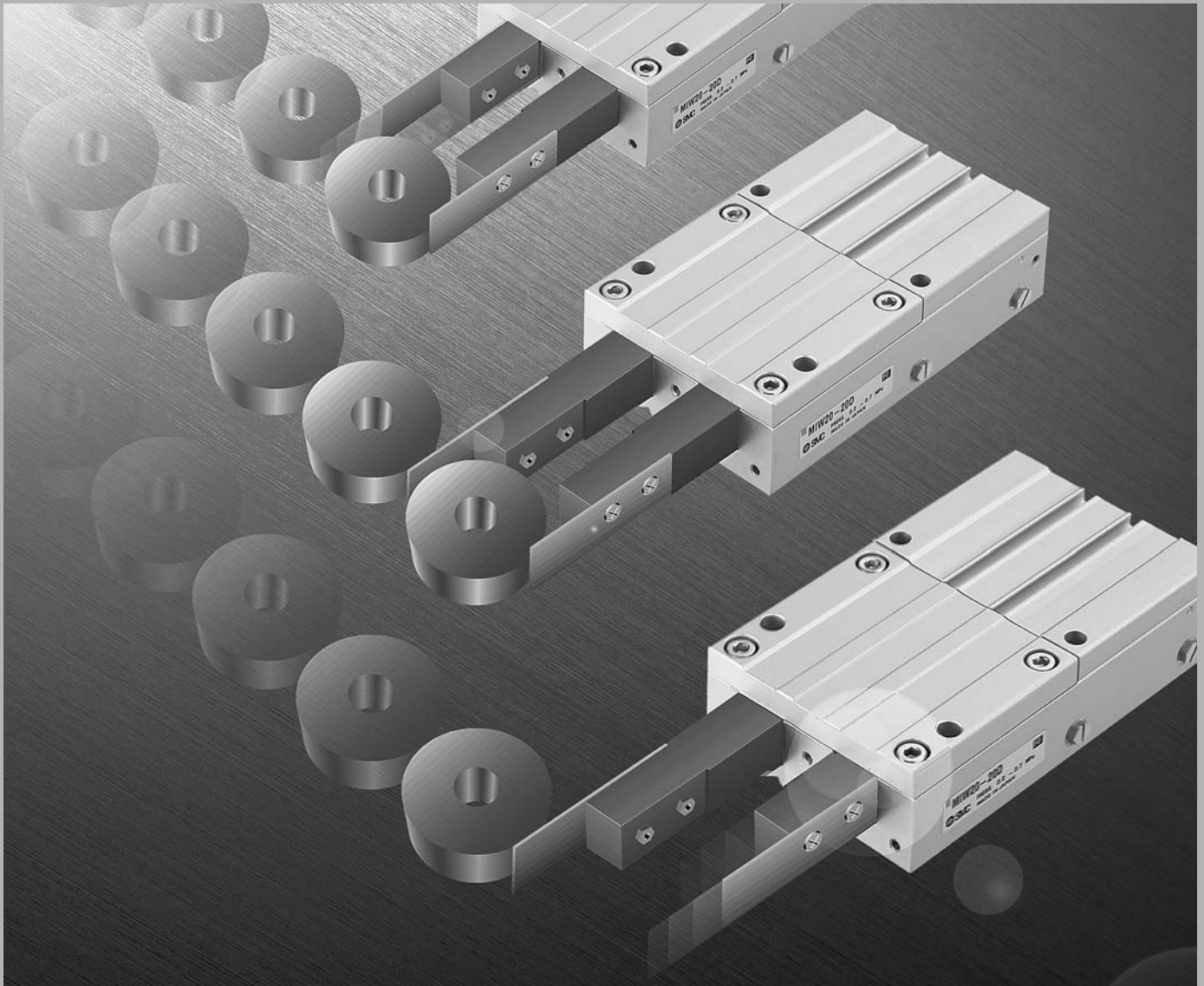


# Escapements

## Series MIW/MIS

ø8, ø12, ø20, ø25, ø32

Ideal for separating and feeding individual parts from vibratory feeders, magazines, and hoppers.



RSQ

RSG

RS□

MI□

### Series variations

| Series | Bore size (mm) | Stroke (mm) |    |    |    |    |    |    |    | Finger option | Stroke adjuster | Scraper |
|--------|----------------|-------------|----|----|----|----|----|----|----|---------------|-----------------|---------|
|        |                | 8           | 10 | 12 | 20 | 25 | 30 | 32 | 50 |               |                 |         |
| MIW    | 8              | ●           |    |    |    |    |    |    |    | ●             | ●               | ●       |
|        | 12             |             |    | ●  |    |    |    |    |    | ●             | ●               | ●       |
|        | 20             |             |    |    | ●  |    |    |    |    | ●             | ●               | ●       |
|        | 25             |             |    |    |    | ●  |    |    |    | ●             | ●               | ●       |
|        | 32             |             |    |    |    |    |    | ●  |    | ●             | ●               | ●       |
| MIS    | 8              |             | ●  |    |    |    |    |    |    | ●             | ●               | ●       |
|        | 12             |             | ●  | ●  |    |    |    |    |    | ●             | ●               | ●       |
|        | 20             |             | ●  | ●  | ●  |    |    |    |    | ●             | ●               | ●       |
|        | 25             |             | ●  | ●  | ●  | ●  |    |    |    | ●             | ●               | ●       |
|        | 32             |             | ●  | ●  | ●  | ●  | ●  |    |    | ●             | ●               | ●       |

D-□

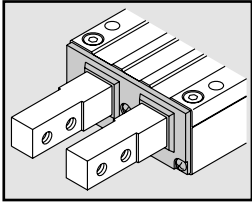
-X□

Individual  
-X□

# Ideal for separating and from vibratory feeders,

## Scraper (optional)

Optional scraper prevents entry of dust to protect internal components.



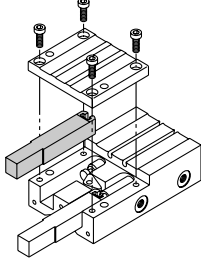
## Air passage

## Auto switch capable

## Floating mechanism

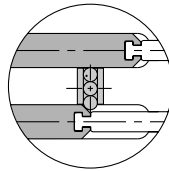
Improves life of the escapement by preventing eccentric loads causing damage to the piston and the seals.

As this mechanism separates the fingers from the piston, it is possible to replace the fingers with ease when required.



## Interlocking

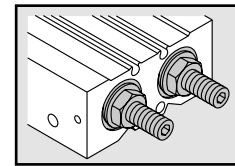
Provides reliable performance of the escapement by interlocking the two piston rods with a cam mechanism and control of air passage to the pistons.



For  $\varnothing 25$  and  $\varnothing 32$ , lock mechanism for heavier load is available.

## Stroke adjuster (optional)

Optional stroke adjuster for precise adjustment of the retracted position of each piston rod.

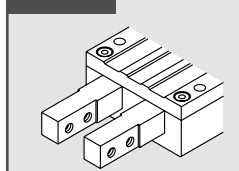


## Three variations of fingers

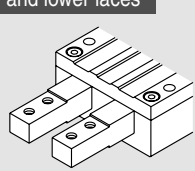
Flexibility in mounting the finger options.

### Finger options

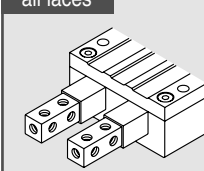
#### Basic type



#### Tapped on upper and lower faces

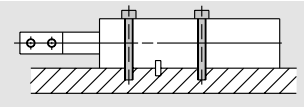


#### Tapped on all faces

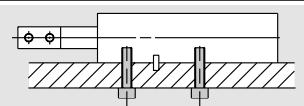


## Mounting is possible from 2 directions.

Using through holes from top face



Using tapped holes in the body from bottom face

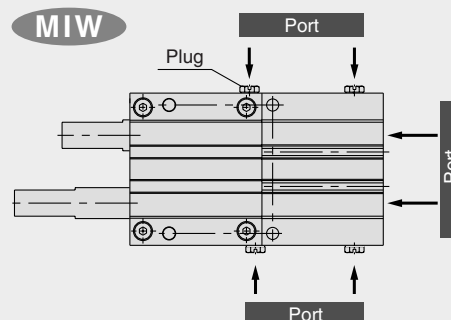


\* Positioning pin holes allow for easy mounting.

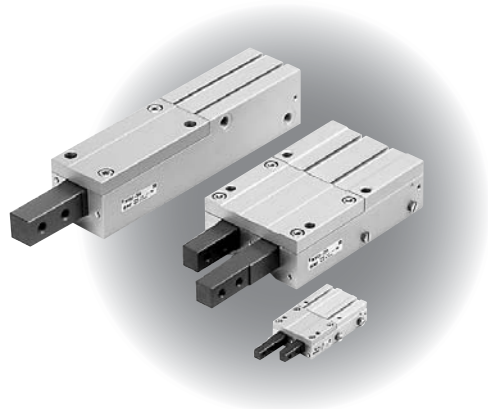
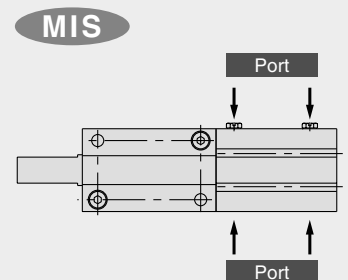
## Piping from three directions are possible (Two directions for MIS)

Port position can be adjusted along with setting conditions by changing plug position.

MIW

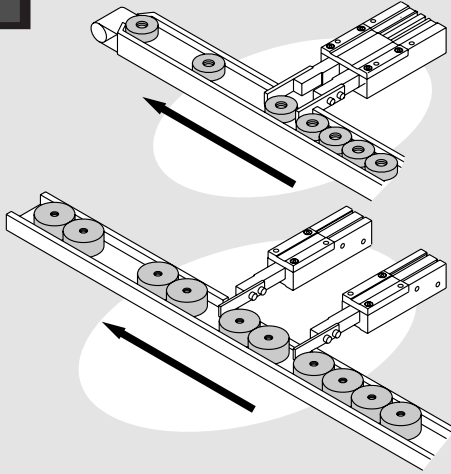


MIS



# feeding individual parts magazines, and hoppers.

## Application examples



### MIW Double finger type

Single valve operation easily separates and feed each work piece.



### MIS Single finger type

Operating speed and mounting position can be set according to the size of work piece and its operating condition.



RSQ

RSG

RS□

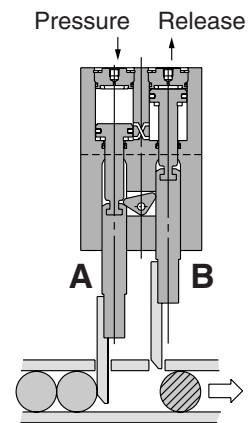
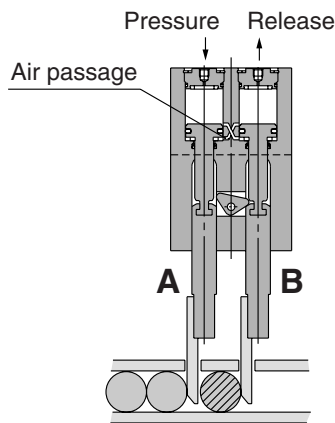
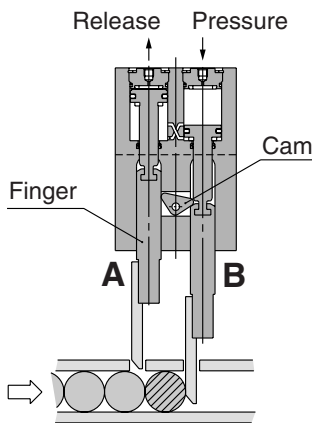
MI□

## Working principle

The cam locks Finger B.

