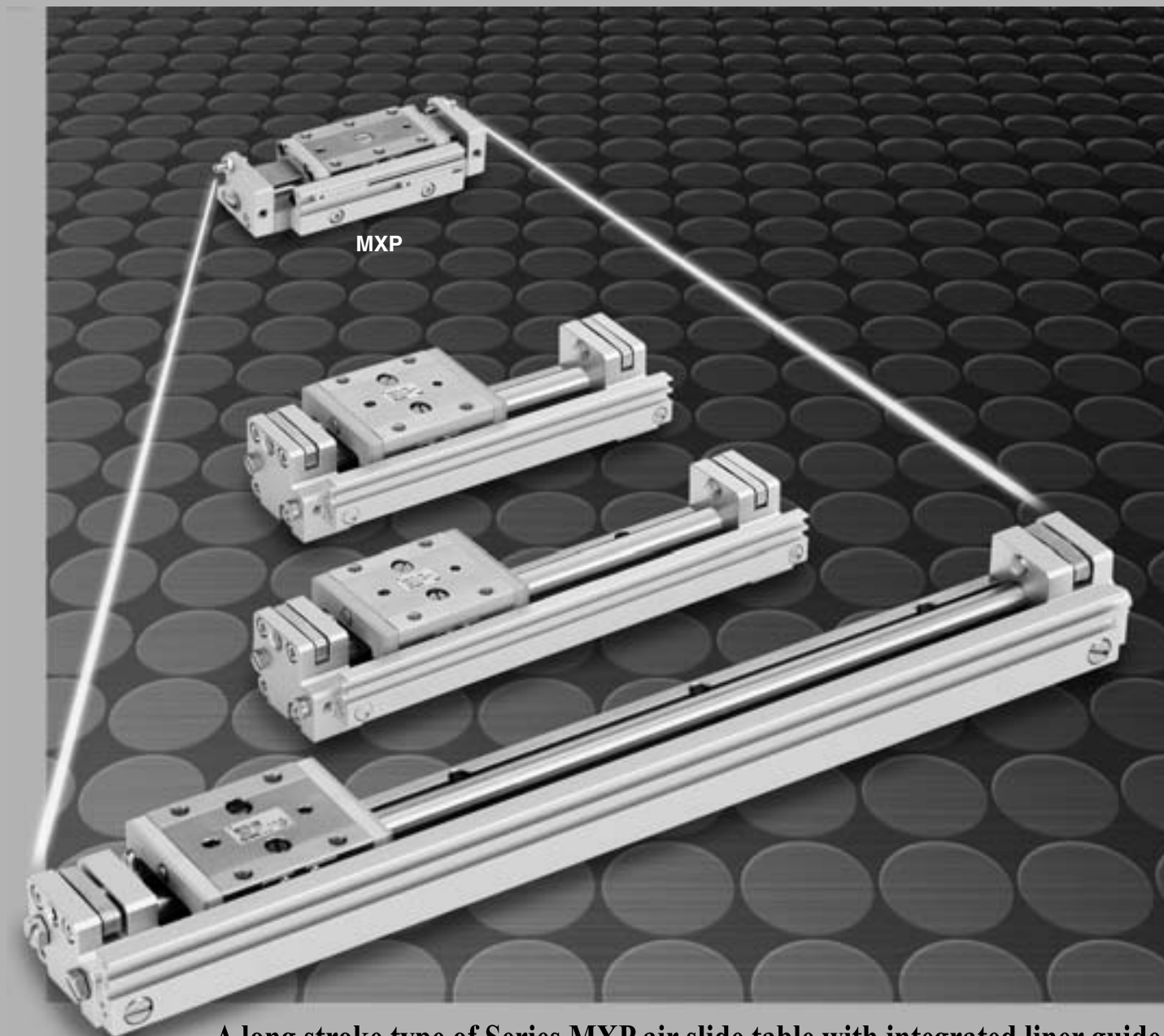


# Air Slide Table/Long Stroke Type

## Series *MX**Y*

ø6, ø8, ø12



A long stroke type of Series MXP air slide table with integrated liner guide.

MXH

MXU

MXS

MXQ

MXF

MXW

MXJ

MXP

**MXY**

MTS

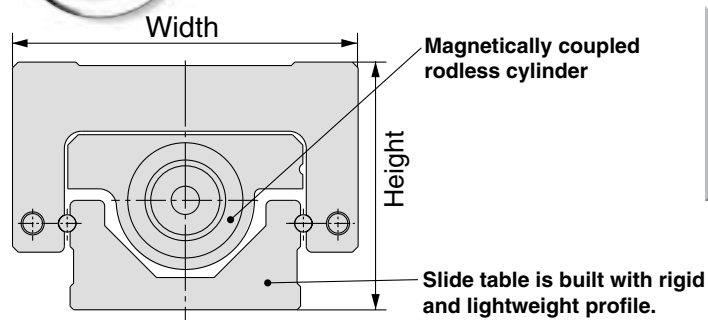
D-□

-X□

Individual  
-X□

# Use of linear guide provides rigid, compact, and lightweight design. The slide table comes with a built-in magnetically coupled rodless cylinder.

## Rigid, compact, and lightweight



| Model              | Height mm | Width mm | Mass g* |
|--------------------|-----------|----------|---------|
| MX <sub>Y</sub> 6  | 21.5      | 30       | 270     |
| MX <sub>Y</sub> 8  | 25        | 38       | 420     |
| MX <sub>Y</sub> 12 | 36        | 50       | 930     |

\*Values for 50 mm stroke

## Compact design with higher allowable moment compared to MX<sub>Y</sub>8/MX<sub>W</sub>8

| Model                            | Height mm | Width mm   | Mass g    | Allowable moment N·m |         |  |
|----------------------------------|-----------|------------|-----------|----------------------|---------|--|
|                                  |           |            |           | Pitch, Yaw           | Roll    |  |
| MX <sub>Y</sub> 8-50             | 25        | 47         | 420       | 5.7                  | 13      |  |
| MX <sub>W</sub> 8-50             | 30        | 49         | 610       | 5                    | 3       |  |
| MX <sub>Y</sub> /MX <sub>W</sub> | 0.8 times | 0.95 times | 0.7 times | 1.14 times           | 4 times |  |

## Long stroke

MX<sub>Y</sub>12—Max. stroke 400 mm

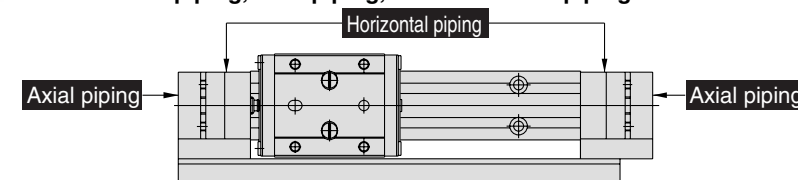
### Series variations

| Bore size (mm) | Stroke |     |     |     |     |     |     |     | Adjuster options |                |               | Function options                                   |
|----------------|--------|-----|-----|-----|-----|-----|-----|-----|------------------|----------------|---------------|----------------------------------------------------|
|                | 50     | 100 | 150 | 200 | 250 | 300 | 350 | 400 | Rubber stopper   | Shock absorber | Metal stopper | Piping concentrated on one side of the switch rail |
| 6              |        |     |     |     |     |     |     |     |                  |                |               |                                                    |
| 8              |        |     |     |     |     |     |     |     |                  |                |               |                                                    |
| 12             |        |     |     |     |     |     |     |     |                  |                |               |                                                    |

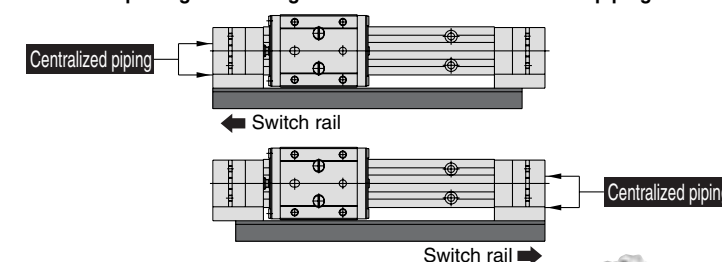
**Auto switch mounting**  
Three types of auto switches can be mounted.  
Solid state switch: M9 type  
Reed switch: A9 type  
2-color indication solid state switch: M9□W type

## Flexible Piping

3 different piping directions are available:  
Horizontal piping, axial piping, and centralized piping

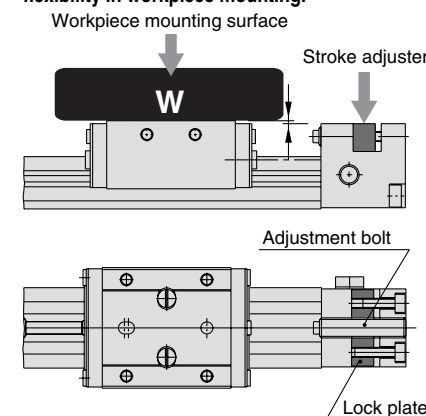


Changing the mounting position of the switch rail, which also used as an air passage can change the direction of the centralized piping.



