

# Wedge Cam Operation Slide Guide Air Gripper (2 Finger)

## Series *MHK2*

ø12, ø16, ø20, ø25



Load Resistant, Dust Cover for Adverse Environments

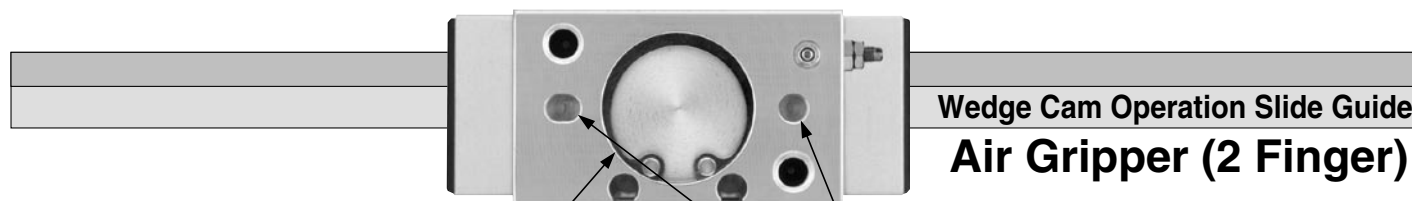
### 2 types of finger materials

Standard: Carbon steel  
Optional: Stainless steel

### 3 types of dust cover materials

Standard: Chloroprene rubber (CR) ...Black  
Optional: Silicon rubber (Si) ...White  
Fluoro rubber (FKM) ...Black

# Wedge Cam Operation Provides Dust Cover for Adverse



## Mounting repeatability

Centering accuracy  $\pm 0.1\text{mm}$

Pin hole for positioning  
on top side

## Auto switch mountable

Grooves for auto switch are located on one side. Easy handling for adjustment and installation.

## Built-in adjustment needle for finger speed

Possible to adjust the speed for finger closing direction.

## Wedge cam structure

The wedge structure allows no lateral vibration along stroke direction once work is held.

## High rigidity

Slide type guide bearing enables highly rigid finger motion.

## Improved performance

Incorporation of dust cover prevents dust, water, etc. from entering the body and avoids generating dust and releasing grease from air gripper.

**High precision  
Repeatability:**  
 $\pm 0.01\text{mm}$

**2 types of finger materials  
are available for different  
applications.**

Standard: Carbon steel  
Optional: Stainless steel

## 3 types of dust covers are available for use in different environments.

Standard: Chloroprene rubber (CR) .....Black  
Optional: Silicon rubber (Si) ...White  
Fluoro rubber (FKM) ...Black

## Longer strokes are now standard.



| Bore size<br>(mm) | Opening/Closing stroke (mm) |                 |
|-------------------|-----------------------------|-----------------|
|                   | Long stroke                 | Standard stroke |
| 12                | 11                          | 4               |
| 16                | 14                          | 6               |
| 20                | 18                          | 10              |
| 25                | 22                          | 14              |

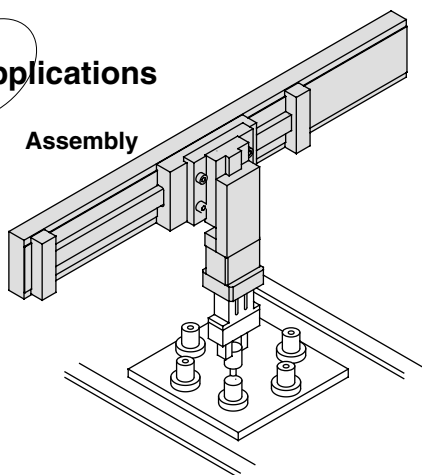
# High Precision and Rigidity. Environmental Conditions.



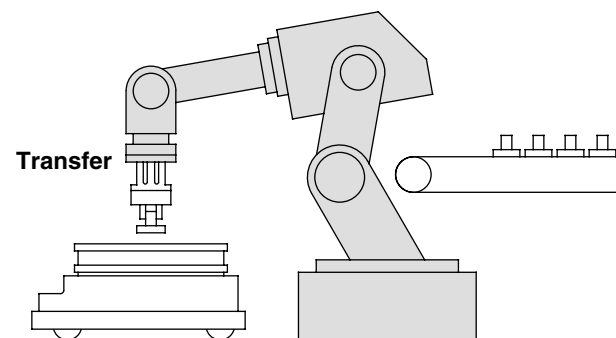
## Series *MHK2*

### Applications

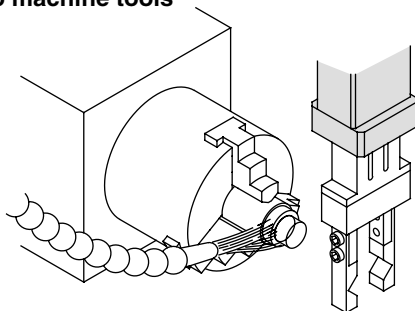
Assembly



Transfer

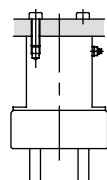


Loading/unloading work  
into machine tools



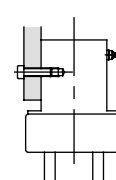
### Universal Mounting

Axial mounting



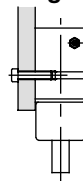
(Body tapped)

Vertical mounting

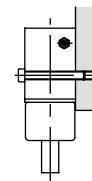


(Body tapped)

Side mounting



(Body tapped)



(Body through hole)

Interchangeable with MHQG2

### Variations

| Series                   |                                       | Model             | Bore size (mm) | Opening/Closing stroke (mm) | Options  |
|--------------------------|---------------------------------------|-------------------|----------------|-----------------------------|--|
| Parallel opening/closing | Standard model series <b>MHK2</b>     | <b>MHK2-12</b> □  | 12             | 4                           | ■ Finger option<br>Carbon steel (Standard), Stainless steel<br>■ Dust cover option<br>Chloroprene rubber (Standard)<br>Fluoro rubber<br>Silicon rubber<br>■ Auto Switch<br>Solid state switch<br>D-M9N(V), D-M9B(V)<br>Water resistant (2 colour indication)<br>D-M9BA |
|                          |                                       | <b>MHK2-16</b> □  | 16             | 6                           |  |
|                          |                                       | <b>MHK2-20</b> □  | 20             | 10                          |  |
|                          |                                       | <b>MHK2-25</b> □  | 25             | 14                          |  |
|                          | Long stroke model series <b>MHKL2</b> | <b>MHKL2-12</b> □ | 12             | 11                          |  |
|                          |                                       | <b>MHKL2-16</b> □ | 16             | 14                          |  |
|                          |                                       | <b>MHKL2-20</b> □ | 20             | 18                          |  |
|                          |                                       | <b>MHKL2-25</b> □ | 25             | 22                          |  |

# Series *MHK2*

ø12, ø16, ø20, ø25

## How to Order

Standard  
model

Long stroke  
model

MHK 2 — 20 D 1 F — M9PL S

MHKL 2 — 20 D 1 F — M9PL S

Number of fingers ●

|   |           |
|---|-----------|
| 2 | 2 fingers |
|---|-----------|

Bore size ●

|    |      |
|----|------|
| 12 | 12mm |
| 16 | 16mm |
| 20 | 20mm |
| 25 | 25mm |

Action ●

|   |                          |
|---|--------------------------|
| D | Double acting            |
| S | Single (Normally open)   |
| C | Single (Normally closed) |

Finger material ●

|   |                 |
|---|-----------------|
| — | Carbon steel    |
| 1 | Stainless steel |

Dust cover material ●

|   |                         |
|---|-------------------------|
| — | Chloroprene rubber (CR) |
| F | Fluoro rubber (FKM)     |
| S | Silicon rubber (Si)     |

Auto switch ●

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

Number of auto switches ●

|   |   |
|---|---|
| — | 2 |
| S | 1 |

### Applicable auto switch

| Type               | Special function                       | Electrical entry | Indicator light | Wiring (Output) | Load voltage |     | Auto switch symbol |         | Lead wire length (mm)* |       | Applicable load |
|--------------------|--|------------------|-----------------|-----------------|--------------|-----|--------------------|---------|------------------------|-------|-----------------|
|                    |  |                  |                 |                 | DC           | AC  | Electrical entry   |         | 0.5 (—)                | 3 (L) |                 |
|                    |  |                  |                 |                 |              |     | Perpendicular      | In-line |                        |       |                 |
| Solid state switch | —                                      | Grommet          | With            | 3 wire (NPN)    | 24V          | 5V  | M9NV               | M9N     | ●                      | ●     | Relay, PLC      |
|                    |  |                  |                 | 3 wire (PNP)    |              | 12V | M9PV               | M9P     | ●                      | ●     |                 |
|                    |  |                  |                 | 2 wire          |              | —   | M9BV               | M9B     | ●                      | ●     |                 |
|                    | Water resistant<br>2 colour indication |                  |                 |                 |              | 12V | —                  | M9BA    | —                      | ●     |                 |



\*Lead wire length: 0.5m ..... — (Example) M9N  
3m ..... L (Example) M9NL

Note) Be careful for the hysteresis of 2 colour indication type D-M9BAL.  
Refer to "Auto Switch Hysteresis" on p.5-156  
Refer to p.6-15 for auto switch specifications.

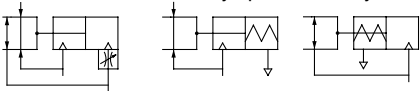
## Specifications



### Symbol

Double acting Single acting

Normally open Normally closed



Note) Refer to p.6-15 for further information on auto switch specifications.