When Finger A is extended to reach the stroke end, air is supplied to retract Finger B.

Extension of Finger A rotates the cam to unlock Finger B and lock finger A to allow retraction of Finger B.



Insertion

Separation

Release

D-□

-X□

Individual  
-X□

# Series MIW/MIS Model Selection 1

## Model Selection

### Selection procedure

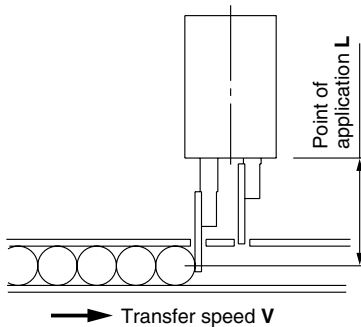
Procedure 1 Condition confirmation

Procedure 2 Confirmation of impact by work piece

Procedure 3 Confirmation of allowable lateral load

#### Procedure 1 Confirmation of conditions

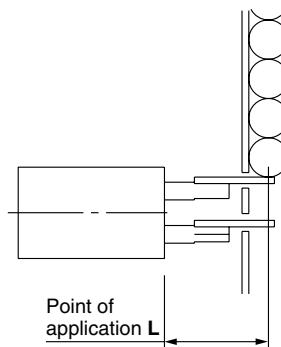
- The work piece moves horizontally on the conveyor.



##### Operation conditions

Operating pressure  $P$  (MPa)  
 Work piece mass  $m$  (Kg)  
 Work piece quantity  $x$  (Qty.)  
 Point of application  $L$  (mm)  
 Work piece transfer speed  
 $V$  (m/min)  
 Coefficient of friction  
 between the work piece  
 and conveyor  $\mu$

- When the work piece drops vertically from a shooter, etc.



##### Operation conditions

Operating pressure  $P$  (MPa)  
 Work piece mass  $m$  (Kg)  
 Work piece quantity  $x$  (Qty.)  
 Point of application  $L$  (mm)  
 Distance of work piece drop  
 $H$  (mm)  
 Gravitational acceleration  $g$  (m/s<sup>2</sup>)

#### Procedure 2 Confirmation of impact

From the graph of operating range, obtain the point of intersection of the total mass of the work piece  $x \cdot m$  (kg) indicated by the axis of ordinates and the transfer speed  $V$  (m/min) indicated by the axis of abscissas. Select a model so that the intersection will fall below the point of application  $L$  indicated by a line.

##### 1. Calculation of work piece collision speed

The collision speed  $V$  is calculated from the distance of work piece fall  $H$ .

$$\text{Work piece collision speed } V = \sqrt{2gH/1000} \times 60 \text{ (m/min)}$$

- From the graph of operating range, obtain the intersection of the total mass of the work piece  $x \cdot m$  (kg) indicated by the axis of ordinates and the collision speed  $V$  (m/min) obtained by calculation. Select a model so that the intersection will fall below the point of application  $L$  indicated by a line.

#### Procedure 3 Confirmation of allowable lateral load

##### 1. Calculation of applied lateral load $F$

The lateral load  $F$  equals the coefficient between the work piece and the conveyor. Thus, from the total amount of the work piece and coefficient of friction,

$$F = \mu \cdot x \cdot m \cdot g \text{ (N)}$$

##### 1. Calculation of applied lateral load

The lateral load  $F$  equals the total load of the work piece.

$$\text{Thus, } F = x \cdot m \cdot g \text{ (N)}$$

- From the graph of allowable lateral load, obtain the allowable lateral load  $F_{\max}$  from the intersection of the operating pressure and the point of application  $L$  indicated by the axis of abscissas. Select a model so that the value will be larger than the lateral load  $F$  applied in real operation.

$$\text{Lateral load: } F \leq \text{Allowable lateral load: } F_{\max}$$

**Model Selection**

**Operating range**

| <b>Procedure 1 Confirmation of conditions</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|-----------------|-------------------|---------------------|---------------|----------------------|------------------|---------------------------|---------------------|-------------------------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|-----------------|--------------------|---------------------|--------------|----------------------|------------------|-----------------------------|------------------|--------------------------|--------------------------------|
| <p>● The work piece moves horizontally on the conveyor.</p> <p><b>Operating conditions</b></p> <table border="0"> <tr> <td>Operating pressure</td> <td><b>P = 0.4 MPa</b></td> </tr> <tr> <td>Work piece mass</td> <td><b>m = 0.1 kg</b></td> </tr> <tr> <td>Work piece quantity</td> <td><b>x = 10</b></td> </tr> <tr> <td>Point of application</td> <td><b>L = 50 mm</b></td> </tr> <tr> <td>Work piece transfer speed</td> <td><b>V = 12 m/min</b></td> </tr> <tr> <td colspan="2">Coefficient of friction between the work piece and conveyor <math>\mu = 0.2</math></td> </tr> </table> | Operating pressure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>P = 0.4 MPa</b> | Work piece mass | <b>m = 0.1 kg</b> | Work piece quantity | <b>x = 10</b> | Point of application | <b>L = 50 mm</b> | Work piece transfer speed | <b>V = 12 m/min</b> | Coefficient of friction between the work piece and conveyor $\mu = 0.2$ |  | <p>● When the work piece drops vertically from a shooter, etc.</p> <p><b>Operating conditions</b></p> <table border="0"> <tr> <td>Operating pressure</td> <td><b>P = 0.4 MPa</b></td> </tr> <tr> <td>Work piece mass</td> <td><b>m = 0.05 kg</b></td> </tr> <tr> <td>Work piece quantity</td> <td><b>x = 5</b></td> </tr> <tr> <td>Point of application</td> <td><b>L = 60 mm</b></td> </tr> <tr> <td>Distance of work piece drop</td> <td><b>H = 15 mm</b></td> </tr> <tr> <td>Gravitation acceleration</td> <td><b>g = 9.8 m/s<sup>2</sup></b></td> </tr> </table> | Operating pressure | <b>P = 0.4 MPa</b> | Work piece mass | <b>m = 0.05 kg</b> | Work piece quantity | <b>x = 5</b> | Point of application | <b>L = 60 mm</b> | Distance of work piece drop | <b>H = 15 mm</b> | Gravitation acceleration | <b>g = 9.8 m/s<sup>2</sup></b> |
| Operating pressure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>P = 0.4 MPa</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Work piece mass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>m = 0.1 kg</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Work piece quantity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>x = 10</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Point of application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>L = 50 mm</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Work piece transfer speed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>V = 12 m/min</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Coefficient of friction between the work piece and conveyor $\mu = 0.2$                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Operating pressure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>P = 0.4 MPa</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Work piece mass                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>m = 0.05 kg</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Work piece quantity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>x = 5</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Point of application                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>L = 60 mm</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Distance of work piece drop                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>H = 15 mm</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| Gravitation acceleration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>g = 9.8 m/s<sup>2</sup></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| <b>Procedure 2 Confirmation of impact</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| <p>• Obtain the total amount of the work piece.<br/>Total mass <math>m = 10 \times 0.1</math> (kg) = 1 (kg)</p> <p>• Obtain the intersection of the transfer speed <math>V</math> and the total weight of work piece <math>m</math>. Confirm that the value is within the operating range of the point of application <math>L = 50</math> mm <math>\phi 12</math></p>                                                                                                                                                                                                                        | <p>• Obtain the total amount of the work piece.<br/>Total mass <math>m = 5 \times 0.05</math> (kg) = 0.25 (kg)</p> <p>• Obtain the collision speed of the work piece <math>V</math>.</p> $V = \sqrt{2gH/1000} \times 60$ $= \sqrt{2 \times 9.8 \times 15/1000} \times 60$ $= 32.5 \text{ (m/min)}$ <p>• Obtain the intersection of the collision speed <math>V</math> and the total mass of the work piece <math>m</math>. Confirm that the value is within the operating range of the point of application <math>L = 60</math> mm.</p> |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| <b>Procedure 3 Confirmation of allowable lateral load</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| <p>1. Calculation of applied lateral load <math>F</math></p> $F = \mu \cdot N \cdot m \cdot g \text{ (N)}$ $= 0.2 \times 10 \times 0.1 \times 9.8$ $= 2.1 \text{ (N)}$ <p>2. Confirmation of allowable lateral load<br/>From the graph, the allowable lateral load at <math>L = 50</math> mm and <math>P = 0.4</math> MPa is 18 N. Because <math>2.1 \text{ N} &lt; 18 \text{ N}</math>, it is applicable.</p>                                                                                                                                                                               | <p>1. Calculation of applied lateral load<br/>The lateral load <math>F</math> equals the total load of the work piece. Thus,</p> $F = 5 \times 0.05 \times 9.8$ $= 2.5 \text{ (N)}$ <p>2. Confirmation of allowable lateral load<br/>In the same way, the lateral load at <math>L = 50</math> mm and <math>P = 0.4</math> MPa is 48 N from the graph. Because <math>2.5 \text{ N} &lt; 48 \text{ N}</math>, it is applicable.</p>                                                                                                       |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |
| <p>Therefore select MIW (MIS) 12.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Therefore select MIW (MIS) 20.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                    |                 |                   |                     |               |                      |                  |                           |                     |                                                                         |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |                    |                 |                    |                     |              |                      |                  |                             |                  |                          |                                |

RSQ

RSG

RS□

MI□

D-□

-X□

Individual  
-X□

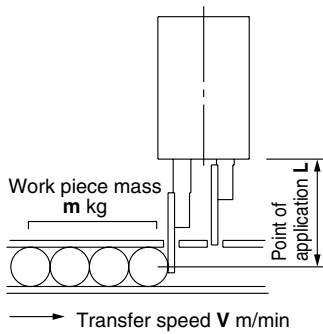
# Series MIW/MIS

## Model Selection 2

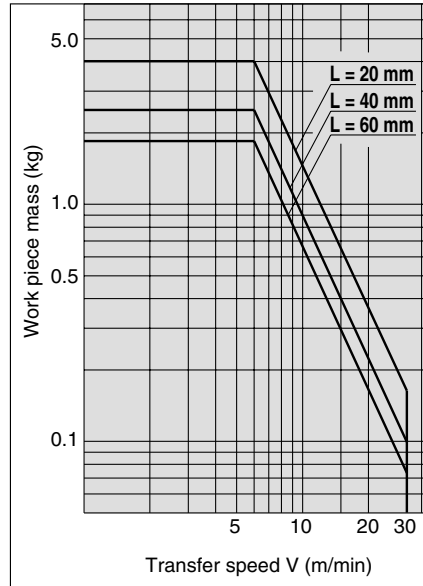
### Model Selection

#### Operating range

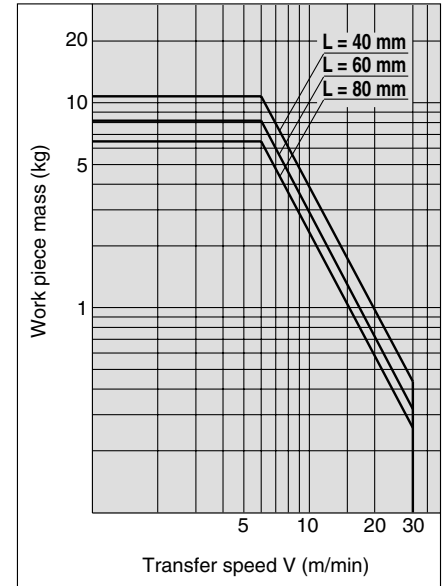
The graph at right shows conditions of the work piece to be stopped; that is, the mass, transfer speed and the operating range of the point of application L.



