

# Mechanically Jointed Rodless Cylinders

## MY3 Series

Basic short type (Rubber bumper)

### MY3A Series



Bore sizes  
 $\varnothing 20$ ,  $\varnothing 32$ ,  $\varnothing 50$  added

Basic standard type (Air cushion)

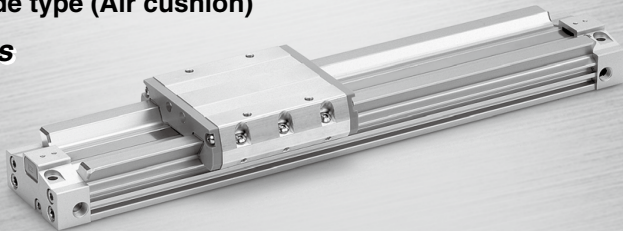
### MY3B Series



Bore sizes  
 $\varnothing 20$ ,  $\varnothing 32$ ,  $\varnothing 50$  added

Slide bearing guide type (Air cushion)

### MY3M Series



#### Series Variations

★ are new additions

| Series | Type                     | Piping type        | Bore size (mm) |    |    |    |    |    | Rubber bumper | Air cushion | Stroke adjustment unit<br>Shock absorber | Side support | Floating bracket | Made to Order  | Page   |
|--------|--------------------------|--------------------|----------------|----|----|----|----|----|---------------|-------------|--|--------------|------------------|--|--------|
|        |                          |                    | 16             | 20 | 25 | 32 | 40 | 50 |               |             |  |              |                  |  |        |
| MY3A   | Basic short type         | Centralized piping | ●              | ★  | ●  | ★  | ●  | ●  | ●             |             |  |              |                  | Shock Absorber Soft Type (Note)<br>-XB22<br>Helical Insert Threads<br>-X168<br>Holder Mounting Bracket (Note)<br>-X416, -X417<br>Copper Free 20- | P.1129 |
| MY3B   | Basic standard type      |                    | ●              | ★  | ●  | ★  | ●  | ●  |               | ●           | ●  | ●            |                  |  |        |
| MY3M   | Slide bearing guide type | Standard piping    | ●              | ●  | ●  | ●  | ●  |    | ●             | ●           | ●  |              |                  | P.1151   |        |

(Note) Except the MY3A

# High functionality with reduced height and length

Mechanically Jointed Rodless Cylinders

## MY3 Series

### MY3A

Basic short type  
(Rubber bumper)



### MY3B

Basic standard type  
(Air cushion)



### MY3M

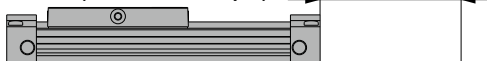
Slide bearing guide type  
(Air cushion)



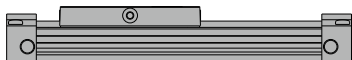
Work pieces can be loaded directly on the work table due to the integrated guide.

Overall length (Z) reduced by **140 mm** at the maximum

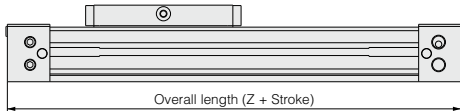
MY3A (with rubber bumper)



MY3B/MY3M (with air cushion)



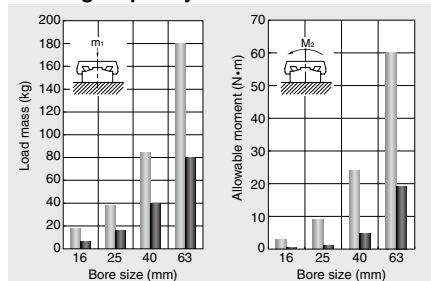
MY1B/MY1M (with air cushion)



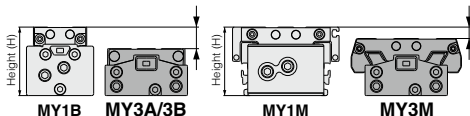
Overall Length (Z)

| Series | ø16 | ø20 | ø25 | ø32 | ø40 | ø50 | ø63 |
|--------|-----|-----|-----|-----|-----|-----|-----|
| MY3A   | 110 | 128 | 150 | 193 | 240 | 274 | 320 |
| MY3B   | 122 | 148 | 178 | 225 | 276 | 310 | 356 |
| MY3M   | 122 | —   | 178 | —   | 276 | —   | 356 |
| MY1B   | 160 | 200 | 220 | 280 | 340 | 400 | 460 |
| MY1M   | —   | —   | —   | —   | —   | —   | —   |

### Loading Capacity



Height (H) reduced by **36%** at the maximum



Height (H)

| Series | ø16 | ø20 | ø25 | ø32 | ø40 | ø50 | ø63 |
|--------|-----|-----|-----|-----|-----|-----|-----|
| MY3A   | 27  | 32  | 37  | 45  | 54  | 67  | 84  |
| MY3B   | 27  | 32  | 37  | 45  | 54  | 67  | 84  |
| MY1B   | 37  | 46  | 54  | 68  | 84  | 94  | 116 |
| MY3M   | 33  | —   | 45  | —   | 63  | —   | 93  |
| MY1M   | 40  | —   | 54  | —   | 84  | —   | 130 |

Weight reduced by **55%** at the maximum

Weight

| Series | ø16  | ø20  | ø25  | ø32  | ø40  | ø50  | ø63  |
|--------|------|------|------|------|------|------|------|
| MY3A   | 0.33 | 0.57 | 0.84 | 1.61 | 2.81 | 4.52 | 7.58 |
| MY3B   | 0.34 | 0.67 | 0.93 | 1.75 | 2.81 | 4.90 | 8.16 |
| MY1B   | 0.73 | 1.26 | 1.57 | 3.01 | 4.41 | 8.66 | 14.5 |
| MY3M   | 0.45 | —    | 1.20 | —    | 3.65 | —    | 9.99 |
| MY1M   | 0.91 | —    | 2.12 | —    | 7.00 | —    | 18.8 |

\* At 100 mm stroke

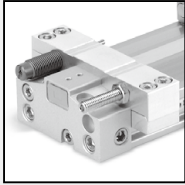
### Floating Bracket

Easy connection with external guide. Vertical and lateral mounting is possible. (Page 1149)

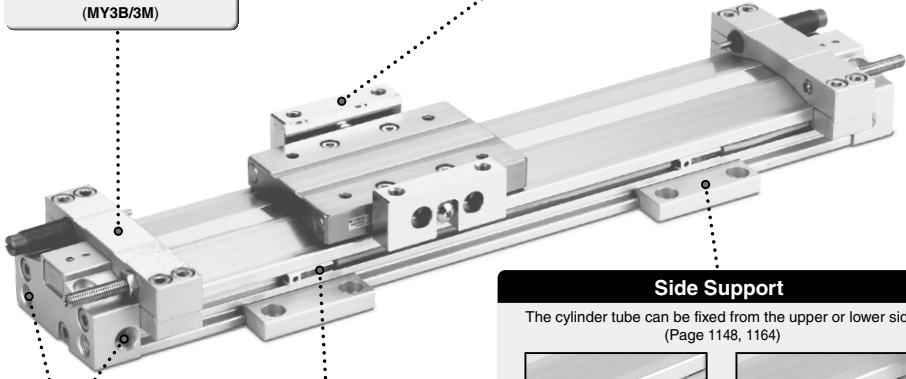


(MY3A/3B)

### Stroke Adjustment Unit



(MY3B/3M)

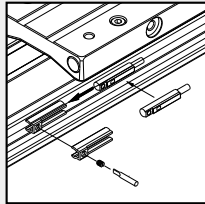


### Centralized Piping

Integrated piping in the head cover is possible. (Page 1145, 1146, 1162)

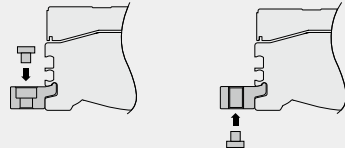
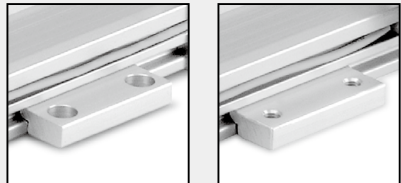
### Auto Switch

Can be mounted on both sides from the front direction.

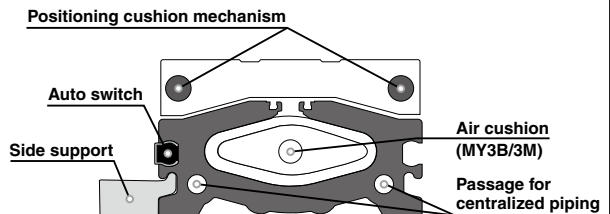


### Side Support

The cylinder tube can be fixed from the upper or lower side. (Page 1148, 1164)



The uniquely designed piston shape enables reduction of the height and length as well as practical arrangement of the common piping passages, cushion mechanism and positioning mechanism. This has achieved drastic miniaturization and weight reduction.



# Related Products

## Deceleration Controller DAS Series

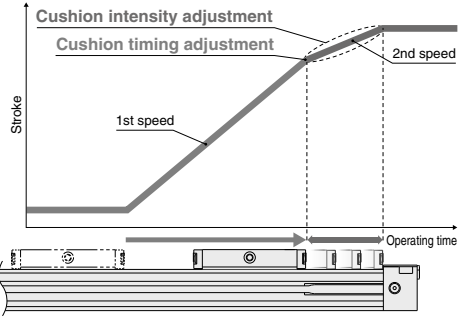
Click here for details



**2-speed control reduces cycle time**  
**Allows for the impact relaxation of the stroke end**

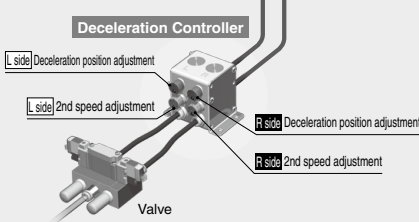
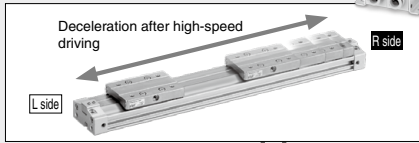
**Allows for the 2-speed control of cylinders**

The deceleration position (cushion timing) and 2nd speed (cushion intensity) can be adjusted.



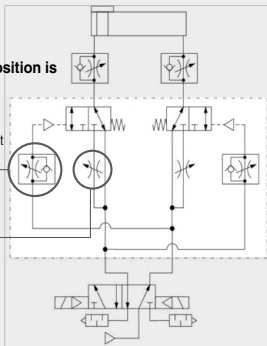
### Piping Example

For double-end

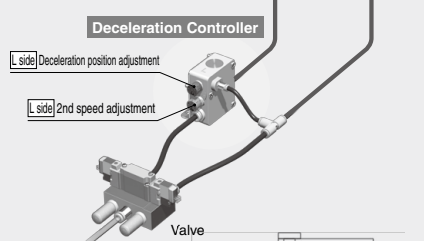
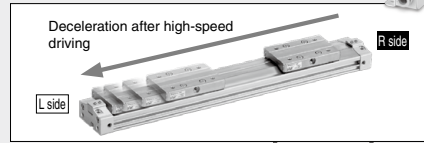


Air for adjusting the deceleration force position is supplied by drive air

- Deceleration position adjustment (Light blue)
- (Timing knob)
- 2nd speed adjustment (Gray)
- (2nd speed knob)

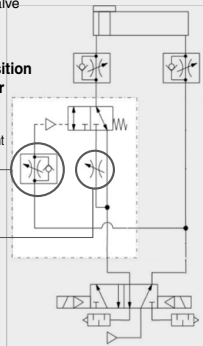


For single-end



Air for adjusting the deceleration force position is supplied by drive air

- Deceleration position adjustment (Light blue)
- (Timing knob)
- 2nd speed adjustment (Gray)
- (2nd speed knob)



### Variations

| Mounting | Body size | Applicable tubing O.D. |   |   |    |           |       |      | Bore size |      |      |            |
|----------|-----------|------------------------|---|---|----|-----------|-------|------|-----------|------|------|------------|
|          |           | Metric size            |   |   |    | Inch size |       |      |           |      |      |            |
|          |           | 4                      | 6 | 8 | 10 | 12        | 5/32" | 1/4" | 5/16"     | 3/8" | 1/2" |            |
|          | 5         | ●                      | ● | ● | ●  | ●         | ●     | ●    | ●         | ●    | ●    | ø10 to ø40 |
|          | 7         | ●                      | ● | ● | ●  | ●         | ●     | ●    | ●         | ●    | ●    | Up to ø100 |



# MY3 Series Model Selection

The following are steps for selecting the MY3 series which is best suited to your application.

## Guideline for Tentative Model Selection

| Series | Type                     | Guideline for tentative model selection |                       |               |                | Note   |
|--------|--------------------------|---|-----------------------|---------------|----------------|--|
|        |                          | Stroke accuracy                         | Use of external guide | Direct loaded | Table accuracy |  |
| MY3A   | Basic short type         | △                                       | ◎                     | △             | △              | Generally combined with a separate guide making it, by length, more compact.     |
| MY3B   | Basic standard type      | ◎                                       | ◎                     | ○             | △              | Generally combined with a separate guide, when stroke accuracy is required.      |
| MY3M   | Slide bearing guide type | ◎                                       | ×                     | ◎             | ○              | Mounting a work piece directly on the product, when stroke accuracy is required. |

◎ Most suitable ○ Suitable △ Usable × Not recommended

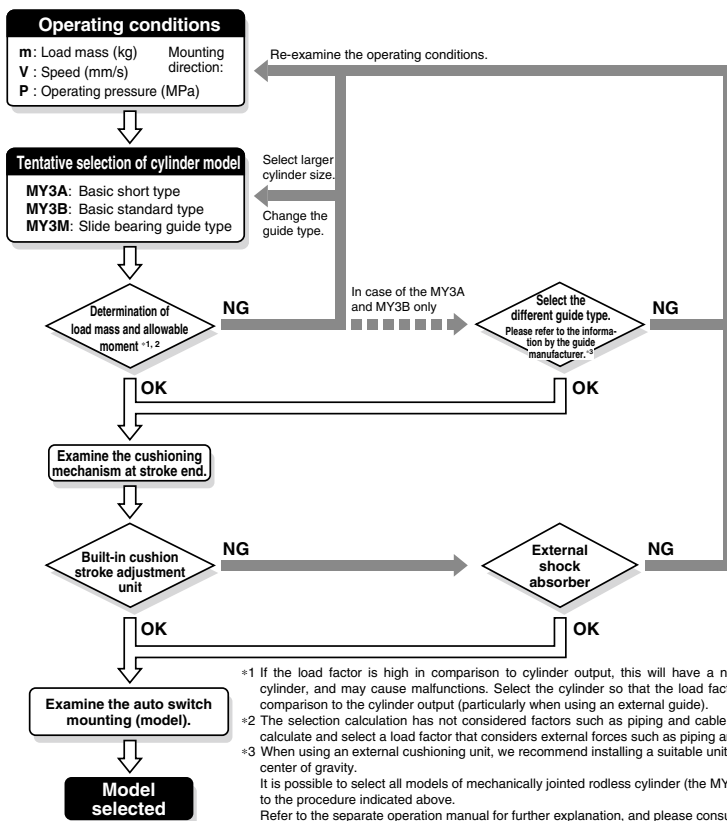
Note 1) The table accuracy means the amount of table deflection when a moment is applied.

Note 2) Travelling parallelism is not guaranteed for this cylinder. Please consult with SMC if the travelling parallelism or stroke intermediate position needs to be precise.

## Selection Flow Chart

When an external guide is used, the selection confirmation of the guide capacity should follow the selection procedure of the external guide.

The MY3 series allow direct load application within the allowable range for the built-in guide. The payload in this case will vary depending on the driving speed and the mounting orientation of the cylinder. Please refer to the flow below and confirm the selection. (For more detailed description of the selection flow, please refer to the operation manual.)



\*1 If the load factor is high in comparison to cylinder output, this will have a negative affect on the cylinder, and may cause malfunctions. Select the cylinder so that the load factor is less than 0.5 in comparison to the cylinder output (particularly when using an external guide).

\*2 The selection calculation has not considered factors such as piping and cable bearings etc. Please calculate and select a load factor that considers external forces such as piping and cable bearing.

\*3 When using an external cushioning unit, we recommend installing a suitable unit near the load's center of gravity.

It is possible to select all models of mechanically jointed rodless cylinder (the MY3 series) according to the procedure indicated above.

Refer to the separate operation manual for further explanation, and please consult with SMC regarding any questions.


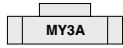

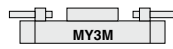
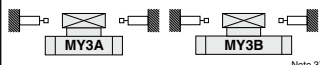
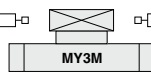
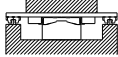
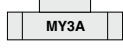

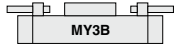
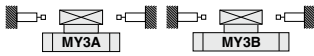
**Warning**

**Reduction circuits or shock absorbers may be necessary.**

If the driven object is fast, or the weight is large, the cylinder cushion alone may not be able to absorb the impact. In this case, install a reduction circuit before the cushion, or install an external shock absorber to reduce the impact. Please check the machine's rigidity as well.

\* External shock absorbers must meet the characteristics listed on page 1139. Cylinders may be damaged if shock absorbers that do not have the recommended characteristics are used.

**Maximum operating speed**

| How to mount a load  | Stroke positioning                         | Shock absorber  | Maximum operating speed (mm/s) |      |      |  |  |  |
|--|--|---|--------------------------------|------|------|--|--|--|
|  |  |   | 500                            | 1000 | 1500 |  |  |  |
| <b>Direct loaded</b><br>                      | Cylinder stroke end                        | Rubber bumper<br>                      |                                |      |      |  |  |  |
|  |  | Air cushion<br>                        |                                |      |      |  |  |  |
|  |  |   |                                |      |      |  |  |  |
|  | Stroke adjustment unit (Option: L, H unit) | Shock absorber<br>                     |                                |      |      |  |  |  |
|  | External stopper                           | External shock absorber (Note 2)<br>   |                                |      |      |  |  |  |
|   |  |   |                                |      |      |  |  |  |
| <b>Use of external guide</b><br>(Note 1)<br> | Cylinder stroke end                        | Rubber bumper<br>                      |                                |      |      |  |  |  |
|  |  | Air cushion<br>                       |                                |      |      |  |  |  |
|  | Stroke adjustment unit (Option: L, H unit) | Shock absorber<br>                   |                                |      |      |  |  |  |
|  | External stopper                           | External shock absorber (Note 2)<br> |                                |      |      |  |  |  |

Note 1) Mechanically jointed rodless cylinders can be used with a direct load within the allowable range for each guide type, however, careful alignment is necessary for connection to a load which has an external guide mechanism. The mounting bracket for the external guide and the floating bracket must be mounted in a position that guarantees freedom of movement to the floating Y and Z axial. Ensure that the floating bracket is set so that the thrust transmission section has even contact.  
\* For details on the floating Y and Z axial, refer to the coordinates and moments in the selection method on page 1149.

Note 2) The shock absorber must meet the conditions mentioned on pages 1138 and 1139.

Note 3) As the external shock absorber, a unit with appropriate capacity and features should be installed close to the load center of gravity.

Note 4) Use the stroke adjustment unit of the MY3B series with an external guide.

Note 5) Shown below are the details of the maximum operating speed for the stroke adjustment unit.

**MY3 Series, Maximum Operating Speed when Using the Stroke Adjustment Unit**

Unit: mm/s

| Series | Bore size (mm)     | Stroke adjustment range | Inside the fine stroke adjustment range | Outside the fine stroke adjustment range |
|--------|--------------------|-------------------------|---|--|
| MY3B   | 16, 20             | L unit                  | 800                                     | 500                                      |
|        |                    | H unit                  | 1000                                    | 800                                      |
| MY3M   | 25, 32, 40, 50, 63 | L, H unit               | 1000                                    | 800                                      |
|        |                    | 16, 25, 40, 63          | L, H unit                               | 1500                                     |

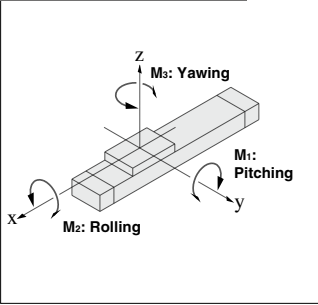
Outside the fine stroke adjustment range means that when an intermediate fixing spacer (short spacer, long spacer) is used.

Intermediate fixing spacer → Refer to pages 1141 and 1159.

## Types of Moment and Load Mass Applied to Rodless Cylinders

Multiple moments may be generated depending on the mounting orientation, load and position of the center of gravity.

### Coordinates and Moments



### Load Mass and Static Moment

| Mounting direction | Horizontal | Ceiling                 | Wall                    | Vertical  |
|--------------------|------------|-------------------------|-------------------------|---|
| Static load        | $m$        | $m$                     | $m$                     | $m$ <sup>Note 1)</sup>                            |
| Static moment      | $M_1$      | $m_1 \times g \times X$ | $m_2 \times g \times X$ | $m_3 \times g \times Z$                           |
|                    | $M_2$      | $m_1 \times g \times Y$ | $m_2 \times g \times Y$ | $m_3 \times g \times X$                           |
|                    | $M_3$      | —                       | —                       | $m_3 \times g \times X$   $m_3 \times g \times Y$ |

Note)  $m_4$  is a mass movable by thrust. Use 0.3 to 0.7 times the thrust (differs depending on the operating speed) as a guide for actual use.

**g**: Gravitational acceleration

### Dynamic Moment

| Mounting direction | Horizontal | Ceiling  | Wall | Vertical |
|--------------------|------------|--|------|----------|
| Dynamic load       | $F_E$      | $1.4U_a \times \delta \times m_n \times g$                       |      |          |
| Dynamic moment     | $M_{1E}$   | $\frac{1}{3} \times F_E \times Z$                                |      |          |
|                    | $M_{2E}$   | <b>Dynamic moment <math>M_{2E}</math> will not be generated.</b> |      |          |
|                    | $M_{3E}$   | $\frac{1}{3} \times F_E \times Y$                                |      |          |

Note) Regardless of the mounting orientation, dynamic moment is calculated with the formulae above.

**g**: Gravitational acceleration  
**U<sub>a</sub>**: Average speed  
**δ**: Bumper coefficient

### Caution on Design

If the product is operated with a guide load factor which exceeds the standard value, malfunction may occur due to damage to the internal parts of the slide table. Therefore, be sure to confirm that the guide load factor is 1 or less.

## Calculation of Guide Load Factor

- Maximum load mass (1), static moment (2), and dynamic moment (3) (at the time of impact with stopper) must be examined for the selection calculations.
  - \* To evaluate, use  $U_a$  (average speed) for (1) and (2), and  $U$  (impact speed  $U = 1.4U_a$ ) for (3). Calculate  $m_{max}$  for (1) from the maximum allowable load graph ( $m_1, m_2, m_3$ ) and  $M_{max}$  for (2) and (3) from the maximum allowable moment graph ( $M_1, M_2, M_3$ ).

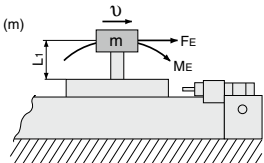
$$\text{Sum of guide load factors } \Sigma \alpha = \frac{\text{Load mass [m]}}{\text{Maximum load mass [m}_{max}\text{]}} + \frac{\text{Static moment [M]}}{\text{Allowable static moment [M}_{max}\text{]}} + \frac{\text{Dynamic moment [ME]}}{\text{Allowable dynamic moment [ME}_{max}\text{]}} \leq 1$$

- Note 1) Moment caused by the load, etc., with cylinder in resting condition.  
 Note 2) Moment caused by the impact load equivalent at the stroke end (at the time of impact with stopper).  
 Note 3) Depending on the shape of the workpiece, multiple moments may occur. When this happens, the sum of the load factors ( $\Sigma \alpha$ ) is the total of all such moments.

### 2. Reference formulas [Dynamic moment at impact]

Use the following formulas to calculate dynamic moment when taking stopper impact into consideration.

- $m$ : Load mass (kg)
- $F$ : Load (N)
- $F_E$ : Load equivalent to impact (at impact with stopper) (N)
- $U_a$ : Average speed (mm/s)
- $M$ : Static moment (N·m)
- $U = 1.4U_a$  (mm/s)  $F_E = 1.4U_a \times \delta \times m \cdot g$
- $M_{1E} = \frac{1}{3} \times F_E \cdot L_1 = 4.57U_a \delta m L_1$  (N·m)
- $M_{2E} = \frac{1}{3} \times F_E \cdot L_2$  (N·m)
- $M_{3E} = \frac{1}{3} \times F_E \cdot L_3$  (N·m)
- $g$ : Gravitational acceleration (9.8 m/s<sup>2</sup>)



Note 4)  $1.4U_a \delta$  is a dimensionless coefficient for calculating impact force.

