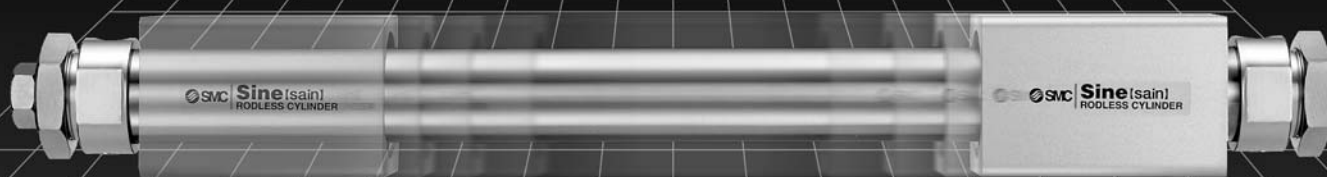
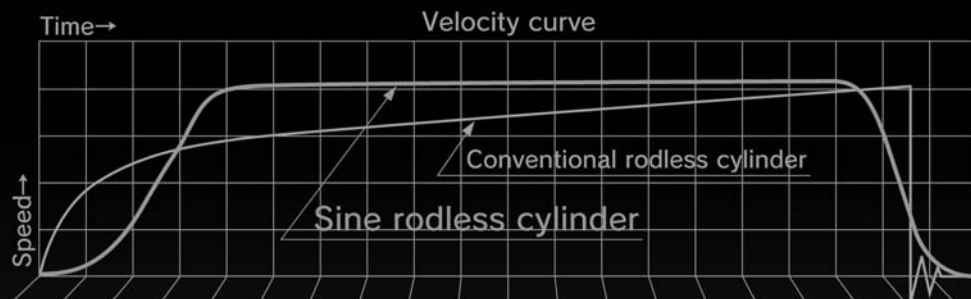


# Sine Rodless Cylinder

## Series *REA/REB*

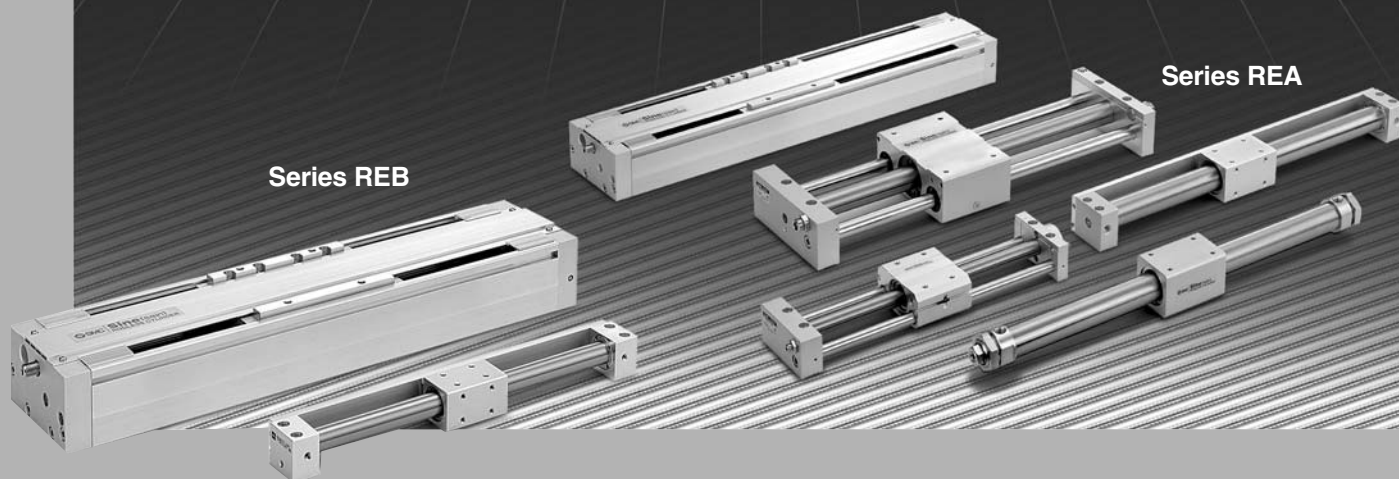
(Maximum speed: 300 mm/s)

(Maximum speed: 600 mm/s)



Series REB

Series REA



### Series *REA* (300 mm/s)

| Guide type                            | Model        | Page   |
|---------------------------------------|--------------|--------|
| Basic type                            | <b>REA</b>   | P. 931 |
| Direct mount type                     | <b>REAR</b>  | P. 939 |
| Slider type<br>(Slide bearing)        | <b>REAS</b>  | P. 951 |
| Slider type<br>(Ball bushing bearing) | <b>REAL</b>  | P. 965 |
| Linear guide type<br>(Single axis)    | <b>REAH</b>  | P. 979 |
| Linear guide type<br>(Double axis)    | <b>REAHT</b> | P. 979 |

### Series *REB* (600 mm/s)

| Guide type                         | Model        | Page    |
|------------------------------------|--------------|---------|
| Direct mount type                  | <b>REBR</b>  | P. 995  |
| Linear guide type<br>(Single axis) | <b>REBH</b>  | P. 1007 |
| Linear guide type<br>(Double axis) | <b>REBHT</b> | P. 1007 |

**REA**

**REB**

**REC**

**C□Y**

**C□X**

**MQ**

**RHC**

**RZQ**

**D-□**

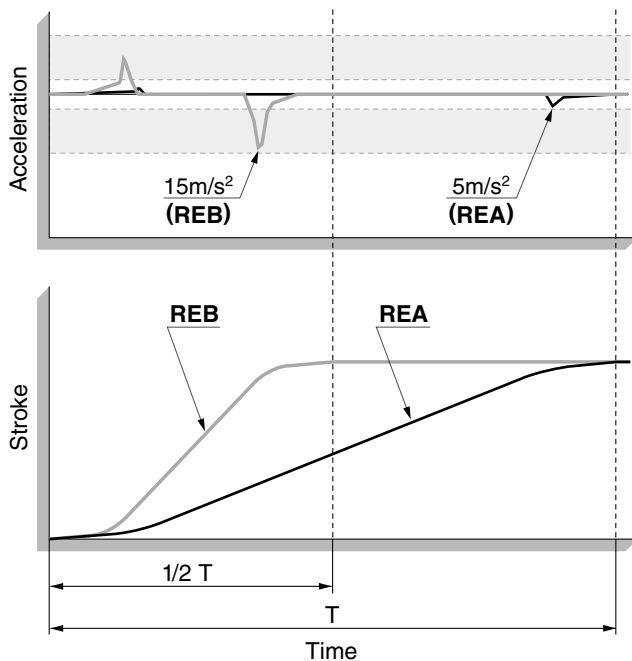
**-X□**

Individual  
**-X□**

# Allows rapid transfer of impact

Throughput dramatically increased  
(Maximum speed: **600 mm/s**)

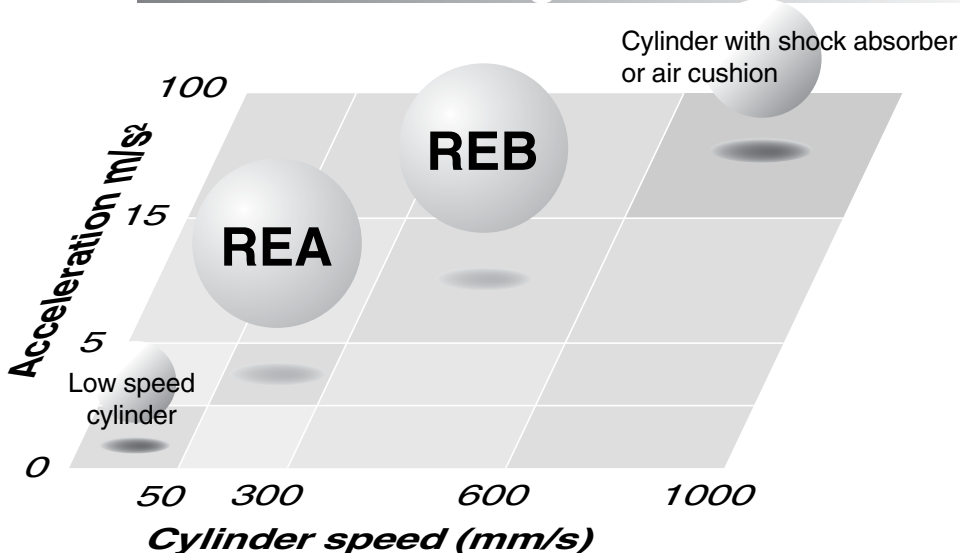
Series REB introduced with a maximum speed of 600 mm/s.  
Compared with the previous type (Series REA: 300 mm/s),  
the tact time can be shortened by approximately 1/2.



**Cushion ring**

The exterior of the cushion ring is provided with a variable throttle groove in its longitudinal direction.

## Acceleration ranges



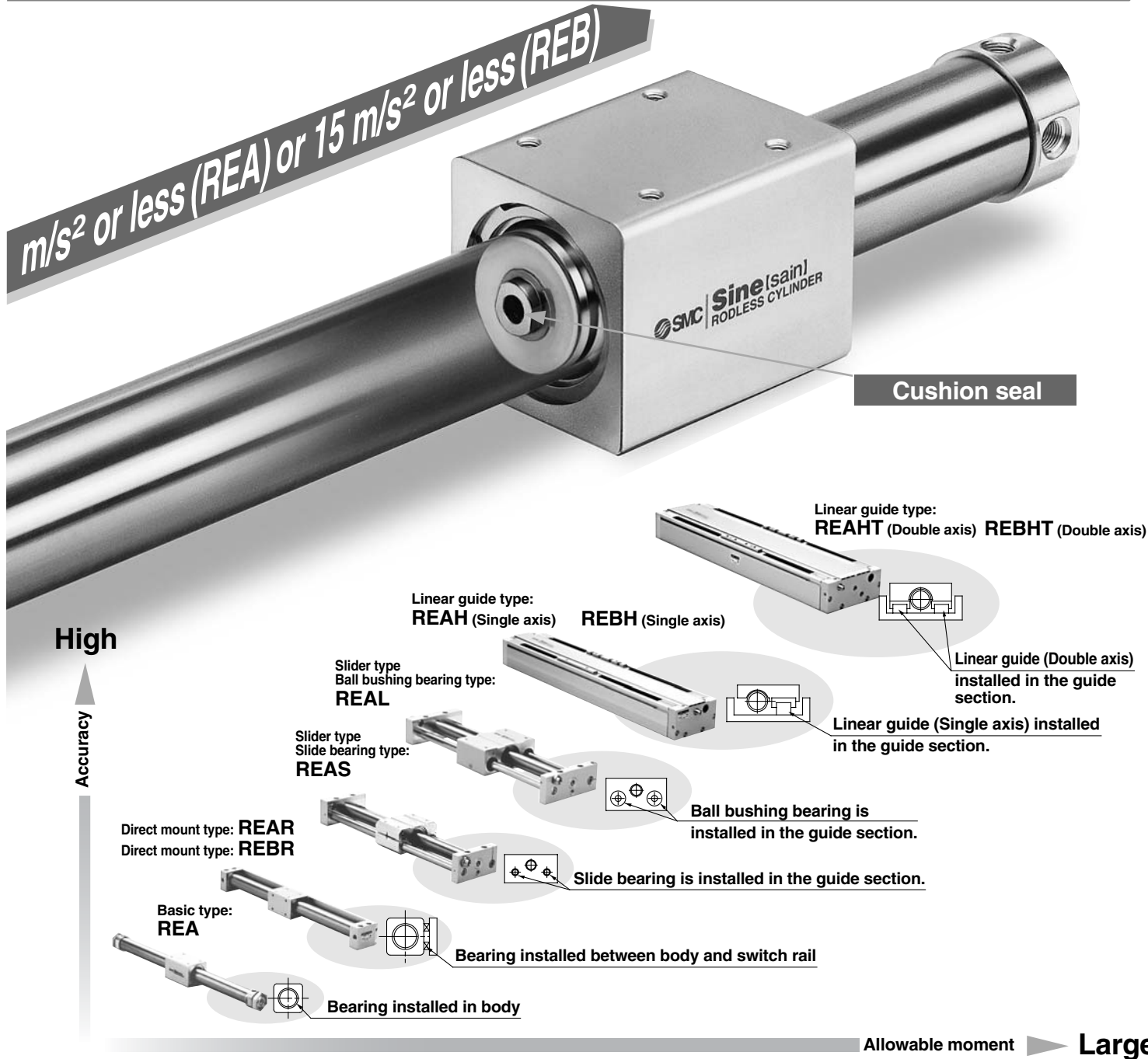
## ● Series Variations

### Series REA (300 mm/s)

| Guide type                         | Base cylinder | Model |
|------------------------------------|---------------|-------|
| Basic type                         | CY3B          | REA   |
| Direct mount type                  | CY3R          | REAR  |
| Slider type (Slide bearing)        | CY1S          | REAS  |
| Slider type (Ball bushing bearing) | CY1L          | REAL  |
| Linear guide type (Single axis)    | CY1H          | REAH  |
| Linear guide type (Double axis)    | CY1HT         | REAHT |

# *sensitive workpieces*

Sine rodless cylinder  
Series **REA/REB**  
Maximum speed (300 mm/s) Maximum speed (600 mm/s)



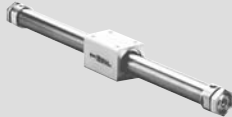
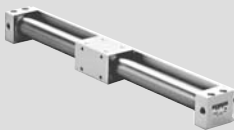
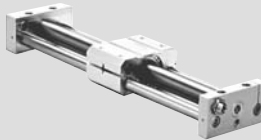
## Series REB (600 mm/s)

|                                 |               |       | Bore size |    |    |    |    |    |    |    |
|---------------------------------|---------------|-------|-----------|----|----|----|----|----|----|----|
|                                 |               |       | 10        | 15 | 20 | 25 | 32 | 40 | 50 | 63 |
| Guide type                      | Base cylinder | Model |           |    |    |    |    |    |    |    |
| Direct mount type               | CY3R          | REBR  |           |    |    |    |    |    |    |    |
| Linear guide type (Single axis) | CY1H          | REBH  |           |    |    |    |    |    |    |    |
| Linear guide type (Double axis) | CY1HT         | REBHT |           |    |    |    |    |    |    |    |

- REA
- REB
- REC
- C□Y
- C□X
- MQ
- RHC
- RZQ

- D-□
- X□
- Individual  
-X□

# Series *REA/REAR/REBR/REAS/REAL/REAH/REBH* Model Selection Criteria

| Model Selection Criteria                                                                                                                                                                                                                   | Recommended Cylinder      |                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                            | Appearance                |                                                                                                                                                                                            | Features                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                              |
| <ul style="list-style-type: none"><li>When many different types of guides are used</li><li>When a long stroke is necessary</li></ul>                                                                                                       | Guide non-integrated type | <b>Series REA</b><br>Size: ø25, ø32, ø40, ø50, ø63<br>                                                    | <ul style="list-style-type: none"><li>Wide variations from ø25 to ø63.</li></ul>                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"><li>Long strokes available.</li></ul>                                                                                                                                                                                                                                      |
| <ul style="list-style-type: none"><li>When many different types of guides are used</li><li>When auto switches are added to the basic style</li><li>When used without a guide for a light load</li><li>When space is very limited</li></ul> |                           | <b>Series REAR</b><br>Size: ø10, ø15, ø20, ø25, ø32, ø40<br><b>Series REBR</b><br>Size: ø15, ø25, ø32<br> | <ul style="list-style-type: none"><li>Choice of the maximum speed of 300 mm/s or 600 mm/s is available.</li></ul>                                                                                                                                                                                                                  | <ul style="list-style-type: none"><li>Cylinder can be directly mounted.</li><li>Auto switch capable, with no cylinder lurching.</li><li>Rotation can be stopped within an allowable range.</li><li>Compact external dimensions</li><li>Mounting can be performed from the top or one side.</li></ul>         |
| <ul style="list-style-type: none"><li>To ensure a permanent path</li><li>When used for general transfer operations</li></ul>                                                                                                               | Guide integrated type     | <b>Series REAS</b><br>Size: ø10, ø15, ø20, ø25, ø32, ø40<br>                                            | <ul style="list-style-type: none"><li>A load can be carried directly by the guide integrated type.</li><li>The centralized piping type allows concentration of piping on one side plate.</li><li>Auto switch capable.</li><li>Choice of the maximum speed of 300 mm/s or 600 mm/s is available. (RE□H/Linear guide type)</li></ul> | <ul style="list-style-type: none"><li>Smooth operation is made possible by using special slide bearings.</li></ul>                                                                                                                                                                                           |
| <ul style="list-style-type: none"><li>To ensure a permanent path</li><li>When smoother operation is required, even with an offset load</li></ul>                                                                                           |                           | <b>Series REAL</b><br>Size: ø10, ø15, ø20, ø25, ø32, ø40<br>                                            |                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"><li>Stable operation is possible, even with an offset load, by using ball bushings.</li></ul>                                                                                                                                                                              |
| <ul style="list-style-type: none"><li>To ensure a permanent path</li><li>When a large load, large moment is required</li><li>When used for pick-and-place operations, etc.</li></ul>                                                       |                           | <b>Series REAH</b><br>Size: ø10, ø15, ø20, ø25, ø32<br><b>Series REBH</b><br>Size: ø15, ø25, ø32<br>    |                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"><li>The use of a linear guide facilitates a large load, large moment.</li><li>Mounting freedom is improved by providing T-slots on the mounting surfaces.</li><li>A top cover mounted over the sliding parts of the cylinder prevents scratches and damage, etc.</li></ul> |



# Series REA/REB Specific Product 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.

## Disassembly and Maintenance

### Warning

1. Use caution as the attractive force 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 removing 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. Do not disassemble the magnetic components (piston slider, external slider).

This can cause a loss of holding force and malfunction.

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

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

Since the external slider and piston slider are directional for size  $\phi 10$ , 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. (1). If they align as shown in Fig. (2), reinsert the piston slider only, after turning it around 180°. If the direction is not correct, it will be impossible to obtain the specified holding force.

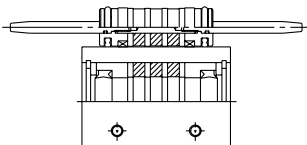


Fig. (1) Correct position

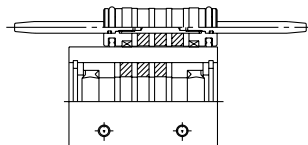


Fig. (2) Incorrect position

5. During disassembly, use caution in handling the cushion ring.

The cushion ring is a precision part, and any deformation, etc., can cause malfunction or poor performance.

## Speed Adjustment

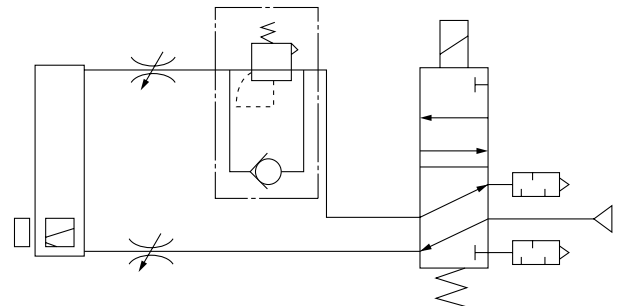
### Caution

1. SMC's "throttle" type speed controllers (Series AS) are recommended for speed adjustment. (Refer to Table (3).)

Table (3) Recommended Speed Controller

| Bore size<br>(mm) | Model              |                    |                 |
|-------------------|--------------------|--------------------|-----------------|
|                   | Elbow type         | Straight type      | In-line type    |
| 10                | AS1201F-M5-04-X214 | AS1301F-M5-04-X214 | AS1001F-04-X214 |
| 15                | AS1201F-M5-04-X214 | AS1301F-M5-04-X214 | AS1001F-04-X214 |
| 20                | AS2201F-01-06-X214 | AS2301F-01-06-X214 | AS2001F-06-X214 |
| 25                | AS2201F-01-06-X214 | AS2301F-01-06-X214 | AS2001F-06-X214 |
| 32                | AS2201F-01-06-X214 | AS2301F-01-06-X214 | AS2001F-06-X214 |
| 40                | AS2201F-02-06-X214 | AS2301F-02-06-X214 | AS2001F-06-X214 |
| 50                | AS3201F-02-08-X214 | AS3301F-02-08-X214 | AS3001F-08-X214 |
| 63                | AS3201F-02-08-X214 | AS3301F-02-08-X214 | AS3001F-08-X214 |

2. Speed adjustment is possible with meter-in/meter-out type speed controllers, but it may not be possible to obtain the cushion effect (smooth start-up, soft stop).
3. In the case of other than horizontal mounting, it is recommended that the system have a reduced pressure supply circuit installed at its lower side. (This is also effective as a countermeasure against start-up delay on an upward stroke, and for air conservation.)



Lower-side reduced pressure supply circuit

## Adjustment of Cushion Effect (Smooth start-up, Soft stop)

### Caution

1. The cushion cannot be adjusted.

There is no cushion needle adjustment of the kind found on conventional cushion mechanisms.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Basic Type

## Series *REA*

Ø25, Ø32, Ø40, Ø50, Ø63



**REA**

**REB**

**REC**

**C□Y**

**C□X**

**MQ**

**RHC**

**RZQ**

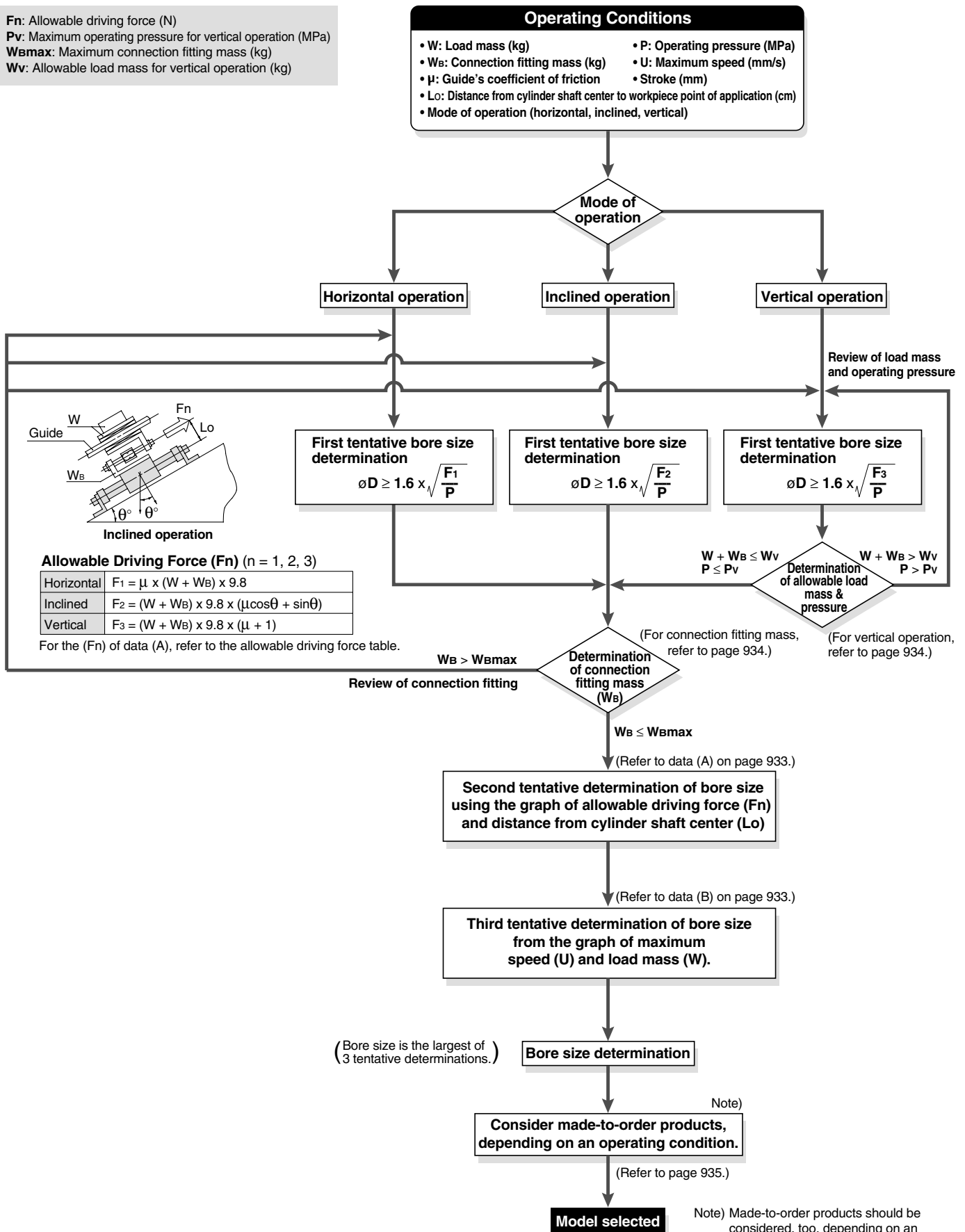
**D-□**

**-X□**

**Individual  
-X□**

# Series REA Model Selection 1

**F<sub>n</sub>**: Allowable driving force (N)  
**P<sub>v</sub>**: Maximum operating pressure for vertical operation (MPa)  
**W<sub>Bmax</sub>**: Maximum connection fitting mass (kg)  
**W<sub>v</sub>**: Allowable load mass for vertical operation (kg)



# Series *REA*

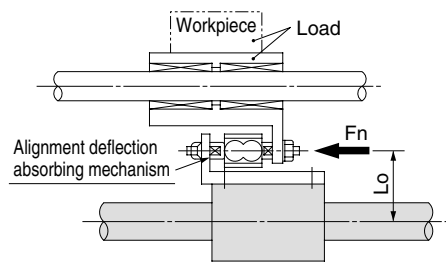
## Model Selection 2

### Caution on Design 1

### Selection Method

#### Selection Procedures

1. Find the drive resisting force  $F_n$  (N) when moving the load horizontally.
2. Find the distance  $L_o$  (cm) from the point of the load where driving force is applied, to the center of the cylinder shaft.
3. Select a bore size from  $L_o$  and  $F_n$  in Data (A).



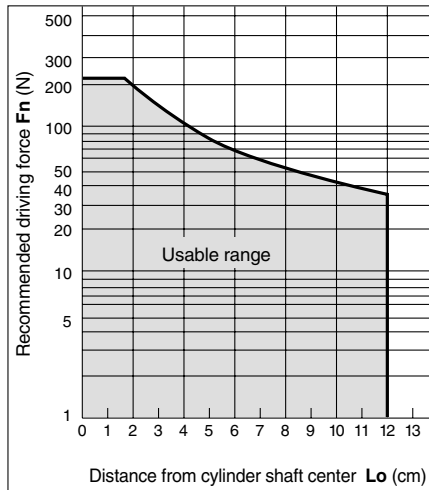
#### Selection Example

Given a load drive resisting force of  $F_n = 100$  (N) and a distance from the cylinder shaft center to the load application point of  $L_o = 8$  cm, find the intersection point by extending upward from the horizontal axis of data (A) where the distance from the shaft center is 8 cm, and then extending to the side, find the allowable driving force on the vertical axis. Models suitable to satisfy the requirement of 100 (N) are **REA32** or **REA40**.

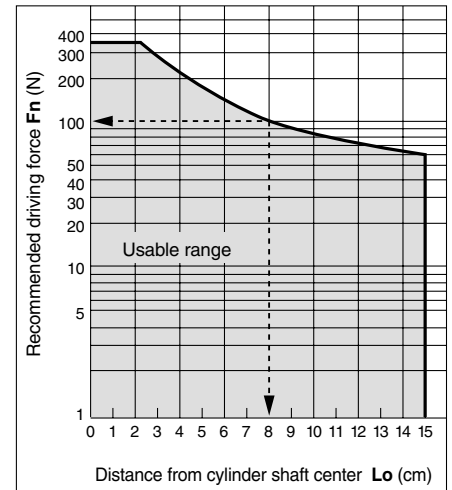
\* Distance from cylinder shaft center,  $L_o$ , is the moment working point between the cylinder and the load.

#### <Data (A): Distance from Cylinder Shaft Center — Allowable Driving Capacity>

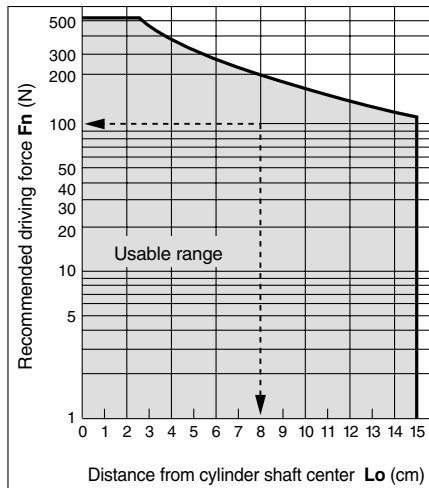
ø25



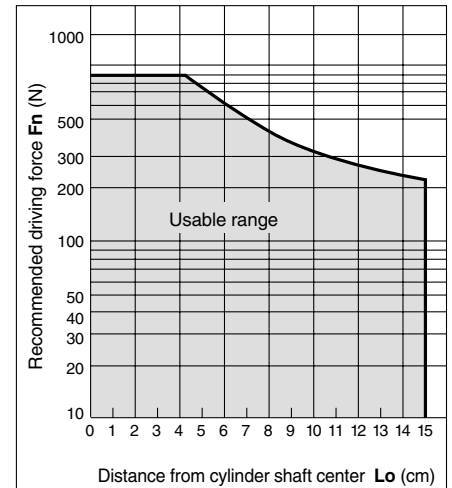
ø32



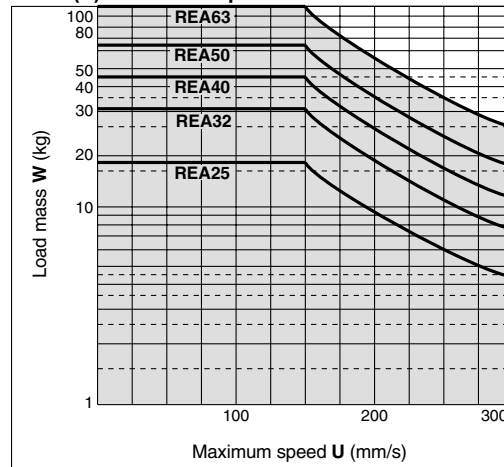
ø40



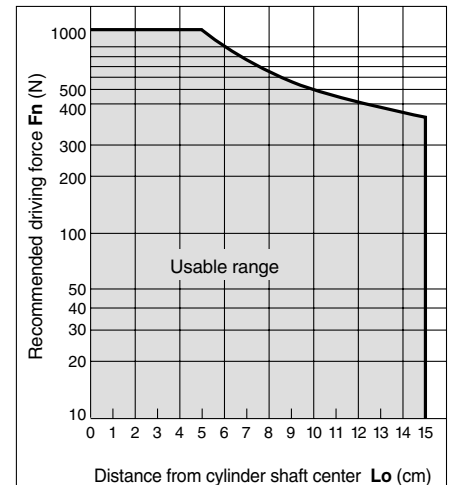
ø50



#### <Data (B): Maximum Speed — Load Mass Chart>



ø63



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

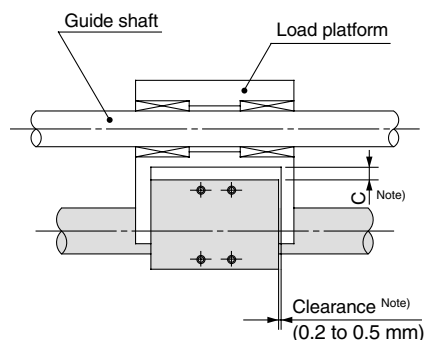
Individual

-X□

## Caution on Design 2

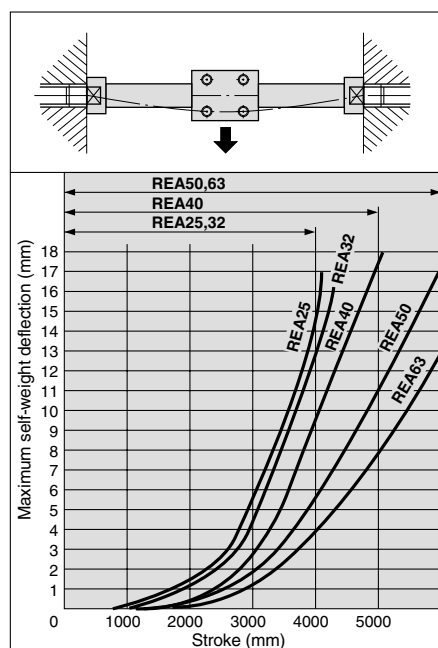
### Cylinder Self-weight Deflection

When the cylinder is mounted horizontally, deflection appears due to its own weight as shown in the data, and the longer the stroke the greater the amount of variation in the shaft centers. A connection method as shown in the figure should be considered to allow for this deflection.



The above clearance is for reference.

Note) Referring to the self-weight deflection in the graph below, provide clearance so that the cylinder does not touch the mounting surface or the load section, and is able to operate smoothly within the minimum operating pressure range for a full stroke.



\* The above deflection data indicate values for external movement within the stroke.

### Max. Connection Fitting Mass

REA (Basic type) is not directly connected to the load, and is guided by another shaft (LM guide, etc.). Load connection fittings should be designed so that they do not exceed the mass given in the table below.

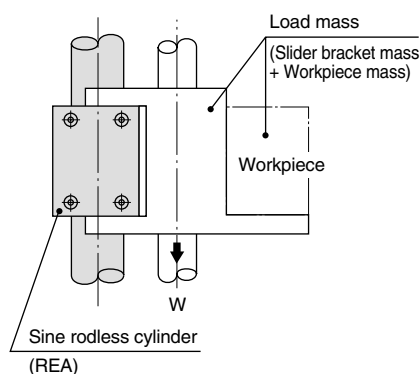
#### Maximum Connection Fitting Mass $W_{Bmax}$ (kg)

| Model | Maximum load (kg) |
|-------|-------------------|
| REA25 | 1.2               |
| REA32 | 1.5               |
| REA40 | 2.0               |
| REA50 | 2.5               |
| REA63 | 3.0               |

\* When loading the mass exceeding the above values, please consult with SMC.

### Vertical Operation

The load should be guided by a ball type bearing (Linear guide, etc.). If a slide bearing is used, sliding resistance increases due to the load mass and load moment, which can cause malfunction. When the cylinder is mounted vertically or sidelong, sliders may move downwards due to the self-weight or workpiece mass. If an accurate stopping position is required at the stroke end or the middle-stroke, use an external stopper to secure accurate positioning.



| Model | Allowable load mass $W_v$ (kg) | Maximum operating pressure $P_v$ (MPa) |
|-------|--------------------------------|----------------------------------------|
| REA25 | 18.5                           | 0.65                                   |
| REA32 | 30.0                           | 0.65                                   |
| REA40 | 47.0                           | 0.65                                   |
| REA50 | 75.0                           | 0.65                                   |
| REA63 | 115.0                          | 0.65                                   |

Note) Use caution, since the magnetic coupling may be dislocated if it is used over the maximum operating pressure.

### Intermediate Stop

The cushion effect (smooth start-up, soft stop) exists only before the stroke end in the stroke ranges indicated in the table below.

The cushion effect (smooth start-up, soft stop) cannot be obtained in an intermediate stop or a return from an intermediate stop using an external stopper, etc.

### Cushion Stroke

| Model | Stroke (mm) |
|-------|-------------|
| REA25 | 30          |
| REA32 | 30          |
| REA40 | 35          |
| REA50 | 40          |
| REA63 | 40          |

# 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 |

Stroke (mm)

Refer to "Standard Stroke" below.

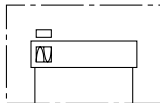
Port thread type

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

**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.) <sup>Note)</sup> | 50 to 300 mm/s                                                                                                                          |     |     |       |       |
| Lubrication                          | Not required (Non-lube)                                                                                                                 |     |     |       |       |
| Stroke length tolerance              | 0 to 250 st: <sup>+1</sup> <sub>0</sub> , 251 to 100 st: <sup>+1.4</sup> <sub>0</sub> , 1001 st or longer: <sup>+1.8</sup> <sub>0</sub> |     |     |       |       |
| Holding force                        | 363                                                                                                                                     | 588 | 922 | 1,470 | 2,260 |



JIS Symbol

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.

### 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.)

### Mass

| 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

#### 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.

REA

REB

REC

C□Y

C□X

MQ

RHC

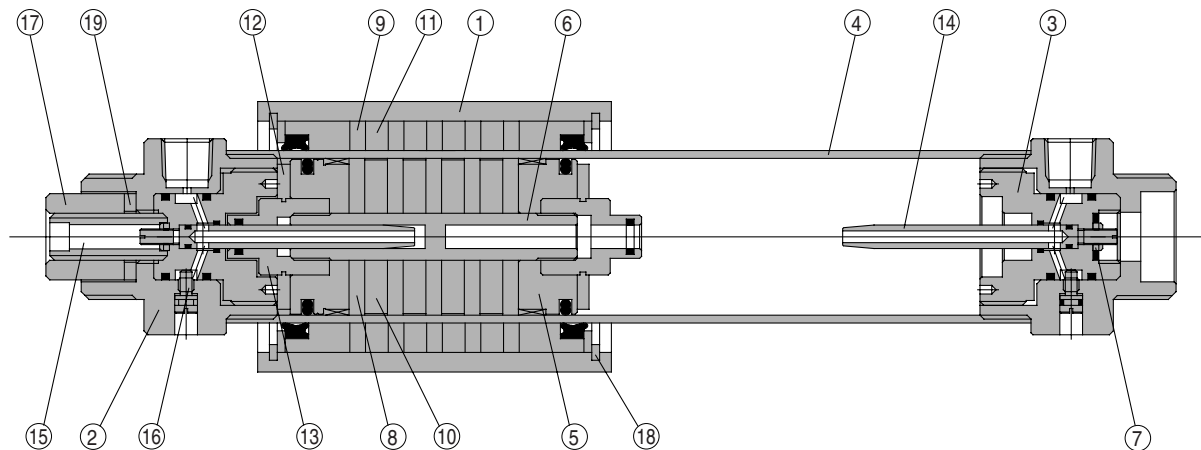
RZQ

D-□

-X□

Individual  
-X□

## Construction



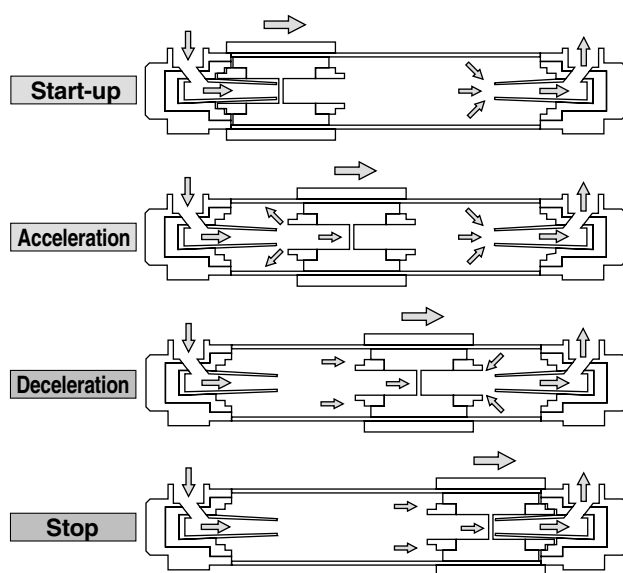
### Component Parts

| 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.

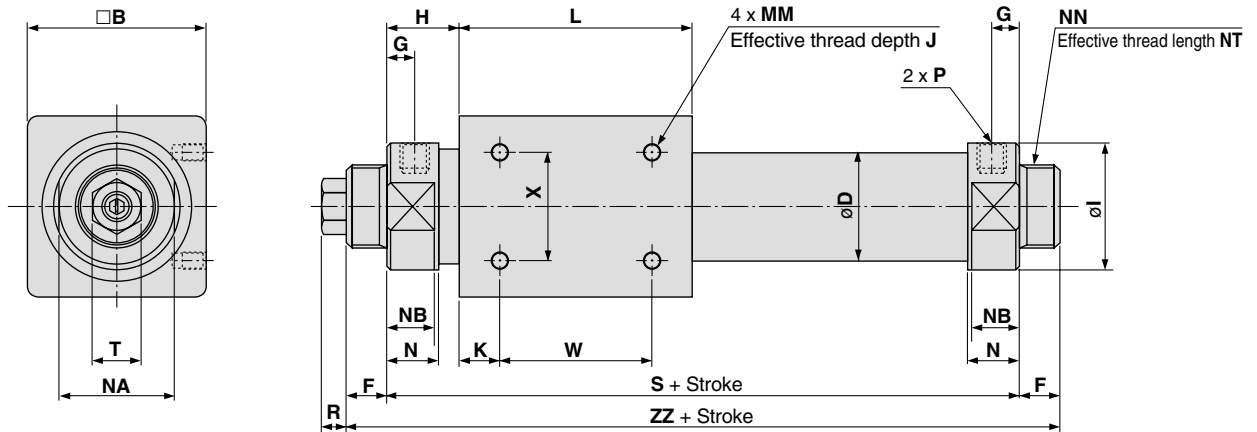
When the differential pressure (thrust) generated on either side of the drive piston becomes larger than the starting resistance of the machinery, the drive piston begins to move to the right. As the drive piston moves to the right, the U-shaped groove in the outer surface of the cushion ring gradually 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.

## Dimensions

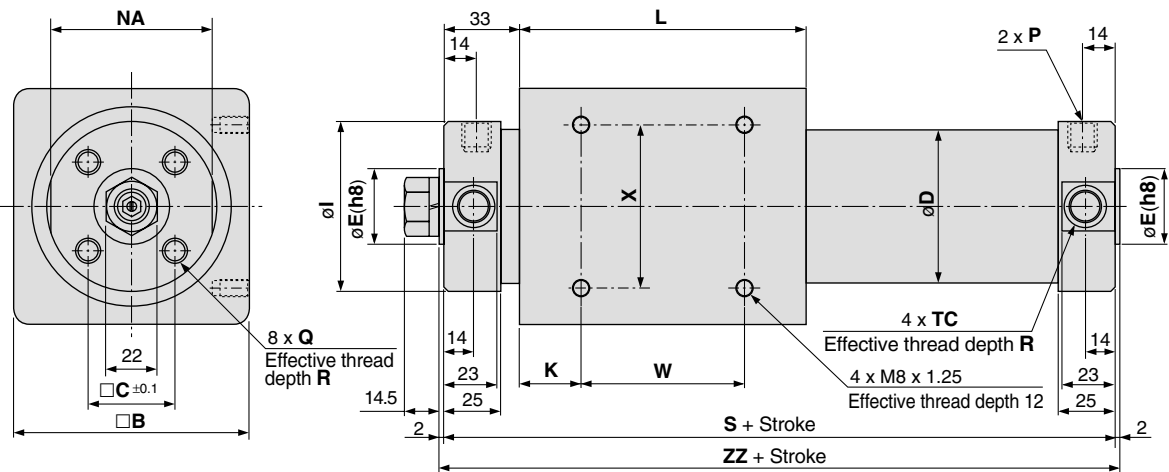
### REA25/32/40



| Model | Port size | B  | D    | F  | G  | H    | I  | K  | L  | MM x J        | N  | NT   | NA | NB | NN        |
|-------|-----------|----|------|----|----|------|----|----|----|---------------|----|------|----|----|-----------|
| REA25 | Rc 1/8    | 46 | 27.8 | 13 | 8  | 20.5 | 34 | 10 | 70 | M5 x 0.8 x 8  | 15 | 11.5 | 30 | 13 | M26 x 1.5 |
| REA32 | Rc 1/8    | 60 | 35   | 16 | 9  | 22   | 40 | 15 | 80 | M6 x 1.0 x 8  | 17 | 13   | 36 | 15 | M26 x 1.5 |
| REA40 | Rc 1/4    | 70 | 43   | 16 | 11 | 29   | 50 | 16 | 92 | M6 x 1.0 x 10 | 21 | 13   | 46 | 19 | M32 x 2.0 |

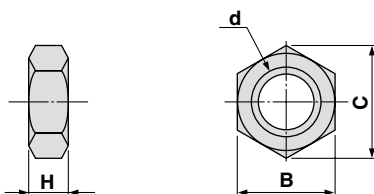
| Model | P      |         |      | S   | W  | X  | ZZ  | R  | T  |
|-------|--------|---------|------|-----|----|----|-----|----|----|
|       | Nil    | TN      | TF   |     |    |    |     |    |    |
| REA25 | Rc 1/8 | NPT 1/8 | —    | 111 | 50 | 30 | 137 | 8  | 17 |
| REA32 | Rc 1/8 | NPT 1/8 | G1/8 | 124 | 50 | 40 | 156 | 8  | 17 |
| REA40 | Rc 1/4 | NPT 1/4 | —    | 150 | 60 | 40 | 182 | 10 | 19 |

### REA50/63



| Model | B   | C  | D  | E(h8)                             | I    | K  | L   | NA | P      |         |       | Q x R          | S   | TC x R           | W  | X  | ZZ  |
|-------|-----|----|----|-----------------------------------|------|----|-----|----|--------|---------|-------|----------------|-----|------------------|----|----|-----|
|       |     |    |    |                                   |      |    |     |    | Nil    | TN      | TF    |                |     |                  |    |    |     |
| REA50 | 86  | 32 | 53 | 30 <sup>0</sup> <sub>-0.033</sub> | 58.2 | 25 | 110 | 55 | Rc 1/4 | NPT 1/4 | G 1/4 | M8 x 1.25 x 16 | 176 | M12 x 1.25 x 7.5 | 60 | 60 | 180 |
| REA63 | 100 | 38 | 66 | 32 <sup>0</sup> <sub>-0.039</sub> | 72.2 | 26 | 122 | 69 | Rc 1/4 | NPT 1/4 | G 1/4 | M10 x 1.5 x 16 | 188 | M14 x 1.5 x 11.5 | 70 | 70 | 192 |

## Mounting Nuts: 2 pcs. Packaged with Each Cylinder



| Model   | Applicable bore size (mm) | d         | H  | B  | C    |
|---------|---------------------------|-----------|----|----|------|
| SN-032B | ø25, ø32                  | M26 x 1.5 | 8  | 32 | 37   |
| SN-040B | ø40                       | M32 x 2.0 | 11 | 41 | 47.3 |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□



# Series REA Specific Product 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.

## Mounting

### ⚠ Caution

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

This can lead to a damage of the scraper and the wear ring, which in turn can cause malfunction.

2. Use caution to the rotation of the external slider.

Rotation should be controlled by connecting it to another shaft (linear guide, etc.).

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

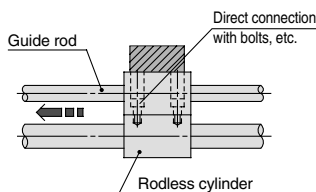
If the magnetic coupling is out of position, push the external slider by hand (or the piston slider with air pressure) back to the proper position at the stroke end.