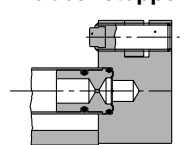
## Stroke adjuster

The stroke adjuster does not protrude from the mounting surface of the workpiece mounting surface, allowing high flexibility in workpiece mounting.



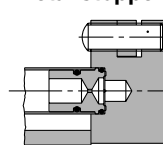
Using lock plates to securely lock the adjustment bolt with minimal force.

### Rubber stopper

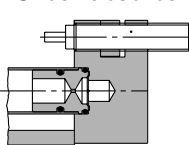


### Adjuster options

#### Metal stopper

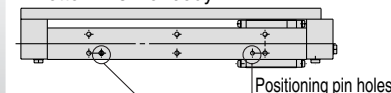


#### Shock absorber



## Positioning pin hole

Improved mounting repeatability of the workpiece and body  
<Bottom view of body>



## Application Example

### Series MXP

Compact air slide table that comes with linear guide with built-in cylinder.

| Series | Stroke (mm) |    |    |    |    |    | Stroke adjusters |               |                | Auto switch |
|--------|-------------|----|----|----|----|----|------------------|---------------|----------------|-------------|
|        | 5           | 10 | 15 | 20 | 25 | 30 | Rubber stopper   | Metal stopper | Shock absorber |             |
| MXP 6  |             |    |    |    |    |    |                  |               |                |             |
| MXP 8  |             |    |    |    |    |    |                  |               |                |             |
| MXP10  |             |    |    |    |    |    |                  |               |                |             |
| MXP12  |             |    |    |    |    |    |                  |               |                |             |
| MXP16  |             |    |    |    |    |    |                  |               |                |             |

MXH  
MXU  
MXS  
MXQ  
MXF  
MXW  
MXJ  
MXP  
MX<sub>Y</sub>  
MTS

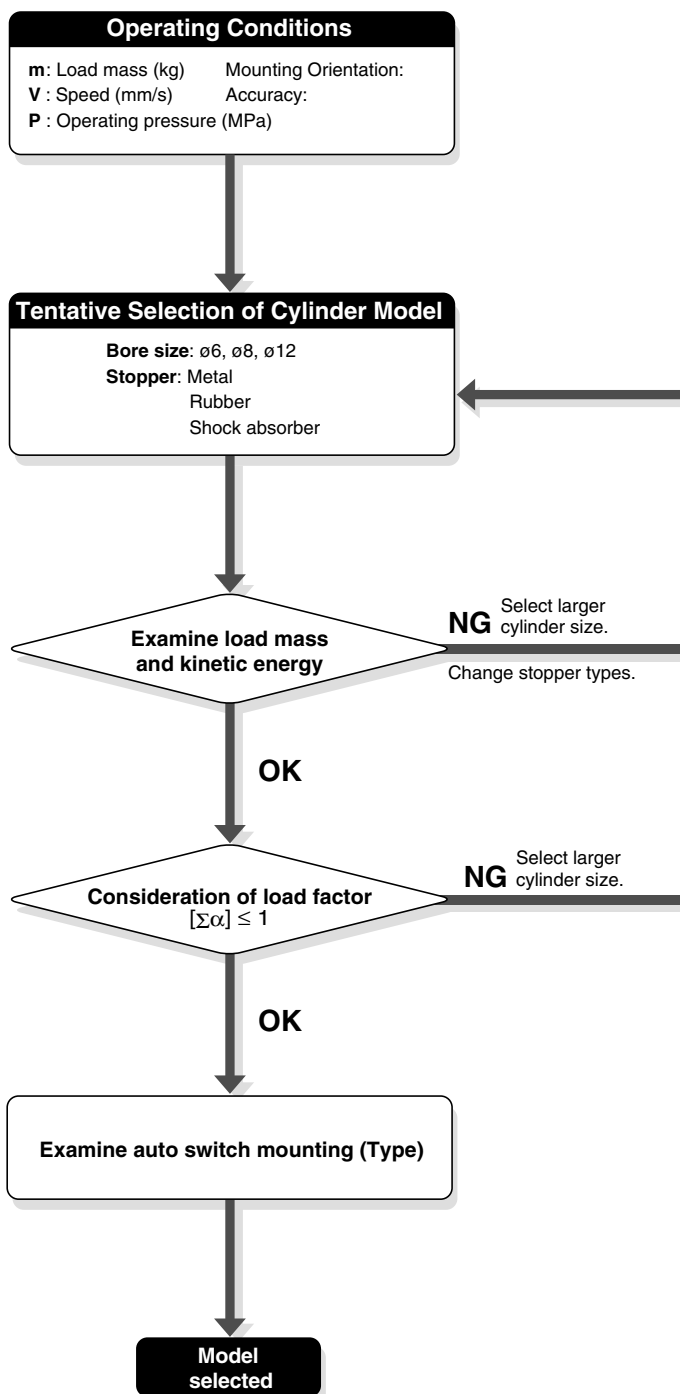
D-□  
-X□  
Individual  
-X□



# Model Selection 1

The following are the steps for selection of the series MXY best suited to your application,

## Conditions and Calculation Flow for Selection



MXH

MXU

MXS

MXQ

MXF

MXW

MXJ

MXP

**MXY**

MTS

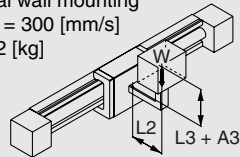
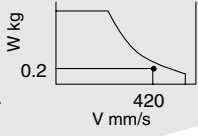
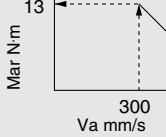
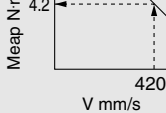
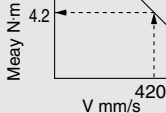
D-□