Note 5) Average load coefficient =  $\left(\frac{1}{3}\right)$ :

This coefficient is for averaging the maximum load moment at the time of stopper impact according to service life calculations.

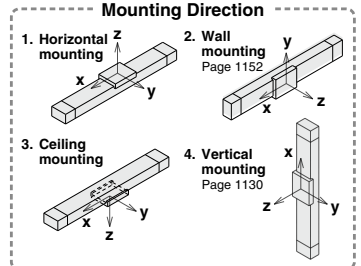
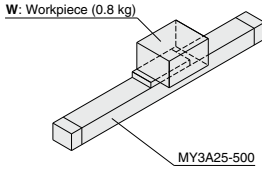
- For detailed selection procedure, please refer to pages 1130, 1131, 1152, 1153.



**Calculation of Guide Load Factor**

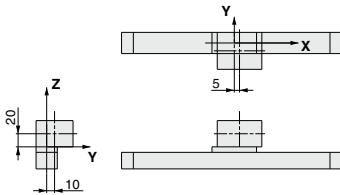
**1 Operating Conditions**

- Cylinder ..... MY3A25-500
- Average operating speed  $v_a$  ..... 300 mm/s
- Mounting direction ..... Horizontal mounting
- Cushion ..... Rubber bumper ( $\delta = 4/100$ )



Refer to the pages mentioned above for actual examples of calculation for each orientation.  
\* For ceiling mounting, refer to 992.

**2 Load Blocking**



**Workpiece Mass and Center of Gravity**

| Workpiece no. | Mass (m) | Center of gravity |        |        |
|---------------|----------|-------------------|--------|--------|
|               |          | X-axis            | Y-axis | Z-axis |
| <b>W</b>      | 0.8 kg   | 5 mm              | 10 mm  | 20 mm  |

**3 Calculation of Load Factor for Static Load**

**m<sub>1</sub>**: Mass

**m<sub>1</sub> max** (from ① of graph MY3A / **m<sub>1</sub>**) = 10.7 (kg) .....

Load factor  $\alpha_1 = m_1 / m_1 \text{ max} = 0.8 / 10.7 = 0.08$

**M<sub>1</sub>**: Moment

**M<sub>1</sub> max** (from ② of graph MY3A / **M<sub>1</sub>**) = 4 (N·m) .....

**M<sub>1</sub>** = **m<sub>1</sub>** x **g** x **X** = 0.8 x 9.8 x 5 x 10<sup>-3</sup> = 0.04 (N·m)

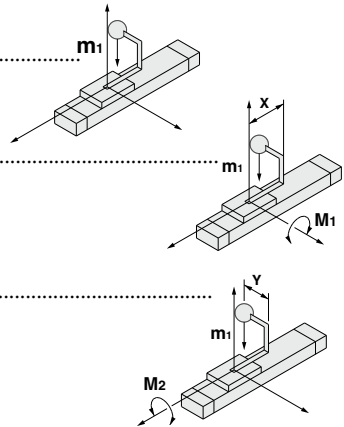
Load factor  $\alpha_2 = M_1 / M_1 \text{ max} = 0.04 / 4 = 0.01$

**M<sub>2</sub>**: Moment

**M<sub>2</sub> max** (from ③ of graph MY3A / **M<sub>2</sub>**) = 0.8 (N·m) .....

**M<sub>3</sub>** = **m<sub>1</sub>** x **g** x **Y** = 0.8 x 9.8 x 10 x 10<sup>-3</sup> = 0.08 (N·m)

Load factor  $\alpha_3 = M_2 / M_2 \text{ max} = 0.08 / 0.8 = 0.1$



## Calculation of Guide Load Factor

### 4 Calculation of Load Factor for Dynamic Moment

Equivalent load  $F_E$  at impact

$$F_E = 1.4U_a \times \delta \times m \times g = 1.4 \times 300 \times \frac{4}{100} \times 0.8 \times 9.8 = 131.7 \text{ (N)}$$

$M_{1E}$ : Moment

$M_{1E} \text{ max}$  (from ④ of graph MY3A /  $M_1$  where  $1.4U_a = 420 \text{ mm/s}$ ) = 2.85 (N·m) .....

$$M_{1E} = \frac{1}{3} \times F_E \times Z = \frac{1}{3} \times 131.7 \times 20 \times 10^{-3} = 0.88 \text{ (N·m)}$$

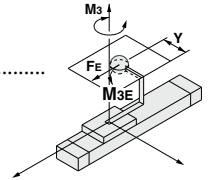
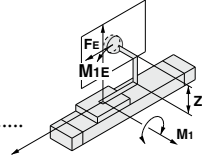
Load factor  $\alpha_4 = M_{1E} / M_{1E} \text{ max} = 0.88 / 2.85 = 0.31$

$M_{3E}$ : Moment

$M_{3E} \text{ max}$  (from ⑤ of graph MY3A /  $M_3$  where  $1.4U_a = 420 \text{ mm/s}$ ) = 0.95 (N·m) .....

$$M_{3E} = \frac{1}{3} \times F_E \times Y = \frac{1}{3} \times 131.7 \times 10 \times 10^{-3} = 0.44 \text{ (N·m)}$$

Load factor  $\alpha_5 = M_{3E} / M_{3E} \text{ max} = 0.44 / 0.95 = 0.43$



### 5 Sum and Examination of Guide Load Factors

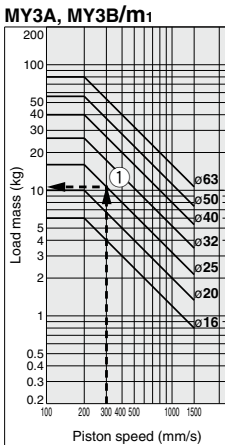
$$\Sigma\alpha = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + \alpha_5 = 0.08 + 0.01 + 0.1 + 0.31 + 0.43 = 0.93 \leq 1$$

The above calculation is within the allowable value, and therefore the selected model can be used.

Select a shock absorber separately.

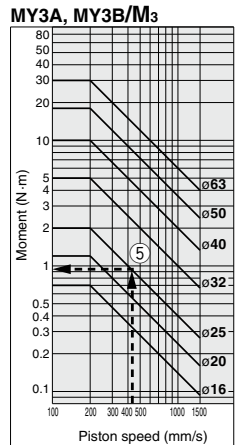
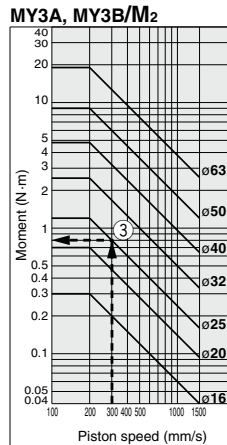
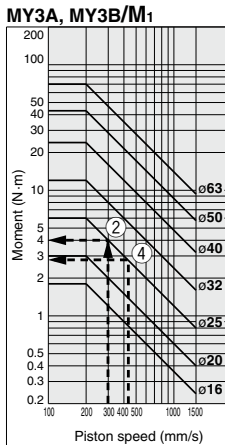
In an actual calculation, when the sum of guide load factors  $\Sigma\alpha$  in the formula above is more than 1, consider decreasing the speed, increasing the bore size, or changing the product series.

#### Load Mass



\* Refer to page 1153 for the MY3M.

#### Allowable Moment

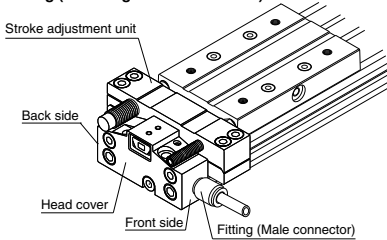


**Mounting of Fitting and Speed Controller**

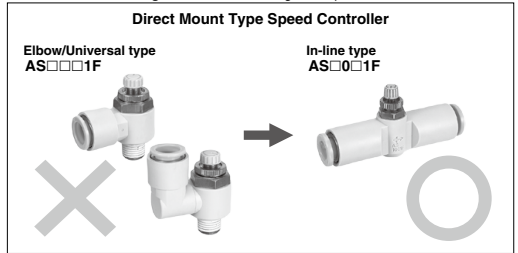
When the stroke adjustment unit is used with MY3B and MY3M, the fittings mountable on the front or back port will be limited to those listed below.

In such cases, since **direct mount type speed controllers cannot be mounted**, use in-line type speed controllers. (Except MY3B40/50/63 and MY3M63)

**Mounting (Mounting a male connector)**



Refer to the **Web Catalog** for the details of fittings and speed controllers.



| Cylinder model size | Connection thread                  | Applicable tubing O.D. (mm) | Fitting type                       | Fitting model                      |            |
|---------------------|------------------------------------|-----------------------------|------------------------------------|------------------------------------|------------|
| MY3□16              | M5                                 | 3.2                         | Male connector                     | KQ2H23-M5□                         |            |
|                     |                                    |                             | Male elbow                         | KQ2L23-M5□                         |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S23-M5□                         |            |
|                     |                                    | 4                           | Male connector                     | KQ2H23-M5                          |            |
|                     |                                    |                             | Male elbow                         | KQ2L23-M5                          |            |
|                     |                                    |                             | Male elbow                         | KQ2L04-M5□                         |            |
|                     | 6                                  | 4                           | Male elbow                         | KQ2L04-M5                          |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S04-M5                          |            |
|                     |                                    |                             | Male elbow                         | KQ2L06-M5                          |            |
|                     |                                    | 6                           | 3.2                                | Hexagon socket head male connector | KQ2S23-M5□ |
|                     |                                    |                             |                                    | Male connector                     | KQ2H23-M5  |
|                     |                                    |                             |                                    | Male elbow                         | KQ2L23-M5  |
| 4                   | Male connector                     |                             | KQ2H04-M5                          |                                    |            |
|                     | Male elbow                         |                             | KQ2L04-M5                          |                                    |            |
|                     | Hexagon socket head male connector |                             | KQ2S04-M5                          |                                    |            |
| MY3□20              | M5                                 | 3.2                         | Male connector                     | KQ2H06-M5                          |            |
|                     |                                    |                             | Male elbow                         | KQ2L06-M5                          |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S06-M5                          |            |
|                     |                                    | 4                           | Male connector                     | KQ2H04-M5                          |            |
|                     |                                    |                             | Male elbow                         | KQ2L04-M5                          |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S04-M5                          |            |
|                     | 6                                  | 4                           | Male connector                     | KQ2H06-M5                          |            |
|                     |                                    |                             | Male elbow                         | KQ2L06-M5                          |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S06-M5                          |            |
|                     |                                    | 3.2                         | Male connector                     | KQ2H23-01S                         |            |
|                     |                                    |                             | Male elbow                         | KQ2L23-01S                         |            |
|                     |                                    |                             | Male connector                     | KQ2H04-01□S                        |            |
| MY3□25              | Rc1/8                              | 3.2                         | Hexagon socket head male connector | KQ2S04-01□S                        |            |
|                     |                                    |                             | Male connector                     | KQ2H04-01S                         |            |
|                     |                                    |                             | Male elbow                         | KQ2L04-01S                         |            |
|                     |                                    | 4                           | Hexagon socket head male connector | KQ2S04-01S                         |            |
|                     |                                    |                             | Male connector                     | KQ2H06-01□S                        |            |
|                     |                                    |                             | Male elbow                         | KQ2L06-01□S                        |            |
|                     | 6                                  | 4                           | Hexagon socket head male connector | KQ2S06-01□S                        |            |
|                     |                                    |                             | Male elbow                         | KQ2L06-01S                         |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S06-01S                         |            |
|                     |                                    | 3.2                         | Male connector                     | KQ2H04-01S                         |            |
|                     |                                    |                             | Male elbow                         | KQ2L04-01S                         |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S04-01S                         |            |
| MY3□32              | Rc1/8                              | 4                           | Male connector                     | KQ2H04-01S                         |            |
|                     |                                    |                             | Male elbow                         | KQ2L04-01S                         |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S04-01S                         |            |
|                     |                                    | 6                           | Male connector                     | KQ2H06-01S                         |            |
|                     |                                    |                             | Male elbow                         | KQ2L06-01S                         |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S06-01S                         |            |
|                     | 8                                  | 4                           | Male connector                     | KQ2H08-01S                         |            |
|                     |                                    |                             | Male elbow                         | KQ2L08-01S                         |            |
|                     |                                    |                             | Hexagon socket head male connector | KQ2S08-01S                         |            |

| Cylinder model size | Connection thread | Applicable tubing O.D. (mm) | Fitting type                       | Fitting model |
|---------------------|-------------------|-----------------------------|------------------------------------|---------------|
| MY3□40              | Rc1/4             | 4                           | Male connector                     | KQ2H04-02S    |
|                     |                   |                             | Male connector                     | KQ2H06-02S    |
|                     |                   | 6                           | Male elbow                         | KQ2L06-02S    |
|                     |                   |                             | Hexagon socket head male connector | KQ2S06-02S    |
|                     |                   | 8                           | Male connector                     | KQ2H08-02S    |
|                     |                   |                             | Male elbow                         | KQ2L08-02S    |
|                     | 6                 | 4                           | Hexagon socket head male connector | KQ2S08-02S    |
|                     |                   |                             | Male connector                     | KQ2H06-03S    |
|                     |                   |                             | Male elbow                         | KQ2L06-03S    |
|                     |                   | 6                           | Hexagon socket head male connector | KQ2S06-03S    |
|                     |                   |                             | Male connector                     | KQ2H08-03S    |
|                     |                   |                             | Male elbow                         | KQ2L08-03S    |
| MY3□50              | Rc3/8             | 8                           | Hexagon socket head male connector | KQ2S08-03S    |
|                     |                   |                             | Male connector                     | KQ2H10-03S    |
|                     |                   |                             | Male elbow                         | KQ2L10-03S    |
|                     |                   | 10                          | Hexagon socket head male connector | KQ2S10-03S    |
|                     |                   |                             | Male connector                     | KQ2H12-03S    |
|                     |                   |                             | Male elbow                         | KQ2L12-03S    |
|                     | 12                | 8                           | Hexagon socket head male connector | KQ2S12-03S    |
|                     |                   |                             | Male connector                     | KQ2H10-03S    |
|                     |                   |                             | Male elbow                         | KQ2L10-03S    |
|                     |                   | 10                          | Hexagon socket head male connector | KQ2S10-03S    |
|                     |                   |                             | Male connector                     | KQ2H12-03S    |
|                     |                   |                             | Male elbow                         | KQ2L12-03S    |
| MY3□63              | Rc3/8             | 6                           | Male connector                     | KQ2H06-03S    |
|                     |                   |                             | Male elbow                         | KQ2L08-03S    |
|                     |                   |                             | Male connector                     | KQ2H10-03S    |
|                     |                   | 10                          | Male elbow                         | KQ2L10-03S    |
|                     |                   |                             | Hexagon socket head male connector | KQ2S10-03S    |
|                     |                   |                             | Male connector                     | KQ2H12-03S    |
|                     | 12                | 6                           | Male elbow                         | KQ2L12-03S    |
|                     |                   |                             | Hexagon socket head male connector | KQ2S12-03S    |
|                     |                   |                             | Male elbow                         | KQ2L16-03S    |



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## **MY3A Series**

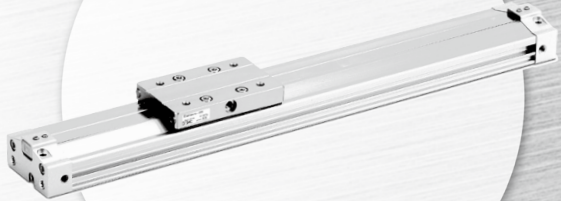
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**Basic, short type  
(Rubber bumper)**

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**ø16, ø20, ø25, ø32, ø40, ø50, ø63**

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## **MY3B Series**

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**Basic, standard type  
(Air cushion)**

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**ø16, ø20, ø25, ø32, ø40, ø50, ø63**

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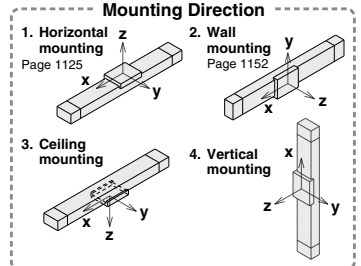
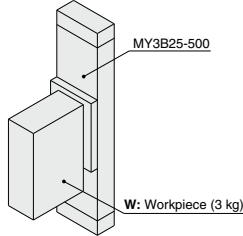
# MY3A/3B Series Model Selection

The following are steps for selecting the MY3 series which is best suited to your application.

## Calculation of Guide Load Factor

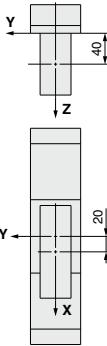
### 1 Operating Conditions

Cylinder ..... MY3B25-500  
 Average operating speed  $V_a$  ..... 300 mm/s  
 Mounting direction ..... Vertical mounting  
 Cushion ..... Shock absorber ( $\delta=1/100$ )



Refer to the pages mentioned above for actual examples of calculation for each orientation.  
 \* For ceiling mounting, refer to page 992.

### 2 Load Blocking



#### Workpiece Mass and Center of Gravity

| Workpiece no. | Mass (m) | Center of gravity |        |        |
|---------------|----------|-------------------|--------|--------|
|               |          | X-axis            | Y-axis | Z-axis |
| <b>W</b>      | 3 kg     | 20 mm             | 0 mm   | 40 mm  |

### 3 Calculation of Load Factor for Static Load

**m** : Mass

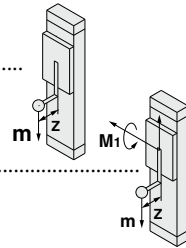
**m** is a mass moveable by thrust. Use 0.3 to 0.7 times the thrust .....  
 (differs depending on the operating speed) as a guide for actual use.

**M<sub>1</sub>**: Moment

**M<sub>1</sub> max** (from ① of graph MY3A/3B/M<sub>1</sub>) = 4 (N·m) .....

**M<sub>1</sub> = m X g x Z** = 3 x 9.8 x 40 x 10<sup>-3</sup> = 1.18 (N·m)

Load factor  $\alpha_1 = M_1 / M_2 \text{ max} = 1.18 / 4 = 0.29$



**Calculation of Guide Load Factor**

**4 Calculation of Load Factor for Dynamic Moment**

**Equivalent load  $F_E$  at impact**

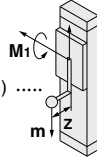
$$F_E = 1.40a \times \delta \times m \times g = 1.4 \times 300 \times \frac{1}{100} \times 3 \times 9.8 = 123.56 \text{ (N)}$$

**$M_{1E}$ : Moment**

**$M_{1E} \text{ max}$**  (from ② of graph MY3A/3B/ $M_1$  where  $1.40a = 420 \text{ mm/s}$ ) = 2.86 (N·m) .....

$$M_{1E} = \frac{1}{3} \times F_E \times Z = \frac{1}{3} \times 123.56 \times 40 \times 10^{-3} = 1.65 \text{ (N·m)}$$

$$\text{Load factor } \alpha_2 = M_{1E} / M_{1E} \text{ max} = 1.65 / 2.86 = 0.58$$



**5 Sum and Examination of Guide Load Factors**

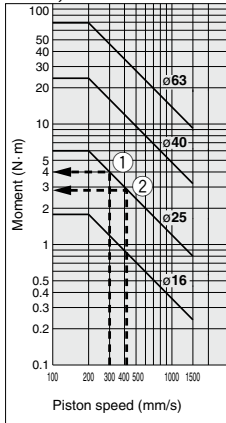
$$\Sigma \alpha = \alpha_1 + \alpha_2 = 0.87 \leq 1$$

The above calculation is within the allowable value, and therefore the selected model can be used.  
Select a shock absorber separately.

In an actual calculation, when the sum of guide load factors  $\Sigma \alpha$  in the formula above is more than 1, consider decreasing the speed, increasing the bore size, or changing the product series. Calculating the above formula is easy with the [SMC Pneumatics CAD System].

**Allowable Moment**

**MY3A, MY3B/ $M_1$**



# MY3A/3B Series

## Maximum Allowable Moment / Maximum Allowable Load

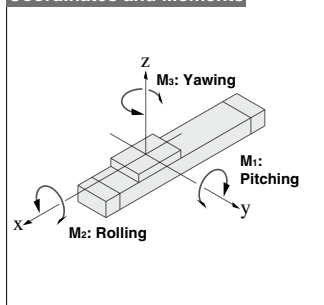
| Series       | Bore size (mm) | Maximum Allowable Moment (N·m) |                |                | Maximum Allowable Load (kg) |                |                |
|--------------|----------------|--------------------------------|----------------|----------------|-----------------------------|----------------|----------------|
|              |                | M <sub>1</sub>                 | M <sub>2</sub> | M <sub>3</sub> | m <sub>1</sub>              | m <sub>2</sub> | m <sub>3</sub> |
| MY3A<br>MY3B | 16             | 1.8                            | 0.3            | 0.7            | 6                           | 3              | 1.5            |
|              | 20             | 3                              | 0.7            | 1.2            | 10                          | 4.3            | 2.4            |
|              | 25             | 6                              | 1.2            | 2              | 16                          | 6              | 4              |
|              | 32             | 12                             | 2.5            | 5              | 26                          | 8.5            | 6.7            |
|              | 40             | 24                             | 4.8            | 10             | 40                          | 12             | 10             |
|              | 50             | 43                             | 9              | 18             | 56                          | 17             | 14             |
| 63           | 70             | 19                             | 30             | 80             | 24                          | 20             |                |

The above values are the maximum allowable values for moment and load. Refer to each graph regarding the maximum allowable moment and maximum allowable load for a particular piston speed.

## Types of Moment and Load Mass Applied to Rodless Cylinders

Multiple moments may be generated depending on the mounting orientation, load and position of the center of gravity.

### Coordinates and Moments



### Load Mass and Static Moment

| Mounting direction   | Horizontal           | Ceiling                      | Wall                         | Vertical                     |
|----------------------|----------------------|------------------------------|------------------------------|------------------------------|
| Static load <b>m</b> | <b>m<sub>1</sub></b> | <b>m<sub>2</sub></b>         | <b>m<sub>3</sub></b>         | <b>m<sub>4</sub></b> (Note)  |
| Static moment        | <b>M<sub>1</sub></b> | <b>m<sub>1</sub> × g × X</b> | <b>m<sub>2</sub> × g × X</b> | —                            |
|                      | <b>M<sub>2</sub></b> | <b>m<sub>1</sub> × g × Y</b> | <b>m<sub>2</sub> × g × Y</b> | <b>m<sub>3</sub> × g × Z</b> |
|                      | <b>M<sub>3</sub></b> | —                            | —                            | <b>m<sub>3</sub> × g × X</b> |

Note) M<sub>4</sub> is a mass movable by thrust. Use 0.3 to 0.7 times the thrust (differs depending on the operating speed) as a guide for actual use.

**g**: Gravitational acceleration

### Dynamic Moment

| Mounting direction     | Horizontal                           | Ceiling   | Wall | Vertical |
|------------------------|--------------------------------------|---|------|----------|
| Dynamic load <b>Fe</b> | <b>1.4Ua × δ × m<sub>n</sub> × g</b> |   |      |          |
| Dynamic moment         | <b>M<sub>1E</sub></b>                | <b>1/3 × Fe × Z</b>   |      |          |
|                        | <b>M<sub>2E</sub></b>                | <b>Dynamic moment M<sub>2E</sub> will not be generated.</b> |      |          |
|                        | <b>M<sub>3E</sub></b>                | <b>1/3 × Fe × Y</b>   |      |          |

Note) Regardless of the mounting orientation, dynamic moment is calculated with the formulae above.