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

Avoid operation with the external slider secured to the surface.

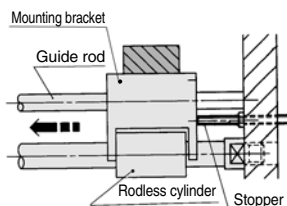
5. Do not apply a lateral load to the external slider.

When a load is mounted directly to the cylinder, variations in the alignment of each shaft center cannot be 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 mass. A drawing of a recommended mounting is shown in Fig. (2).



Variations in the load and cylinder shaft alignment cannot be offset and may result in a malfunction.

Fig. (1) Incorrect mounting



Shaft alignment variations are offset by providing clearance between 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.

Fig. (2) Recommended mounting

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

The allowable load mass when operating in a vertical direction (reference values on page 934 is determined by the model selection method. However, if a load greater than the allowable value is applied, the magnetic coupling may break and there is a possibility of dropping the load. When using this type of application, please contact SMC regarding the operating conditions (pressure, load, speed).

## Disassembly and Maintenance

### ⚠ Caution

1. When reattaching the head covers after disassembly, confirm that they are tightened securely.

When disassembling, hold the wrench flats of one head cover with a vise, and remove the other cover using a spanner or adjustable wrench on the wrench flats. When retightening, first coat with Loctite® (no. 542 Red), and retighten 3° to 5° past the original position prior to removal.

## Stroke Adjustment

### ⚠ Caution

1. This mechanism is not intended for adjustment of the cushion effect (smooth start-up, soft stop). This mechanism is for matching of the cylinder's stroke end position to the mechanical stopper, etc., of a machine. (adjustment range from 0 to -2 mm)
2. Before adjustment is performed, shut off the drive air, release any residual pressure and implement measures to prevent dropping of workpieces, etc.

## Stroke End Adjustment

(To ensure safety, implement with air shut down.)

### ⚠ Caution

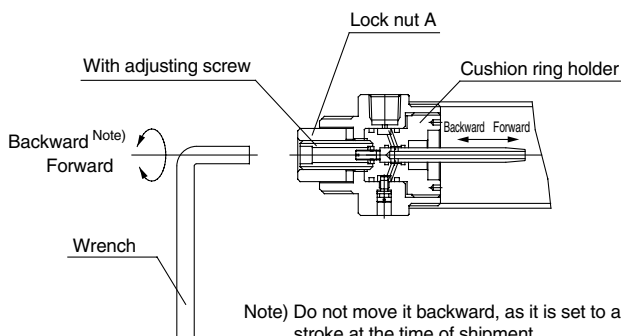
1. Loosen lock nut A.
2. Insert a wrench into the hexagon socket of the adjusting screw, and turn it to the left or right, matching the cushion ring holder (stroke end) with the position of the external stopper by moving it backward or forward.
3. After the stroke end adjustment is completed, retighten lock nut A, and apply high strength Loctite® no. 262 or another comparable locking agent.

#### Adjusting Screw Hexagon Socket

| Model | Width across flats (mm) |
|-------|-------------------------|
| REA25 | 5                       |
| REA32 | 5                       |
| REA40 | 6                       |
| REA50 | 8                       |
| REA63 | 8                       |

#### Lock Nut A tightening Torque

| Model | Tightening torque (N·m) |
|-------|-------------------------|
| REA25 | 1.2                     |
| REA32 | 1.2                     |
| REA40 | 2.1                     |
| REA50 | 3.4                     |
| REA63 | 3.4                     |



# Direct Mount Type

Series **REAR**

Ø10, Ø15, Ø20, Ø25, Ø32, Ø40



**REA**

**REB**

**REC**

**C□Y**

**C□X**

**MQ**

**RHC**

**RZQ**

**D-□**

**-X□**

**Individual  
-X□**

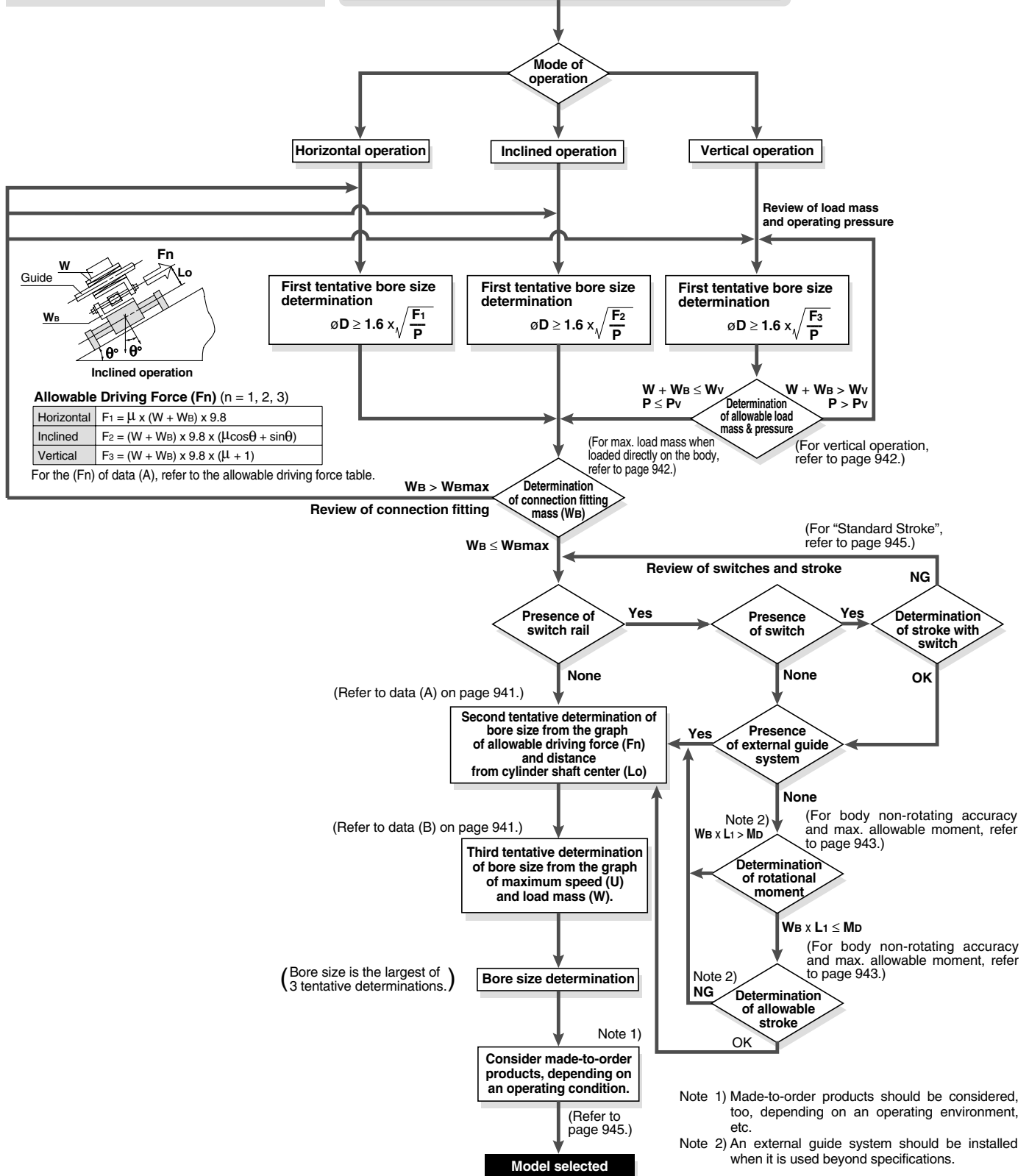
# Series REAR

## Model Selection 1

**F<sub>n</sub>**: Allowable driving force (N)  
**M<sub>d</sub>**: Maximum allowable moment when connection fitting, etc., is directly loaded (N·m)  
**P<sub>v</sub>**: Maximum operating pressure for vertical operation (MPa)  
**W<sub>Bmax</sub>**: Maximum load mass when loaded directly on the body (kg)  
**W<sub>v</sub>**: Allowable load mass for vertical operation (kg)

**Operating Conditions**

- **W**: Load mass (kg)
- **W<sub>B</sub>**: Connection fitting mass (kg)
- **μ**: Guide's coefficient of friction
- **L<sub>o</sub>**: Distance from cylinder shaft center to workpiece point of application (cm)
- **L<sub>1</sub>**: Distance from the cylinder shaft center to the center of the gravity of connection fitting, etc. (mm)
- Presence of switches
- **P**: Operating pressure (MPa)
- **U**: Maximum speed (mm/s)
- **Stroke** (mm)
- Mode of operation (horizontal, inclined, vertical)



# Series **REAR**

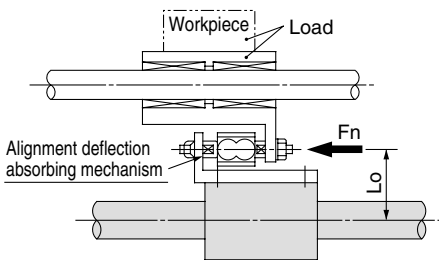
## Model Selection 2

### Caution on Design 1

### Selection Method

#### Selection Procedures

1. Find the drive resisting force  $F_n$  (N) when moving the load horizontally.
2. Find the distance  $L_o$  (cm) from the point of the load where driving force is applied, to the center of the cylinder shaft.
3. Select a bore size from  $L_o$  and  $F_n$  in Data (A).



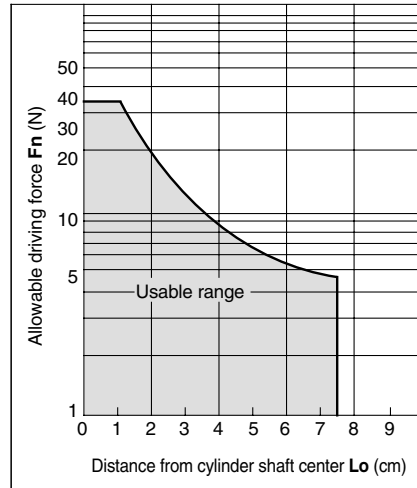
#### Selection Example

Given a load drive resisting force of  $F_n = 100$  (N) and a distance from the cylinder shaft center to the load application point of  $L_o = 8$  cm, find the intersection point by extending upward from the horizontal axis of data (A) where the distance from the shaft center is 8 cm, and then extending to the side, find the allowable driving force on the vertical axis. Models suitable to satisfy the requirement of 100 (N) are **REAR32** or **REAR40**.

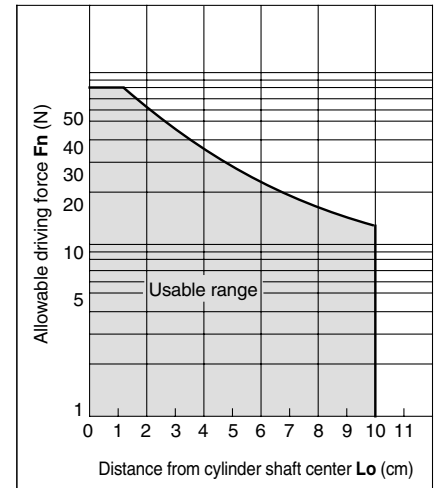
\* Distance from cylinder shaft center,  $L_o$ , is the moment working point between the cylinder and the load.

<Data (A): Distance from Cylinder Shaft Center — Allowable Driving Force>

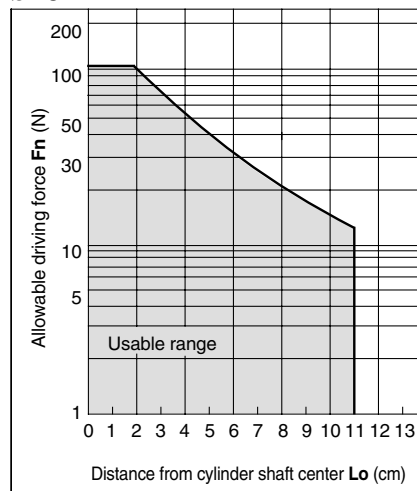
ø10



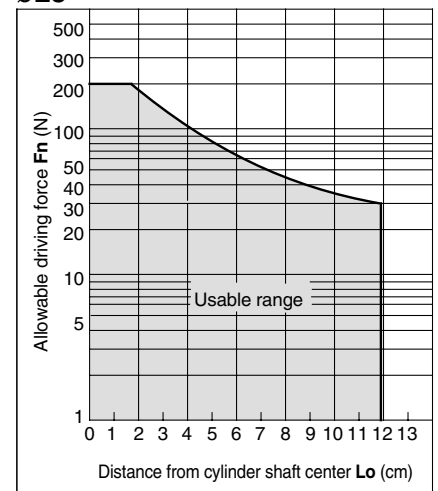
ø15



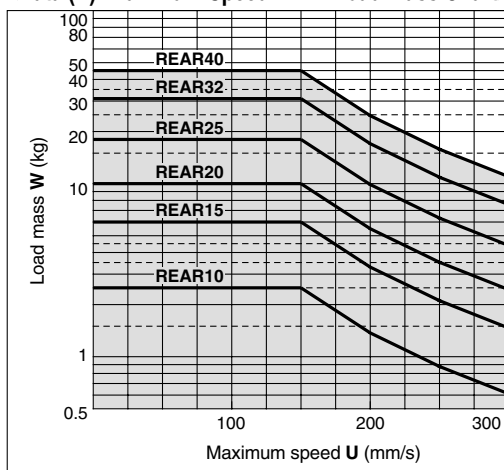
ø20



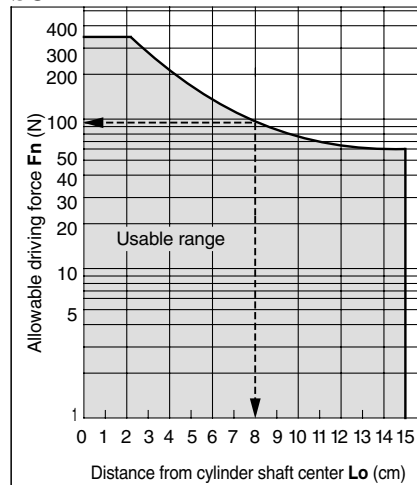
ø25



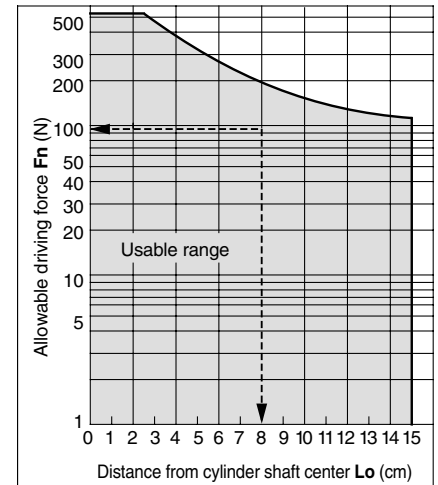
<Data (B): Maximum Speed — Load Mass Chart>



ø32



ø40



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

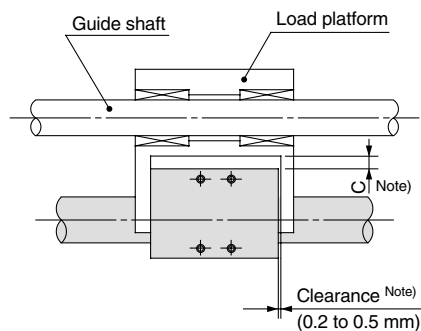
# Series **REAR**

## Model Selection 3

### Caution on Design 2

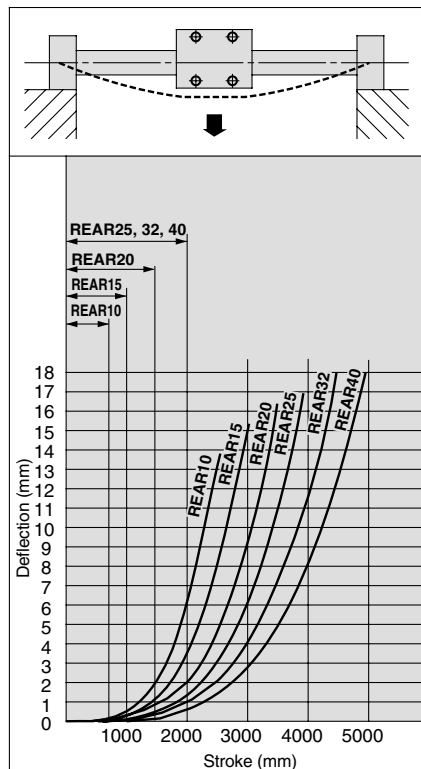
#### Cylinder Self-weight Deflection

When the cylinder is mounted horizontally, deflection appears due to its own weight as shown in the data, and the longer the stroke, the greater the amount of variation in the shaft centers. Therefore, a connection method should be considered which allows for this variation as shown in the drawing.



The above clearance is for reference.

Note) Referring to the self-weight deflection in the graph below, provide clearance so that the cylinder does not touch the mounting surface or the load section, and is able to operate smoothly within the minimum operating pressure range for a full stroke.

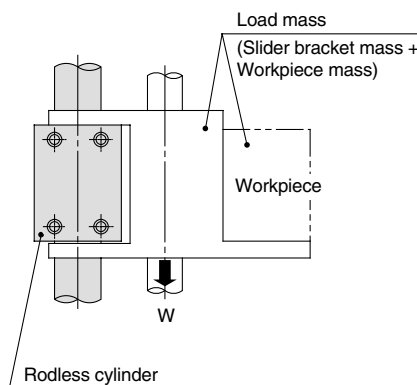


\* The above deflection data indicate values when the external slider has moved to the middle of the stroke.

#### Vertical Operation

The load should be guided by a ball type bearing (Linear guide, etc.). If a slide bearing is used, sliding resistance will increase due to the load weight and moment, and this can cause malfunction.

When the cylinder is mounted vertically or sidelong, sliders may move downwards due to the self-weight or workpiece mass. If an accurate stopping position is required at the stroke end or the middle-stroke, use an external stopper to secure accurate positioning.



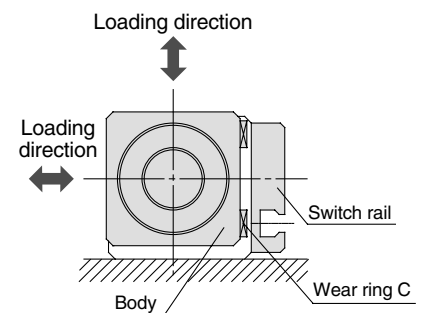
| Bore size<br>(mm) | Model  | Allowable<br>load mass<br>$W_v$ (kg) | Maximum<br>operating pressure<br>$P_v$ (MPa) |
|-------------------|--------|--------------------------------------|----------------------------------------------|
| 10                | REAR10 | 2.7                                  | 0.55                                         |
| 15                | REAR15 | 7.0                                  | 0.65                                         |
| 20                | REAR20 | 11.0                                 | 0.65                                         |
| 25                | REAR25 | 18.5                                 | 0.65                                         |
| 32                | REAR32 | 30.0                                 | 0.65                                         |
| 40                | REAR40 | 47.0                                 | 0.65                                         |

Note) Use caution, since the magnetic coupling may be dislocated if it is used over the maximum operating pressure.

#### Maximum Load Mass when Loaded Directly on Body

When the load is applied directly to the body, it should be no greater than the maximum values shown in the table below.

| Model   | Maximum load mass $W_{bmax}$ (kg) |
|---------|-----------------------------------|
| REAR 10 | 0.4                               |
| REAR 15 | 1.0                               |
| REAR 20 | 1.1                               |
| REAR 25 | 1.2                               |
| REAR 32 | 1.5                               |
| REAR 40 | 2.0                               |



# Series *REAR*

## Model Selection 4

### Caution on Design 3

#### Intermediate Stop

The cushion effect (smooth start-up, soft stop) exists only before the stroke end in the stroke ranges indicated in the table below.

The cushion effect (smooth start-up, soft stop) cannot be obtained in an intermediate stop or return from an intermediate stop using an external stopper, etc.

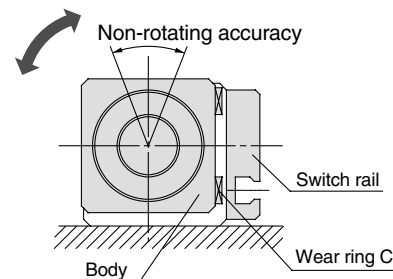
#### Cushion Stroke

| Model         | Stroke (mm) |
|---------------|-------------|
| <b>REAR10</b> | 20          |
| <b>REAR15</b> | 25          |
| <b>REAR20</b> | 30          |
| <b>REAR25</b> | 30          |
| <b>REAR32</b> | 30          |
| <b>REAR40</b> | 35          |

#### Body Non-rotating Accuracy and Max. Allowable Moment (With switch rail) (Reference values)

Reference values for non-rotating accuracy and maximum allowable moment at stroke end are indicated below.

| Bore size (mm) | Non-rotating accuracy (°) | Maximum allowable moment $M_0$ (N·m) | Allowable stroke <sup>(2)</sup> (mm) |
|----------------|---------------------------|--------------------------------------|--------------------------------------|
| <b>10</b>      | 6.0                       | 0.05                                 | 100                                  |
| <b>15</b>      | 4.5                       | 0.15                                 | 200                                  |
| <b>20</b>      | 3.7                       | 0.20                                 | 300                                  |
| <b>25</b>      | 3.7                       | 0.25                                 | 300                                  |
| <b>32</b>      | 3.1                       | 0.40                                 | 400                                  |
| <b>40</b>      | 2.8                       | 0.62                                 | 400                                  |



Note 1) Avoid operations where rotational torque (moment) is applied. In such a case, the use of an external guide is recommended.

Note 2) The above reference values will be satisfied within the allowable stroke ranges. However, caution is necessary because as the stroke becomes longer the inclination (rotation angle) within the stroke can be expected to increase.

Note 3) When a load is applied directly to the body, the loaded mass should be no greater than the allowable load mass on page 942.

**REA**

**REB**

**REC**

**C□Y**

**C□X**

**MQ**

**RHC**

**RZQ**

**D-□**

**-X□**

Individual  
**-X□**

# Sine Rodless Cylinder/Direct Mount Type Series *REAR*

ø10, ø15, ø20, ø25, ø32, ø40

## How to Order

**REAR25** **300** **M9BW**

Sine rodless cylinder

Direct mount type

Bore size

|    |       |
|----|-------|
| 10 | 10 mm |
| 15 | 15 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

Port thread type

| Symbol | Type     | Bore size      |
|--------|----------|----------------|
| Nil    | M thread | 10, 15         |
|        | Rc       | 20, 25, 32, 40 |
| TN     | NPT      |                |
| TF     | G        | 25, 32         |

Cylinder stroke (mm)

Refer to "Standard Stroke" on page 945.

Made to Order Specification  
For details, refer to page 945.

Number of auto switches

|     |          |
|-----|----------|
| Nil | 2 pcs.   |
| S   | 1 pc.    |
| n   | "n" pcs. |

Auto switch

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

Note) In the case of ø20 with switch rail but without auto switches, the cylinder configuration is for reed auto switches.  
\* For the applicable auto switch model, refer to the table below.

Switch rail

|     |                     |
|-----|---------------------|
| Nil | With switch rail    |
| N   | Without switch rail |

Note 1) When equipped with switch rails, magnets for auto switches are built-in.  
Note 2) In the case of ø15, magnets for auto switches are built-in even when not equipped with switch rails.

**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           |                   | 0.5 (Nil)            | 1 (M) | 3 (L) | 5 (Z) |                     |                 |            |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet          | Yes             | 3-wire (NPN)            | 24V          | 5V, 12V      | M9N               | ●                    | ●     | ●     | ○     | ○                   | IC circuit      | Relay, PLC |
|                    |                                            |                  |                 | 3-wire (PNP)            |              |              | M9P               | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 2-wire                  |              |              | M9B               | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 3-wire (NPN)            |              |              | M9NW              | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 3-wire (PNP)            |              |              | M9PW              | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 2-wire                  |              |              | M9BW              | ●                    | ●     | ●     | ○     | ○                   |                 |            |
| Reed switch        | —                                          | Grommet          | Yes             | 3-wire (NPN equivalent) | —            | 5V           | A96               | ●                    | —     | ●     | —     | —                   | IC circuit      | —          |
|                    |                                            |                  |                 | 2-wire                  | 24V          | 12V          | A93               | ●                    | —     | ●     | —     | —                   | —               | Relay, PLC |
|                    |                                            |                  | NO              | 2-wire                  | 24V          | 100V or less | A90               | ●                    | —     | ●     | —     | —                   | IC circuit      | —          |

\* Lead wire length symbols: 0.5 m.....Nil (Example) M9NW  
1 m.....M (Example) M9NWM  
3 m.....L (Example) M9NWL  
5 m.....Z (Example) M9NWZ

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* Since there are other applicable auto switches than listed, refer to page 949 for details.  
\* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.  
\* Auto switches are shipped together (not assembled).

# Sine Rodless Cylinder Direct Mount Type **Series REAR**

## Specifications



| Bore size (mm)                       | 10                                                                                      | 15  | 20  | 25  | 32  | 40  |
|--------------------------------------|-----------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| 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                                                                             |     |     |     |     |     |
| Piston speed (Max.) <sup>Note)</sup> | 50 to 300 mm/s                                                                          |     |     |     |     |     |
| Lubrication                          | Not required (Non-lube)                                                                 |     |     |     |     |     |
| Stroke length tolerance              | 0 to 250 st: $^{+1.0}_0$ , 251 to 1000 st: $^{+1.4}_0$ , 1001 st or longer: $^{+1.8}_0$ |     |     |     |     |     |
| Holding force                        | 53.9                                                                                    | 137 | 231 | 363 | 588 | 922 |

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.

## Standard Stroke

| Bore size (mm) | Standard stroke (mm)                                        | Maximum manufacturable stroke (mm) | Maximum stroke with switch stroke (mm) |
|----------------|-------------------------------------------------------------|------------------------------------|----------------------------------------|
| 10             | 150, 200, 250, 300                                          | 500                                | 500                                    |
| 15             | 150, 200, 250, 300, 350, 400, 450, 500                      | 1000                               | 750                                    |
| 20             | 200, 250, 300, 350, 400, 450, 500, 600, 700, 800            | 1500                               | 1000                                   |
| 25             |                                                             | 2000                               | 1500                                   |
| 32             |                                                             |                                    |                                        |
| 40             | 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000 | 2000                               | 1500                                   |

Note) Intermediate stroke is available by the 1 mm interval.

## Mass

|                                                                               |                                   | (kg)           |       |       |       |       |       |
|-------------------------------------------------------------------------------|-----------------------------------|----------------|-------|-------|-------|-------|-------|
|                                                                               |                                   | Bore size (mm) |       |       |       |       |       |
| Item                                                                          |                                   | 10             | 15    | 20    | 25    | 32    | 40    |
| Basic mass (for 0 st)                                                         | REAR□<br>(with switch rail)       | 0.111          | 0.277 | 0.440 | 0.660 | 1.27  | 2.06  |
|                                                                               | REAR□-□N<br>(without switch rail) | 0.080          | 0.230 | 0.370 | 0.580 | 1.15  | 1.90  |
| Additional mass per each 50 mm of stroke (when equipped with switch rail)     |                                   | 0.034          | 0.045 | 0.071 | 0.083 | 0.113 | 0.133 |
| Additional mass per each 50 mm of stroke (when not equipped with switch rail) |                                   | 0.014          | 0.020 | 0.040 | 0.050 | 0.070 | 0.080 |

Calculation: (Example) REAR25-500 (with switch rail)

- Basic mass ..... 0.660 (kg)
- Additional mass ..... 0.083 (kg/50 st)
- Cylinder stroke ..... 500 (st)

$$0.660 + 0.083 \times 500 \div 50 = 1.49 \text{ kg}$$


**Made to Order Specifications**  
(For details, refer to page 1939.)

| Symbol | Specifications      |
|--------|---------------------|
| —XC57  | With floating joint |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

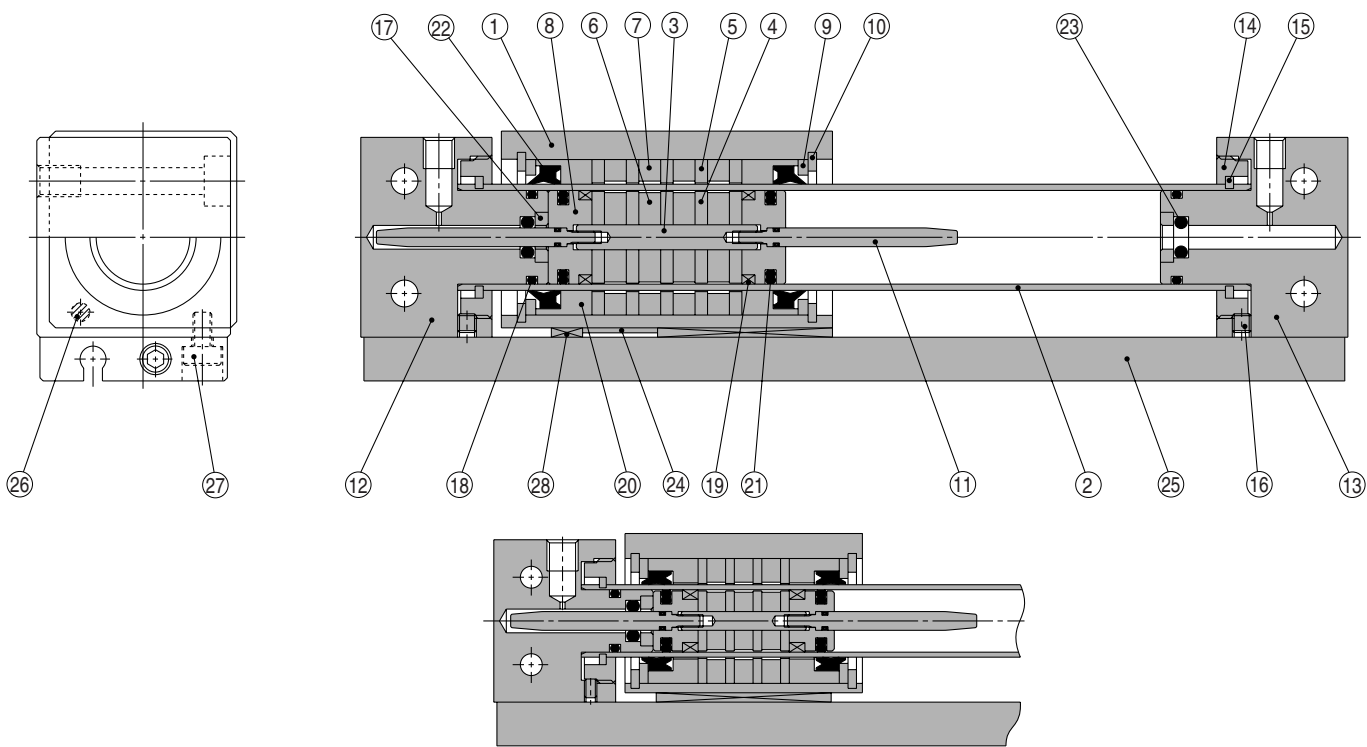
D-□

-X□

Individual  
-X□

# Series REAR

Construction:  $\varnothing 10$ ,  $\varnothing 15$



REAR10

## Component Parts

| No. | Description                    | Material                 | Note                      |
|-----|--------------------------------|--------------------------|---------------------------|
| 1   | Body                           | Aluminum alloy           | Hard anodized             |
| 2   | Cylinder tube                  | Stainless steel          |                           |
| 3   | Shaft                          | Stainless steel          | Zinc chromated            |
| 4   | Piston side yoke               | Rolled steel plate       | Zinc chromated            |
| 5   | External slider side yoke      | Rolled steel plate       |                           |
| 6   | Magnet A                       | —                        |                           |
| 7   | Magnet B                       | —                        |                           |
| 8   | Piston                         | Brass                    | Electroless nickel plated |
| 9   | Spacer                         | Rolled steel plate       | Nickel plated             |
| 10  | Retaining ring                 | Carbon tool steel        | Nickel plated             |
| 11  | Cushion ring                   | Stainless steel          |                           |
| 12  | End cover A                    | Aluminum alloy           | Hard anodized             |
| 13  | End cover B                    | Aluminum alloy           | Hard anodized             |
| 14  | Attachment ring                | Aluminum alloy           | Hard anodized             |
| 15  | Type C retaining ring for axis | Stainless steel          | REAR10                    |
|     |                                | Hard steel wire material | Nickel plated (REAR15)    |
| 16  | Hexagon socket head set screw  | Chromium steel           | Nickel plated             |
| 17  | Retaining plate                | Aluminum alloy           |                           |

## Component Parts

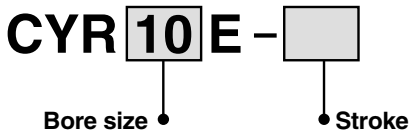
| No. | Description                   | Material           | Note           |
|-----|-------------------------------|--------------------|----------------|
| 18* | Cylinder tube gasket          | NBR                |                |
| 19* | Wear ring A                   | Special resin      |                |
| 20* | Wear ring B                   | Special resin      |                |
| 21* | Piston seal                   | NBR                |                |
| 22* | Scraper                       | NBR                |                |
| 23* | Cushion seal                  | NBR                |                |
| 24  | Magnetic shielding plate      | Rolled steel plate | Chromated      |
| 25  | Switch rail                   | Aluminum alloy     | Clear anodized |
| 26  | Magnet                        | —                  |                |
| 27  | Hexagon socket head cap screw | Chromium steel     | Nickel plated  |
| 28* | Wear ring C                   | Special resin      |                |

## Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                     |
|----------------|-----------|------------------------------|
| 10             | REAR10-PS | Above nos. 18, 19, 20, 21    |
| 15             | REAR15-PS | Above nos. 22, 23, 28 (Note) |

Note) It may be difficult to replace the cushion seal 23.  
\* Seal kit includes a grease pack ( $\varnothing 10$ : 5 g and 10 g,  $\varnothing 15$ : 10 g).  
Order with the following part number when only the grease pack is needed.  
For  $\varnothing 10$  grease pack part no.: GR-F-005 (5 g) For external sliding part  
GR-S-010 (10 g) For tube interior  
For  $\varnothing 15$  grease pack part no.: GR-S-010 (10 g)

## Switch Rail Accessory Kit

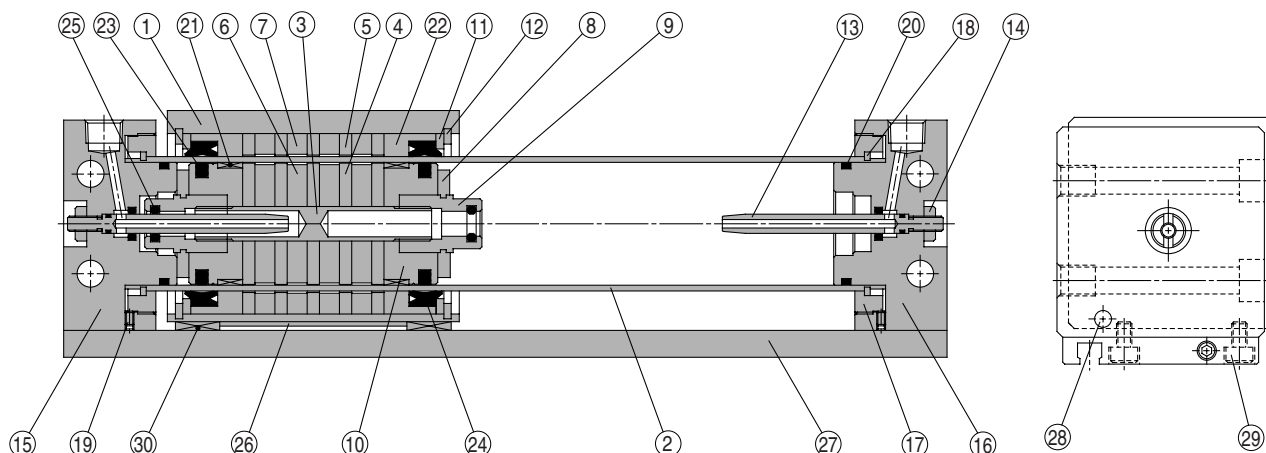


## Switch Rail Accessory Kit

| Bore size (mm) | Kit no.  | Contents                      |
|----------------|----------|-------------------------------|
| 10             | CYR10E-□ | Above nos. 25, 26, 27, 28     |
| 15             | CYR15E-□ | Above nos. 24, 25, 27, 28 (2) |

Note 1) □ indicates the stroke.  
Note 2)  $\varnothing 15$  has internal magnets in the body.

## Construction: ø20 to ø40



### Component Parts

| No. | Description                    | Material                 | Note                                    |
|-----|--------------------------------|--------------------------|-----------------------------------------|
| 1   | Body                           | Aluminum alloy           | Hard anodized                           |
| 2   | Cylinder tube                  | Stainless steel          |                                         |
| 3   | Shaft                          | Stainless steel          |                                         |
| 4   | Piston side yoke               | Rolled steel plate       | Zinc chromated                          |
| 5   | External slider side yoke      | Rolled steel plate       | Zinc chromated                          |
| 6   | Magnet A                       | —                        |                                         |
| 7   | Magnet B                       | —                        |                                         |
| 8   | Bumper                         | Urethane rubber          |                                         |
| 9   | Cushion seal holder            | Aluminum alloy           | Chromated                               |
| 10  | Piston                         | Aluminum alloy           | Chromated                               |
| 11  | Spacer                         | Rolled steel plate       | Nickel plated                           |
| 12  | Retaining ring                 | Carbon tool steel        | Nickel plated                           |
| 13  | Cushion ring                   | Brass                    | Electroless nickel plated (REAR 32, 40) |
|     |                                | Stainless steel          | REAR 20, 25                             |
| 14  | Lock nut B                     | Carbon steel             | Nickel plated                           |
| 15  | End cover A                    | Aluminum alloy           | Hard anodized                           |
| 16  | End cover B                    | Aluminum alloy           | Hard anodized                           |
| 17  | Attachment ring                | Aluminum alloy           | Hard anodized                           |
| 18  | Type C retaining ring for axis | Stainless steel          | REAR 25, 32                             |
|     |                                | Hard steel wire material | Nickel plated (REAR 20, 40)             |
| 19  | Hexagon socket head set screw  | Chromium steel           | Nickel plated                           |

### Component Parts

| No. | Description                   | Material           | Note           |
|-----|-------------------------------|--------------------|----------------|
| 20* | Cylinder tube gasket          | NBR                |                |
| 21* | Wear ring A                   | Special resin      |                |
| 22* | Wear ring B                   | Special resin      |                |
| 23* | Piston seal                   | NBR                |                |
| 24* | Scraper                       | NBR                |                |
| 25* | Cushion seal                  | NBR                | Chromated      |
| 26  | Magnetic shielding plate      | Rolled steel plate | Clear anodized |
| 27  | Switch rail                   | Aluminum alloy     |                |
| 28  | Magnet                        | —                  | Nickel plated  |
| 29  | Hexagon socket head cap screw | Chromium steel     |                |
| 30* | Wear ring C                   | Special resin      |                |

\* Seal kit includes 20 to 25, 30. Order the seal kit, based on each bore size.

### Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                        |
|----------------|-----------|-------------------------------------------------|
| 20             | REAR20-PS | Above nos.<br>20, 21, 22, 23, 24, 25, 30 (Note) |
| 25             | REAR25-PS |                                                 |
| 32             | REAR32-PS |                                                 |
| 40             | REAR40-PS |                                                 |

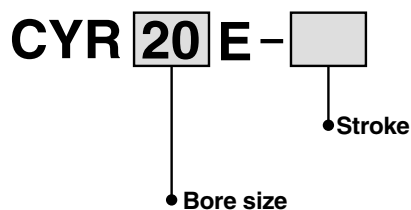
Note) Cushion seal (25) may be difficult to be replaced.

\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

Grease pack part no.: GR-S-010 (10 g)

### Switch Rail Accessory Kit



### Switch Rail Accessory Kit

| Bore size (mm) | Kit no.                             | Contents                         |
|----------------|-------------------------------------|----------------------------------|
| 20             | For reed switch<br>CYR20E-□         | Above nos.<br>26, 27, 28, 29, 30 |
|                | For solid state switch<br>CYR20EN-□ |                                  |
| 25             | CYR25E-□                            |                                  |
| 32             | CYR32E-□                            |                                  |
| 40             | CYR40E-□                            |                                  |

Note) □ indicates the stroke.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

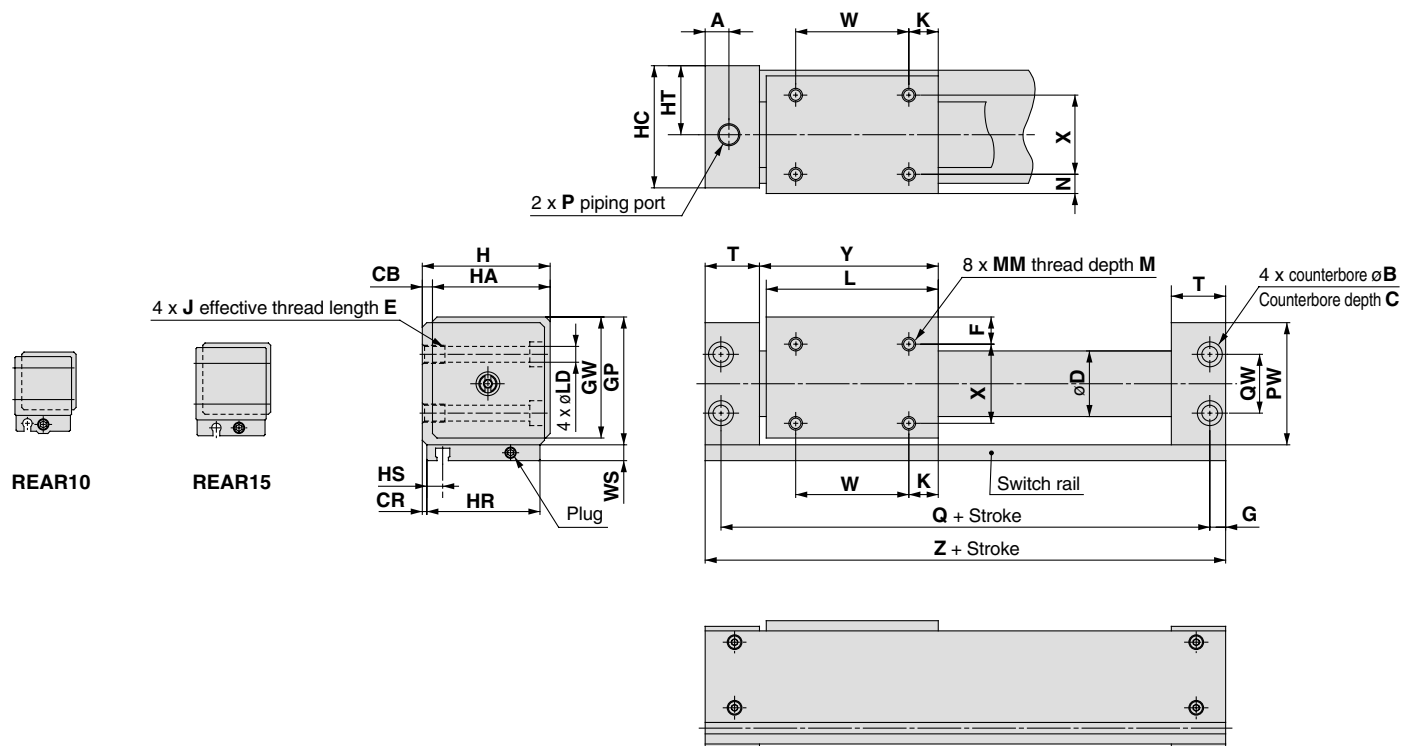
D-□

-X□

Individual  
-X□

# Series **REAR**

## Dimensions

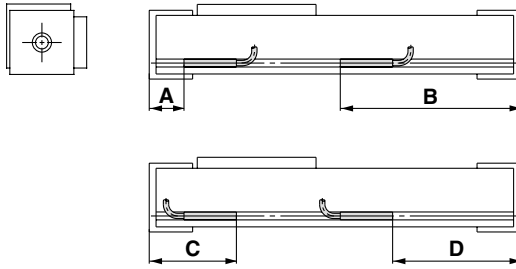


(mm)

| Model  | A    | B   | C   | CB | CR  | D    | F    | G | GP | GW   | H  | HA | HC | HR | HS  | HT   | J x E          |
|--------|------|-----|-----|----|-----|------|------|---|----|------|----|----|----|----|-----|------|----------------|
| REAR10 | 10.5 | 6.5 | 3.2 | 2  | 0.5 | 12   | 6.5  | 6 | 27 | 25.5 | 26 | 24 | 25 | 24 | 5   | 14   | M4 x 0.7 x 6   |
| REAR15 | 12   | 8   | 4.2 | 2  | 0.5 | 17   | 8    | 7 | 33 | 31.5 | 32 | 30 | 31 | 30 | 8.5 | 17   | M5 x 0.8 x 7   |
| REAR20 | 9    | 9.5 | 5.2 | 3  | 1   | 22.8 | 9    | 6 | 39 | 37.5 | 39 | 36 | 38 | 36 | 7.5 | 21   | M6 x 1 x 8     |
| REAR25 | 8.5  | 9.5 | 5.2 | 3  | 1   | 27.8 | 8.5  | 6 | 44 | 42.5 | 44 | 41 | 43 | 41 | 6.5 | 23.5 | M6 x 1 x 8     |
| REAR32 | 10.5 | 11  | 6.5 | 3  | 1.5 | 35   | 10.5 | 7 | 55 | 53.5 | 55 | 52 | 54 | 51 | 7   | 29   | M8 x 1.25 x 10 |
| REAR40 | 10   | 11  | 6.5 | 5  | 2   | 43   | 13   | 7 | 65 | 63.5 | 67 | 62 | 66 | 62 | 8   | 36   | M8 x 1.25 x 10 |

| Model  | K  | L  | LD  | M | MM       | N   | P        |         |       | PW | Q   | QW | T    | W  | WS | X  | Y    | Z   |
|--------|----|----|-----|---|----------|-----|----------|---------|-------|----|-----|----|------|----|----|----|------|-----|
|        |    |    |     |   |          |     | Nil      | TN      | TF    |    |     |    |      |    |    |    |      |     |
| REAR10 | 9  | 38 | 3.5 | 4 | M3 x 0.5 | 4.5 | M5 x 0.8 | —       | —     | 26 | 68  | 14 | 19.5 | 20 | 8  | 15 | 39.5 | 80  |
| REAR15 | 14 | 53 | 4.3 | 5 | M4 x 0.7 | 6   | M5 x 0.8 | —       | —     | 32 | 84  | 18 | 21   | 25 | 7  | 18 | 54.5 | 98  |
| REAR20 | 11 | 62 | 5.6 | 5 | M4 x 0.7 | 7   | Rc 1/8   | NPT 1/8 | —     | 38 | 95  | 17 | 20.5 | 40 | 7  | 22 | 64   | 107 |
| REAR25 | 15 | 70 | 5.6 | 6 | M5 x 0.8 | 6.5 | Rc 1/8   | NPT 1/8 | G 1/8 | 43 | 105 | 20 | 21.5 | 40 | 7  | 28 | 72   | 117 |
| REAR32 | 13 | 76 | 7   | 7 | M6 x 1   | 8.5 | Rc 1/8   | NPT 1/8 | G 1/8 | 54 | 116 | 26 | 24   | 50 | 7  | 35 | 79   | 130 |
| REAR40 | 15 | 90 | 7   | 8 | M6 x 1   | 11  | Rc 1/4   | NPT 1/4 | —     | 64 | 134 | 34 | 26   | 60 | 7  | 40 | 93   | 148 |

## Auto Switch Proper Mounting Position (Detection at Stroke End)



### Auto Switch Proper Mounting Position ø10 to ø40

| Auto switch model<br>Bore size (mm) | A     |                 | B     |                 | C     |                 | D     |                 |
|-------------------------------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|
|                                     | D-A9□ | D-M9□<br>D-M9□W | D-A9□ | D-M9□<br>D-M9□W | D-A9□ | D-M9□<br>D-M9□W | D-A9□ | D-M9□<br>D-M9□W |
| 10                                  | 30    | 34              | 50    | 46              | 50    | 46              | —     | 34              |
| 15                                  | 19.5  | 23.5            | 78.5  | 74.5            | —     | —               | 58.5  | 62.5            |
| 20                                  | 19.5  | 23.5            | 87.5  | 83.5            | 39.5  | 35.5            | 67.5  | 71.5            |
| 25                                  | 19    | 23              | 98    | 102             | 42    | 46              | 75    | 79              |
| 32                                  | 22.5  | 26.5            | 107.5 | 111.5           | 45.5  | 49.5            | 84.5  | 88.5            |
| 40                                  | 24.5  | 28.5            | 123.5 | 127.5           | 47.5  | 51.5            | 100.5 | 104.5           |

Note 1) Auto switches cannot be installed in Area C in the case of ø15.