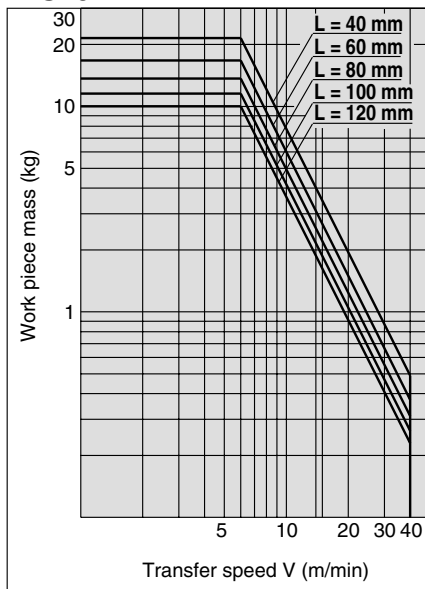
**MIW8  
MIS8**



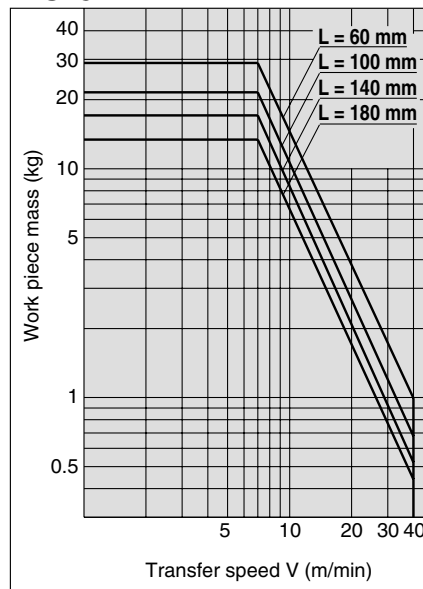
**MIW12  
MIS12**



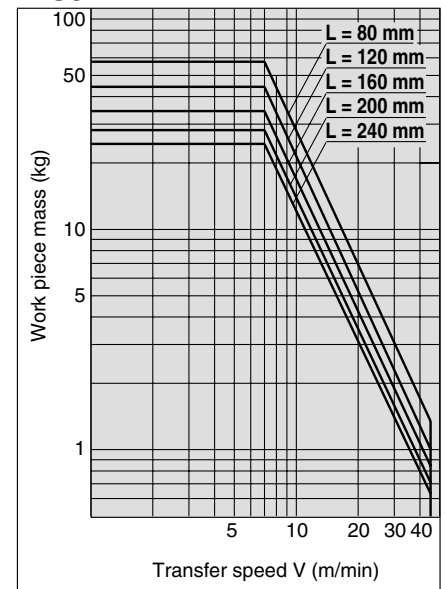
**MIW20  
MIS20**



**MIW25  
MIS25**

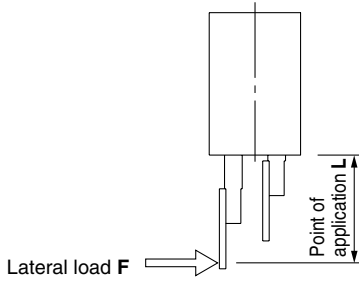


**MIW32  
MIS32**

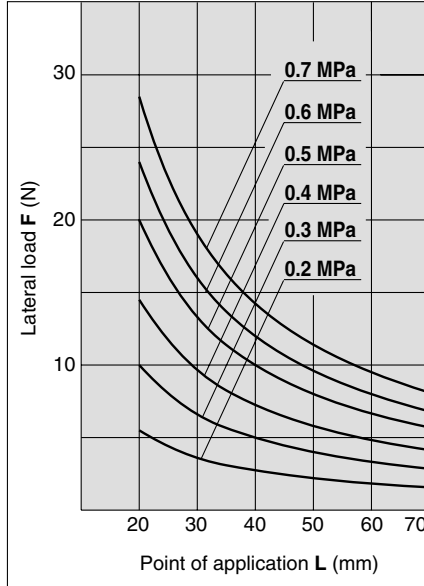


**Model Selection**

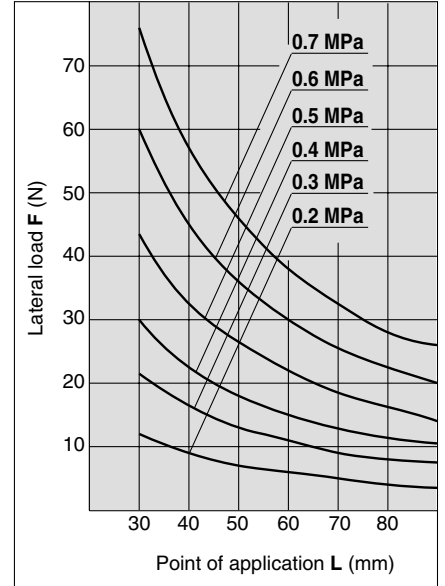
**Allowable lateral load**



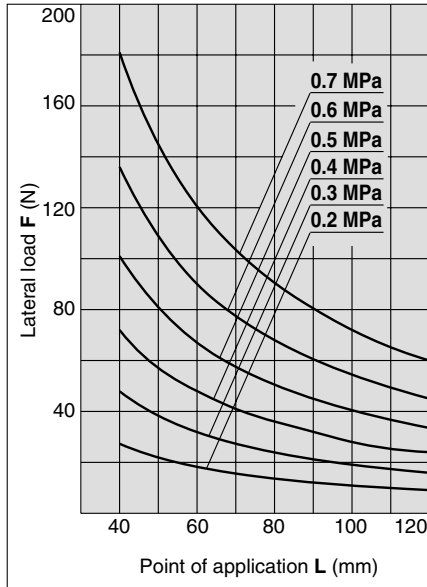
**MIW8  
MIS8**



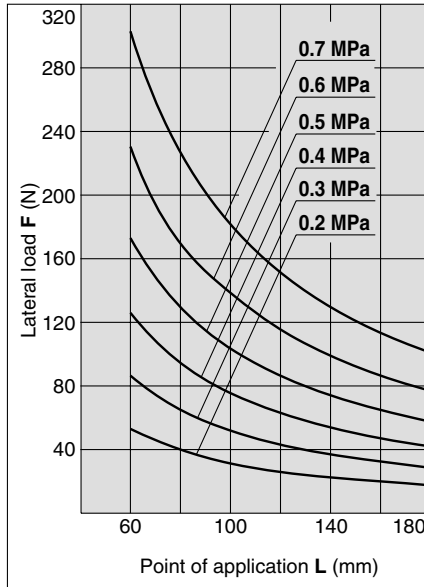
**MIW12  
MIS12**



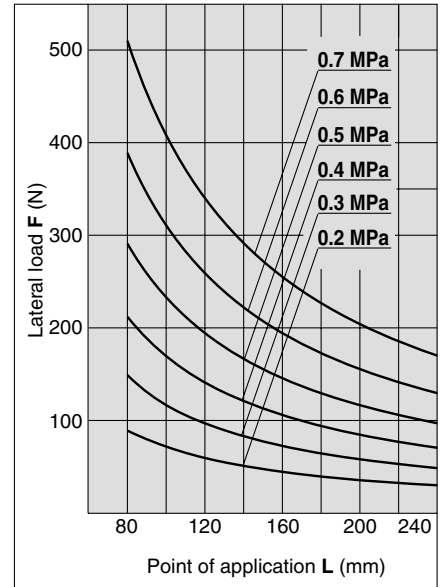
**MIW20  
MIS20**



**MIW25  
MIS25**



**MIW32  
MIS32**



RSQ

RSG

RS

MI

D-

-X

Individual  
-X



# Escapements

# Series MIW/MIS

ø8, ø12, ø20, ø25, ø32

## How to Order

**Double finger type** MIW 12 [ ] - 12 D 1 A S - M9BW [ ] - [ ]

**Single finger type** MIS 32 [ ] - 50 D 1 A S - M9BW [ ] - [ ]

**Cylinder bore**

|    |       |
|----|-------|
| 8  | 8 mm  |
| 12 | 12 mm |
| 20 | 20 mm |
| 25 | 25 mm |
| 32 | 32 mm |

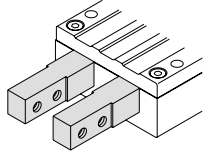
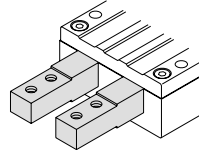
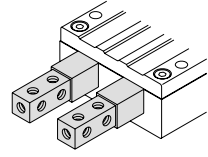
**Port thread type**

| Symbol | Type     | Bore size           |
|--------|----------|---------------------|
| Nil    | M thread | ø8, ø12<br>ø20, ø25 |
|        | Rc       |                     |
| TN     | NPT      | ø32                 |
| TF     | G        |                     |

**Stroke**

\* Refer to the next page for standard stroke table.

**Finger options**

|                                                                                                                              |                                                                                                                                  |                                                                                                                                                         |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nil:</b> Basic type (Standard type)<br> | <b>1:</b> Tapped on upper and lower faces<br> | <b>2:</b> Tapped on all faces (5 surfaces including end surface)<br> |
|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|

**Stroke adjuster**

|     |     |
|-----|-----|
| Nil | No  |
| A   | Yes |

**Scraper**

|     |     |
|-----|-----|
| Nil | No  |
| S   | Yes |

**Number of auto switches**

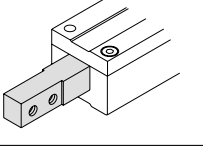
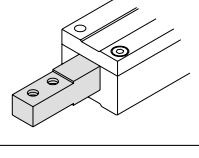
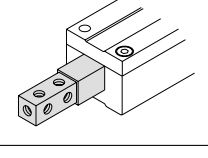
|     |        |
|-----|--------|
| Nil | 2 pcs. |
| S   | 1 pc.  |

**Type of auto switch**

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

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

**Finger options**

|                                                                                                                                |                                                                                                                                    |                                                                                                                                                           |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nil:</b> Basic type (Standard type)<br> | <b>1:</b> Tapped on upper and lower faces<br> | <b>2:</b> Tapped on all faces (5 surfaces including end surface)<br> |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|

### Applicable auto switches/Refer to pages 1719 to 1827 for detailed specifications of auto switches.

| Type               | Special function                        | Electrical entry | Indicator light | Wiring (output) | Load voltage |           | Auto switch models |         | 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 | Diagnostic indication (2-color display) | Grommet          | Yes             | 3-wire (NPN)    | 24 V         | 5 V, 12 V | -                  | M9NV    | M9N                  | ●     | ●     | ●     | ○                   | ○               | IC circuit |   |
|                    |                                         |                  |                 | 3-wire (PNP)    |              |           |                    | M9PV    | M9P                  | ●     | ●     | ●     | ○                   | ○               |            |   |
|                    |                                         |                  |                 | 2-wire          |              |           |                    | M9BV    | M9B                  | ●     | ●     | ●     | ○                   | ○               |            | - |
|                    |                                         |                  |                 | 3-wire (NPN)    |              |           |                    | M9NWV   | M9NW                 | ●     | ●     | ●     | ○                   | ○               |            |   |
|                    |                                         |                  |                 | 3-wire (PNP)    |              |           |                    | M9PWV   | M9PW                 | ●     | ●     | ●     | ○                   | ○               |            |   |
|                    |                                         |                  |                 | 2-wire          |              |           |                    | M9BWV   | M9BW                 | ●     | ●     | ●     | ○                   | ○               |            |   |

\* 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 pages 1784 and 1785 for the details of auto switches with a pre-wired connector.

