Sine Rodless Cylinder/Basic Type

Series REA

ø25, ø32, ø40, ø50, ø63

How to Order

Basic type **REA** **25** **□** – **300** – **□**

Sine rodless cylinder (Basic type)

Bore size

25	25 mm
32	32 mm
40	40 mm
50	50 mm
63	63 mm

Port thread type

Symbol	Type	Bore size
Nil	Rc	25, 32, 40
TN	NPT	50, 63
TF	G	32, 50, 63

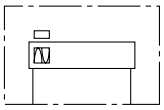
Stroke (mm)
Refer to "Standard Stroke" below.

Made to Order
Refer to the table below for details.

Specifications

Bore size (mm)	25	32	40	50	63
Fluid	Air				
Proof pressure	1.05 MPa				
Maximum operating pressure	0.7 MPa				
Minimum operating pressure	0.18 MPa				
Ambient and fluid temperature	–10 to 60°C (No freezing)				
Piston speed (Max.) Note)	50 to 300 mm/s				
Lubrication	Not required (Non-lube)				
Stroke length tolerance	0 to 250 st: $^{+1}_{0}$, 251 to 100 st: $^{+1.4}_{0}$, 1001 st or longer: $^{+1.8}_{0}$				
Holding force	363	588	922	1,470	2,260

Note) Piston speed above indicates the maximum speed. It takes approximately 0.5 seconds (for one side) after the body moves from the stroke end until it goes through the cushion stroke, while it takes approximately 1 second for both sides.



JIS Symbol

Standard Stroke

Bore size (mm)	Standard stroke (mm)	Maximum manufacturable stroke (mm)
25	200, 250, 300, 350, 400, 450, 500, 600, 700, 800	4000
32	200, 250, 300, 350, 400, 450, 500, 600, 700, 800	
40	200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	5000
50	200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	6000
63	200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000	

Note 1) Intermediate stroke is available by the 1 mm interval.
Note 2) Strokes over 2000 mm are available as made-to-order. (Refer to -XB11.)

Made to Order Specifications

(For details, refer to pages 1851 to 1954.)

Symbol	Specifications
—XB11	Long stroke type
—XC24	With magnet shielding plate
—XC57	With floating joint
—X206	Additional moving element mounting taps
—X210	Non-lubricated exterior specifications
—X324	Non-lubricated exterior specifications with dust seal
—X168	Helical insert thread specifications

Refer to "Pneumatic Clean Series" catalog for clean room specifications.

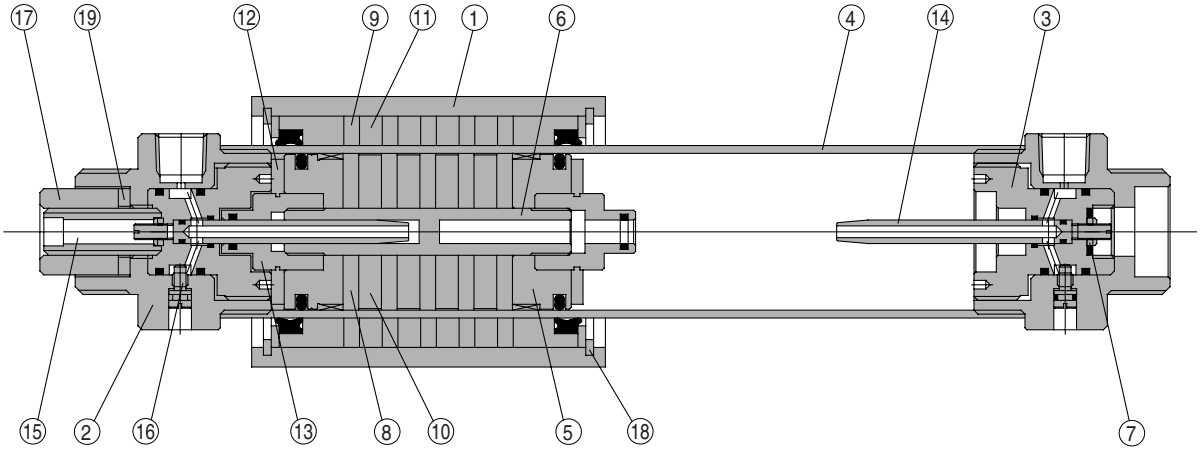
Mass

(kg)