Note 2) D-A9□ cannot be mounted on D of ø10.

Note 3) Adjust the auto switch after confirming the operating conditions in the actual setting.

### ø25 to ø40

| Auto switch model<br>Bore size (mm) | A                                           | B                                           | C                                           | D                                           |
|-------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|                                     | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W |
| 25                                  | 18                                          | 99                                          | 43                                          | 74                                          |
| 32                                  | 21.5                                        | 108.5                                       | 46.5                                        | 83.5                                        |
| 40                                  | 23.5                                        | 124.5                                       | 48.5                                        | 99.5                                        |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

## Operating Range

| Auto switch model | Bore size (mm) |     |     |     |     |    |
|-------------------|----------------|-----|-----|-----|-----|----|
|                   | 10             | 15  | 20  | 25  | 32  | 40 |
| D-A9□             | 13             | 8   | 6   | 7.5 | 8   | 9  |
| D-M9□W<br>D-M9□   | 6.5            | 4.5 | 5.5 | 4   | 4.5 | 5  |
| D-Z7□/Z80         | —              | —   | —   | 9   | 9   | 11 |
| D-Y5□/Y7P/Y7□W    | —              | —   | —   | 7   | 6   | 6  |

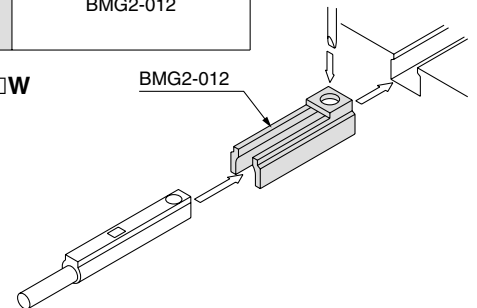
\* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately ±30% dispersion)  
There may be the case it will vary substantially depending on an ambient environment.

## Auto Switch Mounting Bracket: Part No.

| Auto switch model        | Bore size (mm) |
|--------------------------|----------------|
|                          | ø25, ø32, ø40  |
| D-A9□<br>D-M9□<br>D-M9□W | BMG2-012       |

D-A9□/M9□/M9□W

BMG2-012



Other than the models listed in "How to Order", the following auto switches are applicable. For detailed specifications, refer to pages 1719 to 1827.

| Auto switch type | Model              | Electrical entry (Fetching direction) | Features                                   | Applicable bore size |
|------------------|--------------------|---------------------------------------|--------------------------------------------|----------------------|
| Reed             | D-Z73, Z76         | Grommet (In-line)                     | —                                          | ø25 to ø40           |
|                  | D-Z80              |                                       | Without indicator light                    |                      |
| Solid state      | D-Y59A, Y59B, Y7P  | Grommet (In-line)                     | —                                          |                      |
|                  | D-Y7NW, Y7PW, Y7BW |                                       | Diagnostic indication (2-color indication) |                      |

\* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.

\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1746 and 1748 for details.



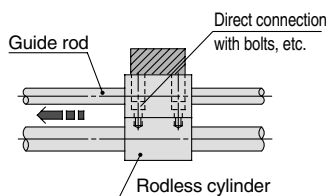
# Series *REAR* Specific Product Precautions

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.

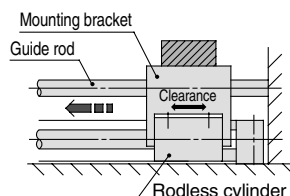
## Mounting

### ⚠ Caution

- Take care to avoid nicks or other damage on the outside surface of the cylinder tube.**  
This can lead to a damage of the scraper and the wear ring, which in turn can cause malfunction.
- Use caution to the rotation of the external slider.**  
Rotation should be controlled by connecting it to another shaft (linear guide, etc.).
- 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.
- The cylinder is mounted with bolts through the mounting holes in the end covers. Be sure they are tightened securely.**
- 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.
- 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 is shown in Fig. (2).



Variations in the load and cylinder shaft alignment cannot be offset and may result in a malfunction.



Shaft alignment variations are offset by providing clearance between 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.

Figure (1) Incorrect mounting

Figure (2) Recommended mounting

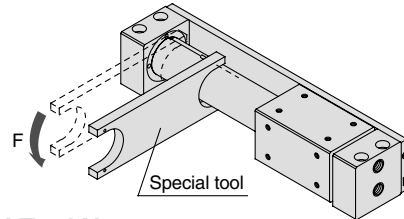
- Use caution regarding the allowable load mass when operating in a vertical direction.**

The allowable load mass when operating in a vertical direction (reference values on page 942) is determined by the model selection method, however, if a load greater than the allowable value is applied, the magnetic coupling may break and there is a possibility of dropping the load. When using this type of application, please contact SMC regarding the operating conditions (pressure, load).

## Disassembly and Maintenance

### ⚠ Caution

- Special tools are necessary for disassembly.**



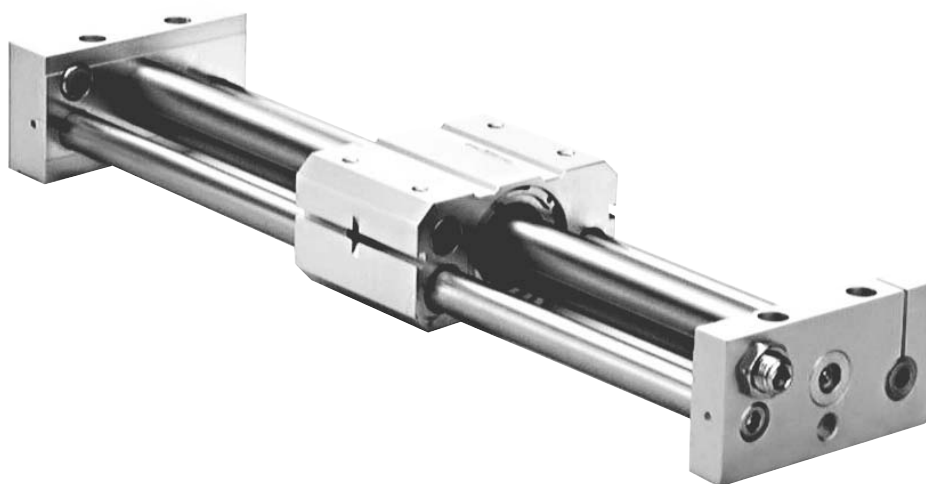
### Special Tool No.

| Part no. | Applicable bore size (mm) |
|----------|---------------------------|
| CYRZ-V   | 10, 15, 20                |
| CYRZ-W   | 25, 32, 40                |

# Slider Type/Slide Bearing

## Series *REAS*

Ø10, Ø15, Ø20, Ø25, Ø32, Ø40



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

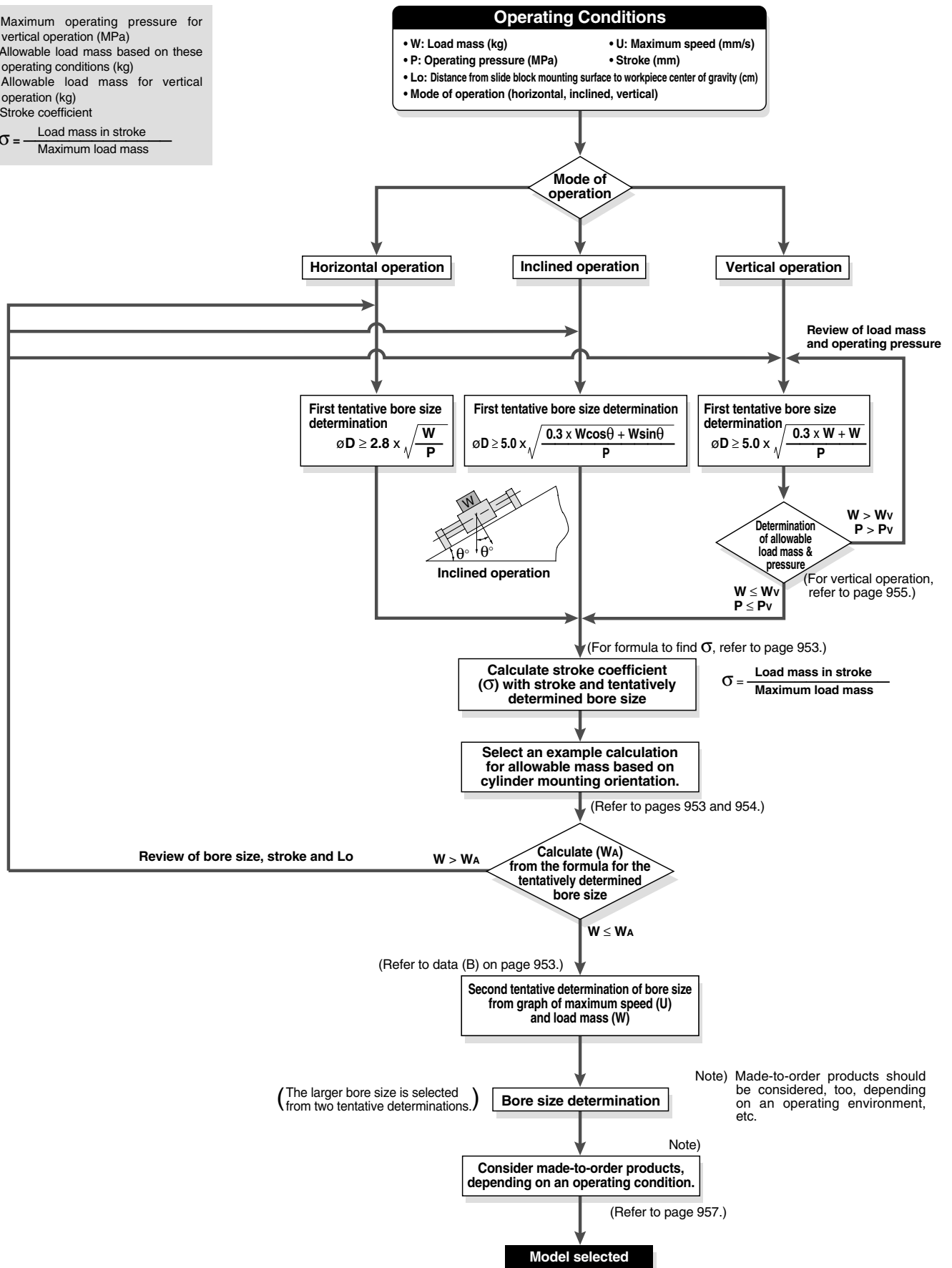
Individual  
-X□

# Series REAS

## Model Selection 1

**P<sub>v</sub>**: Maximum operating pressure for vertical operation (MPa)  
**W<sub>A</sub>**: Allowable load mass based on these operating conditions (kg)  
**W<sub>v</sub>**: Allowable load mass for vertical operation (kg)  
**σ**: Stroke coefficient  

$$\sigma = \frac{\text{Load mass in stroke}}{\text{Maximum load mass}}$$



# Series REAS

## Model Selection 2

### Caution on Design 1

#### How to Find $\sigma$ when Selecting the Allowable Load Mass

Since the maximum load mass with respect to the cylinder stroke changes as shown in the table below,  $\sigma$  should be considered as a coefficient determined in accordance with each stroke.

Example) For REAS25-650

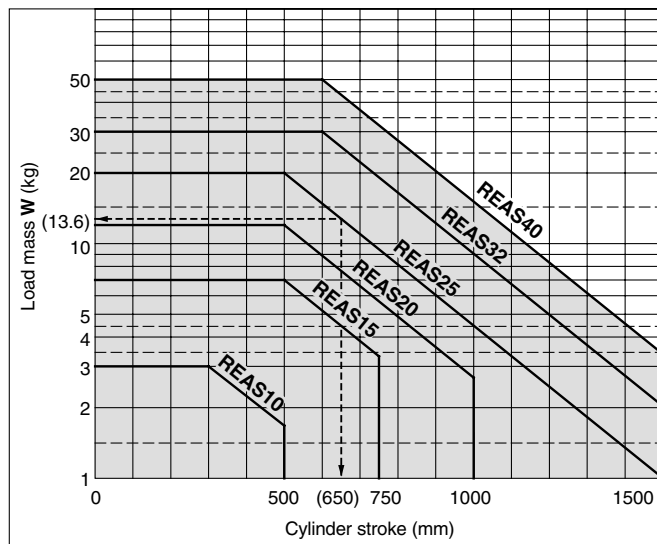
- (1) Maximum load mass = 20 kg
- (2) Load mass for 650 st = 13.6 kg
- (3)  $\sigma = \frac{13.6}{20} = 0.68$  is the result.

#### Calculation Formula for $\sigma$ ( $\sigma \leq 1$ )

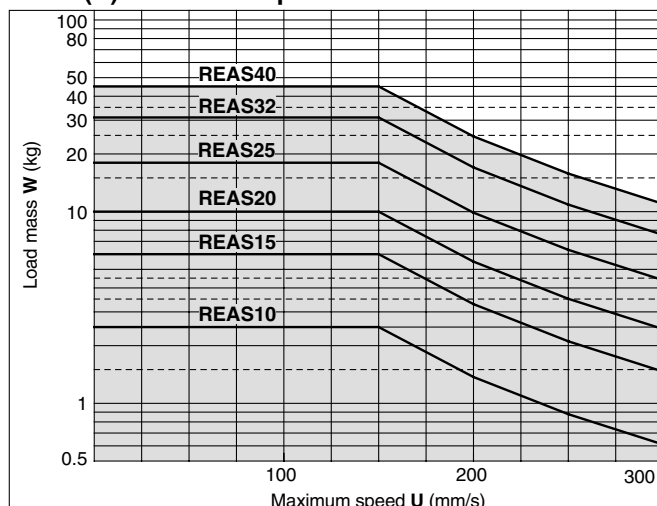
ST: Stroke (mm)

| Model      | REAS10                                                  | REAS15                                                  | REAS20                                                  |
|------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| $\sigma =$ | $\frac{10^{(0.86 - 1.3 \times 10^{-3} \times ST)}}{3}$  | $\frac{10^{(1.5 - 1.3 \times 10^{-3} \times ST)}}{7}$   | $\frac{10^{(1.71 - 1.3 \times 10^{-3} \times ST)}}{12}$ |
| Model      | REAS25                                                  | REAS32                                                  | REAS40                                                  |
| $\sigma =$ | $\frac{10^{(1.98 - 1.3 \times 10^{-3} \times ST)}}{20}$ | $\frac{10^{(2.26 - 1.3 \times 10^{-3} \times ST)}}{30}$ | $\frac{10^{(2.48 - 1.3 \times 10^{-3} \times ST)}}{50}$ |

Note) Calculate with  $\sigma = 1$  for all applications up to  $\phi 10$ –300 mmST,  $\phi 15$ –500 mmST,  $\phi 20$ –500 mmST,  $\phi 25$ –500 mmST,  $\phi 32$ –600 mmST,  $\phi 40$ –600 mmST.

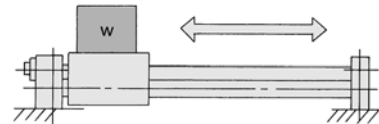


#### <Data (B): Maximum Speed — Load Mass Chart>



#### Example of Allowable Load Mass Calculation Based on Cylinder Mounting Orientation

##### 1. Horizontal Operation (Floor mounting)



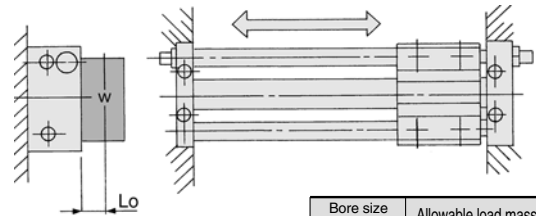
##### Maximum Load Mass (Center of slide block) (kg)

| Bore size (mm)      | 10          | 15          | 20          | 25          | 32          | 40          |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Max. load mass (kg) | 3           | 7           | 12          | 20          | 30          | 50          |
| Stroke (Max.)       | Up to 300st | Up to 500st | Up to 500st | Up to 500st | Up to 600st | Up to 600st |

The above maximum load mass values will change with the stroke length for each cylinder size, due to limitation from warping of the guide shafts. (Take note of the coefficient  $\sigma$ .)

Moreover, depending on the operating direction, the allowable load mass may be different from the maximum load mass.

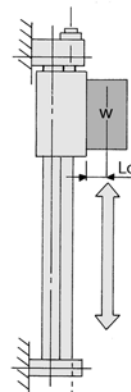
##### 2. Horizontal Operation (Wall mounting)



Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm) | Allowable load mass WA (kg)            |
|----------------|----------------------------------------|
| 10             | $\frac{\sigma \cdot 12.0}{8.4 + 2Lo}$  |
| 15             | $\frac{\sigma \cdot 36.4}{10.6 + 2Lo}$ |
| 20             | $\frac{\sigma \cdot 74.4}{12 + 2Lo}$   |
| 25             | $\frac{\sigma \cdot 140}{13.8 + 2Lo}$  |
| 32             | $\frac{\sigma \cdot 258}{17 + 2Lo}$    |
| 40             | $\frac{\sigma \cdot 520}{20.6 + 2Lo}$  |

##### 3. Vertical Operation



Lo: Distance from mounting surface to load center of gravity (cm)  
Note) Consider a safety factor for drop prevention.

| Bore size (mm) | Allowable load mass WA (kg)           |
|----------------|---------------------------------------|
| 10             | $\frac{\sigma \cdot 4.16}{2.2 + Lo}$  |
| 15             | $\frac{\sigma \cdot 13.23}{2.7 + Lo}$ |
| 20             | $\frac{\sigma \cdot 26.8}{2.9 + Lo}$  |
| 25             | $\frac{\sigma \cdot 44.0}{3.4 + Lo}$  |
| 32             | $\frac{\sigma \cdot 88.2}{4.2 + Lo}$  |
| 40             | $\frac{\sigma \cdot 167.8}{5.1 + Lo}$ |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

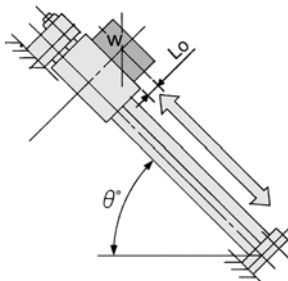
-X□

Individual  
-X□

## Caution on Design 2

### Example of Allowable Load Mass Calculation Based on Cylinder Mounting Orientation

#### 4. Inclined Operation (in operating direction)



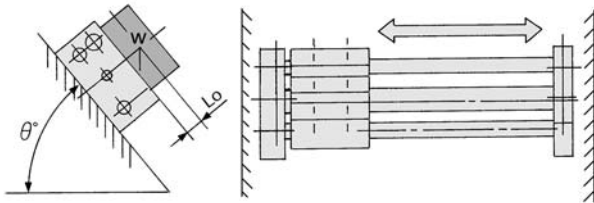
| Angle | Up to 45° | Up to 60° | Up to 75° | Up to 90° |
|-------|-----------|-----------|-----------|-----------|
| k     | 1         | 0.9       | 0.8       | 0.7       |

Angle coefficient (k):  $k = [\text{up to } 45^\circ (= \theta)] = 1$ ,  
 $[\text{up to } 60^\circ] = 0.9$ ,  $[\text{up to } 75^\circ] = 0.8$ ,  
 $[\text{up to } 90^\circ] = 0.7$

Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm) | Allowable load mass WA (kg)                                                    |
|----------------|--------------------------------------------------------------------------------|
| 10             | $\frac{\sigma \cdot 10.5 \cdot K}{3.5 \cos \theta + 2 (2.2 + Lo) \sin \theta}$ |
| 15             | $\frac{\sigma \cdot 35 \cdot K}{5 \cos \theta + 2 (2.7 + Lo) \sin \theta}$     |
| 20             | $\frac{\sigma \cdot 72 \cdot K}{6 \cos \theta + 2 (2.9 + Lo) \sin \theta}$     |
| 25             | $\frac{\sigma \cdot 120 \cdot K}{6 \cos \theta + 2 (3.4 + Lo) \sin \theta}$    |
| 32             | $\frac{\sigma \cdot 210 \cdot K}{7 \cos \theta + 2 (4.2 + Lo) \sin \theta}$    |
| 40             | $\frac{\sigma \cdot 400 \cdot K}{8 \cos \theta + 2 (5.1 + Lo) \sin \theta}$    |

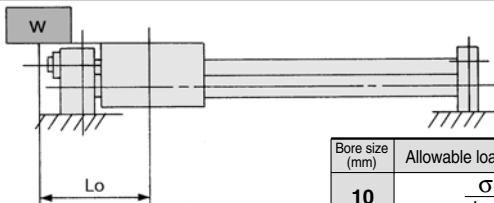
#### 5. Inclined Operation (at a right angle to operating direction)



Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm) | Allowable load mass WA (kg)                                |
|----------------|------------------------------------------------------------|
| 10             | $\frac{\sigma \cdot 12.0}{4 + 2 (2.2 + Lo) \sin \theta}$   |
| 15             | $\frac{\sigma \cdot 36.4}{5.2 + 2 (2.7 + Lo) \sin \theta}$ |
| 20             | $\frac{\sigma \cdot 74.4}{6.2 + 2 (2.9 + Lo) \sin \theta}$ |
| 25             | $\frac{\sigma \cdot 140}{7 + 2 (3.4 + Lo) \sin \theta}$    |
| 32             | $\frac{\sigma \cdot 258}{8.6 + 2 (4.2 + Lo) \sin \theta}$  |
| 40             | $\frac{\sigma \cdot 520}{10.4 + 2 (5.1 + Lo) \sin \theta}$ |

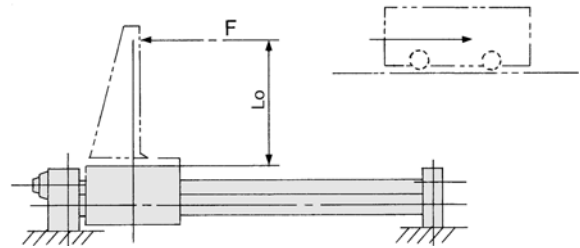
#### 6. Load Center Offset in Operating Direction (Lo)



Lo: Distance from center of slide block to load's center of gravity (cm)

| Bore size (mm) | Allowable load mass WA (kg)          |
|----------------|--------------------------------------|
| 10             | $\frac{\sigma \cdot 5.25}{Lo + 3.5}$ |
| 15             | $\frac{\sigma \cdot 17.5}{Lo + 5.0}$ |
| 20             | $\frac{\sigma \cdot 36}{Lo + 6.0}$   |
| 25             | $\frac{\sigma \cdot 60}{Lo + 6.0}$   |
| 32             | $\frac{\sigma \cdot 105}{Lo + 7.0}$  |
| 40             | $\frac{\sigma \cdot 200}{Lo + 8.0}$  |

#### 7. Horizontal Operation (Pushing load, Pusher)

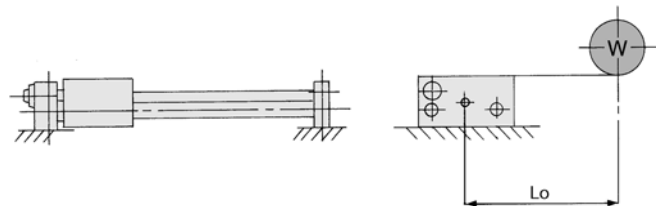


F: Drive (from slide block to position Lo) resistance force (kg)  
Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm)              | 10                                   | 15                                   | 20                                 |
|-----------------------------|--------------------------------------|--------------------------------------|------------------------------------|
| Allowable load mass WA (kg) | $\frac{\sigma \cdot 5.25}{2.2 + Lo}$ | $\frac{\sigma \cdot 17.5}{2.7 + Lo}$ | $\frac{\sigma \cdot 36}{2.9 + Lo}$ |

| Bore size (mm)              | 25                                 | 32                                  | 40                                  |
|-----------------------------|------------------------------------|-------------------------------------|-------------------------------------|
| Allowable load mass WA (kg) | $\frac{\sigma \cdot 60}{3.4 + Lo}$ | $\frac{\sigma \cdot 105}{4.2 + Lo}$ | $\frac{\sigma \cdot 200}{5.1 + Lo}$ |

#### 8. Horizontal Operation (Load, Lateral offset Lo)



Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm)              | 10                                 | 15                                    | 20                                   |
|-----------------------------|------------------------------------|---------------------------------------|--------------------------------------|
| Allowable load mass WA (kg) | $\frac{\sigma \cdot 8.40}{4 + Lo}$ | $\frac{\sigma \cdot 25.48}{5.2 + Lo}$ | $\frac{\sigma \cdot 52.1}{6.2 + Lo}$ |

| Bore size (mm)              | 25                                 | 32                                  | 40                                   |
|-----------------------------|------------------------------------|-------------------------------------|--------------------------------------|
| Allowable load mass WA (kg) | $\frac{\sigma \cdot 98}{7.0 + Lo}$ | $\frac{\sigma \cdot 180}{8.6 + Lo}$ | $\frac{\sigma \cdot 364}{10.4 + Lo}$ |

# Series REAS

## Model Selection 4

### Caution on Design 3

#### Vertical Operation

When operating a load vertically, it should be operated within the allowable load mass and maximum operating pressures shown in the table below.

Use caution since operating above the prescribed values may lead to a dropping of the load with the magnetic coupling out of position.

When the cylinder is mounted vertically or sidelong, sliders may move downwards due to the self-weight or workpiece mass. If an accurate stopping position is required at the stroke end or the middle-stroke, use an external stopper to secure accurate positioning.

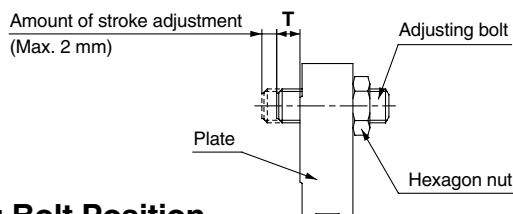
| Bore size (mm) | Model  | Allowable load mass Wv (kg) | Max. operating pressure Pv (MPa) |
|----------------|--------|-----------------------------|----------------------------------|
| 10             | REAS10 | 2.7                         | 0.55                             |
| 15             | REAS15 | 7.0                         | 0.65                             |
| 20             | REAS20 | 11.0                        | 0.65                             |
| 25             | REAS25 | 18.5                        | 0.65                             |
| 32             | REAS32 | 30.0                        | 0.65                             |
| 40             | REAS40 | 47.0                        | 0.65                             |

#### Stroke Adjustment

The adjusting bolt is adjusted to the optimum position for smooth acceleration and deceleration at the time of shipment, and should be operated at the full stroke. When stroke adjustment is necessary, the maximum amount of adjustment on one side is 2 mm. (Do not adjust more than 2 mm, as it will not be possible to obtain smooth acceleration and deceleration.)

##### Stroke adjustment method

Loosen the hexagon nut, and after performing the stroke adjustment from the plate side with a hexagon wrench, retighten and secure the hexagon nut.



#### Adjusting Bolt Position (at the time of shipment), Hexagon Nut Tightening Torque

| Model  | T (mm) | Tightening torque (N·m) |
|--------|--------|-------------------------|
| REAS10 | 1      | 1.67                    |
| REAS15 | 1      |                         |
| REAS20 | 1.5    | 3.14                    |
| REAS25 | 1.5    | 10.8                    |
| REAS32 | 3      | 23.5                    |
| REAS40 | 2      |                         |

#### Intermediate Stop

The cushion effect (smooth start-up, soft stop) exists only before the stroke end in the stroke ranges indicated in the table below.

The cushion effect (smooth start-up, soft stop) cannot be obtained in an intermediate stop or a return from an intermediate stop using an external stopper, etc.

##### Cushion Stroke

| Model  | Stroke (mm) |
|--------|-------------|
| REAS10 | 20          |
| REAS15 | 25          |
| REAS20 | 30          |
| REAS25 | 30          |
| REAS32 | 30          |
| REAS40 | 35          |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Sine Rodless Cylinder Slider Type/Slide Bearing Series *REAS*

ø10, ø15, ø20, ø25, ø32, ø40

## How to Order

**REA S 25 - 300 - J79W**

Sine rodless cylinder

Slider type (Slide bearing)

Bore size

|    |       |
|----|-------|
| 10 | 10 mm |
| 15 | 15 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |

Port thread type

| Symbol | Type     | Bore size          |
|--------|----------|--------------------|
| Nil    | M thread | ø10, ø15           |
|        | Rc       |                    |
| TN     | NPT      | ø20, ø25, ø32, ø40 |
| TF     | G        |                    |

Standard stroke

Refer to "Standard Stroke" on page 957.

Auto switch

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

Number of auto switches

|     |          |
|-----|----------|
| Nil | 2 pcs.   |
| S   | 1 pc.    |
| n   | "n" pcs. |

Made to Order Specification  
For details, refer to page 957.

**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) | None (N) |                     |                 |            |            |
|                    |                                             |                  |                 |                                      |              |                         |                   |         |                       |       |       |          |                     |                 |            |            |
| Solid state switch | —                                           | Grommet          | Yes             | 3-wire (NPN)                         | 24 V         | 5 V, 12 V               | —                 | F7NV    | F79                   | ●     | ●     | ○        | —                   | ○               | IC circuit | Relay, PLC |
|                    |                                             |                  |                 | 3-wire (PNP)                         |              |                         |                   | F7PV    | F7P                   | ●     | ●     | ○        | —                   | ○               |            |            |
|                    | Connector                                   | 2-wire           |                 | 12 V                                 |              | F7BV                    |                   | J79     | ●                     | ●     | ○     | —        | ○                   | —               |            |            |
|                    |                                             | —                |                 |                                      |              | J79C                    |                   | —       | ●                     | ●     | ●     | ●        | —                   |                 |            |            |
|                    | Diagnostic indication (2-color indication)  | Grommet          |                 | 3-wire (NPN)                         | 5 V, 12 V    | F7NWV                   | F79W              | ●       | ●                     | ○     | —     | ○        | IC circuit          |                 |            |            |
|                    |                                             |                  |                 | 3-wire (PNP)                         |              | —                       | F7PW              | ●       | ●                     | ○     | —     | ○        |                     |                 |            |            |
|                    |                                             |                  |                 | Water resistant (2-color indication) |              | 2-wire                  | 12 V              | F7BWV   | J79W                  | ●     | ●     | ○        | —                   | ○               | —          |            |
|                    |                                             |                  |                 |                                      |              |                         |                   | —       | F7BA                  | —     | ●     | ○        | —                   | ○               |            |            |
|                    | With diagnostic output (2-color indication) |                  |                 | 4-wire (NPN)                         | 5 V, 12 V    | F7BAV                   | —                 | —       | ●                     | ○     | —     | ○        | IC circuit          |                 |            |            |
|                    | Reed switch                                 | —                |                 | Grommet                              | Yes          | 3-wire (NPN equivalent) | —                 | 5 V     | —                     | —     | A76H  | ●        | ●                   | —               | —          |            |
| 2-wire             |                                             |                  | —               |                                      |              | —                       | 200 V             | A72     | A72H                  | ●     | ●     | —        | —                   | —               |            |            |
|                    |                                             |                  | 24 V            |                                      |              | 12 V                    | 100 V             | A73     | A73H                  | ●     | ●     | ●        | —                   | —               |            |            |
|                    |                                             |                  |                 |                                      |              | 5 V, 12 V               | 100 V or less     | A80     | A80H                  | ●     | ●     | —        | —                   | —               |            |            |
|                    |                                             |                  | Connector       | No                                   |              | 12 V                    | —                 | A73C    | —                     | ●     | ●     | ●        | ●                   | —               | —          |            |
| 5 V, 12 V          |                                             |                  |                 |                                      |              | —                       | A80C              | —       | ●                     | ●     | ●     | ●        | —                   | —               |            |            |
|                    |                                             |                  |                 |                                      |              | —                       | —                 | —       | —                     | —     | —     | —        | —                   | —               |            |            |
|                    |                                             |                  |                 |                                      |              | —                       | —                 | —       | —                     | —     | —     | —        | —                   | —               | —          |            |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) J79W  
 3 m ..... L (Example) J79WL  
 5 m ..... Z (Example) J79WZ  
 None ..... N (Example) J79CN

\* Solid state auto switches marked with "○" are produced upon receipt of order.

- Since there are other applicable auto switches than listed, refer to page 962 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- \* Auto switches are shipped together (not assembled).



## Specifications

| Bore size (mm)                       | 10                                                                                      | 15  | 20  | 25  | 32  | 40  |
|--------------------------------------|-----------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| 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                                                                             |     |     |     |     |     |
| Piston speed (Max.) <sup>Note)</sup> | 50 to 300 mm/s                                                                          |     |     |     |     |     |
| Lubrication                          | Not required (Non-lube)                                                                 |     |     |     |     |     |
| Stroke length tolerance              | 0 to 250 st: $^{+1.0}_0$ , 251 to 1000 st: $^{+1.4}_0$ , 1001 st or longer: $^{+1.8}_0$ |     |     |     |     |     |
| Holding force                        | 53.9                                                                                    | 137 | 231 | 363 | 588 | 922 |

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

## Standard Stroke

| Bore size (mm) | Standard stroke (mm)                                        | Maximum manufacturable stroke (mm) |
|----------------|-------------------------------------------------------------|------------------------------------|
| 10             | 150, 200, 250, 300                                          | 500                                |
| 15             | 150, 200, 250, 300, 350, 400, 450, 500                      | 750                                |
| 20             | 200, 250, 300, 350, 400, 450, 500, 600, 700, 800            | 1000                               |
| 25             |                                                             | 1500                               |
| 32             |                                                             |                                    |
| 40             | 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000 | 1500                               |

Note) Intermediate stroke is available by the 1 mm interval.

## Mass

| Bore size (mm)                           | 10    | 15    | 20    | 25    | 32    | 40    |
|------------------------------------------|-------|-------|-------|-------|-------|-------|
| Basic mass                               | 0.48  | 0.91  | 1.48  | 1.84  | 3.63  | 4.02  |
| Additional mass per each 50 mm of stroke | 0.074 | 0.104 | 0.138 | 0.172 | 0.267 | 0.406 |

Calculation: (Example) **REAS32-500**

- Basic mass ..... 3.63 kg
- Additional mass ..... 0.267/50 st
- Cylinder stroke ..... 500 st

$$3.63 + 0.267 \times 500 \div 50 = 6.3 \text{ kg}$$


**Made to Order Specifications**  
(For details, refer to pages 1955 to 2021.)

| Symbol | Specifications                                        |
|--------|-------------------------------------------------------|
| —X210  | Non-lubricated exterior specifications                |
| —X324  | Non-lubricated exterior specifications with dust seal |
| —X431  | Auto switch rails on both side faces (With 2 pcs.)    |
| —X168  | Helical insert thread specifications                  |

**REA**

**REB**

**REC**

**C□Y**

**C□X**

**MQ**

**RHC**

**RZQ**

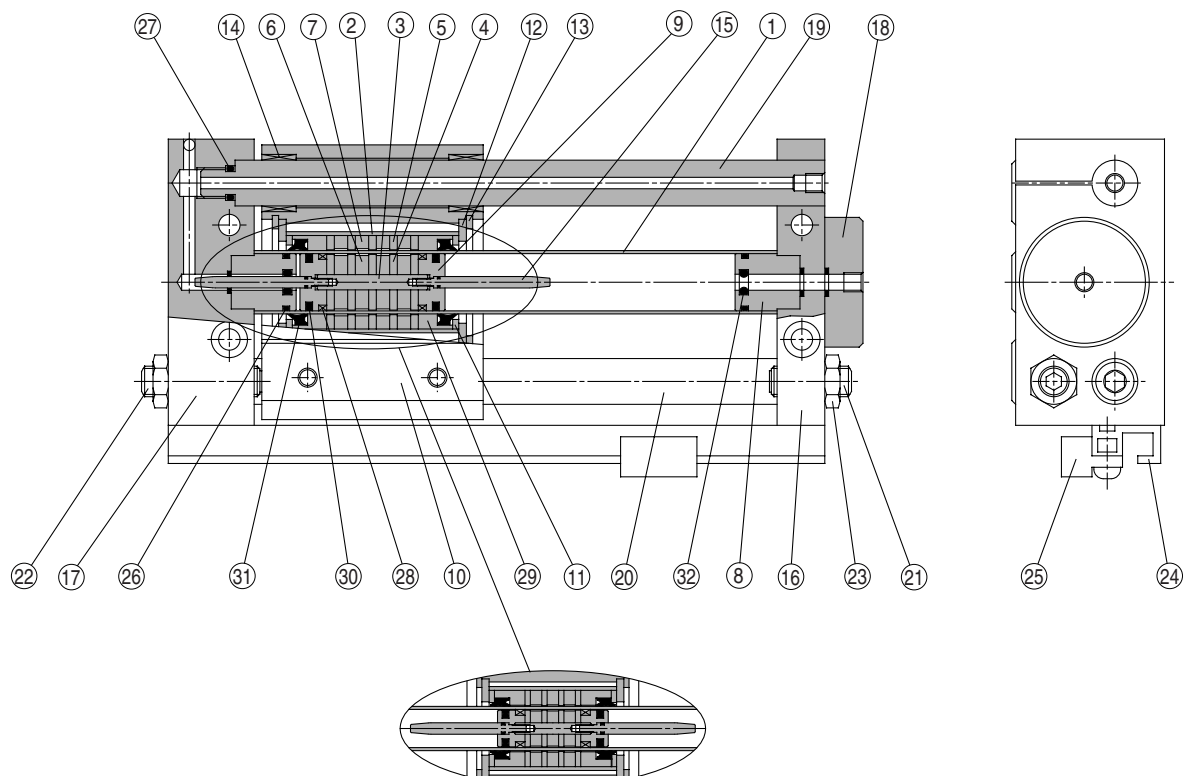
**D-□**

**-X□**

Individual  
**-X□**

# Series REAS

Construction:  $\phi 10$ ,  $\phi 15$



REAS10

## Component Parts

| No. | Description               | Material                       | Note                      |
|-----|---------------------------|--------------------------------|---------------------------|
| 1   | Cylinder tube             | Stainless steel                |                           |
| 2   | External slider tube      | Aluminum alloy                 |                           |
| 3   | Shaft                     | Stainless steel                |                           |
| 4   | Piston side yoke          | Rolled steel plate             | Zinc chromated            |
| 5   | External slider side yoke | Rolled steel plate             | Zinc chromated            |
| 6   | Magnet A                  | —                              |                           |
| 7   | Magnet B                  | —                              |                           |
| 8   | Cushion seal holder       | Aluminum alloy                 | Anodized                  |
| 9   | Piston                    | Brass                          | Electroless nickel plated |
| 10  | Slide block               | Aluminum alloy                 | Hard anodized             |
| 11  | Spacer                    | Rolled steel plate             | Nickel plated             |
| 12  | Slider spacer             | Rolled steel plate             | Nickel plated             |
| 13  | Retaining ring            | Carbon tool steel              | Nickel plated             |
| 14  | Bushing                   | Oil retaining bearing material |                           |
| 15  | Cushion ring              | Stainless steel                |                           |
| 16  | Plate A                   | Aluminum alloy                 | Hard anodized             |

## Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                                                  |
|----------------|-----------|---------------------------------------------------------------------------|
| 10             | REAS10-PS | Set of above. nos<br>(26, 27, 28, 29, 30, 31, 32)<br><small>Note)</small> |
| 15             | REAS15-PS |                                                                           |

Note) It may be difficult to replace the cushion seal (32).

\* Seal kit includes a grease pack ( $\phi 10$ : 5 g and 10 g,  $\phi 15$ : 10 g).

Order with the following part number when only the grease pack is needed.

For  $\phi 10$  grease pack part no.: GR-F-005 (5 g) For external sliding part  
GR-S-010 (10 g) For tube interior

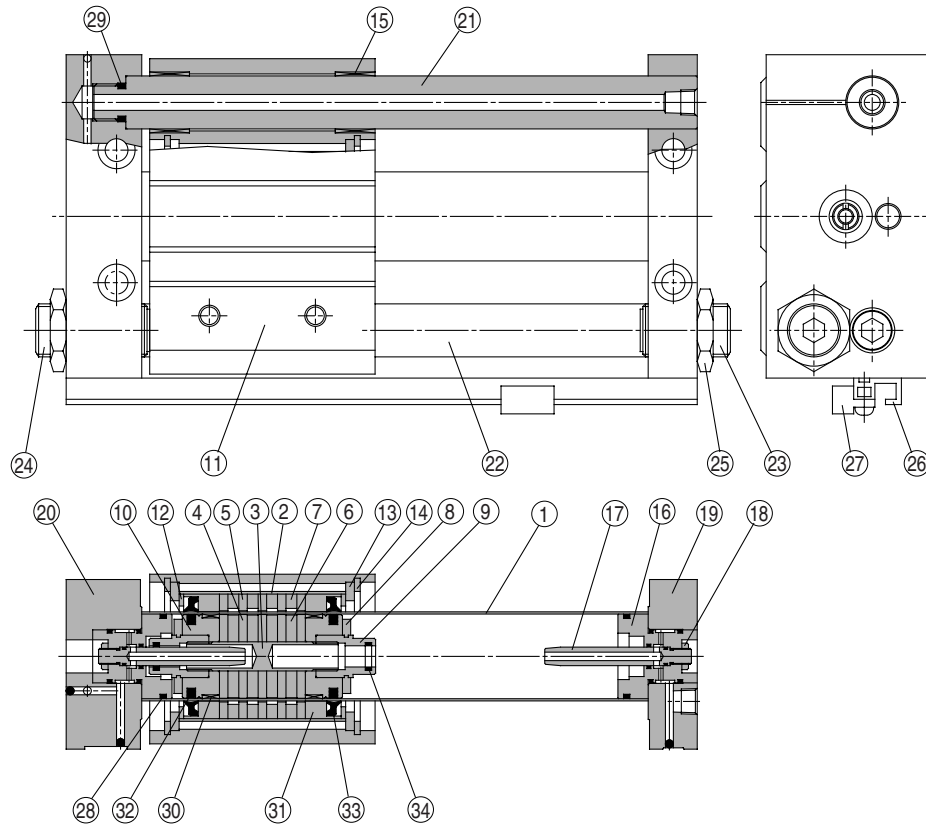
For  $\phi 15$  grease pack part no.: GR-S-010 (10 g)

## Component Parts

| No. | Description          | Material                  | Note               |
|-----|----------------------|---------------------------|--------------------|
| 17  | Plate B              | Aluminum alloy            | Hard anodized      |
| 18  | Port cover           | Aluminum alloy            | Hard anodized      |
| 19  | Guide shaft A        | Carbon steel              | Hard chrome plated |
| 20  | Guide shaft B        | Carbon steel              | Hard chrome plated |
| 21  | Adjusting bolt A     | Chromium molybdenum steel | Nickel plated      |
| 22  | Adjusting bolt B     | Chromium molybdenum steel | Nickel plated      |
| 23  | Hexagon nut          | Carbon steel              | Nickel plated      |
| 24  | Switch mounting rail | Aluminum alloy            |                    |
| 25  | Auto switch          | —                         |                    |
| 26* | Cylinder tube gasket | NBR                       |                    |
| 27* | Guide shaft gasket   | NBR                       |                    |
| 28* | Wear ring A          | Special resin             |                    |
| 29* | Wear ring B          | Special resin             |                    |
| 30* | Piston seal          | NBR                       |                    |
| 31* | Scraper              | NBR                       |                    |
| 32* | Cushion seal         | NBR                       |                    |

\* Seal kit includes (26) to (32). Order the seal kit, based on each bore size.