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



## Specifications



|                                           |                                                         |
|-------------------------------------------|---------------------------------------------------------|
| Series                                    | <b>MIW</b> (Double finger)   <b>MIS</b> (Single finger) |
| Fluid                                     | Air                                                     |
| Operating pressure                        | 0.2 to 0.7 MPa                                          |
| Ambient temperature and fluid temperature | -10 to 60°C (No freezing)                               |
| Lubrication                               | Non-lube                                                |
| Action                                    | Double acting                                           |
| Auto switch (optional) <sup>Note)</sup>   | Solid state auto switch (3-wire, 2-wire)                |
| Stroke tolerance                          | $^{+1}_0$ mm                                            |

## Option

|                                        |                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------|
| Finger options                         | Standard, Tapped on upper and lower faces, Tapped on all faces (5 surfaces including end surface) |
| Stroke adjuster (Rear end stroke only) | <b>MI□8</b> : Arrangement range 4 mm                                                              |
|                                        | <b>MI□12</b> : Arrangement range 6 mm                                                             |
|                                        | <b>MI□20</b> : Arrangement range 12 mm                                                            |
|                                        | <b>MI□25</b> : Arrangement range 15 mm                                                            |
| Scraper                                | <b>MI□32</b> : Arrangement range 20 mm                                                            |
|                                        | Can be mounted on standard products                                                               |

## Theoretical Output

Unit: N

| Bore size (mm) | Rod size (mm) | Operating direction | Piston area (mm <sup>2</sup> ) | Operating pressure MPa |     |     |     |     |     |
|----------------|---------------|---------------------|--------------------------------|------------------------|-----|-----|-----|-----|-----|
|                |               |                     |                                | 0.2                    | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 |
| 8              | 4             | OUT                 | 50                             | 10                     | 15  | 20  | 26  | 31  | 36  |
|                |               | IN                  | 38                             | 7                      | 11  | 15  | 19  | 23  | 26  |
| 12             | 6             | OUT                 | 113                            | 23                     | 34  | 45  | 57  | 68  | 79  |
|                |               | IN                  | 85                             | 17                     | 26  | 34  | 43  | 51  | 60  |
| 20             | 10            | OUT                 | 314                            | 63                     | 94  | 126 | 157 | 188 | 220 |
|                |               | IN                  | 236                            | 47                     | 71  | 94  | 118 | 142 | 165 |
| 25             | 10            | OUT                 | 491                            | 98                     | 147 | 196 | 245 | 295 | 344 |
|                |               | IN                  | 412                            | 82                     | 124 | 165 | 206 | 247 | 288 |
| 32             | 12            | OUT                 | 804                            | 161                    | 241 | 322 | 402 | 482 | 563 |
|                |               | IN                  | 691                            | 138                    | 207 | 276 | 346 | 415 | 484 |

## Standard Stroke

**Double finger type/MIW** (mm)

| Bore size | Stroke |
|-----------|--------|
| 8         | 8 mm   |
| 12        | 12 mm  |
| 20        | 20 mm  |
| 25        | 25 mm  |
| 32        | 32 mm  |

\* For MIW, same stroke as bore size

**Single finger type/MIS** (mm)

| Bore size | Stroke        |
|-----------|---------------|
| 8         | 10, 20 mm     |
| 12        | 10, 20, 30 mm |
| 20        | 10, 20, 30 mm |
| 25        | 30, 50 mm     |
| 32        | 30, 50 mm     |



**Made to Order**  
(For details, refer to page 2020.)

| Symbol | Specifications                |
|--------|-------------------------------|
| -X4    | Heat resistant (-10 to 100°C) |
| -X5    | Fluororubber seal             |
| -X63   | Fluorine grease               |
| -X79   | Grease for food               |

## Mass

| Model | Model            | Stroke (mm) | Mass (g) | Increase by stroke adjuster (g) | Increase by scraper (g) |
|-------|------------------|-------------|----------|---------------------------------|-------------------------|
| MIW   | <b>MIW8-8D</b>   | 8           | 110      | 6                               | 3                       |
|       | <b>MIW12-12D</b> | 12          | 240      | 10                              | 5                       |
|       | <b>MIW20-20D</b> | 20          | 650      | 30                              | 10                      |
|       | <b>MIW25-25D</b> | 25          | 1550     | 30                              | 20                      |
|       | <b>MIW32-32D</b> | 32          | 2650     | 100                             | 35                      |
| MIS   | <b>MIS8-10D</b>  | 10          | 62       | 3                               | 2                       |
|       | <b>MIS8-20D</b>  | 20          | 80       |                                 |                         |
|       | <b>MIS12-10D</b> | 10          | 130      | 5                               | 3                       |
|       | <b>MIS12-20D</b> | 20          | 160      |                                 |                         |
|       | <b>MIS12-30D</b> | 30          | 190      |                                 |                         |
|       | <b>MIS20-10D</b> | 10          | 300      | 15                              | 5                       |
|       | <b>MIS20-20D</b> | 20          | 355      |                                 |                         |
|       | <b>MIS20-30D</b> | 30          | 410      |                                 |                         |
|       | <b>MIS25-30D</b> | 30          | 800      |                                 |                         |
|       | <b>MIS25-50D</b> | 50          | 1000     | 50                              | 10                      |
|       | <b>MIS32-30D</b> | 30          | 1350     |                                 |                         |
|       | <b>MIS32-50D</b> | 50          | 1650     |                                 |                         |

RSQ

RSQ

RS□

MI□

D-□

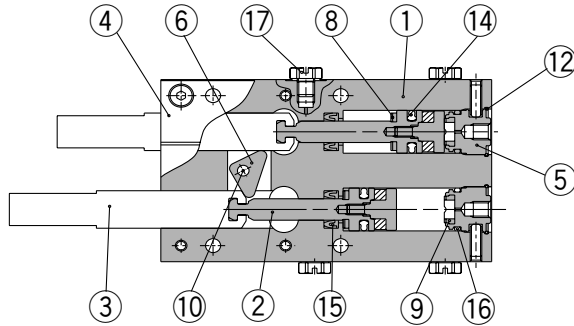
-X□

Individual  
-X□

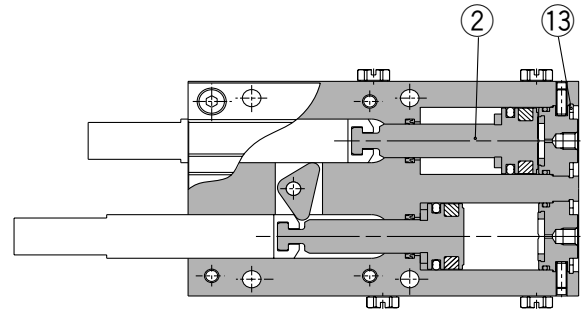
# Series MIW/MIS

## Construction/Double Finger Type (MIW)

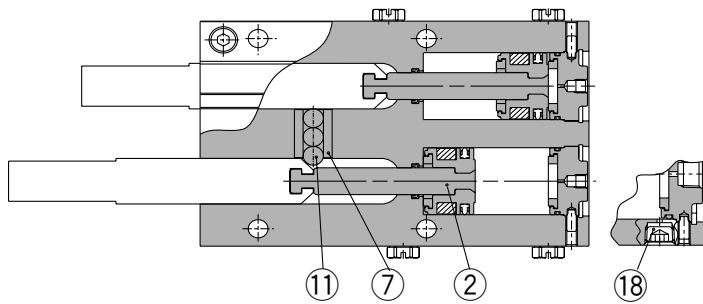
ø8



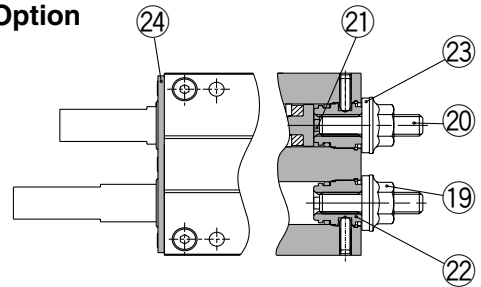
ø12, ø20



ø25, ø32



Option



Scraper

Stroke adjuster

(ø32 only)

### Component parts

| No. | Description     | Material                           | Note                             |
|-----|-----------------|------------------------------------|----------------------------------|
| 1   | Body            | Aluminium alloy                    | Hard anodized                    |
| 2   | Piston assembly |                                    |                                  |
| 3   | Finger          | Carbon steel                       | Heat treatment/Special treatment |
| 4   | Cover           | Aluminium alloy                    | Hard anodized                    |
| 5   | Cap (W)         | Aluminium alloy                    | White anodized                   |
| 6   | Cam             | Stainless steel                    | Heat treatment (MIW8 to 20)      |
| 7   | Roller holder   | Stainless steel                    | Heat treatment (MIW25, 32)       |
| 8   | Bumper          | Urethane rubber                    |                                  |
| 9   | Head bumper     | Urethane rubber                    |                                  |
| 10  | Needle roller   | High carbon chromium bearing steel | (MIW8 to 20)                     |

| No. | Description               | Material     | Note                                      |
|-----|---------------------------|--------------|-------------------------------------------|
| 11  | Cylinder roller           | Carbon steel | (MIW25, 32)                               |
| 12  | Clip                      | Carbon steel | (MIW8)                                    |
| 13  | R shape retaining ring    | Carbon steel | (MIW12 to 32)                             |
| 14  | Piston seal               | NBR          |                                           |
| 15  | Rod seal                  | NBR          |                                           |
| 16  | Gasket                    | NBR          |                                           |
| 17  | Plug                      |              | (MIW8 ... M-3P)<br>(MIW12 to 25 ... M-5P) |
| 18  | Hexagon socket taper plug |              | (MIW32 ... Rc1/8)                         |

### Option: adjuster

| No. | Description             | Material        | Note           |
|-----|-------------------------|-----------------|----------------|
| 19  | Hexagon nut with flange | Carbon steel    | Nickel plated  |
| 20  | Adjustment bolt         | Carbon steel    | Nickel plated  |
| 21  | Adjustment bumper       | Urethane rubber |                |
| 22  | Adjustment cap          | Aluminium alloy | White anodized |
| 23  | Die thread              |                 |                |

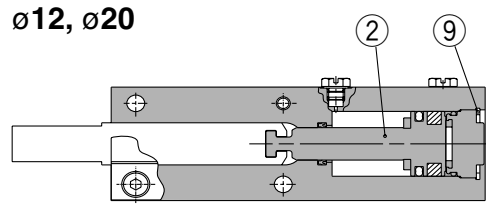
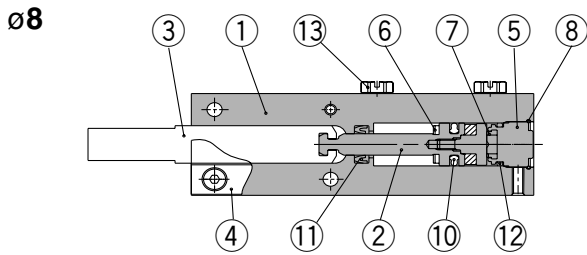
### Option: scraper

| No. | Description | Material              | Note |
|-----|-------------|-----------------------|------|
| 24  | Scraper     | Stainless steel + NBR |      |

