	M6 x 1*	—	—	62*	6.5	—
12-CY3B10	4	25	14	—	12	1.5	9	5	12.5	—	4.5	4	38	M3 x 0.5	11	14	M10 x 1	—	—	63	7.5	—
12-CY3B15	4	35	14	—	16.6*	2	10	5.5	13	—	6	11	57	M4 x 0.7	11	17	M10 x 1	—	—	83	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 -0.007 -0.037	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 -0.007 -0.043	34.5*	188	—	M10 x 1.5

Model	W	X	Y	ZZ	P (Piping port)		
					Nil	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.

Series 12-CY3R

ø6, ø10, ø15, ø20, ø25, ø32, ø40 ø50, ø63
Magnetically Coupled Rodless Cylinder (Direct Mount)

How to Order

Clean series
12 — Special treatment on sliding part

Bore size (mm)

Port thread type

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

12 - CY3R 25 [ ] - 300 N

Standard stroke

N — Without switch rail

∗ 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 NPT1/8 G1/8		100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800	1300		
12-CY3R25	25						
12-CY3R32	32						
12-CY3R40	40	Rc1/4 NPT1/4 G1/4					
12-CY3R50	50			100, 150, 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000			
12-CY3R63	63						

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

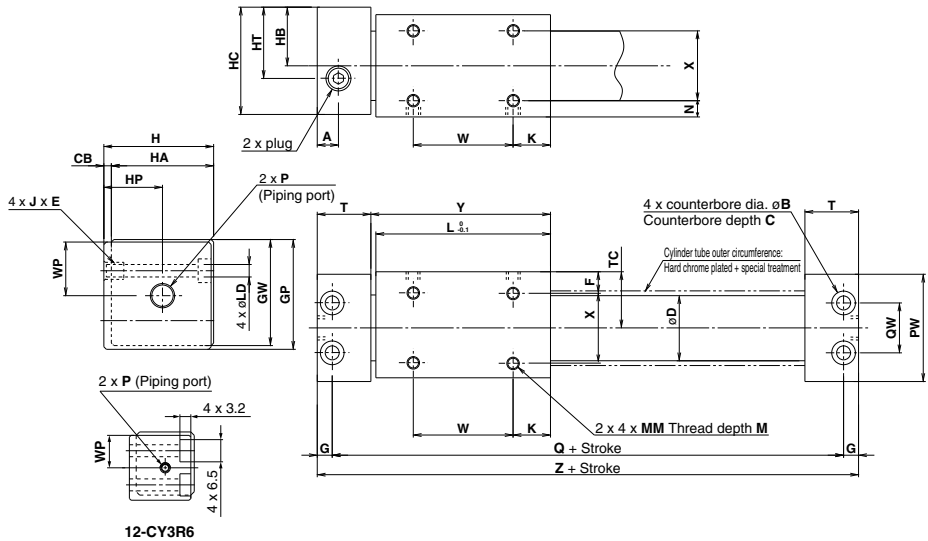
Item \ Bore size (mm)	6	10	15	20	25	32	40	50	63
Proof pressure	1.05 MPa								
Maximum operating pressure	0.7 MPa								
Minimum operating pressure	0.16 MPa				0.15 MPa	0.14 MPa	0.12 MPa		
Ambient and fluid temperature	–10°C to 60°C (No freezing)								
Piston speed	50 to 400 mm/s								
Stroke length 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	14
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	11
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)		
	Nil	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.

⚠ Specific Product Precautions

Be sure to read this before handling.

12-CY3B/3R Common Precautions

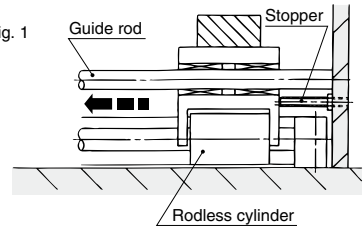
⚠ Caution

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.

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. Be sure to confirm 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.

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 ø6, ø10, 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°.
If the direction is not correct, it will be impossible to obtain the specified holding force.

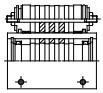


Fig. 2 Correct positioning

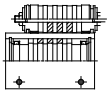


Fig. 3 Positioning in incorrect direction

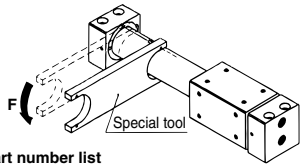
3. Do not disassemble the magnetic components (piston slider and external slider).
This can cause a loss of holding force and malfunction.

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° to 5° 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)
CYRZ-V	6, 10, 15, 20
CYRZ-W	25, 32, 40
CYRZ-X	50
CYRZ-Y	63