## Construction: ø20 to ø40



### Component Parts

| No. | Description               | Material                       | Note                                   |
|-----|---------------------------|--------------------------------|----------------------------------------|
| 1   | Cylinder tube             | Stainless steel                |                                        |
| 2   | External slider tube      | Aluminum alloy                 |                                        |
| 3   | Shaft                     | Stainless steel                |                                        |
| 4   | Piston side yoke          | Rolled steel plate             | Zinc chromated                         |
| 5   | External slider side yoke | Rolled steel plate             | Zinc chromated                         |
| 6   | Magnet A                  | —                              |                                        |
| 7   | Magnet B                  | —                              |                                        |
| 8   | Bumper                    | Urethane rubber                |                                        |
| 9   | Cushion seal holder       | Aluminum alloy                 | Chromated                              |
| 10  | Piston                    | Aluminum alloy                 | Chromated                              |
| 11  | Slide block               | Aluminum alloy                 | Hard anodized                          |
| 12  | Spacer                    | Rolled steel plate             | Nickel plated                          |
| 13  | Slider spacer             | Rolled steel plate             | Nickel plated                          |
| 14  | Retaining ring            | Carbon tool steel              | Nickel plated                          |
| 15  | Bushing                   | Oil retaining bearing material |                                        |
| 16  | Cushion ring holder       | Aluminum alloy                 | Anodized                               |
| 17  | Cushion ring              | Brass                          | Electroless nickel plated (REAS32, 40) |
|     |                           | Stainless steel                | REAS20, 25                             |

### Component Parts

| No. | Description          | Material                  | Note               |
|-----|----------------------|---------------------------|--------------------|
| 18  | Lock nut B           | Carbon steel              | Nickel plated      |
| 19  | Plate A              | Aluminum alloy            | Hard anodized      |
| 20  | Plate B              | Aluminum alloy            | Hard anodized      |
| 21  | Guide shaft A        | Carbon steel              | Hard chrome plated |
| 22  | Guide shaft B        | Carbon steel              | Hard chrome plated |
| 23  | Adjusting bolt A     | Chromium molybdenum steel | Nickel plated      |
| 24  | Adjusting bolt B     | Chromium molybdenum steel | Nickel plated      |
| 25  | Hexagon nut          | Carbon steel              | Nickel plated      |
| 26  | Switch mounting rail | Aluminum alloy            |                    |
| 27  | Auto switch          | —                         | With auto switch   |
| 28* | Cylinder tube gasket | NBR                       |                    |
| 29* | Guide shaft gasket   | NBR                       |                    |
| 30* | Wear ring A          | Special resin             |                    |
| 31* | Wear ring B          | Special resin             |                    |
| 32* | Piston seal          | NBR                       |                    |
| 33* | Scraper              | NBR                       |                    |
| 34* | Cushion seal         | NBR                       |                    |

\* Seal kit includes (28) to (34). Order the seal kit, based on each bore size.

### Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                                    |
|----------------|-----------|-------------------------------------------------------------|
| 20             | REAS20-PS | Set of nos. above<br>(Note)<br>(28, 29, 30, 31, 32, 33, 34) |
| 25             | REAS25-PS |                                                             |
| 32             | REAS32-PS |                                                             |
| 40             | REAS40-PS |                                                             |

Note) Cushion seal (34) may be difficult to be replaced.

\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

Grease pack part no.: GR-S-010 (10g)

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

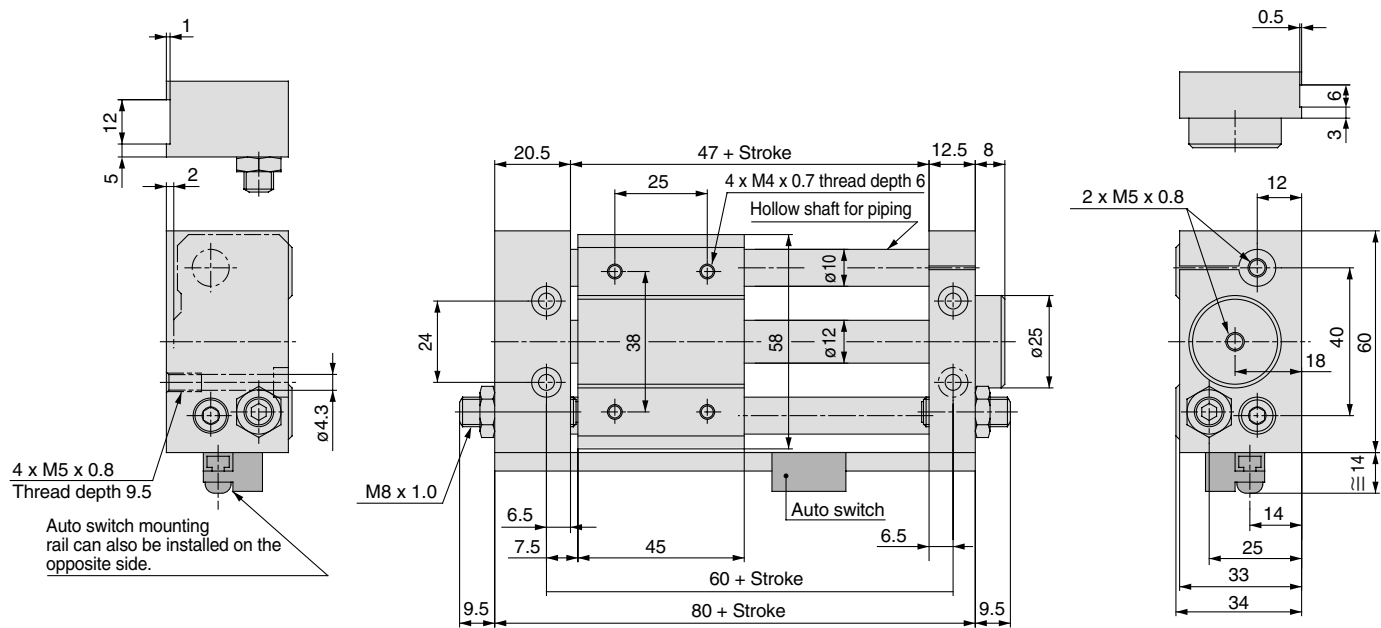
D-□

-X□

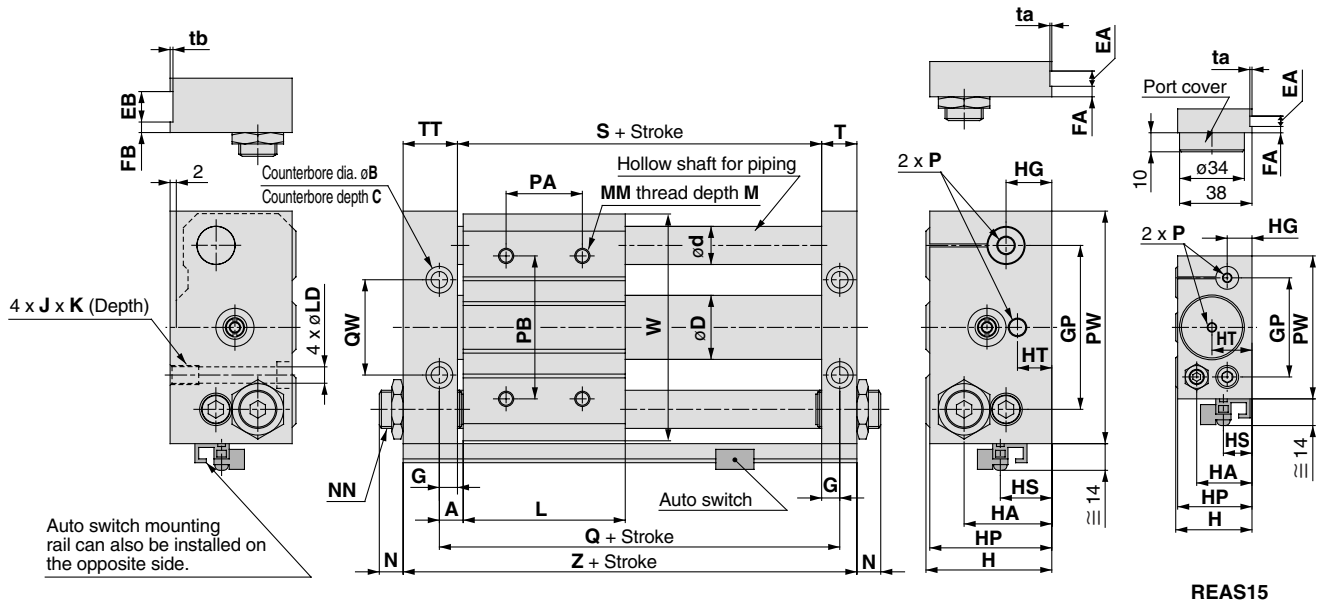
Individual  
-X□

# Series REAS

## Dimensions: $\phi 10$



Dimensions:  $\phi 15$  to  $\phi 40$



REAS15

| Model  | A    | B   | C   | D    | d  | EA | EB | FA | FB | G    | GP  | H  | HA | HG |
|--------|------|-----|-----|------|----|----|----|----|----|------|-----|----|----|----|
| REAS15 | 7.5  | 9.5 | 5   | 16.6 | 12 | 6  | 13 | 3  | 6  | 6.5  | 52  | 40 | 29 | 13 |
| REAS20 | 10   | 9.5 | 5   | 21.6 | 16 | —  | —  | —  | —  | 8.5  | 62  | 46 | 36 | 17 |
| REAS25 | 10   | 11  | 6.5 | 26.4 | 16 | 8  | 14 | 4  | 7  | 8.5  | 70  | 54 | 40 | 20 |
| REAS32 | 12.5 | 14  | 8   | 33.6 | 20 | 8  | 16 | 5  | 7  | 9.5  | 86  | 66 | 46 | 24 |
| REAS40 | 12.5 | 14  | 8   | 41.6 | 25 | 10 | 20 | 5  | 10 | 10.5 | 104 | 76 | 57 | 25 |

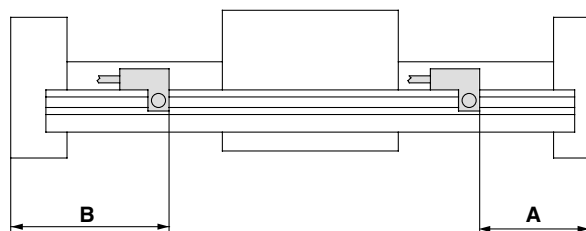
| Model  | HP | HS   | HT | J x K          | L  | LD  | M  | MM        | N    | NN        |
|--------|----|------|----|----------------|----|-----|----|-----------|------|-----------|
| REAS15 | 39 | 15   | 21 | M6 x 1.0 x 9.5 | 60 | 5.6 | 8  | M5 x 0.8  | 7.5  | M8 x 1.0  |
| REAS20 | 45 | 25.5 | 10 | M6 x 1.0 x 9.5 | 70 | 5.6 | 10 | M6 x 1.0  | 9.5  | M10 x 1.0 |
| REAS25 | 53 | 23   | 10 | M8 x 1.25 x 10 | 70 | 7   | 10 | M6 x 1.0  | 11   | M14 x 1.5 |
| REAS32 | 64 | 27   | 17 | M10 x 1.5 x 15 | 85 | 8.7 | 12 | M8 x 1.25 | 11.5 | M20 x 1.5 |
| REAS40 | 74 | 31   | 14 | M10 x 1.5 x 15 | 95 | 8.7 | 12 | M8 x 1.25 | 10.5 | M20 x 1.5 |

| Model  | P        |         |       | PA* | PB  | PW  | Q   | QW | S  | T    | TT   | ta  | tb | W   | Z   |
|--------|----------|---------|-------|-----|-----|-----|-----|----|----|------|------|-----|----|-----|-----|
|        | Nil      | TN      | TF    |     |     |     |     |    |    |      |      |     |    |     |     |
| REAS15 | M5 x 0.8 | —       | —     | 30  | 50  | 75  | 75  | 30 | 62 | 12.5 | 22.5 | 0.5 | 1  | 72  | 97  |
| REAS20 | Rc 1/8   | NPT 1/8 | G 1/8 | 40  | 70  | 90  | 90  | 38 | 73 | 16.5 | 25.5 | —   | —  | 87  | 115 |
| REAS25 | Rc 1/8   | NPT 1/8 | G 1/8 | 40  | 70  | 100 | 90  | 42 | 73 | 16.5 | 25.5 | 0.5 | 1  | 97  | 115 |
| REAS32 | Rc 1/8   | NPT 1/8 | G 1/8 | 40  | 75  | 122 | 110 | 50 | 91 | 18.5 | 28.5 | 0.5 | 1  | 119 | 138 |
| REAS40 | Rc 1/4   | NPT 1/4 | G 1/4 | 65  | 105 | 145 | 120 | 64 | 99 | 20.5 | 35.5 | 1   | 1  | 142 | 155 |

\* PA dimensions are for split from center.

# Series REAS

## Auto Switch Proper Mounting Position (Detection at Stroke End)



(mm)

| Auto switch model<br><br>Bore size (mm) | A dimension |                                                                                                               |         | B dimension |                                                                                                               |         |
|-----------------------------------------|-------------|---------------------------------------------------------------------------------------------------------------|---------|-------------|---------------------------------------------------------------------------------------------------------------|---------|
|                                         | D-A73/A80   | D-A72<br>D-A7□H/A80H<br>D-A73C/A80C<br>D-F7□/J79<br>D-F7□W/J79W<br>D-J79C<br>D-F7□V/F□WV<br>D-F7BA□<br>D-F79F | D-F7NTL | D-A73/A80   | D-A72<br>D-A7□H/A80H<br>D-A73C/A80C<br>D-F7□/J79<br>D-F7□W/J79W<br>D-J79C<br>D-F7□V/F□WV<br>D-F7BA□<br>D-F79F | D-F7NTL |
| 10                                      | 35          | 35.5                                                                                                          | 40.5    | 45          | 44.5                                                                                                          | 39.5    |
| 15                                      | 34.5        | 35                                                                                                            | 40      | 63          | 62                                                                                                            | 57.5    |
| 20                                      | 64.5        | 65                                                                                                            | 70      | 50.5        | 50                                                                                                            | 45      |
| 25                                      | 44          | 44.5                                                                                                          | 49.5    | 71.5        | 71                                                                                                            | 66      |
| 32                                      | 55          | 55.5                                                                                                          | 60.5    | 83.5        | 83                                                                                                            | 78      |
| 40                                      | 61          | 61.5                                                                                                          | 66.5    | 94.5        | 94                                                                                                            | 89      |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

## Operating Range

(mm)

| Auto switch model | Bore size (mm) |    |    |    |    |     |
|-------------------|----------------|----|----|----|----|-----|
|                   | 10             | 15 | 20 | 25 | 32 | 40  |
| D-A7□, A8□        | 6              | 6  | 6  | 6  | 6  | 6   |
| D-F7□, J7□, F79F  | 3              | 4  | 3  | 3  | 3  | 3.5 |

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately  $\pm 30\%$  dispersion)

There may be the case it will vary substantially depending on an ambient environment.

Other than the models listed in “How to Order”, the following auto switches are applicable. For detailed specifications, refer to page 1770.

| Auto switch type   | Model   | Electrical entry (Fetching direction) | Features   |
|--------------------|---------|---------------------------------------|------------|
| <b>Solid state</b> | D-F7NTL | Grommet (In-line)                     | With timer |

\* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.



## Series *REAS*

# Specific Product 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.

### Operation

#### Warning

- 1. Be aware of the space between the plates and the slide block.**  
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” pages.**  
It may cause malfunction.
- 3. Consult with SMC when the cylinder is operated in an environment in which the cylinder is exposed to cutting fluid or water, or the cylinder sliding part lubrication deteriorates.**
- 4. When applying grease to the cylinder, use the grease already used for the product. Contact SMC, grease packs are available.**

### Mounting

#### Caution

- 1. Avoid operation with the external slider fixed to the mounting surface.**  
The cylinder should be operated with the plates fixed to the mounting surface.
- 2. Make sure that the cylinder mounting surface has a flatness of 0.2 mm or less.**  
If the flatness of a workpiece is not appropriate, it may adversely affect the operation since two guide shafts will be twisted. Furthermore, the increase of the sliding resistance and early abrasion of bearings may shorten the service life.  
  
The cylinder mounting surface must have a flatness of 0.2 mm or less, and the cylinder must be mounted so as to be smoothly operated with a minimum operating pressure (0.18 MPa or less) for a full stroke.

### Disassembly and Maintenance

#### Warning

- 1. Use caution, the attractive force 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 magnet installed in each slider has a very strong attractive force.

#### Caution

- 1. Use caution when taking off the external slider, since 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. Do not disassemble the magnetic components (piston and external sliders).**  
This may cause a loss of holding force and malfunction.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

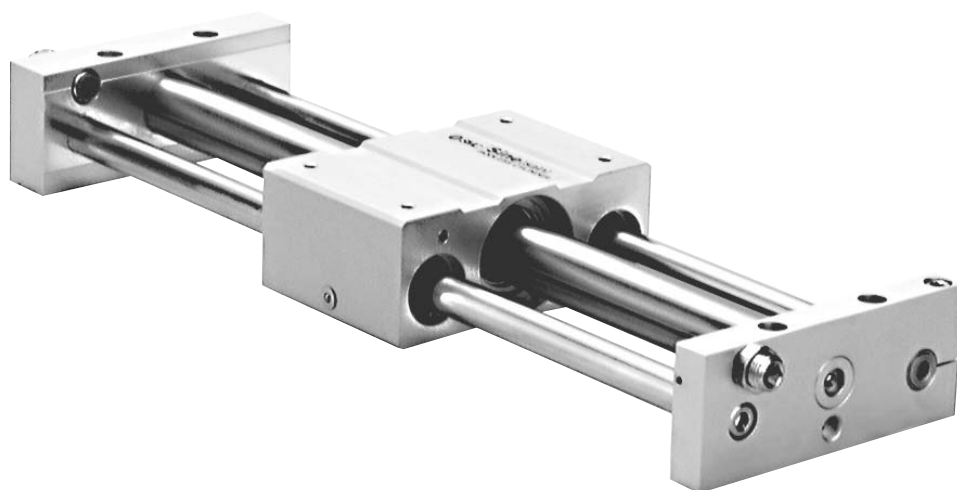
-X□

Individual  
-X□

# Slider Type/Ball Bushing Bearing

Series **REAL**

ø10, ø15, ø20, ø25, ø32, ø40



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Series *REAL* Model Selection 1

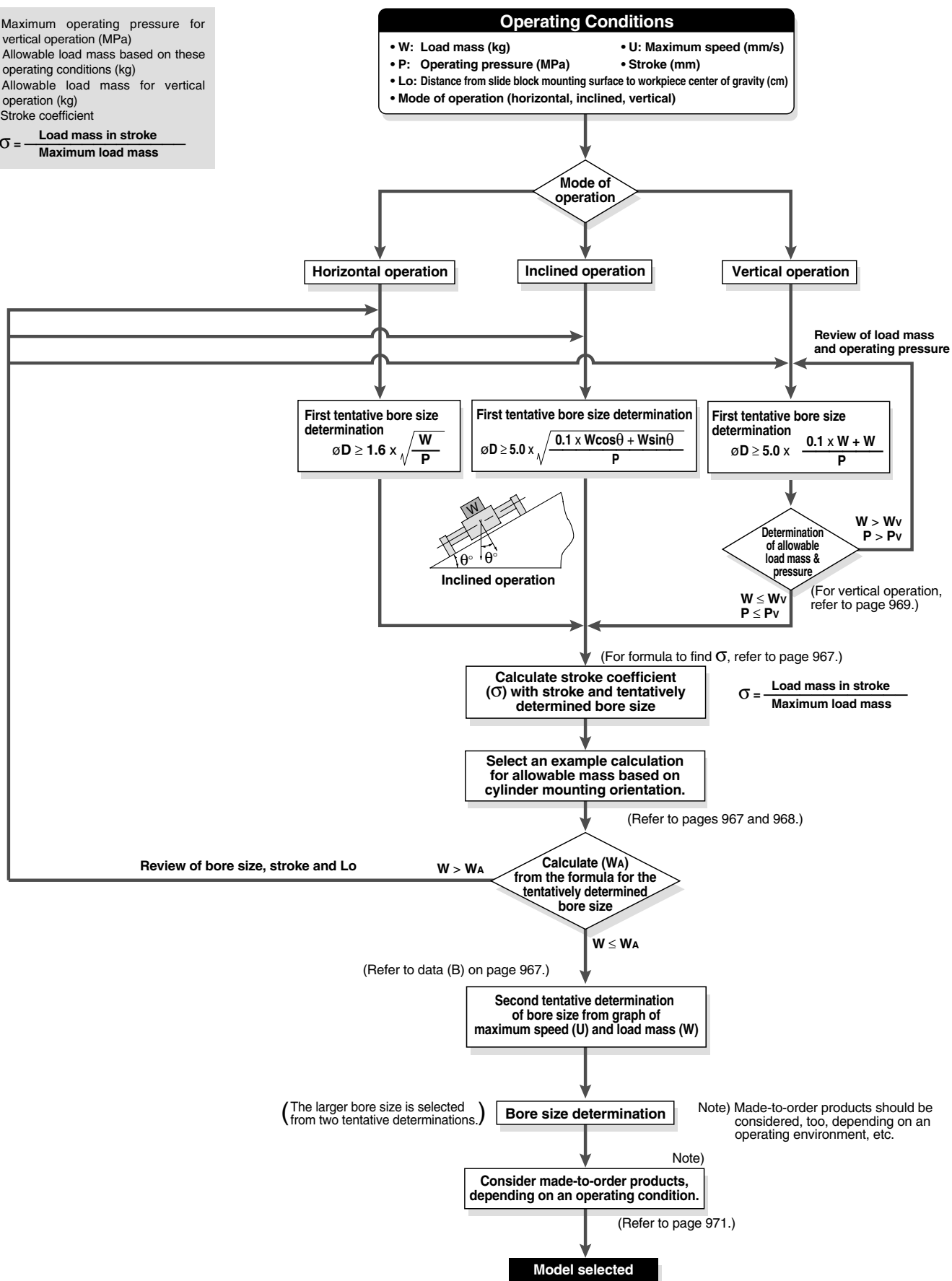
**P<sub>v</sub>**: Maximum operating pressure for vertical operation (MPa)

**W<sub>A</sub>**: Allowable load mass based on these operating conditions (kg)

**W<sub>v</sub>**: Allowable load mass for vertical operation (kg)

**σ**: Stroke coefficient

$$\sigma = \frac{\text{Load mass in stroke}}{\text{Maximum load mass}}$$



## Caution on Design 1

### How to Find $\sigma$ when Selecting the Allowable Load Mass

Since the maximum load mass with respect to the cylinder stroke changes as shown in the table below,  $\sigma$  should be considered as a coefficient determined in accordance with each stroke.

Example) For REAL25-650

- (1) Maximum load mass = 20 kg
- (2) Load mass for 650 st = 13.6 kg
- (3)  $\sigma = \frac{13.6}{20} = 0.68$  is the result.

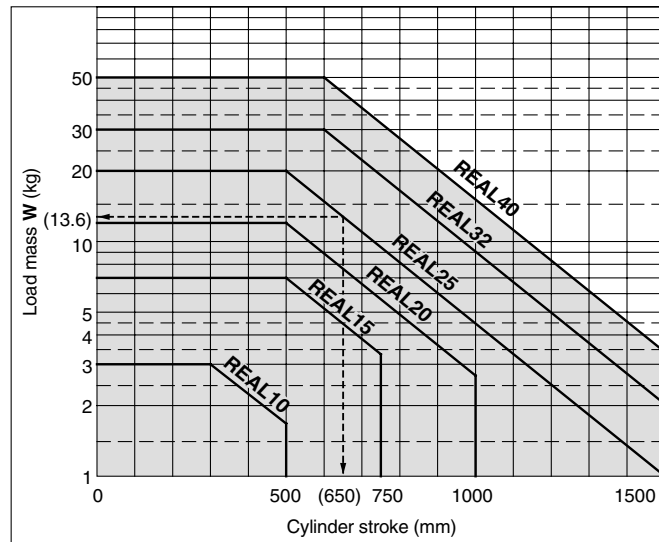
### Calculation Formula for $\sigma$ ( $\sigma \leq 1$ )

ST: Stroke (mm)

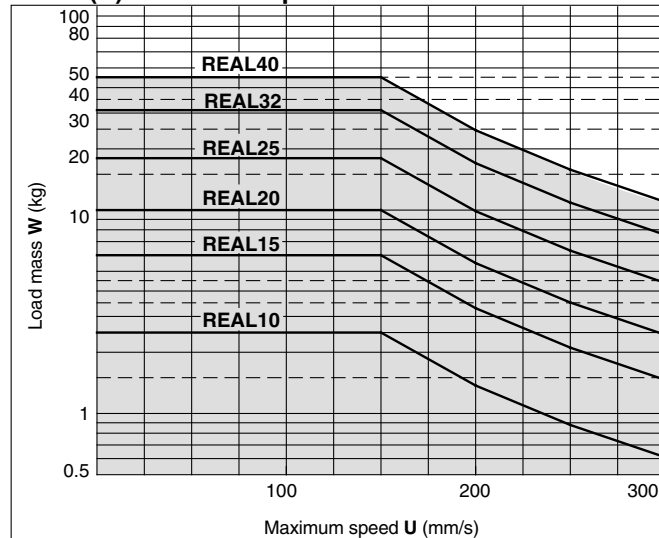
| Model      | REAL10                                                 | REAL15                                                | REAL20                                                  |
|------------|--------------------------------------------------------|-------------------------------------------------------|---------------------------------------------------------|
| $\sigma =$ | $\frac{10^{(0.86 - 1.3 \times 10^{-3} \times ST)}}{3}$ | $\frac{10^{(1.5 - 1.3 \times 10^{-3} \times ST)}}{7}$ | $\frac{10^{(1.71 - 1.3 \times 10^{-3} \times ST)}}{12}$ |

| Model      | REAL25                                                  | REAL32                                                  | REAL40                                                  |
|------------|---------------------------------------------------------|---------------------------------------------------------|---------------------------------------------------------|
| $\sigma =$ | $\frac{10^{(1.98 - 1.3 \times 10^{-3} \times ST)}}{20}$ | $\frac{10^{(2.26 - 1.3 \times 10^{-3} \times ST)}}{30}$ | $\frac{10^{(2.48 - 1.3 \times 10^{-3} \times ST)}}{50}$ |

Note) Calculate with  $\sigma = 1$  for all applications up to  $\phi 10$ –300 mmST,  $\phi 15$ –500 mmST,  $\phi 20$ –500 mmST,  $\phi 25$ –500 mmST,  $\phi 32$ –600 mmST,  $\phi 40$ –600 mmST.

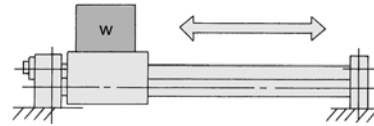


### <Data (B): Maximum Speed — Load Mass Chart>



## Examples of Allowable Load Mass Calculation Based on Cylinder Mounting Orientation

### 1. Horizontal Operation (Floor mounting)



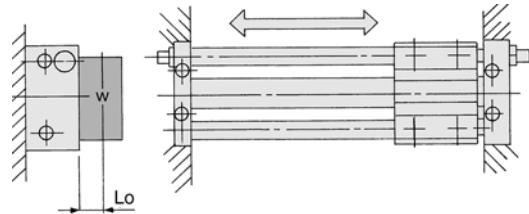
### Maximum Load Mass (Center of slide block) (kg)

| Bore size (mm)         | 10           | 15           | 20           | 25           | 32           | 40           |
|------------------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Maximum load mass (kg) | 3            | 7            | 12           | 20           | 30           | 50           |
| Stroke (max)           | Up to 300 st | Up to 500 st | Up to 500 st | Up to 500 st | Up to 600 st | Up to 600 st |

The above maximum load mass values will change with the stroke length for each cylinder size, due to limitation from warping of the guide shafts. (Take note of the coefficient  $\sigma$ .)

Moreover, depending on the operating direction, the allowable load mass may be different from the maximum load mass.

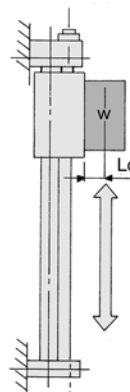
### 2. Horizontal Operation (Wall mounting)



Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm) | Allowable load mass $W_A$ (kg)         |
|----------------|----------------------------------------|
| 10             | $\frac{\sigma \cdot 15.0}{8.9 + 2Lo}$  |
| 15             | $\frac{\sigma \cdot 45.5}{11.3 + 2Lo}$ |
| 20             | $\frac{\sigma \cdot 101}{13.6 + 2Lo}$  |
| 25             | $\frac{\sigma \cdot 180}{15.2 + 2Lo}$  |
| 32             | $\frac{\sigma \cdot 330}{18.9 + 2Lo}$  |
| 40             | $\frac{\sigma \cdot 624}{22.5 + 2Lo}$  |

### 3. Vertical Operation



| Bore size (mm) | Allowable load mass $W_A$ (kg)          |
|----------------|-----------------------------------------|
| 10             | $\frac{\sigma \cdot 5.00}{1.95 + Lo}$   |
| 15             | $\frac{\sigma \cdot 15.96}{2.4 + Lo}$   |
| 20             | $\frac{\sigma \cdot 31.1}{2.8 + Lo}$    |
| 25             | $\frac{\sigma \cdot 54.48}{3.1 + Lo}$   |
| 32             | $\frac{\sigma \cdot 112.57}{3.95 + Lo}$ |
| 40             | $\frac{\sigma \cdot 212.09}{4.75 + Lo}$ |

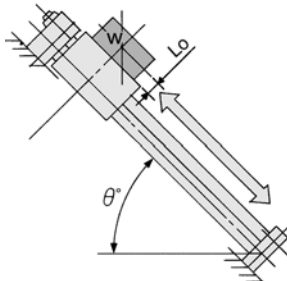
Lo: Distance from mounting surface to load center of gravity (cm)

Note) Consider a safety factor for drop prevention.

## Caution on Design 2

### Examples of Allowable Load Mass Calculation Based on Cylinder Mounting Orientation

#### 4. Inclined Operation (in operating direction)



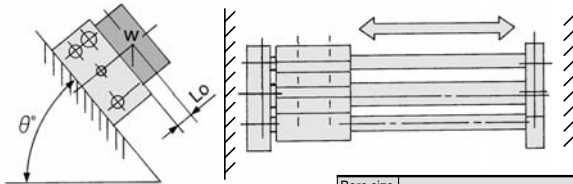
| Angle | up to 45° | up to 60° | up to 75° | up to 90° |
|-------|-----------|-----------|-----------|-----------|
| k     | 1         | 0.9       | 0.8       | 0.7       |

Angle coefficient (k): k = [up to 45° (= θ)] = 1,  
[up to 60°] = 0.9, [up to 75°] = 0.8,  
[up to 90°] = 0.7

Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm) | Allowable load mass WA (kg)                                                   |
|----------------|-------------------------------------------------------------------------------|
| 10             | $\sigma \cdot 10.2 \cdot K$<br>$2.8 \cos \theta + 2 (1.95 + Lo) \sin \theta$  |
| 15             | $\sigma \cdot 31.1 \cdot K$<br>$2.9 \cos \theta + 2 (2.4 + Lo) \sin \theta$   |
| 20             | $\sigma \cdot 86.4 \cdot K$<br>$6 \cos \theta + 2 (2.8 + Lo) \sin \theta$     |
| 25             | $\sigma \cdot 105.4 \cdot K$<br>$3.55 \cos \theta + 2 (3.1 + Lo) \sin \theta$ |
| 32             | $\sigma \cdot 178 \cdot K$<br>$4 \cos \theta + 2 (3.95 + Lo) \sin \theta$     |
| 40             | $\sigma \cdot 361.9 \cdot K$<br>$5.7 \cos \theta + 2 (4.75 + Lo) \sin \theta$ |

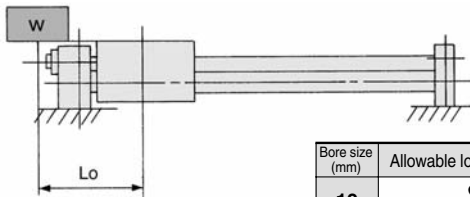
#### 5. Inclined Operation (at a right angle to operating direction)



Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm) | Allowable load mass WA (kg)                             |
|----------------|---------------------------------------------------------|
| 10             | $\sigma \cdot 15$<br>$5 + 2 (1.95 + Lo) \sin \theta$    |
| 15             | $\sigma \cdot 45.5$<br>$6.5 + 2 (2.4 + Lo) \sin \theta$ |
| 20             | $\sigma \cdot 115$<br>$8 + 2 (2.8 + Lo) \sin \theta$    |
| 25             | $\sigma \cdot 180$<br>$9 + 2 (3.1 + Lo) \sin \theta$    |
| 32             | $\sigma \cdot 330$<br>$11 + 2 (3.95 + Lo) \sin \theta$  |
| 40             | $\sigma \cdot 624$<br>$13 + 2 (4.75 + Lo) \sin \theta$  |

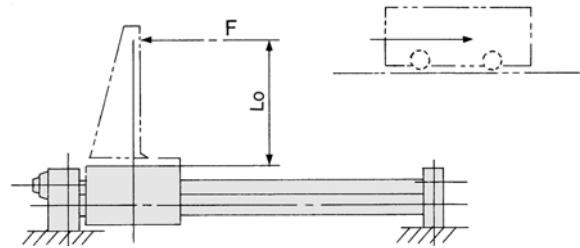
#### 6. Load Center Offset in Operating Direction (Lo)



Lo: Distance from center of slide block to load center of gravity (cm)

| Bore size (mm) | Allowable load mass WA (kg)         |
|----------------|-------------------------------------|
| 10             | $\sigma \cdot 5.6$<br>$Lo + 2.8$    |
| 15             | $\sigma \cdot 13.34$<br>$Lo + 2.9$  |
| 20             | $\sigma \cdot 43.2$<br>$Lo + 6$     |
| 25             | $\sigma \cdot 46.15$<br>$Lo + 3.55$ |
| 32             | $\sigma \cdot 80$<br>$Lo + 4$       |
| 40             | $\sigma \cdot 188.1$<br>$Lo + 5.7$  |

#### 7. Horizontal Operation (Pushing load, Pusher)



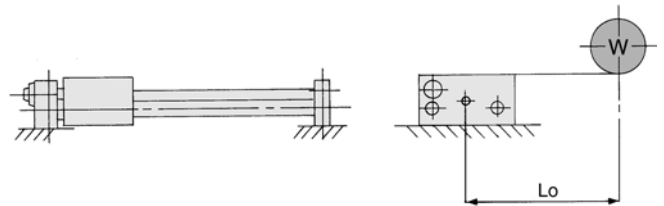
F: Drive (from slide block to position Lo) resistance force (kg)

Lo: Distance from mounting surface to load center of gravity (cm)

| Bore size (mm)              | 10                                 | 15                                 | 20                                |
|-----------------------------|------------------------------------|------------------------------------|-----------------------------------|
| Allowable load mass WA (kg) | $\sigma \cdot 5.55$<br>$1.95 + Lo$ | $\sigma \cdot 15.96$<br>$2.4 + Lo$ | $\sigma \cdot 41.7$<br>$2.8 + Lo$ |

| Bore size (mm)              | 25                                | 32                                   | 40                                |
|-----------------------------|-----------------------------------|--------------------------------------|-----------------------------------|
| Allowable load mass WA (kg) | $\sigma \cdot 58.9$<br>$3.1 + Lo$ | $\sigma \cdot 106.65$<br>$3.95 + Lo$ | $\sigma \cdot 228$<br>$4.75 + Lo$ |

#### 8. Horizontal Operation (Load, Lateral offset Lo)



Lo: Distance from center of side block to load's center of gravity (cm)

| Bore size (mm)              | 10                            | 15                                | 20                              |
|-----------------------------|-------------------------------|-----------------------------------|---------------------------------|
| Allowable load mass WA (kg) | $\sigma \cdot 15$<br>$5 + Lo$ | $\sigma \cdot 45.5$<br>$6.5 + Lo$ | $\sigma \cdot 80.7$<br>$8 + Lo$ |

| Bore size (mm)              | 25                             | 32                              | 40                              |
|-----------------------------|--------------------------------|---------------------------------|---------------------------------|
| Allowable load mass WA (kg) | $\sigma \cdot 144$<br>$9 + Lo$ | $\sigma \cdot 275$<br>$11 + Lo$ | $\sigma \cdot 520$<br>$13 + Lo$ |

# Model Selection 4

## Caution on Design 3

### Vertical Operation

When operating a load vertically, it should be operated within the allowable load weights and maximum operating pressures shown in the table below.

Use caution since operating above the prescribed values may lead to a dropping of the load with the magnetic coupling out of position.

When the cylinder is mounted vertically or sidelong, sliders may move downwards due to the self-weight or workpiece mass. If an accurate stopping position is required at the stroke end or the middle-stroke, use an external stopper to secure accurate positioning.

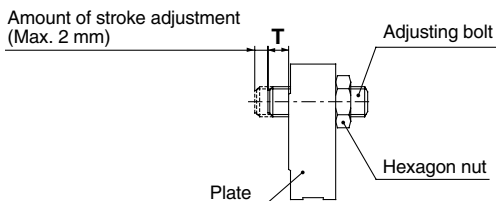
| Bore size (mm) | Model  | Allowable load mass $W_v$ (kg) | Maximum operating pressure $P_v$ (MPa) |
|----------------|--------|--------------------------------|----------------------------------------|
| 10             | REAL10 | 2.7                            | 0.55                                   |
| 15             | REAL15 | 7.0                            | 0.65                                   |
| 20             | REAL20 | 11.0                           | 0.65                                   |
| 25             | REAL25 | 18.5                           | 0.65                                   |
| 32             | REAL32 | 30.0                           | 0.65                                   |
| 40             | REAL40 | 47.0                           | 0.65                                   |

### Stroke Adjustment

The adjusting bolt is adjusted to the optimum position for smooth acceleration and deceleration at the time of shipment, and should be operated at the full stroke. When stroke adjustment is necessary, the maximum amount of adjustment on one side is 2 mm. (Do not adjust more than 2 mm, as it will not be possible to obtain smooth acceleration and deceleration.)

#### Stroke adjustment method

Loosen the hexagon nut, and after performing the stroke adjustment from the plate side with a hexagon wrench, retighten and secure the hexagon nut.



### Adjusting Bolt Position (at the time of shipment), Hexagon Nut Tightening Torque

| Model  | T (mm) | Tightening torque (N·m) |
|--------|--------|-------------------------|
| REAL10 | 1      | 1.67                    |
| REAL15 | 1      |                         |
| REAL20 | 1      | 3.14                    |
| REAL25 | 1      | 10.8                    |
| REAL32 | 1      | 23.5                    |
| REAL40 | 1      |                         |

### Intermediate Stop

The cushion effect (smooth start-up, soft stop) exists only before the stroke end in the stroke ranges indicated in the table below.

The cushion effect (smooth start-up, soft stop) cannot be obtained in an intermediate stop or return from an intermediate stop using an external stopper, etc.

#### Cushion Stroke

| Model  | Stroke (mm) |
|--------|-------------|
| REAL10 | 20          |
| REAL15 | 25          |
| REAL20 | 30          |
| REAL25 | 30          |
| REAL32 | 30          |
| REAL40 | 35          |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Sine Rodless Cylinder Slider Type/Ball Bushing Bearing

## Series *REAL*

ø10, ø15, ø20, ø25, ø32, ø40

### How to Order

**REA L 25 - 300 - J79W -**

Sine rodless cylinder •

Slider type •  
(Ball bushing bearing)

Bore size •

|    |       |    |       |
|----|-------|----|-------|
| 10 | 10 mm | 25 | 25 mm |
| 15 | 15 mm | 32 | 32 mm |
| 20 | 20 mm | 40 | 40 mm |

Port thread type •

| Symbol | Type     | Bore size          |
|--------|----------|--------------------|
| Nil    | M thread | ø10, ø15           |
|        | Rc       |                    |
| TN     | NPT      | ø20, ø25, ø32, ø40 |
| TF     | G        |                    |

Standard stroke •

Refer to "Standard Stroke" on page 971.

Made to Order Specification  
For details, refer to page 971.

Number of auto switches

|     |          |
|-----|----------|
| Nil | 2 pcs.   |
| S   | 1 pc.    |
| n   | "n" pcs. |

Auto switch

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

\* For the applicable auto switch model, refer to the table below.  
\* In cases without auto switches, there are switch rails only.

### 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) | None (N) |                     | IC circuit      |            |            |
| Solid state switch                          | —                                          | Grommet          | Yes             | 3-wire (NPN)            | 24 V         | 5 V, 12 V | —                 | F7NV    | F79                    | ●     | ●     | ○        | —                   |                 |            | ○          |
|                                             |                                            | 3-wire (PNP)     |                 | F7PV                    |              |           |                   | F7P     | ●                      | ●     | ○     | —        | ○                   |                 |            |            |
|                                             | Connector                                  | 2-wire           |                 | F7BV                    |              |           |                   | J79     | ●                      | ●     | ○     | —        | ○                   |                 |            |            |
|                                             |                                            | —                |                 | J79C                    |              |           |                   | —       | ●                      | ●     | ●     | ●        | —                   |                 |            |            |
|                                             | Diagnostic indication (2-color indication) | Grommet          |                 | 3-wire (NPN)            | 24 V         | 5 V, 12 V | F7NWV             | F79W    | ●                      | ●     | ○     | —        | ○                   | IC circuit      |            |            |
|                                             |                                            |                  |                 | 3-wire (PNP)            |              |           | —                 | F7PW    | ●                      | ●     | ○     | —        | ○                   |                 |            |            |
|                                             | Water resistant (2-color indication)       |                  |                 | 2-wire                  |              |           | F7BWV             | J79W    | ●                      | ●     | ○     | —        | ○                   |                 | —          |            |
|                                             |                                            |                  |                 | —                       |              |           | —                 | F7BA    | —                      | ●     | ○     | —        | ○                   |                 |            |            |
| With diagnostic output (2-color indication) |                                            | —                | 4-wire (NPN)    | 5 V, 12 V               | —            | F7BAV     | —                 | —       | ●                      | ○     | —     | ○        | IC circuit          |                 |            |            |
| Reed switch                                 | —                                          | Grommet          | Yes             | 3-wire (NPN equivalent) | —            | 5 V       | —                 | —       | A76H                   | ●     | ●     | —        | —                   | —               | IC circuit | Relay, PLC |
|                                             |                                            |                  |                 | —                       | —            | 200V      | A72               | A72H    | ●                      | ●     | —     | —        | —                   |                 |            |            |
|                                             |                                            | Connector        |                 | 2-wire                  | 24 V         | 5 V, 12 V | 100V or less      | A73     | A73H                   | ●     | ●     | ●        | —                   | —               | IC circuit |            |
|                                             |                                            |                  |                 |                         |              |           |                   | A80     | A80H                   | ●     | ●     | —        | —                   | —               | —          |            |
|                                             |                                            |                  |                 |                         |              |           |                   | A73C    | —                      | ●     | ●     | ●        | ●                   | —               | —          |            |
|                                             |                                            |                  |                 |                         |              |           |                   | A80C    | —                      | ●     | ●     | ●        | ●                   | —               | IC circuit |            |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) J79W  
3 m ..... L (Example) J79WL  
5 m ..... Z (Example) J79WZ  
None ..... N (Example) J79CN

\* Solid state auto switches marked with "○" are produced upon receipt of order.

- Since there are other applicable auto switches than listed, refer to page 976 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- \* Auto switches are shipped together (not assembled).

# Sine Rodless Cylinder Slider Type/Ball Bushing Bearing **Series REAL**



## Specifications

| Bore size (mm)                       | 10                                                                                      | 15  | 20  | 25  | 32  | 40  |
|--------------------------------------|-----------------------------------------------------------------------------------------|-----|-----|-----|-----|-----|
| 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                                                                             |     |     |     |     |     |
| Piston speed (Max.) <sup>Note)</sup> | 50 to 300 mm/s                                                                          |     |     |     |     |     |
| Lubrication                          | Not required (Non-lube)                                                                 |     |     |     |     |     |
| Stroke length tolerance              | 0 to 250 st: $^{+1.0}_0$ , 251 to 1000 st: $^{+1.4}_0$ , 1001 st or longer: $^{+1.8}_0$ |     |     |     |     |     |
| Holding force                        | 53.9                                                                                    | 137 | 231 | 363 | 588 | 922 |

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

## Standard Stroke

| Bore size (mm) | Standard stroke (mm)                                        | Maximum manufacturable stroke (mm) |
|----------------|-------------------------------------------------------------|------------------------------------|
| 10             | 150, 200, 250, 300                                          | 500                                |
| 15             | 150, 200, 250, 300, 350, 400, 450, 500                      | 750                                |
| 20             | 200, 250, 300, 350, 400, 450, 500, 600, 700, 800            | 1000                               |
| 25             |                                                             | 1500                               |
| 32             |                                                             |                                    |
| 40             | 200, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000 | 1500                               |

Note) Intermediate stroke is available by the 1 mm interval.