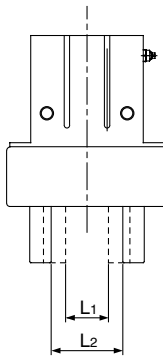
## Options

|                      |  |
|----------------------|--|
| Finger materials     | Carbon steel (Standard), Stainless steel                                     |
| Dust cover materials | Chloroprene rubber (CR) (Standard), Fluoro rubber (FKM), Silicon rubber (Si) |

## Model

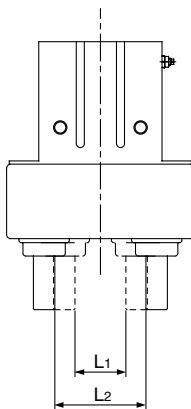
### Series MHK/Standard models

| Action        | Model           | Bore size (mm) | Max. operating frequency (c.p.m) | Effective holding force per finger (N) Note) | Opening/Closing stroke (mm) (L2-L1) | Closed distance (mm) (L1) | Open distance (mm) (L2) | Weight (g) |
|---------------|-----------------|----------------|----------------------------------|--|-------------------------------------|---------------------------|-------------------------|------------|
| Double acting | MHK2-12D        | 12             | 120                              | External hold: 15<br>Internal hold: 16       | 4                                   | 9                         | 13                      | 75         |
|               | MHK2-16D        | 16             |                                  | External hold: 31<br>Internal hold: 36       | 6                                   | 14.6                      | 20.6                    | 113        |
|               | MHK2-20D        | 20             |                                  | External hold: 46<br>Internal hold: 56       | 10                                  | 16                        | 26                      | 235        |
|               | MHK2-25D        | 25             |                                  | External hold: 80<br>Internal hold: 86       | 14                                  | 19                        | 33                      | 440        |
| Single acting | Normally open   | MHK2-12S       |                                  | 9  | 4                                   | 9                         | 13                      | 76         |
|               |                 | MHK2-16S       |                                  | 23   | 6                                   | 14.6                      | 20.6                    | 114        |
|               |                 | MHK2-20S       |                                  | 34   | 10                                  | 16                        | 26                      | 237        |
|               |                 | MHK2-25S       |                                  | 58   | 14                                  | 19                        | 33                      | 443        |
|               | Normally closed | MHK2-12C       |                                  | 12   | 4                                   | 9                         | 13                      | 76         |
|               |                 | MHK2-16C       |                                  | 25   | 6                                   | 14.6                      | 20.6                    | 115        |
|               |                 | MHK2-20C       |                                  | 44   | 10                                  | 16                        | 26                      | 237        |
|               |                 | MHK2-25C       |                                  | 73   | 14                                  | 19                        | 33                      | 443        |



### Series MHKL2/Long stroke models

| Action        | Model           | Bore size (mm) | Max. operating frequency (c.p.m) | Effective holding force per finger (N) Note) | Opening/Closing stroke (mm) (L2-L1) | Closed distance (mm) (L1) | Open distance (mm) (L2) | Weight (g) |
|---------------|-----------------|----------------|----------------------------------|--|-------------------------------------|---------------------------|-------------------------|------------|
| Double acting | MHKL2-12D       | 12             | 90                               | External hold: 14<br>Internal hold: 16       | 11                                  | 9                         | 20                      | 104        |
|               | MHKL2-16D       | 16             |                                  | External hold: 27<br>Internal hold: 30       | 14                                  | 14.6                      | 28.6                    | 164        |
|               | MHKL2-20D       | 20             |                                  | External hold: 45<br>Internal hold: 53       | 18                                  | 16                        | 34                      | 312        |
|               | MHKL2-25D       | 25             |                                  | External hold: 79<br>Internal hold: 90       | 22                                  | 19                        | 41                      | 562        |
| Single acting | Normally open   | MHKL2-12S      |                                  | 9  | 11                                  | 9                         | 20                      | 105        |
|               |                 | MHKL2-16S      |                                  | 17   | 14                                  | 14.6                      | 28.6                    | 165        |
|               |                 | MHKL2-20S      |                                  | 32   | 18                                  | 16                        | 34                      | 314        |
|               |                 | MHKL2-25S      |                                  | 53   | 22                                  | 19                        | 41                      | 565        |
|               | Normally closed | MHKL2-12C      |                                  | 11   | 11                                  | 9                         | 20                      | 105        |
|               |                 | MHKL2-16C      |                                  | 22   | 14                                  | 14.6                      | 28.6                    | 166        |
|               |                 | MHKL2-20C      |                                  | 40   | 18                                  | 16                        | 34                      | 314        |
|               |                 | MHKL2-25C      |                                  | 63   | 22                                  | 19                        | 41                      | 565        |



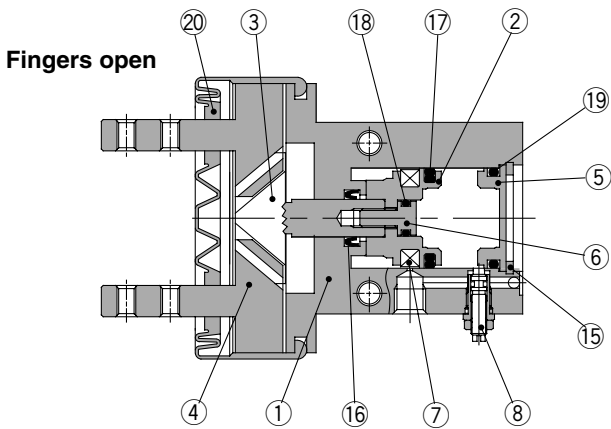
Note) At the pressure of 0.5MPa , when holding point L is 20mm.

Single acting normally open: External holding force, Single acting normally closed: Internal holding force  
Refer to "Effective Holding Force" for the holding force at each holding position on p.5-147 to 5-151

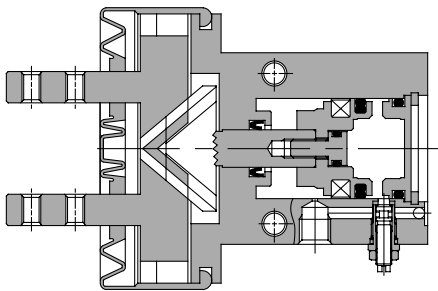
# Series MHK2

## Construction

Double acting



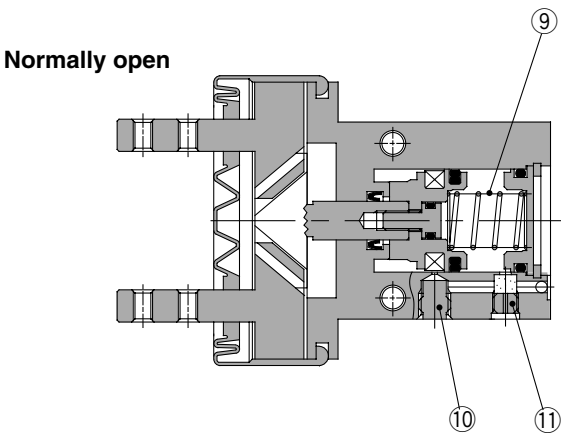
Fingers closed



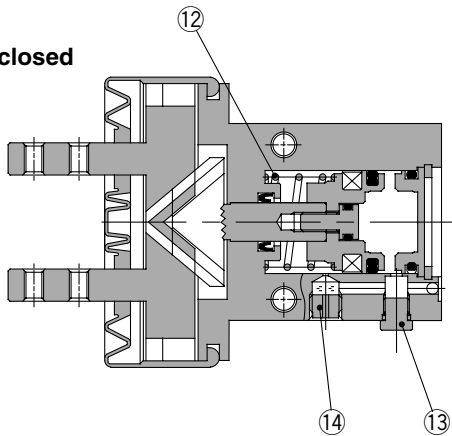
### Component Parts

| No. | Description   | Material               | Note                              |
|-----|---------------|------------------------|-----------------------------------|
| ①   | Body          | Aluminum alloy         | Anodized                          |
| ②   | Piston        | Aluminum alloy         | Anodized                          |
| ③   | Cam           | Carbon steel           | Heat treatment, Special treatment |
| ④   | Finger        | Carbon steel           | Heat treatment, Special treatment |
|     |               | Stainless steel SUS304 | Optional                          |
| ⑤   | Cap           | Aluminum alloy         | Hard anodized                     |
| ⑥   | Piston bolt   | Stainless steel        |                                   |
| ⑦   | Rubber magnet | Synthetic rubber       |                                   |

Single acting



Normally closed



### Component Parts

| No. | Description       | Material     | Note                      |
|-----|-------------------|--------------|---------------------------|
| ⑧   | Needle Ass'y      |              |                           |
| ⑨   | N.O. spring       | Piano wire   |                           |
| ⑩   | Plug              | Brass        | Electroless nickel plated |
| ⑪   | Exhaust plug      | Brass        | Electroless nickel plated |
| ⑫   | N.C. spring       | Piano wire   |                           |
| ⑬   | Plug Ass'y        | Brass        | Electroless nickel plated |
| ⑭   | Exhaust plug A    | Brass        | Electroless nickel plated |
| ⑮   | C-shape snap ring | Carbon steel | Nickel plated             |

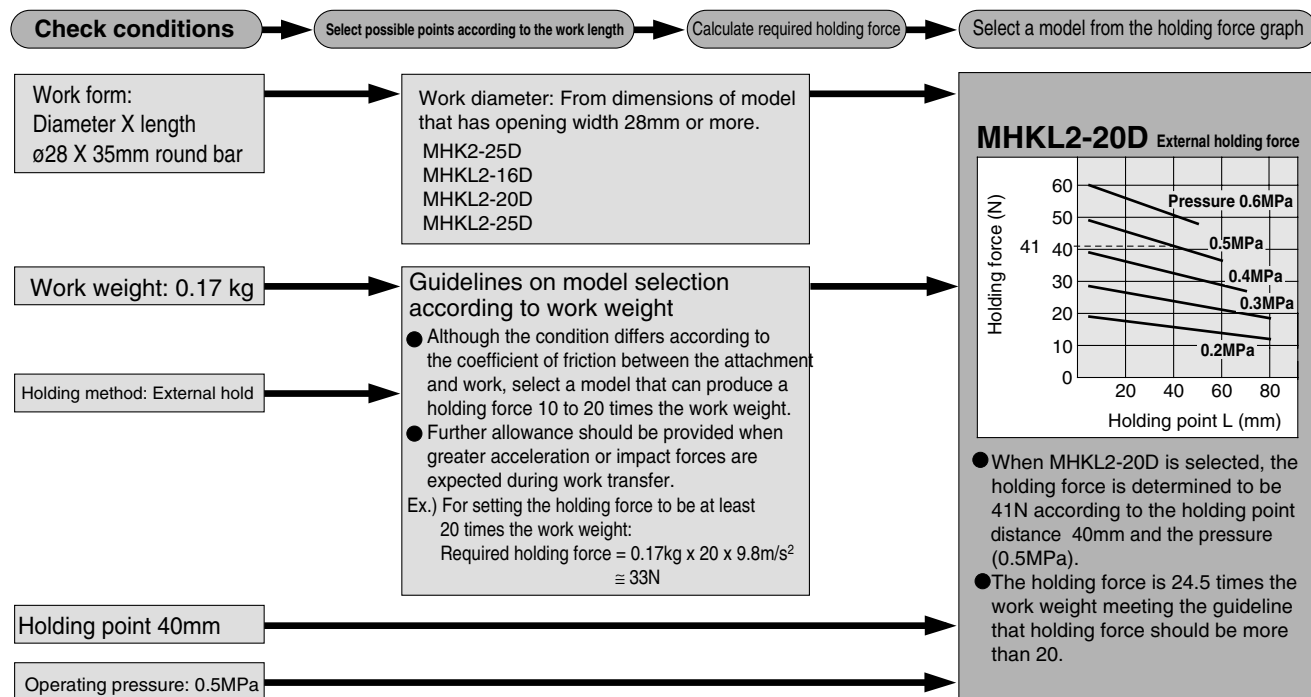
### Replacement Parts: Seal Kits

| No. | Description | Material           | Kit No.    |            |            |            |            |            |            |            |
|-----|-------------|--------------------|------------|------------|------------|------------|------------|------------|------------|------------|
|     |             |                    | MHK2-12    | MHKL2-12   | MHK2-16    | MHKL2-16   | MHK2-20    | MHKL2-20   | MHK2-25    | MHKL2-25   |
| ⑮   | Seal kit    | NBR                | MHK12-PS   |            | MHK16-PS   |            | MHK20-PS   |            | MHK25-PS   |            |
| ⑮   |             |                    |            |            |            |            |            |            |            |            |
| ⑮   |             |                    |            |            |            |            |            |            |            |            |
| ⑮   |             |                    |            |            |            |            |            |            |            |            |
| ⑮   | Dust cover  | CR <sup>(2)</sup>  | P3318105   | P3318113   | P3318205   | P3318213   | P3318305   | P3318313   | P3318405   | P3318413   |
|     |             | FKM <sup>(2)</sup> | P3318105-1 | P3318113-1 | P3318205-1 | P3318213-1 | P3318305-1 | P3318313-1 | P3318405-1 | P3318413-1 |
|     |             | Si <sup>(2)</sup>  | P3318105-2 | P3318113-2 | P3318205-2 | P3318213-2 | P3318305-2 | P3318313-2 | P3318405-2 | P3318413-2 |