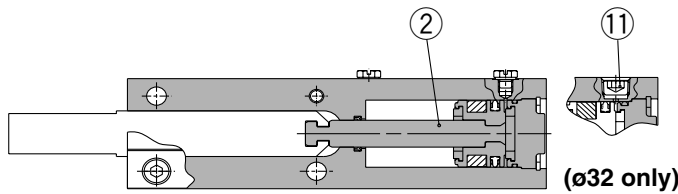
### Replacement parts

| Model          | Finger      |                                 |                     | Seal kit | Scraper assembly | Grease pack                           |
|----------------|-------------|---------------------------------|---------------------|----------|------------------|---------------------------------------|
|                | Standard    | Tapped on upper and lower faces | Tapped on all faces |          |                  |                                       |
| MIW8-8D        | MI-A0801-8  | MI-A0802-8                      | MI-A0803-8          | MIW8-PS  | MIW-A0804        | MH-G01<br>(contents quantity<br>30 g) |
| MIW12-12D      | MI-A1201-12 | MI-A1202-12                     | MI-A1203-12         | MIW12-PS | MIW-A1204        |                                       |
| MIW20-20D      | MI-A2001-20 | MI-A2002-20                     | MI-A2003-20         | MIW20-PS | MIW-A2004        |                                       |
| MIW25-25D      | MI-A2501-25 | MI-A2502-25                     | MI-A2503-25         | MIW25-PS | MIW-A2504        |                                       |
| MIW32-32D      | MI-A3201-32 | MI-A3202-32                     | MI-A3203-32         | MIW32-PS | MIW-A3204        |                                       |
| Main parts No. | ③ (1 pc.)   |                                 |                     | ⑭, ⑮, ⑯  | ⑳                |                                       |

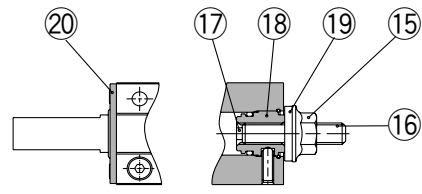
**Construction/Single Finger Type (MIS)**



ø25, ø32



Option



Scraper

Stroke adjuster

RSQ

RSG

RS□

MI□

**Component parts**

| No. | Description            | Material        | Note                             |
|-----|------------------------|-----------------|----------------------------------|
| 1   | Body                   | Aluminium alloy | Hard anodized                    |
| 2   | Piston assembly        |                 |                                  |
| 3   | Finger                 | Carbon steel    | Heat treatment/Special treatment |
| 4   | Cover                  | Aluminium alloy | Hard anodized                    |
| 5   | Cap (S)                | Aluminium alloy | White anodized                   |
| 6   | Bumper                 | Urethane rubber |                                  |
| 7   | Head bumper            | Urethane rubber |                                  |
| 8   | Clip                   | Carbon steel    | (MIS8)                           |
| 9   | R shape retaining ring | Carbon steel    | (MIS12 to 32)                    |

| No. | Description               | Material | Note                                      |
|-----|---------------------------|----------|-------------------------------------------|
| 10  | Piston seal               | NBR      |                                           |
| 11  | Rod seal                  | NBR      |                                           |
| 12  | Gasket                    | NBR      |                                           |
| 13  | Plug                      |          | (MIS8 ... M-3P)<br>(MIS12 to 25 ... M-5P) |
| 14  | Hexagon socket taper plug |          | (MIS32 ... Rc1/8)                         |

**Option: adjuster**

| No. | Description             | Material        | Note           |
|-----|-------------------------|-----------------|----------------|
| 15  | Hexagon nut with flange | Carbon steel    | Nickel plated  |
| 16  | Adjustment bolt         | Carbon steel    | Nickel plated  |
| 17  | Adjustment bumper       | Urethane rubber |                |
| 18  | Adjustment cap          | Aluminium alloy | White anodized |
| 19  | Die thread              |                 |                |

**Option: scraper**

| No. | Description | Material              | Note |
|-----|-------------|-----------------------|------|
| 20  | Scraper     | Stainless steel + NBR |      |

**Replacement parts**

| Description<br>Model | Finger      |                                 |                     | Seal kit | Scraper assembly | Grease pack                           |
|----------------------|-------------|---------------------------------|---------------------|----------|------------------|---------------------------------------|
|                      | Standard    | Tapped on upper and lower faces | Tapped on all faces |          |                  |                                       |
| MIS8-10D             | MI-A0801-10 | MI-A0802-10                     | MI-A0803-10         | MIS8-PS  | MIS-A0804        | MH-G01<br>(contents quantity<br>30 g) |
| MIS8-20D             | MI-A0801-20 | MI-A0802-20                     | MI-A0803-20         |          |                  |                                       |
| MIS12-10D            | MI-A1201-10 | MI-A1202-10                     | MI-A1203-10         |          |                  |                                       |
| MIS12-20D            | MI-A1201-20 | MI-A1202-20                     | MI-A1203-20         | MIS12-PS | MIS-A1204        |                                       |
| MIS12-30D            | MI-A1201-30 | MI-A1202-30                     | MI-A1203-30         |          |                  |                                       |
| MIS20-10D            | MI-A2001-10 | MI-A2002-10                     | MI-A2003-10         | MIS20-PS | MIS-A2004        |                                       |
| MIS20-20D            | MI-A2001-20 | MI-A2002-20                     | MI-A2003-20         |          |                  |                                       |
| MIS20-30D            | MI-A2001-30 | MI-A2002-30                     | MI-A2003-30         |          |                  |                                       |
| MIS25-30D            | MI-A2501-30 | MI-A2502-30                     | MI-A2503-30         | MIS25-PS | MIS-A2504        |                                       |
| MIS25-50D            | MI-A2501-50 | MI-A2502-50                     | MI-A2503-50         |          |                  |                                       |
| MIS32-30D            | MI-A3201-30 | MI-A3202-30                     | MI-A3203-30         | MIS32-PS | MIS-A3204        |                                       |
| MIS32-50D            | MI-A3201-50 | MI-A3202-50                     | MI-A3203-50         |          |                  |                                       |
| Main parts No.       | ③ (1 pc.)   |                                 |                     | ⑩, ⑪, ⑫  | ⑳                |                                       |

D-□

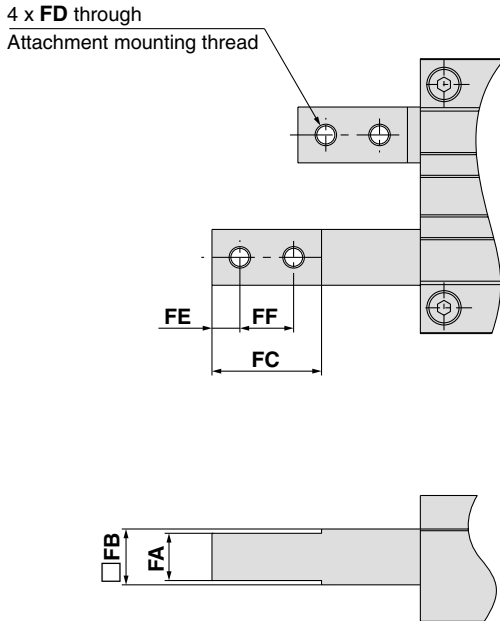
-X□

Individual  
-X□

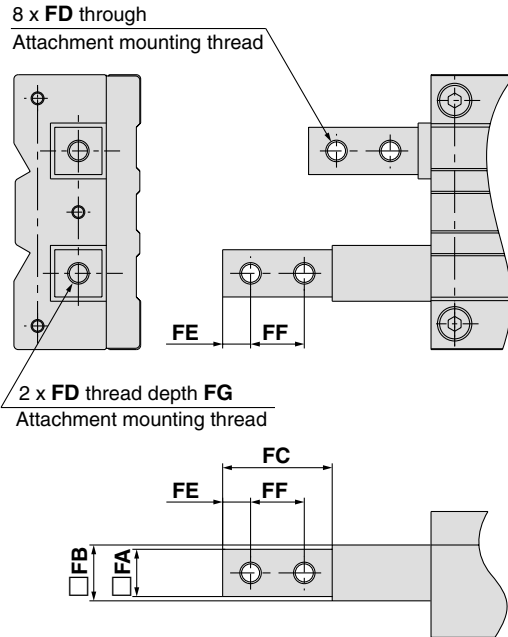


## Finger options

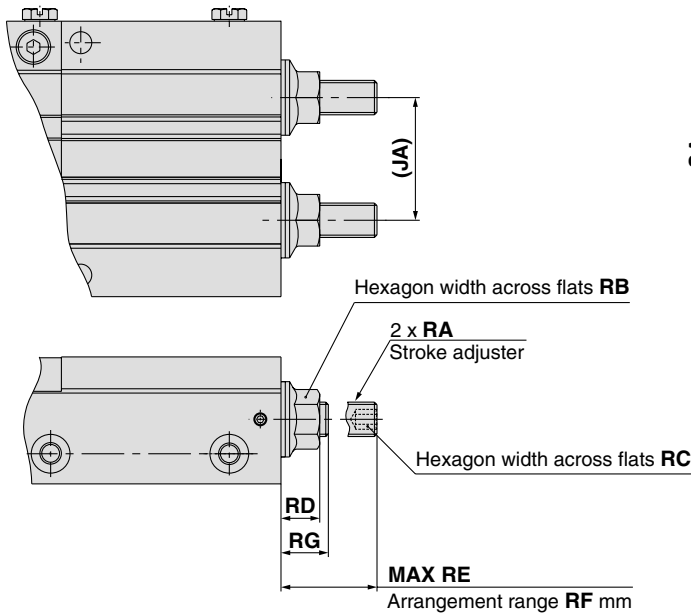
### Tapped on upper and lower faces



### Tapped on all faces

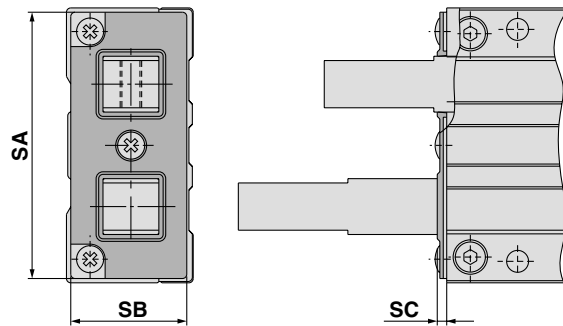


## Stroke adjuster



Note) Observe the specified adjustment range when adjusting with a stroke adjuster.