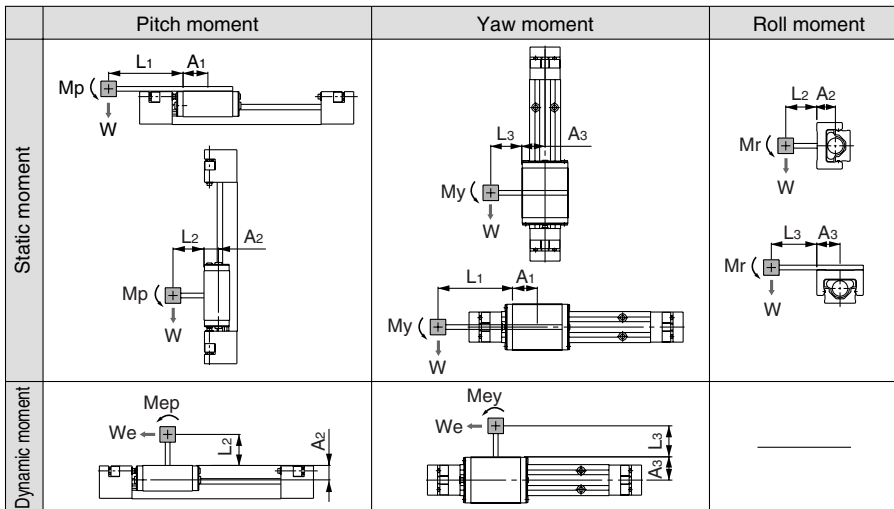
-X□

Individual  
-X□

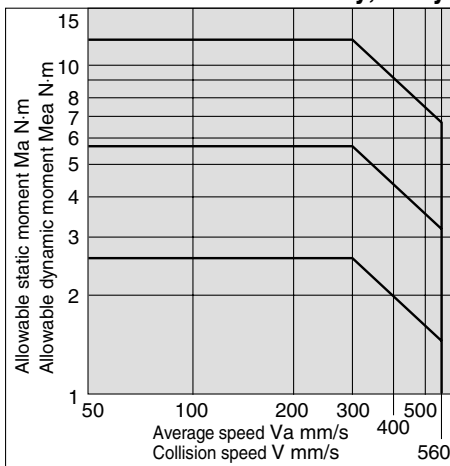
# Series MXY

## Model Selection 2

| Model Selection Step                                                                                                                                                                                        | Formula/Data                                                                                                                                                                                                                                                                                                                                                                                | Selection Example                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>1 Operating Conditions</b><br>Enumerate the operating conditions considering the mounting position and workpiece configuration.                                                                          | <ul style="list-style-type: none"> <li>Model to be used</li> <li>Type of cushion</li> <li>Mounting orientation</li> <li>Average speed <math>V_a</math> (mm/s)</li> <li>Load mass <math>W</math> (kg)</li> <li>Overhang <math>L_n</math> (mm)</li> </ul>                                                                                                                                     | Cylinder: MXY8-100<br>Cushion: Rubber stopper<br>Mounting: Horizontal wall mounting<br>Average speed: $V_a = 300$ [mm/s]<br>Load mass: $W = 0.2$ [kg]<br>$L_2 = 40$ mm<br>$L_3 = 50$ mm<br>                                                                                                                                                                                                                                                                                                                                                                          |
| <b>2 Load Mass</b><br>Find the collision speed $V$ (mm/S)<br><br>Confirm that the load mass $W$ (kg) does not exceed the value in the graph.                                                                | $V = \frac{1.4 \cdot V_a}{*}$ * Correction factor (Reference value)<br><b>Graph (1)</b>                                                                                                                                                                                                                                                                                                     | $V = 1.4 \times 300 = 420$<br><br>Confirm that $V = 420$ and $W = 0.2$ do not exceed the values in Graph (1).<br><br>Applicable because it does not exceed the value in Graph (1).<br>                                                                                                                                                                                                                                                                                                                                                                              |
| <b>3 Load Factor</b>                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>3-1 Load Factor of Static Moment</b><br><br>Find the static moment $M$ (N·m).<br><br>Find the allowable static moment $M_a$ (N·m).<br><br>Find the load factor $\alpha_1$ of the static moment.          | $M = W \times 9.8 (L_n + A_n)/1000$ Corrected value of moment center position distance $A_n$ : <b>Table (1)</b><br><br>Pitch, Yaw moment: <b>Graph (2)</b><br>Roll moment: <b>Graph (3)</b><br><br>$\alpha_1 = M/M_a$                                                                                                                                                                       | Examine $M_r$ .<br>$M_r = 0.2 \times 9.8 (40 + 15.5)/1000 = 0.1$<br>$A_2 = 15.5$<br>Obtain $M_{ar} = 13$ from $V_a = 300$ in Graph (3).<br><br>$\alpha_1 = 0.1/13 = 0.008$<br>                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>3-2 Load Factor of Dynamic Moment</b><br><br>Find the dynamic moment $M_e$ (N·m).<br><br>Find the allowable dynamic moment $M_{ea}$ (N·m).<br><br>Find the load factor $\alpha_2$ of the dynamic moment. | $M_e = 1/3 \cdot W_e \times 9.8 (L_n + A_n)/1000$ Mass equivalent to impact $W_e = \delta \cdot W \cdot V$<br>$\delta$ : Bumper coefficient<br>Rubber stopper screw: 4/100<br>Shock absorber: 1/100<br>Metal stopper screw: 16/100<br>Corrected value of moment center position distance $A_n$ : <b>Table (1)</b><br><br>Pitch, yaw moment: <b>Graph (2)</b><br><br>$\alpha_2 = M_e/M_{ea}$ | Examine $M_{ep}$ .<br>$M_{ep} = 1/3 \times 3.36 \times 9.8 \times (40 + 15.5)/1000 = 0.61$<br>$W_e = 4/100 \times 0.2 \times 420 = 3.36$<br>$A^2 = 15.5$<br>Obtain $M_{eap} = 4.2$ from $V = 420$ in Graph (2).<br>$\alpha_2 = 0.61/4.2 = 0.15$<br><br><br>Examine $M_{ey}$ .<br>$M_{ey} = 1/3 \times 3.36 \times 9.8 \times (50 + 19)/1000 = 0.76$<br>$W_e = 3.36$<br>$A^3 = 19$<br>Obtain $M_{eay} = 4.2$ from $V = 420$ in Graph (2).<br>$\alpha_2' = 0.76/4.2 = 0.18$<br> |
| <b>3-3 Sum of the Load Factors</b><br><br>Use is possible if the sum of the load factors does not exceed 1.                                                                                                 | $\alpha_1 + \alpha_2 < 1$                                                                                                                                                                                                                                                                                                                                                                   | $\alpha_1 + \alpha_2 + \alpha_2' =$ Applicable because<br>$0.008 + 0.15 + 0.18 = 0.34 < 1$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

**Fig. (1) Overhang:  $L_n$  (mm), Correction Value of Moment Center Position Distance:  $A_n$  (mm)**


Note) Static moment: Moment generated by gravity  
Dynamic moment: Moment generated by impact when colliding with stopper

**Graph (2) Allowable Moment**  
Pitch Moment:  $M_{ap}$ ,  $M_{ep}$   
Yaw Moment:  $M_{ay}$ ,  $M_{ey}$ 


Note) Use the average speed when calculating static moment.  
Use the collision speed when calculating dynamic moment.

**Table (1) Correction Value of Moment Center Position Distance:  $A_n$  (mm)**

| Model        | Corrected value of moment center position distance (Refer to Figure 2.) |       |       |
|--------------|-------------------------------------------------------------------------|-------|-------|
|              | $A_1$                                                                   | $A_2$ | $A_3$ |
| <b>MXY6</b>  | 16                                                                      | 14    | 15    |
| <b>MXY8</b>  | 20                                                                      | 15.5  | 19    |
| <b>MXY12</b> | 26                                                                      | 23.5  | 25    |

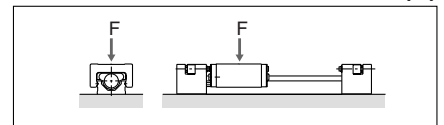
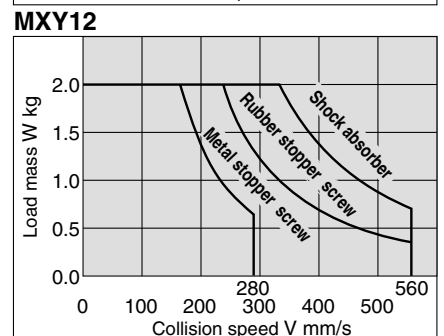
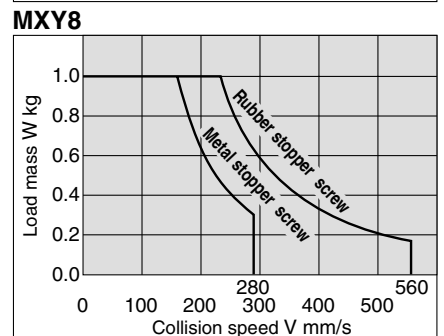
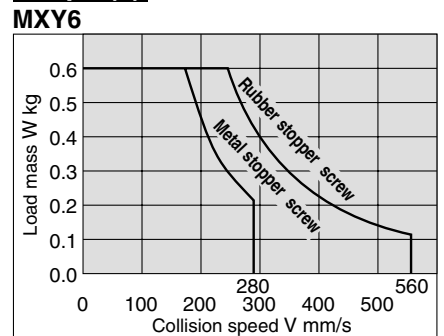
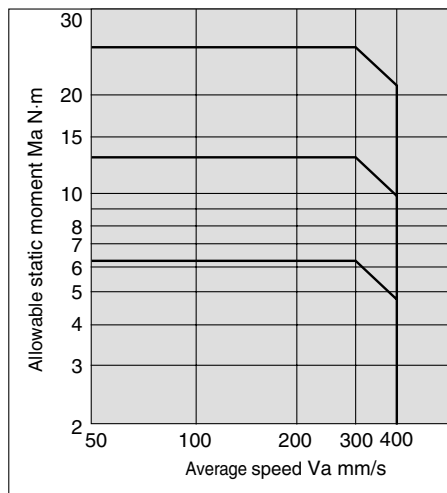
**Table (3) Maximum Allowable Moment:  $M_{max}$  (N·m)**

| Model        | Pitch/Yaw moment: $M_{pmax}/M_{ymax}$ | Roll moment: $M_{rmax}$ |
|--------------|---------------------------------------|-------------------------|
| <b>MXY6</b>  | 2.6                                   | 6.2                     |
| <b>MXY8</b>  | 5.7                                   | 13                      |
| <b>MXY12</b> | 12                                    | 28                      |

The above value represents the maximum value of allowable moment. For the maximum allowable moment for each piston speed, please refer to Graph (2) and (3).