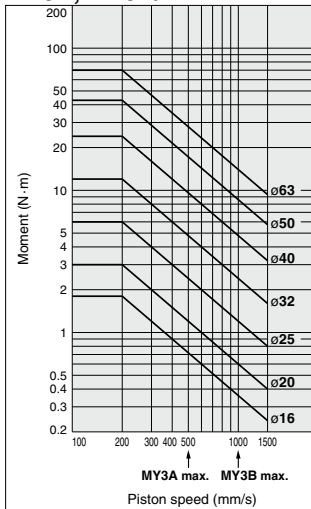
**g**: Gravitational acceleration  
**Ua**: Average speed  
**δ**: Bumper coefficient



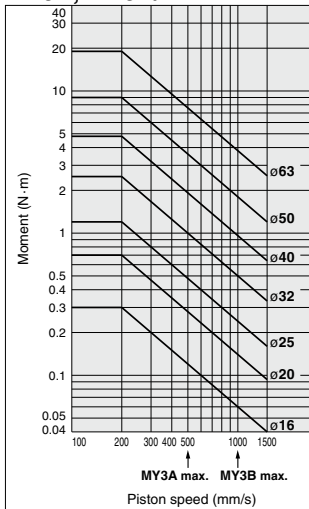
Select the moment from within the range of operating limits shown in the graphs. Note that the maximum allowable load value may sometimes be exceeded even within the operating limits shown in the graphs. Therefore, also check the allowable load for the selected conditions.

## Maximum Allowable Moment

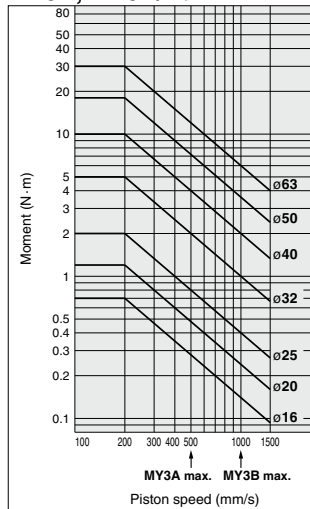
### MY3A, MY3B/m<sub>1</sub>



### MY3A, MY3B/m<sub>2</sub>



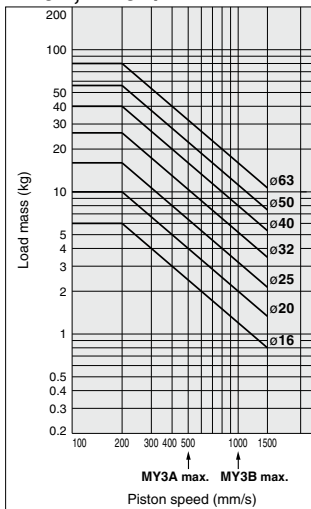
### MY3A, MY3B/m<sub>3</sub>



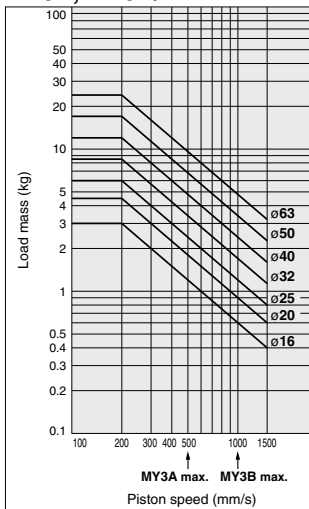
Select the moment from within the range of operating limits shown in the graphs. Note that the maximum allowable load value may sometimes be exceeded even within the operating limits shown in the graphs. Therefore, also check the allowable load for the selected conditions.

## Maximum Allowable Load

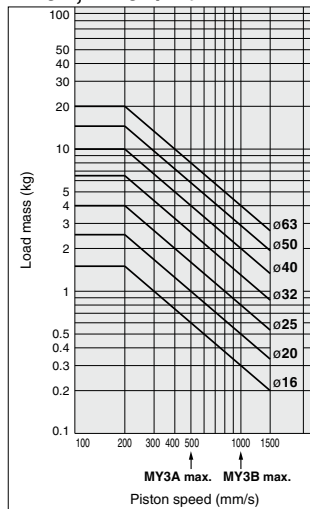
### MY3A, MY3B/m<sub>1</sub>



### MY3A, MY3B/m<sub>2</sub>



### MY3A, MY3B/m<sub>3</sub>

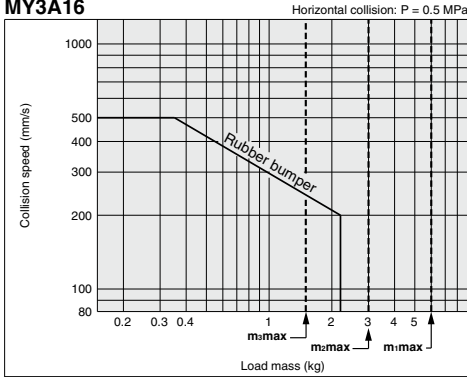


# MY3A/3B Series

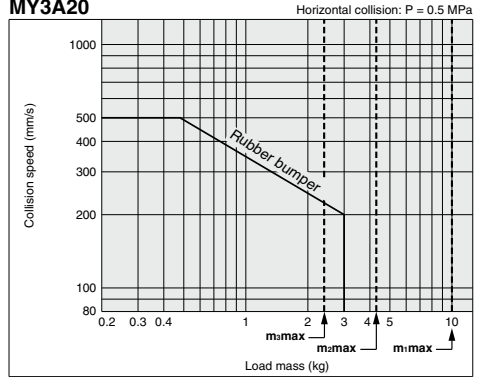
## Cushion Capacity

### Absorption Capacity of Rubber Bumper (MY3A)

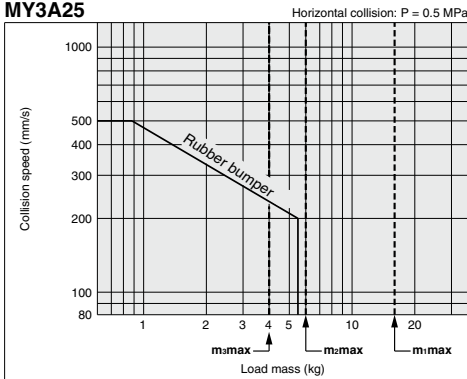
MY3A16



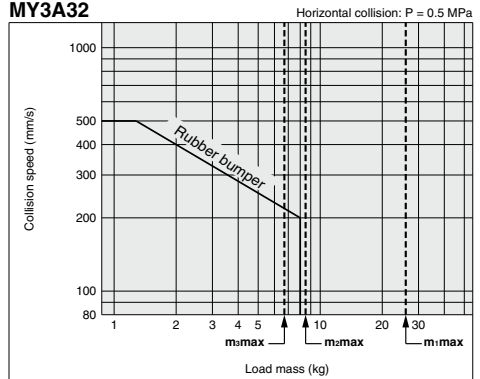
MY3A20



MY3A25



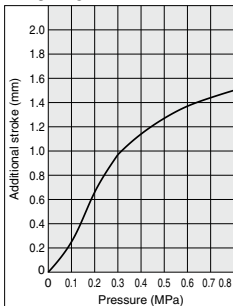
MY3A32



### Rubber Bumper Displacement (Additional Stroke due to Pressure on Each Side)

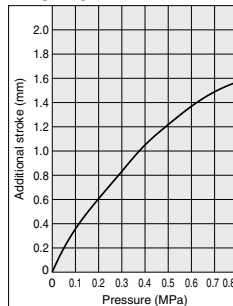
The stop position of the built-in rubber bumper of the MY3A series varies depending on the operating pressure. For alignment at the stroke end, find the guideline for the stroke end position in operation as follows. Find the incremental displacement at the operating pressure in the graph and add it to the stroke end position at no pressurization. If positioning accuracy is required for the stop position at the stroke end, consider installing an external positioning mechanism or switching to the air cushion type (MY3B).

MY3A16



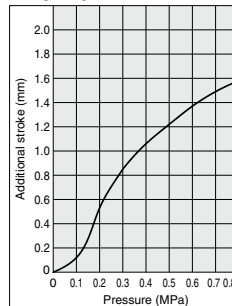
Additional Stroke due to Pressure on Each Side (MY3A16)

MY3A20



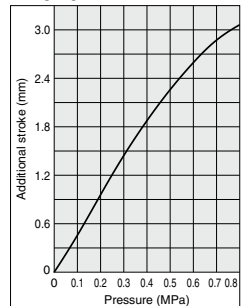
Additional Stroke due to Pressure on Each Side (MY3A20)

MY3A25



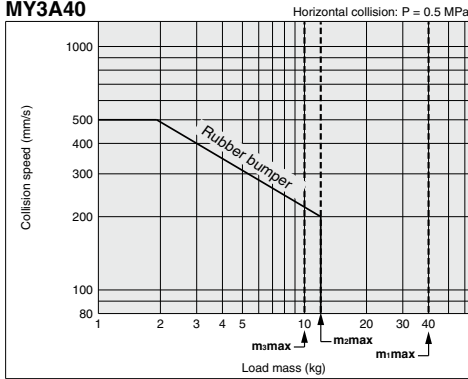
Additional Stroke due to Pressure on Each Side (MY3A25)

MY3A32

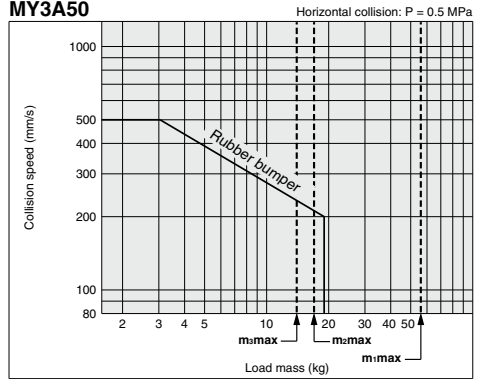


Additional Stroke due to Pressure on Each Side (MY3A32)

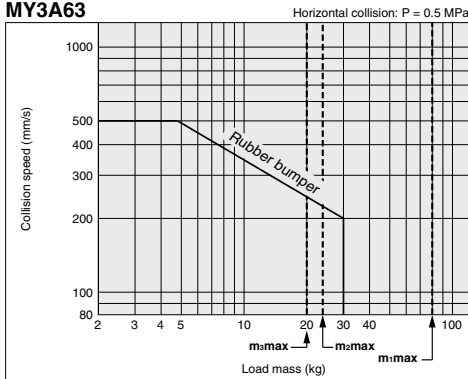
**MY3A40**



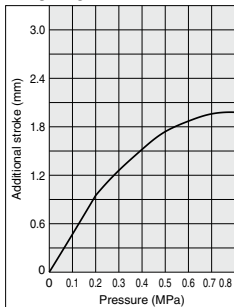
**MY3A50**



**MY3A63**

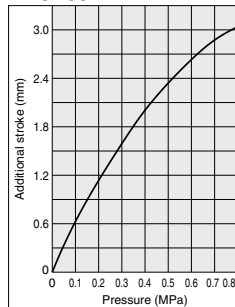


**MY3A40**



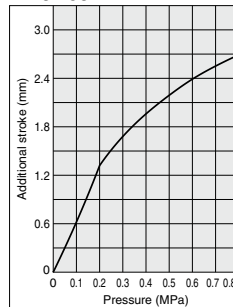
Additional Stroke due to Pressure on Each Side (MY3A40)

**MY3A50**



Additional Stroke due to Pressure on Each Side (MY3A50)

**MY3A63**



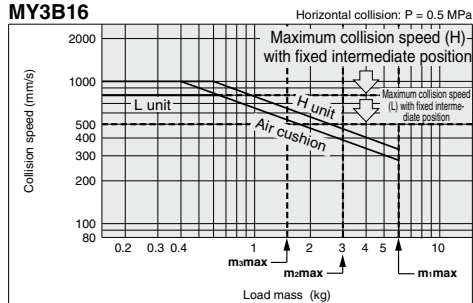
Additional Stroke due to Pressure on Each Side (MY3A63)

# MY3A/3B Series

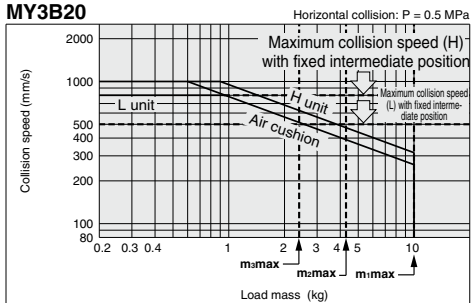
## Cushion Capacity

### Absorption Capacity of Air Cushion and Stroke Adjustment Unit (MY3B)

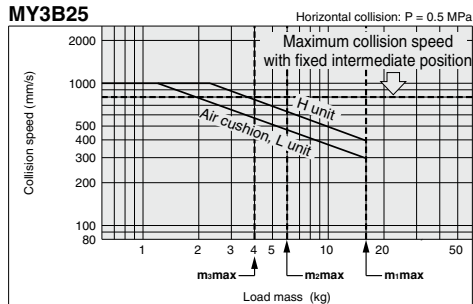
**MY3B16**



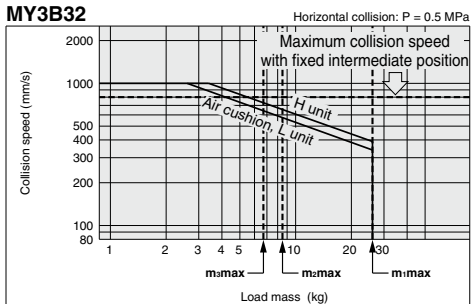
**MY3B20**



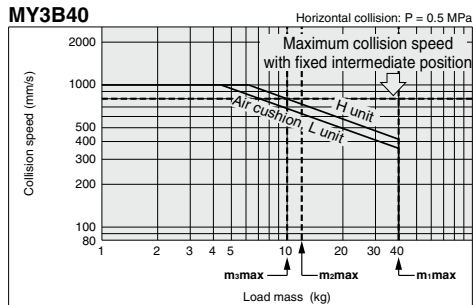
**MY3B25**



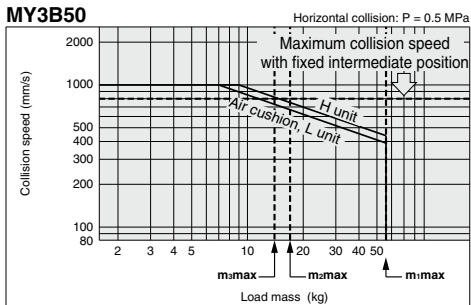
**MY3B32**



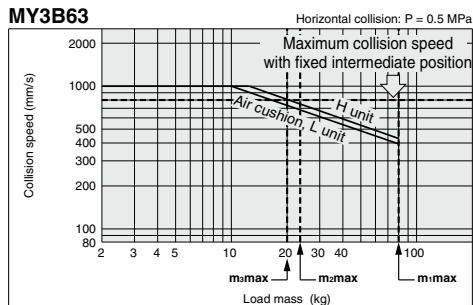
**MY3B40**



**MY3B50**



**MY3B63**

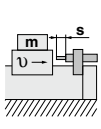
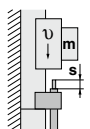
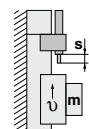


**Air Cushion Stroke**

Unit: mm

| Bore size (mm) | Cushion stroke |
|----------------|----------------|
| 16             | 13             |
| 20             | 16             |
| 25             | 18             |
| 32             | 22             |
| 40             | 25             |
| 50             | 28             |
| 63             | 30             |

**Calculation of Absorbed Energy for Stroke Adjustment Unit with Built-in Shock Absorber** Unit: N·m

| Type of collision             | Horizontal  | Vertical (downward)   | Vertical (upward)   |
|-------------------------------|---|---|---|
|                               |  |  |  |
| Kinetic energy E <sub>1</sub> | $\frac{1}{2} \cdot m \cdot v^2$   |   |   |
| Thrust energy E <sub>2</sub>  | F·s   | F·s + m·g·s   | F·s - m·g·s   |
| Absorbed energy E             | E <sub>1</sub> + E <sub>2</sub>   |   |   |

**Stroke Adjustment Unit Fine Stroke Adjustment Range** Unit: mm

| Bore size (mm) | Fine stroke adjustment range |
|----------------|------------------------------|
| <b>16, 20</b>  | 0 to -10                     |
| <b>25, 32</b>  | 0 to -12                     |
| <b>40, 50</b>  | 0 to -16                     |
| <b>63</b>      | 0 to -24                     |

Note) The maximum operating speed will differ when the stroke adjustment unit with the spacer for intermediate securing is used outside the maximum fine stroke adjustment range (with reference to the fixed stroke end). (Refer to the graph on page 1136.)

Symbols

**v**: Speed of impacting object (m/s)      **m**: Weight of impacting object (kg)  
**F**: Cylinder thrust (N)                      **g**: Gravitational acceleration (9.8 m/s<sup>2</sup>)

**s**: Shock absorber stroke (m)

Note) The speed of the impacting object is measured at the time of collision with the shock absorber.

Note) With an operating pressure of 0.6 MPa or larger, the use of a cushion or an external shock absorber conforming to the conditions on pages 1138 and 1139 is recommended.

**Stroke Adjustment**

**<Stroke adjustment of the adjustment bolt>**

Loosen the lock nut for the adjustment bolt, adjust the stroke on the head cover side with a hexagon wrench, and secure with a lock nut.

**<Stroke adjustment of the shock absorber: MY3B>**

Loosen the two unit fixing bolts on the shock absorber side and rotate the shock absorber for stroke adjustment. Tighten the unit fixing bolts equally to secure the shock absorber. Use caution not to overtighten the fixing bolts.

(Refer to "MY3B Stroke Adjustment Unit Tightening Torque for Fixing Bolts.")

**MY3B Stroke Adjustment Unit Tightening Torque for Fixing Bolts** Unit: N·m

| Bore size (mm) | Unit | Tightening torque |
|----------------|------|-------------------|
| <b>16, 20</b>  | L    | 0.7               |
|                | H    |                   |
| <b>25, 32</b>  | L    | 3.5               |
|                | H    |                   |
| <b>40, 50</b>  | L    | 13.8              |
|                | H    |                   |
| <b>63</b>      | L    | 27.5              |
|                | H    |                   |

**⚠ Caution**

**1. Use caution not to have your hands caught in the unit.**

When using a cylinder with stroke adjustment unit, the space between the slide table (slider) and the stroke adjustment unit is very narrow. Care should be taken to avoid the danger of hands being caught in this small space. Install a protective cover to prevent the risk of accidents to the human body.

**2. The stroke adjustment unit may interfere with the mounting bolt when mounting the cylinder on the equipment.**

Loosen the unit fixing bolt and dislocate the stroke adjustment unit before mounting the cylinder. After fixing the cylinder, move the stroke adjustment unit back to the desired location and tighten the unit fixing bolt.

Use caution not to overtighten the fixing bolts.

(Refer to "MY3B Stroke Adjustment Unit Tightening Torque for Fixing Bolts".)

**⚠ Caution**

**3. Use an external guide for the MY3B stroke adjustment unit.**

If a stroke adjustment unit is used where a load is directly applied, the collision reaction may cause damage to the cylinder.

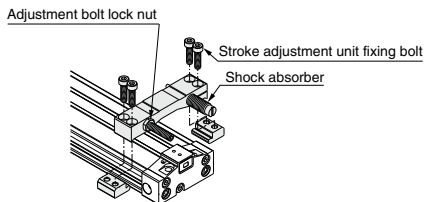
**4. Conduct stroke adjustment with an adjustment bolt as follows:**

The adjustment bolt should be secured on the same surface as the shock absorber after stroke adjustment.

If the stopper surface of the shock absorber and the end surface of the adjustment bolt are not on the same level, it may result in an unstable stop position of the slide table or reduced durability.

**5. Securing the unit body**

-MY3B>



Tighten the four unit fixing bolts equally to secure the unit body.

**6. Do not fix and use the stroke adjustment unit at an intermediate position (MY3B).**

When the stroke adjustment unit is fixed in an intermediate position, slippage can occur depending on the amount of energy released at the time of an impact. In that case, use a short spacer or a long spacer. For other lengths, please consult with SMC.

(Refer to "MY3B Stroke Adjustment Unit Tightening Torque for Fixing Bolts".)

If the stroke adjustment unit is fixed at an intermediate position, the energy absorption capacity may be different. For this reason, refer to the maximum absorbed energy listed above, and use the adjustment unit within the allowable absorption capacity.

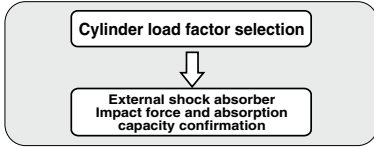
# MY3A/3B Series

## External Shock Absorber Selection

When the positioning of the stop position is necessary or the absorption capacity of the built-in cushion is not sufficient, refer to the selection procedure below and consider the installation of an external shock absorber.

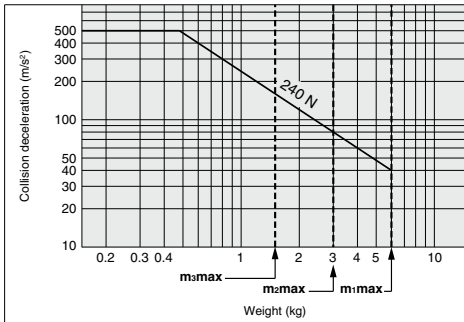
### Selection Confirmation Items with Use of External Shock Absorber

#### ① When the cylinder alone is used.

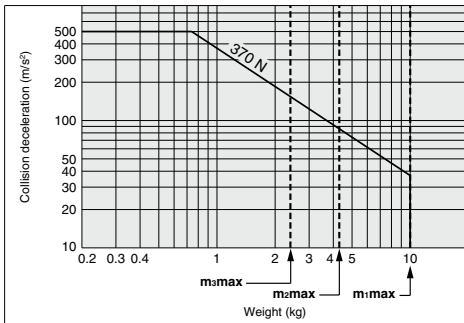


#### Allowable impact force with use of external shock absorber

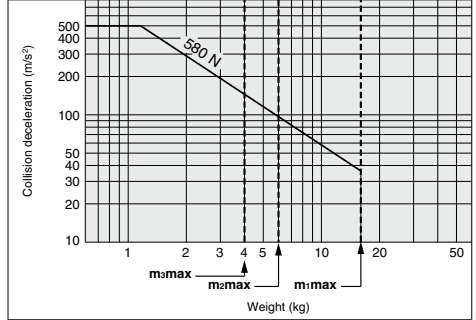
#### MY3□16



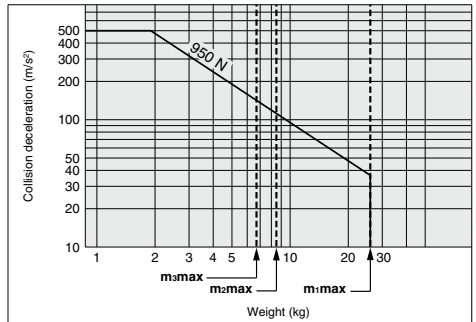
#### MY3□20



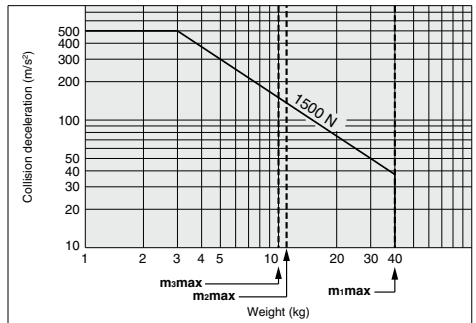
#### MY3□25



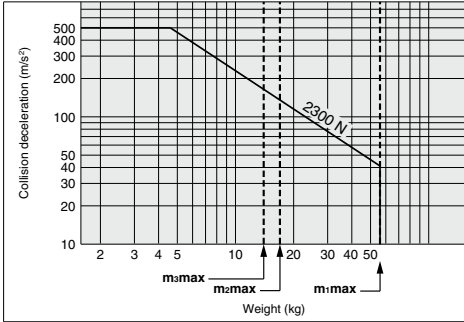
#### MY3□32



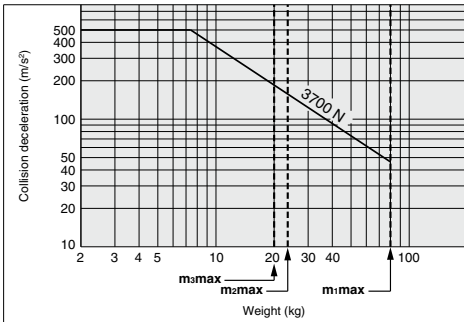
#### MY3□40



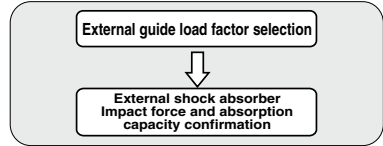
**MY3□50**



**MY3□63**



② When the external guide is used.