## Scrapper



| Model           | LC   | MA        | MB | MC   | MD   | ME | NA  | NB   | P        | PA   | PB   | PC   | PD  | PE  | RA         | RB | RC  | RD   |
|-----------------|------|-----------|----|------|------|----|-----|------|----------|------|------|------|-----|-----|------------|----|-----|------|
| <b>MIW8-8</b>   | 4.5  | M3 x 0.5  | 6  | 9    | 22   | 28 | 7.5 | 14.5 | M3 x 0.5 | 22.5 | 24   | 8    | 4.5 | 2.2 | M4 x 0.7   | 7  | 2   | 5.7  |
| <b>MIW12-12</b> | 7.5  | M4 x 0.7  | 7  | 12.5 | 34   | 37 | 11  | 19   | M5 x 0.8 | 25   | 27   | 10   | 6   | 2.8 | M5 x 0.8   | 8  | 2.5 | 6    |
| <b>MIW20-20</b> | 9.5  | M6 x 1    | 10 | 16.5 | 43.5 | 54 | 15  | 28.5 | M5 x 0.8 | 41.5 | 44   | 12   | 7   | 2.7 | M8 x 1     | 12 | 4   | 9    |
| <b>MIW25-25</b> | 12   | M8 x 1.25 | 12 | 20   | 58   | 71 | 20  | 35.5 | M5 x 0.8 | 50   | 55   | 14   | 8.5 | 2.7 | M8 x 1     | 12 | 4   | 9    |
| <b>MIW32-32</b> | 16.5 | M10 x 1.5 | 15 | 24.5 | 73   | 80 | 25  | 44.5 | Rc1/8    | 69.5 | 75.5 | 14.5 | 11  | —   | M12 x 1.25 | 17 | 6   | 12.4 |

| Model           | RE   | RF | RG   | SA | SB   | SC  |
|-----------------|------|----|------|----|------|-----|
| <b>MIW8-8</b>   | 12.5 | 4  | 8.5  | 33 | 14.5 | 1.4 |
| <b>MIW12-12</b> | 14   | 6  | 8    | 43 | 18.5 | 1.8 |
| <b>MIW20-20</b> | 22.5 | 12 | 10.5 | 62 | 27   | 2.2 |
| <b>MIW25-25</b> | 26   | 15 | 11   | 81 | 35   | 2.8 |
| <b>MIW32-32</b> | 33   | 20 | 13   | 93 | 42   | 3.4 |

RSQ

RSG

RS□

MI□

D-□

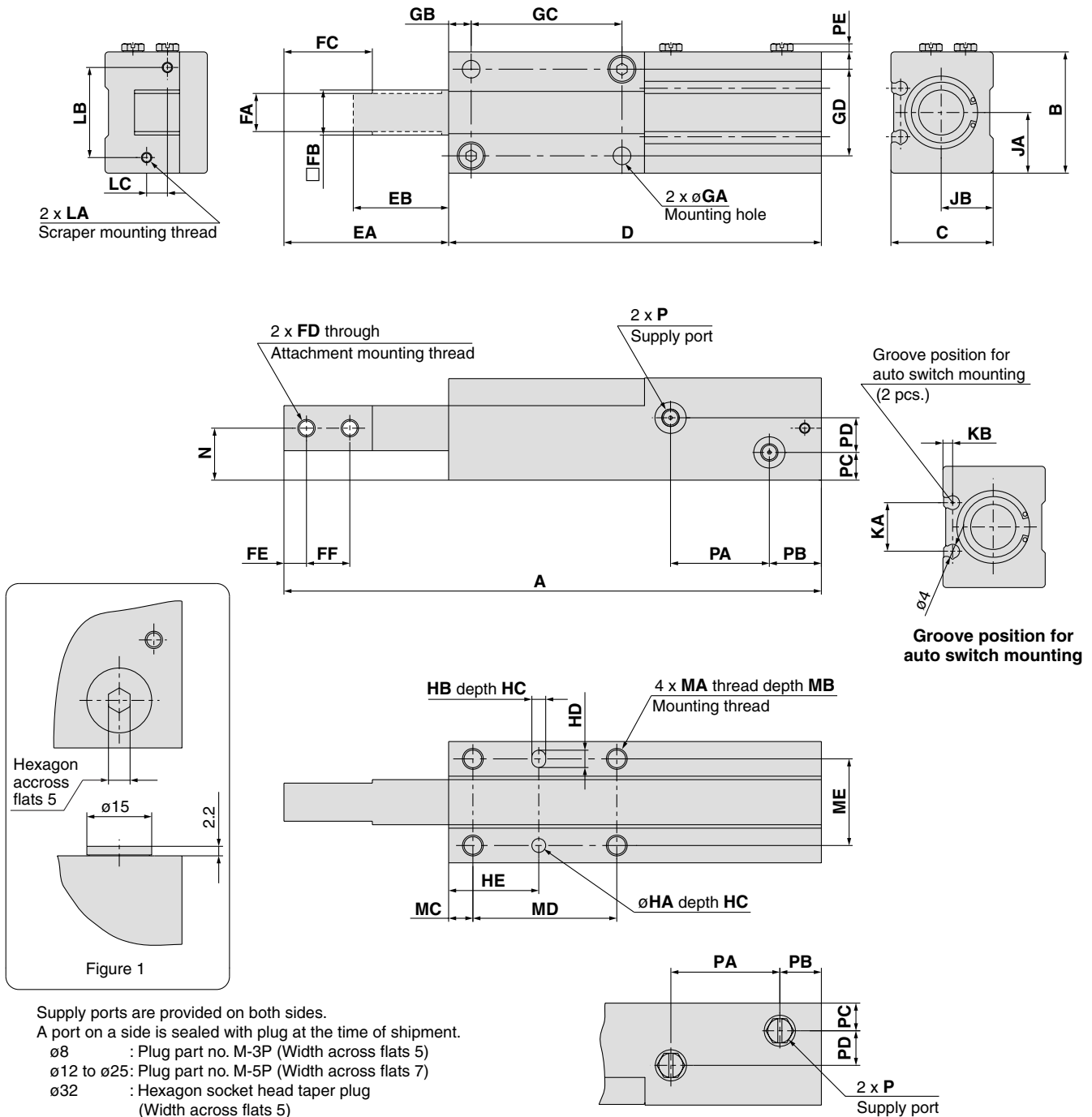
-X□

Individual  
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# Series MIW/MIS

## Dimensions/Single Finger Type

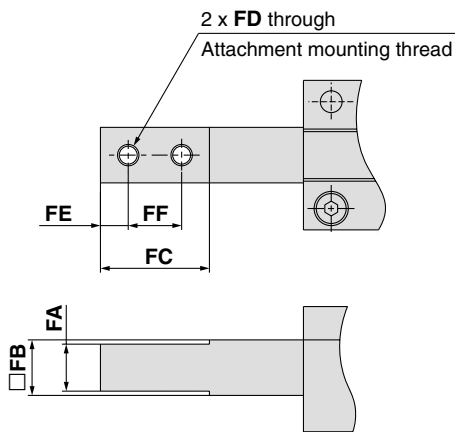
MIS□-□D



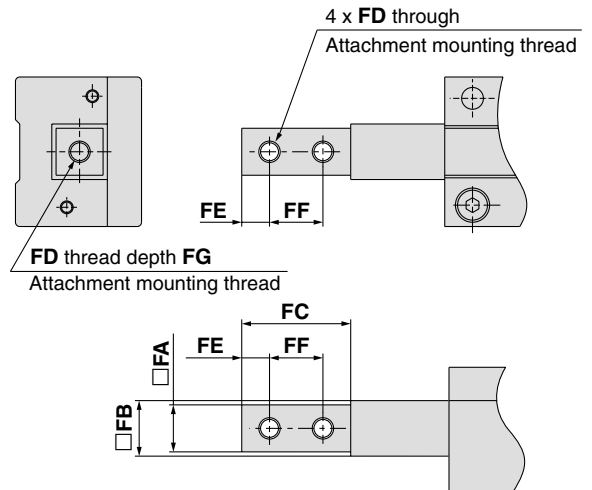
| Model    | A   | B  | C    | D     | EA   | EB   | FA                | FB                  | FC   | FD        | FE   | FF   | FG                          | GA  | GB | GC | GD | HA, HB               |
|----------|-----|----|------|-------|------|------|-------------------|---------------------|------|-----------|------|------|-----------------------------|-----|----|----|----|----------------------|
| MIS8-10  | 87  | 19 | 16   | 59    | 28   | 18   | $6^{0}_{-0.1}$    | $7h9^{0}_{-0.036}$  | 15   | M3 x 0.5  | 4    | 7    | 6<br>(Effective depth 2.5)  | 2.6 | 4  | 20 | 13 | $2H9^{+0.025}_{0}$   |
| MIS8-20  | 117 |    |      | 79    | 38   |      |                   |                     |      |           |      |      |                             |     |    | 30 |    |                      |
| MIS12-10 | 105 | 26 | 21   | 72    | 33   | 23   | $8^{0}_{-0.1}$    | $10h9^{0}_{-0.036}$ | 19   | M3 x 0.5  | 4.5  | 9.5  | 6<br>(Effective depth 3)    | 3.3 | 5  | 28 | 18 | $2.5H9^{+0.025}_{0}$ |
| MIS12-20 | 135 |    |      | 92    | 43   |      |                   |                     |      |           |      |      |                             |     |    | 38 |    |                      |
| MIS12-30 | 165 |    |      | 112   | 53   |      |                   |                     |      |           |      |      |                             |     |    | 48 |    |                      |
| MIS20-10 | 125 | 35 | 29.5 | 86.5  | 38.5 | 28.5 | $11^{0}_{-0.1}$   | $13h9^{0}_{-0.043}$ | 25.5 | M5 x 0.8  | 6.5  | 12.5 | 10<br>(Effective depth 4)   | 5.1 | 7  | 32 | 25 | $4H9^{+0.030}_{0}$   |
| MIS20-20 | 155 |    |      | 106.5 | 48.5 |      |                   |                     |      |           |      |      |                             |     |    | 42 |    |                      |
| MIS20-30 | 185 |    |      | 126.5 | 58.5 |      |                   |                     |      |           |      |      |                             |     |    | 52 |    |                      |
| MIS25-30 | 215 | 41 | 40   | 144   | 71   | 41   | $15^{0}_{-0.1}$   | $17h9^{0}_{-0.043}$ | 37   | M6 x 1    | 10   | 17   | 15<br>(Effective depth 7)   | 6.8 | 10 | 55 | 28 | $5H9^{+0.030}_{0}$   |
| MIS25-50 | 270 |    |      | 184   | 91   |      |                   |                     |      |           |      |      |                             |     |    | 75 |    |                      |
| MIS32-30 | 250 | 50 | 47   | 165   | 85   | 55   | $19.5^{0}_{-0.1}$ | $21h9^{0}_{-0.052}$ | 51   | M8 x 1.25 | 12.5 | 22   | 17<br>(Effective depth 8.5) | 8.6 | 12 | 64 | 34 | $6H9^{+0.030}_{0}$   |
| MIS32-50 | 310 |    |      | 205   | 105  |      |                   |                     |      |           |      |      |                             |     |    | 84 |    |                      |

## Finger options

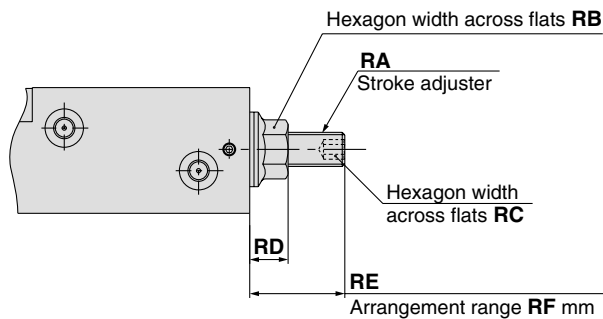
### Tapped on upper and lower faces



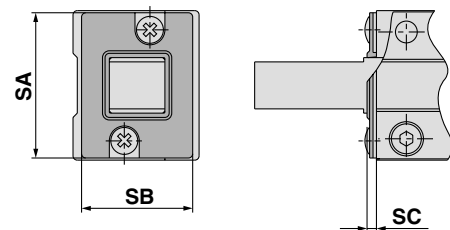
### Tapped on all faces



### With adjuster



### With scraper



Note) Observe the specified adjustment range when adjusting with a stroke adjuster.