## Made to Order Specifications (For details, refer to pages 2016 and 2017.)

| Symbol | Specifications                                     |
|--------|----------------------------------------------------|
| —X431  | Auto switch rails on both side faces (With 2 pcs.) |
| —X168  | Helical insert thread specifications               |

## Mass

| Bore size (mm)                           | 10    | 15    | 20    | 25    | 32    | 40    |
|------------------------------------------|-------|-------|-------|-------|-------|-------|
| Basic mass                               | 0.580 | 1.10  | 1.85  | 2.21  | 4.36  | 4.83  |
| Additional mass per each 50 mm of stroke | 0.077 | 0.104 | 0.138 | 0.172 | 0.267 | 0.406 |

Calculation: (Example) **REAL32-500**

- Basic mass ..... 4.36 kg
- Additional mass ..... 0.267/50 st
- Cylinder stroke ..... 500 st

$$4.36 + 0.267 \times 500 \div 50 = 7.03 \text{ kg}$$

## REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

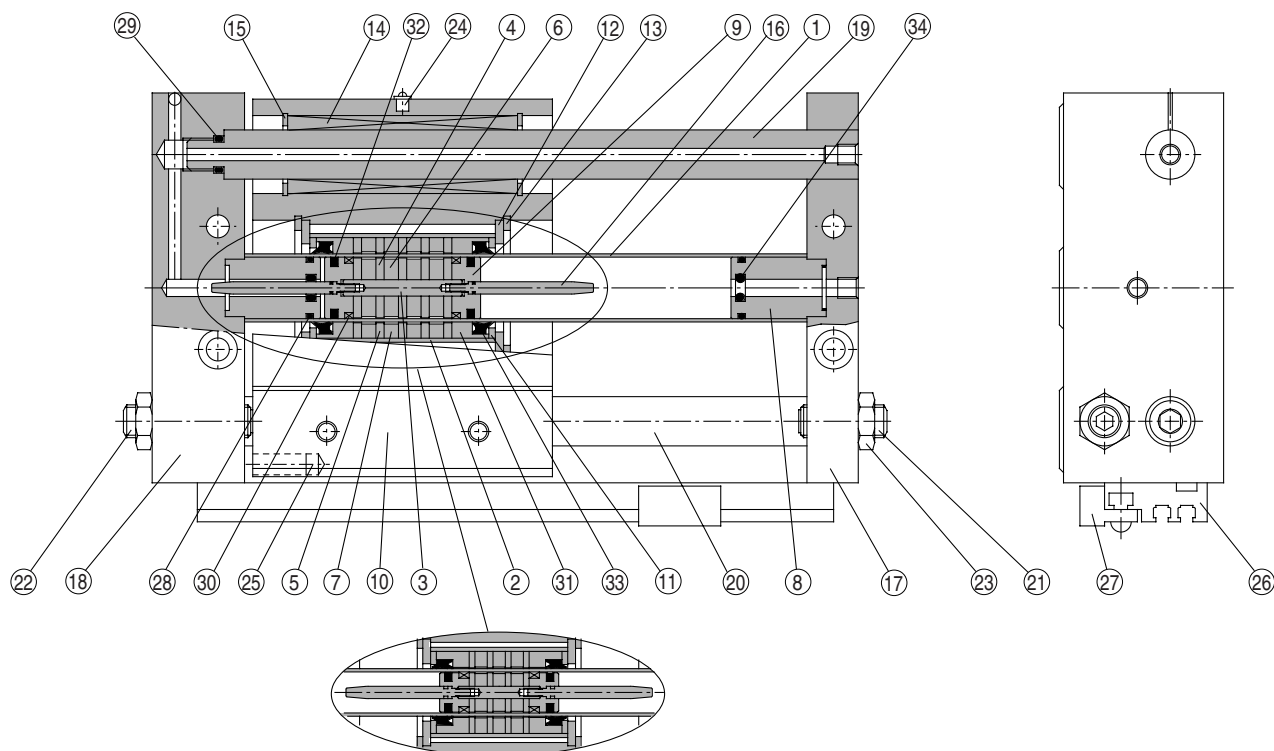
D-□

-X□

Individual  
-X□

# Series **REAL**

**Construction: ø10, ø15**



**REAL10**

## Component Parts

| No. | Description               | Material           | Note                      |
|-----|---------------------------|--------------------|---------------------------|
| 1   | Cylinder tube             | Stainless steel    |                           |
| 2   | External slider tube      | Aluminum alloy     |                           |
| 3   | Shaft                     | Stainless steel    |                           |
| 4   | Piston side yoke          | Rolled steel plate | Zinc chromated            |
| 5   | External slider side yoke | Rolled steel plate | Zinc chromated            |
| 6   | Magnet A                  | —                  |                           |
| 7   | Magnet B                  | —                  |                           |
| 8   | Cushion seal holder       | Aluminum alloy     | Anodized                  |
| 9   | Piston                    | Brass              | Electroless nickel plated |
| 10  | Slide block               | Aluminum alloy     | Hard anodized             |
| 11  | Spacer                    | Rolled steel plate | Nickel plated             |
| 12  | Slider spacer             | Rolled steel plate | Nickel plated             |
| 13  | Retaining ring            | Carbon tool steel  | Nickel plated             |
| 14  | Ball bushing              | —                  |                           |
| 15  | Retaining ring            | Carbon tool steel  | Nickel plated             |
| 16  | Cushion ring              | Stainless steel    |                           |
| 17  | Plate A                   | Aluminum alloy     | Hard anodized             |

## Component Parts

| No.  | Description            | Material                  | Note                          |
|------|------------------------|---------------------------|-------------------------------|
| 18   | Plate B                | Aluminum alloy            | Hard anodized                 |
| 19   | Guide shaft A          | Carbon steel              | Hard chrome plated            |
| 20   | Guide shaft B          | Carbon steel              | Hard chrome plated            |
| 21   | Adjusting bolt A       | Chromium molybdenum steel | Nickel plated                 |
| 22   | Adjusting bolt B       | Chromium molybdenum steel | Nickel plated                 |
| 23   | Hexagon nut            | Carbon steel              | Nickel plated                 |
| 24   | Grease nipple          | Carbon steel              | Nickel plated (Except REAL10) |
| 25   | Magnet for auto switch | —                         |                               |
| 26   | Switch mounting rail   | Aluminum alloy            |                               |
| 27   | Auto switch            | —                         |                               |
| 28 * | Cylinder tube gasket   | NBR                       |                               |
| 29 * | Guide shaft gasket     | NBR                       |                               |
| 30 * | Wear ring A            | Special resin             |                               |
| 31 * | Wear ring B            | Special resin             |                               |
| 32 * | Piston seal            | NBR                       |                               |
| 33 * | Scraper                | NBR                       |                               |
| 34 * | Cushion seal           | NBR                       |                               |

\* Seal kit includes (28) to (34). Order the seal kit, based on each bore size.

## Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                      |
|----------------|-----------|-----------------------------------------------|
| 10             | REAL10-PS | Set of nos. above                             |
| 15             | REAL15-PS | (28, 29, 30, 31, 32, 33, 34) <sup>Note)</sup> |

Note) It may be difficult to replace the cushion seal (34).

\* Seal kit includes a grease pack (ø10: 5 g and 10 g, ø15: 10 g).

Order with the following part number when only the grease pack is needed.

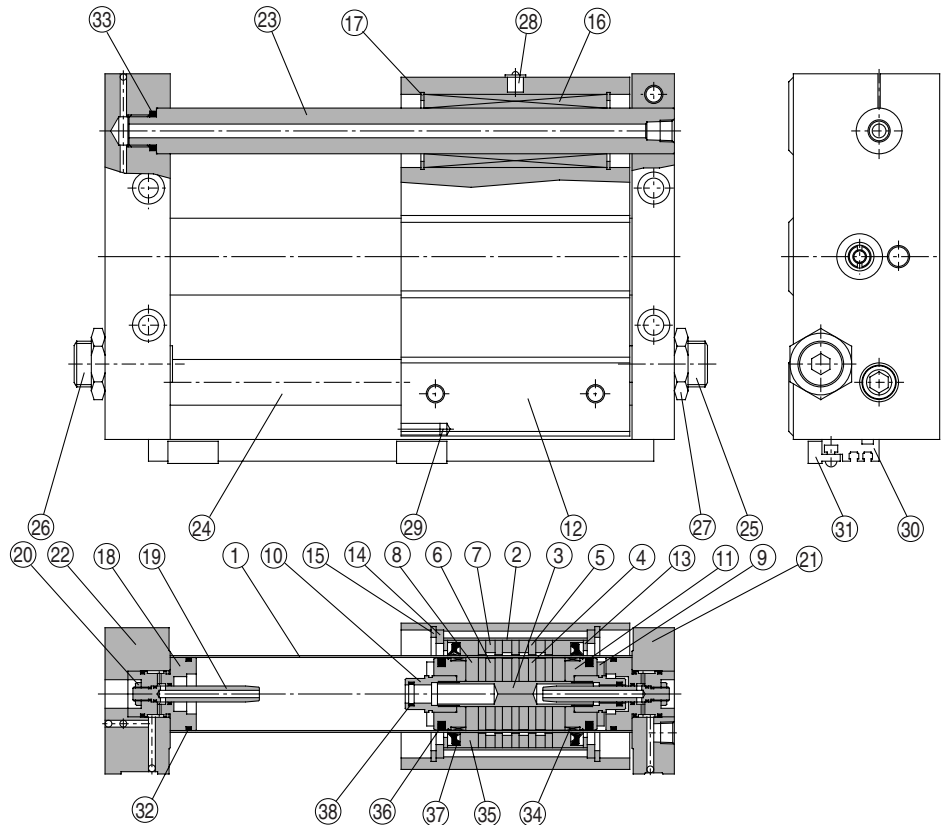
For ø10 grease pack part no.: GR-F-005 (5 g) For external sliding part

GR-S-010 (10 g) For tube interior

For ø15 grease pack part no.: GR-S-010 (10 g)

# Sine Rodless Cylinder Slider Type/Ball Bushing Bearing **Series REAL**

**Construction: ø20 to ø40**



## Component Parts

| No. | Description               | Material                 | Note                                                 |
|-----|---------------------------|--------------------------|------------------------------------------------------|
| 1   | Cylinder tube             | Stainless steel          |                                                      |
| 2   | External slider tube      | Aluminum alloy           |                                                      |
| 3   | Shaft                     | Stainless steel          |                                                      |
| 4   | Piston side yoke          | Rolled steel plate       | Zinc chromated                                       |
| 5   | External slider side yoke | Rolled steel plate       | Zinc chromated                                       |
| 6   | Magnet A                  | —                        |                                                      |
| 7   | Magnet B                  | —                        |                                                      |
| 8   | Piston side spacer        | Aluminum alloy           | Chromated                                            |
| 9   | Bumper                    | Urethane rubber          |                                                      |
| 10  | Cushion seal holder       | Aluminum alloy           | Chromated                                            |
| 11  | Piston                    | Aluminum alloy           | Chromated                                            |
| 12  | Slide block               | Aluminum alloy           | Hard anodized                                        |
| 13  | Spacer                    | Rolled steel plate       | Nickel plated                                        |
| 14  | Slider spacer             | Carbon steel             | Nickel plated                                        |
| 15  | Retaining ring            | Carbon tool steel        | Nickel plated                                        |
| 16  | Ball bushing              | —                        |                                                      |
| 17  | Retaining ring            | Carbon tool steel        | Nickel plated                                        |
| 18  | Cushion ring holder       | Aluminum alloy           | Anodized                                             |
| 19  | Cushion ring              | Brass<br>Stainless steel | Electroless nickel plated (REAL32, 40)<br>REAL20, 25 |

## Component Parts

| No.  | Description            | Material                  | Note               |
|------|------------------------|---------------------------|--------------------|
| 20   | Lock nut B             | Carbon steel              | Nickel plated      |
| 21   | Plate A                | Aluminum alloy            | Hard anodized      |
| 22   | Plate B                | Aluminum alloy            | Hard anodized      |
| 23   | Guide shaft A          | Carbon steel              | Hard chrome plated |
| 24   | Guide shaft B          | Carbon steel              | Hard chrome plated |
| 25   | Adjusting bolt A       | Chromium molybdenum steel | Nickel plated      |
| 26   | Adjusting bolt B       | Chromium molybdenum steel | Nickel plated      |
| 27   | Hexagon nut            | Carbon steel              | Nickel plated      |
| 28   | Grease nipple          | Brass                     | Nickel plated      |
| 29   | Magnet for auto switch | —                         |                    |
| 30   | Switch mounting rail   | Aluminum alloy            |                    |
| 31   | Auto switch            | —                         |                    |
| 32 * | Cylinder tube gasket   | NBR                       |                    |
| 33 * | Guide shaft gasket     | NBR                       |                    |
| 34 * | Wear ring A            | Special resin             |                    |
| 35 * | Wear ring B            | Special resin             |                    |
| 36 * | Piston seal            | NBR                       |                    |
| 37 * | Scraper                | NBR                       |                    |
| 38 * | Cushion seal           | NBR                       |                    |

\* Seal kit includes ③② to ③⑧. Order the seal kit, based on each bore size.

## Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                        |
|----------------|-----------|-------------------------------------------------|
| 20             | REAL20-PS | Set of nos. above<br>③②, ③③, ③④, ③⑤, ③⑥, ③⑦, ③⑧ |
| 25             | REAL25-PS |                                                 |
| 32             | REAL32-PS |                                                 |
| 40             | REAL40-PS |                                                 |

Note) It may be difficult to replace the cushion seal ③⑧.

\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

Grease pack part no.: GR-S-010 (10 g)

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

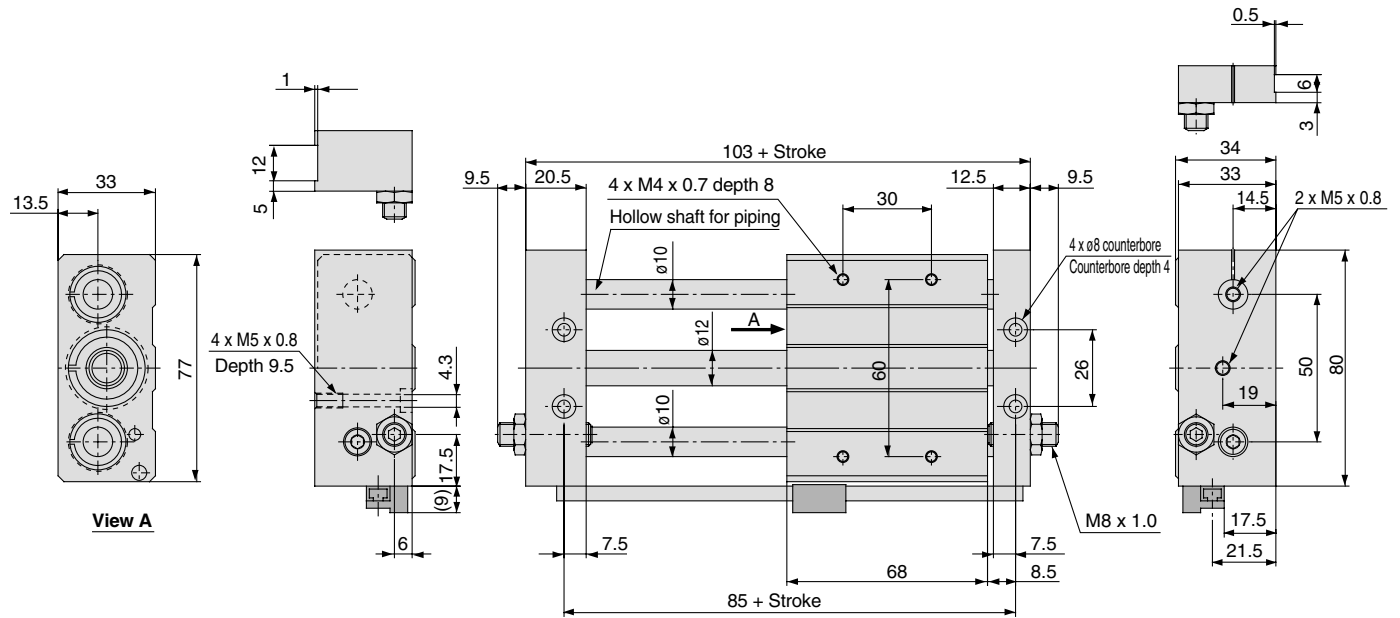
D-□

-X□

Individual  
-X□

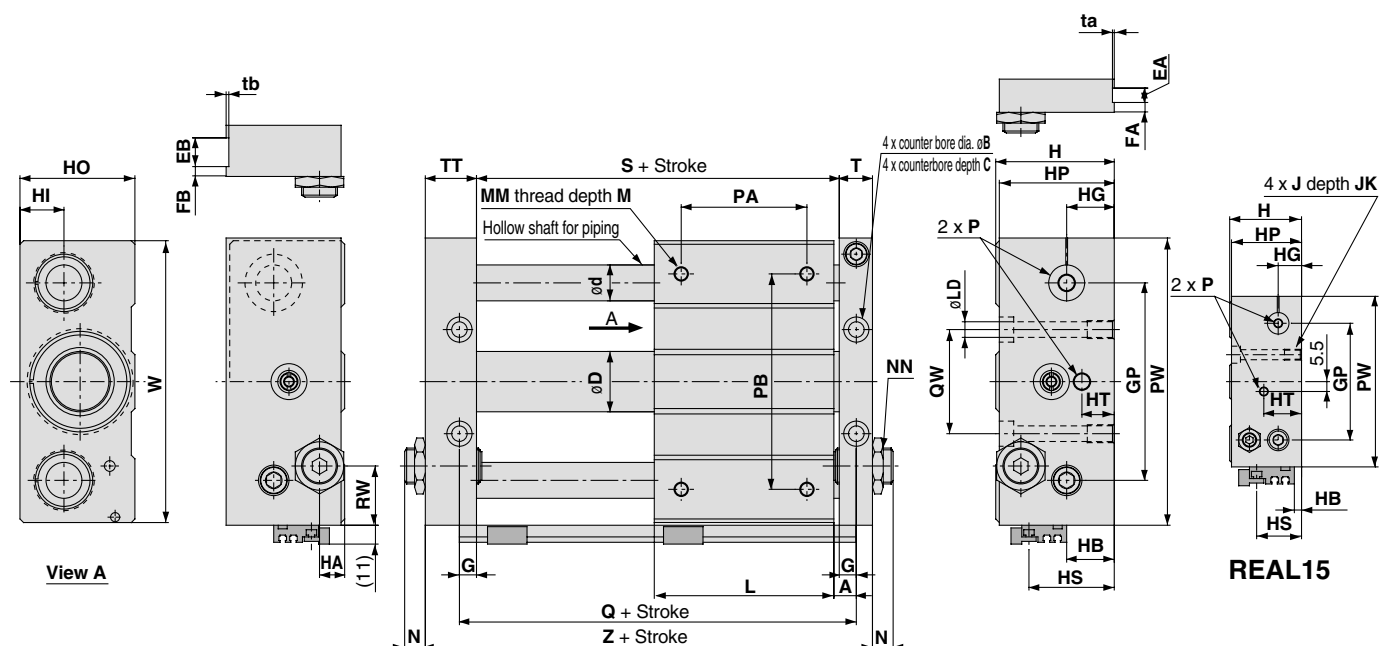
# Series **REAL**

## Dimensions: $\phi 10$



# Sine Rodless Cylinder Slider Type/Ball Bushing Bearing **Series REAL**

**Dimensions: ø15 to ø40**



| Model         | A    | B   | C   | D    | d  | EA | EB | FA | FB | G    | GP  | H  | HA  | HB   | HG   | HI   | HO | HP |
|---------------|------|-----|-----|------|----|----|----|----|----|------|-----|----|-----|------|------|------|----|----|
| <b>REAL15</b> | 7.5  | 9.5 | 5   | 16.6 | 12 | 6  | 13 | 3  | 6  | 6.5  | 65  | 40 | 6.5 | 4    | 16   | 14   | 38 | 39 |
| <b>REAL20</b> | 9.5  | 9.5 | 5   | 21.6 | 16 | —  | —  | —  | —  | 8.5  | 80  | 46 | 9   | 10   | 18   | 16   | 44 | 45 |
| <b>REAL25</b> | 9.5  | 11  | 6.5 | 26.4 | 16 | 8  | 14 | 4  | 7  | 8.5  | 90  | 54 | 9   | 18   | 23   | 21   | 52 | 53 |
| <b>REAL32</b> | 10.5 | 14  | 8   | 33.6 | 20 | 8  | 16 | 5  | 7  | 9.5  | 110 | 66 | 12  | 26.5 | 26.5 | 24.5 | 64 | 64 |
| <b>REAL40</b> | 11.5 | 14  | 8   | 41.6 | 25 | 10 | 20 | 5  | 10 | 10.5 | 130 | 78 | 12  | 35   | 30.5 | 28.5 | 76 | 74 |

| Model         | HS   | HT | J         | JK  | L   | LD  | M  | MM        | N    | NN        | P        |         |       | PA * |
|---------------|------|----|-----------|-----|-----|-----|----|-----------|------|-----------|----------|---------|-------|------|
|               |      |    |           |     |     |     |    |           |      |           | Nil      | TN      | TF    |      |
| <b>REAL15</b> | 25   | 21 | M6 x 1.0  | 9.5 | 75  | 5.6 | 8  | M5 x 0.8  | 7.5  | M8 x 1.0  | M5 x 0.8 | —       | —     | 45   |
| <b>REAL20</b> | 31   | 10 | M6 x 1.0  | 10  | 86  | 5.6 | 10 | M6 x 1.0  | 10   | M10 x 1.0 | Rc 1/8   | NPT 1/8 | G 1/8 | 50   |
| <b>REAL25</b> | 39   | 10 | M8 x 1.25 | 10  | 86  | 7   | 10 | M6 x 1.0  | 11   | M14 x 1.5 | Rc 1/8   | NPT 1/8 | G 1/8 | 60   |
| <b>REAL32</b> | 47.5 | 17 | M10 x 1.5 | 15  | 100 | 9.2 | 12 | M8 x 1.25 | 11.5 | M20 x 1.5 | Rc 1/8   | NPT 1/8 | G 1/8 | 70   |
| <b>REAL40</b> | 56   | 14 | M10 x 1.5 | 15  | 136 | 9.2 | 12 | M8 x 1.25 | 10.5 | M20 x 1.5 | Rc 1/4   | NPT 1/4 | G 1/4 | 90   |

\* PA dimensions are for split from center.

| Model         | PB  | PW  | Q   | QW | RW | S   | T    | TT   | ta  | tb  | W   | Z   |
|---------------|-----|-----|-----|----|----|-----|------|------|-----|-----|-----|-----|
| <b>REAL15</b> | 70  | 95  | 90  | 30 | 15 | 77  | 12.5 | 22.5 | 0.5 | 1.0 | 92  | 112 |
| <b>REAL20</b> | 90  | 120 | 105 | 40 | 28 | 88  | 16.5 | 25.5 | —   | —   | 117 | 130 |
| <b>REAL25</b> | 100 | 130 | 105 | 50 | 22 | 88  | 16.5 | 25.5 | 0.5 | 1.0 | 127 | 130 |
| <b>REAL32</b> | 120 | 160 | 121 | 60 | 33 | 102 | 18.5 | 28.5 | 0.5 | 1.0 | 157 | 149 |
| <b>REAL40</b> | 140 | 190 | 159 | 84 | 35 | 138 | 20.5 | 35.5 | 1.0 | 1.0 | 187 | 194 |

**REA**

**REB**

**REC**

**C□Y**

**C□X**

**MQ**

**RHC**

**RZQ**

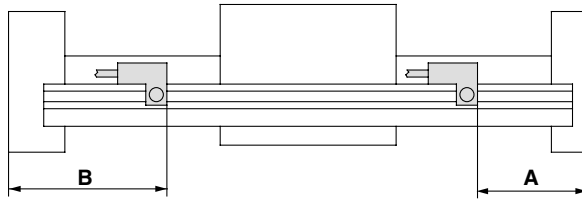
**D-□**

**-X□**

Individual  
**-X□**

# Series **REAL**

## Auto Switch Proper Mounting Position (Detection at Stroke End)



(mm)

| Auto switch model<br>Bore size (mm) | A dimension |                                                                                                                |         | B dimension |                                                                                                                |         |
|-------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------|---------|-------------|----------------------------------------------------------------------------------------------------------------|---------|
|                                     | D-A73/A80   | D-A72<br>D-A7□H/A80H<br>D-A73C/A80C<br>D-F7□/J79<br>D-F7□W/J79W<br>D-J79C<br>D-F7□V/F7□WV<br>D-F7BA□<br>D-F79F | D-F7NTL | D-A73/A80   | D-A72<br>D-A7□H/A80H<br>D-A73C/A80C<br>D-F7□/J79<br>D-F7□W/J79W<br>D-J79C<br>D-F7□V/F7□WV<br>D-F7BA□<br>D-F79F | D-F7NTL |
| 10                                  | 58          | 58.5                                                                                                           | 63.5    | 45          | 44.5                                                                                                           | 39.5    |
| 15                                  | 65          | 65.5                                                                                                           | 70.5    | 47          | 46.5                                                                                                           | 41.5    |
| 20                                  | 76          | 76.5                                                                                                           | 81.5    | 54          | 53.5                                                                                                           | 48.5    |
| 25                                  | 76          | 76.5                                                                                                           | 81.5    | 54          | 53.5                                                                                                           | 48.5    |
| 32                                  | 92          | 92.5                                                                                                           | 97.5    | 57          | 56.5                                                                                                           | 51.5    |
| 40                                  | 130         | 130.5                                                                                                          | 135.5   | 64          | 63.5                                                                                                           | 58.5    |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

## Operating Range

(mm)

| Auto switch model | Bore size (mm) |    |    |    |    |     |
|-------------------|----------------|----|----|----|----|-----|
|                   | 10             | 15 | 20 | 25 | 32 | 40  |
| D-A7□, A8□        | 6              | 6  | 6  | 6  | 6  | 6   |
| D-F7□, J7□, F79F  | 3              | 4  | 3  | 3  | 3  | 3.5 |

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately  $\pm 30\%$  dispersion)

There may be the case it will vary substantially depending on an ambient environment.

Other than the models listed in “How to Order”, the following auto switches are applicable. For detailed specifications, refer to page 1770.

| Auto switch type   | Model   | Electrical entry (Fetching direction) | Features   |
|--------------------|---------|---------------------------------------|------------|
| <b>Solid state</b> | D-F7NTL | Grommet (In-line)                     | With timer |

\* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.



## Series *REAL*

# Specific Product 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.

### Operation

#### Warning

1. **Be aware of the space between the plates and the slide block.**  
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” pages.**  
It may cause malfunction.
3. **Consult with SMC when the cylinder is operated in an environment in which the cylinder is exposed to cutting fluid or water, or the cylinder sliding part lubrication deteriorates.**
4. **When applying grease to the cylinder, use the grease already used for the product. Contact SMC, grease packs are available.**

### Mounting

#### Caution

1. **Avoid operation with the external slider fixed to the mounting surface.**  
The cylinder should be operated with the plates fixed to the mounting surface.
2. **Make sure that the cylinder mounting surface has a flatness of 0.2 mm or less.**  
If the flatness of a workpiece is not appropriate, it may adversely affect the operation since two guide shafts will be twisted. Furthermore, the increase of the sliding resistance and early abrasion of bearings may shorten the service life.  
The cylinder mounting surface must have a flatness of 0.2 mm or less, and the cylinder must be mounted so as to be smoothly operated with a minimum operating pressure (0.18 MPa or less) for a full stroke.

### Disassembly and Maintenance

#### Warning

1. **Use caution, the attractive force 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 magnet installed in each slider has a very strong attractive force.

#### Caution

1. **Use caution when taking off the external slider, since 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. **Do not disassemble the magnetic components (piston and external sliders).**  
This may cause a loss of holding force and malfunction.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Linear Guide Type Single Axis/Double Axes

## Series **REAH/REAHT**

Single Axis:  $\varnothing 10$ ,  $\varnothing 15$ ,  $\varnothing 20$ ,  $\varnothing 25$

Double Axes:  $\varnothing 25$ ,  $\varnothing 32$



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Model Selection 1

**P<sub>v</sub>**: Maximum operating pressure for vertical operation (MPa)

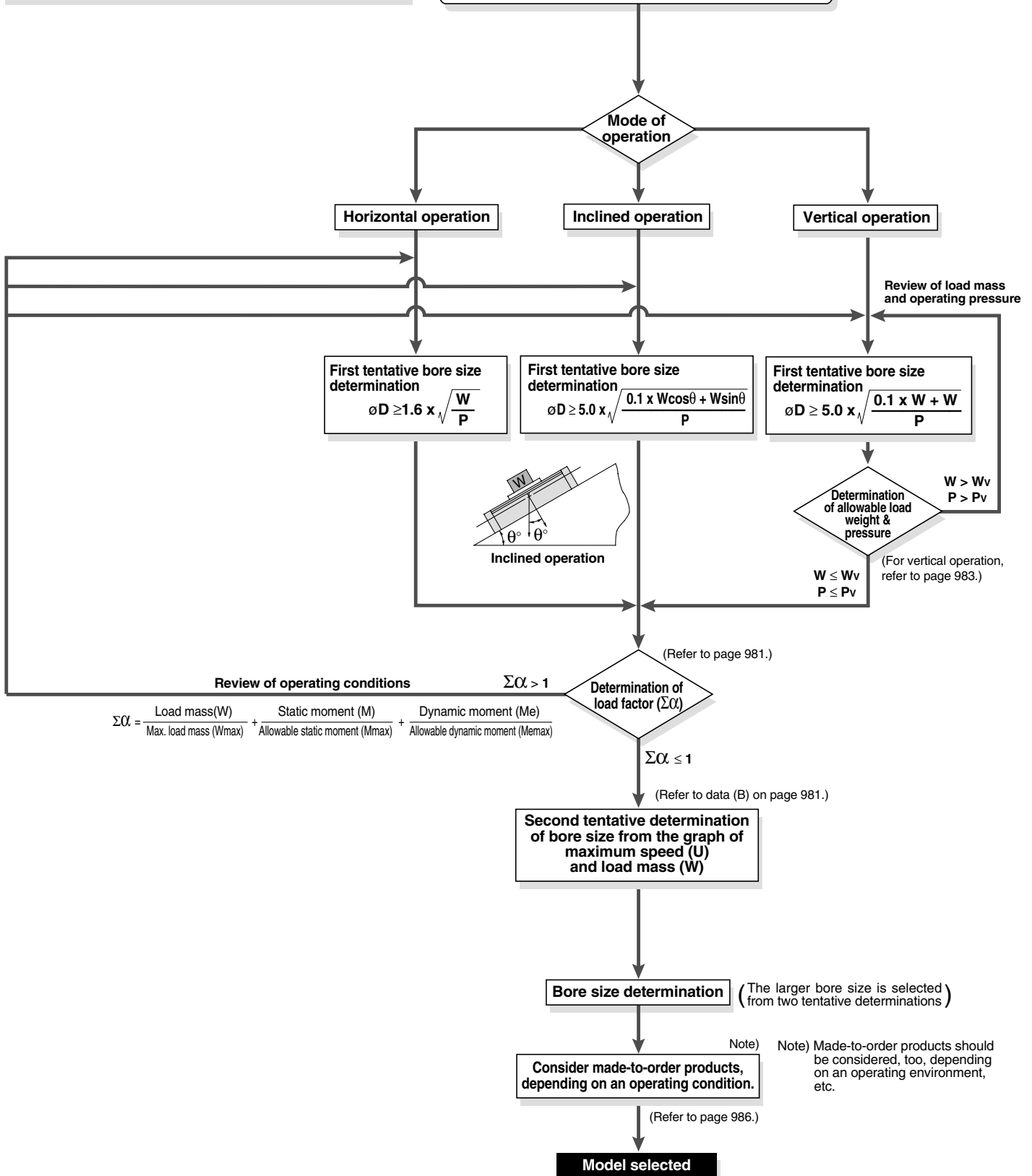
**W<sub>v</sub>**: Allowable load mass for vertical operation (kg)

**α**: Load factor

$$\Sigma\alpha = \frac{\text{Load mass (W)}}{\text{Max. load mass (Wmax)}} + \frac{\text{Static moment (M)}}{\text{Allowable static moment (Mmax)}} + \frac{\text{Dynamic moment (Me)}}{\text{Allowable dynamic moment (Memax)}}$$

## Operating Conditions

- **W**: Load mass (kg)
- **U**: Maximum speed (mm/s)
- **P**: Operating pressure (MPa)
- **Stroke** (mm)
- **Position of workpiece center of gravity** (m)
- **Mode of operation** (horizontal, inclined, vertical)



# Series REAH

## Model Selection 2

### Caution on Design 1

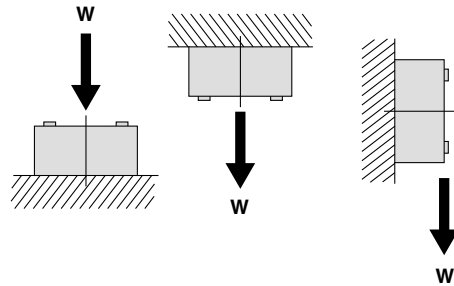
The load mass allowable moment differs depending on the workpiece mounting method, cylinder mounting orientation and piston speed. In making a determination of usability, do not allow the sum ( $\sum \alpha_n$ ) of the load factors ( $\alpha_n$ ) for each mass and moment to exceed "1".

$$\sum \alpha_n = \frac{\text{Load mass (W)}}{\text{Maximum load mass (Wmax)}} + \frac{\text{Static moment (M)}}{\text{Allowable static moment (Mmax)}} + \frac{\text{Dynamic moment (Me)}}{\text{Allowable dynamic moment (Memax)}} \leq 1$$

### Load Mass

Maximum Load Mass (kg)

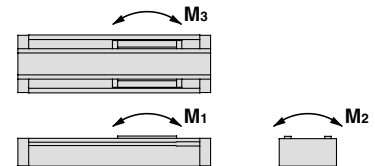
| Model  | W <sub>max</sub> |
|--------|------------------|
| REAH10 | 4                |
| REAH15 | 9                |
| REAH20 | 16               |
| REAH25 | 25               |
| REAH25 | 25               |
| REAH32 | 40               |



### Moment

Allowable Moment (Static moment/Dynamic moment) (N·m)

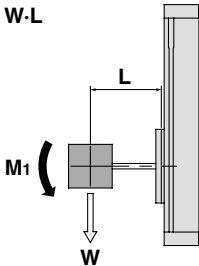
| Model  | M <sub>1</sub> | M <sub>2</sub> | M <sub>3</sub> | Model  | M <sub>1</sub> | M <sub>2</sub> | M <sub>3</sub> |
|--------|----------------|----------------|----------------|--------|----------------|----------------|----------------|
| REAH10 | 1.5            | 2.5            | 1.5            | REAH25 | 28             | 26             | 28             |
| REAH15 | 10             | 16             | 10             | REAH25 | 56             | 85             | 56             |
| REAH20 | 13             | 16             | 13             | REAH32 | 64             | 96             | 64             |



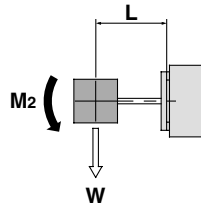
### Static Moment

Moment generated by the workpiece mass even when the cylinder is stopped

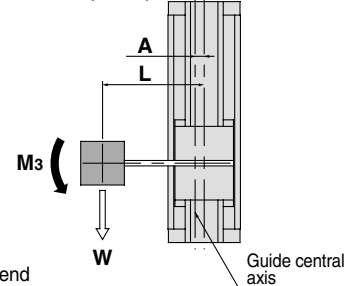
■ Pitch moment  
M<sub>1</sub> = W · L



■ Roll moment  
M<sub>2</sub> = W · L



■ Yaw moment  
M<sub>3</sub> = W (L - A)



(mm)

| Model  | A    |
|--------|------|
| REAH10 | 15   |
| REAH15 | 17.5 |
| REAH20 | 19.5 |
| REAH25 | 23.5 |
| REAH25 | 0 *  |
| REAH32 | 0 *  |

\* Since there are 2 guides, the guide's central axis and the cylinder's central axis are the same.

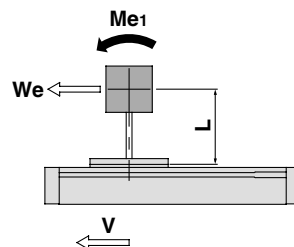
### Dynamic Moment

Moment generated by the load equivalent to impact at the stroke end

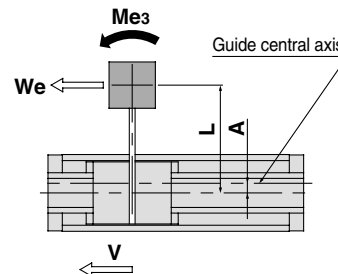
$$We = 5 \times 10^{-3} \cdot W \cdot g \cdot U$$

W<sub>e</sub>: Load equivalent to impact [N]  
W: Load mass [kg]  
U: Maximum speed [mm/s]  
g: Gravitational acceleration (≅ 9.8 m/s<sup>2</sup>)

■ Pitch moment  
Me<sub>1</sub> = 1/3 · We · L



■ Yaw moment  
Me<sub>3</sub> = 1/3 · We (L - A)

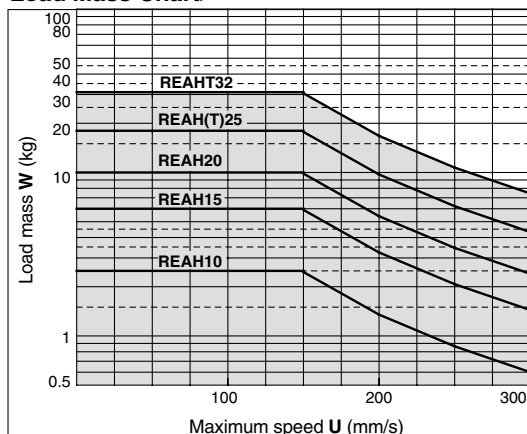


(mm)

| Model  | A    |
|--------|------|
| REAH10 | 15   |
| REAH15 | 17.5 |
| REAH20 | 19.5 |
| REAH25 | 23.5 |
| REAH25 | 0 *  |
| REAH32 | 0 *  |

\* Since there are 2 guides, the guide's central axis and the cylinder's central axis are the same.

<Data (B): Maximum Speed—Load Mass Chart>



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Model Selection 3

## Selection Calculation

The selection calculation finds the load factors ( $\alpha_n$ ) of the items below, where the total ( $\Sigma\alpha_n$ ) does not exceed 1.

$$\Sigma\alpha_n = \alpha_1 + \alpha_2 + \alpha_3 \leq 1$$

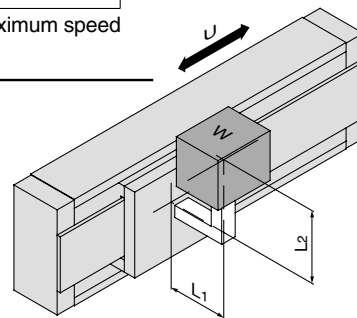
| Item              | Load factor $\alpha_n$     | Note                                                                                                   |
|-------------------|----------------------------|--------------------------------------------------------------------------------------------------------|
| 1. Max. load mass | $\alpha_1 = W/W_{\max}$    | Review W.<br>W <sub>max</sub> is the maximum load mass.                                                |
| 2. Static moment  | $\alpha_2 = M/M_{\max}$    | Review M <sub>1</sub> , M <sub>2</sub> , M <sub>3</sub> .<br>M <sub>max</sub> is the allowable moment. |
| 3. Dynamic moment | $\alpha_3 = M_e/M_{e\max}$ | Review M <sub>e1</sub> , M <sub>e3</sub> .<br>M <sub>e</sub> <sub>max</sub> is the allowable moment.   |

U: Maximum speed

## Calculation Example

### Operating Conditions

Cylinder: REAH15  
Mounting: Horizontal wall mounting style  
Maximum speed: **U** = 300 [mm/s]  
Load mass: **W** = 1 [kg] (Except mass of arm section)  
**L**<sub>1</sub> = 200 [mm]  
**L**<sub>2</sub> = 200 [mm]



| Item                            | Load factor $\alpha_n$                                                                                                                                                                                                                                                                                                              | Note                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>1. Maximum load mass</b><br> | $\alpha_1 = W/W_{\max}$<br>$= 1/9$<br>$= \mathbf{0.111}$                                                                                                                                                                                                                                                                            | Examine W.                                                                                                         |
| <b>2. Static moment</b><br>     | $M_2 = W \cdot L_1$<br>$= 10 \cdot 0.2$<br>$= 2 \text{ [N}\cdot\text{m]}$<br>$\alpha_2 = M_2/M_{2\max}$<br>$= 2/16$<br>$= \mathbf{0.125}$ <div style="display: inline-block; vertical-align: middle; border-left: 1px dashed black; padding-left: 10px;"> <math>W = 1 \text{ [kg]}</math><br/> <math>= 10 \text{ [N]}</math> </div> | Examine M <sub>2</sub> .<br>Since M <sub>1</sub> & M <sub>3</sub> are not generated, investigation is unnecessary. |
| <b>3. Dynamic moment</b><br>    | $W_e = 5 \times 10^{-3} \cdot W \cdot g \cdot U$<br>$= 5 \times 10^{-3} \cdot 1 \cdot 9.8 \cdot 300$<br>$= 15 \text{ [N]}$<br>$M_{e3} = 1/3 \cdot W_e (L_2 - A)$<br>$= 1/3 \cdot 15 \cdot 0.182$<br>$= 0.91 \text{ [N}\cdot\text{m]}$<br>$\alpha_3 = M_{e3}/M_{e3\max}$<br>$= 0.91/10$<br>$= \mathbf{0.091}$                        | Examine M <sub>e3</sub> .                                                                                          |
|                                 | $M_{e1} = 1/3 \cdot W_e \cdot L_1$<br>$= 1/3 \cdot 15 \cdot 0.2$<br>$= 1 \text{ [N}\cdot\text{m]}$<br>$\alpha_4 = M_{e1}/M_{e1\max}$<br>$= 1/10$<br>$= \mathbf{0.1}$                                                                                                                                                                | Examine M <sub>e1</sub> .                                                                                          |

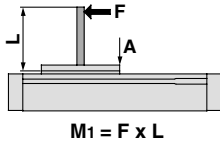
$$\begin{aligned} \Sigma\alpha_n &= \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 \\ &= 0.111 + 0.125 + 0.091 + 0.10 \\ &= 0.427 \end{aligned}$$

Can be used base on  $\Sigma\alpha_n = 0.427 \leq 1$

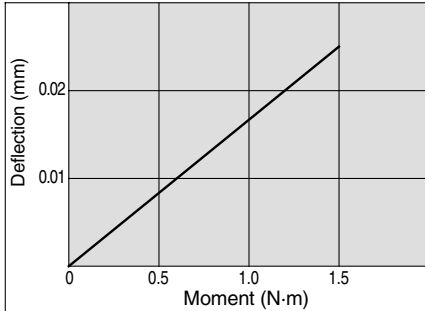
## Caution on Design 2

### Table Deflection Amount

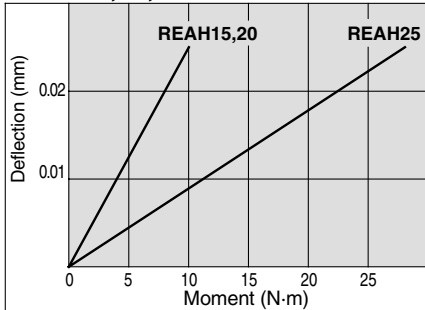
#### Displacement of Table due to Pitch Moment Load



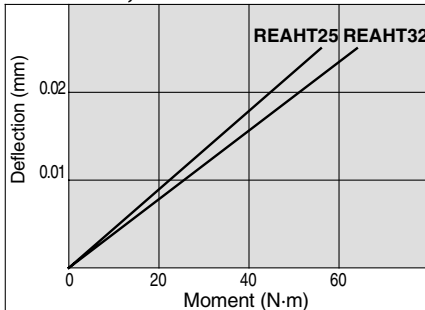
#### REAH10



#### REAH15,20,25



#### REAH25,32



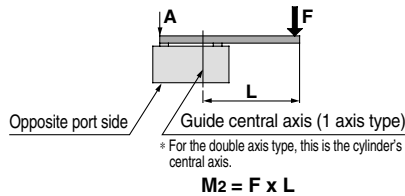
Note) Deflection when a moment other than the above is applied can be specified by extending the lines in the graphs above.

### Vertical Operation

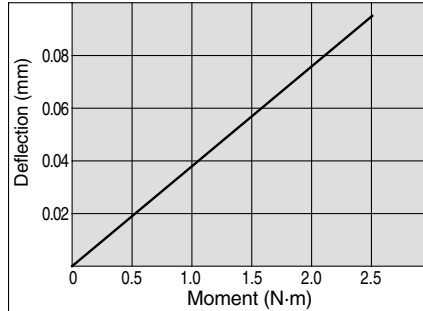
When using in vertical operation, prevention of workpiece dropping due to breaking of the magnetic coupling should be considered. The allowable load mass and maximum operating pressure should be as shown in the table below. When the cylinder is mounted vertically or sidelong, sliders may move downwards due to the self-weight or workpiece mass. If an accurate stopping position is required at the stroke end or the middle-stroke, use an external stopper to secure accurate positioning.

| Model  | Allowable load mass<br>Wv (kg) | Maximum operating pressure<br>Pv (MPa) |
|--------|--------------------------------|----------------------------------------|
| REAH10 | 2.7                            | 0.55                                   |
| REAH15 | 7.0                            | 0.65                                   |
| REAH20 | 11.0                           | 0.65                                   |
| REAH25 | 18.5                           | 0.65                                   |
| REAH25 | 18.5                           | 0.65                                   |
| REAH32 | 30.0                           | 0.65                                   |

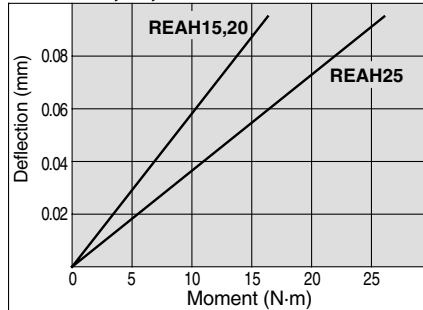
#### Displacement of Table due to Roll Moment Load



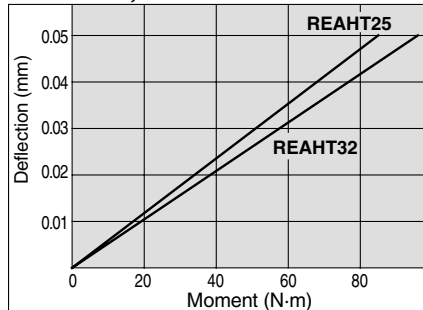
#### REAH10



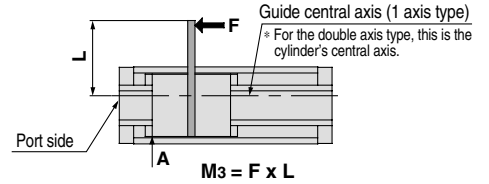
#### REAH15,20,25



#### REAH25,32

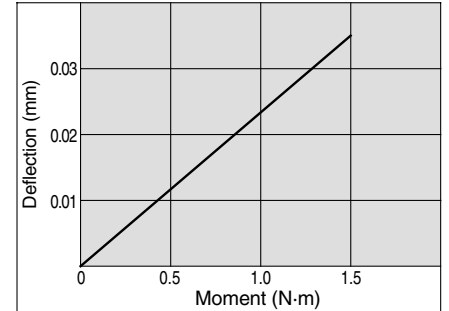


#### Displacement of Table due to Yaw Moment Load

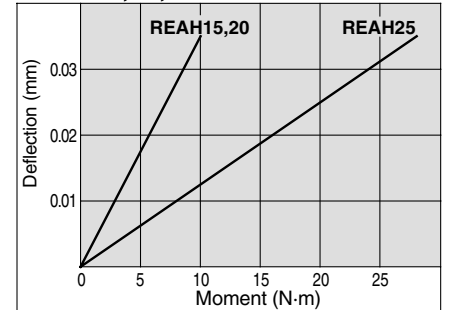


Note) Deflection: Displacement of section A when force acts on section F

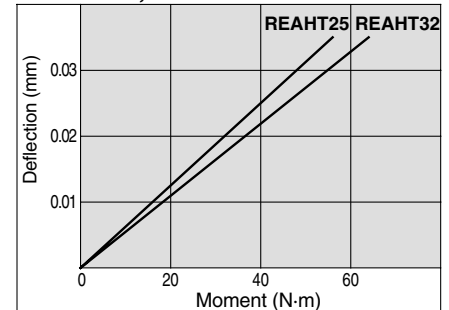
#### REAH10



#### REAH15,20,25



#### REAH25,32



### Intermediate Stop

The cushion effect (smooth start-up, soft stop) exists only before the stroke end in the stroke ranges indicated in the table below. The cushion effect (smooth start-up, soft stop) cannot be obtained in an intermediate stop or a return from an intermediate stop using an external stopper, etc.