Bore size (mm)	25	32	40	50	63
Basic mass	0.71	1.34	2.15	3.4	5.7
Additional mass per each 50 mm of stroke	0.05	0.07	0.08	0.095	0.12

Calculation: (Example) **REA32-500** • Basic mass ·····1.34 (kg)
• Additional mass ·····0.07 (kg/50 st)
• Cylinder stroke ·····500 (st)
1.34 + 0.07 x 500 ÷ 50 = 2.04 kg

Construction



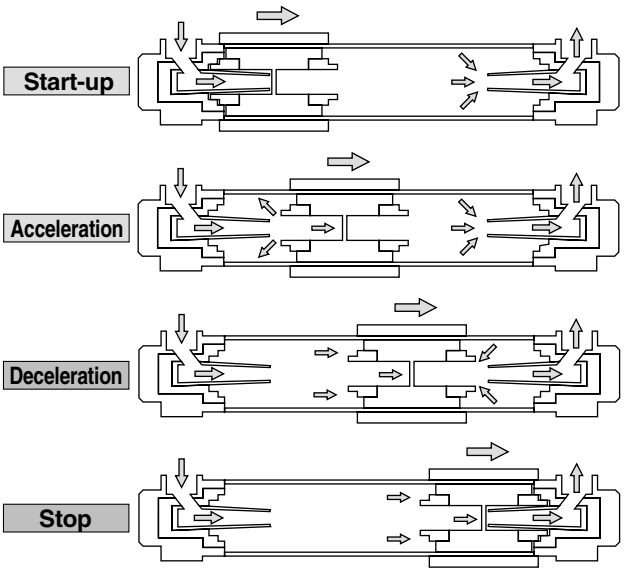
Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	Anodized
2	**Head cover**	Aluminum alloy	Anodized
3	**Cushion ring holder**	Aluminum alloy	Chromated
4	**Cylinder tube**	Stainless steel	
5	**Piston**	Aluminum alloy	Chromated
6	**Shaft**	Stainless steel	
7	**Lock nut B**	Carbon steel	Nickel plated
8	**Piston side yoke**	Rolled steel plate	Zinc chromated
9	**External slider side yoke**	Rolled steel plate	Zinc chromated
10	**Magnet A**	—	

Component Parts

No.	Description	Material	Note
11	**Magnet B**	—	
12	**Bumper**	Urethane rubber	
13	**Cushion seal holder**	Aluminum alloy	Chromated
14	**Cushion ring**	Brass	Electroless nickel plated
15	**Adjusting screw**	Carbon steel	Nickel plated
16	**Stopper bolt**	Carbon steel	Nickel plated
17	**Lock nut A**	Carbon steel	Nickel plated
18	**Retaining ring**	Carbon tool steel	
19	**Spring washer**	Steel wire	

Working principle



Start-up/Acceleration

The driving air from the cylinder port passes through the inside of the cushion ring, and flows into the left chamber of the drive piston from the clearance between the cushion seal and the U-shaped groove in the outer surface of the cushion ring. Further, the exhaust air in the right chamber of the drive piston passes from inside the hollow cushion ring through the cylinder port and is released to the atmosphere by the drive solenoid valve.
When the differential pressure (thrust) generated on either side of the drive piston becomes larger than the starting resistance of the machinery, the drive piston begins to move to the right. As the drive piston moves to the right, the U-shaped groove in the outer surface of the cushion ring gradually becomes deeper, a flow corresponding to the drive speed of the drive piston flows into the left chamber of the drive piston, and the drive piston proceeds to accelerate. The U-shaped groove is machined into the cushion ring in such a way that this acceleration process can proceed smoothly (as a sine function).

Deceleration/Stop

In conventional cushion mechanisms, when the cushion seal installed on the drive piston is pushed into the cushion ring at the right stroke end, the drive piston's right chamber is pressurized and a sudden braking force is generated. However, in a sine rodless cylinder, due to the U-shaped groove provided on the outer surface of the cushion ring, whose depth changes as a sine function, a large quantity of the air in the cushion chamber is discharged when the cushion seal is pushed in, and a sudden braking force is not generated. With the progression of the cushion stroke, the discharge flow from the cushion chamber is restricted, and therefore, a soft stop is achieved at the stroke end.