| Model    | HC | HD  | HE   | JA   | JB  | KA   | KB  | LA          | LB | LC | MA        | MB | MC | MD | ME | N   | P        | PA   | PB   | PC  |
|----------|----|-----|------|------|-----|------|-----|-------------|----|----|-----------|----|----|----|----|-----|----------|------|------|-----|
| MIS8-10  | 2  | 3   | 14   | 9.5  | 7.5 | 6.2  | 1.6 | M2 x 0.4    | 14 | 3  | M3 x 0.5  | 5  | 4  | 20 | 13 | 7.5 | M3 x 0.5 | 19   | 8    | 4.5 |
| MIS8-20  |    |     |      |      |     |      |     |             |    |    |           |    |    | 30 |    |     |          | 29   |      |     |
| MIS12-10 |    |     |      |      |     |      |     |             |    |    |           |    |    | 28 |    |     |          | 19   |      |     |
| MIS12-20 | 4  | 3.5 | 17.5 | 13   | 11  | 11.6 | 2.2 | M2.6 x 0.45 | 19 | 4  | M4 x 0.7  | 7  | 5  | 38 | 18 | 11  | M5 x 0.8 | 29   | 10   | 6   |
| MIS12-30 |    |     |      |      |     |      |     |             |    |    |           |    |    | 48 |    |     |          | 39   |      |     |
| MIS20-10 |    |     |      |      |     |      |     |             |    |    |           |    |    | 32 |    |     |          | 20.5 |      |     |
| MIS20-20 | 5  | 5   | 26   | 17.5 | 15  | 14   | 2.8 | M3 x 0.5    | 26 | 6  | M6 x 1    | 10 | 7  | 42 | 25 | 15  | M5 x 0.8 | 30.5 | 12   | 8   |
| MIS20-30 |    |     |      |      |     |      |     |             |    |    |           |    |    | 52 |    |     |          | 40.5 |      |     |
| MIS25-30 | 5  | 7   | 32   | 20.5 | 20  | 11   | 3   | M3 x 0.5    | 32 | 10 | M8 x 1.25 | 14 | 10 | 55 | 28 | 20  | M5 x 0.8 | 47   | 14   | 12  |
| MIS25-50 |    |     |      |      |     |      |     |             |    |    |           |    |    | 75 |    |     |          | 67   |      |     |
| MIS32-30 | 6  | 8   | 40   | 25   | 25  | 20.4 | 2.5 | M4 x 0.7    | 39 | 12 | M10 x 1.5 | 15 | 12 | 64 | 34 | 25  | Rc1/8    | 47   | 14.5 | 11  |
| MIS32-50 |    |     |      |      |     |      |     |             |    |    |           |    |    | 84 |    |     |          | 67   |      |     |

| Model    | PD | PE  | RA         | RB | RC  | RD   | RE   | RF | RG   | SA   | SB | SC  |
|----------|----|-----|------------|----|-----|------|------|----|------|------|----|-----|
| MIS8-10  | 6  | 2.2 | M4 x 0.7   | 7  | 2   | 5.7  | 12.5 | 4  | 8.5  | 18.6 | 14 | 1.4 |
| MIS8-20  |    |     |            |    |     |      |      |    |      |      |    |     |
| MIS12-10 |    |     |            |    |     |      |      |    |      |      |    |     |
| MIS12-20 | 7  | 2.8 | M5 x 0.8   | 8  | 2.5 | 6    | 14   | 6  | 8    | 24   | 18 | 1.8 |
| MIS12-30 |    |     |            |    |     |      |      |    |      |      |    |     |
| MIS20-10 |    |     |            |    |     |      |      |    |      |      |    |     |
| MIS20-20 | 10 | 2.7 | M8 x 1     | 12 | 4   | 9    | 22.5 | 12 | 10.5 | 34   | 26 | 2.2 |
| MIS20-30 |    |     |            |    |     |      |      |    |      |      |    |     |
| MIS25-30 |    |     |            |    |     |      |      |    |      |      |    |     |
| MIS25-50 | 14 | 2.7 | M8 x 1     | 12 | 4   | 9    | 26   | 15 | 11   | 40   | 36 | 2.8 |
| MIS32-30 |    |     |            |    |     |      |      |    |      |      |    |     |
| MIS32-50 | 27 | —   | M12 x 1.25 | 17 | 6   | 12.4 | 33   | 20 | 13   | 49   | 41 | 3.4 |

RSQ

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MI□

D-□

-X□

Individual

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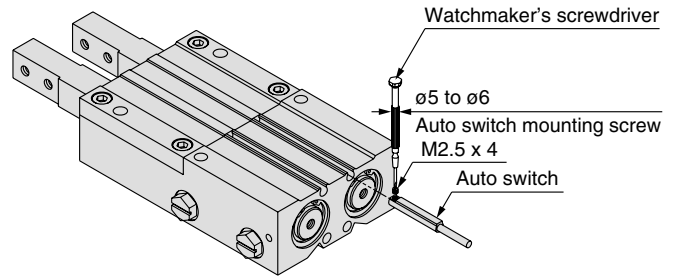


# Series MIW/MIS

## Auto Switch Mounting

When mounting an auto switch, insert the auto switch in the switch mounting groove on the escapement from the direction as below figure. Having set the mounting position, tighten the attached auto switch mounting screws with a flat head watchmaker's screwdriver.

\* When adjusting the auto switch mounting screws, use a watchmaker's screwdriver with a handle 5 to 6 mm in diameter. (This is to prevent fracture due to an excessive torque.) The guideline of the tightening torque is 0.1 to 0.15 N·m.



## Proper mounting position for stroke end detection

| Model                  | Electrical entry is in the → direction |
|------------------------|----------------------------------------|
| M9□<br>M9□V<br>M9□W(V) |                                        |
|                        | Electrical entry is in the ← direction |
|                        |                                        |

## Auto Switch Operating Range

| MIW               | (mm) |     |     |     |     |
|-------------------|------|-----|-----|-----|-----|
| Auto switch model | ø8   | ø12 | ø20 | ø25 | ø32 |
| D-M9□(V)          | 3    | 2.5 | 4   | 5.5 | 7   |
| D-M9□W(V)         |      |     |     |     |     |

| MIS               | (mm) |     |     |     |     |
|-------------------|------|-----|-----|-----|-----|
| Auto switch model | ø8   | ø12 | ø20 | ø25 | ø32 |
| D-M9□(V)          | 3    | 3.5 | 4.5 | 5.5 | 7   |
| D-M9□W(V)         |      |     |     |     |     |

Note) The operating ranges are provided as guidelines including hysteresis and are not guaranteed values (with ±30% variations). Hysteresis may fluctuate due to the operating environments.

| Model     | Proper mounting position |                   | Model     | Proper mounting position |                   | Model     | Proper mounting position |                   |
|-----------|--------------------------|-------------------|-----------|--------------------------|-------------------|-----------|--------------------------|-------------------|
|           | D-M9□<br>D-M9□W          | D-M9□V<br>D-M9□WV |           | D-M9□<br>D-M9□W          | D-M9□V<br>D-M9□WV |           | D-M9□<br>D-M9□W          | D-M9□V<br>D-M9□WV |
| MIW8-8D   | A                        | 16.5              | MIS12-30D | A                        | 18.5              | MIS25-30D | A                        | 7.5               |
|           | B                        | 25                |           | B                        | 49                |           | B                        | 38                |
|           | C                        | 4.5               |           | C                        | 6.5               |           | C                        | 21                |
|           | D                        | —                 |           | D                        | —                 |           | D                        | —                 |
|           | E                        | 6   4             |           | E                        | 3.5   1.5         |           | E                        | —   —             |
| MIS8-10D  | A                        | 16.5              | MIW20-20D | A                        | 20.5              | MIS25-50D | A                        | 7.5               |
|           | B                        | 27                |           | B                        | 41                |           | B                        | 38                |
|           | C                        | 4.5               |           | C                        | 8.5               |           | C                        | 21                |
|           | D                        | —                 |           | D                        | —                 |           | D                        | —                 |
|           | E                        | 6   4             |           | E                        | 4   2             |           | E                        | —   —             |
| MIS8-20D  | A                        | 16.5              | MIS20-10D | A                        | 20.5              | MIW32-32D | A                        | 8.5               |
|           | B                        | 37                |           | B                        | 31                |           | B                        | 41                |
|           | C                        | 4.5               |           | C                        | 8.5               |           | C                        | 29                |
|           | D                        | —                 |           | D                        | —                 |           | D                        | —                 |
|           | E                        | 6   4             |           | E                        | 4   2             |           | E                        | —   —             |
| MIW12-12D | A                        | 18.5              | MIS20-20D | A                        | 20.5              | MIS32-30D | A                        | 8.5               |
|           | B                        | 31                |           | B                        | 51                |           | B                        | 39                |
|           | C                        | 6.5               |           | C                        | 8.5               |           | C                        | 29                |
|           | D                        | —                 |           | D                        | —                 |           | D                        | —                 |
|           | E                        | 3.5   1.5         |           | E                        | 4   2             |           | E                        | —   —             |
| MIS12-10D | A                        | 18.5              | MIS20-30D | A                        | 20.5              | MIS32-50D | A                        | 8.5               |
|           | B                        | 29                |           | B                        | 61                |           | B                        | 59                |
|           | C                        | 6.5               |           | C                        | 8.5               |           | C                        | 29                |
|           | D                        | —                 |           | D                        | —                 |           | D                        | —                 |
|           | E                        | 3.5   1.5         |           | E                        | 4   2             |           | E                        | —   —             |
| MIS12-20D | A                        | 18.5              | MIW25-25D | A                        | 7.5               |           |                          |                   |
|           | B                        | 39                |           | B                        | 33                |           |                          |                   |
|           | C                        | 6.5               |           | C                        | 21                |           |                          |                   |
|           | D                        | —                 |           | D                        | —                 |           |                          |                   |
|           | E                        | 3.5   1.5         |           | E                        | —   —             |           |                          |                   |

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



# Series MIW/MIS 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

### Warning

#### 1. Design the attachment to be light and short.

- 1) A long and heavy attachment can cause a large inertia force in operation, sometimes affecting the life time.
- 2) Design the attachment to be as short and light as possible even within the limitation.

## Mounting

### Warning

#### 1. Do not scratch or gouge the escapement by dropping or bumping it when mounting.

Even a slight deformation can cause inaccuracy or malfunction.

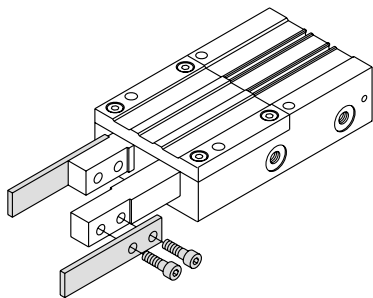
#### 2. Please observe the specified torque limits when tightening screws to mount the attachment.

A tightening torque beyond the specified limits can cause malfunction, while a tightening torque below the specified limits can cause dislocation or drop off.

#### Mounting attachment on finger

When mounting an attachment on the finger, support the finger with a tool like a spanner to prevent twisting.

Mount attachments by inserting bolts, etc. into the female mounting threads on the fingers and tightening with the torque shown in the table below.



| Model | Bolt      | Max tightening torque (N·m) |
|-------|-----------|-----------------------------|
| MIW8  | M3 x 0.5  | 0.88                        |
| MIS8  |           |                             |
| MIW12 | M3 x 0.5  | 0.88                        |
| MIS12 |           |                             |
| MIW20 | M5 x 0.8  | 4.3                         |
| MIS20 |           |                             |
| MIW25 | M6 x 1    | 7.3                         |
| MIS25 |           |                             |
| MIW32 | M8 x 1.25 | 17.5                        |
| MIS32 |           |                             |

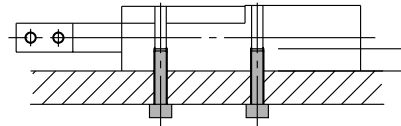
#### 3. Please observe the specified torque limits when tightening screws to mount the attachment.