Note 1) No. ⑮ to ⑲ are supplied in one unit for each seal kit. Designate the part number for each bore size when ordering.  
CR: Chloroprene rubber, FKM: Fluoro rubber, Si: Silicon rubber.

## Example of Model Selection

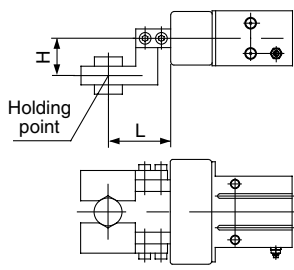
### Procedures



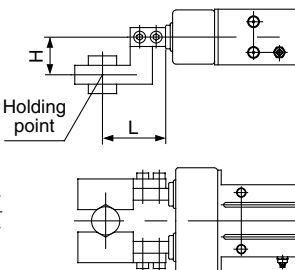
## Holding Point

### External hold

#### Series MHK

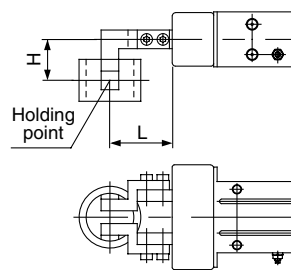


#### Series MHKL

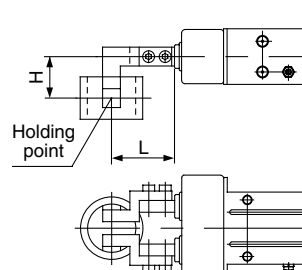


### Internal hold

#### Series MHK



#### Series MHKL

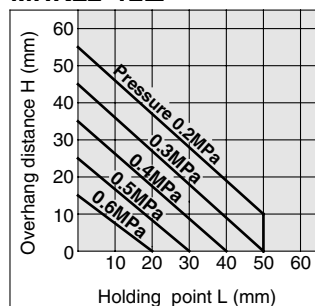


L: Distance to the holding point  
H: Overhang distance

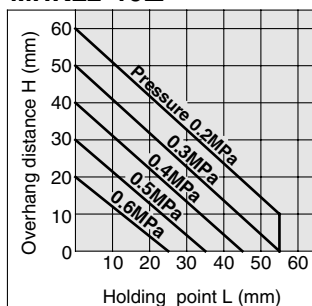
- Proper holding points should be selected in accordance with the operating pressure. The distance to the holding point L and the overhang distance H should be within the limited range shown in the graph below.
- When the work holding point is out of range, the unbalanced load applied to the finger and the guide section may cause excessive play in fingers and have an adverse effect on the gripper life.

## Limitations of Holding Point

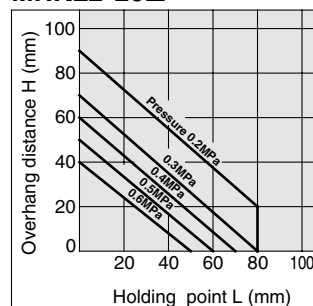
### MHK2-12□ MHKL2-12□



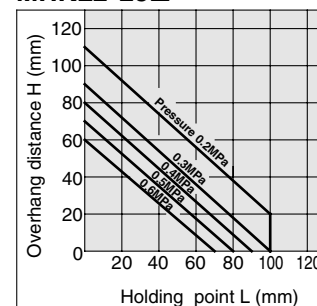
### MHK2-16□ MHKL2-16□



### MHK2-20□ MHKL2-20□



### MHK2-25□ MHKL2-25□



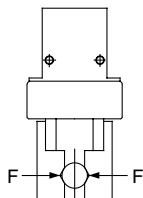
Note) Distance to the holding point L of single acting type is shortened end by spring return.  
Use air gripper within holding force line shown for each pressure in effective holding force graph.

# Series MHK2

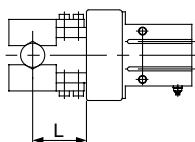
## Effective Holding Force: Series MHK2 double acting

### ● Indication of effective holding force

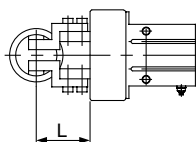
The holding force shown in the tables represents the holding force of one finger when all fingers and attachments are in contact with the work.



External hold  
Series MHK2

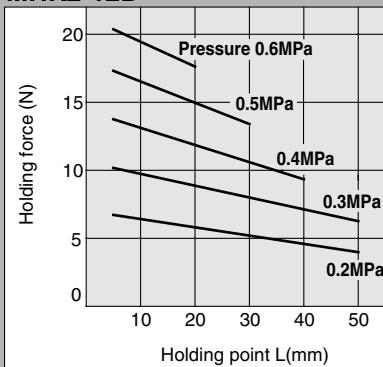


Internal hold  
Series MHK2

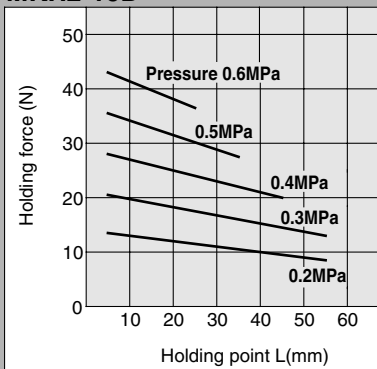


### External Holding Force

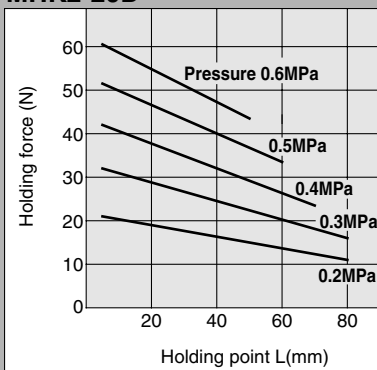
#### MHK2-12D



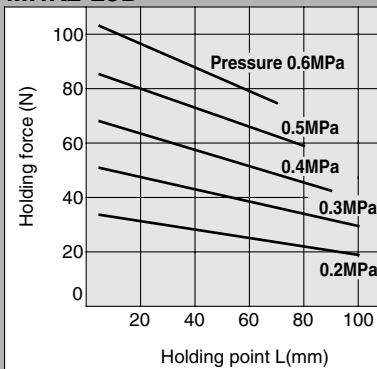
#### MKH2-16D



#### MHK2-20D

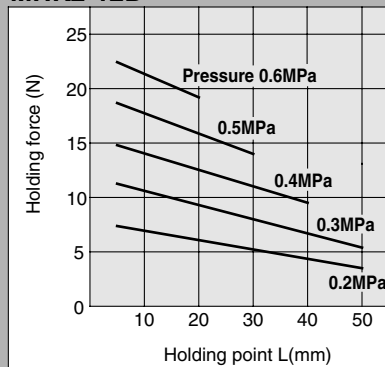


#### MHK2-25D

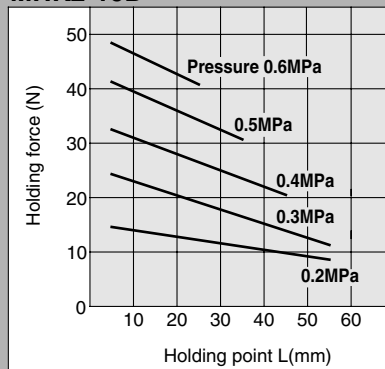


### Internal Holding Force

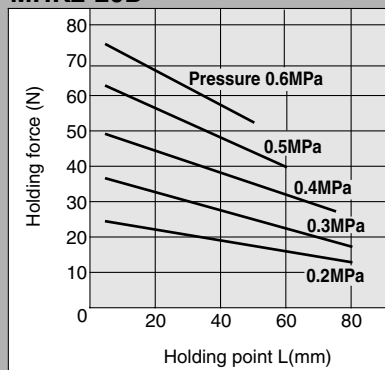
#### MHK2-12D



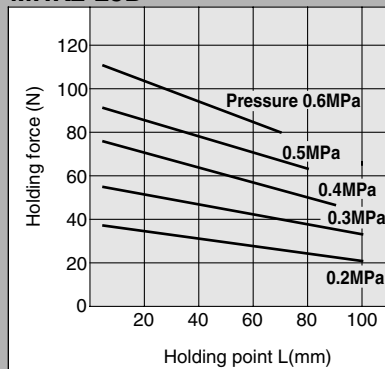
#### MKH2-16D



#### MHK2-20D



#### MHK2-25D

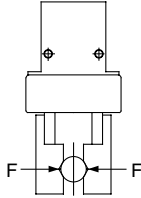




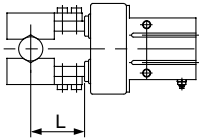
## Effective Holding Force: Series MHKL2 Double acting

### ● Indication of effective holding force

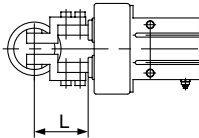
The holding force shown in the tables represents the holding force when all fingers and attachments are in contact with the work.