**Piston Speed with Use of External Shock Absorber**

| Bore size (mm) | 16              | 20 | 25 | 32 | 40 | 50 | 63 |
|----------------|-----------------|----|----|----|----|----|----|
| <b>MY3A</b>    | 80 to 1500 mm/s |    |    |    |    |    |    |
| <b>MY3B</b>    |                 |    |    |    |    |    |    |

An external shock absorber can be used within the above piston speed range. In conjunction with the absorption capacity selection, however, also confirm the conditions which make the shock absorber collision impact force to stay within the allowable range in the graph.

Use of an external shock absorber with conditions exceeding the allowable range may damage the cylinder.

**To confirm the collision impact force of the shock absorber, first find the impact force or acceleration under the operating conditions using the selection information or selection software provided by the manufacturer and then, refer to the graph.**

(The selection should allow a sufficient margin because the value calculated by the selection software involves an error with reference to the actual value.)

**Example of Recommended Use of the External Shock Absorber**

|   |                  |
|---|------------------|
| MY3□ $\begin{pmatrix} 16 \\ 20 \end{pmatrix}$ | ⇒ RB-OEM0.25M    |
| MY3□ $\begin{pmatrix} 25 \\ 32 \end{pmatrix}$ | ⇒ RB-OEM0.5M     |
| MY3□ $\begin{pmatrix} 40 \\ 50 \end{pmatrix}$ | ⇒ RB-OEM1.0MF    |
| MY3□ 63                                       | ⇒ RB-OEM1.5M x 1 |

# Mechanically Jointed Rodless Cylinder/Basic Type

# MY3A/3B Series

∅16, ∅20, ∅25, ∅32, ∅40, ∅50, ∅63

## How to Order

**Basic** **MY3 B 16** - **300** - **M9BW** -

**Type**

|          |                             |
|----------|-----------------------------|
| <b>A</b> | Short type (Rubber bumper)  |
| <b>B</b> | Standard type (Air cushion) |

**Cylinder bore size**

|           |       |
|-----------|-------|
| <b>16</b> | 16 mm |
| <b>20</b> | 20 mm |
| <b>25</b> | 25 mm |
| <b>32</b> | 32 mm |
| <b>40</b> | 40 mm |
| <b>50</b> | 50 mm |
| <b>63</b> | 63 mm |

**Port thread type**

| Symbol     | Type | Bore size     |
|------------|------|---------------|
| <b>NII</b> | M5   | ∅16, ∅20      |
|            | Rc   |               |
| <b>TN</b>  | NPT  | ∅25, ∅32, ∅40 |
| <b>TF</b>  | G    | ∅50, ∅63      |

**Number of auto switches**

|            |          |
|------------|----------|
| <b>NII</b> | 2 pcs.   |
| <b>S</b>   | 1 pc.    |
| <b>n</b>   | "n" pcs. |

**Auto switch**

|            |                                       |
|------------|---------------------------------------|
| <b>NII</b> | Without auto switch (Built-in magnet) |
|------------|---------------------------------------|

\* Refer to the table below for auto switch model numbers.

**Stroke adjustment unit symbol**

Refer to "Stroke adjustment unit" on page 1141.  
\* Stroke adjustment unit is not available for MY3A.

**Made to Order**  
Refer to page 1141 for details.

**Cylinder stroke (mm)**

| Bore size                         | Standard stroke*1   | Long stroke  | Maximum manufacturable stroke |
|-----------------------------------|---|--|-------------------------------|
| <b>16, 20, 25, 32, 40, 50, 63</b> | 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000<br>*1 The stroke can be manufactured in 1 mm increments from 1 mm stroke. | Strokes of 2001 to 3000 mm (1 mm increments) exceeding the standard stroke | 3000                          |

Ordering example

\* Long stroke can be ordered the same as the standard stroke. MY3A20-3000L-M9BW

Note) Please be advised that with stroke 49 or less, there are cases where auto switch mounting is not possible and the performance of the air cushion may decline.

## Applicable Auto Switches

Refer to pages 1289 to 1383 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 (NII)            | 1 (M)          | 3 (L)      |                     |                 | 5 (Z)      |            |
|                                     |   |                  |                 |                     |                 |     |                   |             |                      |                |            |                     |                 |            |            |
| Solid state auto switch             | —   | Grommet          | Yes             | 3-wire (NPN)        | 5 V, 12 V       | —   | <b>M9NV</b>       | <b>M9N</b>  | ●                    | ●              | ●          | ○                   | IC circuit      | Relay, PLC |            |
|                                     |   |                  |                 | 3-wire (PNP)        |                 |     | <b>M9PV</b>       | <b>M9P</b>  | ●                    | ●              | ●          | ○                   |                 |            |            |
|                                     |   |                  |                 | 2-wire              | <b>M9BV</b>     |     | <b>M9B</b>        | ●           | ●                    | ●              | ○          | —                   |                 |            |            |
|                                     |   |                  |                 | 3-wire (NPN)        | <b>M9NVW</b>    |     | <b>M9NW</b>       | ●           | ●                    | ●              | ○          | IC circuit          |                 |            |            |
|                                     | Diagnostic indication (2-color indicator) |                  |                 | 3-wire (PNP)        | <b>M9PWV</b>    |     | <b>M9PW</b>       | ●           | ●                    | ●              | ○          | ○                   |                 |            | —          |
|                                     |   |                  |                 | 2-wire              | <b>M9BWW</b>    |     | <b>M9BW</b>       | ●           | ●                    | ●              | ○          | ○                   |                 |            | —          |
|                                     |   |                  |                 | 3-wire (NPN)        | <b>M9NAV</b> *1 |     | <b>M9NA</b> *1    | ○           | ○                    | ●              | ○          | ○                   |                 |            | IC circuit |
|                                     |   |                  |                 | 3-wire (PNP)        | <b>M9PAV</b> *1 |     | <b>M9PA</b> *1    | ○           | ○                    | ●              | ○          | ○                   |                 |            | IC circuit |
| Water resistant (2-color indicator) | 2-wire                                    | <b>M9BAV</b> *1  | <b>M9BA</b> *1  | ○                   | ○               | ●   | ○                 | ○           | —                    |                |            |                     |                 |            |            |
|                                     | —   | Grommet          | Yes             | 3-wire (NPN equiv.) | —               | 5 V | <b>A96V</b>       | <b>A96</b>  | ●                    | —              | —          | —                   | IC circuit      | —          |            |
| —                                   | No  |                  |                 | 2-wire              |                 |     | 24 V              | 12 V        | 100 V                | <b>A93V</b> *2 | <b>A93</b> | ●                   | ●               | ●          | —          |
|                                     |   |                  |                 |                     |                 |     | 100 V or less     | <b>A90V</b> | <b>A90</b>           | ●              | —          | —                   | —               | IC circuit | —          |

\*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

\*2 1 m type lead wire is only applicable to D-A93.

\* Lead wire length symbols: 0.5 m ..... NII (Example) M9NW  
1 m ..... M (Example) M9NWM  
3 m ..... L (Example) M9NLW  
5 m ..... Z (Example) M9NZW

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

\* Separate switch spacers (BM93-016) are required for retrofitting of auto switches.

\* There are other applicable auto switches than listed above. For details, refer to page 1165.

\* Refer to pages 1358 and 1359 for the details of auto switches with a pre-wired connector.

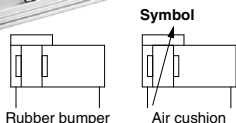
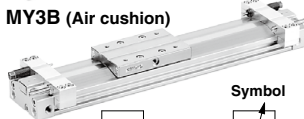
\* Auto switches are shipped together (not assembled). (Refer to page 1165 for the details of auto switch mounting.)



## MY3A (Rubber bumper)



## MY3B (Air cushion)



**Made to Order: Individual Specifications**  
(For details, refer to page 1166.)

| Symbol | Specifications        |
|--------|-----------------------|
| -X168  | Helical insert thread |

### Made to Order

[Click here for details](#)

| Symbol | Specifications                          |
|--------|---|
| -XB22  | Shock absorber soft type RJ series type |

## Specifications

| Bore size (mm)                | 16, 20  | 25, 32 | 40              | 50, 63 |
|-------------------------------|---|--------|-----------------|--------|
| Fluid                         | Air   |        |                 |        |
| Action                        | Double acting   |        |                 |        |
| Operating pressure range      | 0.2 to 0.8 MPa  |        | 0.15 to 0.8 MPa |        |
| Proof pressure                | 1.2 MPa   |        |                 |        |
| Ambient and fluid temperature | 5 to 60°C   |        |                 |        |
| Cushion                       | Rubber bumper (MY3A) / Air cushion (MY3B)                                 |        |                 |        |
| Lubrication                   | Not required (Non-lube)   |        |                 |        |
| Stroke length tolerance       | 1000 mm or less $\pm \frac{1}{8}$ , From 1001 mm $\pm \frac{2}{8}$ (Note) |        |                 |        |
| Port size (Rc, NPT, G)        | M5 x 0.8  | 1/8    | 1/4             | 3/8    |

(Note) The tolerance of the MY3A is a value with no pressurization. When a rubber bumper is used, the stroke of the MY3A varies according to the operating pressure.  
To find the stroke length tolerance at each operating pressure, double the additional stroke due to pressure on each side (pages 1134 and 1135) and add it.

## Piston Speed

| Bore size (mm)                               | 16  | 20 | 25 | 32 | 40 | 50 | 63 |
|--|---|----|----|----|----|----|----|
| Without stroke adjustment unit (MY3A)        | 80 to 500 mm/s  |    |    |    |    |    |    |
| Without stroke adjustment unit (MY3B)        | 80 to 1000 mm/s   |    |    |    |    |    |    |
| Stroke adjustment unit (L and H unit/MY3B)   | 80 to 1000 mm/s<br>( $\phi 16, \phi 20$ L unit: 80 to 800 mm/s) |    |    |    |    |    |    |
| External shock absorber (low reaction type)* | 80 to 1500 mm/s   |    |    |    |    |    |    |

- \* Refer to "External Shock Absorber Selection" on pages 1138 and 1139.
- When the RB series is used, operate at a piston speed that will not exceed the absorption capacity of the air cushion and stroke adjustment unit.
- \* Because of its structure, the fluctuation of this cylinder's operating speed is greater than rod type cylinders. For applications that require constant speed, select an applicable equipment for the level of demand.

## Stroke Adjustment Unit Specifications

| Bore size (mm)   |                   | 16, 20     |         | 25, 32     |         | 40, 50     |        | 63         |        |
|--|-------------------|------------|---------|------------|---------|------------|--------|------------|--------|
| Unit symbol  |                   | L          | H       | L          | H       | L          | H      | L          | H      |
| Shock absorber model                                       |                   | RB0806     | RB1007  | RB1007     | RB1412  | RB1412     | RB2015 | RB2015     | RB2725 |
| Shock absorber soft type RJ series (-XB22) model           |                   | RJ0806H    | RJ1007H | RJ1007H    | RJ1412H | RJ1412H    | —      | —          | —      |
| Stroke adjustment range by intermediate fixing spacer (mm) | Without spacer    | 0 to -10   |         | 0 to -12   |         | 0 to -16   |        | 0 to -24   |        |
|  | With short spacer | -10 to -20 |         | -12 to -24 |         | -16 to -32 |        | -24 to -48 |        |
|  | With long spacer  | -20 to -30 |         | -24 to -36 |         | -32 to -48 |        | -48 to -72 |        |

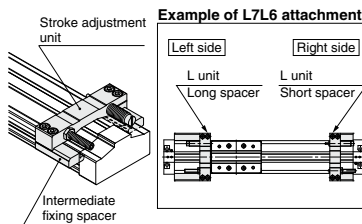
\* Stroke adjustment range is applicable for one side when mounted on a cylinder.

## Stroke Adjustment Unit Symbol

|                                  |  | Right side stroke adjustment unit |     |   |      |  |      |      |      |  |
|----------------------------------|--|-----------------------------------|-----|---|------|--|------|------|------|--|
|                                  |  | Without unit                      |     | L: With low load shock absorber + Adjustment bolt |      | H: With high load shock absorber + Adjustment bolt |      |      |      |  |
| Left side stroke adjustment unit | Without unit                                       | Nil                               | SL  | SL6   | SL7  | SH   | SH6  | SH7  |      |  |
|                                  | L: With low load shock absorber + Adjustment bolt  | With short spacer                 | LS  | L   | LL6  | LL7  | LH   | LH6  | LH7  |  |
|                                  |  | With long spacer                  | L6S | L6L   | L6   | L6L7   | L6H  | L6H6 | L6H7 |  |
|                                  | H: With high load shock absorber + Adjustment bolt | With short spacer                 | L7S | L7L   | L7L6 | L7   | L7H  | L7H6 | L7H7 |  |
| With short spacer                |  | HS                                | HL  | HL6   | HL7  | H  | HH6  | HH7  |      |  |
| With long spacer                 |  | H6S                               | H6L | H6L6  | H6L7 | H6H  | H6   | H6H7 |      |  |
|                                  | With long spacer                                   | H7S                               | H7L | H7L6  | H7L7 | H7H  | H7H6 | H7   |      |  |

\* Spacers are used to fix the stroke adjustment unit at an intermediate stroke position.

### Stroke adjustment unit mounting diagram



## Shock Absorber Specifications

| Type                                 | RB 0806    | RB 1007 | RB 1412 | RB 2015 | RB 2725 |       |
|--------------------------------------|------------|---------|---------|---------|---------|-------|
| Max. energy absorption (J)           | 0.84       | 2.4     | 10.1    | 29.8    | 46.6    |       |
| Stroke absorption (mm)               | 6          | 7       | 12      | 15      | 25      |       |
| Max. collision speed (mm/s)          | 1000       |         |         |         |         |       |
| Max. operating frequency (cycle/min) | 80         | 70      | 45      | 25      | 10      |       |
| Spring force (N)                     | Extended   | 1.96    | 4.22    | 6.86    | 8.34    | 8.83  |
|                                      | Compressed | 4.22    | 6.86    | 15.98   | 20.50   | 20.01 |
| Operating temperature range (°C)     | 5 to 60    |         |         |         |         |       |

(Note) The shock absorber service life is different from that of the MY3A/3B cylinders depending on operating conditions. Allowable operating cycle under the specifications set in this catalog is shown below.

**1.2 million times RB08□□**  
**2 million times RB10□□ to RB2725**

(Note) Specified service life (suitable replacement period) is the value at room temperature (20 to 25°C). The period may vary depending on the temperature and other conditions. In some cases the absorber may need to be replaced before the allowable operating cycle above.

# MY3A/3B Series

## Theoretical Output

| Bore size (mm) | Piston area (mm <sup>2</sup> ) | Operating pressure (MPa) |     |      |      |      |      |      | Unit: N |
|----------------|--------------------------------|--------------------------|-----|------|------|------|------|------|---------|
|                |                                | 0.2                      | 0.3 | 0.4  | 0.5  | 0.6  | 0.7  | 0.8  |         |
| 16             | 200                            | 40                       | 60  | 80   | 100  | 120  | 140  | 160  |         |
| 20             | 314                            | 62                       | 94  | 125  | 157  | 188  | 219  | 251  |         |
| 25             | 490                            | 98                       | 147 | 196  | 245  | 294  | 343  | 392  |         |
| 32             | 804                            | 161                      | 241 | 322  | 402  | 483  | 563  | 643  |         |
| 40             | 1256                           | 251                      | 377 | 502  | 628  | 754  | 879  | 1005 |         |
| 50             | 1962                           | 392                      | 588 | 784  | 981  | 1177 | 1373 | 1569 |         |
| 63             | 3115                           | 623                      | 934 | 1246 | 1557 | 1869 | 2180 | 2492 |         |

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

## Weight

| Model | Bore size (mm) | Basic weight | Additional weight per 50 mm stroke | Weight of moving parts | Stroke adjustment unit weight (per unit) |               | Unit: kg |
|-------|----------------|--------------|------------------------------------|------------------------|--|---------------|----------|
|       |                |              |                                    |                        | L unit weight                            | H unit weight |          |
| MY3A  | 16             | 0.21         | 0.06                               | 0.06                   |  |               |          |
|       | 20             | 0.39         | 0.09                               | 0.12                   |  |               |          |
|       | 25             | 0.62         | 0.11                               | 0.20                   |  |               |          |
|       | 32             | 1.25         | 0.18                               | 0.37                   |  |               |          |
|       | 40             | 2.31         | 0.25                               | 0.67                   |  |               |          |
|       | 50             | 3.72         | 0.40                               | 1.07                   |  |               |          |
|       | 63             | 6.46         | 0.56                               | 2.16                   |  |               |          |
| MY3B  | 16             | 0.22         | 0.06                               | 0.06                   | 0.04                                     | 0.05          |          |
|       | 20             | 0.49         | 0.09                               | 0.12                   | 0.06                                     | 0.08          |          |
|       | 25             | 0.71         | 0.11                               | 0.20                   | 0.10                                     | 0.15          |          |
|       | 32             | 1.39         | 0.18                               | 0.37                   | 0.14                                     | 0.22          |          |
|       | 40             | 2.41         | 0.25                               | 0.67                   | 0.26                                     | 0.30          |          |
|       | 50             | 4.10         | 0.40                               | 1.08                   | 0.38                                     | 0.52          |          |
|       | 63             | 7.04         | 0.56                               | 2.16                   | 0.57                                     | 0.92          |          |

Calculation method/Example: **MY3B25-300L**

Basic weight ..... 0.71 kg      Cylinder stroke ..... 300 st

Additional weight ..... 0.11/50 st

L unit weight ..... 0.1 kg

0.71 + 0.11 x 300 ÷ 50 + 0.1 x 2 = 1.57 kg

## Option

### Stroke Adjustment Unit Part No.

**MY3B-A 25 L2-6N**

Stroke adjustment unit

Bore size

|    |       |
|----|-------|
| 16 | 16 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |
| 40 | 40 mm |
| 50 | 50 mm |
| 63 | 63 mm |

Unit no.

| Symbol | Stroke adjustment unit | Mounting position |
|--------|------------------------|-------------------|
| L1     | L unit                 | Left              |
| L2     |                        | Right             |
| H1     | H unit                 | Left              |
| H2     |                        | Right             |

Note) Refer to page 1141 for details about adjustment range.

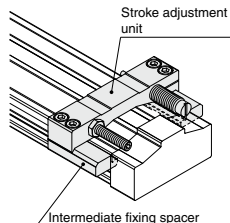
Intermediate fixing spacer

|     |                |
|-----|----------------|
| Nil | Without spacer |
| 6   | Short spacer   |
| 7   | Long spacer    |

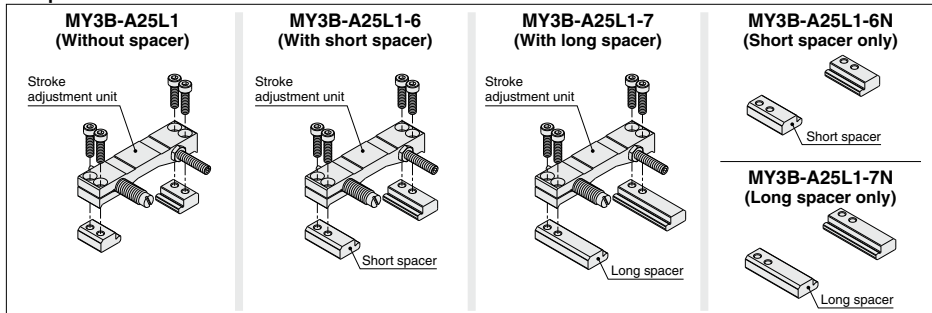
Spacer delivery type

|     |                |
|-----|----------------|
| Nil | Unit installed |
| N   | Spacer only    |

- \* Spacers are used to fix the stroke adjustment unit at an intermediate stroke position.
- \* Spacers are shipped for a set of two.

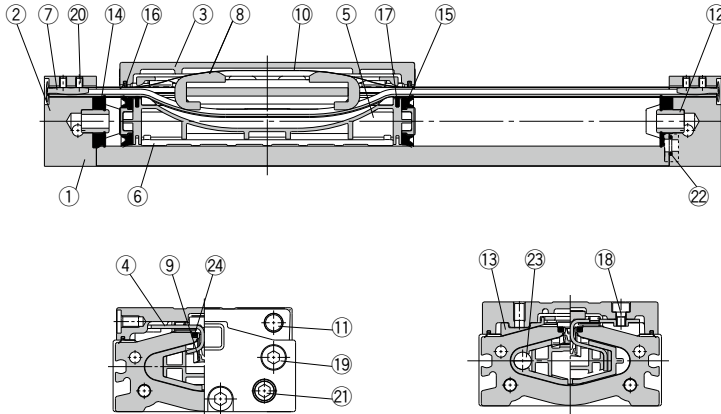


## Component Parts



Construction: **Ø16, Ø20, Ø25, Ø32, Ø40, Ø50, Ø63**

**MY3A**



**Component Parts**

| No. | Description    | Material                   | Note                      |
|-----|----------------|----------------------------|---------------------------|
| 1   | Cylinder tube  | Aluminum alloy             | Hard anodized             |
| 2   | Head cover     | Aluminum alloy             | Hard anodized             |
| 3   | Slide table    | Aluminum alloy             | Electroless nickel plated |
| 4   | Piston yoke    | Stainless steel            |                           |
| 5   | Piston         | Polyamide                  |                           |
| 6   | Wear ring      | Polyacetal                 |                           |
| 7   | Belt clamp     | Polybutylene terephthalate |                           |
| 8   | Belt separator | Polyacetal                 |                           |
| 11  | Stopper        | Carbon steel               | Electroless nickel plated |

| No. | Description                   | Material                | Note      |
|-----|-------------------------------|-------------------------|-----------|
| 12  | Seal ring                     | Aluminum alloy          | Anodized  |
| 13  | Bearing                       | Polyacetal              |           |
| 17  | Inner wiper                   | Special resin           |           |
| 18  | Hexagon socket head cap screw | Chrome molybdenum steel | Chromated |
| 19  | Hexagon socket head cap screw | Chrome molybdenum steel | Chromated |
| 20  | Hexagon socket head set screw | Chrome molybdenum steel | Chromated |
| 21  | Hexagon socket head plug      | Carbon steel            | Chromated |
| 23  | Magnet                        | —                       |           |
| 24  | Seal magnet                   | Rubber magnet           |           |

**Replacement Parts/Seal**

| No. | Description    | Material           | Qty. | MY3A16            | MY3A20            | MY3A25            | MY3A32            | MY3A40            | MY3A50            | MY3A63            |
|-----|----------------|--------------------|------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| 9   | Seal belt      | Urethane Polyamide | 1    | MY3A16-16C-Stroke | MY3A20-16C-Stroke | MY3A25-16C-Stroke | MY3A32-16C-Stroke | MY3A40-16C-Stroke | MY3A50-16C-Stroke | MY3A63-16A-Stroke |
| 10  | Dust seal band | Stainless steel    | 1    | MY3A16-16B-Stroke | MY3A20-16B-Stroke | MY3A25-16B-Stroke | MY3A32-16B-Stroke | MY3A40-16B-Stroke | MY3A50-16B-Stroke | MY3A63-16B-Stroke |
| 16  | Scraper        | Polyamide          | 1    | MYA16-15-R6656    | MYA20-15-AC594    | MYA25-15-R6657    | MYA32-15-AC595    | MYA40-15-R6658    | MYA50-15-AC596    | MYA63-15-R6659    |
| 14  | Gasket bumper  | NBR                | 2    |                   |                   |                   |                   |                   |                   |                   |
| 15  | Piston seal    | NBR                | 2    | MY3A16-PS         | MY3A20-PS         | MY3A25-PS         | MY3A32-PS         | MY3A40-PS         | MY3A50-PS         | MY3A63-PS         |
| 22  | O-ring         | NBR                | 4    |                   |                   |                   |                   |                   |                   |                   |

\* Seal kit includes 14, 15, and 22. Order the seal kit based on each bore size.

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

When 9 and 10 are shipped as single units, a grease pack is included (10 g per 1000 strokes).

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

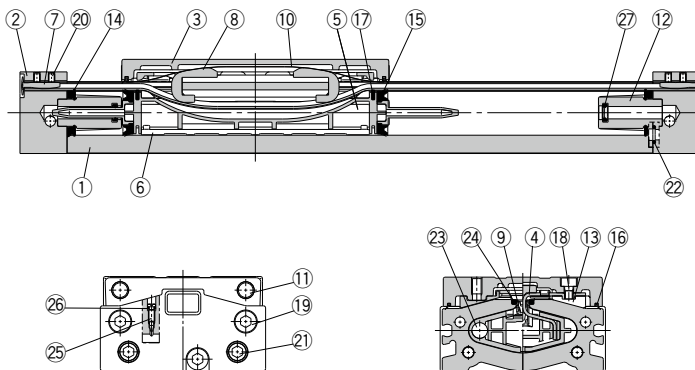
Grease pack part number: GR-S-010 (10 g), GR-S-020 (20 g)

\* For instructions on how to replace replacement parts/seals, refer to the operation manual.