### Symbol

| Symbol                                               | Definition                                         | Unit | Symbol      | Definition               | Unit |
|------------------------------------------------------|----------------------------------------------------|------|-------------|--------------------------|------|
| <b>An</b> ( $n = 1$ to 3)                            | Corrected value of moment center position distance | mm   | <b>F</b>    | Allowable static load    | N    |
| <b>Ln</b> ( $n = 1$ to 3)                            | Overhang                                           | mm   | <b>V</b>    | Collision speed          | mm/s |
| <b>M</b> ( $M_p$ , $M_y$ , $M_r$ )                   | Static moment (pitch, yaw, roll)                   | N·m  | <b>Va</b>   | Average speed            | mm/s |
| <b>Ma</b> ( $M_{ap}$ , $M_{ay}$ , $M_{ar}$ )         | Allowable static moment (pitch, yaw, roll)         | N·m  | <b>W</b>    | Load mass                | kg   |
| <b>Me</b> ( $M_{ep}$ , $M_{ey}$ )                    | Dynamic moment (pitch, yaw)                        | N·m  | <b>Wa</b>   | Allowable load mass      | kg   |
| <b>Mea</b> ( $M_{eap}$ , $M_{eay}$ )                 | Allowable dynamic moment (pitch, yaw)              | N·m  | <b>Wmax</b> | Max. allowable load mass | kg   |
| <b>Mmax</b> ( $M_{pmax}$ , $M_{ymax}$ , $M_{rmax}$ ) | Max. allowable moment (pitch, yaw, roll)           | N·m  | $\alpha$    | Load factor              | —    |

**Fig. (2) Allowable Static Load:  $F$  (N)**

**Graph (1) Load Mass:  $W$** 

**Graph (3) Allowable Moment**  
Roll Moment:  $M_{ar}$ 

**Table (2) Max. Allowable Load Mass:  $W_{max}$  (kg)**

| Model        | Max. allowable load mass |
|--------------|--------------------------|
| <b>MXY6</b>  | 0.6                      |
| <b>MXY8</b>  | 1                        |
| <b>MXY12</b> | 2                        |

The above value represents the maximum value for each allowable load mass. For the maximum allowable load mass for each piston speed, please refer to Graph (1).

**Table (4) Allowable Static Load:  $F$  (N)**

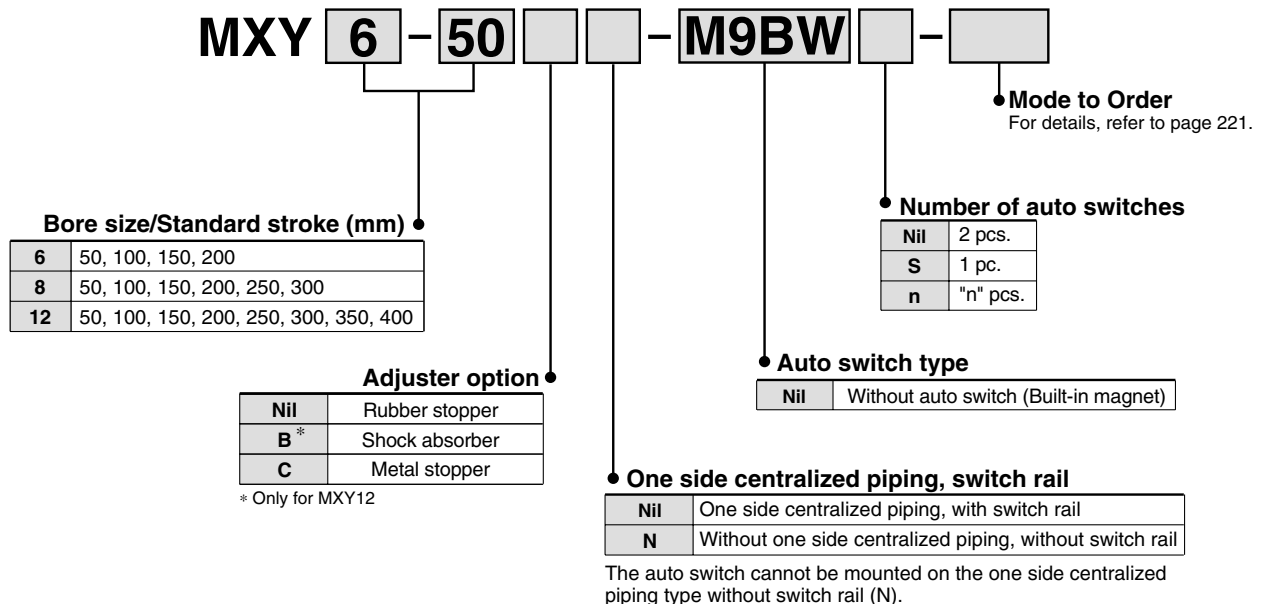
| Model        | Allowable static load |
|--------------|-----------------------|
| <b>MXY6</b>  | 580                   |
| <b>MXY8</b>  | 980                   |
| <b>MXY12</b> | 1600                  |

The above value represents the applicable load at the position where the moment does not work at the time of stop. Factors such as impact, etc. are not in consideration with the value.

# Air Slide Table Long Stroke Type Series MXY

ø6, ø8, ø12

## How to Order



## Applicable Auto Switch/Refer to pages 1719 to 1827 for further information on auto switches.

| Type               | Special function | Electrical entry | Indicator light | Wiring (Output)     | Load voltage |           | Auto switch model |               | Lead wire length (m) |           |       |       | Pre-wired connector | Applicable load |            |            |
|--------------------|------------------|------------------|-----------------|---------------------|--------------|-----------|-------------------|---------------|----------------------|-----------|-------|-------|---------------------|-----------------|------------|------------|
|                    |                  |                  |                 |                     | DC           |           | AC                | Perpendicular | In-line              | 0.5 (Nil) | 1 (M) | 3 (L) |                     |                 |            | 5 (Z)      |
| Solid state switch | —                | Grommet          | Yes             | 3-wire (NPN)        | 24 V         | 5 V, 12 V | —                 | M9NV          | M9N                  | ●         | ●     | ●     | ○                   | ○               | IC circuit | Relay PLC  |
|                    | 3-wire (PNP)     |                  |                 | M9PV                |              |           |                   | M9P           | ●                    | ●         | ●     | ○     | ○                   |                 |            |            |
|                    | 2-wire           |                  |                 | M9BV                |              |           |                   | M9B           | ●                    | ●         | ●     | ○     | ○                   | —               |            |            |
|                    | 3-wire (NPN)     |                  |                 | M9N WV              |              |           |                   | M9N W         | ●                    | ●         | ●     | ○     | ○                   | IC circuit      |            |            |
|                    | 3-wire (PNP)     |                  |                 | M9P WV              |              |           |                   | M9P W         | ●                    | ●         | ●     | ○     | ○                   |                 |            |            |
|                    | 2-wire           |                  |                 | M9B WV              |              |           |                   | M9B W         | ●                    | ●         | ●     | ○     | ○                   | —               |            |            |
| Reed switch        | —                | Grommet          | Yes             | 3-wire (NPN equiv.) | —            | 5 V       | —                 | A96V          | A96                  | ●         | —     | ●     | —                   | —               | IC circuit | —          |
|                    |                  |                  |                 | No                  | 2-wire       | 24 V      | 12 V              | 100 V         | A93V                 | A93       | ●     | —     | ●                   | —               | —          | —          |
|                    |                  |                  | 100 V or less   |                     |              |           |                   | A90V          | A90                  | ●         | —     | ●     | —                   | —               | —          | IC circuit |

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

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

\* Refer to page 225 for applicable auto switches in addition to those listed above.

\* For details on auto switches with a pre-wired connector, refer to pages 1784 and 1785.

\* Auto switches are shipped together (not assembled).

## Specifications



| Model                         |                | MXY6                                                                                                                                            | MXY8 | MXY12               |
|-------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------------------------------------|------|---------------------|
| Bore size (mm)                |                | 6                                                                                                                                               | 8    | 12                  |
| Port size                     |                | M5 x 0.8                                                                                                                                        |      |                     |
| Fluid                         |                | Air                                                                                                                                             |      |                     |
| Action                        |                | Double acting (type)                                                                                                                            |      |                     |
| Operating pressure            |                | 0.2 to 0.55 MPa                                                                                                                                 |      |                     |
| Proof pressure                |                | 0.83 MPa                                                                                                                                        |      |                     |
| Ambient and fluid temperature |                | − 10 to 60°C                                                                                                                                    |      |                     |
| Piston speed                  |                | 50 to 400 mm/S<br>Metal stopper: 50 to 200 mm/S                                                                                                 |      |                     |
| Cushion                       |                | Rubber bumper<br>Shock absorber (option, not available on MXY6, MXY8)<br>None (with metal stopper)                                              |      |                     |
| Lubrication                   |                | Non-lube (equipment), unlubricated                                                                                                              |      |                     |
| Stroke adjuster               |                | Standard                                                                                                                                        |      |                     |
| Stroke adjustment range       | Rubber stopper | One side 0 to 5 mm                                                                                                                              |      |                     |
|                               | Shock absorber | —                                                                                                                                               | —    | One side 0 to 15 mm |
|                               | Metal stopper  | One side 0 to 5 mm                                                                                                                              |      |                     |
| Auto switch                   |                | Reed auto switches (2-wire, 3-wire)<br>Solid state auto switches (2-wire, 3-wire)<br>2-color display solid state auto switches (2-wire, 3-wire) |      |                     |
| Stroke length tolerance       |                | +1<br>0 mm                                                                                                                                      |      |                     |

Note) The shock absorber service life is different from that of the MXY cylinder depending on operating conditions. Refer to the Specific Product Precautions for the replacement period.