External hold  
Series MHKL2

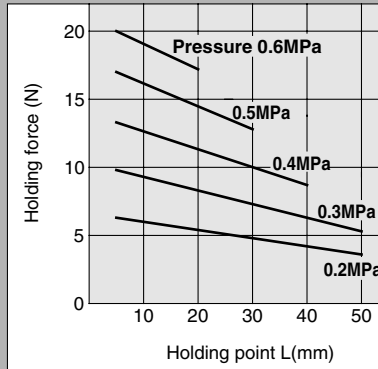


Internal hold  
Series MHKL2

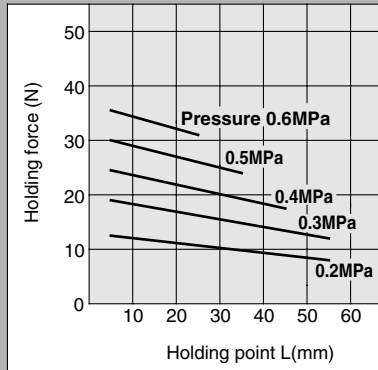


### External Holding Force

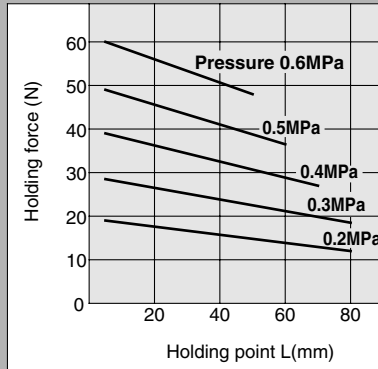
#### MHKL2-12D



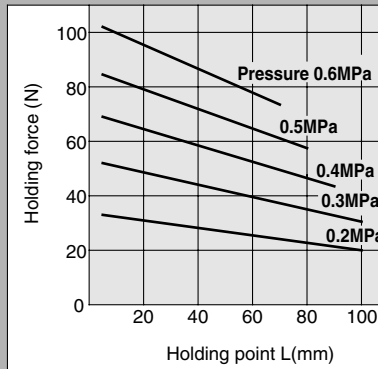
#### MHKL2-16D



#### MHKL2-20D

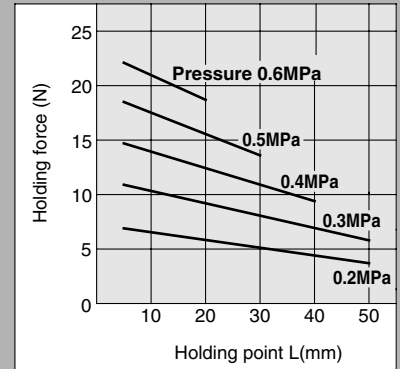


#### MHKL2-25D

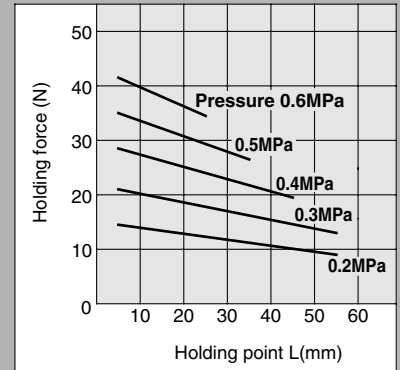


### Internal Holding Force

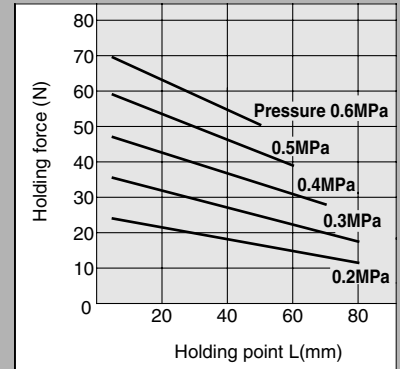
#### MHKL2-12D



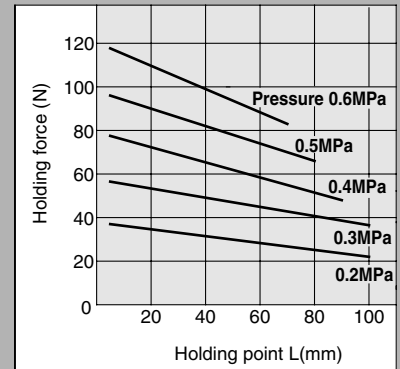
#### MHKL2-16D



#### MHKL2-20D



#### MHKL2-25D

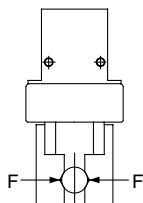


# Series MHK2

## Effective Holding Force: Series MHK2 Single acting

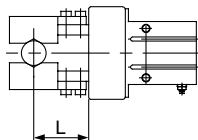
### ● Indication of effective holding force

The holding force shown in the tables represents the holding force when all fingers and attachments are in contact with the work.  $F$  = one finger thrust.

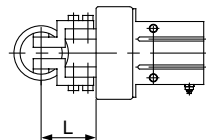


Note) In case of single acting type, the value is for stroke center.

External hold  
Series MHK2



Internal hold  
Series MHK2



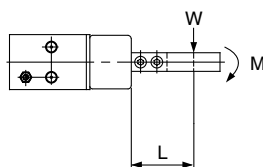
### ● Precautions when using the single acting type:

If a moment such as that illustrated below is applied to the finger, the finger might not be able to retract by the spring force alone. Therefore, make sure to use the air gripper within the allowable moment that is indicated in the table below.

#### Allowable moment

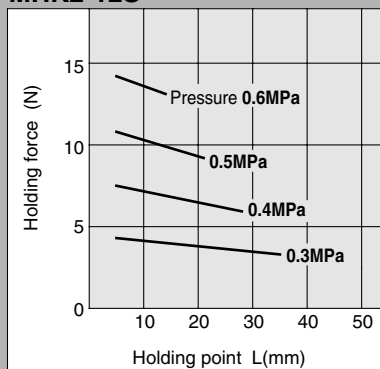
| Model       | Allowable moment<br>Nm |
|-------------|------------------------|
| MHK2-12S, C | 0.05                   |
| MHK2-16S, C | 0.12                   |
| MHK2-20S, C | 0.25                   |
| MHK2-25S, C | 0.49                   |

M: Allowable moment  
( $M = WL$ )

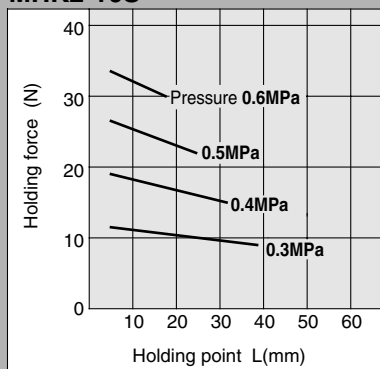


### External Holding Force

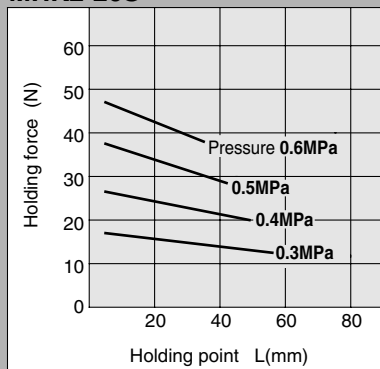
#### MHK2-12S



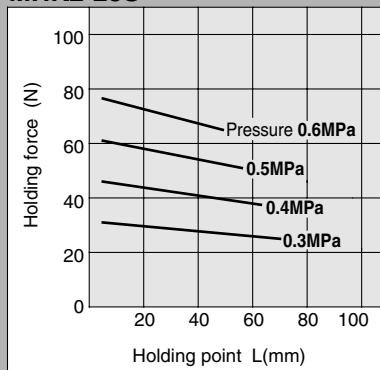
#### MHK2-16S



#### MHK2-20S

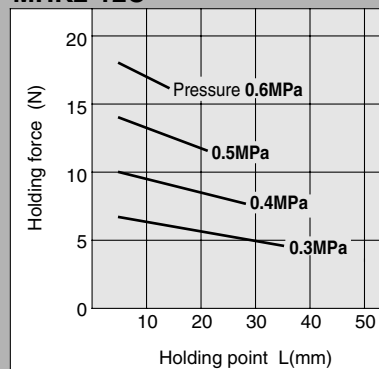


#### MHK2-25S

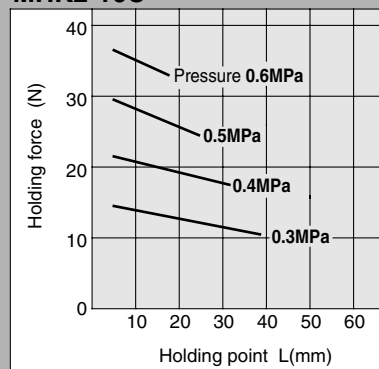


### Internal Holding Force

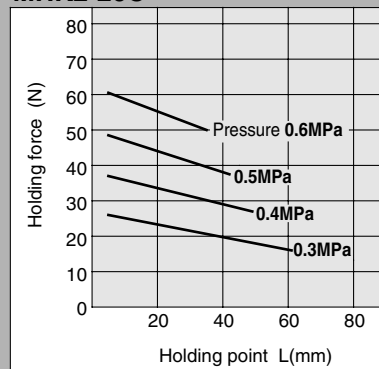
#### MHK2-12C



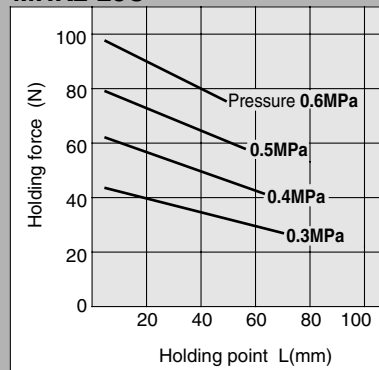
#### MHK2-16C



#### MHK2-20C



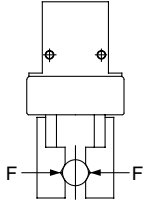
#### MHK2-25C



## Effective Holding Force: Series MHKL2 Single acting

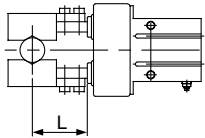
### ● Indication of effective holding force

The holding force shown in the tables represents the holding force of one finger when all fingers and attachments are in contact with the work.

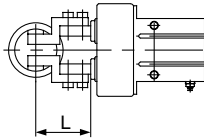


Note) In case of single acting type, the value is for stroke center.

External hold  
Series MHKL2



Internal hold  
Series MHKL2



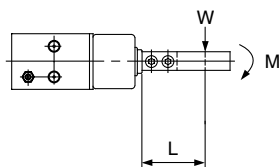
### ● Precautions when using the single acting type:

If a moment such as that illustrated below is applied to the finger, the finger might not be able to retract by the spring force alone. Therefore, make sure to use the air gripper within the allowable moment that is indicated in the table below.