### Cushion Stroke

| Model  | Stroke (mm) |
|--------|-------------|
| REAH10 | 20          |
| REAH15 | 25          |
| REAH20 | 30          |
| REAH25 | 30          |
| REAH25 | 30          |
| REAH32 | 30          |

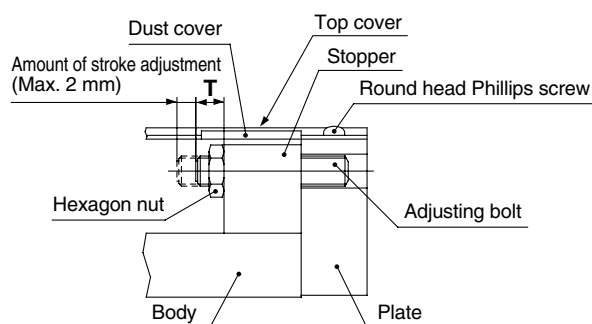
## Stroke Adjustment

The adjusting bolt is adjusted to the optimum position for smooth acceleration and deceleration at the time of shipment, and should be operated at the full stroke. When stroke adjustment is necessary, the maximum amount of adjustment on one side is 2 mm. (Do not adjust more than 2 mm, as it will not be possible to obtain smooth acceleration and deceleration.)

Do not adjust based on the stopper's movement, as this can cause cylinder damage.

### Stroke adjustment method

Loosen the round head Phillips screws, and remove the top covers and dust covers (4 pcs.). Then loosen the hexagon nut, and after performing the stroke adjustment from the plate side with a hexagon wrench, retighten and secure the hexagon nut.



## Adjusting Bolt Position (at the time of shipment), Hexagon Nut Tightening Torque

| Model   | T (mm) | Tightening torque (N·m) |
|---------|--------|-------------------------|
| REAH10  | 7      | 1.67                    |
| REAH15  | 7      |                         |
| REAH20  | 7      |                         |
| REAH25  | 9      | 3.14                    |
| REAHT25 | 9      |                         |
| REAHT32 | 9      |                         |

After adjusting the stroke, replace the top covers and dust covers. Tighten the round head Phillips screws for securing the top covers with a torque of 0.58 N·m.

# Sine Rodless Cylinder Linear Guide Type

## Series *REAH*

Single Axis: ø10, ø15, ø20, ø25/Double Axes: ø25, ø32

### How to Order

**REAH** 25 300 Y7BW

Sine rodless cylinder •

Linear guide type •

Guide •

Bore size •

Port thread type •

Standard stroke •

Made to Order Specification  
For details, refer to page 986.

Number of auto switches

|     |          |
|-----|----------|
| Nil | 2 pcs.   |
| S   | 1 pc.    |
| n   | "n" pcs. |

Auto switch

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

\* For the applicable auto switch model, refer to the table below.

| Bore size (mm) |        | 10 | 15 | 20 | 25 | 32 |
|----------------|--------|----|----|----|----|----|
| Symbol         | 1 axis | ●  | ●  | ●  | ●  | —  |
|                | 2 axes | —  | —  | —  | ●  | ●  |

| Symbol | Type     | Bore size     |
|--------|----------|---------------|
| Nil    | M thread | ø10, ø15      |
|        | Rc       |               |
| TN     | NPT      | ø20, ø25, ø32 |
| TF     | G        |               |

| Bore size |       | 10 | 15 | 20 | 25 | 32 |
|-----------|-------|----|----|----|----|----|
| 10        | 10 mm |    |    |    |    |    |
| 15        | 15 mm |    |    |    |    |    |
| 20        | 20 mm |    |    |    |    |    |
| 25        | 25 mm |    |    |    |    |    |
| 32        | 32 mm |    |    |    |    |    |

**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) |                     |                 |            |  |
|                    |                                            |                  |                 |                         |              |           |               |                   |         |                       |       |       |                     |                 |            |  |
| Solid state switch | —                                          | Grommet          | Yes             | 3-wire (NPN)            | 24 V         | 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)            | 24 V         | 5 V, 12 V |               | Y7NWV             | Y7NW    | ●                     | ●     | ○     | ○                   | IC circuit      |            |  |
|                    | 3-wire (PNP)                               |                  |                 | Y7PWV                   |              |           |               | Y7PW              | ●       | ●                     | ○     | ○     |                     |                 |            |  |
|                    | 2-wire                                     |                  |                 | Y7BWV                   |              |           |               | Y7BW              | ●       | ●                     | ○     | ○     |                     |                 |            |  |
| Reed switch        | —                                          | Grommet          | Yes             | 3-wire (NPN equivalent) | —            | 5 V       | —             | —                 | Z76     | ●                     | ●     | —     | —                   | IC circuit      | —          |  |
|                    |                                            |                  |                 | 2-wire                  | 24 V         | 12 V      | 100 V         | —                 | Z73     | ●                     | ●     | —     | —                   | IC circuit      | Relay, PLC |  |
|                    |                                            |                  |                 |                         |              | 5 V, 12 V | 100 V or less | —                 | Z80     | ●                     | ●     | —     | —                   |                 |            |  |

\* Lead wire length symbols: 0.5 m.....Nil (Example) Y7BW  
3 m.....L (Example) Y7BWL  
5 m.....Z (Example) Y7BWZ

\* Solid state auto switches marked with "○" are produced upon receipt of order.

- Since there are other applicable auto switches than listed, refer to page 993 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- \* Auto switches are shipped together (not assembled).

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□



## Specifications

| Bore size (mm)                       | 10                      | 15  | 20  | 25  | 32  |
|--------------------------------------|-------------------------|-----|-----|-----|-----|
| Fluid                                | Air                     |     |     |     |     |
| Action                               | Double acting           |     |     |     |     |
| Maximum operating pressure           | 0.7 MPa                 |     |     |     |     |
| Minimum operating pressure           | 0.2 MPa                 |     |     |     |     |
| Proof pressure                       | 1.05 MPa                |     |     |     |     |
| Ambient and fluid temperature        | -10 to 60°C             |     |     |     |     |
| Piston speed (Max.) <sup>Note)</sup> | 70 to 300 mm/s          |     |     |     |     |
| Lubrication                          | Not required (Non-lube) |     |     |     |     |
| Stroke length tolerance              | 0 to 1.8 mm             |     |     |     |     |
| Piping                               | Centralized piping type |     |     |     |     |
| Piping port size                     | M5 x 0.8                |     |     | 1/8 |     |
| Holding force (N)                    | 53.9                    | 137 | 231 | 363 | 588 |

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

## Standard Stroke



**Made to Order Specifications**  
(For details, refer to pages 1857 and 2016.)

| Symbol | Specifications                             |
|--------|--------------------------------------------|
| —XB10  | Intermediate stroke (Using exclusive body) |
| —X168  | Helical insert thread specifications       |

| Bore size (mm) | Number of axes | Standard stroke (mm)               | Maximum manufacturable stroke (mm) |
|----------------|----------------|------------------------------------|------------------------------------|
| 10             | 1 axis         | 150, 200, 300                      | 500                                |
| 15             |                | 150, 200, 300, 400, 500            | 750                                |
| 20             |                | 200, 300, 400, 500, 600            | 1000                               |
| 25             |                | 200, 300, 400, 500, 600, 800       | 1200                               |
| 25             | 2 axes         | 200, 300, 400, 500, 600, 800, 1000 | 1200                               |
| 32             |                |                                    | 1500                               |

Note 1) Stroke exceeding the standard stroke will be available upon request for special.

Note 2) Intermediate strokes other than made-to-order (refer to -XB10) are available as special.

## Mass

| Model  | Standard stroke (mm) |     |      |      |      |      |      |      | (kg) |
|--------|----------------------|-----|------|------|------|------|------|------|------|
|        | 150                  | 200 | 300  | 400  | 500  | 600  | 800  | 1000 |      |
| REAH10 | 1.2                  | 1.3 | 1.6  | —    | —    | —    | —    | —    |      |
| REAH15 | 2.5                  | 2.7 | 3.2  | 3.6  | 4.1  | —    | —    | —    |      |
| REAH20 | —                    | 3.5 | 4.0  | 4.4  | 4.9  | 5.4  | —    | —    |      |
| REAH25 | —                    | 5.3 | 6.0  | 6.6  | 7.3  | 8.0  | 9.4  | —    |      |
| REAH25 | —                    | 6.2 | 7.3  | 8.3  | 9.4  | 10.4 | 12.5 | 14.6 |      |
| REAH32 | —                    | 9.6 | 10.7 | 11.9 | 13.0 | 14.2 | 16.5 | 18.8 |      |

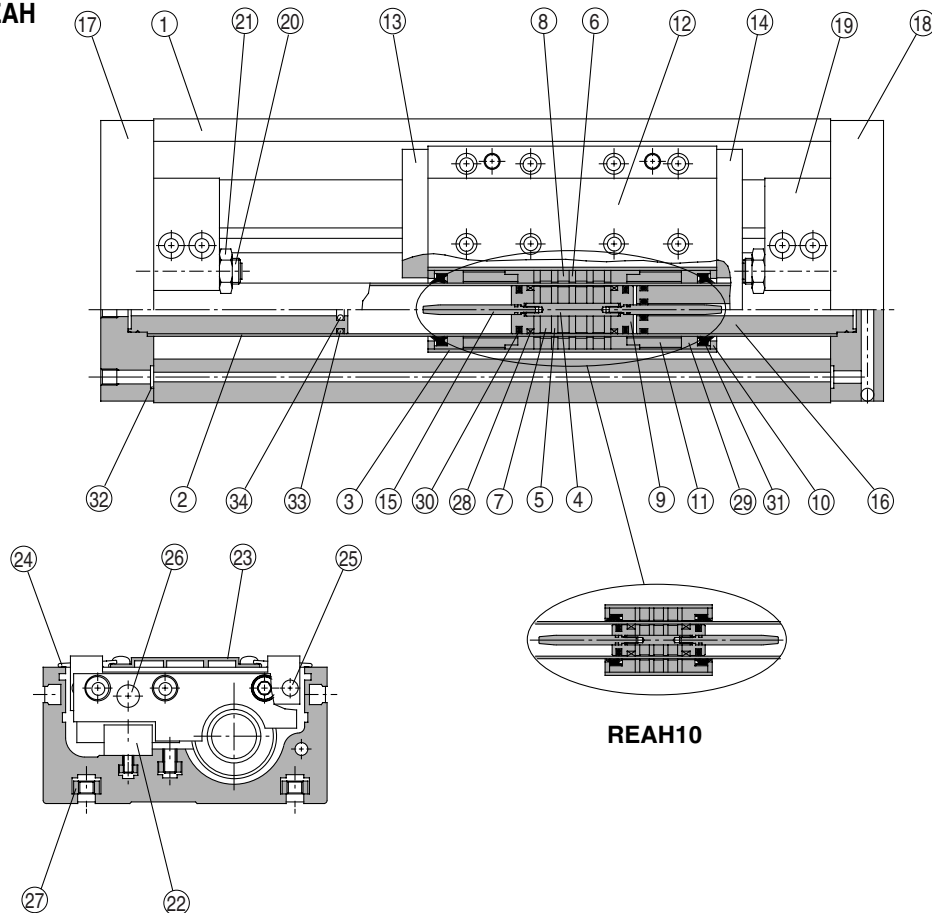
## Theoretical Output

| Bore size (mm) | Piston area (mm <sup>2</sup> ) | Operating pressure (MPa) |     |     |     |     |     | (N) |
|----------------|--------------------------------|--------------------------|-----|-----|-----|-----|-----|-----|
|                |                                | 0.2                      | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 |     |
| 10             | 78                             | 15                       | 23  | 31  | 39  | 46  | 54  |     |
| 15             | 176                            | 35                       | 52  | 70  | 88  | 105 | 123 |     |
| 20             | 314                            | 62                       | 94  | 125 | 157 | 188 | 219 |     |
| 25             | 490                            | 98                       | 147 | 196 | 245 | 294 | 343 |     |
| 32             | 804                            | 161                      | 241 | 322 | 402 | 483 | 563 |     |

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

## Construction: ø10, ø15

### Single axis type: REAH



### Component Parts

| No. | Description               | Material           | Note                      |
|-----|---------------------------|--------------------|---------------------------|
| 1   | Body                      | Aluminum alloy     | Hard anodized             |
| 2   | Cylinder tube             | Stainless steel    |                           |
| 3   | External slider tube      | Aluminum alloy     |                           |
| 4   | Shaft                     | Stainless steel    |                           |
| 5   | Piston side yoke          | Rolled steel plate | Zinc chromated            |
| 6   | External slider side yoke | Rolled steel plate | Zinc chromated            |
| 7   | Magnet A                  | —                  |                           |
| 8   | Magnet B                  | —                  |                           |
| 9   | Piston                    | Brass              | Electroless nickel plated |
| 10  | Spacer                    | Rolled steel plate | Nickel plated             |
| 11  | Space ring                | Aluminum alloy     | Chromated (Except REAH10) |
| 12  | Slide table               | Aluminum alloy     | Hard anodized             |
| 13  | Side plate A              | Aluminum alloy     | Hard anodized             |
| 14  | Side plate B              | Aluminum alloy     | Hard anodized             |
| 15  | Cushion ring              | Stainless steel    |                           |
| 16  | Internal stopper          | Aluminum alloy     | Anodized                  |
| 17  | Plate A                   | Aluminum alloy     | Hard anodized             |

### Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                        |
|----------------|-----------|-------------------------------------------------|
| 10             | REAH10-PS | Set of nos. above<br>28, 29, 30, 31, 32, 33, 34 |
| 15             | REAH15-PS |                                                 |

Note) It may be difficult to replace the cushion seal 34.

\* Seal kit includes a grease pack (ø10: 5 g and 10 g, ø15: 10 g).

Order with the following part number when only the grease pack is needed.

For ø10 grease pack part no.: GR-F-005 (5 g) For external sliding part  
GR-S-010 (10 g) For tube interior

For ø15 grease pack part no.: GR-S-010 (10 g)

### Component Parts

| No. | Description                  | Material                  | Note                      |
|-----|------------------------------|---------------------------|---------------------------|
| 18  | Plate B                      | Aluminum alloy            | Hard anodized             |
| 19  | Stopper                      | Aluminum alloy            | Anodized                  |
| 20  | Adjusting bolt               | Chromium molybdenum steel | Nickel plated             |
| 21  | Hexagon nut                  | Carbon steel              | Nickel plated             |
| 22  | Linear guide                 |                           |                           |
| 23  | Top cover                    | Aluminum alloy            | Hard anodized             |
| 24  | Dust cover                   | Special resin             |                           |
| 25  | Magnet (for auto switch)     | —                         |                           |
| 26  | Parallel pin                 | Carbon steel              | Nickel plated             |
| 27  | Square nut for body mounting | Carbon steel              | Nickel plated (Accessory) |
| 28* | Wear ring A                  | Special resin             |                           |
| 29* | Wear ring B                  | Special resin             |                           |
| 30* | Piston seal                  | NBR                       |                           |
| 31* | Scraper                      | NBR                       |                           |
| 32* | O-ring                       | NBR                       |                           |
| 33* | O-ring                       | NBR                       |                           |
| 34* | Cushion seal                 | NBR                       |                           |

Note 1) Seal kit includes 28 to 34. Order the seal kit, based on each bore size.

Note 2) Square nut for body mounting 27: 4 pieces

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

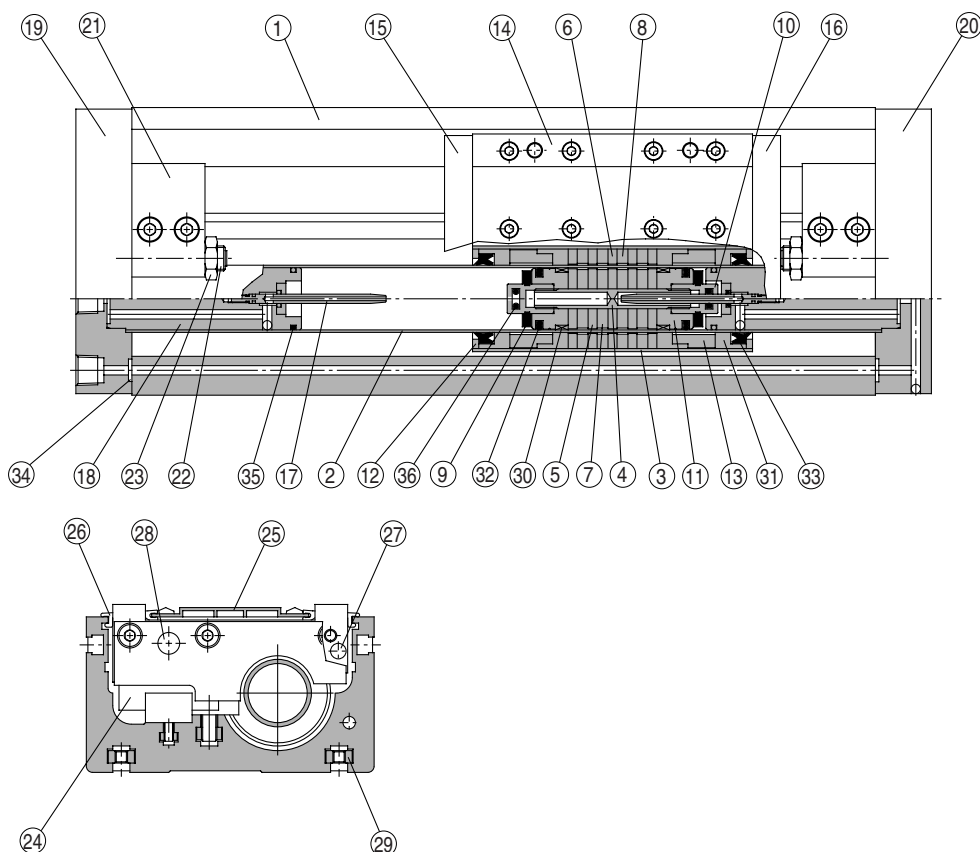
-X□

Individual  
-X□

# Series REAH

Construction: ø20, ø25

Single axis type: REAH



## Component Parts

| No. | Description               | Material           | Note           |
|-----|---------------------------|--------------------|----------------|
| 1   | Body                      | Aluminum alloy     | Hard anodized  |
| 2   | Cylinder tube             | Stainless steel    |                |
| 3   | External slider tube      | Aluminum alloy     |                |
| 4   | Shaft                     | Stainless steel    |                |
| 5   | Piston side yoke          | Rolled steel plate | Zinc chromated |
| 6   | External slider side yoke | Rolled steel plate | Zinc chromated |
| 7   | Magnet A                  | —                  |                |
| 8   | Magnet B                  | —                  |                |
| 9   | Bumper                    | Urethane rubber    |                |
| 10  | Cushion seal holder       | Aluminum alloy     | Chromated      |
| 11  | Piston                    | Aluminum alloy     | Chromated      |
| 12  | Spacer                    | Rolled steel plate | Nickel plated  |
| 13  | Space ring                | Aluminum alloy     | Chromated      |
| 14  | Slide table               | Aluminum alloy     | Hard anodized  |
| 15  | Side plate A              | Aluminum alloy     | Hard anodized  |
| 16  | Side plate B              | Aluminum alloy     | Hard anodized  |
| 17  | Cushion ring              | Stainless steel    |                |
| 18  | Internal stopper          | Aluminum alloy     | Anodized       |

## Component Parts

| No.  | Description                  | Material                  | Note                      |
|------|------------------------------|---------------------------|---------------------------|
| 19   | Plate A                      | Aluminum alloy            | Hard anodized             |
| 20   | Plate B                      | Aluminum alloy            | Hard anodized             |
| 21   | Stopper                      | Aluminum alloy            | Anodized                  |
| 22   | Adjusting bolt               | Chromium molybdenum steel | Nickel plated             |
| 23   | Hexagon nut                  | Carbon steel              | Nickel plated             |
| 24   | Linear guide                 |                           |                           |
| 25   | Top cover                    | Aluminum alloy            | Hard anodized             |
| 26   | Dust cover                   | Special resin             |                           |
| 27   | Magnet (for auto switch)     | —                         |                           |
| 28   | Parallel pin                 | Carbon steel              | Nickel plated             |
| 29   | Square nut for body mounting | Carbon steel              | Nickel plated (Accessory) |
| 30 * | Wear ring A                  | Special resin             |                           |
| 31 * | Wear ring B                  | Special resin             |                           |
| 32 * | Piston seal                  | NBR                       |                           |
| 33 * | Scraper                      | NBR                       |                           |
| 34 * | O-ring                       | NBR                       |                           |
| 35 * | O-ring                       | NBR                       |                           |
| 36 * | Cushion seal                 | NBR                       |                           |

Note 1) Seal kit includes ③① to ③⑥. Order the seal kit, based on each bore size.

Note 2) Square nut for body mounting ②⑨ : 4 pieces

## Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                    |
|----------------|-----------|---------------------------------------------|
| 20             | REAH20-PS | Set of nos. above<br>③①, ③②, ③③, ③④, ③⑤, ③⑥ |
| 25             | REAH25-PS |                                             |

Note) It may be difficult to replace the cushion seal ③⑥.

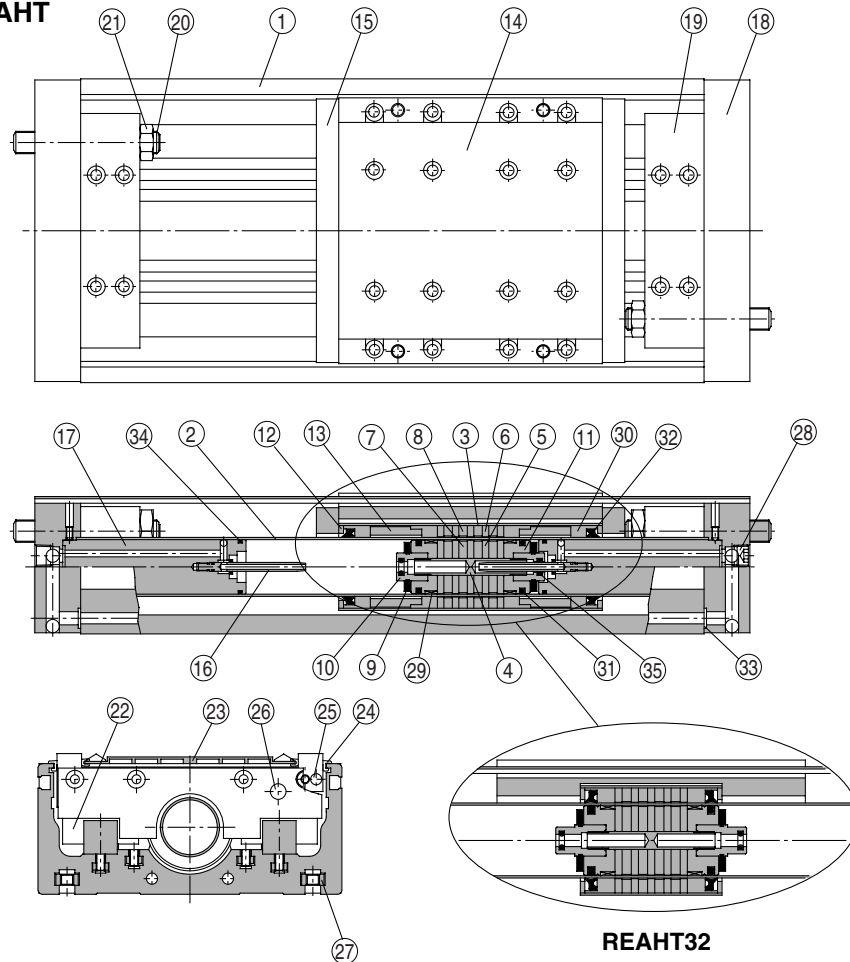
\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

Grease pack part no.: GR-S-010 (10 g)

## Construction: ø25, ø32

### Double axis type: REAHT



### Component Parts

| No. | Description               | Material           | Note                                |
|-----|---------------------------|--------------------|-------------------------------------|
| 1   | Body                      | Aluminum alloy     | Hard anodized                       |
| 2   | Cylinder tube             | Stainless steel    |                                     |
| 3   | External slider tube      | Aluminum alloy     |                                     |
| 4   | Shaft                     | Stainless steel    |                                     |
| 5   | Piston side yoke          | Rolled steel plate | Zinc chromated                      |
| 6   | External slider side yoke | Rolled steel plate | Zinc chromated                      |
| 7   | Magnet A                  | —                  |                                     |
| 8   | Magnet B                  | —                  |                                     |
| 9   | Bumper                    | Urethane rubber    |                                     |
| 10  | Cushion seal holder       | Aluminum alloy     | Chromated                           |
| 11  | Piston                    | Aluminum alloy     | Chromated                           |
| 12  | Spacer                    | Rolled steel plate | Nickel plated                       |
| 13  | Space ring                | Aluminum alloy     | Chromated (Except REAHT32)          |
| 14  | Slide table               | Aluminum alloy     | Hard anodized                       |
| 15  | Side plate                | Aluminum alloy     | Hard anodized (Except REAHT32)      |
| 16  | Cushion ring              | Brass              | Electroless nickel plated (REAHT32) |
|     |                           | Stainless steel    | REAHT25                             |
| 17  | Internal stopper          | Aluminum alloy     | Anodized                            |

### Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.    | Contents                   |
|----------------|------------|----------------------------|
| 25             | REAHT25-PS | Set of nos. above          |
| 32             | REAHT32-PS | 29, 30, 31, 32, 33, 34, 35 |

Note) It may be difficult to replace the cushion seal 35.

\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

Grease pack part no.: GR-S-010 (10 g)

### Component Parts

| No.  | Description                    | Material                  | Note                      |
|------|--------------------------------|---------------------------|---------------------------|
| 18   | Plate                          | Aluminum alloy            | Hard anodized             |
| 19   | Stopper                        | Aluminum alloy            | Anodized                  |
| 20   | Adjusting bolt                 | Chromium molybdenum steel | Nickel plated             |
| 21   | Hexagon nut                    | Carbon steel              | Nickel plated             |
| 22   | Linear guide                   |                           |                           |
| 23   | Top cover                      | Aluminum alloy            | Hard anodized             |
| 24   | Dust cover                     | Special resin             |                           |
| 25   | Magnet (for auto switch)       | —                         |                           |
| 26   | Parallel pin                   | Carbon steel              | Nickel plated             |
| 27   | Square nut for body mounting   | Carbon steel              | Nickel plated (Accessory) |
| 28   | Hexagon socket head taper plug | Carbon steel              | Nickel plated             |
| 29 * | Wear ring A                    | Special resin             |                           |
| 30 * | Wear ring B                    | Special resin             |                           |
| 31 * | Piston seal                    | NBR                       |                           |
| 32 * | Scraper                        | NBR                       |                           |
| 33 * | O-ring                         | NBR                       |                           |
| 34 * | O-ring                         | NBR                       |                           |
| 35 * | Cushion seal                   | NBR                       |                           |

Note 1) Seal kit includes 29 to 35. Order the seal kit, based on each bore size.

Note 2) Square nut for body mounting 27: 4 pieces

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

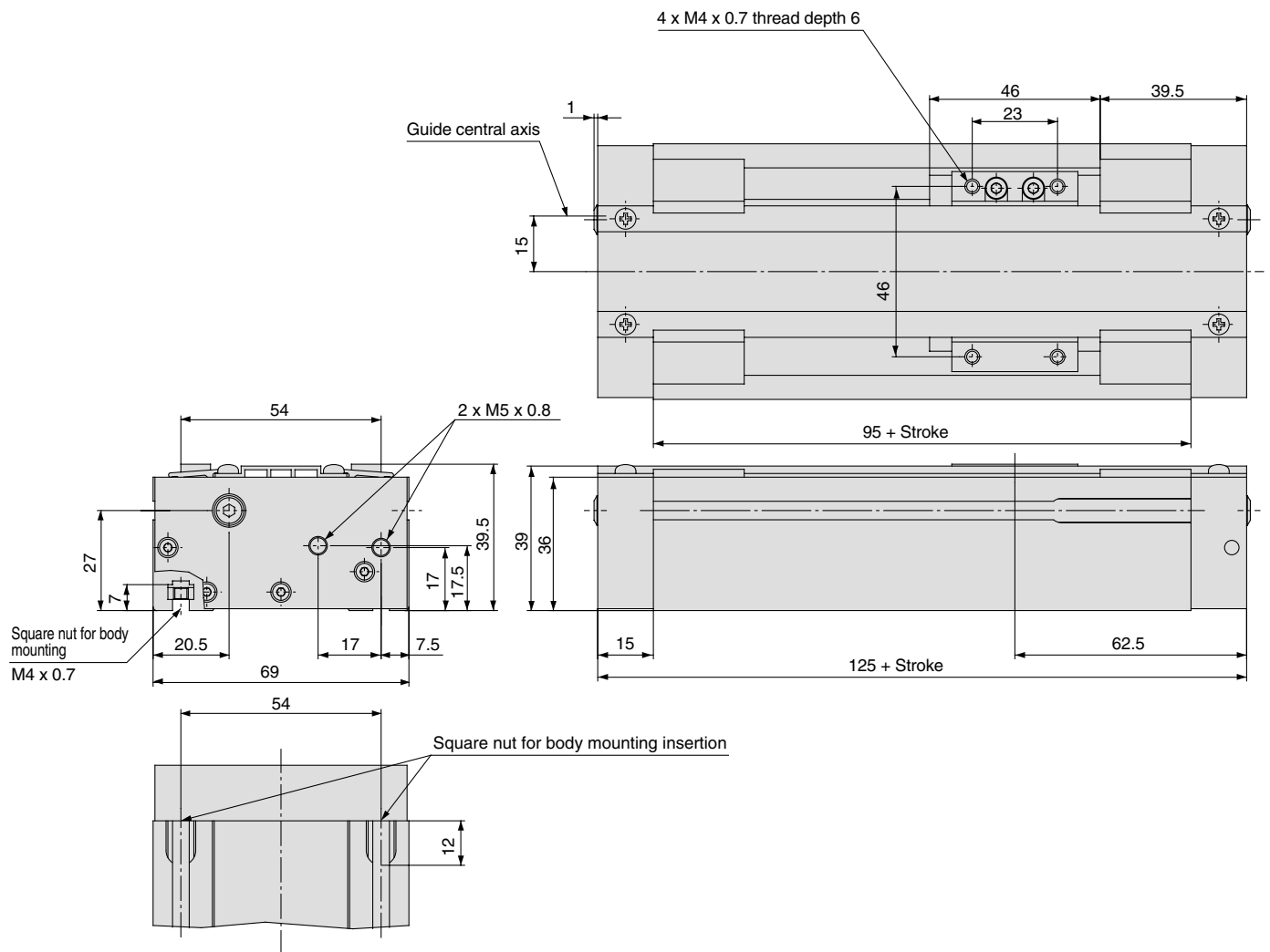
-X□

Individual  
-X□

# Series *REAH*

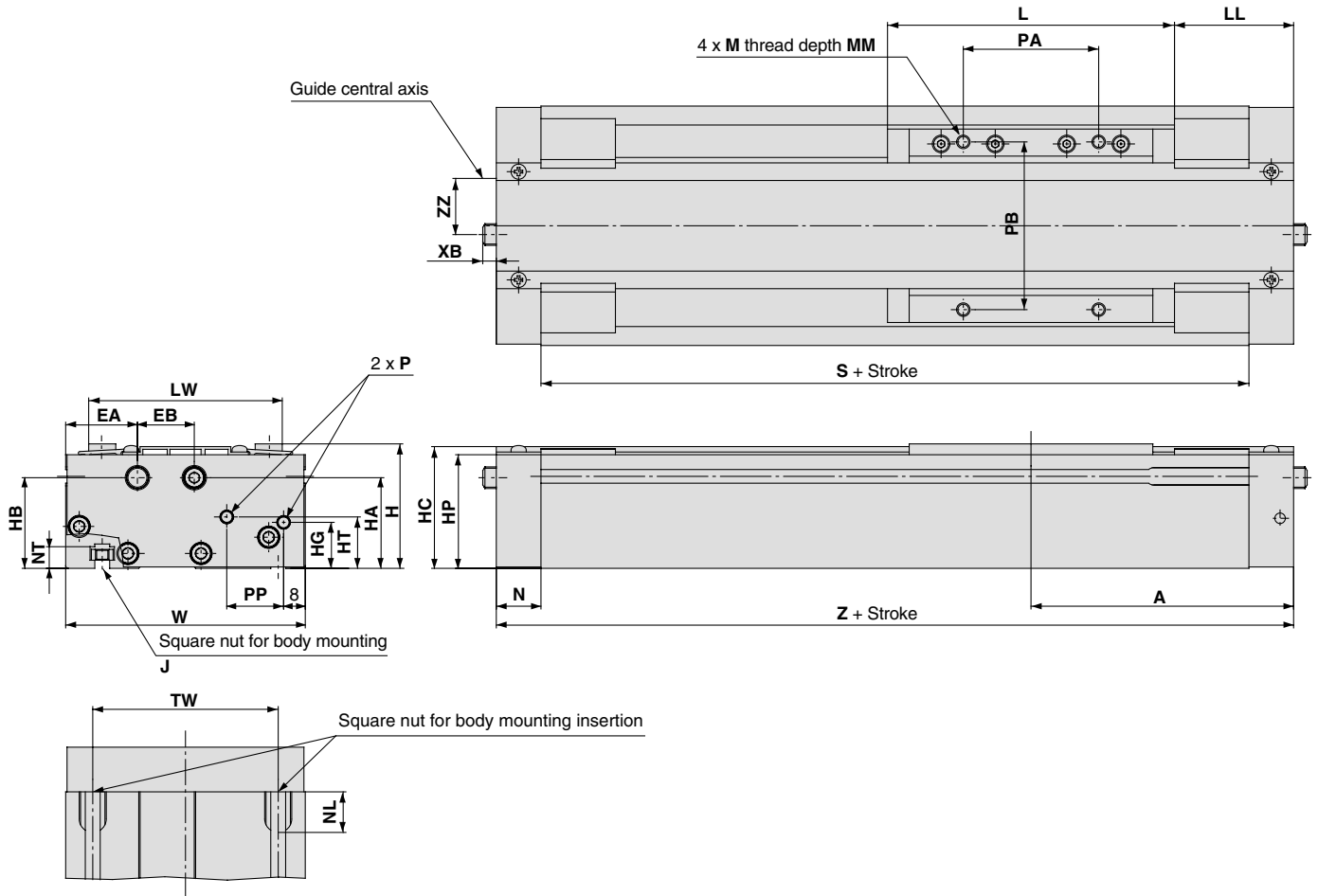
Dimensions:  $\varnothing 10$

Single axis type: REAH



Dimensions:  $\varnothing 15$ ,  $\varnothing 20$ ,  $\varnothing 25$

Single axis type: REAH



| Model  | A     | EA   | EB | H  | HA   | HB   | HC   | HG | HP   | HT   | J        | L   | LL   | LW   | M        | MM |
|--------|-------|------|----|----|------|------|------|----|------|------|----------|-----|------|------|----------|----|
| REAH15 | 97    | 26.5 | 21 | 46 | 33.5 | 33.5 | 45   | 17 | 42   | 19   | M5 x 0.8 | 106 | 44   | 71.5 | M5 x 0.8 | 8  |
| REAH20 | 102.5 | 26.5 | 22 | 54 | 42.5 | 41.5 | 53   | 16 | 50   | 23.5 | M5 x 0.8 | 108 | 48.5 | 75.5 | M5 x 0.8 | 8  |
| REAH25 | 125   | 29   | 24 | 63 | 46   | 46   | 61.5 | 25 | 58.5 | 28   | M6 x 1.0 | 138 | 56   | 86   | M6 x 1.0 | 10 |

| Model  | N    | NL | NT | P        |         |       | PA | PB | PP | S   | TW | W    | XB  | Z   | ZZ   |
|--------|------|----|----|----------|---------|-------|----|----|----|-----|----|------|-----|-----|------|
|        |      |    |    | Nil      | TN      | TF    |    |    |    |     |    |      |     |     |      |
| REAH15 | 16.5 | 15 | 8  | M5 x 0.8 | —       | —     | 50 | 62 | 21 | 161 | 65 | 88.5 | —   | 194 | 17.5 |
| REAH20 | 18   | 15 | 8  | Rc 1/8   | NPT 1/8 | G 1/8 | 50 | 65 | 23 | 169 | 70 | 92.5 | —   | 205 | 19.5 |
| REAH25 | 20.5 | 18 | 9  | Rc 1/8   | NPT 1/8 | G 1/8 | 65 | 75 | 27 | 209 | 75 | 103  | 9.5 | 250 | 23.5 |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

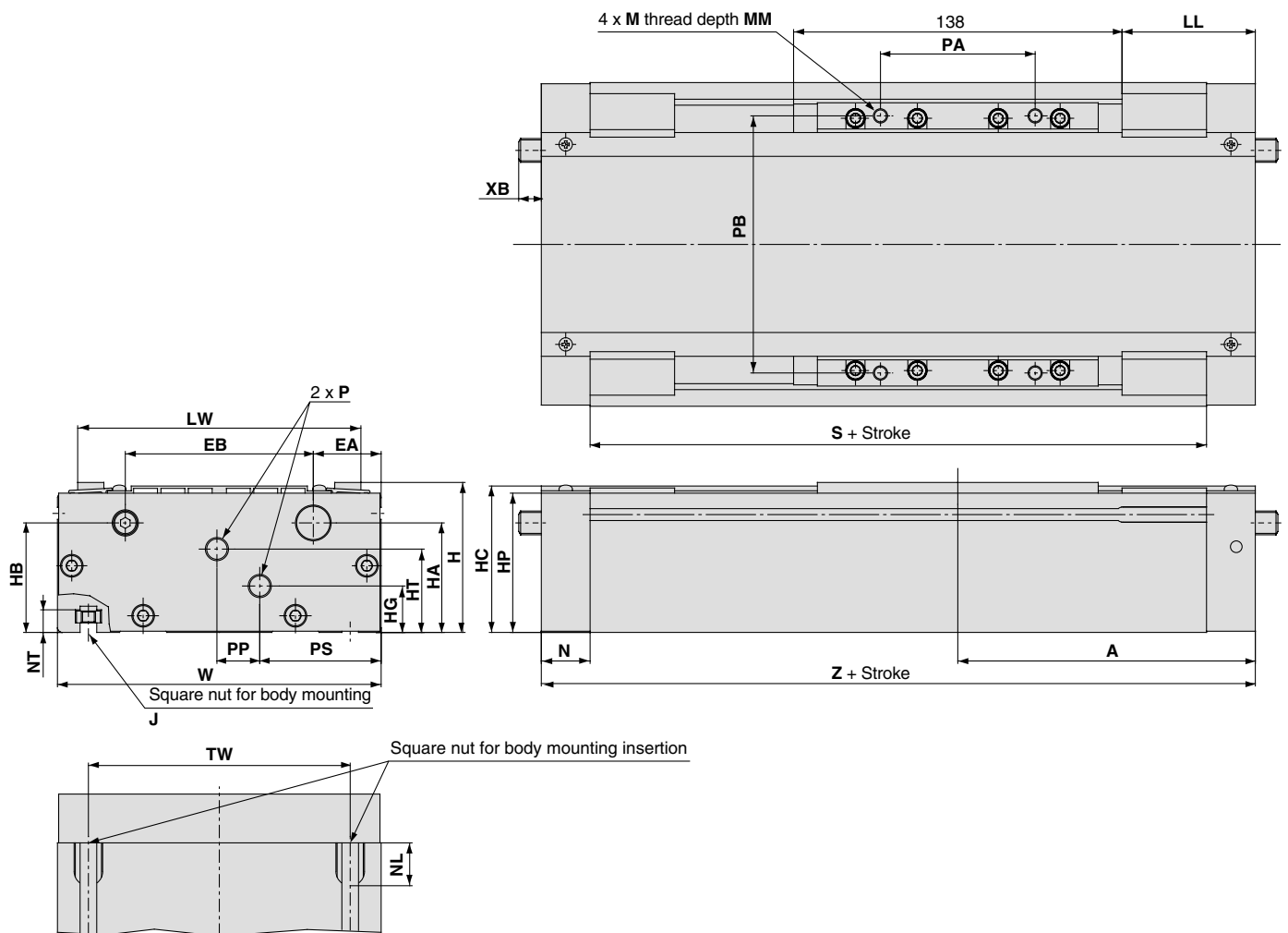
-X□

Individual  
-X□

# Series **REAH**

Dimensions:  $\varnothing 25$ ,  $\varnothing 32$

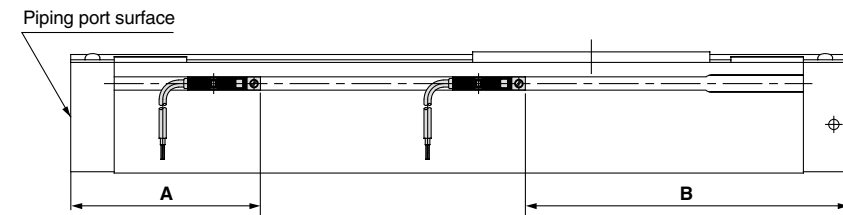
Double axis type: REAHT



| Model          | A     | EA   | EB | H  | HA   | HB   | HC   | HG   | HP   | HT | J         | LL   | LW  | M         | MM | N    |
|----------------|-------|------|----|----|------|------|------|------|------|----|-----------|------|-----|-----------|----|------|
| <b>REAHT25</b> | 125   | 28.5 | 79 | 63 | 46   | 46   | 61.5 | 19.5 | 58.5 | 35 | M6 x 1.0  | 56   | 119 | M6 x 1.0  | 10 | 20.5 |
| <b>REAHT32</b> | 132.5 | 30   | 90 | 75 | 52.5 | 57.5 | 72.5 | 25   | 69.5 | 43 | M8 x 1.25 | 63.5 | 130 | M8 x 1.25 | 12 | 23   |

| Model          | NL   | NT | P      |         |       | PA | PB  | PP | PS | S   | TW  | W   | XB  | Z   |
|----------------|------|----|--------|---------|-------|----|-----|----|----|-----|-----|-----|-----|-----|
|                |      |    | Nil    | TN      | TF    |    |     |    |    |     |     |     |     |     |
| <b>REAHT25</b> | 18   | 9  | Rc 1/8 | NPT 1/8 | G 1/8 | 65 | 108 | 18 | 51 | 209 | 110 | 136 | 9.5 | 250 |
| <b>REAHT32</b> | 22.5 | 12 | Rc 1/8 | NPT 1/8 | G 1/8 | 66 | 115 | 14 | 61 | 219 | 124 | 150 | 2   | 265 |

## Auto Switch Proper Mounting Position (Detection at Stroke End)



## Auto Switch Proper Mounting Position

| Auto switch model<br>Cylinder model | A              |                   |                                   | B              |                   |                                   |
|-------------------------------------|----------------|-------------------|-----------------------------------|----------------|-------------------|-----------------------------------|
|                                     | D-Z7□<br>D-Z80 | D-Y7□W<br>D-Y7□WV | D-Y5□<br>D-Y6□<br>D-Y7P<br>D-Y7PV | D-Z7□<br>D-Z80 | D-Y7□W<br>D-Y7□WV | D-Y5□<br>D-Y6□<br>D-Y7P<br>D-Y7PV |
| REAH10                              |                | 65.5              |                                   |                | 59.5              |                                   |
| REAH15                              |                | 72                |                                   |                | 122               |                                   |
| REAH20                              |                | 77.5              |                                   |                | 127.5             |                                   |
| REAH25                              |                | 86                |                                   |                | 164               |                                   |
| REAH25                              |                | 86                |                                   |                | 164               |                                   |
| REAH32                              |                | 82                |                                   |                | 183               |                                   |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

## Operating Range

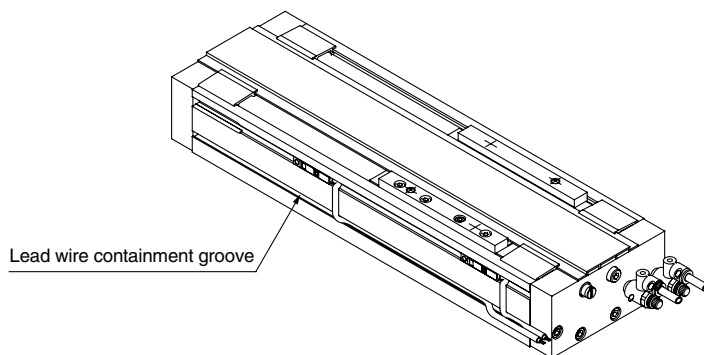
(mm)

| Auto switch model | Bore size (mm) |    |    |    |       |    |
|-------------------|----------------|----|----|----|-------|----|
|                   | REAH           |    |    |    | REAH2 |    |
|                   | 10             | 15 | 20 | 25 | 25    | 32 |
| D-Z7□, Z8□        | 8              | 6  | 6  | 6  | 6     | 9  |
| D-Y5□, Y6□, Y7□   | 6              | 5  | 5  | 5  | 5     | 6  |

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately  $\pm 30\%$  dispersion)  
There may be the case it will vary substantially depending on an ambient environment.

## Auto Switch Lead Wire Containment Groove

On models REAH20 and REAH25 a groove is provided on the side of the body (one side only) to contain auto switch lead wires. This should be used for placement of wiring.



Other than the models listed in "How to Order", the following auto switches are applicable. For detailed specifications, refer to page 1748.

| Auto switch type   | Model      | Electrical entry (Fetching direction) | Features        |
|--------------------|------------|---------------------------------------|-----------------|
| <b>Solid state</b> | D-Y7G, Y7H | Grommet (In-line)                     | Normally closed |

\* For solid state auto switches, auto switches with a pre-wired connector are also available.  
Refer to pages 1784 and 1785 for details.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□



## Series **REAH**

# Specific Product 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.

### Mounting

#### ⚠ Caution

1. The interior is protected to a certain extent by the top cover, however, when performing maintenance, etc., take care not to cause scratches or other damage to the cylinder tube, slide table or linear guide by striking them or placing objects on them.

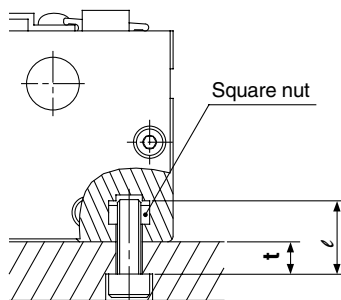
Cylinder bores are manufactured to precise tolerances, so that even a slight deformation may cause faulty operation.

2. Because the slider is supported by precision bearings, take care not to apply strong impacts or excessive moments to the table when loading a workpiece.

#### 3. Mounting of the cylinder body

The body is mounted using the square nuts, which are included, in the two T-slots on the bottom of the body. Refer to the table below for mounting bolt dimensions and tightening torque.

| Model             |             | REAH10   | REAH15   | REAH20   | REAH25    | REAH25 | REAH32 |
|-------------------|-------------|----------|----------|----------|-----------|--------|--------|
| Bolt dimensions   | Thread size | M4 x 0.7 | M5 x 0.8 | M6 x 1.0 | M8 x 1.25 |        |        |
|                   | Dimension t | ℓ-7      | ℓ-8      | ℓ-9      | ℓ-12      |        |        |
| Tightening torque | N·m         | 1.37     | 2.65     | 4.4      | 13.2      |        |        |



### Operation

#### ⚠ Caution

1. The unit can be used with a direct load within the allowable range, but when connecting to a load which has an external guide mechanism, careful alignment is necessary.