# MY3A/3B Series

## Construction: $\varnothing 16$ , $\varnothing 20$ , $\varnothing 25$ , $\varnothing 32$ , $\varnothing 40$ , $\varnothing 50$ , $\varnothing 63$

### MY3B



### Component Parts

| No. | Description    | Material                   | Note                      |
|-----|----------------|----------------------------|---------------------------|
| 1   | Cylinder tube  | Aluminum alloy             | Hard anodized             |
| 2   | Head cover     | Aluminum alloy             | Hard anodized             |
| 3   | Slide table    | Aluminum alloy             | Electroless nickel plated |
| 4   | Piston yoke    | Stainless steel            |                           |
| 5   | Piston         | Polyamide                  |                           |
| 6   | Wear ring      | Polyacetal                 |                           |
| 7   | Belt clamp     | Polybutylene terephthalate |                           |
| 8   | Belt separator | Polyacetal                 |                           |
| 11  | Stopper        | Carbon steel               | Electroless nickel plated |
| 12  | Cushion boss   | Aluminum alloy             | Chromated                 |
| 13  | Bearing        | Polyacetal                 |                           |

| No. | Description                   | Material                | Note          |
|-----|-------------------------------|-------------------------|---------------|
| 17  | Inner wiper                   | Special resin           |               |
| 18  | Hexagon socket head cap screw | Chrome molybdenum steel | Chromated     |
| 19  | Hexagon socket head cap screw | Chrome molybdenum steel | Chromated     |
| 20  | Hexagon socket head set screw | Chrome molybdenum steel | Chromated     |
| 21  | Hexagon socket head plug      | Carbon steel            | Chromated     |
| 23  | Magnet                        | —                       |               |
| 24  | Seal magnet                   | Rubber magnet           |               |
| 25  | Cushion needle                | Rolled steel            | Nickel plated |

### Replacement Parts/Seal

| No. | Description    | Material              | Qty. | MY3B16   | MY3B20   | MY3B25   | MY3B32   | MY3B40   | MY3B50   | MY3B63   |
|-----|----------------|-----------------------|------|--|--|--|--|--|--|--|
| 9   | Seal belt      | Urethane<br>Polyamide | 1    | MY3B16-16C-<br>[Stroke]  | MY3B20-16C-<br>[Stroke]  | MY3B25-16C-<br>[Stroke]  | MY3B32-16C-<br>[Stroke]  | MY3B40-16C-<br>[Stroke]  | MY3B50-16C-<br>[Stroke]  | MY3B63-16A-<br>[Stroke]  |
| 10  | Dust seal band | Stainless steel       | 1    | MY3B16-16B-<br>[Stroke]  | MY3B20-16B-<br>[Stroke]  | MY3B25-16B-<br>[Stroke]  | MY3B32-16B-<br>[Stroke]  | MY3B40-16B-<br>[Stroke]  | MY3B50-16B-<br>[Stroke]  | MY3B63-16B-<br>[Stroke]  |
| 16  | Scraper        | Polyamide             | 1    | MYA16-15-<br>R6656   | MYA20-15-<br>AC594   | MYA25-15-<br>R6657   | MYA32-15-<br>AC595   | MYA40-15-<br>R6658   | MYA50-15-<br>AC596   | MYA63-15-<br>R6659   |
| 26  | O-ring         | NBR                   | 2    | KA00309<br>( $\varnothing 4 \times \varnothing 1.8 \times \varnothing 1.1$ ) | KA00309<br>( $\varnothing 4 \times \varnothing 1.8 \times \varnothing 1.1$ ) | KA00309<br>( $\varnothing 4 \times \varnothing 1.8 \times \varnothing 1.1$ ) | KA00309<br>( $\varnothing 4 \times \varnothing 1.8 \times \varnothing 1.1$ ) | KA00320<br>( $\varnothing 7.15 \times \varnothing 3.75 \times \varnothing 1.7$ ) | KA00320<br>( $\varnothing 7.15 \times \varnothing 3.75 \times \varnothing 1.7$ ) | KA00402<br>( $\varnothing 8.3 \times \varnothing 4.5 \times \varnothing 1.9$ ) |
| 14  | Tube gasket    | NBR                   | 2    | MY3B16-PS  | MY3B20-PS  | MY3B25-PS  | MY3B32-PS  | MY3B40-PS  | MY3B50-PS  | MY3B63-PS  |
| 15  | Piston seal    | NBR                   | 2    |  |  |  |  |  |  |  |
| 22  | O-ring         | NBR                   | 4    |  |  |  |  |  |  |  |
| 27  | Cushion seal   | NBR                   | 2    |  |  |  |  |  |  |  |

\* Seal kit includes 14, 15, 22 and 27. Order the seal kit based on each bore size.

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

When ⑨ and ⑩ are shipped as single units, a grease pack is included (10 g per 1000 strokes).

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

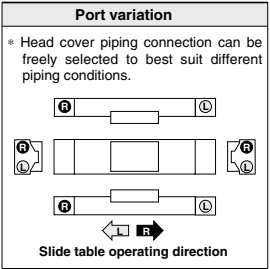
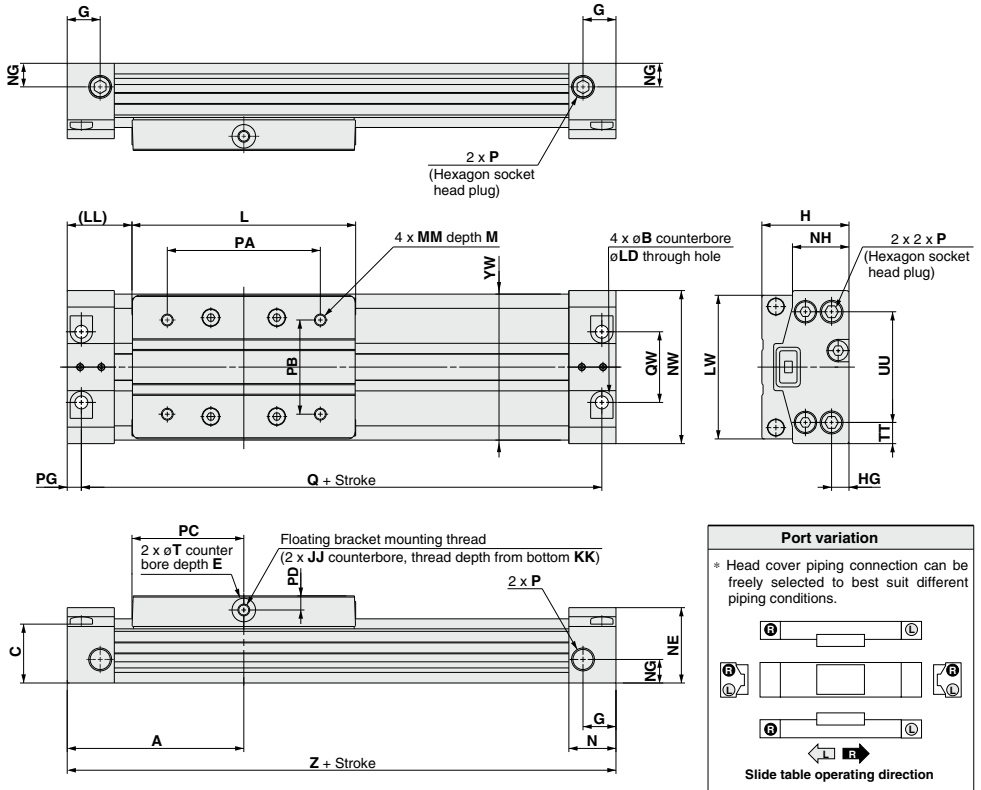
Grease pack part number: GR-S-010 (10 g), GR-S-020 (20 g)

\* For instructions on how to replace replacement parts/seals, refer to the operation manual.

# Short Type: $\varnothing 16, \varnothing 20, \varnothing 25, \varnothing 32, \varnothing 40, \varnothing 50, \varnothing 63$

MY3A **Bore size** – **Stroke**

\* Refer to "Specific Product Precautions" on page 1167 for mounting.



| Model  | A    | B   | C    | E | G    | H  | HG   | JJ        | KK   | L   | LD  | LL   | LW  | M  | MM        | N    |
|--------|------|-----|------|---|------|----|------|-----------|------|-----|-----|------|-----|----|-----------|------|
| MY3A16 | 55   | 6   | 18   | 2 | 9.5  | 27 | 5    | M4 x 0.7  | 5    | 65  | 3.5 | 22.5 | 41  | 6  | M4 x 0.7  | 13.5 |
| MY3A20 | 64   | 7.5 | 22   | 2 | 9.5  | 32 | 6.5  | M4 x 0.7  | 8.5  | 80  | 4.5 | 24   | 51  | 6  | M4 x 0.7  | 15.5 |
| MY3A25 | 75   | 9.5 | 25   | 2 | 14   | 37 | 7.4  | M5 x 0.8  | 7.5  | 95  | 5.5 | 27.5 | 61  | 8  | M5 x 0.8  | 20   |
| MY3A32 | 96.5 | 11  | 32.5 | 2 | 14   | 45 | 9    | M5 x 0.8  | 7.5  | 128 | 6.6 | 32.5 | 76  | 8  | M5 x 0.8  | 22.5 |
| MY3A40 | 120  | 14  | 38   | 2 | 18   | 54 | 12   | M6 x 1    | 12   | 160 | 8.6 | 40   | 90  | 12 | M6 x 1    | 27   |
| MY3A50 | 137  | 14  | 49   | 3 | 16   | 67 | 14   | M6 x 1    | 15.5 | 190 | 9   | 42   | 112 | 12 | M6 x 1    | 27   |
| MY3A63 | 160  | 17  | 60   | 3 | 20.5 | 84 | 16.5 | M8 x 1.25 | 22   | 220 | 11  | 50   | 134 | 16 | M8 x 1.25 | 31   |

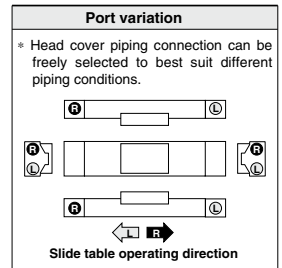
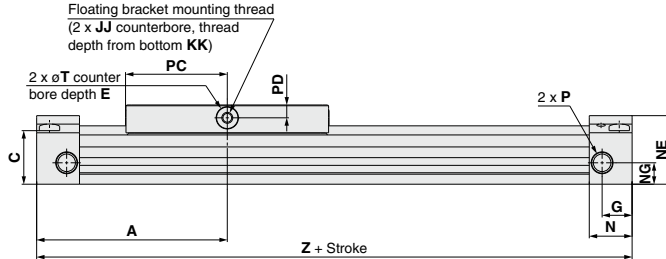
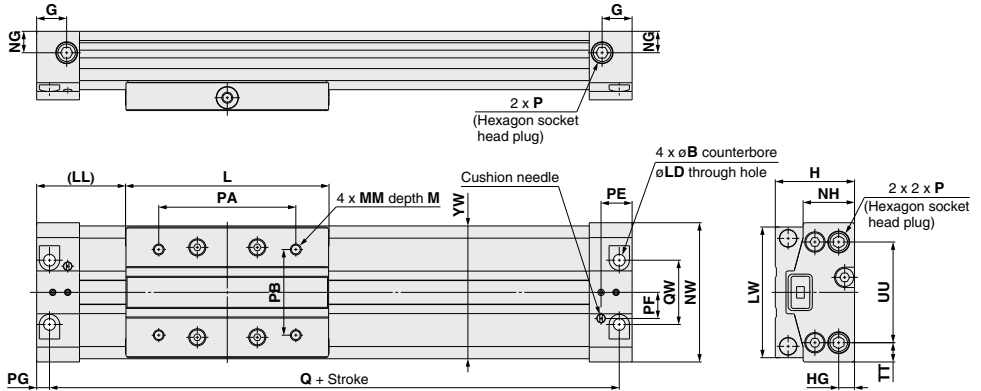
| Model  | NE   | NG | NH   | NW  | P             | PA  | PB | PC   | PD  | PG  | Q   | QW | T  | TT   | UU | YW  | Z   |
|--------|------|----|------|-----|---------------|-----|----|------|-----|-----|-----|----|----|------|----|-----|-----|
| MY3A16 | 22.5 | 8  | 17.2 | 43  | M5 x 0.8      | 44  | 26 | 32.5 | 4   | 4   | 102 | 19 | 7  | 6.5  | 30 | 42  | 110 |
| MY3A20 | 27.5 | 10 | 20.8 | 53  | M5 x 0.8      | 54  | 30 | 40   | 5   | 4.5 | 119 | 23 | 8  | 9    | 35 | 52  | 128 |
| MY3A25 | 32   | 10 | 24   | 65  | Rc, NPT, G1/8 | 64  | 40 | 47.5 | 6   | 6   | 138 | 30 | 10 | 9    | 47 | 62  | 150 |
| MY3A32 | 39   | 14 | 31   | 79  | Rc, NPT, G1/8 | 92  | 44 | 64   | 6   | 7   | 179 | 33 | 10 | 13.5 | 52 | 77  | 193 |
| MY3A40 | 46   | 15 | 37   | 94  | Rc, NPT, G1/4 | 112 | 60 | 80   | 7.5 | 8.5 | 223 | 40 | 14 | 14   | 66 | 92  | 240 |
| MY3A50 | 58   | 25 | 47.5 | 116 | Rc, NPT, G3/8 | 142 | 66 | 95   | 8.5 | 8.5 | 257 | 44 | 15 | 21   | 74 | 114 | 274 |
| MY3A63 | 70   | 29 | 58   | 139 | Rc, NPT, G3/8 | 162 | 84 | 110  | 10  | 10  | 300 | 64 | 16 | 20   | 99 | 136 | 320 |

# MY3A/3B Series

## Standard Type: $\varnothing 16, \varnothing 20, \varnothing 25, \varnothing 32, \varnothing 40, \varnothing 50, \varnothing 63$

MY3B Bore size – Stroke

\* Refer to "Specific Product Precautions" on page 1167 for mounting.



| Model  | A     | B   | C    | E | G    | H  | HG   | JJ        | KK   | L   | LD  | LL   | LW  | M  | MM        | N    |
|--------|-------|-----|------|---|------|----|------|-----------|------|-----|-----|------|-----|----|-----------|------|
| MY3B16 | 61    | 6   | 18   | 2 | 9.5  | 27 | 5    | M4 x 0.7  | 5    | 65  | 3.5 | 28.5 | 41  | 6  | M4 x 0.7  | 13.5 |
| MY3B20 | 74    | 7.5 | 22   | 2 | 9.5  | 32 | 6.5  | M4 x 0.7  | 8.5  | 80  | 4.5 | 34   | 51  | 6  | M4 x 0.7  | 15.5 |
| MY3B25 | 89    | 9.5 | 25   | 2 | 14   | 37 | 7.4  | M5 x 0.8  | 7.5  | 95  | 5.5 | 41.5 | 61  | 8  | M5 x 0.8  | 20   |
| MY3B32 | 112.5 | 11  | 32.5 | 2 | 14   | 45 | 9    | M5 x 0.8  | 7.5  | 128 | 6.6 | 48.5 | 76  | 8  | M5 x 0.8  | 22.5 |
| MY3B40 | 138   | 14  | 38   | 2 | 18   | 54 | 12   | M6 x 1    | 12   | 160 | 8.6 | 58   | 90  | 12 | M6 x 1    | 27   |
| MY3B50 | 155   | 14  | 49   | 3 | 16   | 67 | 14   | M6 x 1    | 15.5 | 190 | 9   | 60   | 112 | 12 | M6 x 1    | 27   |
| MY3B63 | 178   | 17  | 60   | 3 | 20.5 | 84 | 16.5 | M8 x 1.25 | 22   | 220 | 11  | 68   | 134 | 16 | M8 x 1.25 | 31   |

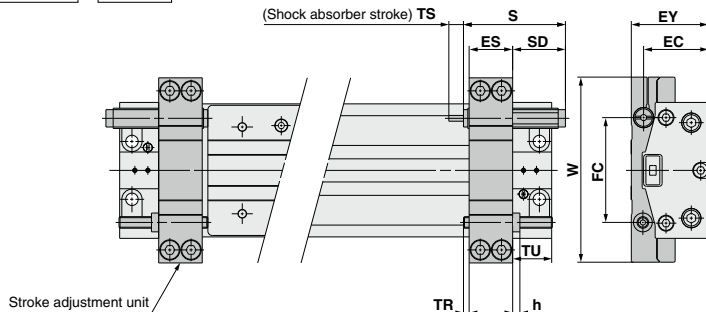
| Model  | NE   | NG | NH   | NW  | P             | PA  | PB | PC   | PD  | PE   | PF   | PG  | Q   | QW | T  | TT   | UU | YW  | Z   |
|--------|------|----|------|-----|---------------|-----|----|------|-----|------|------|-----|-----|----|----|------|----|-----|-----|
| MY3B16 | 22.5 | 8  | 17.2 | 43  | M5 x 0.8      | 44  | 26 | 32.5 | 4   | 9.7  | 8.5  | 4   | 114 | 19 | 7  | 6.5  | 30 | 42  | 122 |
| MY3B20 | 27.5 | 10 | 20.8 | 53  | M5 x 0.8      | 54  | 30 | 40   | 5   | 11.2 | 10   | 4.5 | 139 | 23 | 8  | 9    | 35 | 52  | 148 |
| MY3B25 | 32   | 10 | 24   | 65  | Rc, NPT, G1/8 | 64  | 40 | 47.5 | 6   | 14.5 | 12.2 | 6   | 166 | 30 | 10 | 9    | 47 | 62  | 178 |
| MY3B32 | 39   | 14 | 31   | 79  | Rc, NPT, G1/8 | 92  | 44 | 64   | 6   | 16   | 15   | 7   | 211 | 33 | 10 | 13.5 | 52 | 77  | 225 |
| MY3B40 | 46   | 15 | 37   | 94  | Rc, NPT, G1/4 | 112 | 60 | 80   | 7.5 | 19.5 | 16.5 | 8.5 | 259 | 40 | 14 | 14   | 66 | 92  | 276 |
| MY3B50 | 58   | 25 | 47.5 | 116 | Rc, NPT, G3/8 | 142 | 66 | 95   | 8.5 | 20.5 | 20   | 8.5 | 293 | 44 | 15 | 21   | 74 | 114 | 310 |
| MY3B63 | 70   | 29 | 58   | 139 | Rc, NPT, G3/8 | 162 | 84 | 110  | 10  | 23.5 | 27.5 | 10  | 336 | 64 | 16 | 20   | 99 | 136 | 356 |

## Standard Type: $\varnothing 16, \varnothing 20, \varnothing 25, \varnothing 32, \varnothing 40, \varnothing 50, \varnothing 63$

### Stroke adjustment unit

Low load shock absorber + Adjustment bolt

MY3B Bore size – Stroke L



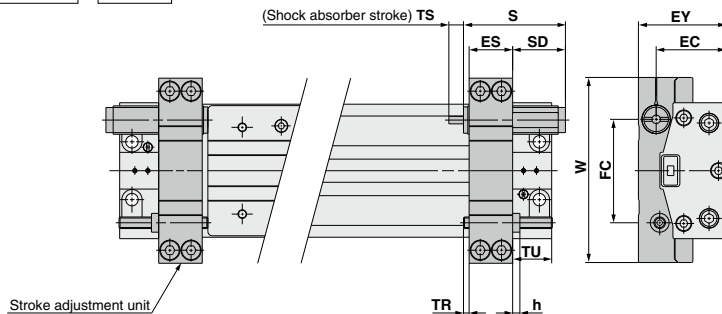
(mm)

| Applicable cylinder | ES   | EC   | EY   | FC   | h   | S    | SD   | TS | TR  | TU   | W   | Shock absorber model |
|---------------------|------|------|------|------|-----|------|------|----|-----|------|-----|----------------------|
| MY3B16              | 14.1 | 21.5 | 26.5 | 34.5 | 2.4 | 40.8 | 25.8 | 6  | 0.9 | 25   | 62  | RB0806               |
| MY3B20              | 14.1 | 26.5 | 31.5 | 41   | 2.4 | 40.8 | 22.3 | 6  | 4.4 | 21.5 | 72  | RB0806               |
| MY3B25              | 20.1 | 29.8 | 36.5 | 51.5 | 3.6 | 46.7 | 25.2 | 7  | 1.4 | 28.5 | 90  | RB1007               |
| MY3B32              | 20.1 | 37.5 | 44.5 | 60   | 3.6 | 46.7 | 20.7 | 7  | 5.9 | 24   | 105 | RB1007               |
| MY3B40              | 30.1 | 45   | 53.5 | 72.5 | 5   | 67.3 | 36.3 | 12 | 0.9 | 39   | 128 | RB1412               |
| MY3B50              | 30.1 | 56.5 | 66.5 | 88   | 5   | 67.3 | 34.3 | 12 | 2.9 | 37   | 150 | RB1412               |
| MY3B63              | 36.1 | 70.5 | 83.5 | 108  | 6   | 73.2 | 36.2 | 15 | 0.9 | 43   | 178 | RB2015               |

Note) When the stroke adjustment unit is used, the fitting type, which can be connected with the port on the body front and the back, will be limited. Refer to page 1127 for details.

### Heavy-loaded shock absorber + Adjustment bolt

MY3B Bore size – Stroke H



(mm)

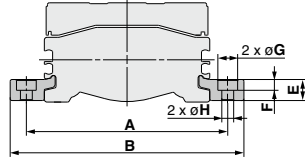
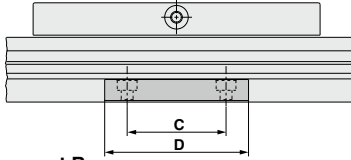
| Applicable cylinder | ES   | EC   | EY   | FC   | h   | S    | SD   | TS | TR  | TU   | W   | Shock absorber model |
|---------------------|------|------|------|------|-----|------|------|----|-----|------|-----|----------------------|
| MY3B16              | 14.1 | 23   | 29.5 | 34.5 | 2.4 | 46.7 | 31.7 | 7  | 0.9 | 25   | 62  | RB1007               |
| MY3B20              | 14.1 | 27.5 | 34   | 41   | 2.4 | 46.7 | 28.2 | 7  | 4.4 | 21.5 | 72  | RB1007               |
| MY3B25              | 20.1 | 31.8 | 41   | 52.2 | 3.6 | 67.3 | 45.8 | 12 | 1.4 | 28.5 | 90  | RB1412               |
| MY3B32              | 20.1 | 39.5 | 49   | 60.5 | 3.6 | 67.3 | 41.3 | 12 | 5.9 | 24   | 105 | RB1412               |
| MY3B40              | 30.1 | 48   | 60.5 | 73.5 | 5   | 73.2 | 42.2 | 15 | 0.9 | 39   | 128 | RB2015               |
| MY3B50              | 30.1 | 58.5 | 71   | 88.5 | 5   | 73.2 | 40.2 | 15 | 2.9 | 37   | 150 | RB2015               |
| MY3B63              | 36.1 | 74.5 | 91   | 108  | 6   | 99   | 62   | 25 | 0.9 | 43   | 178 | RB2725               |

Note) When the stroke adjustment unit is used, the fitting type, which can be connected with the port on the body front and the back, will be limited. Refer to page 1127 for details.