#### Allowable moment

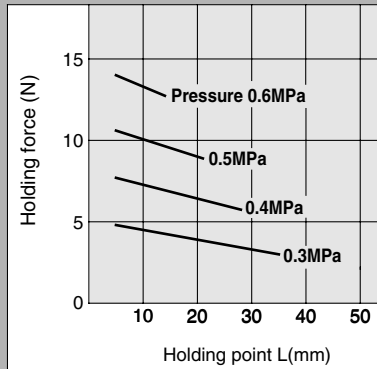
| Model        | Allowable moment<br>Nm |
|--------------|------------------------|
| MHKL2-12S, C | 0.05                   |
| MHKL2-16S, C | 0.12                   |
| MHKL2-20S, C | 0.25                   |
| MHKL2-25S, C | 0.49                   |

M: Allowable moment  
( $M = WL$ )

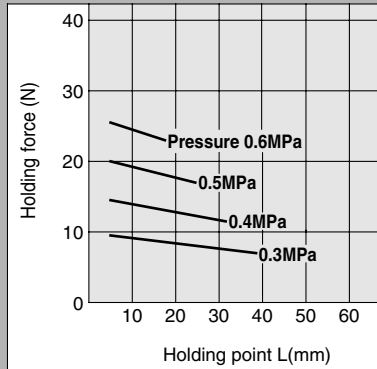


### External Holding Force

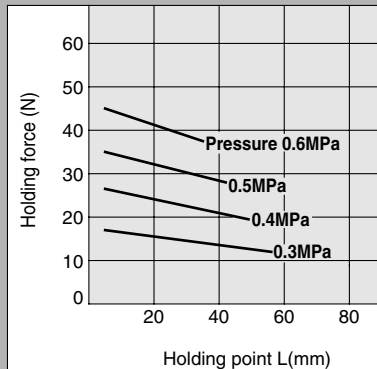
#### MHKL2-12S



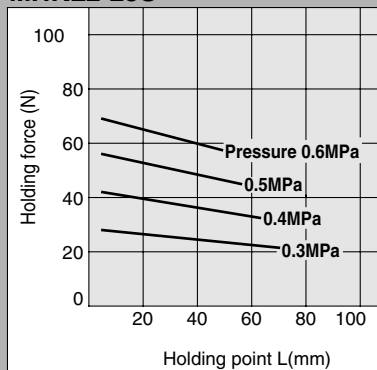
#### MHKL2-16S



#### MHKL2-20S

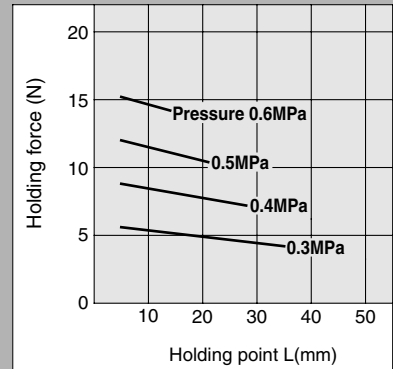


#### MHKL2-25S

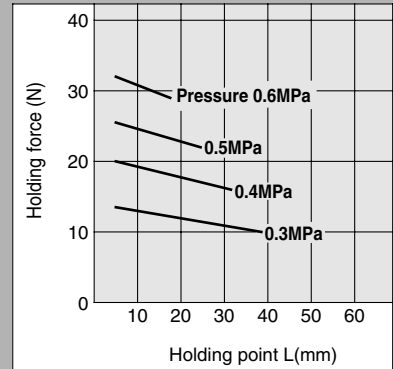


### Internal Holding Force

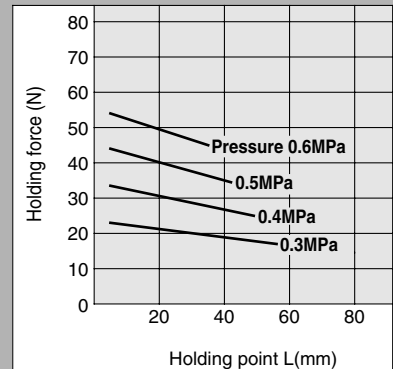
#### MHKL2-12C



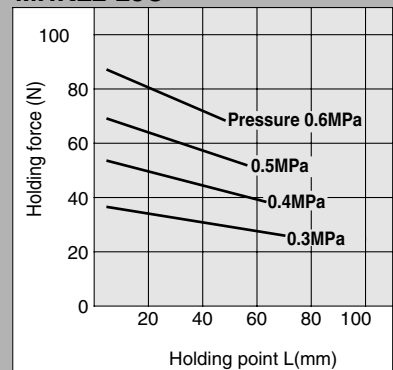
#### MHKL2-16C



#### MHKL2-20C

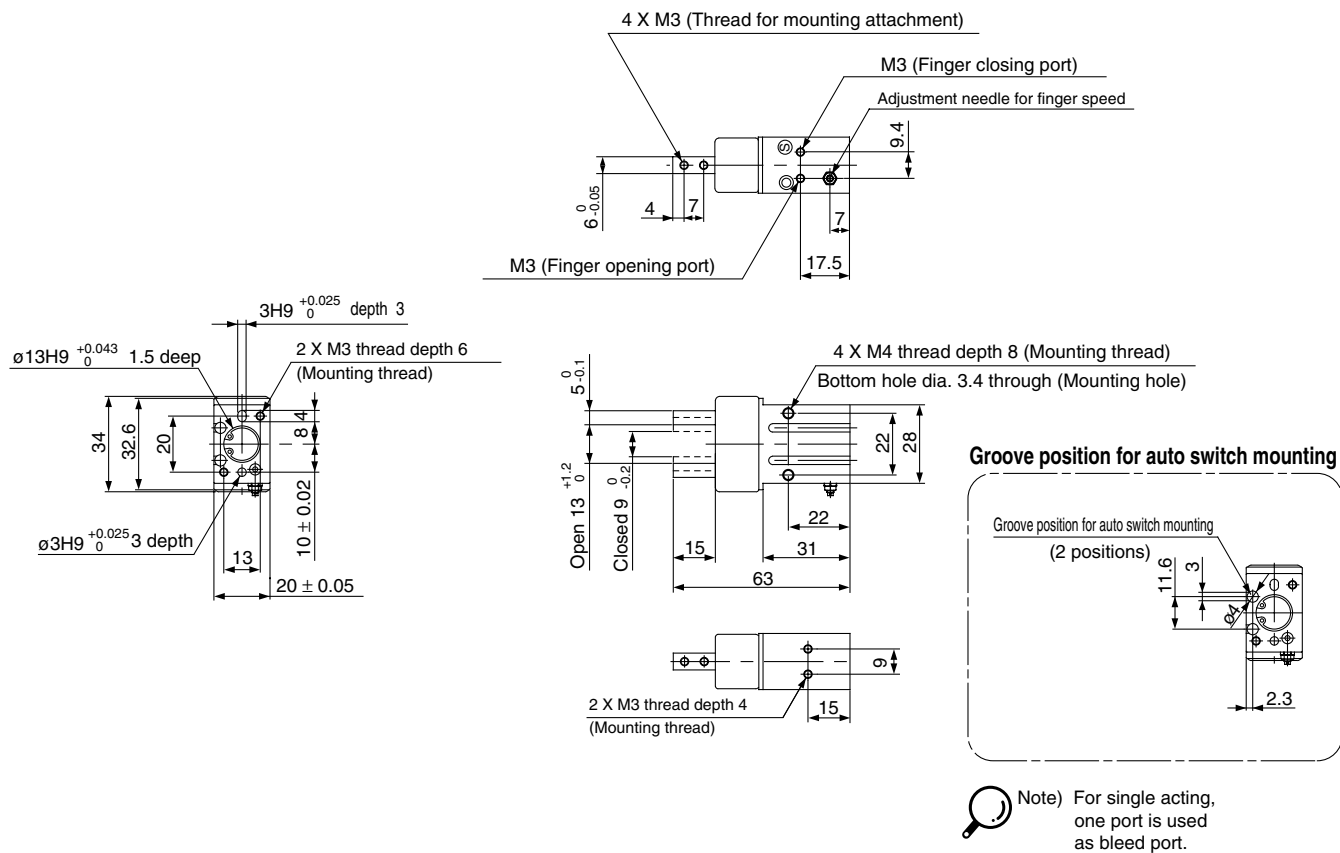


#### MHKL2-25C

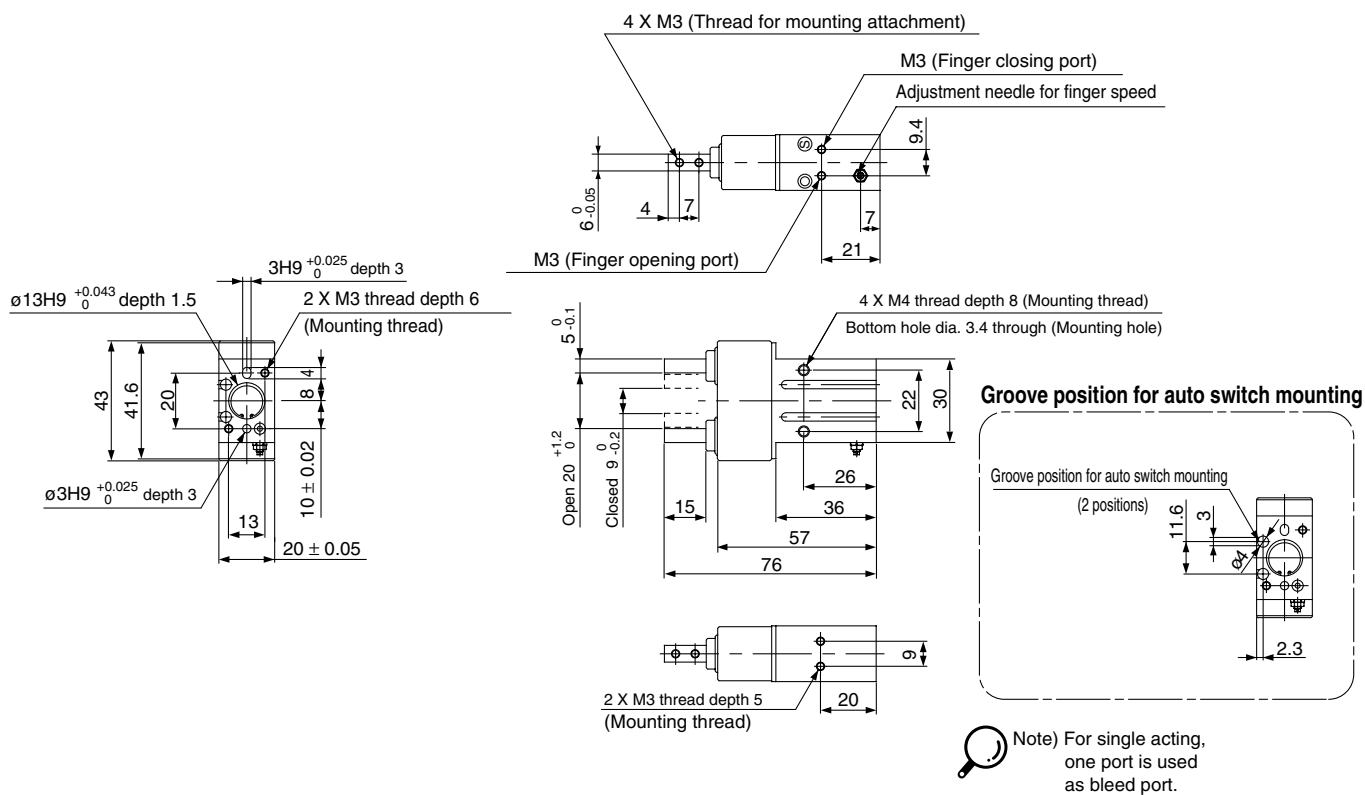


## Dimensions

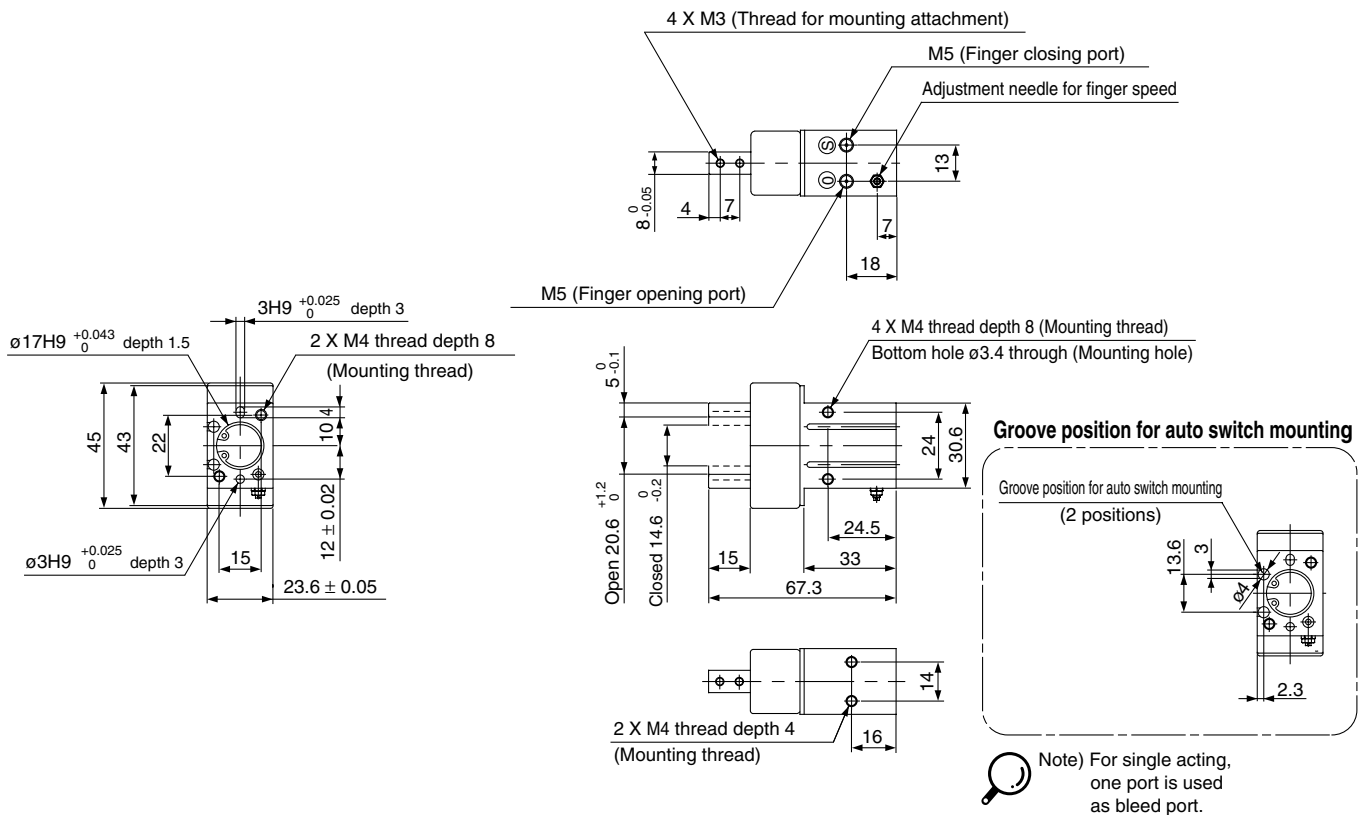
### MHK2-12□/Standard model



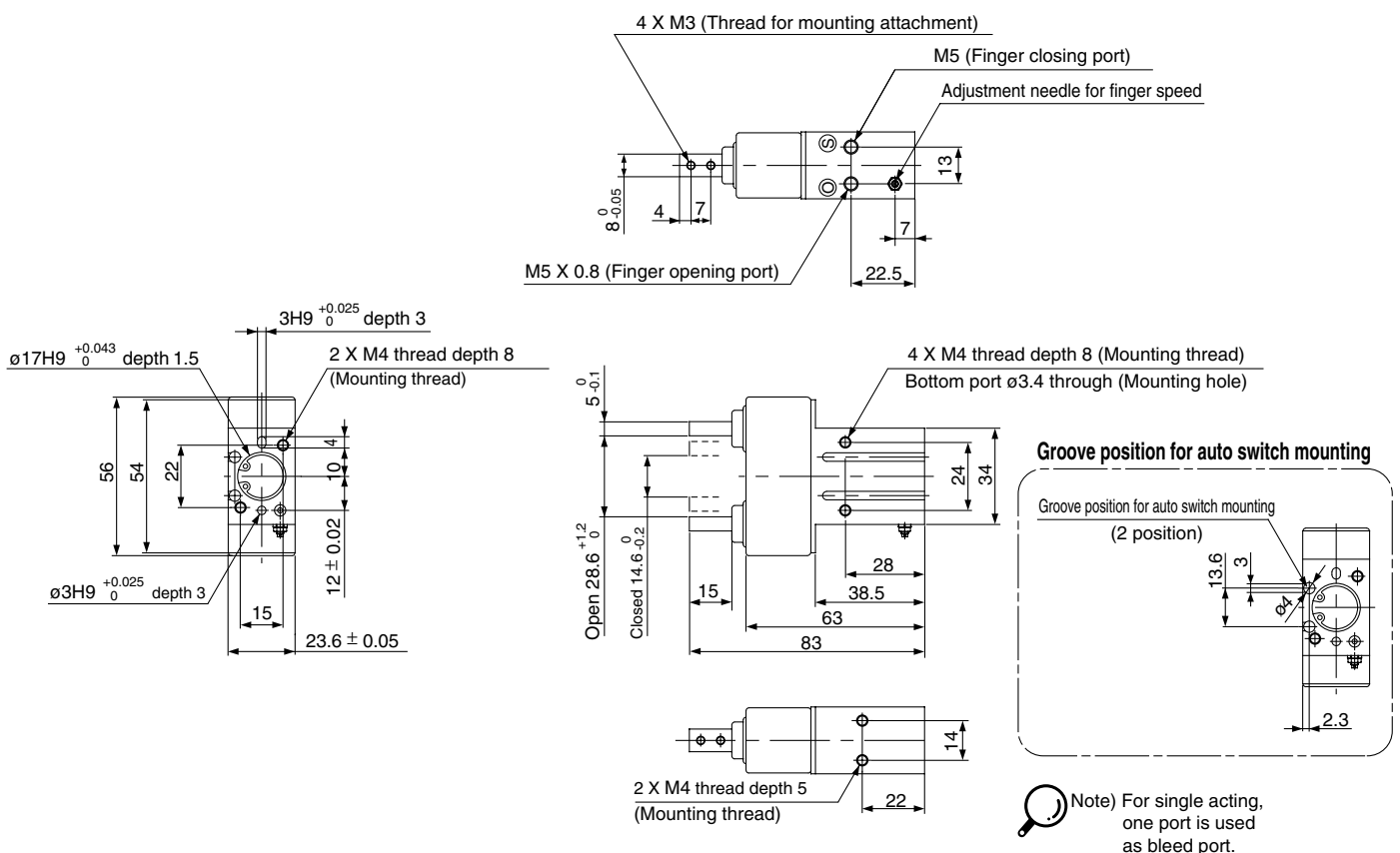
### MHKL2-12□/Long stroke model



## MHK2-16□/Standard model



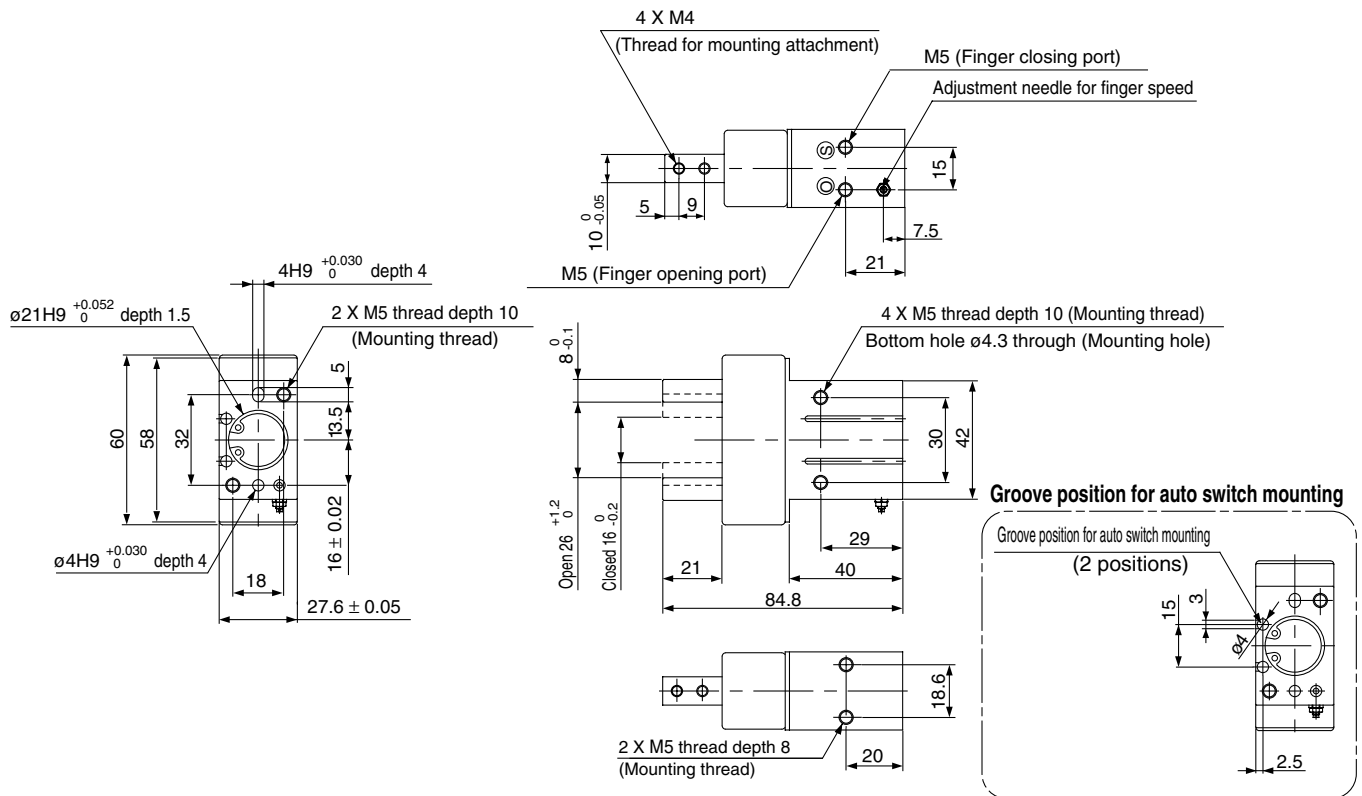
## MHKL2-16□/Long stroke model



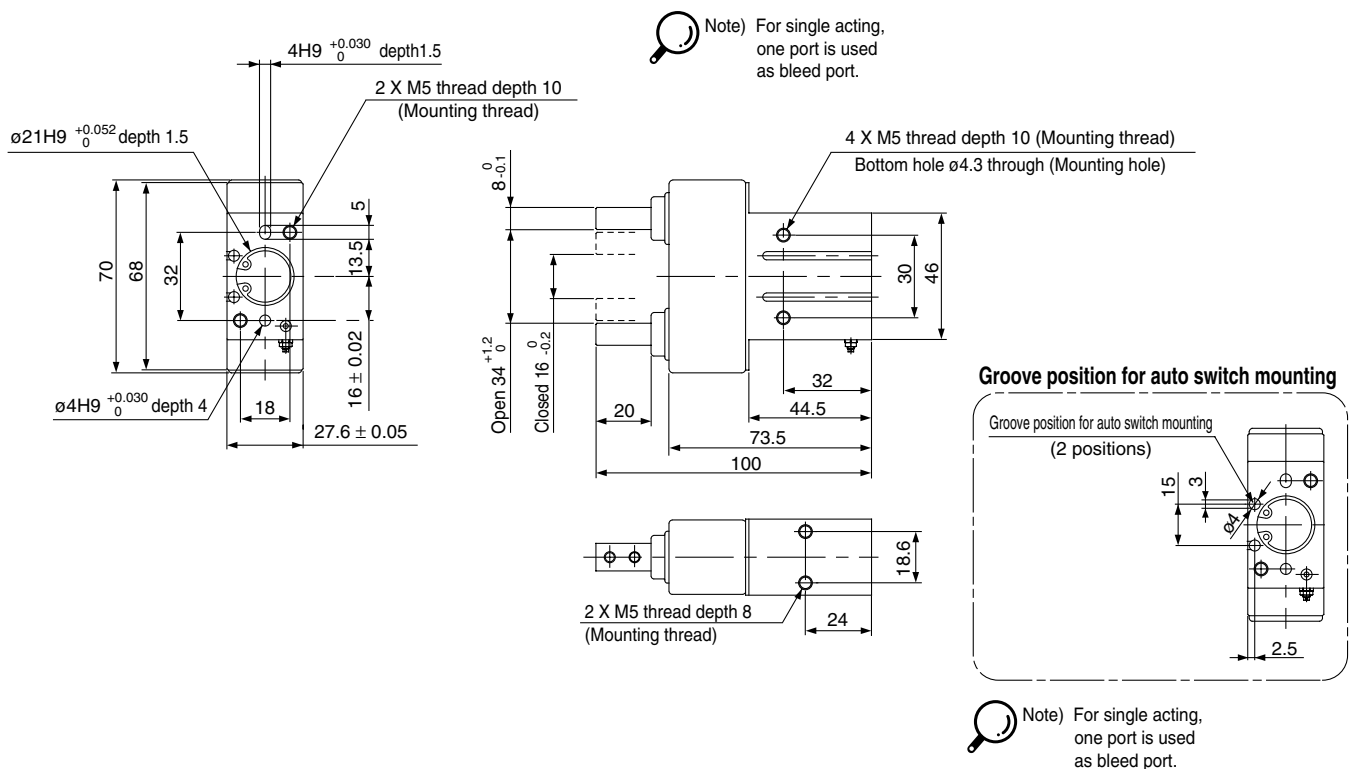
# Series MHK2

## Dimensions

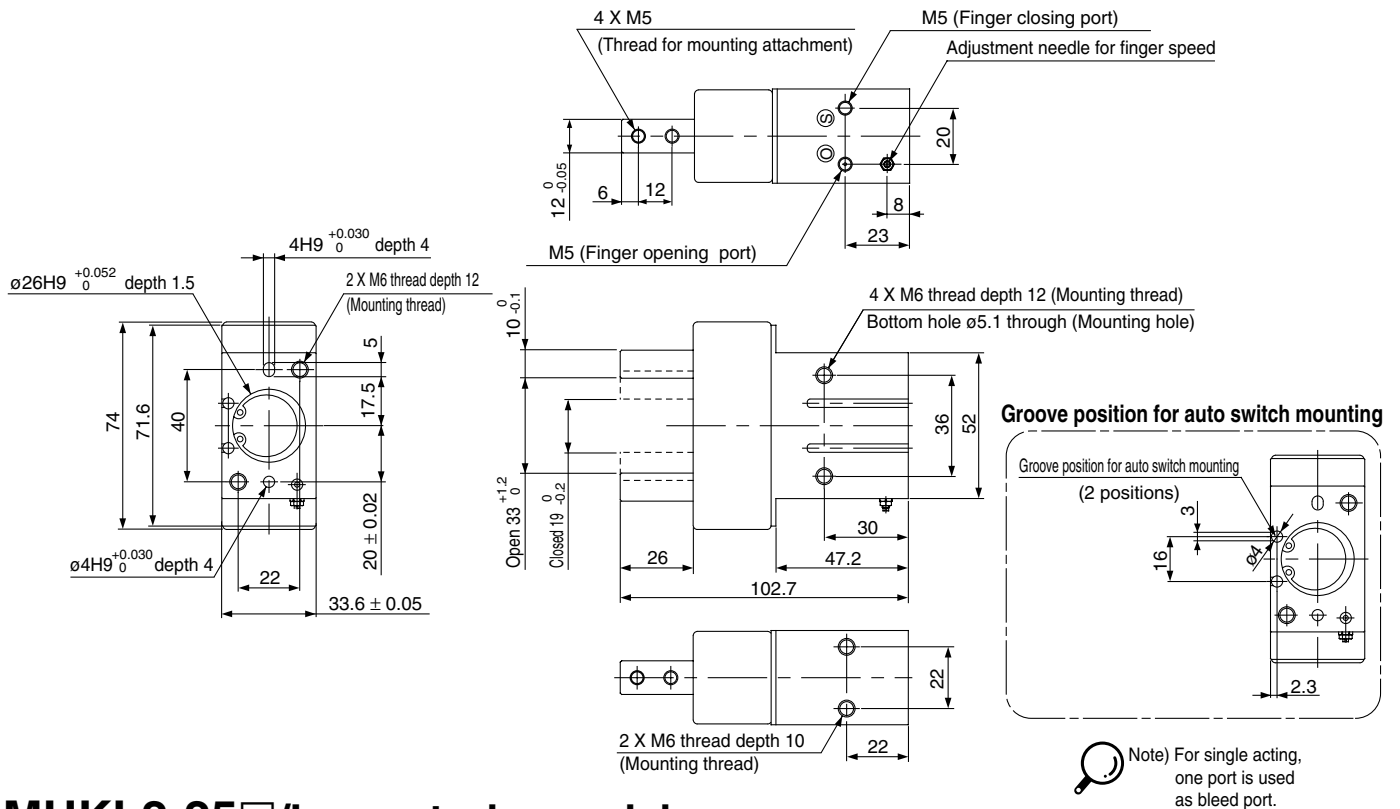
### MHK2-20□/Standard model



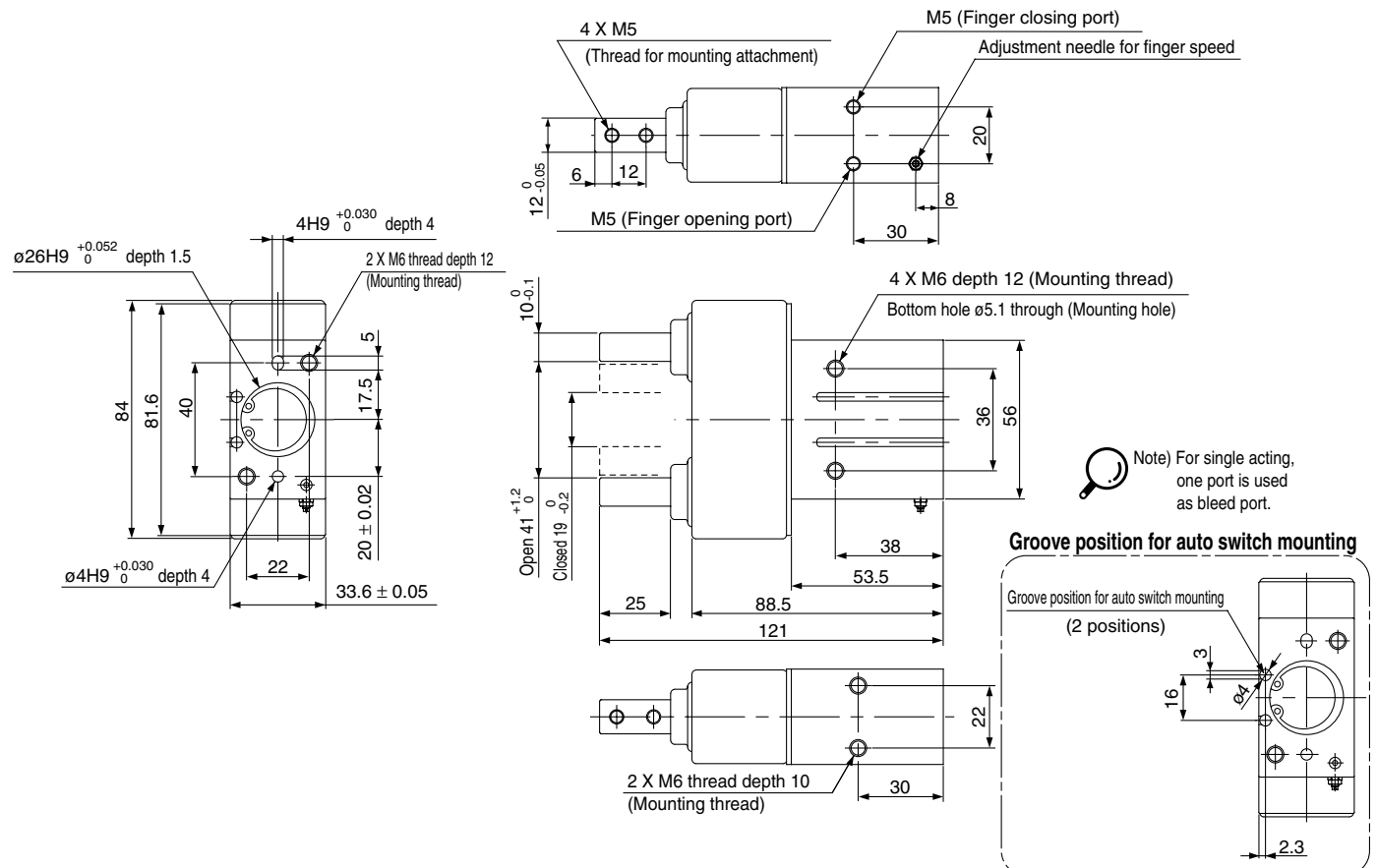
### MHKL2-20□/Long stroke model



## MHK2-25□/Standard model



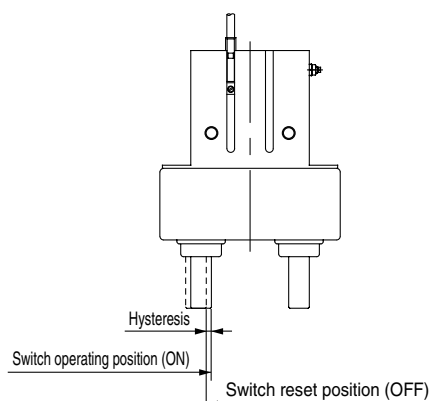
## MHKL2-25□/Long stroke model



# Series MHK2

## Auto Switch Hysteresis

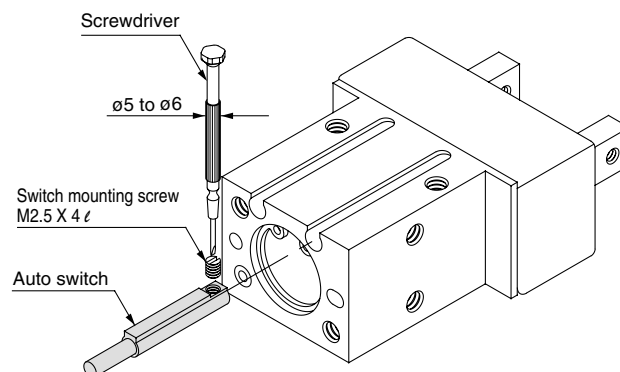
Similarly to micro switch, auto switch have hysteresis. The values in the following tables are criteria for switch position control etc.



| Model    | Auto switch<br>D-M9N(V)<br>M9B(V) | Max. hysteresis mm           |                                |
|----------|-----------------------------------|------------------------------|--------------------------------|
|          |                                   | D-M9BAL                      |                                |
|          |                                   | ON: Red light emitting diode | ON: Green light emitting diode |
| MHK□2-12 | 0.4                               | 0.4                          | 1.6                            |