Since variation of the shaft center increases as the stroke becomes longer, a connection method should be devised which allows for this displacement.

2. Since the guide is adjusted at the time of shipment, unintentional movement of the adjustment setting should be avoided.

3. Please contact SMC before operating in an environment where there will be contact with cutting chips, dust (paper debris, lint, etc.) or cutting oil (gas oil, water, warm water, etc.).

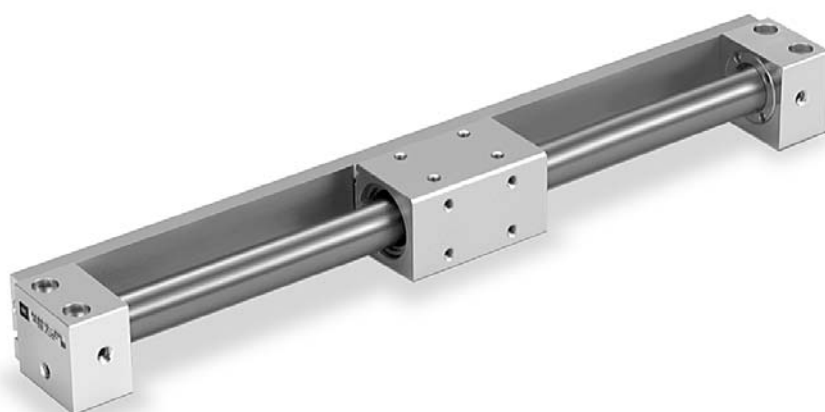
4. Do not operate with the magnetic coupling out of position.

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).

# Direct Mount Type

Series **REBR**

ø15, ø25, ø32



|            |
|------------|
| REA        |
| <b>REB</b> |
| REC        |
| C□Y        |
| C□X        |
| MQ         |
| RHC        |
| RZQ        |

|                   |
|-------------------|
| D-□               |
| -X□               |
| Individual<br>-X□ |

## Model Selection 1

**F<sub>n</sub>**: Allowable driving force (N)

**M<sub>d</sub>**: Maximum allowable moment when connection fitting, etc., is directly loaded (N·m)

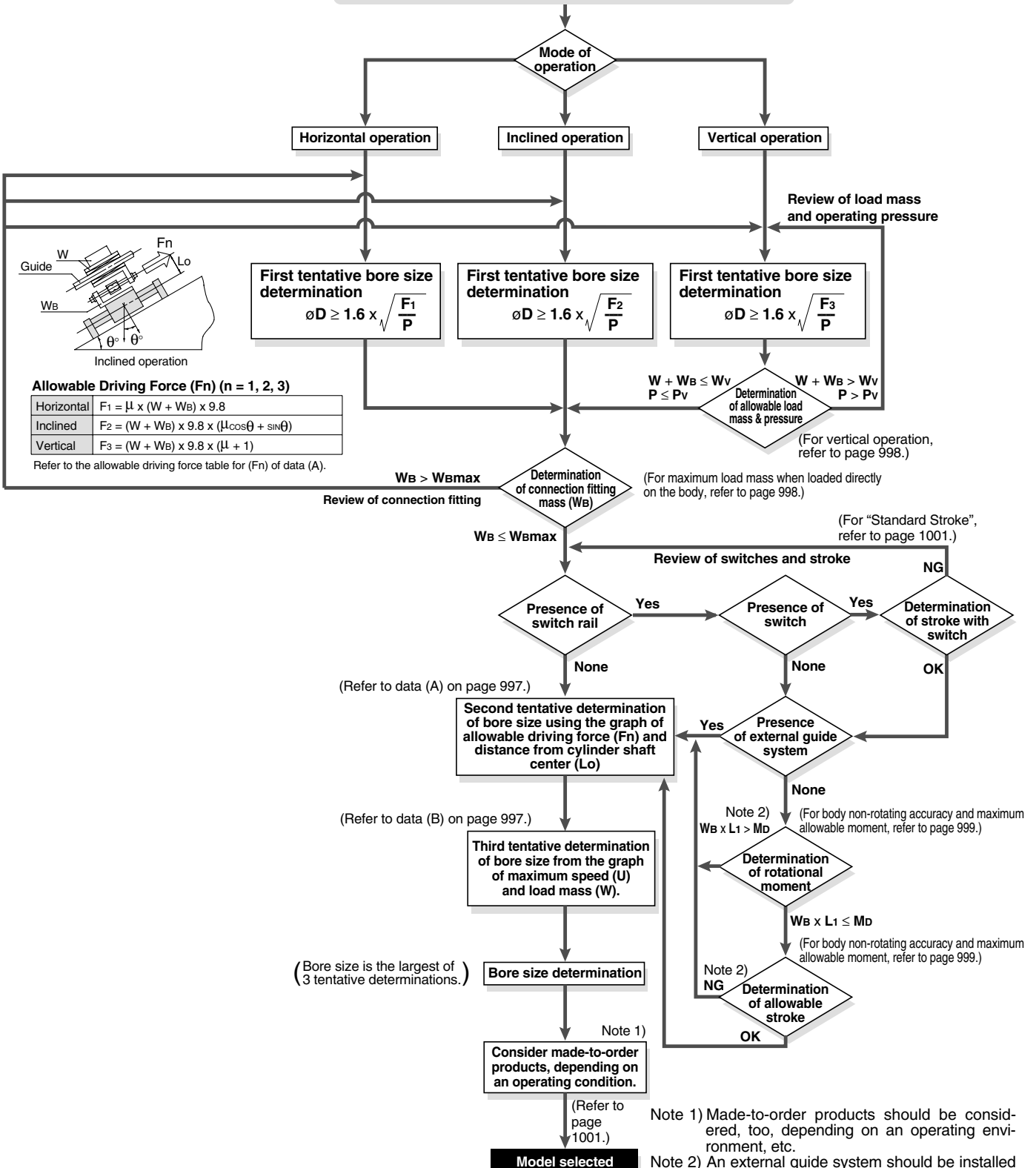
**P<sub>v</sub>**: Maximum operating pressure for vertical operation (MPa)

**W<sub>Bmax</sub>**: Maximum load mass when loaded directly on the body (kg)

**W<sub>v</sub>**: Allowable load mass for vertical operation (kg)

### Operating Conditions

- **W**: Load mass (kg)
- **W<sub>B</sub>**: Connection fitting mass (kg)
- **μ**: Guide's coefficient of friction
- **L<sub>o</sub>**: Distance from cylinder shaft center to workpiece point of application (cm)
- **L<sub>1</sub>**: Distance from the cylinder shaft center to the center of the gravity of connection fitting, etc. (mm)
- Presence of switches
- **P**: Operating pressure (MPa)
- **U**: Maximum speed (mm/s)
- Stroke (mm)
- Mode of operation (horizontal, inclined, vertical)



# Series REBR

## Model Selection 2

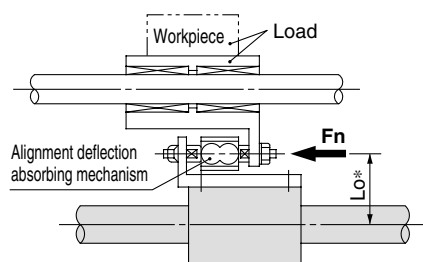
### Caution on Design 1

### Selection Method

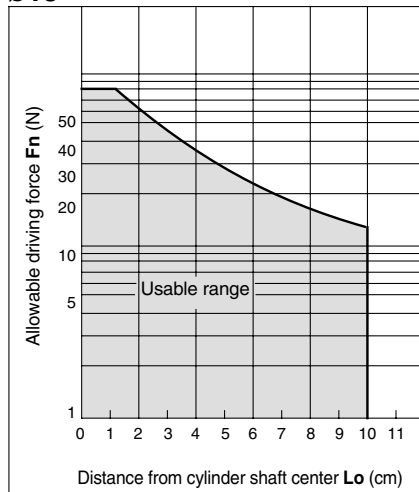
<Data (A): Distance from Cylinder Shaft Center — Allowable Driving Capacity>

#### Selection Procedures

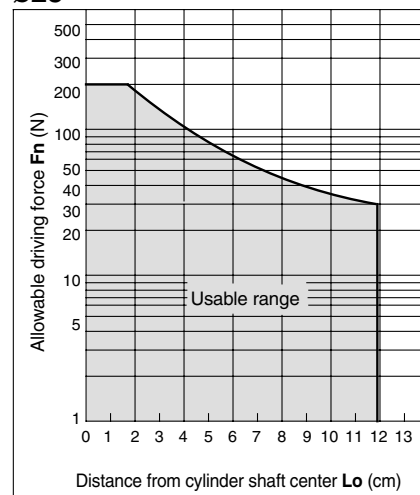
- ① Find the drive resisting force  $F_n$  (N) when moving the load horizontally.
- ② Find the distance  $L_o$  (cm) from the point of the load where driving force is applied, to the center of the cylinder shaft.
- ③ Select a bore size from  $L_o$  and  $F_n$  in Data A.



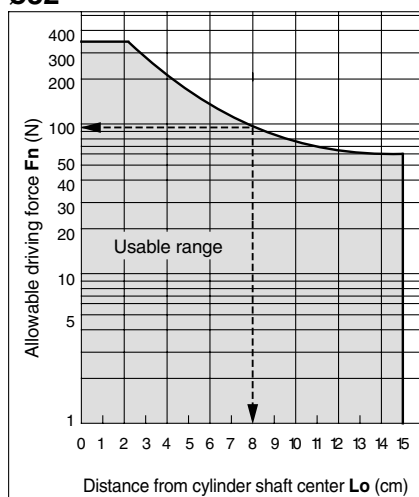
ø15



ø25



ø32

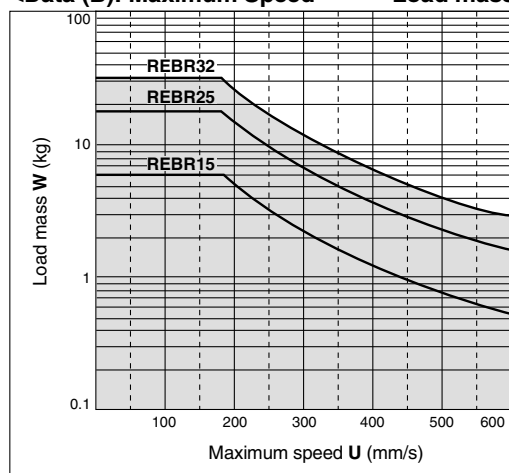


#### Selection Example

Given a load drive resisting force of  $F_n = 100$  (N) and a distance from the cylinder shaft center to the load application point of  $L_o = 8$  cm, find the intersection point by extending upward from the horizontal axis of data (A) where the distance from the shaft center is 8 cm, and then extending to the side, find the allowable driving force on the vertical axis. Models suitable to satisfy the requirement of 100 (N) are **REBR32**.

\* Distance from cylinder shaft center,  $L_o$ , is the moment working point between the cylinder and the load.

<Data (B): Maximum Speed — Load mass Chart>



REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

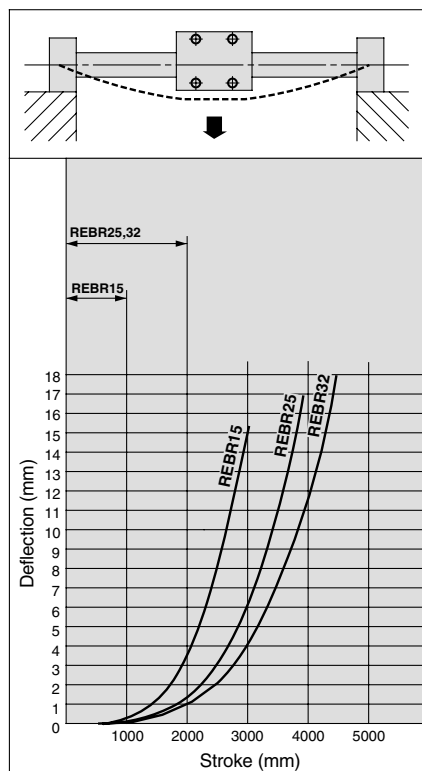
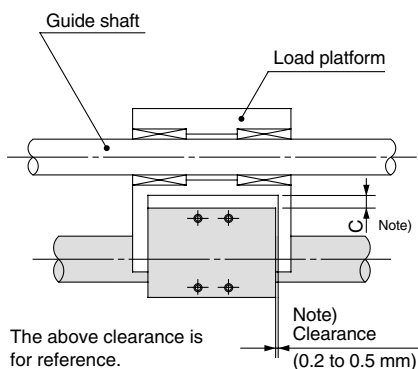
# Series REBR

## Model Selection 3

### Caution on Design 2

#### Cylinder Self-weight Deflection

When the cylinder is mounted horizontally, deflection appears due to its own weight as shown in the data, and the longer the stroke, the greater the amount of variation in the shaft centers. Therefore, a connection method should be considered which allows for this variation as shown in the drawing.

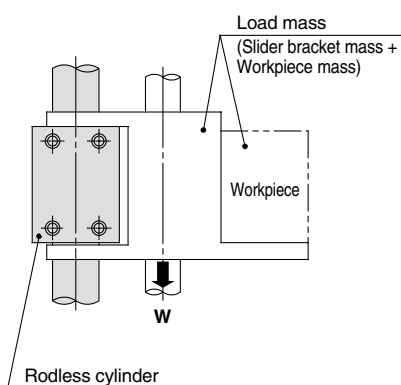


\* The above deflection data indicate values when the external slider has moved to the middle of the stroke.

#### Vertical Operation

The load should be guided by a ball type bearing (LM guide, etc.). If a slide bearing is used, sliding resistance will increase due to the load mass and moment, and this can cause malfunction.

When the cylinder is mounted vertically or sidelong, sliders may move downwards due to the self-weight or workpiece mass. If an accurate stopping position is required at the stroke end or the middle-stroke, use an external stopper to secure accurate positioning.



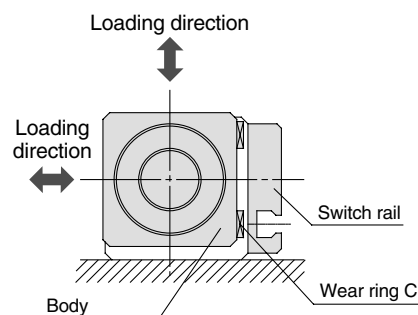
| Bore size (mm) | Model  | Allowable load mass $W_v$ (kg) | Maximum operating pressure $P_v$ (MPa) |
|----------------|--------|--------------------------------|----------------------------------------|
| 15             | REBR15 | 7.0                            | 0.65                                   |
| 25             | REBR25 | 18.5                           | 0.65                                   |
| 32             | REBR32 | 30.0                           | 0.65                                   |

Note) Use caution, since the magnetic coupling may be dislocated if it is used over the maximum operating pressure.

#### Maximum Load Mass when Loaded Directly on Body

When the load is applied directly to the body, it should be no greater than the maximum values shown in the table below.

| Model  | Maximum load mass $W_{Bmax}$ (kg) |
|--------|-----------------------------------|
| REBR15 | 1.0                               |
| REBR25 | 1.2                               |
| REBR32 | 1.5                               |



# Series **REBR**

## Model Selection 4

### Caution on Design 3

#### Intermediate Stop

The cushion effect (smooth start-up, soft stop) exists only before the stroke end in the stroke ranges indicated in the table below.

The cushion effect (smooth start-up, soft stop) cannot be obtained in an intermediate stop or return from an intermediate stop using an external stopper, etc.

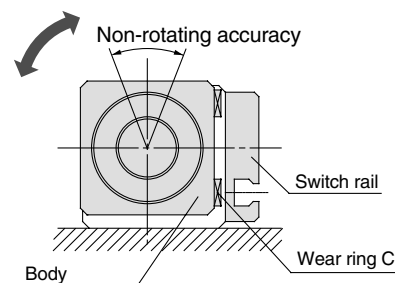
#### Cushion Stroke

| Model         | Stroke (mm) |
|---------------|-------------|
| <b>REBR15</b> | 25          |
| <b>REBR25</b> | 30          |
| <b>REBR32</b> | 30          |

#### Body Non-rotating Accuracy and Max. Allowable Moment (With switch rail) (Reference values)

Reference values for non-rotating accuracy and maximum allowable moment at stroke end are indicated below.

| Bore size (mm) | Non-rotating accuracy (°) | Maximum allowable moment $M_0$ (N·m) | Note 2) Allowable stroke (mm) |
|----------------|---------------------------|--------------------------------------|-------------------------------|
| <b>15</b>      | 4.5                       | 0.15                                 | 200                           |
| <b>25</b>      | 3.7                       | 0.25                                 | 300                           |
| <b>32</b>      | 3.1                       | 0.40                                 | 400                           |



Note 1) Avoid operations where rotational torque (moment) is applied. In such a case, the use of an external guide is recommended.

Note 2) The above reference values will be satisfied within the allowable stroke ranges. However, caution is necessary because as the stroke becomes longer the inclination (rotation angle) within the stroke can be expected to increase.

Note 3) When a load is applied directly to the body, the loaded mass should be no greater than the allowable load mass on page 998.

**REA**

**REB**

**REC**

**C□Y**

**C□X**

**MQ**

**RHC**

**RZQ**

**D-□**

**-X□**

Individual  
**-X□**

# Sine Rodless Cylinder / Direct Mount Type

## Series *REBR*

### ø15, ø25, ø32

### How to Order

**REBR25-300-M9BW**

Sine rodless cylinder

Direct mount type

Bore size

|    |       |
|----|-------|
| 15 | 15 mm |
| 25 | 25 mm |
| 32 | 32 mm |

Port thread type

| Symbol | Type     | Bore size |
|--------|----------|-----------|
| Nil    | M thread | 15        |
|        | Rc       | 25, 32    |
| TN     | NPT      |           |
| TF     | G        |           |

Cylinder stroke (mm)

Refer to "Standard Stroke" on page 1001.

Made to Order  
Refer to page 1001 for details.

Number of auto switches

|     |          |
|-----|----------|
| Nil | 2 pcs.   |
| S   | 1 pc.    |
| n   | "n" pcs. |

Auto switch

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

\* For the applicable auto switch model, refer to the table below.

Switch rail

|     |                     |
|-----|---------------------|
| Nil | With switch rail    |
| N   | Without switch rail |

Note 1) When equipped with switch rails, magnets for auto switches are built-in.  
Note 2) In the case of ø15, magnets for auto switches are built-in even when not equipped with switches.

### 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        |                   | 0.5 (Nil)            | 1 (M) | 3 (L) | 5 (Z) |                     |                 |            |
| Solid state switch | Diagnostic indication (2-color indication) | Grommet          | Yes             | 3-wire (NPN)            | 24 V         | 5 V, 12 V | M9N               | ●                    | ●     | ●     | ○     | ○                   | IC circuit      | Relay, PLC |
|                    |                                            |                  |                 | 3-wire (PNP)            |              |           | M9P               | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 2-wire                  |              |           | M9B               | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 3-wire (NPN)            |              | 5 V, 12 V | M9NW              | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 3-wire (PNP)            |              |           | M9PW              | ●                    | ●     | ●     | ○     | ○                   |                 |            |
|                    |                                            |                  |                 | 2-wire                  |              |           | M9BW              | ●                    | ●     | ●     | ○     | ○                   |                 |            |
| Reed switch        |                                            | Grommet          | Yes             | 3-wire (NPN equivalent) | —            | 5 V       | A96               | ●                    | —     | ●     | —     | —                   | IC circuit      | —          |
|                    |                                            |                  |                 | 2-wire                  | 24 V         | 12 V      | A93               | ●                    | —     | ●     | —     | —                   | —               | Relay, PLC |
|                    |                                            |                  | No              |                         |              |           | A90               | ●                    | —     | ●     | —     | —                   | IC circuit      | —          |

\* Lead wire length symbols: 0.5 m..... Nil (Example) M9NW  
1 m..... M (Example) M9NWM  
3 m..... L (Example) M9NWL  
5 m..... Z (Example) M9NWL

\* Solid state auto switches marked with "○" are produced upon receipt of order.

\* Since there are other applicable auto switches than listed, refer to page 1004 for details.  
\* For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.  
\* Auto switches are shipped together (not assembled).

## Specifications



| Bore size (mm)                       | 10                                                                                      | 15  | 32  |
|--------------------------------------|-----------------------------------------------------------------------------------------|-----|-----|
| 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                                                                             |     |     |
| Piston speed (Max.) <sup>Note)</sup> | 50 to 600 mm/s                                                                          |     |     |
| Lubrication                          | Not required (Non-lube)                                                                 |     |     |
| Stroke length tolerance              | 0 to 250 st: $^{+1.0}_0$ , 251 to 1000 st: $^{+1.4}_0$ , 1001 st and up to: $^{+1.8}_0$ |     |     |
| Holding force                        | 137                                                                                     | 363 | 588 |

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.

## Standard Stroke



**Made to Order Specifications**  
(For details, refer to page 1939.)

| Symbol | Specifications      |
|--------|---------------------|
| —XC57  | With Floating Joint |

| Bore size (mm) | Standard stroke (mm)                             | Maximum manufacturable stroke (mm) | Maximum stroke with switch (mm) |
|----------------|--------------------------------------------------|------------------------------------|---------------------------------|
| 15             | 150, 200, 250, 300, 350, 400, 450, 500           | 1000                               | 750                             |
| 25             | 200, 250, 300, 350, 400, 450, 500, 600, 700, 800 | 2000                               | 1500                            |
| 32             |                                                  |                                    |                                 |

Note) Intermediate stroke is available by the 1 mm interval.

## Mass

|                                                                                  |                                   | (kg)  |       |       |
|----------------------------------------------------------------------------------|-----------------------------------|-------|-------|-------|
| Bore size (mm)                                                                   |                                   | 15    | 25    | 32    |
| Item                                                                             |                                   |       |       |       |
| Basic mass<br>(for 0 st)                                                         | REBR□<br>(with switch rail)       | 0.277 | 0.660 | 1.27  |
|                                                                                  | REBR□-□N<br>(without switch rail) | 0.230 | 0.580 | 1.15  |
| Additional mass per each 50 mm of stroke<br>(when equipped with switch rail)     |                                   | 0.045 | 0.083 | 0.113 |
| Additional mass per each 50 mm of stroke<br>(when not equipped with switch rail) |                                   | 0.020 | 0.050 | 0.070 |

Calculation: (Example) **REBR25-500** (with switch rail)

- Basic mass ..... 0.660 (kg)
- Additional mass ..... 0.083 (kg/50 st)
- Cylinder stroke ..... 500 (st)

$$0.660 + 0.083 \times 500 \div 50 = 1.49 \text{ kg}$$

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

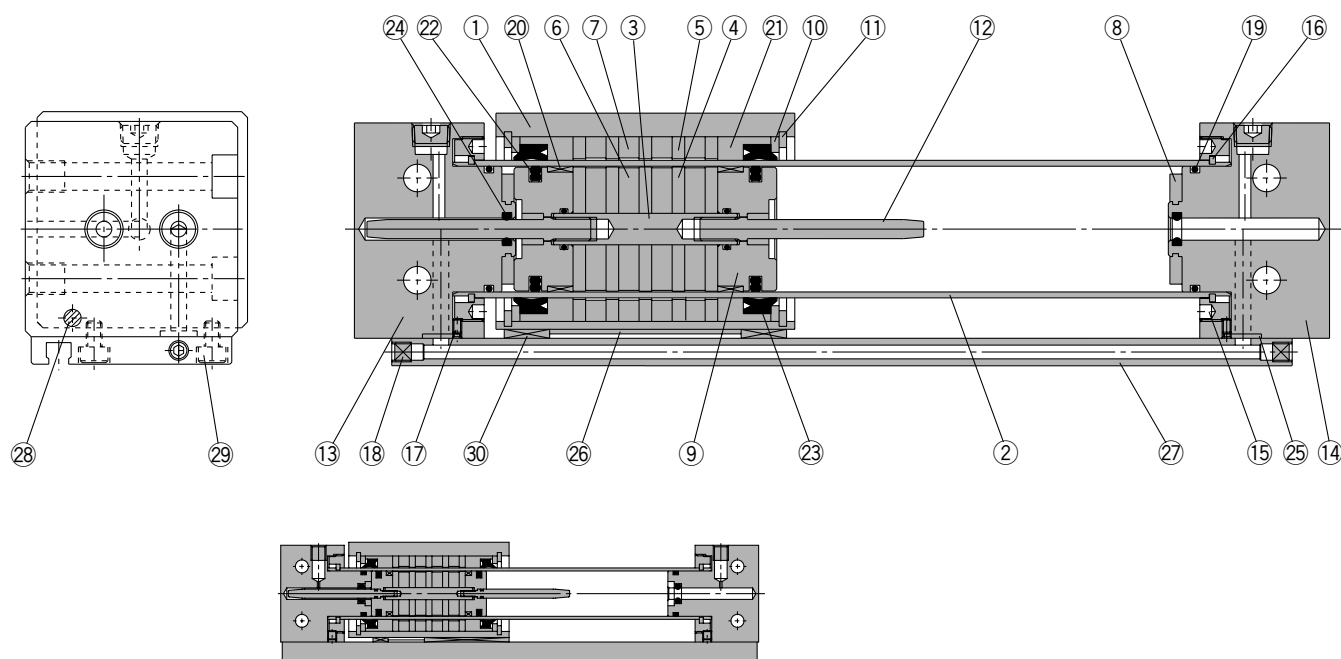
D-□

-X□

Individual  
-X□

# Series **REBR**

**Construction: ø15, ø25, ø32**



**REBR15**

## Component Parts

| No. | Description                    | Material                                    | Note                                                             |
|-----|--------------------------------|---------------------------------------------|------------------------------------------------------------------|
| 1   | Body                           | Aluminum alloy                              | Hard anodized                                                    |
| 2   | Cylinder tube                  | Stainless steel                             |                                                                  |
| 3   | Shaft                          | Stainless steel                             |                                                                  |
| 4   | Piston side yoke               | Rolled steel plate                          | Zinc chromated                                                   |
| 5   | External slider side yoke      | Rolled steel plate                          | Zinc chromated                                                   |
| 6   | Magnet A                       | —                                           |                                                                  |
| 7   | Magnet B                       | —                                           |                                                                  |
| 8   | Bumper                         | Urethane rubber                             | Except REBR15                                                    |
| 9   | Piston                         | Aluminum alloy                              | Chromated                                                        |
| 10  | Spacer                         | Rolled steel plate                          | Nickel plated                                                    |
| 11  | Retaining ring                 | Carbon tool steel                           | Nickel plated                                                    |
| 12  | Cushion ring                   | Stainless steel<br>Brass                    | REBR15, 25<br>REBR32<br>Compound<br>electroless<br>nickel plated |
| 13  | End cover A                    | Aluminum alloy                              | Hard anodized                                                    |
| 14  | End cover B                    | Aluminum alloy                              | Hard anodized                                                    |
| 15  | Attachment ring                | Aluminum alloy                              | Hard anodized                                                    |
| 16  | Type C retaining ring for axis | Hard steel wire material<br>Stainless steel | Nickel plated (REBR15)<br>REBR25, 32                             |
| 17  | Hexagon socket head set screw  | Chromium steel                              | Nickel plated                                                    |
| 18  | Hexagon socket head plug       | Chromium steel                              | Nickel plated                                                    |
| 19  | Cylinder tube gasket           | NBR                                         |                                                                  |

## Component Parts

| No. | Description                   | Material                      | Note |
|-----|-------------------------------|-------------------------------|------|
| 20  | Wear ring A                   | Special resin                 |      |
| 21  | Wear ring B                   | Special resin                 |      |
| 22  | Piston seal                   | NBR                           |      |
| 23  | Scraper                       | NBR                           |      |
| 24  | Cushion seal                  | NBR                           |      |
| 25  | Switch rail gasket            | NBR                           |      |
| 26  | Magnetic shielding plate      | Rolled steel plate/Chromated  |      |
| 27  | Switch rail                   | Aluminum alloy/Clear anodized |      |
| 28  | Magnet                        | —                             |      |
| 29  | Hexagon socket head cap screw | Chromium steel/Nickel plated  |      |
| 30  | Wear ring C                   | Special resin                 |      |

## Replacement Parts: Seal Kit

| Bore size (mm) | Kit no.   | Contents                                             |
|----------------|-----------|------------------------------------------------------|
| 15             | REBR15-PS | A set of 19, 20, 21, 22, 23, 24, 25, 30 listed above |
| 25             | REBR25-PS |                                                      |
| 32             | REBR32-PS |                                                      |

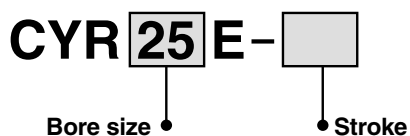
Note) Cushion seal 24 may be difficult to be replaced.

\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

Grease pack part no.: GR-S-010 (10 g)

## Switch Rail Accessory Kit



## Switch Rail Accessory Kit

| Bore size (mm) | Kit no.  | Contents                      |
|----------------|----------|-------------------------------|
| 15             | CYR15E-□ | Above nos. 26, 27, 28, 29, 30 |
| 25             | CYR25E-□ |                               |
| 32             | CYR32E-□ |                               |

Note 1) □ indicates the stroke.

Note 2) ø15 has internal magnets in the body.

## Series *REBR*

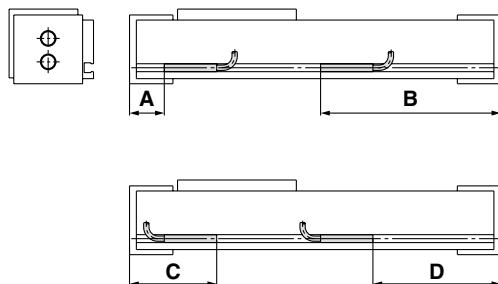
**Dimensions: ø15, ø25, ø32**



REBR15

|     |
|-----|
| REA |
| REB |
| REC |
| C□Y |
| C□X |
| MQ  |
| RHC |
| RZQ |

## Auto Switch Proper Mounting Position (Detection at Stroke End)



### Auto Switch Proper Mounting Position

ø15, ø25, ø32

(mm)

| Auto switch model<br>Bore size | A     |                 | B     |                 | C     |                 | D     |                 |
|--------------------------------|-------|-----------------|-------|-----------------|-------|-----------------|-------|-----------------|
|                                | D-A9□ | D-M9□<br>D-M9□W | D-A9□ | D-M9□<br>D-M9□W | D-A9□ | D-M9□<br>D-M9□W | D-A9□ | D-M9□<br>D-M9□W |
| <b>15</b>                      | 19.5  | 23.5            | 78.5  | 74.5            | —     | —               | 58.5  | 62.5            |
| <b>25</b>                      | 23    | 27              | 102   | 98              | 46    | 42              | 79    | 83              |
| <b>32</b>                      | 31.5  | 35.5            | 116.5 | 112.5           | 54.5  | 50.5            | 93.5  | 87.5            |

Note 1) Auto switches cannot be installed in Area C in the case of ø15.

Note 2) Adjust the auto switch after confirming the operating conditions in the actual setting.

ø25, ø32

(mm)

| Auto switch model<br>Bore size | A                                           | B                                           | C                                           | D                                           |
|--------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
|                                | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W | D-Z7□<br>D-Z80<br>D-Y59□<br>D-Y7P<br>D-Y7□W |
| <b>25</b>                      | 22                                          | 103                                         | 47                                          | 78                                          |
| <b>32</b>                      | 30.5                                        | 117.5                                       | 55.5                                        | 92.5                                        |

Note ) Adjust the auto switch after confirming the operating conditions in the actual setting.

## Operating Range

(mm)

| Auto switch model             | Bore size |     |     |
|-------------------------------|-----------|-----|-----|
|                               | 15        | 25  | 32  |
| <b>D-A9□</b>                  | 8         | 7.5 | 8   |
| <b>D-M9□W</b><br><b>D-M9□</b> | 4.5       | 5.5 | 4.5 |
| <b>D-Z7□/Z80</b>              | —         | 9   | 9   |
| <b>D-Y5□/Y7P/Y7□W</b>         | —         | 7   | 6   |

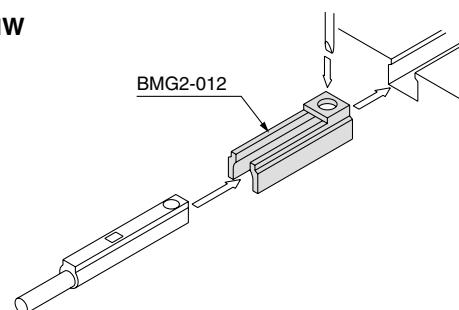
\* Since this is a guideline including hysteresis, not meant to be guaranteed.  
(assuming approximately ±30% dispersion)  
There may be the case it will vary substantially depending on an ambient environment.

## Auto Switch Specifications

(mm)

| Auto switch model                             | Bore size |
|-----------------------------------------------|-----------|
|                                               | ø25, ø32  |
| <b>D-A9□</b><br><b>D-M9□</b><br><b>D-M9□W</b> | BMG2-012  |

**D-A9□/M9□/M9□W**



Other than the models listed in “How to Order”, the following auto switches are applicable.  
For detailed specifications, refer to pages 1719 to 1827.

| Auto switch type   | Model              | Electrical entry (Fetching direction) | Features                                   | Applicable bore size |
|--------------------|--------------------|---------------------------------------|--------------------------------------------|----------------------|
| <b>Reed</b>        | D-Z73, Z76         | Grommet (In-line)                     | —                                          | ø25, ø32             |
|                    | D-Z80              |                                       | Without indicator light                    |                      |
| <b>Solid state</b> | D-Y59A, Y59B, Y7P  | Grommet (In-line)                     | —                                          |                      |
|                    | D-Y7NW, Y7PW, Y7BW |                                       | Diagnostic indication (2-color indication) |                      |

\* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1784 and 1785 for details.

\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H/Y7G/Y7H types) are also available. Refer to pages 1746 and 1748 for details.



# Series REBR Specific Product 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.

## Mounting

### ⚠ Caution

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

This can lead to a damage of the scraper and the wear ring, which in turn can cause malfunction.

2. Use caution to the rotation of the external slider.

Rotation should be controlled by connecting it to another shaft (linear guide, etc.).

3. 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.

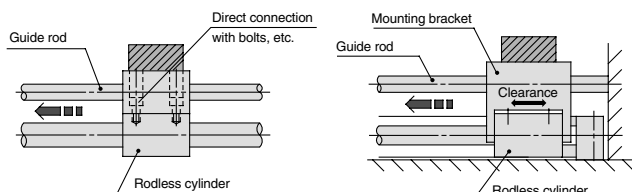
4. The cylinder is mounted with bolts through the mounting holes in the end covers. Be sure they are tightened securely.

5. 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.

6. 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 mass. A drawing of a recommended mounting is shown in Fig. (2).



Variations in the load and cylinder shaft alignment cannot be offset and may result in a malfunction.

Shaft alignment variations are offset by providing clearance between 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.

Fig. (1) Incorrect mounting

Fig. (2) Recommended mounting

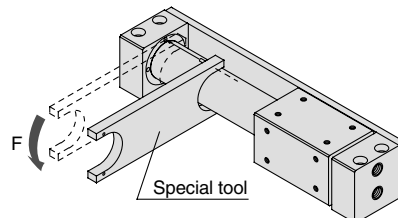
7. Use caution regarding the allowable load mass when operating in a vertical direction.

The allowable load mass when operating in a vertical direction (reference values on page 998) is determined by the model selection method. However, if a load greater than the allowable value is applied, the magnetic coupling may break and there is a possibility of dropping the load. When using this type of application, please contact SMC regarding the operating conditions (pressure, load, speed, stroke, frequency, etc.).

## Disassembly and Maintenance

### ⚠ Caution

1. Special tools are necessary for disassembly.



#### Special Tool Number

| Part no. | Applicable bore size (mm) |
|----------|---------------------------|
| CYRZ-V   | 15                        |
| CYRZ-W   | 25, 32                    |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Linear Guide Type Single Axis/Double Axes

## Series **REBH/REBHT**

Single Axis:  $\varnothing 15$ ,  $\varnothing 25$   
Double Axes:  $\varnothing 25$ ,  $\varnothing 32$



**REBH**

**REBHT**

REA

**REB**

REC

C□Y

C□X

MQ

RHC

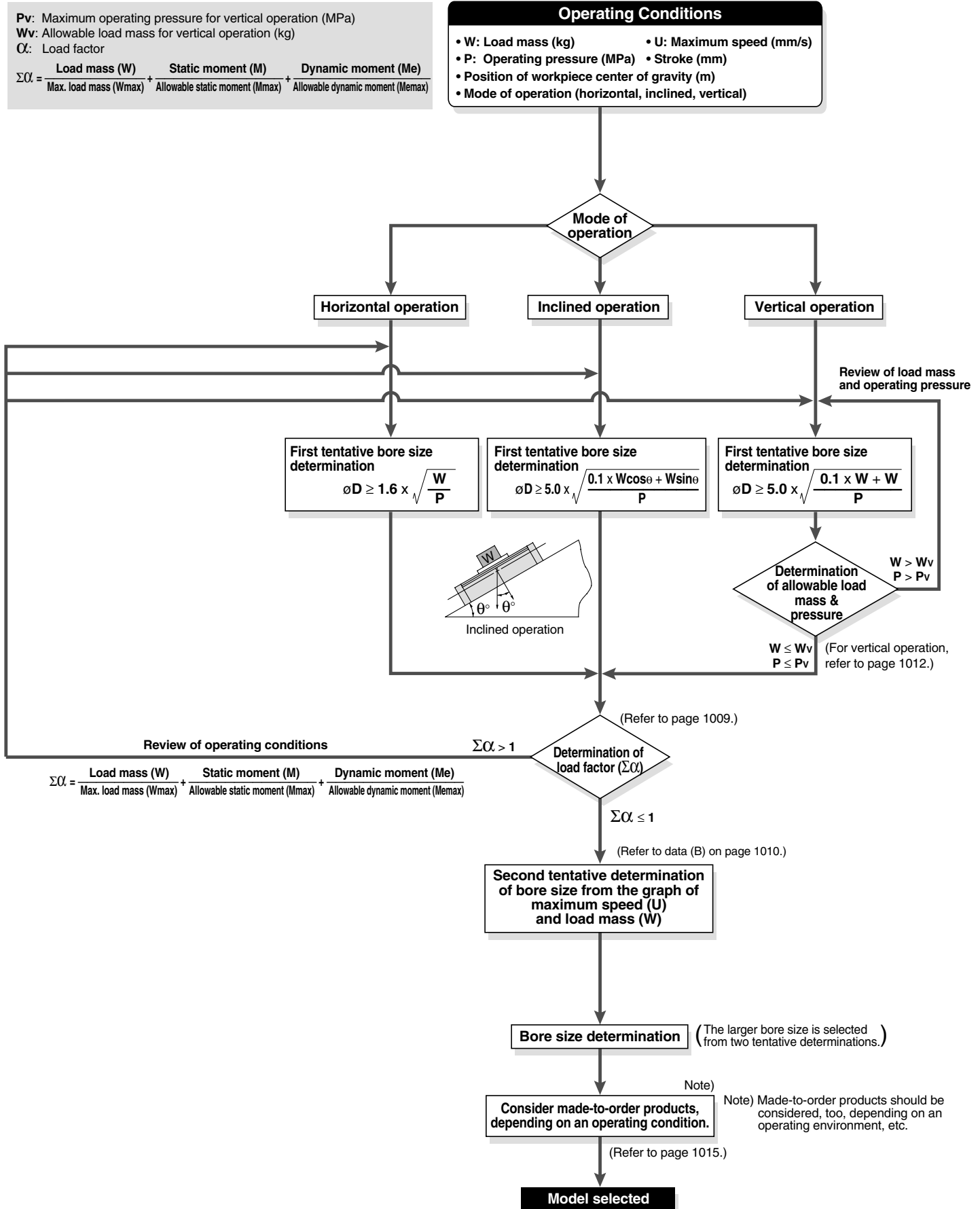
RZQ

D-□

-X□

Individual  
-X□

# Model Selection 1



# Series *REBH*

## Model Selection 2

### Caution on Design 1

The load mass allowable moment differs depending on the workpiece mounting method, cylinder mounting orientation and piston speed. In making a determination of usability, do not allow the sum ( $\sum \alpha_n$ ) of the load factors ( $\alpha_n$ ) for each mass and moment to exceed "1".

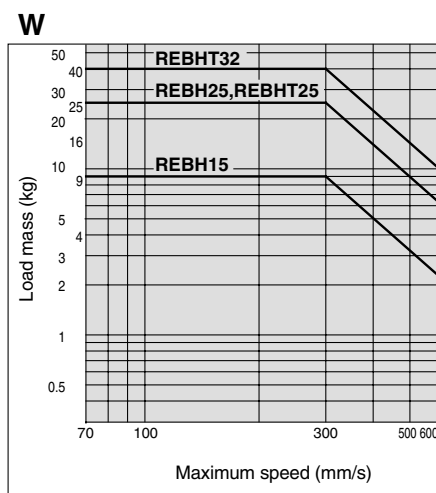
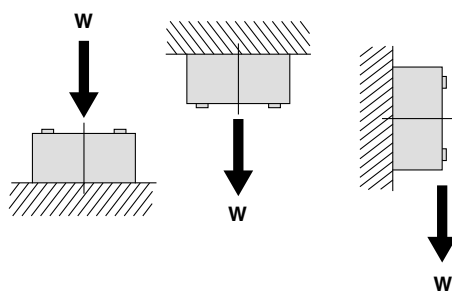
$$\sum \alpha_n = \frac{\text{Load mass (W)}}{\text{Maximum load mass (Wmax)}} + \frac{\text{Static moment (M)}}{\text{Allowable static moment (Mmax)}} + \frac{\text{Dynamic moment (Me)}}{\text{Allowable dynamic moment (Memax)}} \leq 1$$

### Caution on Design 2

### Load Mass

#### Maximum Load Mass (kg)

| Model   | W <sub>max</sub> |
|---------|------------------|
| REBH15  | 9                |
| REBH25  | 25               |
| REBHT25 | 25               |
| REBHT32 | 40               |

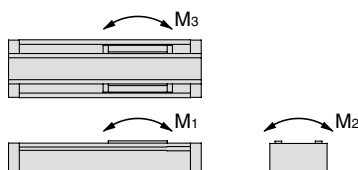


<Graph (1)>

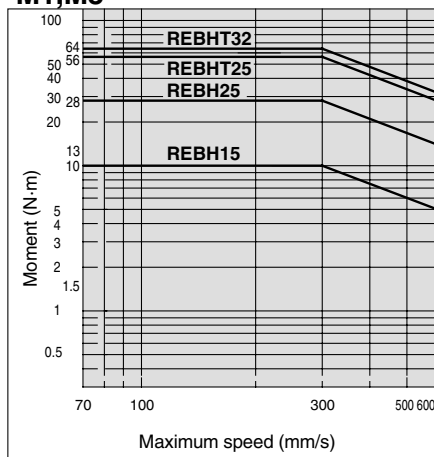
### Moment

#### Allowable Moment (Static moment/Dynamic moment) (N·m)

| Model   | M <sub>1</sub> | M <sub>2</sub> | M <sub>3</sub> |
|---------|----------------|----------------|----------------|
| REBH15  | 10             | 16             | 10             |
| REBH25  | 28             | 26             | 28             |
| REBHT25 | 56             | 85             | 56             |
| REBHT32 | 64             | 96             | 64             |

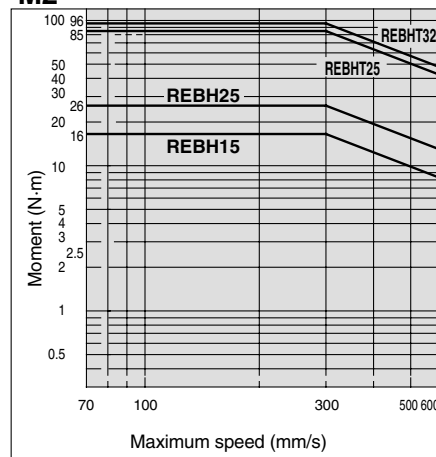


#### M1, M3



<Graph (2)>

#### M2



<Graph (3)>

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

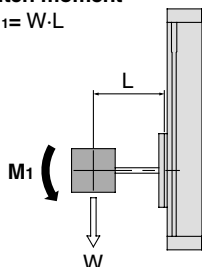
# Series **REBH**

## Static Moment

Moment generated by the workpiece mass even when the cylinder is stopped

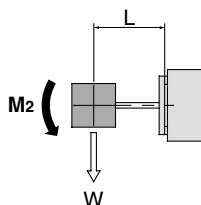
### ■ Pitch moment

$$M_1 = W \cdot L$$



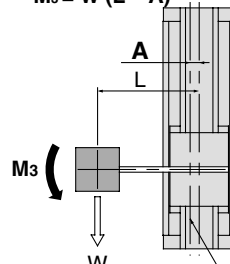
### ■ Roll moment

$$M_2 = W \cdot L$$



### ■ Yaw moment

$$M_3 = W (L - A)$$



(mm)

| Model   | A    |
|---------|------|
| REBH15  | 17.5 |
| REBH25  | 23.5 |
| REBHT25 | 0*   |
| REBHT32 | 0*   |

\*Since there are 2 guides, the guides' central axis and the cylinder's central axis are the same.

## Dynamic Moment

Moment generated by the load equivalent to impact at the stroke end

$$We = 5 \times 10^{-3} \cdot W \cdot g \cdot U$$

**We** : Load equivalent to impact [N]

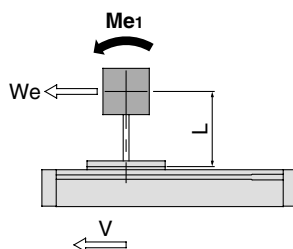
**W** : Load mass [kg]

**U** : Maximum speed [mm/s]

**g** : Gravitational acceleration (9.8 m/s<sup>2</sup>)

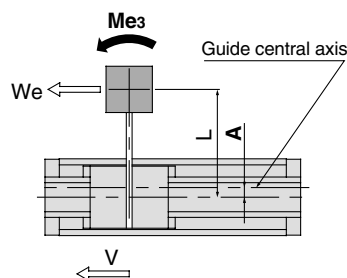
### ■ Pitch moment

$$Me_1 = 1/3 \cdot We \cdot L$$



### ■ Yaw moment

$$Me_3 = 1/3 \cdot We (L - A)$$

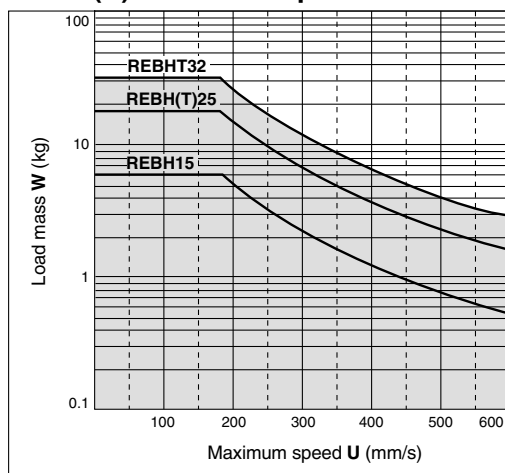


(mm)

| Model   | A    |
|---------|------|
| REBH15  | 17.5 |
| REBH25  | 23.5 |
| REBHT25 | 0*   |
| REBHT32 | 0*   |

\*Since there are 2 guides, the guides' central axis and the cylinder's central axis are the same.