## Theoretical Output

(N)

| Cylinder bore (mm) | Piston area (mm <sup>2</sup> ) | Operating pressure (MPa) |     |     |     |      |
|--------------------|--------------------------------|--------------------------|-----|-----|-----|------|
|                    |                                | 0.2                      | 0.3 | 0.4 | 0.5 | 0.55 |
| <b>6</b>           | 28                             | 6                        | 8   | 11  | 14  | 15   |
| <b>8</b>           | 50                             | 10                       | 15  | 20  | 25  | 28   |
| <b>12</b>          | 113                            | 23                       | 34  | 45  | 57  | 62   |



**Made to Order Specifications**  
(Refer to pages 1955 to 2021 for details.)

| Symbol | Specifications                                               |
|--------|--------------------------------------------------------------|
| -X7    | PTFE grease                                                  |
| -X9    | Grease for food                                              |
| -X11   | Adjusting bolt, long specification (Adjustment range: 15 mm) |
| -X12   | Adjusting bolt, long specification (Adjustment range: 25 mm) |
| -X39   | Fluororubber seal                                            |
| -X42   | Anti-corrosive guide unit                                    |
| -X45   | EPDM seal                                                    |

## Standard Stroke

(mm)

| Model        | Standard stroke                       |
|--------------|---------------------------------------|
| <b>MXY6</b>  | 50, 100, 150, 200                     |
| <b>MXY8</b>  | 50, 100, 150, 200, 250, 300           |
| <b>MXY12</b> | 50, 100, 150, 200, 250, 300, 350, 400 |

## Magnetic Holding Force

(N)

| Model        | Magnetic holding force |
|--------------|------------------------|
| <b>MXY6</b>  | 19                     |
| <b>MXY8</b>  | 34                     |
| <b>MXY12</b> | 77                     |

## Mass

(g)

| Model        | One side centralized piping, with switch rail |      |      |      |      |      |      |      | One side centralized piping, without switch rail |      |      |      |      |      |      |      |
|--------------|-----------------------------------------------|------|------|------|------|------|------|------|--------------------------------------------------|------|------|------|------|------|------|------|
|              | Stroke (mm)                                   |      |      |      |      |      |      |      | Stroke (mm)                                      |      |      |      |      |      |      |      |
|              | 50                                            | 100  | 150  | 200  | 250  | 300  | 350  | 400  | 50                                               | 100  | 150  | 200  | 250  | 300  | 350  | 400  |
| <b>MXY6</b>  | 270                                           | 330  | 390  | 450  | —    | —    | —    | —    | 230                                              | 280  | 330  | 380  | —    | —    | —    | —    |
| <b>MXY8</b>  | 420                                           | 510  | 600  | 690  | 780  | 870  | —    | —    | 410                                              | 480  | 550  | 620  | 690  | 760  | —    | —    |
| <b>MXY12</b> | 930                                           | 1060 | 1190 | 1320 | 1450 | 1580 | 1710 | 1840 | 910                                              | 1020 | 1130 | 1240 | 1350 | 1460 | 1570 | 1680 |

D-□

-X□

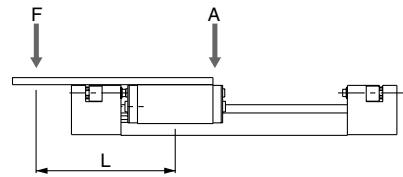
Individual  
-X□

**Table Deflection (Reference Values)**

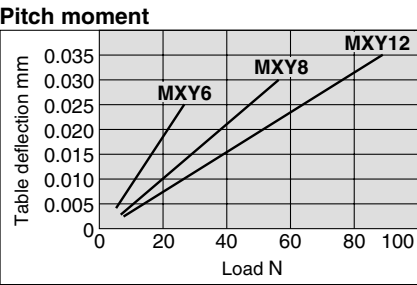
The graphs below show the table displacement when the static moment load is applied to the table. The graphs do not show the loadable mass. Refer to the Model Selection for the loadable mass.

**Table deflection due to pitch moment load**

Displacement at "A" when load is applied "F"

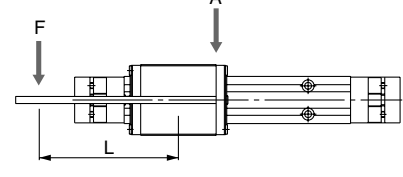


| L dimension                  | mm  |
|------------------------------|-----|
| <b>MX</b> <i>Y</i> <b>6</b>  | 100 |
| <b>MX</b> <i>Y</i> <b>8</b>  | 100 |
| <b>MX</b> <i>Y</i> <b>12</b> | 140 |

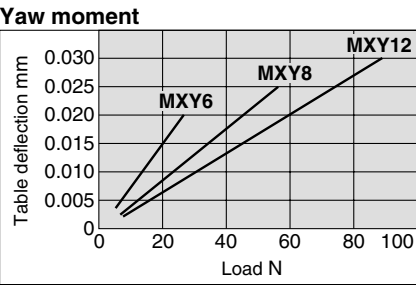


**Table deflection due to yaw moment load**

Displacement at "A" when load is applied "F"

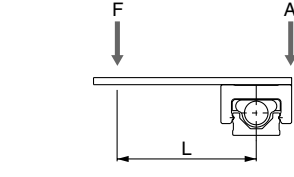


| L dimension                  | mm  |
|------------------------------|-----|
| <b>MX</b> <i>Y</i> <b>6</b>  | 100 |
| <b>MX</b> <i>Y</i> <b>8</b>  | 100 |
| <b>MX</b> <i>Y</i> <b>12</b> | 140 |

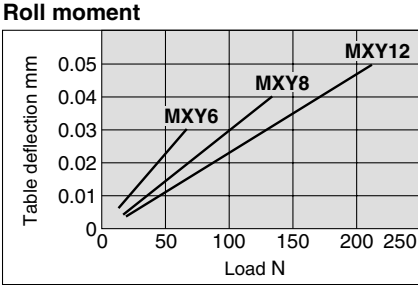


**Table deflection due to roll moment load**

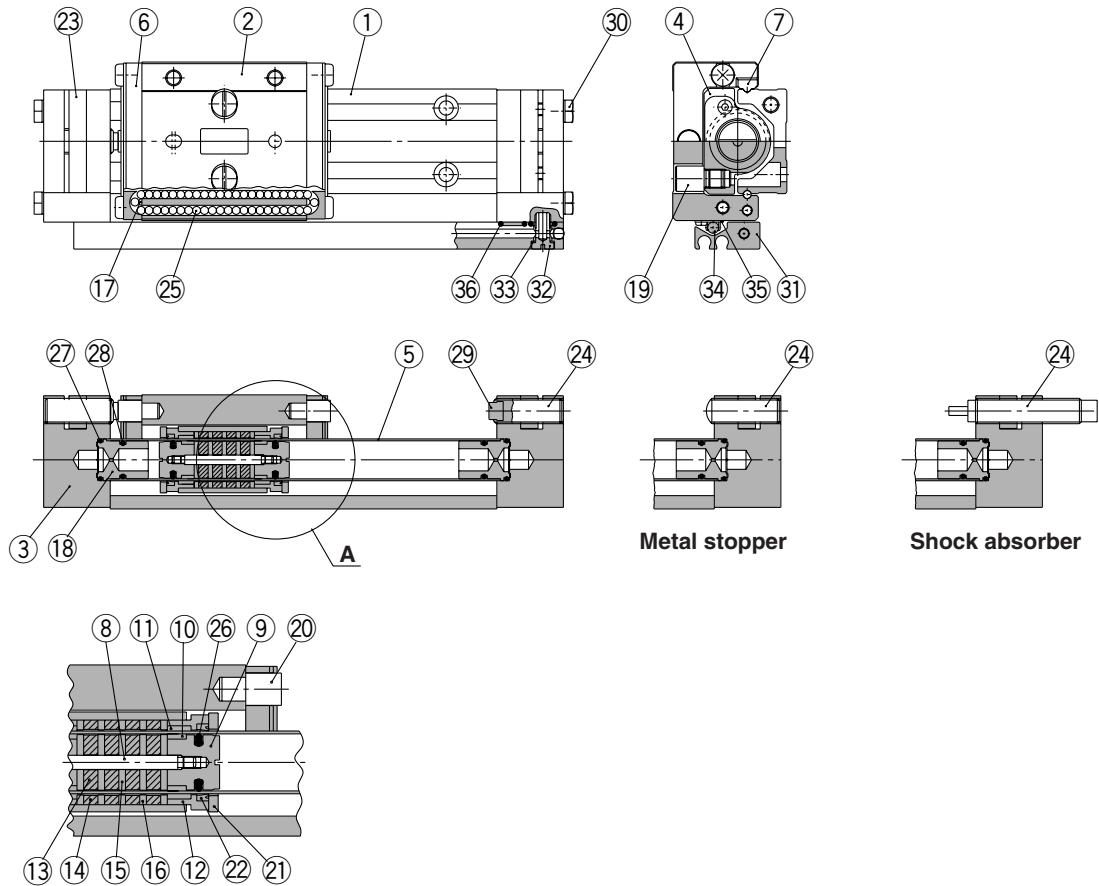
Displacement at "A" when load is applied "F"



| L dimension                  | mm  |
|------------------------------|-----|
| <b>MX</b> <i>Y</i> <b>6</b>  | 100 |
| <b>MX</b> <i>Y</i> <b>8</b>  | 100 |
| <b>MX</b> <i>Y</i> <b>12</b> | 140 |