| MHK□2-16 | 0.4                               | 0.4                          | 1.6                            |
| MHK□2-20 | 0.4                               | 0.4                          | 1.6                            |
| MHK□2-25 | 0.4                               | 0.4                          | 1.6                            |

## Setting Method of Auto Switch

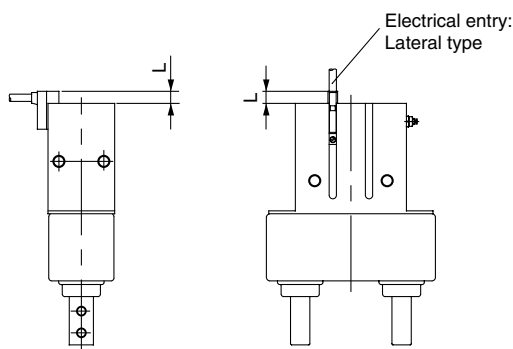
To set the auto switch, insert the auto switch into the switch groove of the air gripper from the direction indicated in the following drawing. After setting the position, tighten the attached switch mounting set screw with a straight bladed switchmakers screwdriver.



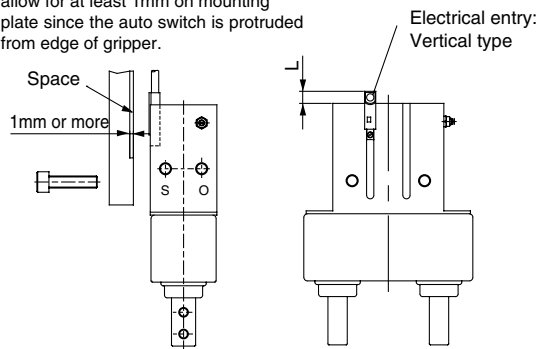
Note) Use a screwdriver with a grip diameter of 5 to 6mm to tighten the auto switch mounting screw. The tightening torque should be about 0.05 to 0.1Nm. When you begin to feel that the screw is being tightened, turn it further by 90°.

## Protrusion of Auto Switch from Edge of Body

The protrusion of an auto switch from the edge of the body in the table below. Use the table as a guideline for mounting.



When auto switch for MHK2, MHKL2 is set on mounting side as figure below, allow for at least 1mm on mounting plate since the auto switch is protruded from edge of gripper.



| Air gripper |        | Electrical entry                    | In-line entry |       |        | Perpendicular entry |        |
|-------------|--------|-------------------------------------|---------------|-------|--------|---------------------|--------|
|             |        | Auto switch type<br>Finger position | D-M9N         | D-M9B | D-M9BA | D-M9NV              | D-M9BV |
| MHK2-12□    | Open   | —                                   | 2             | 7     | —      | —                   | —      |
|             | Closed | 3                                   | 7             | 12    | —      | —                   | —      |
| MHK2-16□    | Open   | —                                   | 2             | 6     | —      | —                   | —      |
|             | Closed | 3                                   | 8             | 13    | 1      | 1                   | —      |