## <Data (B): Maximum speed — Load Mass Chart>



# Series REBH

## Model Selection 3

### Selection Calculation

The selection calculation finds the load factors ( $\alpha_n$ ) of the items below, where the total ( $\Sigma\alpha_n$ ) does not exceed 1.

$$\Sigma\alpha_n = \alpha_1 + \alpha_2 + \alpha_3 \leq 1$$

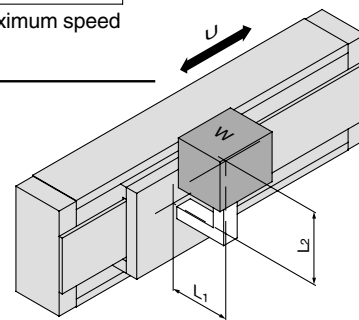
| Item              | Load factor $\alpha_n$     | Note                                                                                                   |
|-------------------|----------------------------|--------------------------------------------------------------------------------------------------------|
| 1. Max. load mass | $\alpha_1 = W/W_{\max}$    | Review W.<br>W <sub>max</sub> is the maximum load mass.                                                |
| 2. Static moment  | $\alpha_2 = M/M_{\max}$    | Review M <sub>1</sub> , M <sub>2</sub> , M <sub>3</sub> .<br>M <sub>max</sub> is the allowable moment. |
| 3. Dynamic moment | $\alpha_3 = M_e/M_{e\max}$ | Review M <sub>e1</sub> , M <sub>e3</sub> .<br>M <sub>e</sub> <sub>max</sub> is the allowable moment.   |

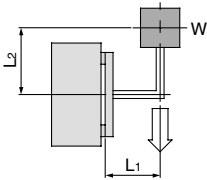
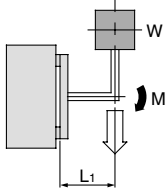
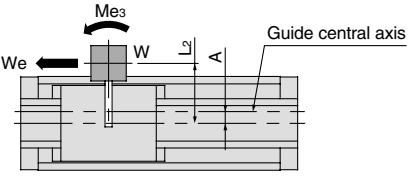
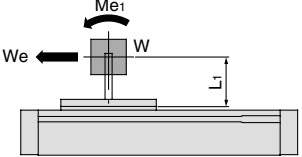
U: Maximum speed

### Calculation Example

#### Operating Conditions

Cylinder: REBH15  
Mounting: Horizontal wall mounting style  
Maximum speed: U = 500 [mm/s]  
Load mass: W = 1 [kg] (excluding mass of arm section)  
L<sub>1</sub> = 200 [mm]  
L<sub>2</sub> = 200 [mm]



| Item                                                                                                            | Load factor $\alpha_n$                                                                                                                                                                                                                                                                                  | Note                                                                                                                |
|-----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>1. Maximum load mass</b>  | $\alpha_1 = W/W_{\max}$<br>$= 1/3$<br>$= 0.111$<br>$= 0.333$                                                                                                                                                                                                                                            | Examine W.<br>(For W <sub>max</sub> , find the value in <Graph (1)> when U = 500 mm/s.)                             |
| <b>2. Static moment</b>      | $M_2 = W \cdot L_1$<br>$= 10 \cdot 0.2$<br>$= 2 \text{ [N}\cdot\text{m]}$<br>$\alpha_2 = M_2/M_{2\max}$<br>$= 2/16$<br>$= 0.125$                                                                                                                                                                        | Examine M <sub>2</sub> .<br>Since M <sub>1</sub> & M <sub>3</sub> are not generated, investigation is unnecessary.  |
| <b>3. Dynamic moment</b>     | $W_e = 5 \times 10^{-3} \cdot W \cdot g \cdot U$<br>$= 5 \times 10^{-3} \cdot 1 \cdot 9.8 \cdot 500$<br>$= 25 \text{ [N]}$<br>$M_{e3} = 1/3 \cdot W_e \cdot (L_2 - A)$<br>$= 1/3 \cdot 25 \cdot 0.182$<br>$= 1.52 \text{ [N}\cdot\text{m]}$<br>$\alpha_3 = M_{e3}/M_{e3\max}$<br>$= 1.52/6$<br>$= 0.25$ | Examine M <sub>e3</sub> .<br>(For M <sub>e</sub> <sub>max</sub> , find the value in <Graph (2)> when U = 500 mm/s.) |
|                              | $M_{e1} = 1/3 \cdot W_e \cdot L_1$<br>$= 1/3 \cdot 25 \cdot 0.2$<br>$= 1.6 \text{ [N}\cdot\text{m]}$<br>$\alpha_4 = M_{e1}/M_{e1\max}$<br>$= 1.6/6$<br>$= 0.27$                                                                                                                                         | Examine M <sub>e1</sub> .<br>(For M <sub>e</sub> <sub>max</sub> , find the value in <Graph (2)> when U = 500 mm/s.) |

$$\begin{aligned} \Sigma\alpha_n &= \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 \\ &= 0.333 + 0.125 + 0.25 + 0.27 \\ &= 0.978 \leq 1 \\ \text{And it is possible to use.} \end{aligned}$$

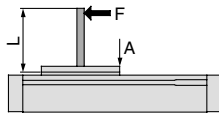
# Series **REBH**

## Model Selection 4

### Caution on Design 2

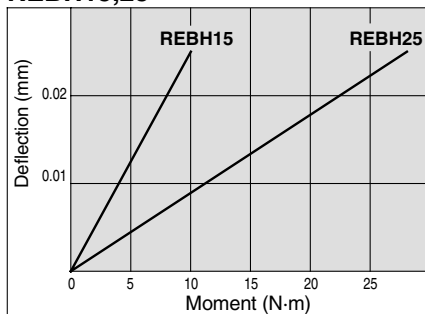
#### Table Deflection Amount

##### Displacement of Table due to Pitch Moment Load

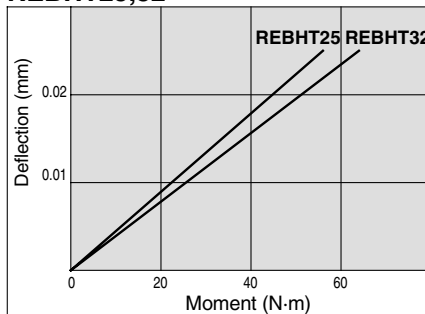


$$M_1 = F \times L$$

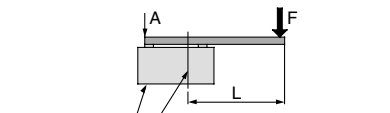
##### REBH15,25



##### REBHT25,32



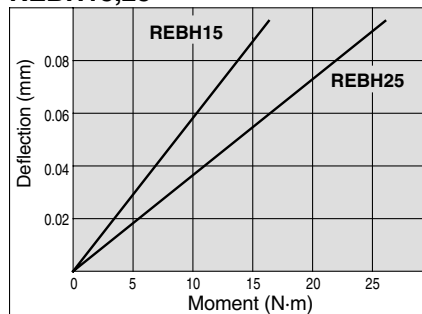
##### Displacement of Table due to Roll Moment Load



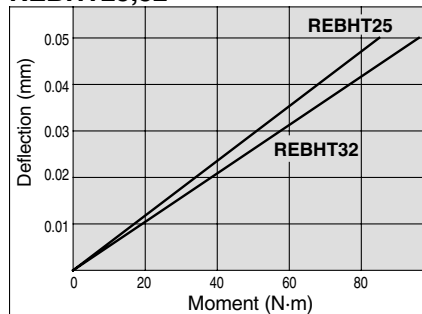
$$M_2 = F \times L$$

\* For the double axis type, this is the cylinder's central axis.

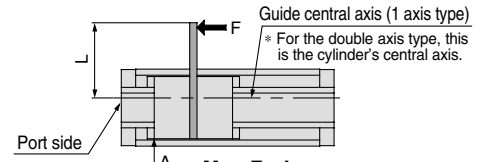
##### REBH15,25



##### REBHT25,32



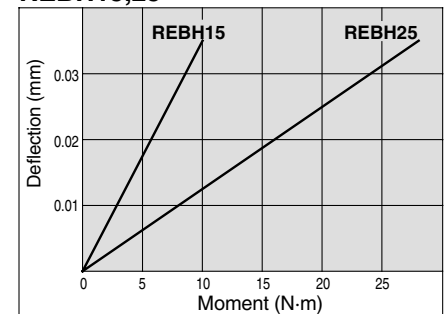
##### Displacement of Table due to Yaw Moment Load



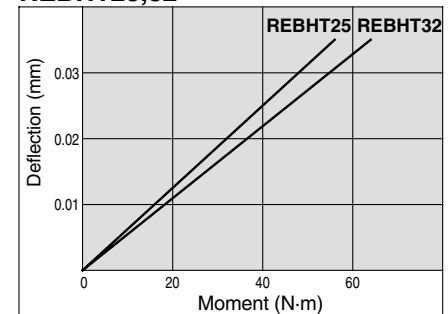
$$M_3 = F \times L$$

Note) Deflection: Displacement of section A when force acts on section F

##### REBH15,25



##### REBHT25,32



Note) Deflection when a moment other than the above is applied can be specified by extending the lines in the graphs above.

### Vertical Operation

When using in vertical operation, prevention of workpiece dropping due to breaking of the magnetic coupling should be considered. The allowable load mass and maximum operating pressure should be as shown in the table below. When the cylinder is mounted vertically or sidelong, sliders may move downwards due to the self-weight or workpiece mass. If an accurate stopping position is required at the stroke end or the middle-stroke, use an external stopper to secure accurate positioning.

| Model   | Allowable load mass<br>Wv (kg) | Maximum operating pressure<br>Pv (MPa) |
|---------|--------------------------------|----------------------------------------|
| REBH15  | 7.0                            | 0.65                                   |
| REBH25  | 18.5                           | 0.65                                   |
| REBHT25 | 18.5                           | 0.65                                   |
| REBHT32 | 30.0                           | 0.65                                   |

### Intermediate Stop

The cushion effect (smooth start-up, soft stop) exists only before the stroke end in the stroke ranges indicated in the table below. The cushion effect (smooth start-up, soft stop) cannot be obtained in an intermediate stop or a return from an intermediate stop using an external stopper, etc.

#### Cushion Stroke

| Model   | Stroke (mm) |
|---------|-------------|
| REBH15  | 25          |
| REBH25  | 30          |
| REBHT25 | 30          |
| REBHT32 | 30          |

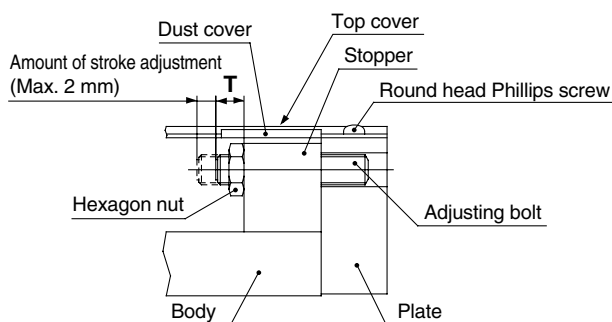
## Stroke Adjustment

The adjusting bolt is adjusted to the optimum position for smooth acceleration and deceleration at the time of shipment, and should be operated at the full stroke. When stroke adjustment is necessary, the maximum amount of adjustment on one side is 2 mm. (Do not adjust more than 2 mm, as it will not be possible to obtain smooth acceleration and deceleration.)

Do not adjust based on the stopper's movement, as this can cause cylinder damage.

### Stroke adjustment method

Loosen the round head Phillips screws, and remove the top covers and dust covers (4 pcs.). Then loosen the hexagon nut, and after performing the stroke adjustment from the plate side with a hexagon wrench, retighten and secure the hexagon nut.



## Adjusting Bolt Position (at the time of shipment), Hexagon Nut Tightening Torque

| Model   | T (mm) | Tightening torque (N·m) |
|---------|--------|-------------------------|
| REBH15  | 7      | 1.67                    |
| REBH25  | 9      | 3.14                    |
| REBHT25 | 9      |                         |
| REBHT32 | 9      |                         |

After adjusting the stroke, replace the top covers and dust covers. Tighten the round head Phillips screws for securing the top covers with a torque of 0.58 N·m.

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□

# Sine Rodless Cylinder / Linear Guide Type

## Series *REBH*

Single Axis: ø15, ø25 / Double Axes: ø25, ø32

### How to Order

**REB H** 25 300 Y7BW

• Sine rodless cylinder

• Linear guide type

• Guide

|        |        | Bore size (mm) |    |    |
|--------|--------|----------------|----|----|
| Symbol |        | 15             | 25 | 32 |
| Nil    | 1 axis | ●              | ●  | —  |
| T      | 2 axes | —              | ●  | ●  |

• Bore size

|    |       |
|----|-------|
| 15 | 15 mm |
| 25 | 25 mm |
| 32 | 32 mm |

• Port thread type

| Symbol | Type     | Bore size |
|--------|----------|-----------|
| Nil    | M thread | ø15       |
|        | Rc       |           |
| TN     | NPT      | ø25, ø32  |
| TF     | G        |           |

• Auto switch

|     |                                       |
|-----|---------------------------------------|
| Nil | Without auto switch (Built-in magnet) |
|-----|---------------------------------------|

\* For the applicable auto switch model, refer to the table below.

• Number of auto switches

|     |          |
|-----|----------|
| Nil | 2 pcs.   |
| S   | 1 pc.    |
| n   | "n" pcs. |

• Made to Order  
Refer to page 1015 for details.

• Standard stroke (mm)  
Refer to "Standard Stroke" on page 1015.

**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) |                     |                 |            |            |
|                    |                  |                  |                 |                         |              |           |                   |         |                       |       |       |                     |                 |            |            |
| Solid state switch | —                | Grommet          | Yes             | 3-wire (NPN)            | 24 V         | 5 V, 12 V | —                 | Y69A    | Y59A                  | ●     | ●     | ○                   | ○               | IC circuit | Relay, PLC |
|                    | 3-wire (PNP)     |                  |                 | Y7PV                    |              |           |                   | Y7P     | ●                     | ●     | ○     | ○                   |                 |            |            |
|                    | 2-wire           |                  |                 | Y69B                    |              |           |                   | Y59B    | ●                     | ●     | ○     | ○                   |                 |            |            |
|                    | 3-wire (NPN)     |                  |                 | Y7NWV                   |              |           |                   | Y7NW    | ●                     | ●     | ○     | ○                   |                 |            |            |
|                    | 3-wire (PNP)     |                  |                 | Y7PWV                   |              |           |                   | Y7PW    | ●                     | ●     | ○     | ○                   |                 |            |            |
|                    | 2-wire           |                  |                 | Y7BWV                   |              |           |                   | Y7BW    | ●                     | ●     | ○     | ○                   |                 |            |            |
| Reed switch        | —                | Grommet          | Yes             | 3-wire (NPN equivalent) | —            | 5 V       | —                 | —       | Z76                   | ●     | ●     | —                   | —               | IC circuit | —          |
|                    |                  |                  |                 | 2-wire                  | 24 V         | 12 V      | 100 V             | —       | Z73                   | ●     | ●     | ●                   | —               | —          | Relay, PLC |
|                    |                  |                  |                 |                         |              | 5 V, 12 V | 100 V or less     | —       | Z80                   | ●     | ●     | —                   | —               | IC circuit |            |

\* Lead wire length symbols: 0.5 m ..... Nil (Example) Y59A  
 3 m ..... L (Example) Y59AL  
 5 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 1020 for details.
- For details about auto switches with pre-wired connector, refer to pages 1784 and 1785.
- \* Auto switches are shipped together (not assembled).

## Specifications



| Bore size (mm)                       | 15                      | 25     | 32  |
|--------------------------------------|-------------------------|--------|-----|
| Fluid                                | Air                     |        |     |
| Maximum operating pressure           | 0.7 MPa                 |        |     |
| Minimum operating pressure           | 0.2 MPa                 |        |     |
| Proof pressure                       | 1.05 MPa                |        |     |
| Ambient and fluid temperature        | -10 to 60°C             |        |     |
| Piston speed (Max.) <sup>Note)</sup> | 70 to 600 mm/s          |        |     |
| Lubrication                          | Not required (Non-lube) |        |     |
| Stroke length tolerance              | 0 to 1.8 mm             |        |     |
| Piping                               | Centralized piping type |        |     |
| Piping port size                     | M5 x 0.8                | Rc 1/8 |     |
| Holding force (N)                    | 137                     | 363    | 588 |

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

## Standard Stroke



**Made to Order Specifications**  
(For details, refer to pages 1857 and 2016.)

| Symbol | Specifications                             |
|--------|--------------------------------------------|
| -XB10  | Intermediate stroke (Using exclusive body) |
| -X168  | Helical insert thread specifications       |

| Bore size (mm) | Number of axes | Standard stroke (mm)               | Maximum manufacturable stroke (mm) |
|----------------|----------------|------------------------------------|------------------------------------|
| 15             | 1 axis         | 150, 200, 300, 400, 500            | 750                                |
| 25             |                | 200, 300, 400, 500, 600, 800       | 1200                               |
| 25             | 2 axes         | 200, 300, 400, 500, 600, 800, 1000 |                                    |
| 32             |                |                                    |                                    |

Note 1) Stroke exceeding the standard stroke will be available upon request for special.

Note 2) Intermediate strokes other than made-to-order (refer to -XB10) are available as special.

## Mass

| Model   | Standard stroke (mm) |     |      |      |      |      |      |      | (kg) |
|---------|----------------------|-----|------|------|------|------|------|------|------|
|         | 150                  | 200 | 300  | 400  | 500  | 600  | 800  | 1000 |      |
| REBH15  | 2.5                  | 2.7 | 3.2  | 3.6  | 4.1  | —    | —    | —    |      |
| REBH25  | —                    | 5.3 | 6.0  | 6.6  | 7.3  | 8.0  | 9.4  | —    |      |
| REBHT25 | —                    | 6.2 | 7.3  | 8.3  | 9.4  | 10.4 | 12.5 | 14.6 |      |
| REBHT32 | —                    | 9.6 | 10.7 | 11.9 | 13.0 | 14.2 | 16.5 | 18.8 |      |

## Theoretical Output

|                   |                                   |                          |     |     |     |     | (N) |
|-------------------|-----------------------------------|--------------------------|-----|-----|-----|-----|-----|
| Bore size<br>(mm) | Piston area<br>(mm <sup>2</sup> ) | Operating pressure (MPa) |     |     |     |     |     |
|                   |                                   | 0.2                      | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 |
| 15                | 176                               | 35                       | 52  | 70  | 88  | 105 | 123 |
| 25                | 490                               | 98                       | 147 | 196 | 245 | 294 | 343 |
| 32                | 804                               | 161                      | 241 | 322 | 402 | 483 | 563 |

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

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

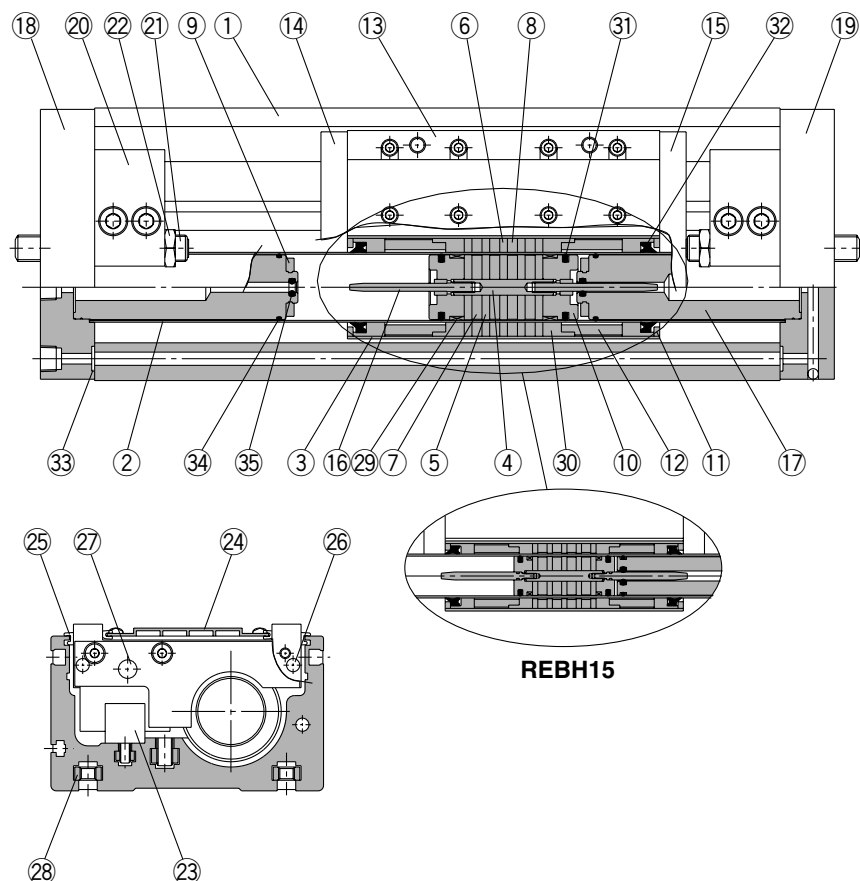
-X□

Individual  
-X□

# Series **REBH**

**Construction: ø15, ø25**

**Single axis type: REBH**



## Component Parts

| No. | Description                      | Material           | Note                               |
|-----|----------------------------------|--------------------|------------------------------------|
| 1   | <b>Body</b>                      | Aluminum alloy     | Hard anodized                      |
| 2   | <b>Cylinder tube</b>             | Stainless steel    |                                    |
| 3   | <b>External slider tube</b>      | Aluminum alloy     |                                    |
| 4   | <b>Shaft</b>                     | Stainless steel    |                                    |
| 5   | <b>Piston side yoke</b>          | Rolled steel plate | Zinc chromated                     |
| 6   | <b>External slider side yoke</b> | Rolled steel plate | Zinc chromated                     |
| 7   | <b>Magnet A</b>                  | —                  |                                    |
| 8   | <b>Magnet B</b>                  | —                  |                                    |
| 9   | <b>Bumper</b>                    | Urethane rubber    | Except REBH15                      |
| 10  | <b>Piston</b>                    | Aluminum alloy     | Chromated                          |
| 11  | <b>Spacer</b>                    | Rolled steel plate | Nickel plated                      |
| 12  | <b>Space ring</b>                | Aluminum alloy     | Chromated                          |
| 13  | <b>Slide table</b>               | Aluminum alloy     | Hard anodized                      |
| 14  | <b>Side plate A</b>              | Aluminum alloy     | Hard anodized                      |
| 15  | <b>Side plate B</b>              | Aluminum alloy     | Hard anodized                      |
| 16  | <b>Cushion ring</b>              | Stainless steel    | Compound electroless nickel plated |
| 17  | <b>Internal stopper</b>          | Aluminum alloy     | Anodized                           |
| 18  | <b>Plate A</b>                   | Aluminum alloy     | Hard anodized                      |

## Component Parts

| No. | Description                         | Material                  | Note                      |
|-----|-------------------------------------|---------------------------|---------------------------|
| 19  | <b>Plate B</b>                      | Aluminum alloy            | Hard anodized             |
| 20  | <b>Stopper</b>                      | Aluminum alloy            | Anodized                  |
| 21  | <b>Adjusting bolt</b>               | Chromium molybdenum steel | Nickel plated             |
| 22  | <b>Hexagon nut</b>                  | Carbon steel              | Nickel plated             |
| 23  | <b>Linear guide</b>                 |                           |                           |
| 24  | <b>Top cover</b>                    | Aluminum alloy            | Hard anodized             |
| 25  | <b>Dust cover</b>                   | Special resin             |                           |
| 26  | <b>Magnet (for auto switch)</b>     | —                         |                           |
| 27  | <b>Parallel pin</b>                 | Carbon steel              | Nickel plated             |
| 28  | <b>Square nut for body mounting</b> | Carbon steel              | Nickel plated (Accessory) |
| 29  | <b>Wear ring A</b>                  | Special resin             |                           |
| 30  | <b>Wear ring B</b>                  | Special resin             |                           |
| 31  | <b>Piston seal</b>                  | NBR                       |                           |
| 32  | <b>Scraper</b>                      | NBR                       |                           |
| 33  | <b>O-ring</b>                       | NBR                       |                           |
| 34  | <b>O-ring</b>                       | NBR                       |                           |
| 35  | <b>Cushion seal</b>                 | NBR                       |                           |

Note) Square nut for body mounting ⑳: 4 pieces

## Replacement Parts/Seal Kit

| Bore size (mm) | Kit no.   | Contents                |
|----------------|-----------|-------------------------|
| 15             | REBH15-PS | Set of nos. above ⑳, ⑳, |
| 25             | REBH25-PS | ⑳, ⑳, ⑳, ⑳, ⑳           |

Note) Cushion seal ㉟ may be difficult to be replaced.

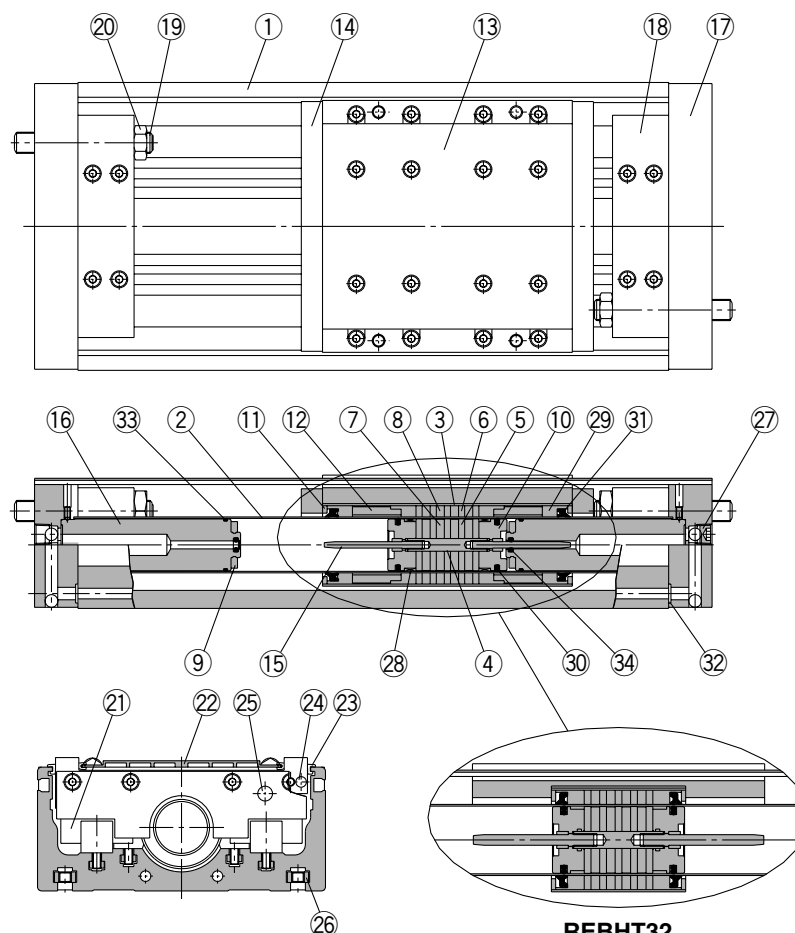
\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

**Grease pack part no.: GR-S-010 (10 g)**

## Construction: ø25, ø32

### Double axis type: REBHT



REBHT32

### Component Parts

| No. | Description               | Material           | Note                                       |
|-----|---------------------------|--------------------|--------------------------------------------|
| 1   | Body                      | Aluminum alloy     | Hard anodized                              |
| 2   | Cylinder tube             | Stainless steel    |                                            |
| 3   | External slider tube      | Aluminum alloy     |                                            |
| 4   | Shaft                     | Stainless steel    |                                            |
| 5   | Piston side yoke          | Rolled steel plate | Zinc chromated                             |
| 6   | External slider side yoke | Rolled steel plate | Zinc chromated                             |
| 7   | Magnet A                  | —                  |                                            |
| 8   | Magnet B                  | —                  |                                            |
| 9   | Bumper                    | Urethane rubber    |                                            |
| 10  | Piston                    | Aluminum alloy     | Chromated                                  |
| 11  | Spacer                    | Rolled steel plate | Nickel plated                              |
| 12  | Space ring                | Aluminum alloy     | Chromated (Except REBHT32)                 |
| 13  | Slide table               | Aluminum alloy     | Hard anodized                              |
| 14  | Side plate                | Aluminum alloy     | Hard anodized (Except REBHT32)             |
| 15  | Cushion ring              | Stainless steel    | REBHT25 Compound electroless nickel plated |
|     |                           | Brass              | REBHT32                                    |
| 16  | Internal stopper          | Aluminum alloy     | Anodized                                   |
| 17  | Plate                     | Aluminum alloy     | Hard anodized                              |

### Component Parts

| No. | Description                    | Material                  | Note                      |
|-----|--------------------------------|---------------------------|---------------------------|
| 18  | Stopper                        | Aluminum alloy            | Anodized                  |
| 19  | Adjusting bolt                 | Chromium molybdenum steel | Nickel plated             |
| 20  | Hexagon nut                    | Carbon steel              | Nickel plated             |
| 21  | Linear guide                   |                           |                           |
| 22  | Top cover                      | Aluminum alloy            | Hard anodized             |
| 23  | Dust cover                     | Special resin             |                           |
| 24  | Magnet (for auto switch)       | —                         |                           |
| 25  | Parallel pin                   | Carbon steel              | Nickel plated             |
| 26  | Square nut for body mounting   | Carbon steel              | Nickel plated (Accessory) |
| 27  | Hexagon socket head taper plug | Carbon steel              | Nickel plated             |
| 28  | Wear ring A                    | Special resin             |                           |
| 29  | Wear ring B                    | Special resin             |                           |
| 30  | Piston seal                    | NBR                       |                           |
| 31  | Scraper                        | NBR                       |                           |
| 32  | O-ring                         | NBR                       |                           |
| 33  | O-ring                         | NBR                       |                           |
| 34  | Cushion seal                   | NBR                       |                           |

Note) Square nut for body mounting ②⑥: 4 pieces

### Replacement Parts/Seal Kit

| Bore size (mm) | Kit no.    | Contents                  |
|----------------|------------|---------------------------|
| 25             | REBHT25-PS | Set of nos. above ②⑧, ②⑨, |
| 32             | REBHT32-PS | ③①, ③②, ③③, ③④            |

Note) Cushion seal ③④ may be difficult to be replaced.

\* Seal kit includes a grease pack (10 g).

Order with the following part number when only the grease pack is needed.

Grease pack part no.: GR-S-010 (10 g)

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

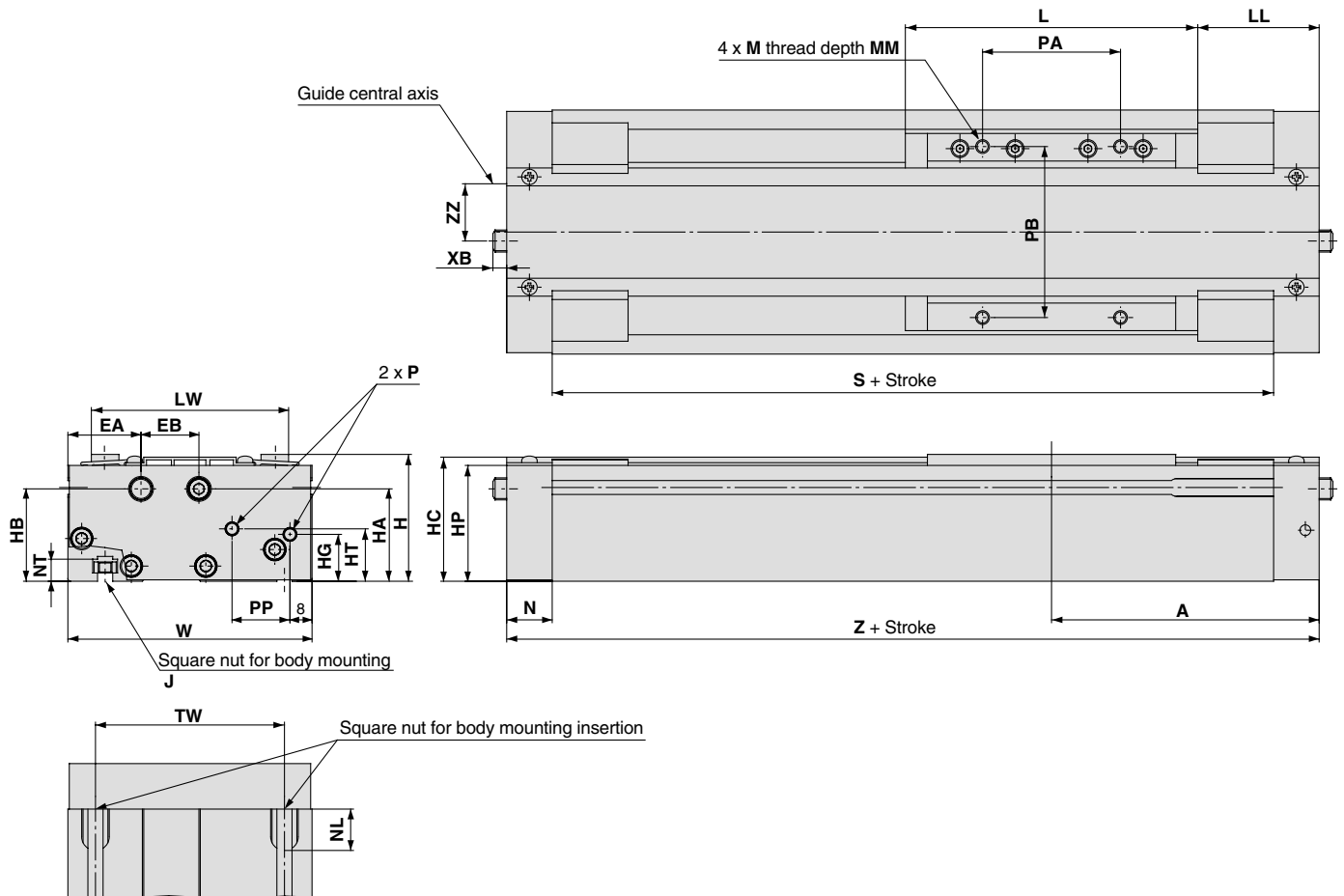
-X□

Individual  
-X□

# Series **REBH**

**Dimensions: ø15, ø25**

**Single axis type: REBH**

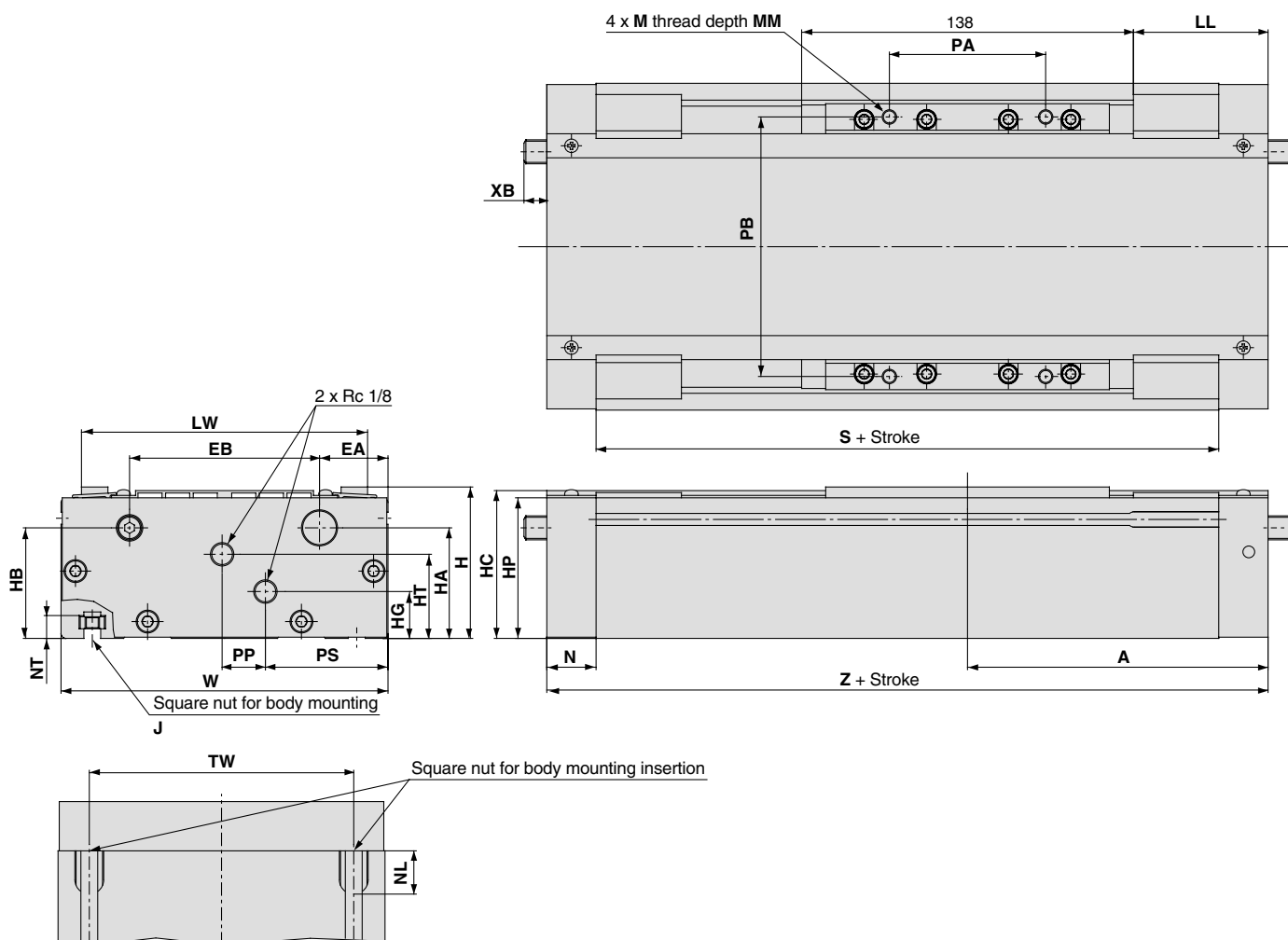


| Model         | A   | EA   | EB | H  | HA   | HB   | HC   | HG | HP   | HT | J        | L   | LL | LW   | M        | MM |
|---------------|-----|------|----|----|------|------|------|----|------|----|----------|-----|----|------|----------|----|
| <b>REBH15</b> | 97  | 26.5 | 21 | 46 | 33.5 | 33.5 | 45   | 17 | 42   | 19 | M5 x 0.8 | 106 | 44 | 71.5 | M5 x 0.8 | 8  |
| <b>REBH25</b> | 125 | 29   | 24 | 63 | 46   | 46   | 61.5 | 25 | 58.5 | 28 | M6 x 1.0 | 138 | 56 | 86   | M6 x 1.0 | 10 |

| Model         | N    | NL | NT | P        | PA | PB | PP | S   | TW | W    | XB  | Z   | ZZ   |
|---------------|------|----|----|----------|----|----|----|-----|----|------|-----|-----|------|
| <b>REBH15</b> | 16.5 | 15 | 8  | M5 x 0.8 | 50 | 62 | 21 | 161 | 65 | 88.5 | —   | 194 | 17.5 |
| <b>REBH25</b> | 20.5 | 18 | 9  | 1/8      | 65 | 75 | 27 | 209 | 75 | 103  | 9.5 | 250 | 23.5 |

Dimensions:  $\varnothing 25$ ,  $\varnothing 32$

Double axis type: REBHT



| Model   | A     | EA   | EB | H  | HA   | HB   | HC   | HG   | HP   | HT | J         | LL   | LW  | M         | MM | N    |
|---------|-------|------|----|----|------|------|------|------|------|----|-----------|------|-----|-----------|----|------|
| REBHT25 | 125   | 28.5 | 79 | 63 | 46   | 46   | 61.5 | 19.5 | 58.5 | 35 | M6 x 1.0  | 56   | 119 | M6 x 1.0  | 10 | 20.5 |
| REBHT32 | 132.5 | 30   | 90 | 75 | 52.5 | 57.5 | 72.5 | 25   | 69.5 | 43 | M8 x 1.25 | 63.5 | 130 | M8 x 1.25 | 12 | 23   |

| Model   | NL   | NT | PA | PB  | PP | PS | S   | TW  | W   | XB  | Z   |
|---------|------|----|----|-----|----|----|-----|-----|-----|-----|-----|
| REBHT25 | 18   | 9  | 65 | 108 | 18 | 51 | 209 | 110 | 136 | 9.5 | 250 |
| REBHT32 | 22.5 | 12 | 66 | 115 | 14 | 61 | 219 | 124 | 150 | 2   | 265 |

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

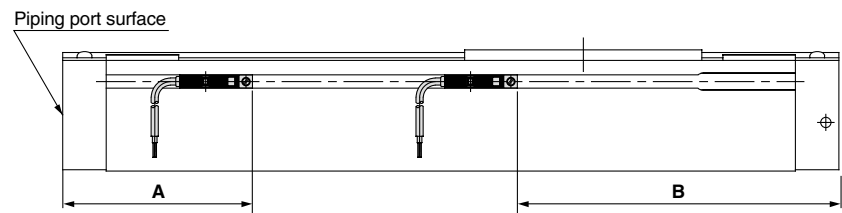
D-□

-X□

Individual  
-X□

# Series *REBH*

## Proper Auto Switch Mounting Position (Detection at stroke end)



## Proper Auto Switch Mounting Position

| Auto switch model<br><br>Cylinder model | A dimension    |                   |                                   | B dimension    |                   |                                   |
|-----------------------------------------|----------------|-------------------|-----------------------------------|----------------|-------------------|-----------------------------------|
|                                         | D-Z7□<br>D-Z80 | D-Y7□W<br>D-Y7□WV | D-Y5□<br>D-Y6□<br>D-Y7P<br>D-Y7PV | D-Z7□<br>D-Z80 | D-Y7□W<br>D-Y7□WV | D-Y5□<br>D-Y6□<br>D-Y7P<br>D-Y7PV |
| REBH15                                  | 72             |                   |                                   | 122            |                   |                                   |
| REBH25                                  | 86             |                   |                                   | 164            |                   |                                   |
| REBHT25                                 | 86             |                   |                                   | 164            |                   |                                   |
| REBHT32                                 | 82             |                   |                                   | 183            |                   |                                   |

Note) Adjust the auto switch after confirming the operating conditions in the actual setting.

## Operating Range

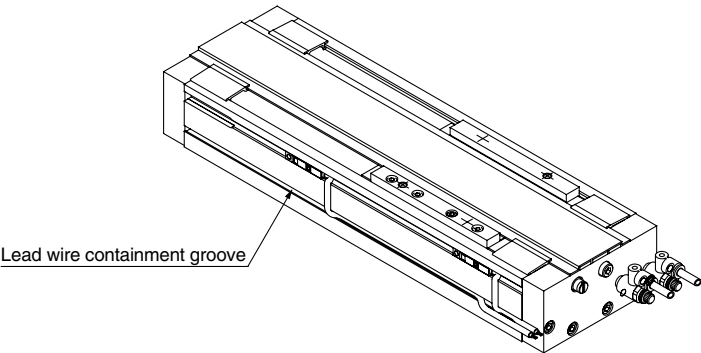
(mm)

| Auto switch model | Bore size (mm) |    |       |    |
|-------------------|----------------|----|-------|----|
|                   | REBH           |    | REBHT |    |
|                   | 15             | 25 | 25    | 32 |
| D-Z7□/Z8□         | 6              | 6  | 6     | 9  |
| D-Y5□/Y6□/Y7□     | 5              | 5  | 5     | 6  |

\* Since this is a guideline including hysteresis, not meant to be guaranteed. (assuming approximately  $\pm 30\%$  dispersion)  
There may be the case it will vary substantially depending on an ambient environment.

## Auto Switch Lead Wire Containment Groove

On model REBH25 a groove is provided on the side of the body (one side only) to contain auto switch lead wires. This should be used for placement of wiring.



Other than the models listed in “How to Order”, the following auto switches are applicable.  
For detailed specifications, refer to pages 1719 to 1827.

\* Normally closed (NC = b contact) solid state auto switches (D- Y7G/Y7H types) are also available. Refer to page 1748 for details.



## Series REBH

# Specific Product 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.

### Mounting

#### ⚠ Caution

1. The interior is protected to a certain extent by the top cover, however, when performing maintenance, etc., take care not to cause scratches or other damage to the cylinder tube, slide table or linear guide by striking them or placing objects on them.

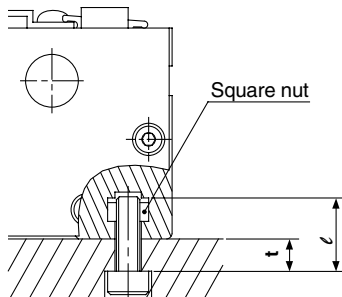
Cylinder bores are manufactured to precise tolerances, so that even a slight deformation may cause faulty operation.

2. Because the slider is supported by precision bearings, take care not to apply strong impacts or excessive moments to the table when loading a workpiece.

#### 3. Mounting of the cylinder body.

The body is mounted using the square nuts, which are included, in the two T-slots on the bottom of the body. Refer to the table below for mounting bolt dimensions and tightening torque.

| Model             |             | REBH15   | REBH25   | REBHT25 | REBHT32   |
|-------------------|-------------|----------|----------|---------|-----------|
| Bolt dimensions   | Thread size | M5 x 0.8 | M6 x 1.0 |         | M8 x 1.25 |
|                   | Dimension t | ℓ-8      | ℓ-9      |         | ℓ-12      |
| Tightening torque | N·m         | 2.65     | 4.4      |         | 13.2      |



### Operation

#### ⚠ Caution

1. The unit can be used with a direct load within the allowable range, but when connecting to a load which has an external guide mechanism, careful alignment is necessary.

Since variation of the shaft center increases as the stroke becomes longer, a connection method should be devised which allows for this displacement.

2. Since the guide is adjusted at the time of shipment, unintentional movement of the adjustment setting should be avoided.

3. Please contact SMC before operating in an environment where there will be contact with cutting chips, dust (paper debris, lint, etc.) or cutting oil (gas oil, water, warm water, etc.).

4. 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).

REA

REB

REC

C□Y

C□X

MQ

RHC

RZQ

D-□

-X□

Individual  
-X□