A tightening torque above the specified limits can cause malfunction, while a tightening torque below the specified limits can cause dislocation or drop off.

## Mounting

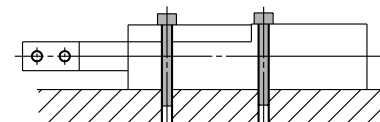
### Mounting

#### Body tap



| Model | Bolt      | Max tightening torque (N·m) | Max screw-in depth (mm) |
|-------|-----------|-----------------------------|-------------------------|
| MIW8  | M3 x 0.5  | 0.88                        | 6                       |
| MIS8  |           | 0.63                        | 4.5                     |
| MIW12 | M4 x 0.7  | 1.5                         | 6                       |
| MIS12 |           |                             |                         |
| MIW20 | M6 x 1    | 5.2                         | 9                       |
| MIS20 |           |                             |                         |
| MIW25 | M8 x 1.25 | 12.5                        | 12                      |
| MIS25 |           |                             |                         |
| MIW32 | M10 x 1.5 | 24.5                        | 15                      |
| MIS32 |           |                             |                         |

#### Body through hole



| Model | Bolt        | Max tightening torque (N·m) |
|-------|-------------|-----------------------------|
| MIW8  | M2.5 x 0.45 | 0.5                         |
| MIS8  |             |                             |
| MIW12 | M3 x 0.5    | 0.88                        |
| MIS12 |             |                             |
| MIW20 | M5 x 0.8    | 4.3                         |
| MIS20 |             |                             |
| MIW25 | M6 x 1      | 7.3                         |
| MIS25 |             |                             |
| MIW32 | M8 x 1.25   | 17.5                        |
| MIS32 |             |                             |

### Caution

#### 1. When mounting an attachment on the finger, support the finger with a tool like a spanner to prevent twisting.

Otherwise malfunction may result.

#### 2. Please do not scratch or gouge the sliding part of the finger.

It may increase the sliding resistance or cause abrasion.

#### 3. Use a speed controller, etc. to keep the operating speed of the finger within the proper range.

Otherwise the life time may be adversely affected by inertia force of the attachment.

#### 4. Conduct meter-out control to throttle down the speed.

Applicable speed controller

Direct connection type –AS120□ Piping type – AS1001F

Direct connection type –AS220□ Piping type – AS2001F etc.

RSQ

RSG

RS□

MI□

D-□

-X□

Individual

-X□



# Series MIW/MIS 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.

## Changing of Piping Directions

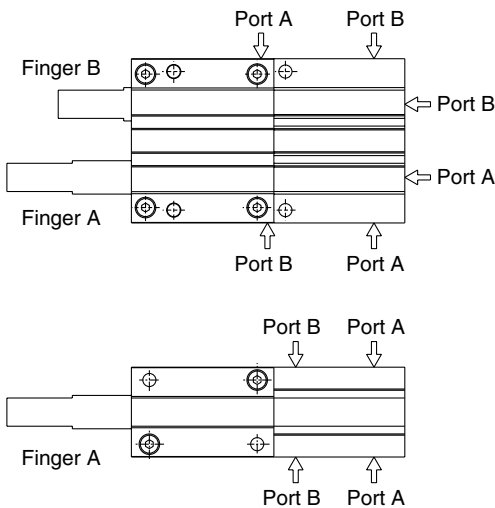
### Caution

1. Please observe the specified torque limits when tightening a plug to change the piping directions.

A tightening torque above the specified limits can cause a damage to the plug, while tightening torque below the specified limits can cause a damage to seal or the screw come loose during the operation.

| Model          | Port size                            | How to tight                                               |
|----------------|--------------------------------------|------------------------------------------------------------|
| MIW8<br>MIS8   | M3 x 0.5<br>(Plug part no.:<br>M-3P) | Turn another 1/4 turn with a tool after manual tightening. |
| MIW12<br>MIS12 | M5 x 0.8<br>(Plug part no.:<br>M-5P) | Turn another 1/6 turn with a tool after manual tightening. |
| MIW20<br>MIS20 |                                      |                                                            |
| MIW25<br>MIS25 |                                      |                                                            |
| MIW32<br>MIS32 |                                      |                                                            |
| MIW32<br>MIS32 | Rc1/8                                | Tightening torque 7 to 9 N·m                               |

### Supply port operation



Pressured from A port → Finger A extends, finger B retracts  
Pressure from B port → Finger B extends, finger A retracts

## Handling of Adjuster Options

### Stroke adjuster

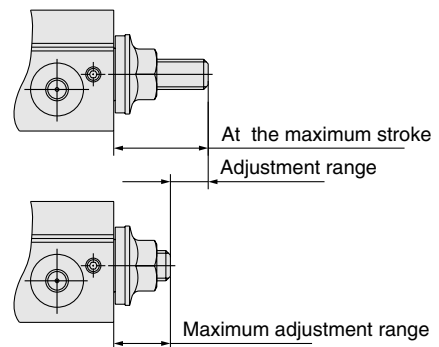
### Warning

1. Observe the specified adjustment range as shown on right when adjusting with a stroke adjuster.

Bolts may shoot out when adjusting stroke adjuster over the maximum stroke as shown on right. Be sure to observe the specified adjustment range, otherwise malfunction may results.

## Handling of Adjuster Options

| Model | At the maximum stroke (mm) | At the maximum adjustment (mm) | Adjustment range (mm) |
|-------|----------------------------|--------------------------------|-----------------------|
| MIW8  | 12.5                       | 8.4                            | 4                     |
| MIS8  |                            |                                |                       |
| MIW12 | 14                         | 8                              | 6                     |
| MIS12 |                            |                                |                       |
| MIW20 | 22.5                       | 10.5                           | 12                    |
| MIS20 |                            |                                |                       |
| MIW25 | 26                         | 11                             | 15                    |
| MIS25 |                            |                                |                       |
| MIW32 | 33                         | 13                             | 20                    |
| MIS32 |                            |                                |                       |



2. Be sure to use specified adjuster bolts for replacement. Otherwise, fracture may be caused by an impact etc.
3. Refer to the table below for the lock nut tightening torque.

Insufficient tightening can cause air leakage.

| Model | Tightening torque (N·m) |
|-------|-------------------------|
| MIW8  | 1.2 to 1.5              |
| MIS8  |                         |
| MIW12 | 2.5 to 3.0              |
| MIS12 |                         |
| MIW20 | 10.5 to 12.5            |
| MIS20 |                         |
| MIW25 | 10.5 to 12.5            |
| MIS25 |                         |
| MIW32 | 34 to 42                |
| MIS32 |                         |

## Operating Environment

### Caution

1. Do not use in an environment where the product is directly exposed to liquid such as cutting lubricant. Avoid use in an environment where the product is exposed to cutting lubricant, liquid coolant or oil mist. It can cause rattles, increase in sliding resistance and air leakage.
2. Do not use in an environment where the product is directly exposed to foreign matter such as dust, coarse particular, chips and polishing powder from a spatter grinder, etc. It can cause rattles, increase in sliding resistance and air leakage.



# Series MIW/MIS 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.

## Operating Environment

### ⚠ Caution

3. Provide shading in an environment where the product is exposed to the sunlight.
4. Block off heat radiation in an environment where a heat source is at a close distance.

Block off heat radiation with a cover if a heat source is at a close distance because the temperature of the product can rise to exceed the operating temperature range due to radiation.

5. Do not use in an environment where vibration or impact occurs.

Contact SMC about use under such conditions because it can cause fracture or malfunction.

## Lubrication

### ⚠ Caution

1. The non-lubricant type escapement is lubricated at the factory and does not need further lubrication for use.

In case the product is lubricated by the customer, apply class 1 turbin oil (non additive) ISO VG32.

In case the product is lubricated by the customer, be sure to continue lubrication.

If it is discontinued, malfunction may result due to loss of initial lubricant.

## Maintenance

### ⚠ Warning

1. Keep away hands and other body parts from the fingers of the escapement or movement range of the attachment.

It can lead to an injury or accident.

2. When removing the escapement, first block off or remove the work piece on the primary side of the escapement, release compressed air and remove it.

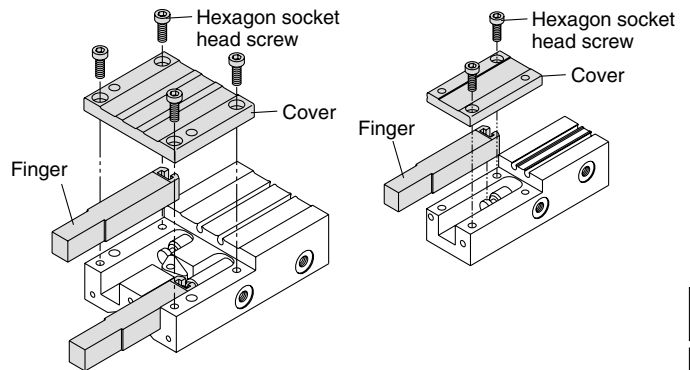
If the work piece remains, it can be transferred by mistake and cause failure to the equipment on the secondary side.

### Finger replacement

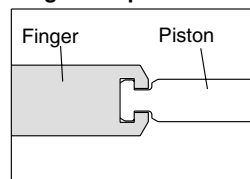
1. Remove the hexagon socket head screws.
2. Remove the cover.
3. Replace the finger.
  - Apply the specified grease to the sliding part and T groove part of the finger.
  - Insert the piston in the T groove so that it will be hooked there.
4. Mount the cover and tighten the hexagon socket head screws with the tightening torque in the table below.

| Bore size | Hexagon socket head screw | Hexagon width across flats | Tightening torque (N·m) |
|-----------|---------------------------|----------------------------|-------------------------|
| 8         | M2 x 6                    | 1.5                        | 0.24                    |
| 12        | M2.5 x 6                  | 2                          | 0.36                    |
| 20        | M4 x 10                   | 3                          | 1.5                     |
| 25        | M5 x 14                   | 4                          | 3.0                     |
| 32        | M6 x 15                   | 5                          | 5.2                     |

## Maintenance



### Finger and position connection



For information on the replacement parts and specified grease, refer to the replacement parts on page 1425.

## Scraper Option

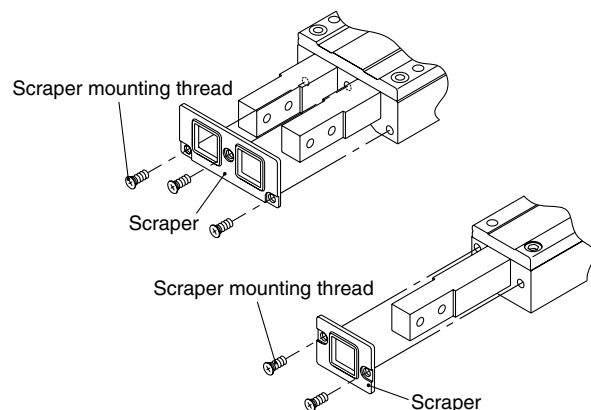
### ⚠ Caution

1. Please observe the specified torque limits when mounting a scraper.

A tightening torque above the specified limits can cause a damage, while tightening torque below the specified limits can cause a dislocation or drop off.

### Tightening torque

| Model | Bolt (N·m) |
|-------|------------|
| MIW8  | 0.176      |
| MIS8  |            |
| MIW12 | 0.36       |
| MIS12 |            |
| MIW20 | 0.63       |
| MIS20 |            |
| MIW25 | 0.63       |
| MIS25 |            |
| MIW32 | 1.5        |
| MIS32 |            |



RSQ

RSG

RS□

MI□

D-□

-X□

Individual  
-X□