| MHK2-20□    | Open   | —                                   | —             | 1     | —      | —                   | —      |
|             | Closed | 1                                   | 5             | 11    | —      | —                   | —      |
| MHK2-25□    | Open   | —                                   | —             | —     | —      | —                   | —      |
|             | Closed | 2                                   | 6             | 12    | —      | —                   | —      |
| MHKL2-12□   | Open   | —                                   | —             | 3     | —      | —                   | —      |
|             | Closed | 3                                   | 7             | 12    | —      | —                   | —      |
| MHKL2-16□   | Open   | —                                   | —             | 1     | —      | —                   | —      |
|             | Closed | 3                                   | 8             | 13    | 1      | 1                   | —      |
| MHKL2-20□   | Open   | —                                   | —             | —     | —      | —                   | —      |
|             | Closed | 1                                   | 6             | 11    | —      | —                   | —      |
| MHKL2-25□   | Open   | —                                   | —             | —     | —      | —                   | —      |
|             | Closed | 1                                   | 6             | 11    | —      | —                   | —      |

Unit: mm

Note) There is no protrusion if no values are entered in the table.



# Series MHK2

## Made to Order

Contact SMC for the details on dimensions, specifications, and delivery.



### 1 Oil-proof

MHK **L** 2 - **Cylinder bore** **D** 1 **F** - X5

- Finger material
- Action

The packing class has been revised to adopt oil-proof materials for use in an environment with splashing of cutting oil, etc.

#### Specifications

| Type                   | Oil-proof  |
|------------------------|--|
| Bore size (mm)         | 12, 16, 20, 25   |
| Action                 | Double acting, Single acting (normally open/normally closed) |
| Fluid                  | Air  |
| Material               | Dust cover, Seal, Gasket-fluoro rubber                       |