## Construction



Detail drawing of part A

## Component Parts

| No. | Description  | Material             | Note                                      |
|-----|--------------|----------------------|-------------------------------------------|
| 1   | Rail         | Stainless steel      | Heat treatment, electroless nickel plated |
| 2   | Guide block  | Stainless steel      | Heat treatment, electroless nickel plated |
| 3   | End plate    | Aluminium alloy      | Hard anodized                             |
| 4   | Body         | Aluminium alloy      | Hard anodized                             |
| 5   | Tube         | Stainless steel      |                                           |
| 6   | Cover        | Resin                |                                           |
| 7   | Scraper      | Stainless steel, NBR |                                           |
| 8   | Shaft        | Stainless steel      |                                           |
| 9   | Piston       | Brass                | Electroless nickel plated                 |
| 10  | Wear ring A  | Resin                |                                           |
| 11  | Wear ring B  | Resin                |                                           |
| 12  | Spacer       | Brass                | Electroless nickel plated                 |
| 13  | Magnet A     | —                    | Nickel plated                             |
| 14  | Magnet B     | —                    | Nickel plated                             |
| 15  | Yoke A       | Steel                | Electroless nickel plated                 |
| 16  | Yoke B       | Steel                | Electroless nickel plated                 |
| 17  | Return guide | Resin                |                                           |
| 18  | End cap      | Resin                |                                           |
| 19  | Stud         | Stainless steel      | Heat treatment                            |

| No. | Description               | Material                         | Note                         |
|-----|---------------------------|----------------------------------|------------------------------|
| 20  | Stopper screw             | Stainless steel                  | Heat treatment               |
| 21  | External magnet fix plate | Stainless steel                  |                              |
| 22  | Cylinder scraper          | NBR                              |                              |
| 23  | Lock plate                | Stainless steel                  |                              |
| 24  | Adjustment bolt           | Steel                            | Nickel plated Rubber stopper |
|     | Shock absorber            | Stainless steel                  | Metal stopper                |
| 25  | Steel ball                | High carbon chrome bearing steel |                              |
| 26  | Piston seal               | NBR                              |                              |
| 27  | O-ring                    | NBR                              |                              |
| 28  | O-ring                    | NBR                              |                              |
| 29  | Adjustment bumper         | Polyurethane                     | Rubber stopper               |
| 30  | Plug                      | Brass                            | Electroless nickel plated    |
| 31  | Switch rail               | Aluminium alloy                  | Hard anodized                |
| 32  | Stud                      | Brass                            | Electroless nickel plated    |
| 33  | Gasket                    | NBR                              |                              |
| 34  | Magnet                    | —                                | Nickel plated                |
| 35  | Magnet holder             | Steel                            | Electroless nickel plated    |
| 36  | O-ring                    | NBR                              |                              |

## Replacement Parts

| Bore size (mm) | Kit no.  | Contents                           |
|----------------|----------|------------------------------------|
| 6              | MXY6-PS  | A set of two of ⑩, ⑪, ⑫ and ⑳ each |
| 8              | MXY8-PS  |                                    |
| 12             | MXY12-PS |                                    |

## Replacement Parts: Grease Pack

| Grease pack part no. |
|----------------------|
| GR-S-010 (10g)       |
| GR-S-020 (20g)       |

MXH

MXU

MXS

MXQ

MXF

MXW

MXJ

MXP

**MXY**

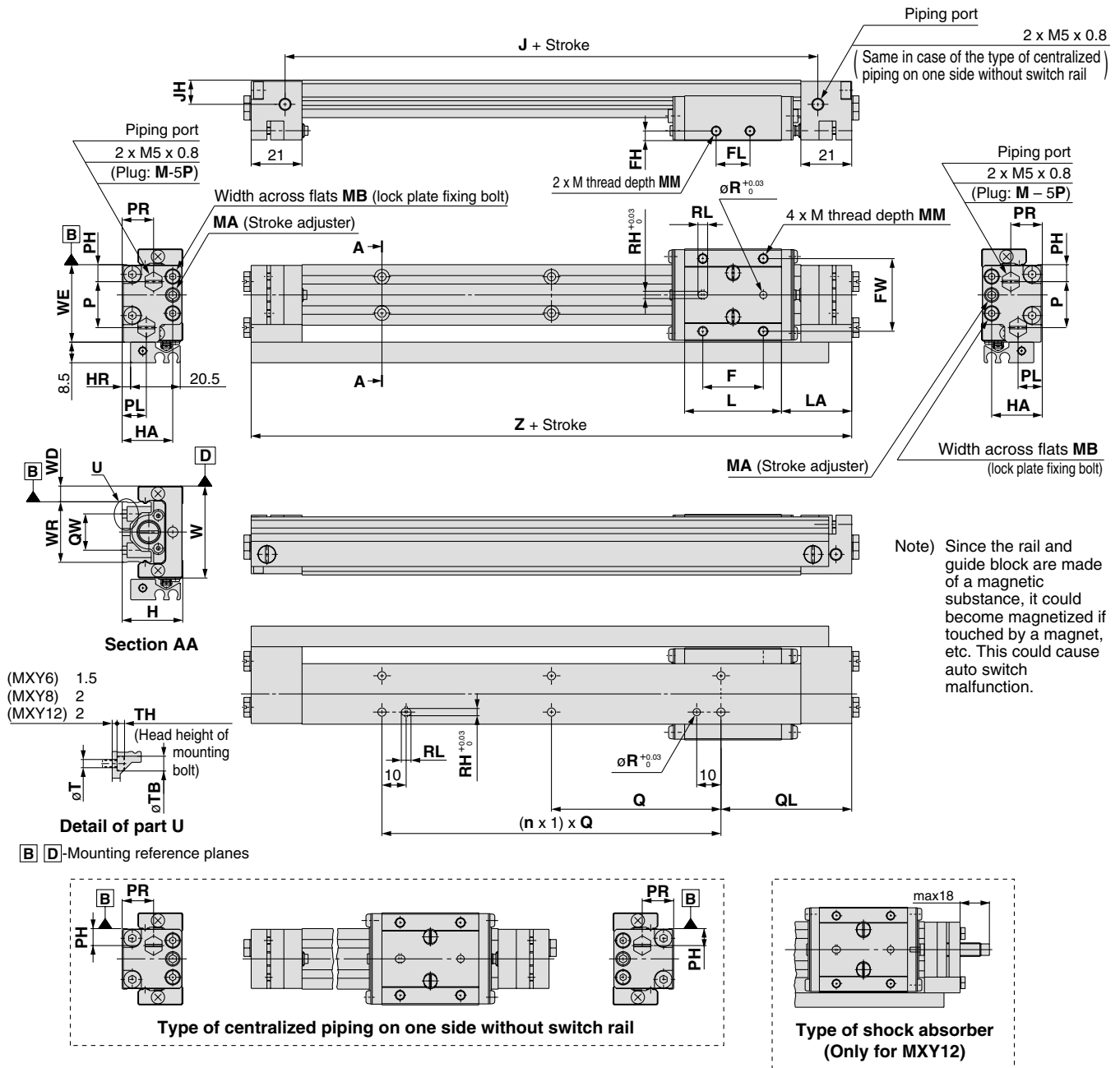
MTS

D-□

-X□

Individual  
-X□

## Dimensions



| Model        | F  | FH | FL | FW | H    | HA   | HR  | J  | JH  | L  | LA | M        | MM | MA                                   | MB  |
|--------------|----|----|----|----|------|------|-----|----|-----|----|----|----------|----|--------------------------------------|-----|
| <b>MXY6</b>  | 20 | 3  | 12 | 24 | 21.5 | 18   | 0.5 | 60 | 8.5 | 32 | 28 | M3 x 0.5 | 4  | M5 x 0.8<br>(Width across flats 2.5) | 2   |
| <b>MXY8</b>  | 25 | 4  | 14 | 30 | 25   | 20.9 | 3.5 | 70 | 10  | 40 | 29 | M4 x 0.7 | 5  | M6 x 1<br>(Width across flats 3)     | 2.5 |
| <b>MXY12</b> | 32 | 5  | 18 | 40 | 36   | 30.9 | 8.5 | 86 | 15  | 52 | 31 | M5 x 0.8 | 6  | M8 x 1<br>(Width across flats 4)     | 3   |