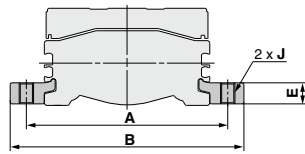
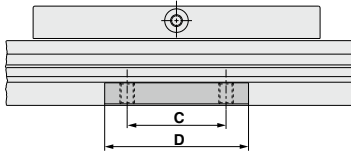
# MY3A/3B Series

## Side Support

### Side support A MY-S□A



### Side support B MY-S□B

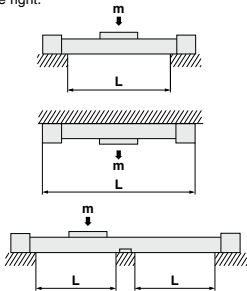


| Model                | Applicable cylinder | A   | B    | C  | D  | E    | F   | G   | H   | J         |
|----------------------|---------------------|-----|------|----|----|------|-----|-----|-----|-----------|
| MY-S16 <sup>Δ</sup>  | MY3A16-MY3B16       | 53  | 63.6 | 15 | 26 | 4.9  | 3   | 6.5 | 3.4 | M4 x 0.7  |
| MY3-S20 <sup>Δ</sup> | MY3A20-MY3B20       | 65  | 77.6 | 25 | 38 | 5.9  | 3.5 | 8   | 4.5 | M5 x 0.8  |
| MY-S25 <sup>Δ</sup>  | MY3A25-MY3B25       | 77  | 91   | 35 | 50 | 8    | 5   | 9.5 | 5.5 | M6 x 1    |
| MY-S32 <sup>Δ</sup>  | MY3A32-MY3B32       | 97  | 115  | 45 | 64 | 11.7 | 6   | 11  | 6.6 | M8 x 1.25 |
|                      | MY3A40-MY3B40       | 112 | 130  |    |    |      |     |     |     |           |
| MY-S50 <sup>Δ</sup>  | MY3A50-MY3B50       | 138 | 160  | 55 | 80 | 14.8 | 8.5 | 14  | 9   | M10 x 1.5 |
|                      | MY3A63-MY3B63       | 160 | 182  |    |    |      |     |     |     |           |

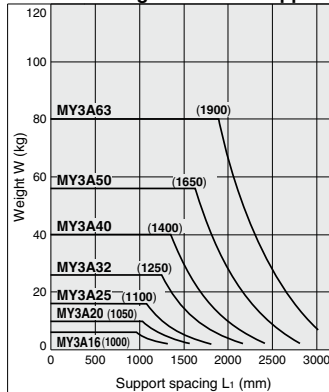
Note) A set of side supports consists of a left support and a right support.

## Guide for Using Side Support

For long stroke operation, the cylinder tube may be deflected depending on its own weight and the load weight. In such a case, use a side support in the middle section. The spacing (L) of the support must be no more than the values shown in the graph on the right.

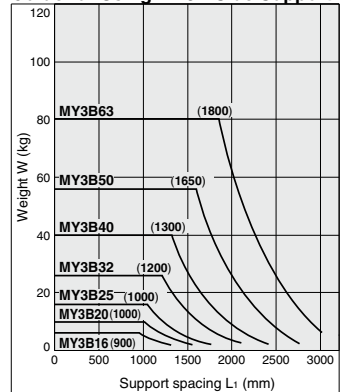


### Guide for Using MY3A Side Support



Note) A side support must be used to keep the spacing from exceeding the value inside the parentheses.

### Guide for Using MY3B Side Support



Note) A side support must be used to keep the spacing from exceeding the value inside the parentheses.

## ⚠ Caution

- If the cylinder mounting surfaces are not measured accurately, using a side support may cause poor operation. Therefore, be sure to level the cylinder tube when mounting. Also, for long stroke operation involving vibration and impact, use of a side support is recommended even if the spacing value is within the allowable limits shown in the graph.
- Support brackets are not for mounting; use them solely for providing support.

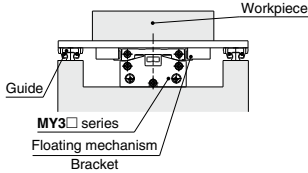


## Floating Bracket

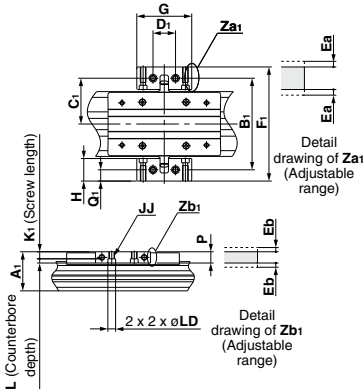
Facilitates connection to other guide systems.

### Application

Mounting direction ① (to minimize the installation height)

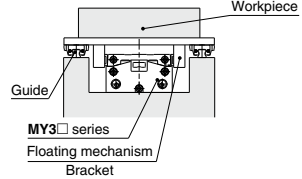


### Mounting Example

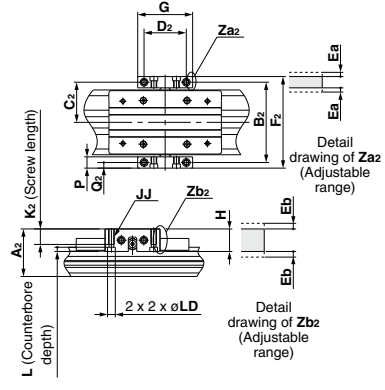


### Application

Mounting direction ② (to minimize the installation width)



### Mounting Example



### MY3 Floating Bracket Mounting Dimensions

| Model  | Applicable cylinder | Common |    |          |     |    |     |    | Adjustment range |  |
|--------|---------------------|--------|----|----------|-----|----|-----|----|------------------|--|
|        |                     | G      | H  | JJ       | L   | P  | LD  | Ea | Eb               |  |
| MYAJ16 | MY3□16              | 38     | 20 | M4 x 0.7 | 4.5 | 10 | 6   | 1  | 1                |  |
| MYAJ20 | MY3□20              | 50     | 21 | M4 x 0.7 | 4   | 10 | 6.5 | 1  | 1                |  |
| MYAJ25 | MY3□25              | 55     | 22 | M6 x 1   | 5.5 | 12 | 9.5 | 1  | 1                |  |
| MYAJ32 | MY3□32              | 60     | 22 | M6 x 1   | 5.5 | 12 | 9.5 | 1  | 1                |  |

| Model  | Applicable cylinder | Mounting direction ① |     |      |    |     |     |      |
|--------|---------------------|----------------------|-----|------|----|-----|-----|------|
|        |                     | A1                   | B1  | C1   | D1 | F1  | K1  | Q1   |
| MYAJ16 | MY3□16              | 29                   | 68  | 34   | 18 | 88  | 5.5 | 10   |
| MYAJ20 | MY3□20              | 34                   | 81  | 40.5 | 20 | 102 | 6   | 10.5 |
| MYAJ25 | MY3□25              | 38.5                 | 90  | 45   | 24 | 112 | 6.5 | 11   |
| MYAJ32 | MY3□32              | 47                   | 106 | 53   | 30 | 128 | 6.5 | 11   |

| Model  | Applicable cylinder | Mounting direction ② |    |    |    |     |    |    |
|--------|---------------------|----------------------|----|----|----|-----|----|----|
|        |                     | A2                   | B2 | C2 | D2 | F2  | K2 | Q2 |
| MYAJ16 | MY3□16              | 36                   | 58 | 29 | 30 | 68  | 10 | 5  |
| MYAJ20 | MY3□20              | 41                   | 70 | 35 | 35 | 80  | 10 | 5  |
| MYAJ25 | MY3□25              | 46                   | 80 | 40 | 40 | 92  | 14 | 6  |
| MYAJ32 | MY3□32              | 54                   | 96 | 48 | 46 | 108 | 14 | 6  |

Note) Floating brackets are shipped as a set of left and right brackets.

| Model  | Applicable cylinder | Common |    |           |     |    |    |    | Adjustment range |  |
|--------|---------------------|--------|----|-----------|-----|----|----|----|------------------|--|
|        |                     | G      | H  | JJ        | L   | P  | LD | Ea | Eb               |  |
| MYAJ40 | MY3□40              | 72     | 32 | M8 x 1.25 | 6.5 | 16 | 11 | 1  | 1                |  |
| MYAJ50 | MY3□50              | 90     | 36 | M8 x 1.25 | 6.5 | 16 | 11 | 1  | 1                |  |
| MYAJ63 | MY3□63              | 100    | 40 | M10 x 1.5 | 9   | 19 | 14 | 1  | 1                |  |

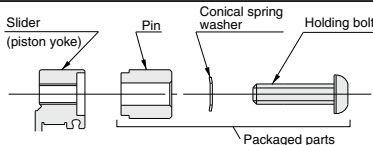
| Model  | Applicable cylinder | Mounting direction ① |     |    |    |     |     |    |
|--------|---------------------|----------------------|-----|----|----|-----|-----|----|
|        |                     | A1                   | B1  | C1 | D1 | F1  | K1  | Q1 |
| MYAJ40 | MY3□40              | 56                   | 130 | 65 | 32 | 162 | 9.5 | 16 |
| MYAJ50 | MY3□50              | 69                   | 156 | 78 | 40 | 192 | 9.5 | 18 |
| MYAJ63 | MY3□63              | 86                   | 186 | 93 | 50 | 226 | 10  | 20 |

| Model  | Applicable cylinder | Mounting direction ② |     |    |    |     |    |     |
|--------|---------------------|----------------------|-----|----|----|-----|----|-----|
|        |                     | A2                   | B2  | C2 | D2 | F2  | K2 | Q2  |
| MYAJ40 | MY3□40              | 68                   | 114 | 57 | 55 | 130 | 19 | 8   |
| MYAJ50 | MY3□50              | 81                   | 136 | 68 | 70 | 152 | 20 | 8   |
| MYAJ63 | MY3□63              | 100                  | 166 | 83 | 80 | 185 | 23 | 9.5 |

### MYAJ (1 set) Component Parts

| Description           | Qty. |
|-----------------------|------|
| Bracket               | 2    |
| Pin                   | 2    |
| Conical spring washer | 2    |
| Holding bolts         | 2    |

### Installation of Holding Bolts



### Tightening Torque for Holding Bolts

| Model  | Tightening torque | Model  | Tightening torque |
|--------|-------------------|--------|-------------------|
| MYAJ16 | 1.5               | MYAJ40 | 5                 |
| MYAJ20 | 1.5               | MYAJ50 | 5                 |
| MYAJ25 | 3                 | MYAJ63 | 13                |
| MYAJ32 | 3                 |        |                   |

Unit: N·m



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## ***MY3M Series***

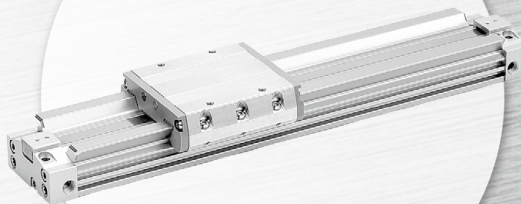
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**Slide bearing guide type  
(Air cushion)**

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**ø16, ø25, ø40, ø63**

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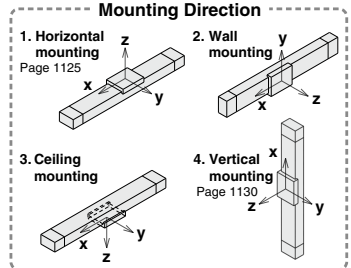
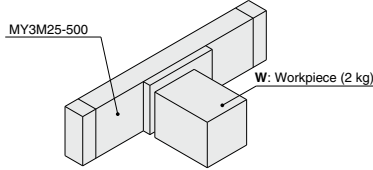
# MY3M Series Model Selection

The following are steps for selecting the MY3 series which is best suited to your application.

## Calculation of Guide Load Factor

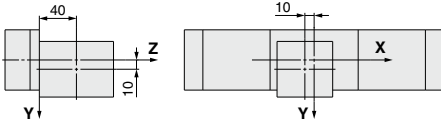
### 1 Operating Conditions

Cylinder ..... MY3M25-500  
 Average operating speed  $1/a$  ..... 300 mm/s  
 Mounting direction ..... Wall mounting  
 Cushion ..... Air cushion ( $\delta = 1/100$ )



Refer to the pages mentioned above for actual examples of calculation for each orientation.  
 \* For ceiling mounting, refer to page 992.

### 2 Load Blocking



#### Workpiece Mass and Center of Gravity

| Workpiece no. | Mass (m) | Center of gravity |        |        |
|---------------|----------|-------------------|--------|--------|
|               |          | X-axis            | Y-axis | Z-axis |
| W             | 2 kg     | 10 mm             | 10 mm  | 40 mm  |

### 3 Calculation of Load Factor for Static Load

**m<sub>3</sub>**: Mass

**m<sub>3</sub> max** (from ① of graph MY3M / m<sub>3</sub>) = 5.33 (kg) .....

Load factor  $\alpha_1 = m_3 / m_3 \text{ max} = 2 / 5.33 = 0.38$

**M<sub>2</sub>**: Moment

**M<sub>2</sub> max** (from ② of graph MY3M / M<sub>2</sub>) = 6 (N·m) .....

**M<sub>2</sub>** = **m<sub>3</sub>** × **g** × **Z** = 2 × 9.8 × 40 × 10<sup>-3</sup> = 0.78 (N·m)

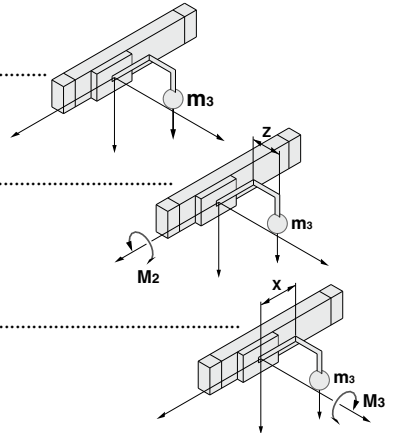
Load factor  $\alpha_2 = M_2 / M_2 \text{ max} = 0.78 / 6 = 0.13$

**M<sub>3</sub>**: Moment

**M<sub>3</sub> max** (from ③ of graph MY3M / M<sub>3</sub>) = 2.67 (N·m) .....

**M<sub>3</sub>** = **m<sub>3</sub>** × **g** × **X** = 2 × 9.8 × 10 × 10<sup>-3</sup> = 0.2 (N·m)

Load factor  $\alpha_3 = M_3 / M_3 \text{ max} = 0.2 / 2.67 = 0.07$



**Calculation of Guide Load Factor**

**4 Calculation of Load Factor for Dynamic Moment**

Equivalent load  $F_E$  at impact

$$F_E = 1.4 \nu a \times \delta \times m \times g = 1.4 \times 300 \times \frac{1}{100} \times 2 \times 9.8 = 82.38 \text{ (N)}$$

$M_{1E}$ : Moment

$M_{1E} \text{ max}$  (from ④ of graph MY3M/ $M_1$  where  $1.4 \nu a = 420 \text{ mm/s}$ ) = 7.62 (N·m) .....

$$M_{1E} = \frac{1}{3} \times F_E \times Z = \frac{1}{3} \times 82.38 \times 40 \times 10^{-3} = 1.10 \text{ (N·m)}$$

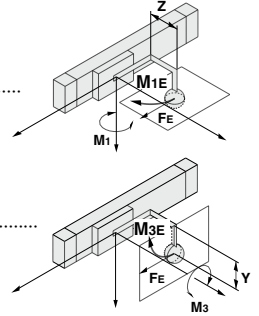
$$\text{Load factor } \alpha_4 = M_{1E} / M_{1E} \text{ max} = 1.10 / 7.62 = 0.14$$

$M_{3E}$ : Moment

$M_{3E} \text{ max}$  (from ⑤ graph of MY3M/ $M_3$  where  $1.4 \nu a = 420 \text{ mm/s}$ ) = 1.90 (N·m) .....

$$M_{3E} = \frac{1}{3} \times F_E \times Y = \frac{1}{3} \times 82.38 \times 10 \times 10^{-3} = 0.27 \text{ (N·m)}$$

$$\text{Load factor } \alpha_5 = M_{3E} / M_{3E} \text{ max} = 0.27 / 1.90 = 0.14$$



**5 Sum and Examination of Guide Load Factors**

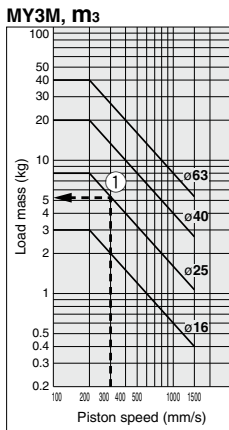
$$\Sigma \alpha = \alpha_1 + \alpha_2 + \alpha_3 + \alpha_4 + \alpha_5 = 0.87 \leq 1$$

The above calculation is within the allowable value, and therefore the selected model can be used.

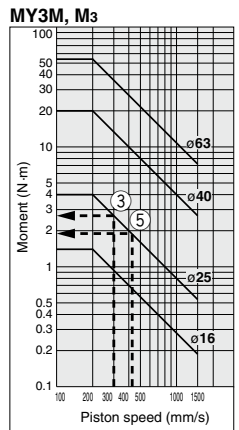
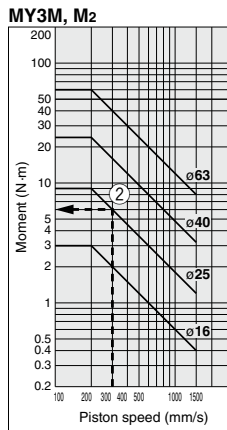
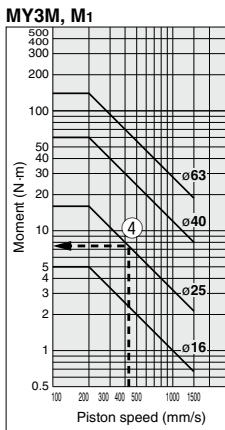
Select a shock absorber separately.

In an actual calculation, when the sum of guide load factors  $\Sigma \alpha$  in the formula above is more than 1, consider decreasing the speed, increasing the bore size, or changing the product series. This calculation can be easily made using the "SMC Pneumatic CAD System".

**Load Mass**



**Allowable Moment**

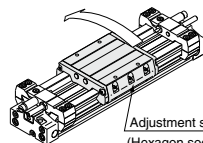


# MY3M Series

## Maximum Allowable Moment / Maximum Allowable Load

| Model | Bore size (mm) | Maximum allowable moment (N·m) |                |                | Maximum allowable load (kg) |                |                |
|-------|----------------|--------------------------------|----------------|----------------|-----------------------------|----------------|----------------|
|       |                | M <sub>1</sub>                 | M <sub>2</sub> | M <sub>3</sub> | m <sub>1</sub>              | m <sub>2</sub> | m <sub>3</sub> |
| MY3M  | 16             | 5                              | 3              | 1.4            | 18                          | 14             | 3              |
|       | 25             | 16                             | 9              | 4              | 38                          | 36             | 8              |
|       | 40             | 60                             | 24             | 20             | 84                          | 81             | 20             |
|       | 63             | 140                            | 60             | 54             | 180                         | 163            | 40             |

Recommended direction of applying M<sub>2</sub> moment



Adjustment side

(Hexagon socket button head screw side)

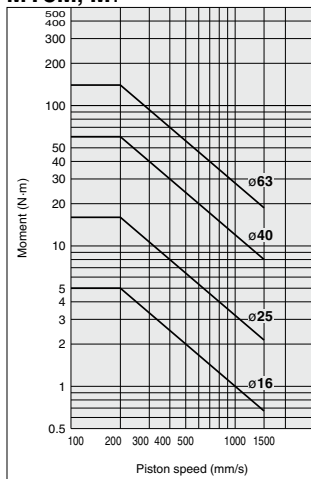
\* We recommend that the static M<sub>2</sub> moment direction should be as illustrated.

Also, when using the product in a wall mount application (m<sub>3</sub> applied), we recommend that the mounting orientation of the adjustment side (hexagon socket head button bolt side) should be in the upper position.

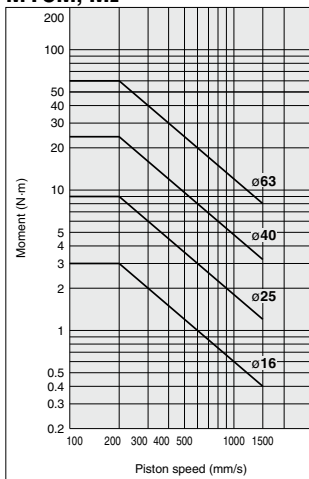
Select the moment from within the range of operating limits shown in the graphs. Note that the maximum allowable load value may sometimes be exceeded even within the operating limits shown in the graphs. Therefore, also check the allowable load for the selected conditions.

### Maximum Allowable Moment

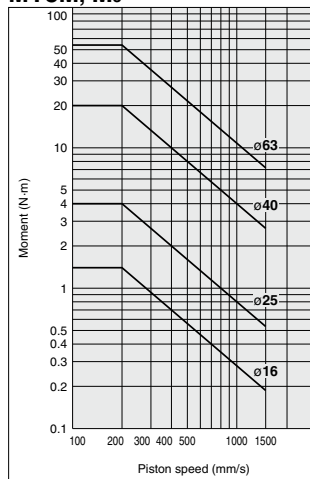
#### MY3M, M<sub>1</sub>



#### MY3M, M<sub>2</sub>



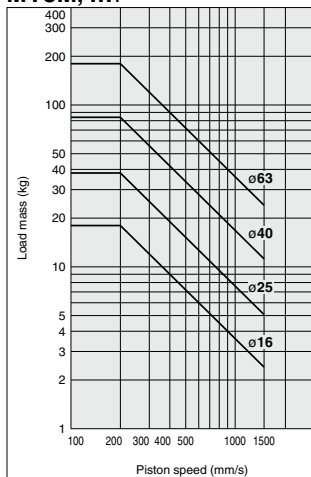
#### MY3M, M<sub>3</sub>



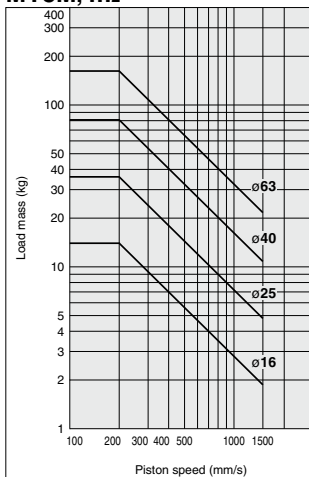
### Maximum Allowable Load

Select the load from within the range of limits shown in the graphs. Note that the maximum allowable moment value may sometimes be exceeded even within the operating limits shown in the graphs. Therefore, also check the allowable moment for the selected conditions.

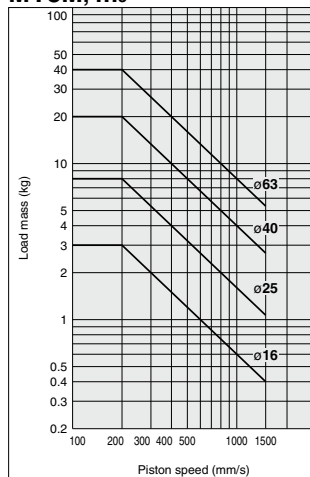
#### MY3M, m<sub>1</sub>



#### MY3M, m<sub>2</sub>



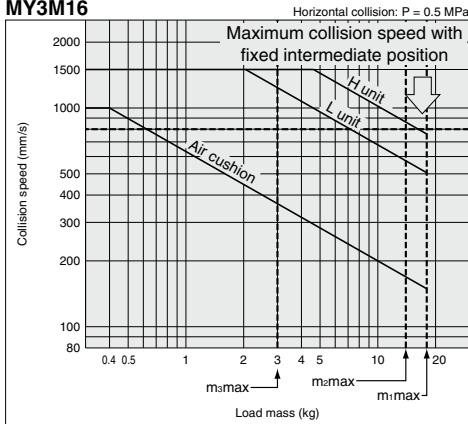
#### MY3M, m<sub>3</sub>



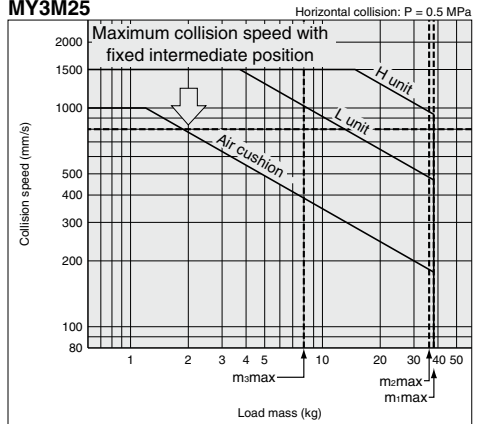
## Cushion Capacity

### Absorption Capacity of Air Cushion and Stroke Adjustment Unit

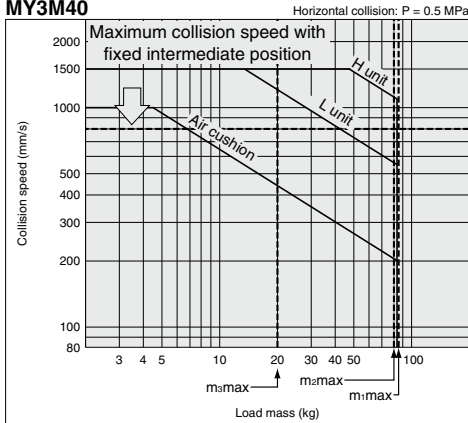
**MY3M16**



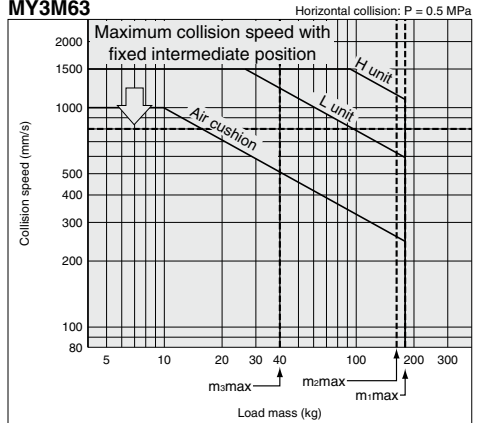
**MY3M25**



**MY3M40**



**MY3M63**



### Air Cushion Stroke

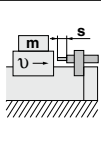
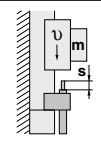
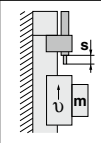
Unit: mm

| Bore size (mm) | Cushion stroke |
|----------------|----------------|
| 16             | 13             |
| 25             | 18             |
| 40             | 25             |
| 63             | 30             |

## Cushion Capacity

### Absorption Capacity of Air Cushion and Stroke Adjustment Unit

#### Calculation of Absorbed Energy for Stroke Adjustment Unit with Built-in Shock Absorber Unit: N·m

| Type of collision             | Horizontal  | Vertical (Downward)   | Vertical (Upward)   |
|-------------------------------|---|---|---|
|                               |  |  |  |
| Kinetic energy E <sub>1</sub> | $\frac{1}{2} m \cdot v^2$   |   |   |
| Thrust energy E <sub>2</sub>  | F · s   | F · s + m · g · s   | F · s - m · g · s   |
| Absorbed energy E             | E <sub>1</sub> + E <sub>2</sub>   |   |   |

#### Stroke Adjustment Unit Fine Stroke Adjustment Range Unit: mm

| Bore size (mm) | Fine stroke adjustment range |
|----------------|------------------------------|
| 16             | 0 to -10                     |
| 25             | 0 to -12                     |
| 40             | 0 to -16                     |
| 63             | 0 to -24                     |

Note) The maximum operating speed will differ when the stroke adjustment unit with the spacer for intermediate securing is used outside the maximum fine stroke adjustment range (with reference to the fixed stroke end).  
(Refer to the graph on page 1155.)