| Applicable auto switch | D-M9BAL  |



Notes) Some liquid may make the use of an air gripper or auto switch impossible. Confirm liquid and consult SMC for the use. The dimensions are the same as the standard type.

### 3 With grease needle

MHK **L** 2 - **Cylinder bore** **D** 1 **F** - X39

- Dust cover material
- Finger material
- Action

Lubrication from grease needle to interior is possible.

#### Specifications

| Type           | With grease needle   |
|----------------|--|
| Bore size (mm) | 16, 20, 25   |
| Action         | Double acting, Single acting (normally open/normally closed) |
| Fluid          | Air  |



Notes) Lubrication:

Fill lubricant to the bearing via magazine pocket so that foreign particles are not mixed in. Fine quality lithium soap grease (no. 2) for grease is recommended. The dimensions are the same as the standard type.

### 2 Thermal proof

MHK **L** 2 - **Cylinder bore** **D** 1 **F** - X4

- Finger material
- Action

The packing class has been revised to adopt thermal proof materials for use at high temperature of up to 100°C.

#### Specifications

| Type           | Thermal proof  |
|----------------|--|
| Bore size (mm) | 12, 16, 20, 25   |
| Action         | Double acting, Single acting (normally open/normally closed) |
| Fluid          | Air  |
| Material       | Dust cover, Seal, Gasket - fluoro rubber                     |



Notes) Items with auto switch cannot be manufactured. The dimensions are the same as the standard type.

### 4 Grooves for auto switch on both sides

MHK **L** 2 - **Cylinder bore** **D** 1 **F** - X41

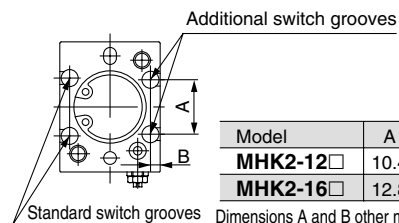
- Dust cover material
- Finger material
- Action

Possible to select the auto switch mounting side.

#### Specifications

| Type           | Both sides grooves for auto switch mounting                  |
|----------------|--|
| Bore size (mm) | 12, 16, 20, 25   |
| Action         | Double acting, Single acting (normally open/normally closed) |
| Fluid          | Air  |

Groove position of auto switch



| Model    | A    | B   |
|----------|------|-----|
| MHK2-12□ | 10.4 | 1.8 |
| MHK2-16□ | 12.8 | 1.6 |

Dimensions A and B other models are same as standard switch grooves.