| Model        | P  | PH | PL | PR | Q  | QW | R          | RH         | RL | T   | TB  | TH  | W  | WD  | WE   | WR | Z   |
|--------------|----|----|----|----|----|----|------------|------------|----|-----|-----|-----|----|-----|------|----|-----|
| <b>MXY6</b>  | 13 | 7  | 9  | 11 | 60 | 12 | 3(depth 3) | 3(depth 3) | 4  | 2.9 | 5.1 | 2.5 | 30 | 5   | 25.5 | 20 | 88  |
| <b>MXY8</b>  | 19 | 7  | 10 | 13 | 70 | 15 | 3(depth 3) | 3(depth 3) | 4  | 3.4 | 6.1 | 3   | 38 | 6.5 | 32   | 25 | 98  |
| <b>MXY12</b> | 29 | 7  | 13 | 18 | 90 | 21 | 4(depth 4) | 4(depth 4) | 5  | 4.5 | 7.8 | 4   | 50 | 8.5 | 42   | 33 | 114 |

| Model        | n  |     |     |     |     |     |     |     | QL |     |     |     |     |     |     |     |
|--------------|----|-----|-----|-----|-----|-----|-----|-----|----|-----|-----|-----|-----|-----|-----|-----|
| Stroke       | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 |
| <b>MXY6</b>  | 2  | 3   | 3   | 4   | —   | —   | —   | —   | 39 | 34  | 59  | 54  | —   | —   | —   | —   |
| <b>MXY8</b>  | 2  | 2   | 3   | 4   | 5   | 5   | —   | —   | 39 | 64  | 54  | 44  | 34  | 59  | —   | —   |
| <b>MXY12</b> | 2  | 2   | 3   | 3   | 4   | 4   | 5   | 5   | 37 | 62  | 42  | 67  | 47  | 72  | 52  | 77  |

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

### Reed Auto Switch

D-A90(V), D-A93(V), D-A96(V) (mm)

| Model | Mounting | Auto switch operating range |
|-------|----------|-----------------------------|
| MXY6  | A        | 54                          |
|       | B        | 34                          |
| MXY8  | A        | 59                          |
|       | B        | 39                          |
| MXY12 | A        | 67                          |
|       | B        | 47                          |

### Solid State Auto Switch

D-M9B(V), D-M9N(V), D-M9P(V) (mm)

| Model | Mounting | Auto switch operating range |
|-------|----------|-----------------------------|
| MXY6  | A        | 50                          |
|       | B        | 38                          |
| MXY8  | A        | 55                          |
|       | B        | 43                          |
| MXY12 | A        | 63                          |
|       | B        | 51                          |

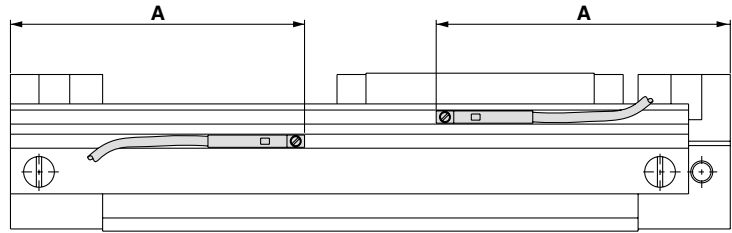
### 2-Color Display Solid State Auto Switch

D-M9BW(V), D-M9NW(V), D-M9PW (mm)

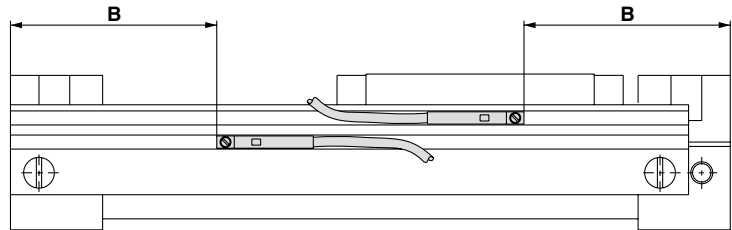
| Model | Mounting | Auto switch operating range |
|-------|----------|-----------------------------|
| MXY6  | A        | 50                          |
|       | B        | 38                          |
| MXY8  | A        | 55                          |
|       | B        | 43                          |
| MXY12 | A        | 63                          |
|       | B        | 51                          |

\* Adjust the auto switch after confirming the operating conditions in the actual setting.

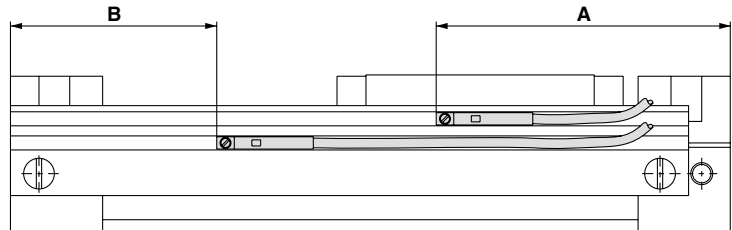
#### Lead wire entries outside



#### Lead wire entries inside



#### Lead wire entries parallel



MXH

MXU

MXS

MXQ

MXF

MXW

MXJ

MXP

**MXY**

MTS

## Auto Switch Mounting

### ⚠ Caution

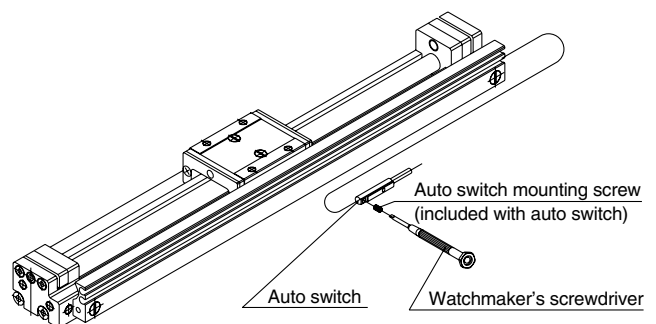
#### Auto Switch Mounting Tool

- When tightening the auto switch mounting screw (included with auto switch), use a watchmaker's screwdriver with a handle diameter of about 5 to 6 mm.

#### Tightening Torque

Tightening Torque of Auto Switch Mounting Screw (N·m)

| Auto switch model     | Tightening torque |
|-----------------------|-------------------|
| D-A9□(V)              | 0.10 to 0.20      |
| D-M9□(V)<br>D-M9□W(V) | 0.05 to 0.15      |



Other than the applicable auto switches listed in "How to Order", the following auto switches can be mounted.

\* Normally closed (NC = b contact) solid state auto switches (D-F9G/F9H types) and a solid state auto switch (D-F8) are also available. Refer to pages 1745 and 1746 for details.

D-□

-X□

Individual

-X□



# Series MXY Specific Product Precautions 1

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

## Selection

### ⚠ Caution

1. Use a load within a range that does not exceed the operating limit.

Select models based on the maximum load weight and the allowable moment. Refer to model selection on pages 217 to 219 for detailed methods. If operated beyond the operating limit, the eccentric load applied to the guide section will be excessive. This can have an adverse effect on service life due to vibration in the guide unit and loss of accuracy, etc.

2. When performing intermediate stops with an external stopper, employ measures to prevent lurching.

If lurching occurs damage can result. When making a stop with an external stopper to be followed by continued forward movement, first supply pressure to momentarily reverse the table, then retract the intermediate stopper, and finally apply pressure to the opposite port to operate the table again.

3. In vertical operation, it is not possible to stop the piston at an intermediate position using a closed center solenoid valve, etc.

In vertical operation, it is not possible to stop the piston at an intermediate position using a closed center solenoid valve because it can cause dislocation of the magnet coupling. The only available option in such cases is use of an external stopper for an intermediate stop.

4. When stopping the piston using a closed center solenoid valve in horizontal operation, do not allow the kinetic energy exceed the allowable kinetic energy.

When stopping the piston using a closed center solenoid valve in horizontal operation, do not allow the kinetic energy of the load to exceed the values shown below. If the allowable value is exceeded, it can cause dislocation of the magnet coupling.

| Model | Allowable kinetic energy for intermediate stop (J) |
|-------|----------------------------------------------------|
| MXY6  | 0.007                                              |
| MXY8  | 0.014                                              |
| MXY12 | 0.047                                              |

5. Do not operate in such a way that excessive external forces or impact forces are applied to the product.

This can cause damage.