Symbols

v: Speed of impacting object (m/s)

m: Weight of impacting object (kg)

F: Cylinder thrust (N)

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

s: Shock absorber stroke (m)

Note) The speed of the impacting object is measured at the time of collision with the shock absorber.

### Stroke Adjustment

#### <Stroke adjustment of the adjustment bolt>

Loosen the lock nut for the adjustment bolt, adjust the stroke on the head cover side with a hexagon wrench, and secure with a lock nut.

#### <Stroke adjustment of the shock absorber>

Loosen the fixing bolts on the shock absorber side and rotate the shock absorber for stroke adjustment. Tighten the fixing bolts to secure the shock absorber. Use caution not to overtighten the fixing bolts.

(Refer to "Stroke Adjustment Unit Tightening Torque for Fixing Bolts.")

#### Stroke Adjustment Unit

##### Tightening Torque for Fixing Bolts Unit: N·m

| Bore size (mm) | Unit | Tightening torque |
|----------------|------|-------------------|
| 16             | L    | 0.7               |
|                | H    |                   |
| 25             | L    | 3.5               |
|                | H    |                   |
| 40             | L    | 13.8              |
|                | H    |                   |
| 63             | L    | 27.5              |
|                | H    |                   |

#### Shock Absorber

##### Tightening Torque for Fixing Bolts Unit: N·m

| Bore size (mm) | Unit | Tightening torque |
|----------------|------|-------------------|
| 16             | L    | 0.6               |
|                | H    |                   |
| 25             | L    | 1.5               |
|                | H    |                   |
| 40             | L    | 3.0               |
|                | H    |                   |
| 63             | L    | 5.0               |
|                | H    |                   |

## ⚠ Caution

### 1. Use caution not to have your hands caught in the unit.

When using a cylinder with stroke adjustment unit, the space between the slide table (slider) and the stroke adjustment unit is very narrow. Care should be taken to avoid the danger of hands being caught in this small space. Install a protective cover to prevent the risk of accidents to the human body.

## ⚠ Caution

### 2. The stroke adjustment unit may interfere with the mounting bolt when mounting the cylinder on the equipment.

Loosen the unit fixing bolt and dislocate the stroke adjustment unit before mounting the cylinder. After fixing the cylinder, move the stroke adjustment unit back to the desired location and tighten the unit fixing bolt.

Use caution not to overtighten the fixing bolts.

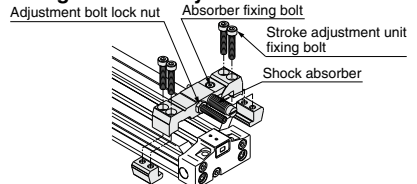
(Refer to "Stroke Adjustment Unit Tightening Torque for Fixing Bolts.")

### 3. When using the adjust bolt to perform stroke adjustment, fix the adjust bolt so that it is on the same side as the shock absorber.

Fix the adjust bolt on the same side as the shock absorber that was used for stroke adjustment.

If the shock absorber's stopper side and the front end of the adjust bolt are not on the same side, the slide table stopping position becomes unstable, and durability may drop.

### 4. Securing the unit body



Tighten the four unit fixing bolts equally to secure the unit body.

### 5. Do not fix and use the stroke adjustment unit at an intermediate position.

When the stroke adjustment unit is fixed in an intermediate position, slippage can occur depending on the amount of energy released at the time of an impact. In that case, use a short spacer or a long spacer. For other lengths, please consult with SMC.

(Refer to "Stroke Adjustment Unit Tightening Torque for Fixing Bolts.")

If the stroke adjustment unit is fixed at an intermediate position, the energy absorption capacity may be different. For this reason, refer to the maximum absorbed energy listed above, and use the adjustment unit within the allowable absorption capacity.





# Mechanically Jointed Rodless Cylinder Slide bearing guide type

## MY3M Series

∅16, ∅25, ∅40, ∅63

### How to Order

**Slide bearing guide type**

**MY3 M 16** - **300** - **M9BW** -

Slide bearing guide type

Cylinder bore size

|    |       |
|----|-------|
| 16 | 16 mm |
| 25 | 25 mm |
| 40 | 40 mm |
| 63 | 63 mm |

Port thread type

| Symbol | Type | Bore size     |
|--------|------|---------------|
| Nil    | M5   | ∅16           |
|        | Rc   |               |
| TN     | NPT  | ∅25, ∅40, ∅63 |
| TF     | G    |               |

Cylinder stroke (mm)

| Bore size      | Standard stroke*1   | Long stroke  | Maximum manufacturable stroke |
|----------------|---|--|-------------------------------|
| 16, 25, 40, 63 | 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000<br>*1 The stroke can be manufactured in 1 mm increments from 1 mm stroke. | Strokes of 2001 to 3000 mm (1 mm increments) exceeding the standard stroke | 3000                          |

Made to Order  
Refer to page 1159 for details.

Number of auto switches

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

Auto switch

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

\* Refer to the table below for auto switch model numbers.

Stroke adjustment unit symbol  
Refer to "Stroke adjustment unit" on page 1159.

| Bore size      | Standard stroke*1   | Long stroke  | Maximum manufacturable stroke |
|----------------|---|--|-------------------------------|
| 16, 25, 40, 63 | 100, 200, 300, 400, 500, 600, 700, 800, 900, 1000, 1200, 1400, 1600, 1800, 2000<br>*1 The stroke can be manufactured in 1 mm increments from 1 mm stroke. | Strokes of 2001 to 3000 mm (1 mm increments) exceeding the standard stroke | 3000                          |

Ordering example

\* Long stroke can be ordered the same as the standard stroke. MY3M20-3000L-M9BW

Note) Please be advised that with stroke 49 or less, there are cases where auto switch mounting is not possible and the performance of the air cushion may decline.

### Applicable Auto Switches

Refer to pages 1289 to 1383 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)            | 1 (M) | 3 (L) |                     | 5 (Z)           | IC circuit | Relay, PLC |
|                                     |   |                  |                 |                     |               |       |                   |         |                      |       |       |                     |                 |            |            |
| Solid state auto switch             | —   | Grommet          | Yes             | 3-wire (NPN)        | 5 V, 12 V     | —     | M9NV              | M9N     | ●                    | ●     | ○     | ○                   | IC circuit      | Relay, PLC |            |
|                                     |   |                  |                 | 3-wire (PNP)        |               |       | M9PV              | M9P     | ●                    | ●     | ○     | ○                   |                 |            |            |
|                                     |   |                  |                 | 2-wire              | M9BV          |       | M9B               | ●       | ●                    | ○     | ○     | —                   |                 |            |            |
|                                     |   |                  |                 | 3-wire (NPN)        | M9NVV         |       | M9NV              | ●       | ●                    | ○     | ○     | IC circuit          |                 |            |            |
|                                     | Diagnostic indication (2-color indicator) |                  |                 | 3-wire (PNP)        | M9PVV         |       | M9PV              | ●       | ●                    | ○     | ○     | —                   |                 |            |            |
|                                     |   |                  |                 | 2-wire              | M9BWW         |       | M9BW              | ●       | ●                    | ○     | ○     | —                   |                 |            |            |
|                                     |   |                  |                 | 3-wire (NPN)        | M9NAV*1       |       | M9NA*1            | ○       | ○                    | ●     | ●     | IC circuit          |                 |            |            |
|                                     |   |                  |                 | 3-wire (PNP)        | M9PAV*1       |       | M9PA*1            | ○       | ○                    | ●     | ●     | —                   |                 |            |            |
| Water resistant (2-color indicator) | 2-wire                                    | M9BAV*1          | M9BA*1          | ○                   | ○             | ●     | ●                 | —       |                      |       |       |                     |                 |            |            |
|                                     | —   | Grommet          | Yes             | 3-wire (NPN equiv.) | —             | 5 V   | —                 | A96V    | A96                  | ●     | —     | —                   | IC circuit      | —          |            |
| Reed auto switch                    | 2-wire                                    |                  |                 | 24 V                | 12 V          | 100 V | —                 | A93V*2  | A93                  | ●     | ●     | ●                   | —               | —          | Relay, PLC |
|                                     | —   | No               | —               | —                   | 100 V or less | —     | —                 | A90V    | A90                  | ●     | —     | —                   | IC circuit      | —          |            |

\*1 Water resistant type auto switches can be mounted on the above models, but in such case SMC cannot guarantee water resistance.

Consult with SMC regarding water resistant types with the above model numbers.

\*2 1 m type lead wire is only applicable to D-A93.

\* Lead wire length symbols: 0.5 m ..... Nil (Example) M9NV  
1 m ..... M (Example) M9NVW  
3 m ..... L (Example) M9NVL  
5 m ..... Z (Example) M9NVZ

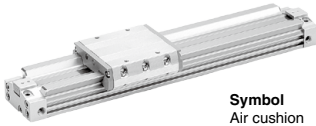
\* Solid state auto switches marked with "○" are produced upon receipt of order.  
\* Separate switch spacers (BM93-016) are required for retrofitting of auto switches.

\* There are other applicable auto switches than listed above. For details, refer to page 1165.

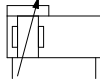
\* Refer to pages 1258 to 1259 for the details of auto switches with a pre-wired connector.

\* Auto switches are shipped together (not assembled). (Refer to page 1165 for the details of auto switch mounting.)

## Specifications



Symbol  
Air cushion



**Made to Order: Individual Specifications**  
(For details, refer to page 1166.)

| Symbol | Specifications        |
|--------|-----------------------|
| -X168  | Helical insert thread |

### Made to Order

[Click here for details](#)

| Symbol | Specifications                             |
|--------|--|
| -XB22  | Shock absorber soft type<br>RJ series type |

| Bore size (mm)                | 16                             | 25  | 40                          | 63  |
|-------------------------------|--------------------------------|-----|-----------------------------|-----|
| Fluid                         | Air                            |     |                             |     |
| Action                        | Double acting                  |     |                             |     |
| Operating pressure range      | 0.2 to 0.7 MPa                 |     | 0.15 to 0.7 MPa             |     |
| Proof pressure                | 1.05 MPa                       |     |                             |     |
| Ambient and fluid temperature | 5 to 60°C                      |     |                             |     |
| Cushion                       | Air cushion                    |     |                             |     |
| Lubrication                   | Not required (Non-lube)        |     |                             |     |
| Stroke length tolerance       | 1000 mm or less $^{+1.8}_{-3}$ |     | From 1001 mm $^{+2.8}_{-5}$ |     |
| Port size (Rc, NPT, G)        | M5 x 0.8                       | 1/8 | 1/4                         | 3/8 |

## Piston Speed

| Bore size (mm)                        | 16              | 25 | 40 | 63 |
|---------------------------------------|-----------------|----|----|----|
| Without stroke adjustment unit        | 80 to 1000 mm/s |    |    |    |
| Stroke adjustment unit (L and H unit) | 80 to 1500 mm/s |    |    |    |
| External shock absorber               | 80 to 1500 mm/s |    |    |    |

- \* When the RB series is used, operate at a piston speed that will not exceed the absorption capacity of the air cushion and stroke adjustment unit.
- \* Because of its structure, the fluctuation of this cylinder's operating speed is greater than rod type cylinders. For applications that require constant speed, select an applicable equipment for the level of demand.

## Stroke Adjustment Unit Specifications

| Bore size (mm)   |                   | 16         |         |  | 25         |         |  | 40         |        | 63         |  |
|--|-------------------|------------|---------|--|------------|---------|--|------------|--------|------------|--|
| Unit symbol  |                   | L          | H       |  | L          | H       |  | L          | H      |            |  |
| Shock absorber model                                       |                   | RB0806     | RB1007  |  | RB1007     | RB1412  |  | RB1412     | RB2015 | RB2725     |  |
| Shock absorber soft type<br>RJ series (-XB22) model        |                   | RJ0806H    | RJ1007H |  | RJ1007H    | RJ1412H |  | RJ1412H    | —      | —          |  |
| Stroke adjustment range by intermediate fixing spacer (mm) | Without spacer    | 0 to -10   |         |  | 0 to -12   |         |  | 0 to -16   |        | 0 to -24   |  |
|  | With short spacer | -10 to -20 |         |  | -12 to -24 |         |  | -16 to -32 |        | -24 to -48 |  |
|  | With long spacer  | -20 to -30 |         |  | -24 to -36 |         |  | -32 to -48 |        | -48 to -72 |  |

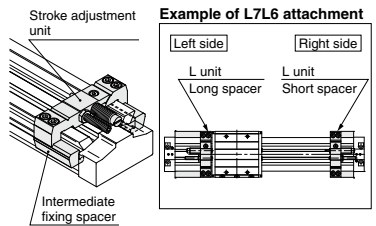
\* Stroke adjustment range is applicable for one side when mounted on a cylinder.

## Stroke Adjustment Unit Symbol

|                                  |  | Right side stroke adjustment unit |     |      |      |      |   |      |      |  |  |  |  |  |  |  |  |  |
|----------------------------------|--|-----------------------------------|-----|------|------|------|---|------|------|--|--|--|--|--|--|--|--|--|
|                                  |  | Without unit                      |     |      |      |      | L: With low load shock absorber + Adjustment bolt |      |      |  |  | H: With high load shock absorber + Adjustment bolt |  |  |  |  |  |  |
| Left side stroke adjustment unit | Without unit                                       | Nil                               | SL  | SL6  | SL7  | SH   | SH6   | SH7  |      |  |  |  |  |  |  |  |  |  |
|                                  | L: With low load shock absorber + Adjustment bolt  | With short spacer                 | L6S | L6L  | L6   | L6L7 | L6H   | L6H6 | L6H7 |  |  |  |  |  |  |  |  |  |
|                                  |  | With long spacer                  | L7S | L7L  | L7L6 | L7   | L7H   | L7H6 | L7H7 |  |  |  |  |  |  |  |  |  |
|                                  | H: With high load shock absorber + Adjustment bolt | With short spacer                 | H6S | H6L  | H6L6 | H6L7 | H6H   | H6H6 | H6H7 |  |  |  |  |  |  |  |  |  |
| With long spacer                 |  | H7S                               | H7L | H7L6 | H7L7 | H7H  | H7H6  | H7   |      |  |  |  |  |  |  |  |  |  |

\* Spacers are used to fix the stroke adjustment unit at an intermediate stroke position.

### Stroke adjustment unit mounting diagram



## Shock Absorber Specifications

| Type                                 | RB 0806    | RB 1007 | RB 1412 | RB 2015 | RB 2725 |       |
|--------------------------------------|------------|---------|---------|---------|---------|-------|
| Max. energy absorption (J)           | 2.9        | 5.9     | 19.6    | 58.8    | 147     |       |
| Stroke absorption (mm)               | 6          | 7       | 12      | 15      | 25      |       |
| Max. collision speed (mm/s)          | 1500       |         |         |         |         |       |
| Max. operating frequency (cycle/min) | 80         | 70      | 45      | 25      | 10      |       |
| Spring force (N)                     | Extended   | 1.96    | 4.22    | 6.86    | 8.34    | 8.83  |
|                                      | Compressed | 4.22    | 6.86    | 15.98   | 20.50   | 20.01 |
| Operating temperature range (°C)     | 5 to 60    |         |         |         |         |       |

Note) The shock absorber service life is different from that of the MY3M cylinders depending on operating conditions. Allowable operating cycle under the specifications set in this catalog is shown below.

- 1.2 million times RB08□□
- 2 million times RB10□□ to RB2725

Note) Specified service life (suitable replacement period) is the value at room temperature (20 to 25°C). The period may vary depending on the temperature and other conditions. In some cases the absorber may need to be replaced before the allowable operating cycle above.

# MY3M Series

## Theoretical Output

| Bore size (mm) | Piston area (mm <sup>2</sup> ) | Operating pressure (MPa) |     |      |      |      |      |      |
|----------------|--------------------------------|--------------------------|-----|------|------|------|------|------|
|                |                                | 0.2                      | 0.3 | 0.4  | 0.5  | 0.6  | 0.7  | 0.8  |
| 16             | 200                            | 40                       | 60  | 80   | 100  | 120  | 140  | 160  |
| 25             | 490                            | 98                       | 147 | 196  | 245  | 294  | 343  | 392  |
| 40             | 1256                           | 251                      | 377 | 502  | 628  | 754  | 879  | 1005 |
| 63             | 3115                           | 623                      | 934 | 1246 | 1557 | 1869 | 2180 | 2492 |

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

## Weight

| Model | Bore size (mm) | Basic weight | Additional weight per 50 mm stroke | Weight of moving parts | Stroke adjustment unit weight (per unit) |               |
|-------|----------------|--------------|------------------------------------|------------------------|--|---------------|
|       |                |              |                                    |                        | L unit weight                            | H unit weight |
|       |                |              |                                    |                        | Unit: kg                                 |               |
| MY3M  | 16             | 0.29         | 0.08                               | 0.13                   | 0.05                                     | 0.06          |
|       | 25             | 0.90         | 0.15                               | 0.35                   | 0.12                                     | 0.17          |
|       | 40             | 3.03         | 0.31                               | 1.14                   | 0.34                                     | 0.43          |
|       | 63             | 8.63         | 0.68                               | 2.96                   | 0.69                                     | 0.91          |

Calculation method/Example: **MY3M25-400H**

Basic weight ..... 0.90 kg      Cylinder stroke ..... 400 st

Additional weight ..... 0.15/50 st

H unit weight ..... 0.17 kg

$0.90 + 0.15 \times 400 \div 50 + 0.17 \times 2 = 2.44$  kg

## Option

### Stroke Adjustment Unit Part No.

**MY3M-A 25 L2 - 6N**

Stroke adjustment unit

Bore size

|    |       |
|----|-------|
| 16 | 16 mm |
| 25 | 25 mm |
| 40 | 40 mm |
| 63 | 63 mm |

Intermediate fixing spacer

|     |                |
|-----|----------------|
| Nil | Without spacer |
| 6   | Short spacer   |
| 7   | Long spacer    |

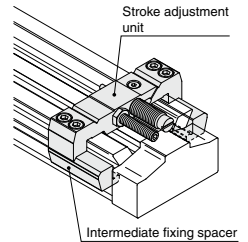
Spacer delivery type

|     |                |
|-----|----------------|
| Nil | Unit installed |
| N   | Spacer only    |

\* Spacers are used to fix the stroke adjustment unit at an intermediate stroke position.  
 \* Spacers are shipped for a set of two.

| Symbol | Stroke adjustment unit | Mounting position |
|--------|------------------------|-------------------|
| L1     | L unit                 | Left              |
| L2     |                        | Right             |
| H1     | H unit                 | Left              |
| H2     |                        | Right             |

Note) Refer to page 1144 for details about adjustment range.

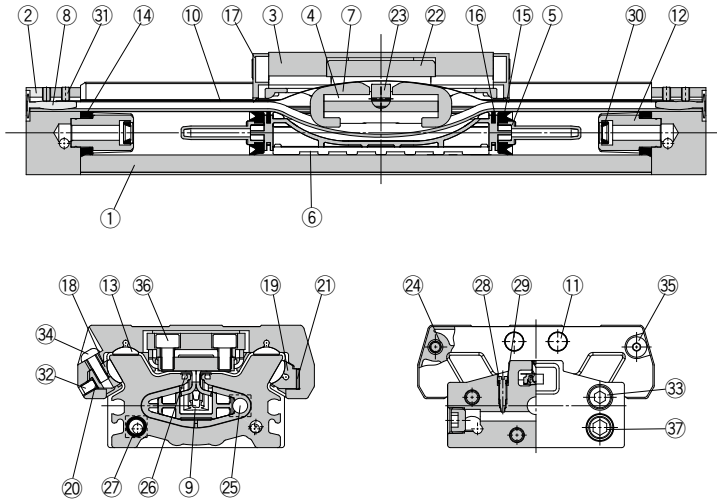


### Component Parts

|   |  |  |   |
|---|--|--|---|
| <p><b>MY3M-A25L1</b><br/>(Without spacer)</p> <p>Stroke adjustment unit</p> | <p><b>MY3M-A25L1-6</b><br/>(With short spacer)</p> <p>Stroke adjustment unit</p> <p>Short spacer</p> | <p><b>MY3M-A25L1-7</b><br/>(With long spacer)</p> <p>Stroke adjustment unit</p> <p>Long spacer</p> | <p><b>MY3M-A25L1-6N</b><br/>(Short spacer only)</p> <p>Short spacer</p> <hr/> <p><b>MY3M-A25L1-7N</b><br/>(Long spacer only)</p> <p>Long spacer</p> |
|---|--|--|---|

## Construction

### MY3M



### Component Parts

| No. | Description    | Material                   | Note          |
|-----|----------------|----------------------------|---------------|
| 1   | Cylinder tube  | Aluminum alloy             | Hard anodized |
| 2   | Head cover     | Aluminum alloy             | Hard anodized |
| 3   | Slide table    | Aluminum alloy             | Hard anodized |
| 4   | Piston yoke    | Stainless steel            |               |
| 5   | Piston         | Polyamide                  |               |
| 6   | Wear ring      | Polyacetal                 |               |
| 7   | Belt separator | Polyacetal                 |               |
| 8   | Belt clamp     | Polybutylene terephthalate |               |
| 11  | Stopper        | Carbon steel               | Nickel plated |
| 12  | Cushion boss   | Aluminum alloy             | Chromated     |
| 13  | Bearing        | Polyacetal                 |               |
| 16  | Inner wiper    | Special resin              |               |
| 17  | End cover      | Polyamide                  |               |
| 18  | Adjust arm A   | Aluminum alloy             | Chromated     |
| 19  | Adjust arm B   | Aluminum alloy             | Chromated     |

| No. | Description                      | Material                | Note                      |
|-----|----------------------------------|-------------------------|---------------------------|
| 20  | Backup spring                    | Stainless steel         |                           |
| 21  | Bearing adjustment rubber        | NBR                     |                           |
| 22  | Coupler body                     | Aluminum alloy          | Hard anodized             |
| 23  | Coupler pin                      | Carbon steel            | Electroless nickel plated |
| 24  | Spacer                           | Stainless steel         |                           |
| 25  | Magnet                           | —                       |                           |
| 26  | Seal magnet                      | Rubber magnet           |                           |
| 28  | Cushion needle                   | Rolled steel            | Nickel plated             |
| 31  | Hexagon socket head set screw    | Chrome molybdenum steel | Chromated                 |
| 32  | Hexagon socket head set screw    | Chrome molybdenum steel | Chromated                 |
| 33  | Hexagon socket head cap screw    | Chrome molybdenum steel | Chromated                 |
| 34  | Hexagon socket button head screw | Chrome molybdenum steel | Chromated                 |
| 35  | Hexagon socket button head screw | Chrome molybdenum steel | Chromated                 |
| 36  | Hexagon socket head cap screw    | Chrome molybdenum steel | Chromated                 |
| 37  | Hexagon socket head plug         | Carbon steel            | Chromated                 |

### Replacement Parts/Seal

| No. | Description    | Material              | Qty. | MY3M16                        | MY3M25                        | MY3M40                            | MY3M63                          |
|-----|----------------|-----------------------|------|-------------------------------|-------------------------------|-----------------------------------|---------------------------------|
| 9   | Seal belt      | Urethane<br>Polyamide | 1    | MY3B16-16C-[Stroke]           | MY3B25-16C-[Stroke]           | MY3B40-16C-[Stroke]               | MY3B63-16A-[Stroke]             |
| 10  | Dust seal band | Stainless steel       | 1    | MY3B16-16B-[Stroke]           | MY3B25-16B-[Stroke]           | MY3B40-16B-[Stroke]               | MY3B63-16B-[Stroke]             |
| 29  | O-ring         | NBR                   | 2    | KA00309<br>(ø4 x ø1.8 x ø1.1) | KA00309<br>(ø4 x ø1.8 x ø1.1) | KA00320<br>(ø7.15 x ø3.75 x ø1.7) | KA00402<br>(ø8.3 x ø4.5 x ø1.9) |
| 14  | Tube gasket    | NBR                   | 2    | MY3B16-PS                     | MY3B25-PS                     | MY3B40-PS                         | MY3B63-PS                       |
| 15  | Piston seal    | NBR                   | 2    |                               |                               |                                   |                                 |
| 27  | O-ring         | NBR                   | 4    |                               |                               |                                   |                                 |
| 30  | Cushion seal   | NBR                   | 2    |                               |                               |                                   |                                 |

\* Seal kit includes (14, 15, 27) and 30. Order the seal kit based on each bore size.