6. Be careful in an application which requires precision in the middle of a stroke.

If straightness is required in the middle of a stroke, fix the entire rail mounting surface on the base.

## Mounting

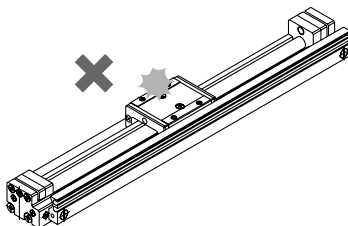
### ⚠ Caution

1. Do not scratch or gouge the mounting surfaces of the body, table and end plate.

This can cause loss of parallelism in the mounting surfaces, vibration in the guide unit and increased operating resistance, etc.

2. Do not scratch or gouge the transfer surfaces of the rail and guide.

This can cause vibration and increased operating resistance, etc.



3. Do not apply strong impacts or excessive moment when mounting workpieces.

Application of external forces greater than the allowable moment can cause vibration in the guide unit and increased operating resistance, etc.

4. Ensure that the parallelism of the mounting surface is 0.02 mm or less.

Poor parallelism of the workpiece mounted on the body, the base, and other parts can cause vibration of the guide unit and increased operating resistance, etc.

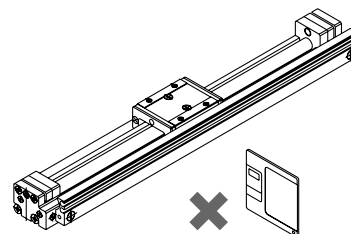
## Mounting

### ⚠ Caution

5. For connection to a load that has an external support or guide mechanism, select an appropriate connection method and perform careful alignment.

6. Keep away objects which can be influenced by magnets.

A magnet is built inside the body or, in case of a type with auto switch, on the side of the guide lock. Please keep away magnetic disks, cards or tapes. Otherwise, the data can be deleted.



7. Do not attach magnets to the rail and guide block.

Since the body and table (guide block) are made of a magnetic substance, it could become magnetized if touched by a magnet, etc. This could cause auto switch malfunction.



# Series MXY

## Specific Product Precautions 2

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

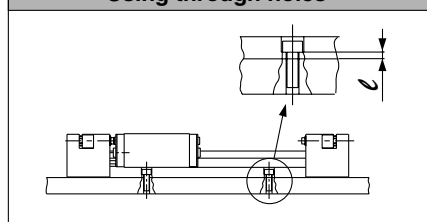
### Mounting

#### ⚠ Caution

8. When mounting the body, use screws of an appropriate length and do not exceed the maximum tightening torque.

Tightening with a torque above the limit could cause malfunction. Whereas tightening insufficiently could result in misalignment or dropping.

#### Using through holes



| Model | Bolt | Max. tightening torque N·m | Rail thickness $\ell$ (mm) |
|-------|------|----------------------------|----------------------------|
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
| MXS   |      |                            |                            |
| MXQ   |      |                            |                            |
| MXF   |      |                            |                            |
| MXW   |      |                            |                            |
| MXJ   |      |                            |                            |
| MXP   |      |                            |                            |
| MXY   |      |                            |                            |
| MTS   |      |                            |                            |
| MXH   |      |                            |                            |
| MXU   |      |                            |                            |
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# Series MXY Specific Product Precautions 3

Be sure to read before handling.

Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

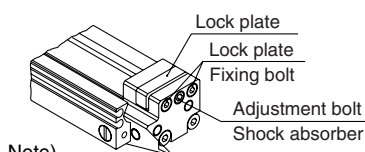
## Stroke Adjustment

### ⚠ Caution

#### 1. Adjustment method

Loosen the 2 lock plate fixing bolts (or shock absorbers) and rotate the adjustment bolt (or shock absorber) to adjust the stroke. Then tighten the lock plate fixing bolts evenly to secure the adjustment bolt (or shock absorber). Be careful not to tighten the lock plate adjusting bolts too firmly.

| Model  | Tightening torque of lock plate fixing bolt |
|--------|---------------------------------------------|
| MX Y6  | 0.1 N·m                                     |
| MX Y8  | 0.2 N·m                                     |
| MX Y12 | 0.4 N·m                                     |



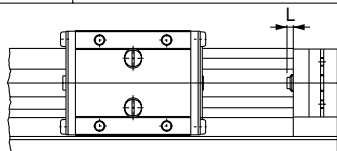
Note)

The lock plate may bend slightly due to tightening of the lock plate fixing bolts but it will not affect the adjustment bolt or shock absorber that has been secured.

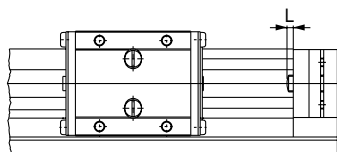
#### 2. Adjustment range

Adjust the stroke within the range where the stopper or shock absorber works effectively. As a guideline, keep the stroke within the range where the L dimension in the figure below is larger than the value in the table. If the stroke exceeds this range, the guide lock will bump into the end plate, affecting the life time.

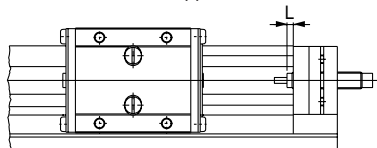
| Model  | L      |
|--------|--------|
| MX Y6  | 2 mm   |
| MX Y8  | 2 mm   |
| MX Y12 | 2.5 mm |



Rubber stopper screw



Metal stopper screw

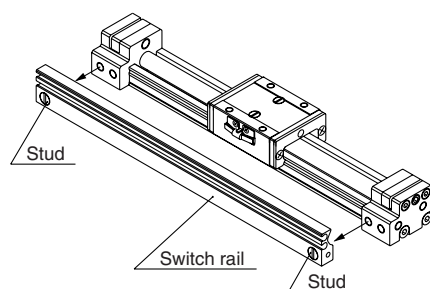


Shock absorber

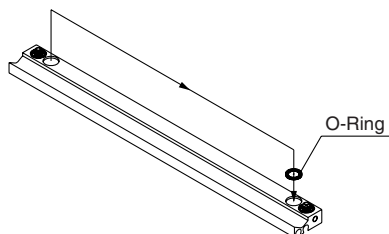
## How to Change Concentrated Piping

The piping is concentrated on the left side at the time of shipment. To switch to the right side piping, follow the steps below.

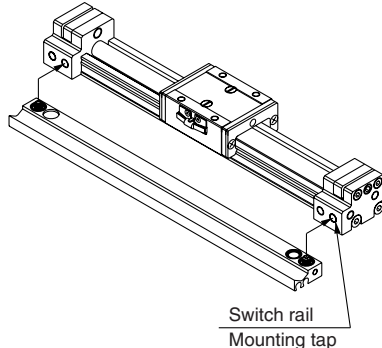
#### 1. Loosen the 2 studs to remove the switch rail.



#### 2. Change the position of the O-ring shown in the figure.

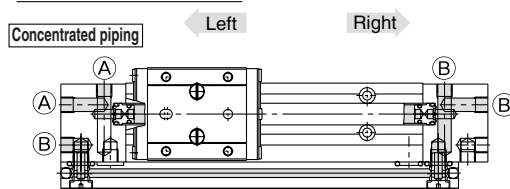


#### 3. Fasten the stud onto the tap at the right side of the end plate and secure the switch rail.



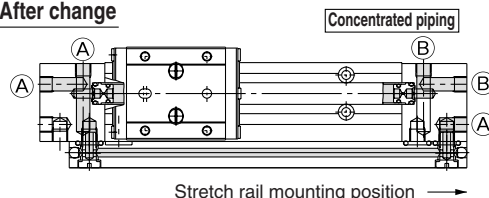
\* Stud fastening: After a temporary tightening, tighten an additional 1/4 turn.

#### At the time of shipment



← Stretch rail mounting position

#### After change



| Port | Actuation Direction |
|------|---------------------|
| (A)  | Right               |
| (B)  | Left                |

## Disassembly and Maintenance

### ⚠ Warning

Be careful the magnets have a large absorption force.

Please pay enough attention when the external mover and piston mover are removed from the cylinder tube for maintenance, etc. Because the magnet mounted on each mover has a large adsorption force. Please refer to the disassembly instructions when disassembling the product.

### ⚠ Caution

#### 1. Be careful if the external mover is removed in the normal condition, it will directly absorb the piston mover.

When removing the external mover or piston mover, first force the magnet coupling to go off the position to disable the holding power and then remove them separately. If they are removed in the normal condition, the magnets will directly absorb each other and will not go apart.

#### 2. Never disassemble the magnet constructions

(piston mover and external mover).

If can cause a drop of the holding power or malfunction.