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

When (9) and (10) are shipped as single units, a grease pack is included (10 g per 1000 strokes). Order with the following part number when only the grease pack is needed.

**Grease pack part number: GR-S-010 (10 g), GR-S-020 (20 g)**

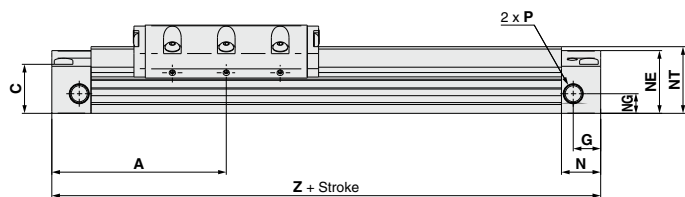
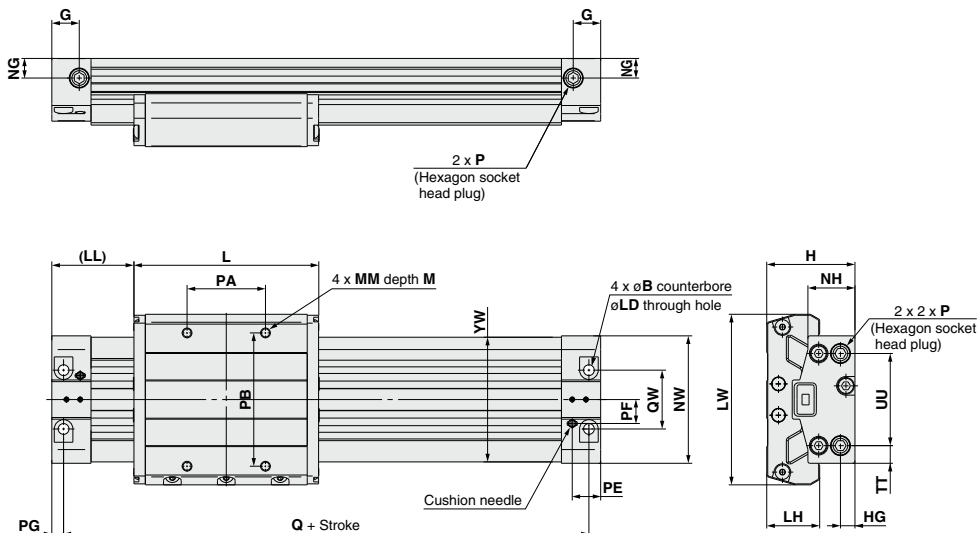
\* For instructions on how to replace replacement parts/seals, refer to the operation manual.

# MY3M Series

## Slide Bearing Guide Type: $\varnothing 16$ , $\varnothing 25$ , $\varnothing 40$ , $\varnothing 63$

MY3M Bore size — Stroke

\* Refer to "Specific Product Precautions" on page 1167 for mounting.



**Port Variation**

\* Head cover piping connection can be freely selected to best suit different piping conditions.

Slide table operating direction

| Model  | A   | B   | C  | G    | H  | HG   | L   | LD  | LH   | LL   | LW  | M  | MM        | N    | NE   | NG |
|--------|-----|-----|----|------|----|------|-----|-----|------|------|-----|----|-----------|------|------|----|
| MY3M16 | 61  | 6   | 18 | 9.5  | 33 | 5    | 65  | 3.5 | 20.5 | 28.5 | 64  | 6  | M4 x 0.7  | 13.5 | 22.5 | 8  |
| MY3M25 | 89  | 9.5 | 25 | 14   | 45 | 7.4  | 95  | 5.5 | 27   | 41.5 | 87  | 10 | M5 x 0.8  | 20   | 32   | 10 |
| MY3M40 | 138 | 14  | 38 | 18   | 63 | 12   | 160 | 8.6 | 35   | 58   | 124 | 13 | M6 x 1.0  | 27   | 46   | 15 |
| MY3M63 | 178 | 17  | 60 | 20.5 | 93 | 16.5 | 220 | 11  | 46   | 68   | 176 | 15 | M10 x 1.5 | 31   | 70   | 29 |

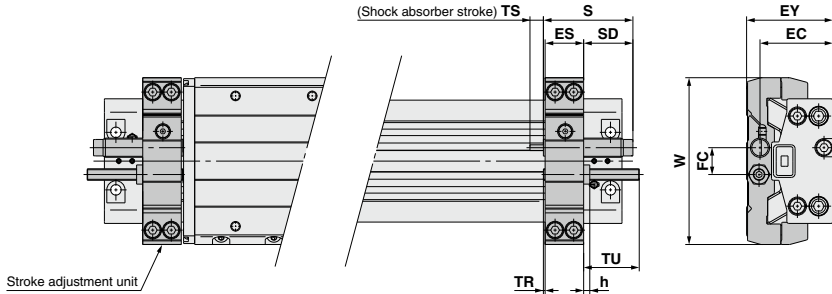
| Model  | NH   | NT | NW  | P             | PA  | PB  | PE   | PF   | PG  | Q   | QW | TT  | UU | YW   | Z   |
|--------|------|----|-----|---------------|-----|-----|------|------|-----|-----|----|-----|----|------|-----|
| MY3M16 | 17.2 | 24 | 43  | M5 x 0.8      | 28  | 48  | 9.7  | 8.5  | 4   | 114 | 19 | 6.5 | 30 | 44.6 | 122 |
| MY3M25 | 24   | 34 | 65  | Rc, NPT, G1/8 | 40  | 68  | 14.5 | 12.2 | 6   | 166 | 30 | 9   | 47 | 63.6 | 178 |
| MY3M40 | 37   | 49 | 94  | Rc, NPT, G1/4 | 100 | 100 | 19.5 | 16.5 | 8.5 | 259 | 40 | 14  | 66 | 93.6 | 276 |
| MY3M63 | 58   | 76 | 139 | Rc, NPT, G3/8 | 130 | 150 | 23.5 | 27.5 | 10  | 336 | 64 | 20  | 99 | 138  | 356 |

## Slide Bearing Guide Type: $\varnothing 16$ , $\varnothing 25$ , $\varnothing 40$ , $\varnothing 63$

### Stroke adjustment unit

Low load shock absorber + Adjustment bolt

MY3M Bore size – Stroke L



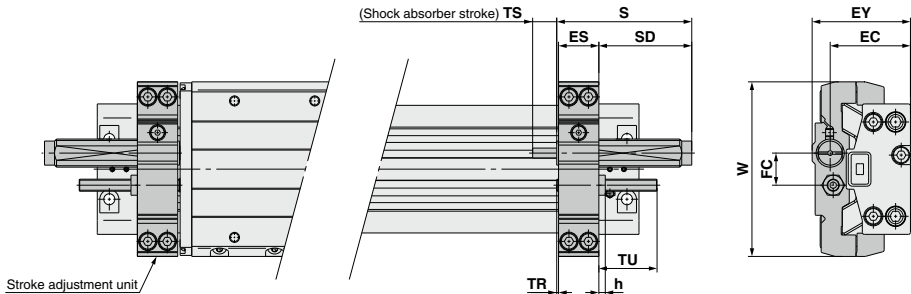
(mm)

| Applicable cylinder | ES   | EC   | EY   | FC | h   | S    | SD   | TS | TR  | TU   | W   | Shock absorber model |
|---------------------|------|------|------|----|-----|------|------|----|-----|------|-----|----------------------|
| MY3M16              | 14.1 | 27.5 | 32.5 | 9  | 2.4 | 40.8 | 25.8 | 6  | 0.9 | 25   | 64  | RB0806               |
| MY3M25              | 20.1 | 38   | 44.5 | 14 | 3.6 | 46.7 | 25.2 | 7  | 1.4 | 28.5 | 87  | RB1007               |
| MY3M40              | 30.1 | 54   | 62.5 | 24 | 5   | 67.3 | 36.3 | 12 | 0.9 | 39   | 124 | RB1412               |
| MY3M63              | 36.1 | 81   | 92.5 | 32 | 6   | 73.2 | 36.2 | 15 | 0.9 | 43   | 176 | RB2015               |

Note) When the stroke adjustment unit is used, the fitting type, which can be connected with the port on the body front and the back, will be limited. Refer to page 1127 for details.

### Heavy-loaded shock absorber + Adjustment bolt

MY3M Bore size – Stroke H



(mm)

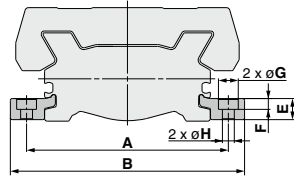
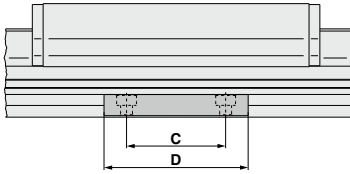
| Applicable cylinder | ES   | EC   | EY   | FC | h   | S    | SD   | TS | TR  | TU   | W   | Shock absorber model |
|---------------------|------|------|------|----|-----|------|------|----|-----|------|-----|----------------------|
| MY3M16              | 14.1 | 28.5 | 34.5 | 11 | 2.4 | 46.7 | 31.7 | 7  | 0.9 | 25   | 64  | RB1007               |
| MY3M25              | 20.1 | 40   | 49   | 16 | 3.6 | 67.3 | 45.8 | 12 | 1.4 | 28.5 | 87  | RB1412               |
| MY3M40              | 30.1 | 57   | 69   | 26 | 5   | 73.2 | 42.2 | 15 | 0.9 | 39   | 124 | RB2015               |
| MY3M63              | 36.1 | 84.5 | 100  | 32 | 6   | 99   | 62   | 25 | 0.9 | 43   | 176 | RB2725               |

Note) When the stroke adjustment unit is used, the fitting type, which can be connected with the port on the body front and the back, will be limited. Refer to page 1127 for details.

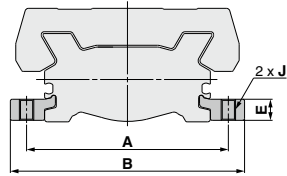
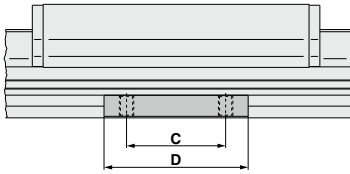
# MY3M Series

## Side Support

### Side support A MY-S□A



### Side support B MY-S□B

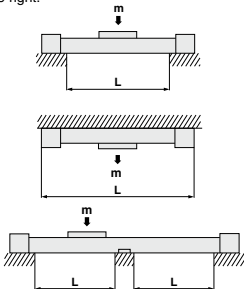


| Model                            | Applicable cylinder | A   | B    | C  | D  | E    | F   | G   | H   | J         |
|----------------------------------|---------------------|-----|------|----|----|------|-----|-----|-----|-----------|
| MY-S16 <sup>A</sup> <sub>B</sub> | MY3M16              | 53  | 63.6 | 15 | 26 | 4.9  | 3   | 6.5 | 3.4 | M4 x 0.7  |
| MY-S25 <sup>A</sup> <sub>B</sub> | MY3M25              | 77  | 91   | 35 | 50 | 8    | 5   | 9.5 | 5.5 | M6 x 1    |
| MY-S32 <sup>A</sup> <sub>B</sub> | MY3M40              | 112 | 130  | 45 | 64 | 11.7 | 6   | 11  | 6.6 | M8 x 1.25 |
| MY-S50 <sup>A</sup> <sub>B</sub> | MY3M63              | 160 | 182  | 55 | 80 | 14.8 | 8.5 | 14  | 9   | M10 x 1.5 |

Note) A set of side supports consists of a left support and a right support.

## Guide for Using Side Support

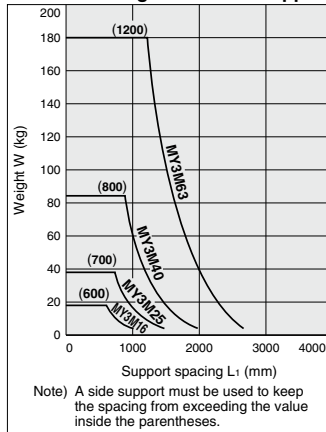
For long stroke operation, the cylinder tube may be deflected depending on its own weight and the load weight. In such a case, use a side support in the middle section. The spacing (L) of the support must be no more than the values shown in the graph on the right.



### ⚠ Caution

- ① If the cylinder mounting surfaces are not measured accurately, using a side support may cause poor operation. Therefore, be sure to level the cylinder tube when mounting. Also, for long stroke operation involving vibration and impact, use of a side support is recommended even if the spacing value is within the allowable limits shown in the graph.
- ② Support brackets are not for mounting; use them solely for providing support.

## Guide for Using MY3M Side Support

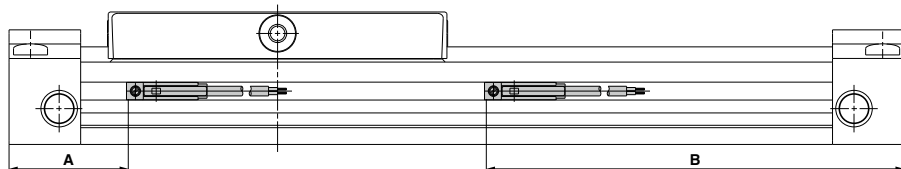




# MY3 Series

# Auto Switch Specifications

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



### Auto Switch Proper Mounting Position

#### MY3A

| Auto switch model | Bore size (mm)  |       |                 |       |
|-------------------|---|-------|-----------------|-------|
|                   | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□A<br>D-M9□AV |       | D-A9□<br>D-A9□V |       |
| Bore size         | A   | B     | A               | B     |
| 16                | 26  | 84    | 22              | 88    |
| 20                | 26  | 102   | 22              | 106   |
| 25                | 33  | 117   | 29              | 121   |
| 32                | 40.5  | 152.5 | 36.5            | 156.5 |
| 40                | 46.5  | 193.5 | 42.5            | 197.5 |
| 50                | 47  | 227   | 43              | 231   |
| 63                | 57.5  | 262.5 | 53.5            | 266.5 |

Note) The values in the table indicate the position of the auto switch's front end. Adjust the auto switch after confirming the operating conditions in the actual setting.

#### MY3B/MY3M

| Auto switch model | Bore size (mm)  |       |                 |       |
|-------------------|---|-------|-----------------|-------|
|                   | D-M9□<br>D-M9□V<br>D-M9□W<br>D-M9□WV<br>D-M9□A<br>D-M9□AV |       | D-A9□<br>D-A9□V |       |
| Bore size         | A   | B     | A               | B     |
| 16                | 32  | 90    | 28              | 94    |
| 20                | 36  | 112   | 32              | 116   |
| 25                | 47  | 131   | 43              | 135   |
| 32                | 56.5  | 168.5 | 52.5            | 172.5 |
| 40                | 64.5  | 211.5 | 60.5            | 215.5 |
| 50                | 65  | 245   | 61              | 249   |
| 63                | 75.5  | 280.5 | 71.5            | 284.5 |

## Operating Range

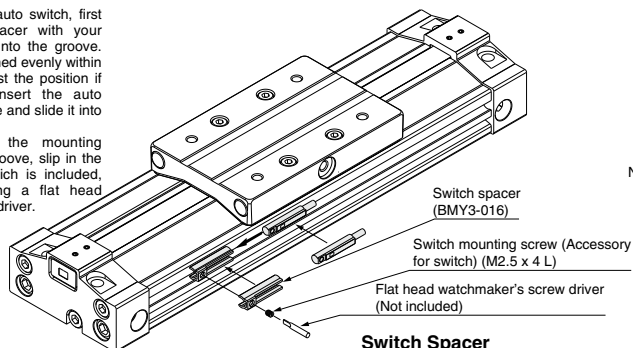
| Auto switch model                          | Bore size (mm) |     |      |     |    |      |    |
|--|----------------|-----|------|-----|----|------|----|
|  | 16             | 20  | 25   | 32  | 40 | 50   | 63 |
| D-M9□/M9□V<br>D-M9□W/M9□WV<br>D-M9□A/M9□AV | 3.5            | 5   | 6    | 6.5 | 8  | 8    | 8  |
| D-A9□/A9□V                                 | 6.5            | 9.5 | 10.5 | 12  | 15 | 13.5 | 14 |

\* Since the operating range is provided as a guideline including hysteresis, it cannot be guaranteed. (Assuming approximately ±30% dispersion.) It may vary substantially depending on an ambient environment.

## Auto Switch Mounting

When mounting an auto switch, first hold the switch spacer with your fingers and push it into the groove. Confirm that it is aligned evenly within the groove and adjust the position if necessary. Then, insert the auto switch into the groove and slide it into the spacer.

After deciding on the mounting position within the groove, slip in the mounting screw, which is included, and tighten it, using a flat head watchmaker's screw driver.



Note) Use a watchmaker's screw driver with a handle diameter of 5 to 6 mm to fasten the auto switch mounting screws. The tightening torque should be approximately 0.1 to 0.15 N·m.

### Switch Spacer

| Applicable bore size (mm) | 16       | 20 | 25 | 32 | 40 | 50 | 63 |
|---------------------------|----------|----|----|----|----|----|----|
| Switch spacer             | BMY3-016 |    |    |    |    |    |    |

Besides the models listed in How to Order, the following auto switches are applicable.

- \* For solid state auto switches, auto switches with a pre-wired connector are also available. Refer to pages 1358 and 1359 for details.
- \* Normally closed (NC = b contact) solid state auto switches (D-M9□E(V)) are also available. Refer to page 1308 for details.

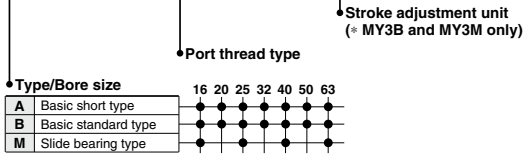


## 1 Helical Insert Threads

**-X168**

The mounting threads of the slider are changed to helical insert threads.  
The thread size is the same as standard.

MY3 **B** Bore size - Stroke - Auto switch Symbol - X168



Example) MY3B16-300L-M9B-X168



# MY3 Series

## Specific Product Precautions

Be sure to read this before handling the products.

Refer to page 8 for safety instructions and pages 9 to 18 for actuator and auto switch precautions.

### Selection

#### ⚠ Warning

1. When applying a load directly, set the design so that all the mounting threads on the slide table's upper surface are used.

Parts have been made smaller to achieve a compact size. If only some of the threads are used when mounting the load, the impact that results from the operation may cause extremely concentrated stress or disfiguration and may negatively affect operation. In worst cases the cylinder may be damaged, so please be careful.

#### ⚠ Caution

1. Provide intermediate supports for long stroke cylinders.

Provide intermediate supports for cylinders with long strokes to prevent rod damage due to sagging of the rod, deflection of the tube, vibration and external loads. For detailed information, please refer to "Guide for Using Side Support" on pages 1148 and 1164.

2. For intermediate stops, use a dual-side pressure control circuit.

Since the mechanically jointed rodless cylinders have a unique seal structure, slight external leakage may occur. Controlling intermediate stops with a 3 position valve cannot hold the stopping position of the slide table (slider). The speed at the restarting state also may not be controllable. Use the dual-side pressure control circuit with a PAB-connected 3 position valve for intermediate stops.

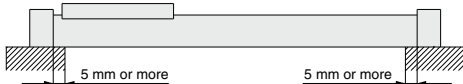
3. Cautions on less frequent operation

When the cylinder is used extremely infrequently, operation may be interrupted in order for anchoring and a change lubrication to be performed or service life may be reduced.

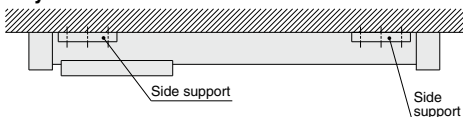
### Mounting

#### ⚠ Caution

1. At each end of the cylinder, secure a mounting surface with a 5 mm or longer area that contacts the lower side of the cylinder.



2. If the cylinder is mounted on the ceiling or wall under the condition where high load factors or impacts are expected, use side supports, in addition to the fixing bolts on the head cover, to support both ends of the cylinder tube.

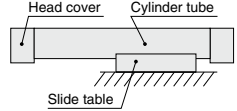


### Mounting

#### ⚠ Caution

3. Do not mount a slide table on the fixed equipment surface.

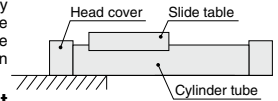
It may cause damage or malfunctions since an excessive load is applied to the bearing.



Mounting with a slide table (slider)

4. Consult with SMC when mounting in a cantilevered way.

Since the cylinder body deflects, it may cause malfunctions. Please consult with SMC when using it this way.



Mounting in a cantilevered way

5. Do not mount cylinders as they are twisted.

When mounting, be sure for a cylinder tube not to be twisted. The flatness of the mounting surface is not appropriate, the cylinder tube is twisted, which may cause air leakage due to the detachment of a seal belt, damage a dust seal band, and cause malfunctions.

6. Do not generate negative pressure in the cylinder tube.

Take precautions under operating conditions in which negative pressure is generated inside the cylinder by external forces or inertial forces. Air leakage may occur due to separation of the seal belt. Do not generate negative pressure in the cylinder by forcibly moving it with an external force during the trial operation or dropping it with self-weight under the non-pressure state, etc. When the negative pressure is generated, slowly move the cylinder by hand and move the stroke back and forth. (When using with a stroke adjustment unit, please either remove the unit or adjust the stroke to the full stroke.) After doing so, if air leakage still occurs, please consult with SMC.

### Operating Environment

#### ⚠ Warning

1. Avoid use in environments where a cylinder will come in contact with coolants, cutting oil, droplet of water, adhesive matter, or dust, etc. Also avoid operation with compressed air that contains drainage or foreign matter, etc.

Foreign matter or liquids on the cylinder's interior or exterior can wash out the lubricating grease, which can lead to deterioration and damage of dust seal band and seal materials, causing a danger of malfunction.

When operating in locations with exposure to water and oil drops, or in dusty locations, provide protection such as a cover to prevent direct contact with the cylinder, or mount so that the dust seal band surface faces downward, and operate with clean compressed air.

2. The product is not designed for clean room usage.

If clean room usage is considered, please consult with SMC.